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BUILDER

What's New in BUILDER 3.6.8.2

This topic describes changes made in **BUILDER** Version 3.6 and its incremental versions through 3.6.8.2.

For information about bug fixes, see release notes in the Support web page at https://support.sms.erdc.dren.mil.

Version 3.6.8.2 Changes

- **Bug Fix:** Issues with exporting scenarios while using the Export to Excel button on the Scenario Analysis page have been resolved.
- **New Feature:** BUILDER instances now have the capability to turn off standard reports.

Version 3.6.8.1 Changes

- **Bug Fix:** Updated the import process to account for Section "Year Installed" date changes within BRED.
- **Bug Fix**: Updated a configuration value misspelling for the word "False" in the InventorySearchBar script.
- **New Function–Import Stored Procedures via API:** Users can employ API calls to allow the importer to initiate Stored Procedures.
- **New Search Bar Functionality:** The Inventory Search bar can now be configured for use by all, regardless of user permissions.
- **Stored Procedures:** The @updateDate parameter is no longer available for Stored Procedures.

Version 3.6.8 Changes

- **Bug Fix–API Calls:** Users can employ API calls to initiate Scenario Starts.
- **Bug Fix–Complex Folders:** Folder contents for Complexes are listed in alphanumeric order.
- **Bug Fix–BRED Package Exports:** Multiple file types are compatible with BRED Package exports, including JFIF, FPE, and Excel. Previously, failures would occur when unexpected file types appeared in the exported data.
- **New Feature–Quantity Values:** When configured, users can add up to 3 decimal place values for Section and Facility-level quantities.
- **New Function–Facility Summary Category Codes:** Users can view Category Codes in the Facility Summary section if they do not appear in the Building General info pane.

Version 3.6.7 Changes

- Minor Bug Fixes and Software Enhancements.

Version 3.6.6 Changes

- **New Feature–OKTA Implementation:**The Bureau of Overseas Building Operations (OBO) users can now access BUILDER though the OKTA single sign-on (SSO) service. This provides access under OBO's existing security without need to create/monitor additional passwords or other login requirements. For additional details about OKTA implementation, refer to the OKTA Implementation in BUILDERon page 24 page.
- **New Feature–Building-Level Field Value Locks:** Certain building-level field values have been locked for particular users. Restricting the editing of certain building level fields, will benefit the Real Property data integrity and systems connection integrity.

Version 3.6.5 Changes

- **New Feature–Custom Inventory Attributes:** Users can now create additional, custom attributes available to be applied to assets in addition to the descriptive features selected and entered at an asset's inventory page. These attributes can be applied in free-form manner, or you have the option to create "admin managed attributes" to enhance consistency across your organization's inventory.
- To access this feature, use the new tab named "<Inventory level> Attributes".
- **Cost Modifiers:** Documentation is provided for selecting and applying inventory cost modifiers. Look for the **Cost Modifiers** tab at each asset page, except at the Organization level. Available modifiers are governed by the cost modifier library, which is set at the Site or Organization level.
- **Scenarios:** Screens have been updated in Scenarios.
- **Functionality Wizards:** The documentation now reflects a reduced set of standard functionality wizards available.
- **Functional Assessment:** The interface for Functional Assessment has been updated. In the documentation, see in particular topics about performing functionality assessments (first tier and second tier).

Version 3.6.4 Changes

- **Default Systems in Scenarios:** Scenarios will now default to all Systems selected instead of no Systems selected.

Version 3.6.3 Changes

- **Data Fields Unlocked at Building Inventory Screen:** At the **General Info.** tab on the Building-level inventory screen, fields formerly locked for editing by users below the Master Planner A user with

Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges.level are no longer locked. This includes Building Number, Building Name, Building Use code, Current Status, Construction Type, Area, Year Constructed, Replacement Cost, **MDI**[1] Mission Dependency Index - measures the relative importance of a Building(mission dependency index), and Alternate ID. A user-configurable locking scheme is planned for the future.

Version 3.6.2 Changes

- **Unsupported Browser: BUILDER** no longer supports the Internet Explorer browser. **BUILDER** supports the Chrome, Firefox, and Microsoft Edge browsers.

Version 3.6.1 Changes

- **Facility Summary Sort/Search by Alternate ID:** At the **Facility Summary** tab on the Site inventory page, the option to filter results by RPUID (Alternate ID) has been added.
- **Global Rollup Confirmation:** Confirmation (in a dialogue box) is now required before **BUILDER** will perform a Global Rollup operation. Global rollups can take a long time, thus confirmation is a precaution against a mis-click leading to a long wait for a rollup to complete.
- **Full Section Name Displayed:** The entire Section name now displays by default in the navigator pane in **BUILDER**'s Web interface. Previously only the first part of the Section name would show unless the Section was selected.
- Performance has been improved with database optimizations and updates to the BRED BUILDER Remote Entry Database (BuilderRED)lookup tables.

Version 3.6.0 Changes

- **Microsoft Silverlight:** Microsoft Silverlight is no longer required for any BUILDER functionality.
- **Choice of Rounded or Un-Rounded Units:** On the Component-Section inventory page, quantities can now be displayed as either rounded or un-rounded units (e.g. square feet, linear meters, etc...) at the **General Information** tab. Previously they were only displayed as rounded units.
- **Section Alternate ID:** On the Component Section inventory page, a Component-Section's Alternate ID can now be viewed and changed at the **General Information** tab.

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[1] Mission Dependency Index

Getting Started

BUILDER Account Setup

A BUILDER Administrator A user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings.will set you up with a user account that has a particular level of user privileges. For details on the levels of user privilege, see About BUILDER Permissions Roles.

Once you have an account and are logged in, you can access User Preferences via a link at the upper right hand corner of the home screen to do any of the following:

- change the unit of measure
- clear all the locks on the database records
- change the default view in the navigation pane of **BUILDER**'s main page
- change the email address associated with your account
- change the password to your account
- register a CAC for use to log into **BUILDER**

To do any of these things, refer to User Preferences.

Understanding the BUILDER™ Inventory Hierarchy

The hierarchy that has been designed and built out in a given **BUILDER** implementation is shown in the navigation pane at the left hand side of the **BUILDER** screen. Activate the "plus" boxes to expand the inventory tree shown there.

The levels of hierarchy available in a **BUILDER** inventory tree are as follows:

- Top node: This will be a single Organization or a single Site. The topmost position can not be shared; only one Organization or Site can be at the topmost level.
- Organization (Having an Organization level is optional; if the top node is a Site, there can be no Organization in the tree)
- Site
- Complex
- Facility / Building
- System
- Component
- Section

Each of these levels is described briefly under headings below.

Icon Colors

Condition and functionality metrics used in **BUILDER** are communicated upwards through the hierarchy in weighted fashion. At each level of the hierarchy, the condition or functionality index for that level provides an understanding of the average condition/functionality of the real property contained in all the inventory items under the specified Organization, Site, Complex, Building, System, or Component. The value of the index will determine whether the inventory icon for any given inventory item appears as green, amber, or red. Gray indicates that no assessment has been recorded in **BUILDER** for anything under that asset.

Levels of Hierarchy

Top node

Your inventory tree will have one and only one "node" at the top, typically named for your service branch, installation, or company. This can only be an Organization or a Site.

Organization

Organization is the highest possible level in the inventory tree. However, it is not a required level. Depending on the scope of your **BUILDER** implementation, it is possible to start with the Site level instead.

Unlike the other hierarchical levels, the Organization level may be nested more than one deep. When designing the inventory tree before implementing and filling out your inventory, it is important to accommodate in the inventory tree the highest possible Organization level you may want to expand to in the future. For more detail, see the section on implementation planning .

In the hierarchy tree, an Organization can have either (a) one or more Sites, (b) one or more Organizations, or (c) both created underneath it.

For more information about this hierarchical level, see Working with Organizations.

Site

The level below Organization is the Site, which usually refers to a geographic location. The Area Cost Factor is one of the Location Factors that is set at the Site level. Other features that are set at the Site level are:

- Seismic Zone
- HVAC Zone

(In practice, a Site as a whole will typically have a facility manager who is responsible for day-to-day management of the Site, often with the assistance of subsidiary personnel.)

Just as an Organization can have one or more Sites and/or other Organizations created underneath it, in the SMS hierarchy a Site can have any combination of Complexes and/or Buildings beneath it.

For more information, see Working with Sites

Complex

A Complex is an optional grouping of Buildings or facilities. This feature is particularly useful for groupings of Buildings with similar Building Use types or locations.

Note: Grouping Buildings into a Complex is done after creating the Buildings, not before.

For more information, see Working with Complexes.

Facility / Building

A Building is a stand-alone building or other facility. At this level in the hierarchy, you can see details such as year constructed, size/area, condition indexes, and work item history. Attachments such as floor plans and photographs can be associated with the Building level.

For more information, see Working with Buildings.

Systems, Components, and Sections

In **BUILDER**, a Building is divided in to Systems, then further divided into Components, following the UNIFORMAT II system shown in BUILDER Systems and Components. BUILDER Systems equate to Level 2 Group Elements, and BUILDER Components equate to Level 3 in the UNIFORMAT classification.

Components are then divided into Component-Sections, also called Sections. It is at the Section level that inspection information is recorded into **BUILDER**.

How To Navigate BUILDER™

This topic

- Introduces the layout of the **BUILDER** home page
- Gives a brief overview of the main menu options and user links
- Introduces the Inventory, Condition, and Functionality navigation trees

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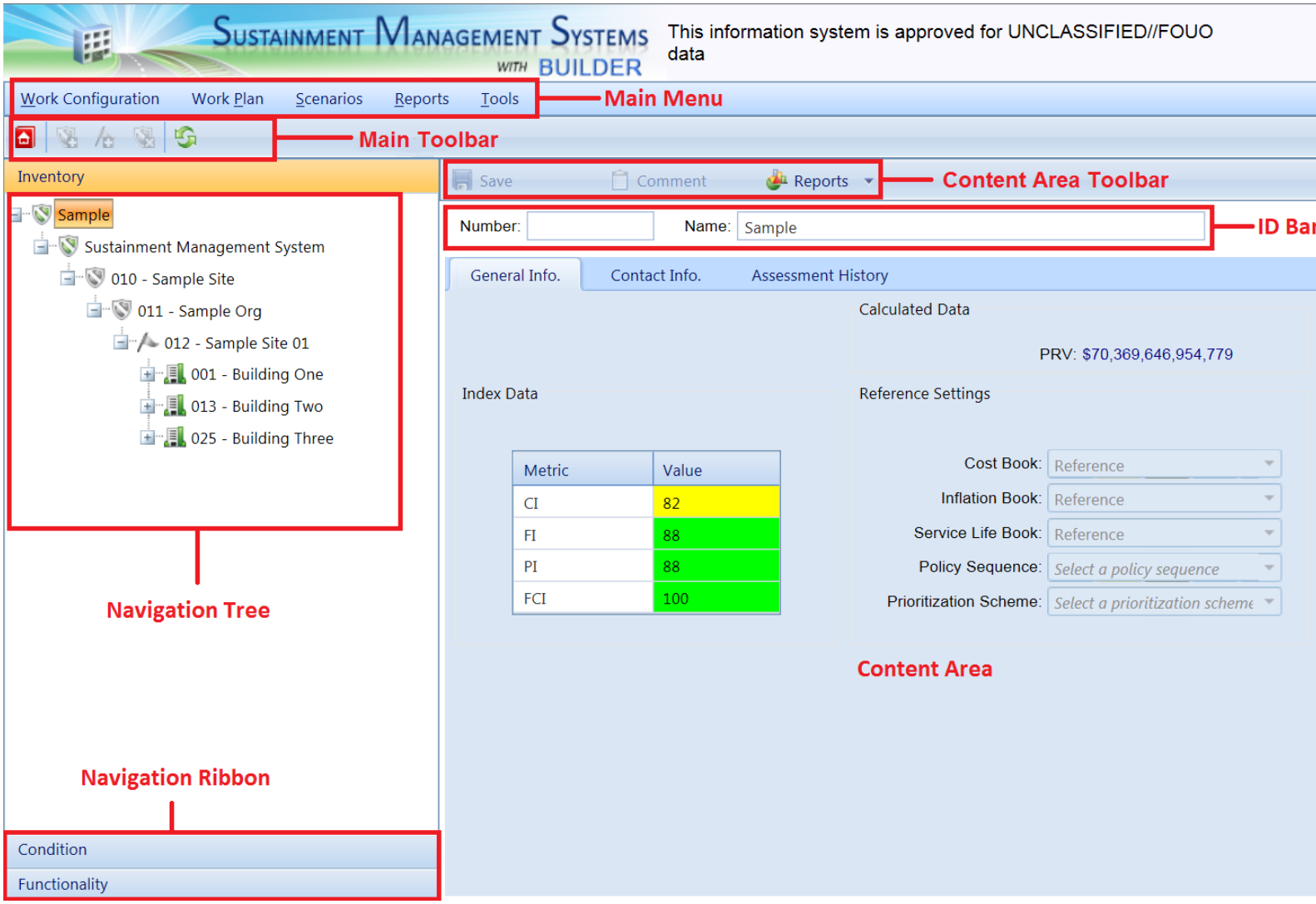
When you log into **BUILDER**, a screen similar to the one below will appear:



The BUILDER user interface has the following main areas, each of which is described in greater detail below:

- User Links
- Main Menu and Toolbar
- Navigation Pane
- Content Area

User Links

The **User Links** area (upper right) offers these options:

- **User Preferences**. This option allows you to do any of the following:
  - change the unit of measure
  - clear all the locks on the database records
  - change the default view in the navigation pane of BUILDER's main page

- change the email address associated with your account
- change the password to your account password
- register a CAC for use to log into BUILDER

  Note: To do any of these things, refer to User Preferences.

- **Logout**. Selecting this option causes you to log out of (sign off from) **BUILDER**. After logging out of **BUILDER**, you will no longer be able to view or edit data until you are logged back in.
- **Help**. This option gives you access to a sub-list of multiple user Help options:
  - **Context-Sensitive Help**. Select this to launch a context-sensitive help file pertaining to the current **BUILDER** screen.
  - **Table of Contents** for the online user documentation. To reach the Contents, first select **Index** in the dropdown list. This will bring you to a Welcome page. In the navigation pane at the left you can choose between (1) **Contents**, (2) the **Index**, and (3) a **Glossary**.
  - **Index**. Selecting this option will bring you to a Welcome page. In the navigation pane at the left you can choose between (1) **Contents**, (2) the **Index**, and (3) a **Glossary**.
  - **Glossary**. To reach the Glossary, first select **Index** in the dropdown list. This will bring you to a Welcome page. In the navigation pane at the left you can choose between (1) **Contents**, (2) the **Index**, and (3) the **Glossary**.
- **Contact Help**. This option will open an Outlook window for submitting a ticket to **BUILDER** support. Alternatively, it will enable some other form of access as determined by your specific **BUILDER** support representative.
- About **BUILDER**. Select this to open a popup window showing version information pertaining to your **BUILDER** software. To close the popup window, select the **OK** button in the popup.

Main Menu and Toolbar

Main Menu

The main menu has the following options:

- **Work Configuration.** Activating Work Configuration will give you a drop-down list providing you with the work configuration options for the following **BUILDER** features. In each of these areas, the **Return** button, located above the navigation pane, will return you to the Main Menu page.
  - Standards (see Work Configuration Overview for an overview)
  - Policies
  - Policy Sequences
  - FCI Policies
  - Prioritization Schemes
  - Funding
- Work Plan. Activating Work Plan brings you to the table of details about each work plan item. For more information, see Add a Work Item. From the work plan, the **Return** button (located above the navigation pane) will return you to the Main Menu page.

- **Scenarios**. Activating **Scenarios** allows you to create or manage a scenario or perform Scenario Visualization / Analysis. In each of these areas, the **Return** button, located upper left, will return you to the Main Menu page.
- **Reports**. Activating **Reports** brings up a pop-up box listing report formats to choose from. The **Close** button (in the upper left corner of the pop-up box) will return you to the Main Menu page. You can learn more about reports from the topics showing how to select a report, generate a report, and export a report.
- **Tools**. Activating **Tools** allows you access to the following capabilities:
  - import from BRED (BuilderRED)
  - import image archive
  - BUILDER Administrator tasks
  - access a Library (Cost Books, Inflation Books, Service Life Books, Component Importance Indexes, or **Cost Modifiers**).
  - Unlock My Buildings

Main Toolbar

Directly under the main menu is the main toolbar. The options displayed on the main toolbar will vary, depending on the currently active level (Organization, Site, Complex, etc.).

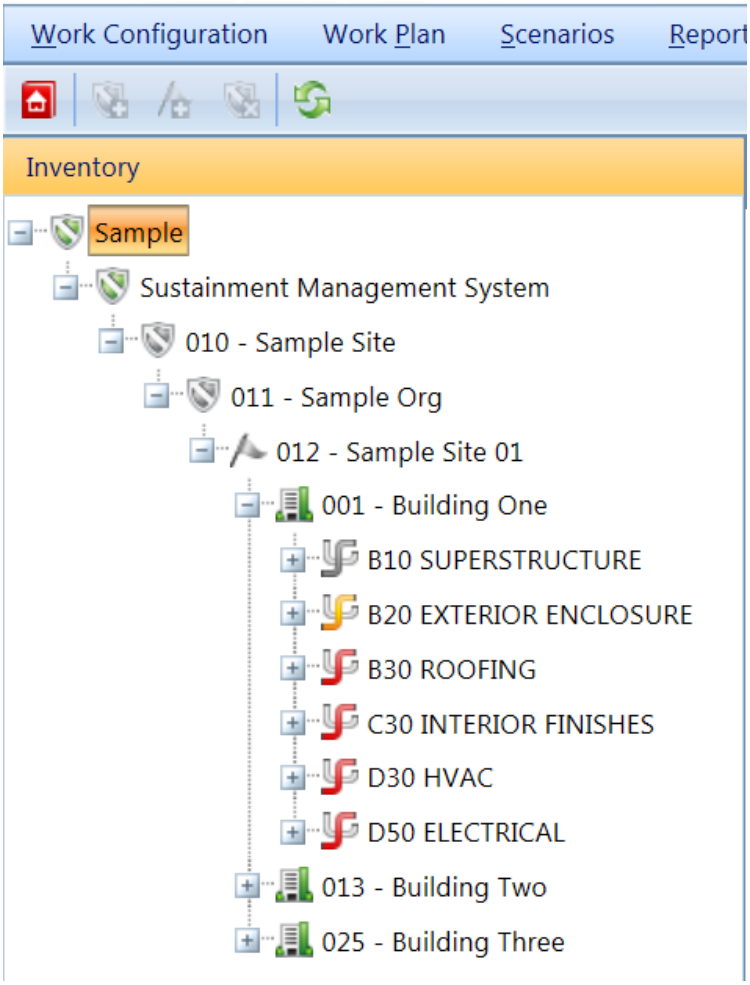
Navigation Pane

Navigation Ribbons

In the left viewing pane, which is the navigation pane, the navigation ribbons allow you to quickly select between the following navigation trees:

- **Inventory**. The inventory tree is the default view in the navigation pane. If either the **Condition** or the **Functionality** ribbon is highlighted instead of **Inventory**, then activating the **Inventory** ribbon will replace that tree with the inventory tree. Navigating the inventory tree and using it to select tasks to perform is described in the next section, "Navigation Tree".
- **Condition**. Activating the **Condition** ribbon will show the condition assessment tree in the navigation pane. Navigating the condition tree and using it to select tasks to perform is described in the next section, "Navigation Tree".
- **Functionality**. Activating the **Functionality** ribbon will show the functionality assessment tree in the navigation pane. Navigating the functionality tree and using it to select tasks to perform is described in the next section.

Navigation Tree



The navigation tree, in the left-hand viewing area, allows you to select the different levels of the tree and to view data related to that level in the content area. Shown above is an example of the inventory tree.

Here, the tree can be expanded by activating the "+" next to an inventory level or collapsed by activating the "-" next to an inventory level. To select a particular inventory level, left or right-click it. The information pertaining to that inventory level will be displayed in the content area.

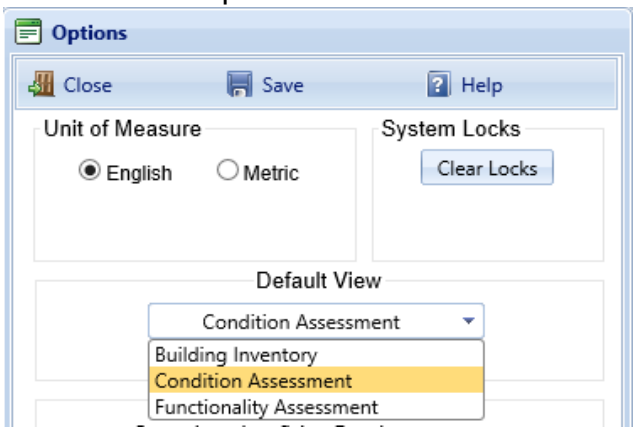
After an inventory level is selected in the tree, right-clicking it with the mouse will cause a sub-menu to drop-down providing you with task options for the selected level. Which options appear depends on whether you are in the inventory, condition, or functionality tree.

Note: The example illustration shown above is for the inventory tree. The condition assessment and functionality assessment trees are navigated in the same manner, but the items that appear at lower levels of the tree will differ. For example, in the functionality tree, the only level below Building is Functional Area (where one or more of these have been created in connection with a Building).

Change Default Navigation View

The inventory tree is the default view in the navigation pane. To change your default view to the condition tree or functionality tree,

- Activate **User Preferences** in the User Links.
- Activate the dropdown list in the "Default View" section of the user links "Options" popup.



- Select the desired default view.

Content Area

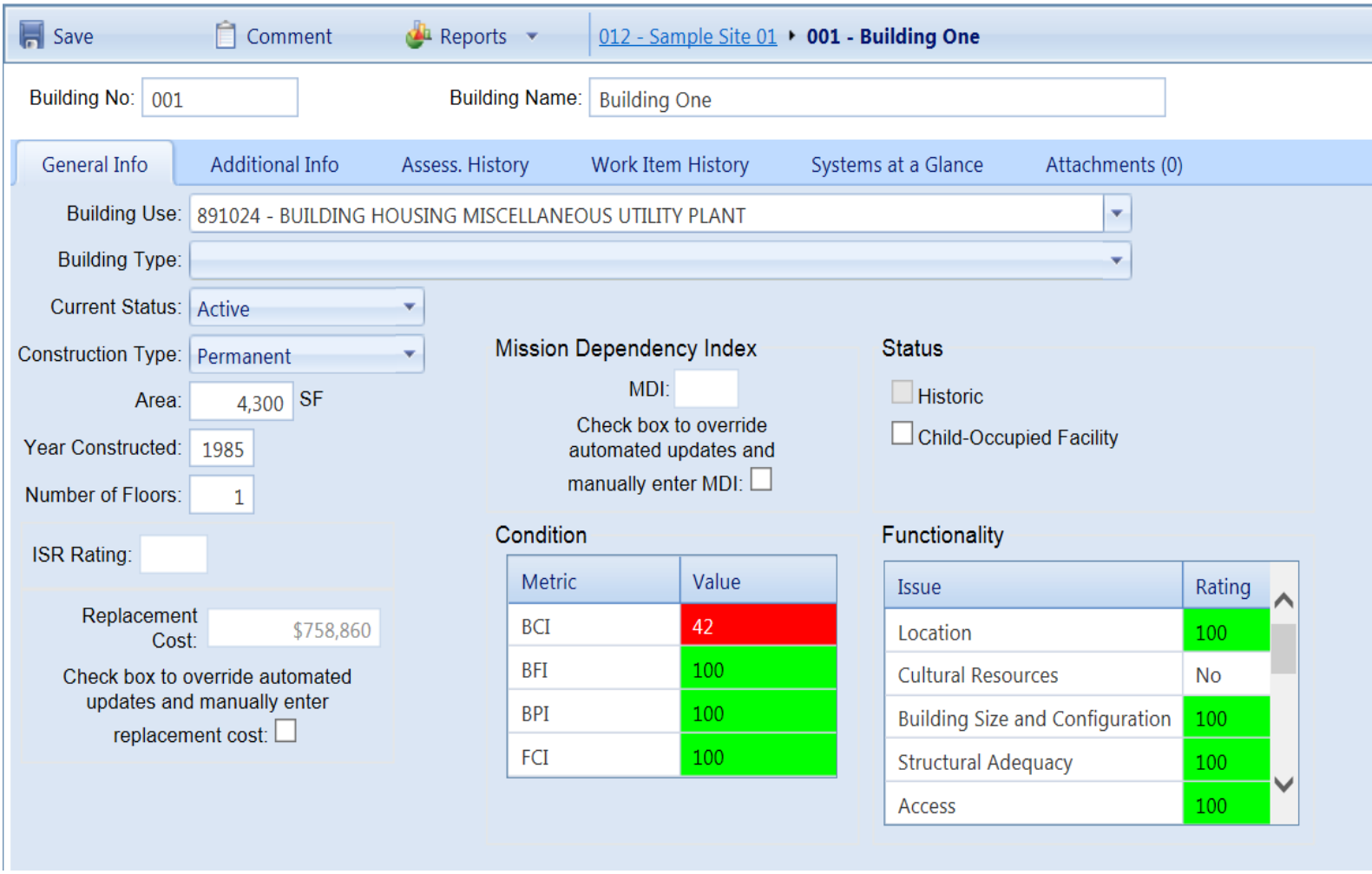
The content area displays specific information pertaining to the current item selected in the navigation tree.

Content Area Toolbar

The content area toolbar offers options that apply only to what is being displayed in the content area.

Sample Content Area View

Shown below is an example of what would appear in the content area if a Component-Section was selected in the inventory navigation tree.



Recognizing Common BUILDER Icons

Listed below are the common command, toolbar, and menu buttons you will encounter, along with their definitions. It's a good idea to become familiar with these icons before using **BUILDER**.

Inventory Icons

- - ADD ORGANIZATION: Activate to add a new Organization to the inventory.
- - DELETE ORGANIZATION: Activate to delete a selected Organization from the navigation tree.
- - ORGANIZATION: Activate this icon on the navigation tree to access data about a particular Organization. The icon color (Gray, Green, Yellow, Red) reflects the condition of the Organization.
- - ADD SITE: Activate to add a new Site under an Organization in the inventory.
- - DELETE SITE: Activate to delete a selected Site from the navigation tree.

- - SITE: Activate this icon on the navigation tree to access data about a particular Site. The icon color (Gray, Green, Yellow, Red) reflects the condition of the Site.
- - ADD COMPLEX: Activate to add a Complex to a Site.
- - DELETE COMPLEX: Activate to delete a selected Complex from the navigation tree.
- - COMPLEX: Activate this icon on the navigation tree to access data about a particular Complex. The icon color (Gray, Green, Yellow, Red) reflects the condition of the complex.
- - ADD BUILDING: Activate to add a new Building to a Site.
- - DELETE BUILDING: Activate to delete a selected Building from a Site.
- - BUILDING: Activate this icon on the navigation tree to access data about a particular Building. The icon color (Gray, Green, Yellow, Red) reflects the condition of the Building.
- - ADD SYSTEM: Activate to add a System to a Building.
- - DELETE SYSTEM: Activate to delete a selected System.
- - SYSTEM: Designates a System.
- - ADD COMPONENT:. Activate to add a Component to a System.
- - DELETE COMPONENT: Activate to delete a selected Component.
- - COMPONENT: Designates a Component.
- - ADD SECTION: Activate to add a Section to a Component.
- - DELETE SECTION: Activate this button to delete a selected Section.
- - SECTION: Designates a Section.
- - ROLLUP: Activate to manually roll up performance metrics for a selected Building, Complex, Site, or Organization.
- - REFRESH: Activate to refresh the inventory tree to reflect the latest data edits. Note that refreshing the tree collapses all expanded nodes.

Task and Form Icons

General

- - SAVE: Activate to permanently save and store changes to the data in the content area or popup window.
- - COMMENT: Activate to add a comment about a particular inventory item.
- - NEW: Activate to create a new record. The type of record to be created is determined by where the **New** button is located.
- - EDIT: Activate to edit a selected record. This icon is available in multiple contexts within **BUILDER**.
- - IMAGES: Activate to add, view, or delete an image. The scope of the image is determined by the hierarchical level at which you activate the button. When the Images button is visible in color on the

toolbar, it can be activated to manage images of the item displayed in the window. For example, the item could be a Building or a Section.

- - CHECK SPELLING: Activate to check spelling in document.
- - OK: This check mark designates acceptance in the comments box.
- - DELETE: Activate to delete a selected record. The record to be deleted is determined by where this button is located.
- - LOCKED RECORD: This indicates that the selected record is locked. When it is locked, the record cannot be edited. This may be the case either because the record is checked out or the user does not have permission.
- - UNLOCKED RECORD: This indicates that the selected record is unlocked. See also LOCKED RECORD.
- - CANCEL: Activate to cancel the defined operation.
- - PROCEED: Activate to proceed with the defined operation.
- - CLOSE/RETURN: Activate to close a particular popup window or form.
- - HELP: Activate to access context specific help within a particular window or form.
- - CALENDAR: Activate to select a date from a calendar to populate a date type field.

Reports

- - REPORTS: Activate to select and view standard reports. The types and scope of the reports are determined by where the Reports button is located. A Reports button in the window toolbar is used for reports on the item displayed in the window.
- - EXPORT REPORT: Activate to export the report being viewed.

Import/Export

- - IMPORT: Activate to import your data.
- - EXPORT: Activate to export your data.
- - EXPORT TO BRED: Activate to export your data to a BUILDER Rapid Entry Data (BRED) file.

Inventory Methods

- - COPY INVENTORY TO ANOTHER BUILDING: Activate to copy inventory to another building.
- - BUILDING TEMPLATE: Activate to bring up a list of available building templates.
- - CREATE INVENTORY USING TEMPLATE. Activate to create an inventory using a template.

Work Configuration

- - EVALUATE: Activate to assign weighting points to the various values of a measure. (A measure is a type of objective.)

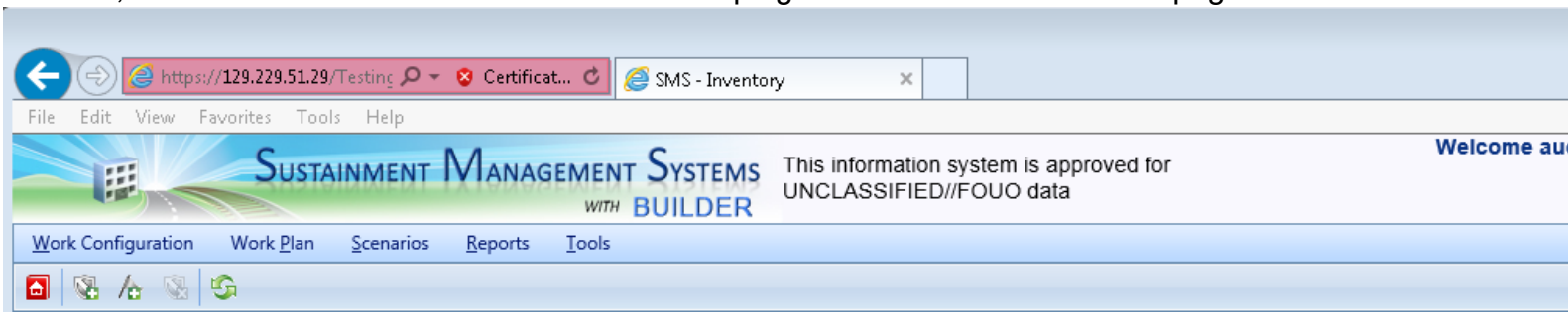
- - OBJECTIVE: Objective or sub-objective in a prioritization schema. Activate to access the Objective data.
- - MEASUREMENT: Measurement belonging to an objective or sub-objective in a prioritization schema. Activate to evaluate a measurement.

Work Plan

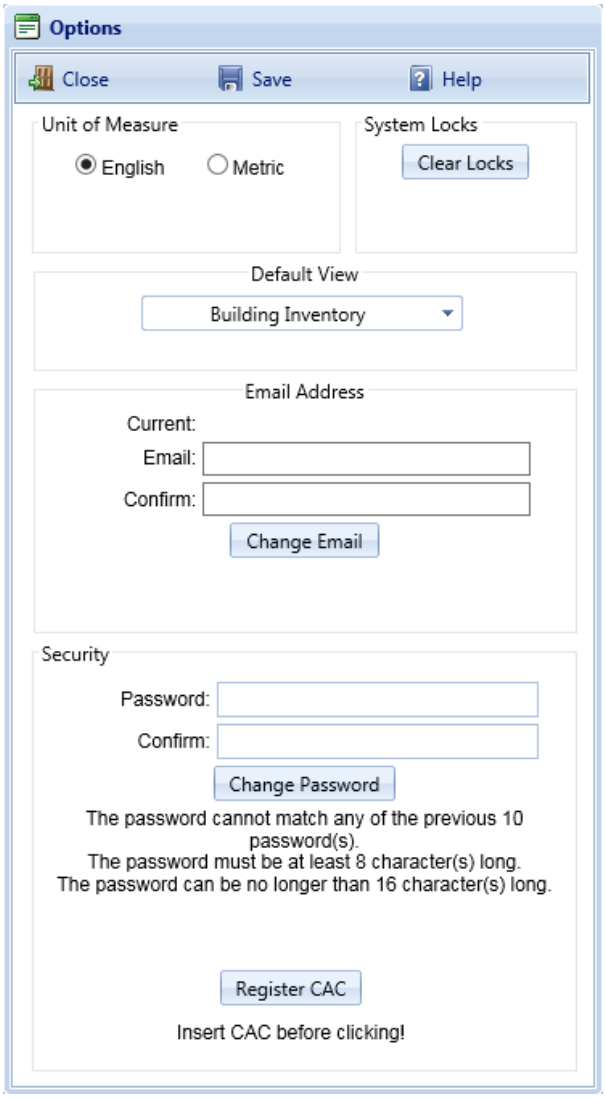
- - GENERATE ITEMS: Activate to generate analysis results. This may be for inspection schedules, work items, or scenarios.
- - PRIORITIZE: Activate to prioritize work items according to the active prioritization scheme. The prioritization scheme created in the **Work Configuration > Work Prioritization** area will prioritize and rank your work plan in a quick, objective, repeatable, and representative method with the touch of this button.
- - RANKINGS: Activate to view the rankings of the work items in your work plan.
- - FUND ITEMS: Activate to apply funding to work items according to their priority.
- - EXPORT: Activate to export work items to an Excel spreadsheet.

User Preferences

The User preferences window allows you to change your default view, to change the unit of measure, to clear all the locks on the database records, or to change the password to your database. To edit the user preferences, activate the **User Preferences** link at the top right hand corner of the home page.



The User Preferences window will appear:



From this window, the following data can be edited:

- **Unit of Measure**. Select the unit of measure, **English** or **Metric**, to be used for the database.
- **System Locks**. Activate the **Clear Locks** button to clear all the user locks and allow for all data to be edited.
- **Default View**. Expand the dropdown list and select between Building Inventory, Condition Assessment, and Functionality Assessment as your default view when using **BUILDER**.
- **Email Address.** Your current email address will appear above the two text boxes. To change your email address,
  - Enter the new address in the first text box.
  - Enter the new email address again in the second text box to confirm it.
  - Activate the **Change Email** button.

- **Security**. If you wish to change your login password,
  - Enter the new password.
  - Retype it to confirm.
  - Activate the **Change Password** button.
- In the Security section, you also have the option to register a smart card (CAC) to log in with.

How To Save Your New User Preferences

After editing any of the data, activate the **Save** button to save your changes to the database.

How To Cancel User Preference Changes

If you have not activated the **Save** button, you can simply activate the **Close** button (upper left corner of the User Preferences options window) to exit the User Preferences options window without saving your changes

If you already activated **Save**, then you will need to change the options back to the way you want them, and activate **Save**.

How to Exit the User Preferences Options Window

IMPORTANT: Make sure to save any changes you want before exiting. With the exception of changing your email or password, changes to the User Preferences options are *not* saved until you activate the **Save** button.

Activate the **Close** button to close the User Preferences window.

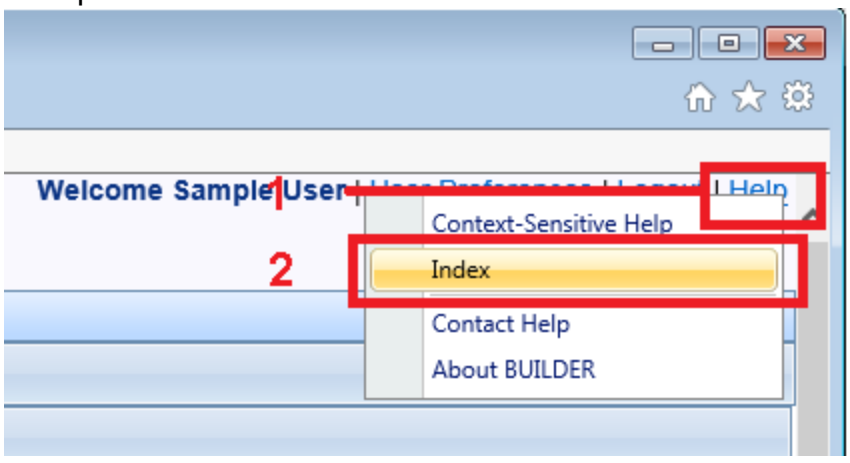
How to Use Online Help

Online Help Table of Contents

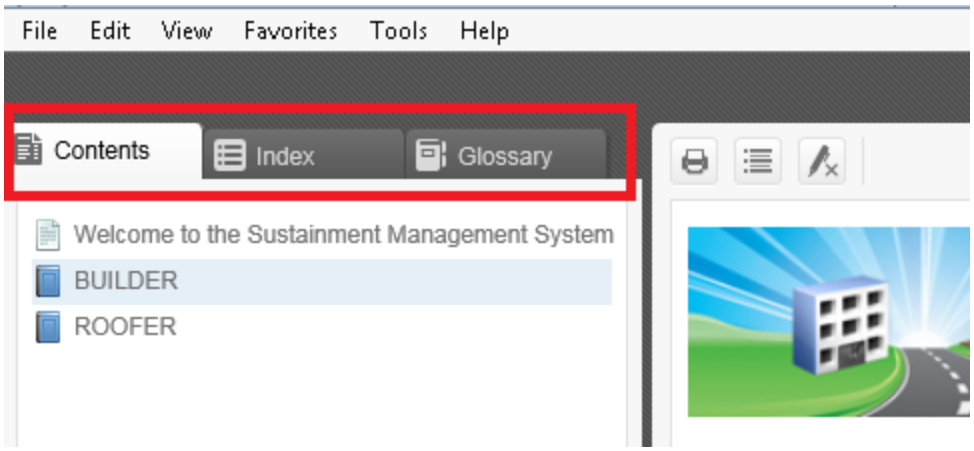
Open Table of Contents

To open the table of contents for the online help documentation,

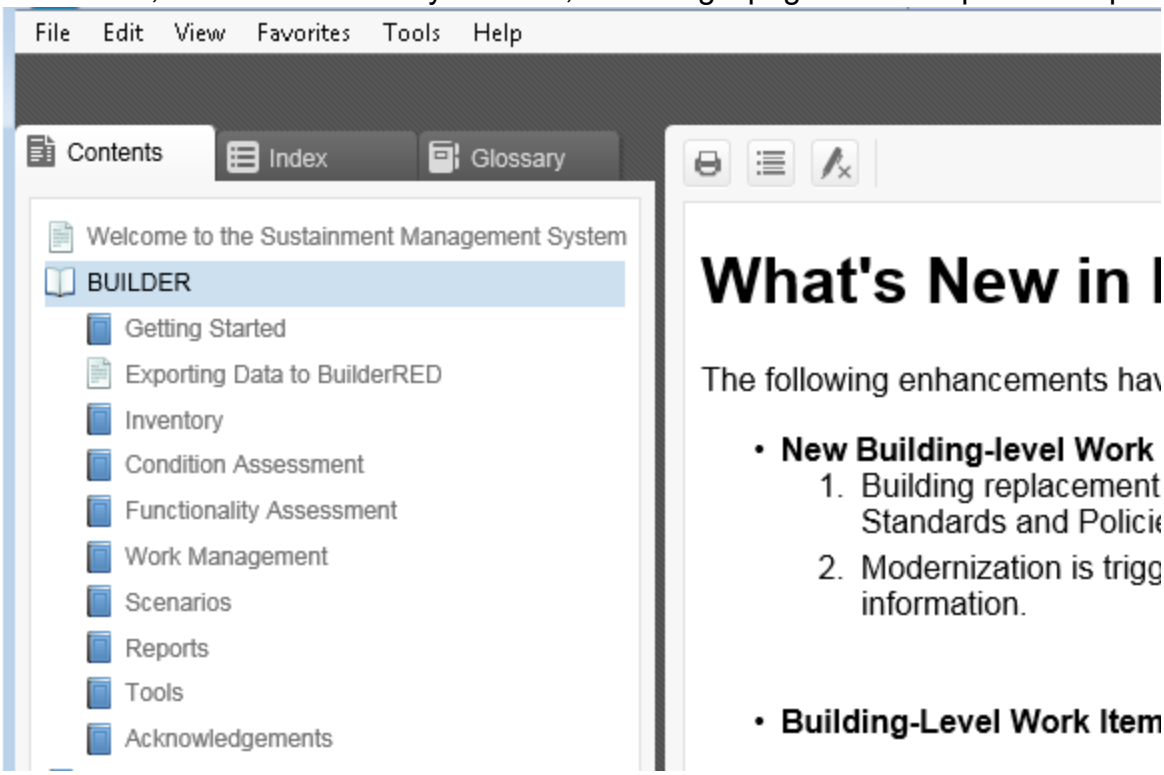
- Activate **Help** in the User Links area at the upper right of the main screen.
- Select "Index" from the dropdown list.



This will open a Welcome page that has, at the left in the navigation pane, tabs for (1) the online help **Contents**, *(2) the* **Index**, *and (3) the* **Glossary**. *The Contents tab is open by default.*



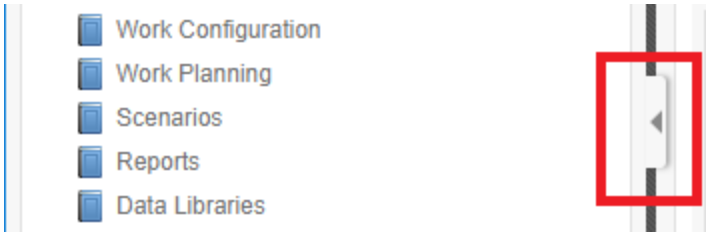
- To expand the Table of Contents, activate any closed blue book icon to expand that area of the Contents, as shown below. By contrast, activating a page icon will open that topic.



Hide or Unhide Table of Contents

Hide

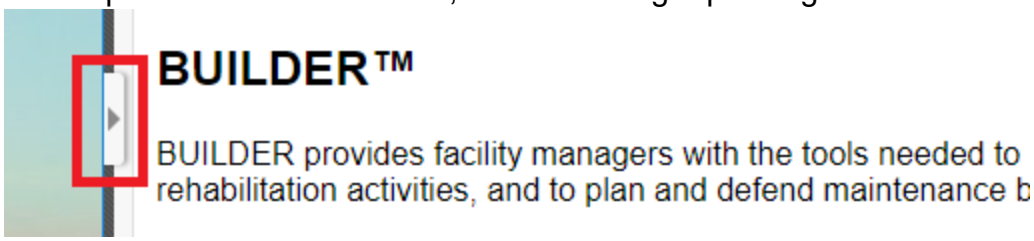
To hide the navigation pane containing the table of contents (or index or glossary), activate the arrow button halfway down the window, between the navigation pane and content area:



The content area will expand into the navigation pane space, and a right-pointing arrow button will appear halfway down the left edge of the window.

Unhide

To re-open the table of contents, activate the right-pointing arrow button.



Context-Sensitive Help

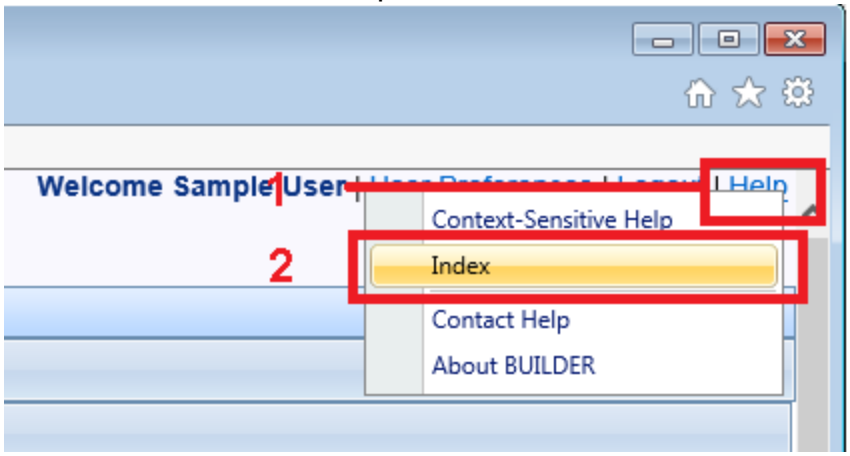
Selecting **Context-Sensitive Help** from the **Help** dropdown list options should take you directly to a documentation topic that is helpful for a likely task that users might want to perform at the current location. Additionally, the online help Contents will be displayed at the left.

Index

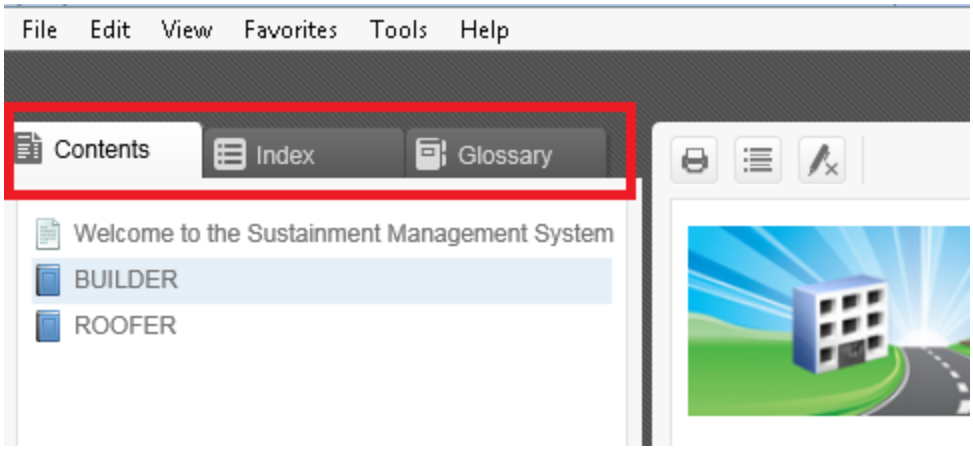
Open Online Help Index

To open the Index,

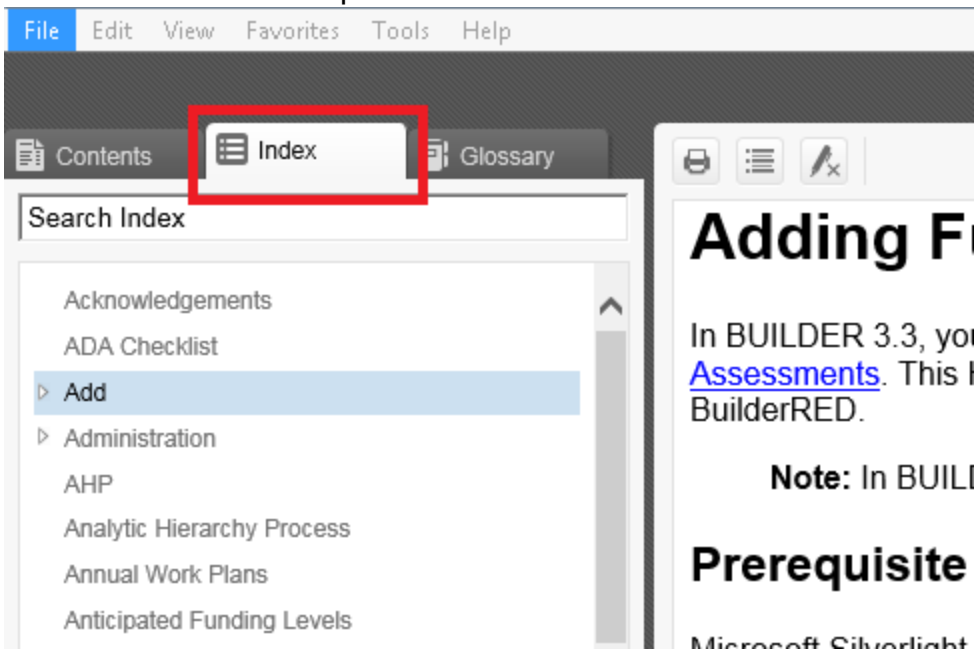
- Activate **Help** in the User Links area at the upper right of the main screen.
- Select "Index" from the dropdown list.



This will open a Welcome page that has, at the left in the navigation pane, tabs for (1) the online help ***Contents****, (2) the* ***Index****, and (3) the* ***Glossary****. The* ***Contents*** *tab is open by default.*



- Select the Index tab to open the Index.

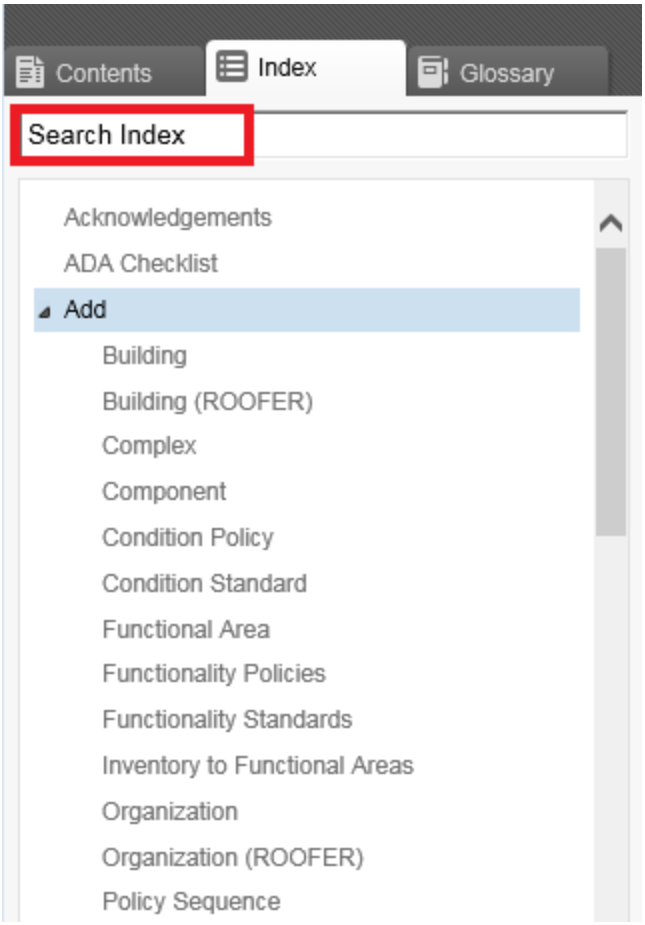


Search the Online Help Index

You can look for an item in the online help index in either of two ways:

a. Activate the Search box (where the text "Search Index" is initially entered) and type in the item you are looking for.
b. Alternatively, browse the alphabetical list of index entries.

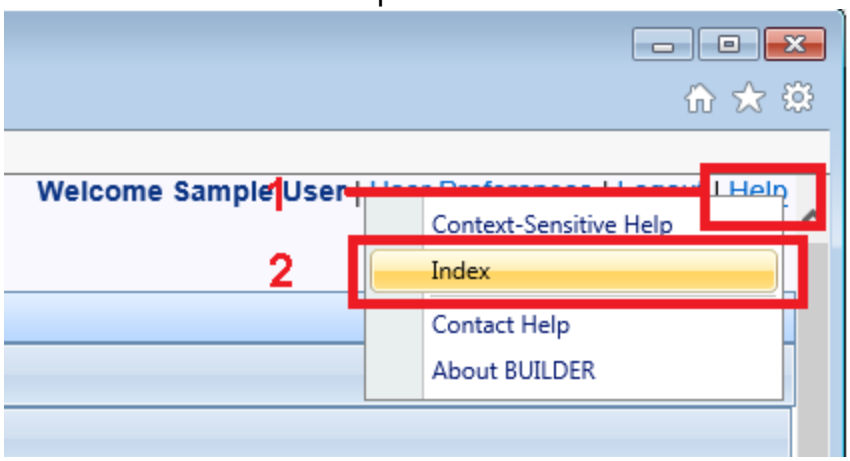
Selecting a term in the index entries that has a right-pointing arrow to the left of it will show sub-entries for that term. (The white arrow will turn black and tilt when the sub-entries are shown.)



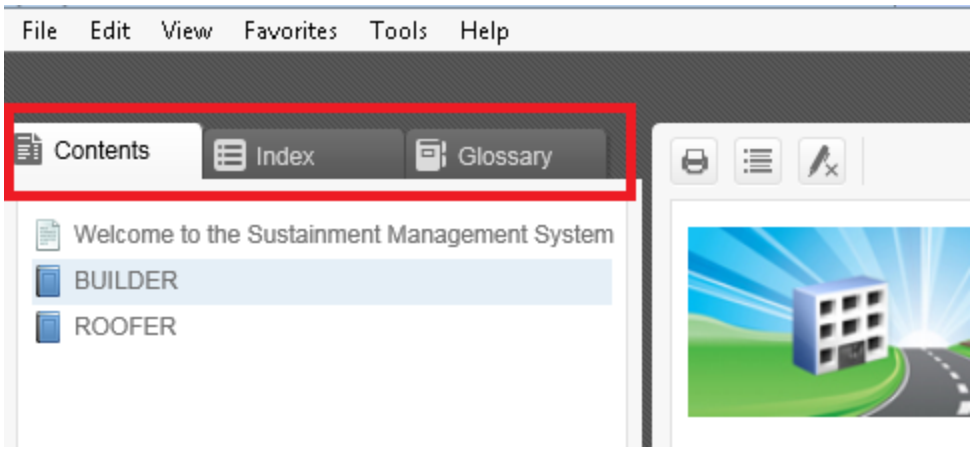
Glossary

To open the Glossary,

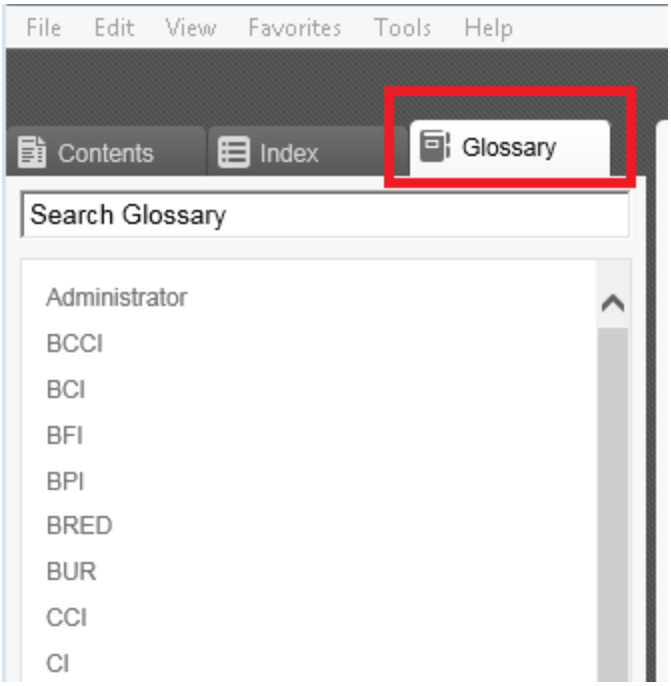
- Activate **Help** in the User Links area at the upper right of the main screen.
- Select "Index" from the dropdown list.



*This will open a Welcome page that has, at the left in the navigation pane, tabs for (1) the online help **Contents**, (2) the **Index**, and (3) the **Glossary**. The **Contents** tab is open by default.*



- To use the Glossary, select the **Glossary** tab, then enter or select the acronym or term you wish to see defined.



Contact the Help Desk

To send a help request to your SMS support representative,

- Activate **Help** in the User Links area at the upper right of the main screen.
- Select "Contact Help" from the dropdown list of options.

Generally a help request is sent through Microsoft Outlook, but the procedure may vary depending on the support procedures your SMS provider follows. If you don't have Microsoft Outlook active on your device or computer, a wizard will help you activate it.

See Version Information

To see the version number for your product, and for other "About" information, select **About BUILDER** in the list of **Help** options. A popup window with the information will appear.

Note: The popup window also provides a link to the SMS Support website.

To close the popup, activate the **OK** button.

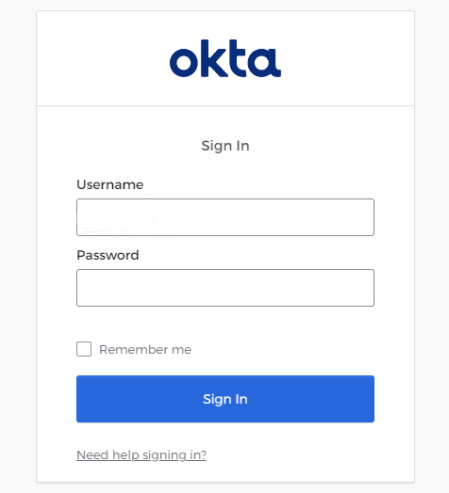
OKTA Implementation in BUILDER

This topic discusses how to implement OKTA into local installations of BUILDER. Steps for troubleshooting installation issues are also featured here.

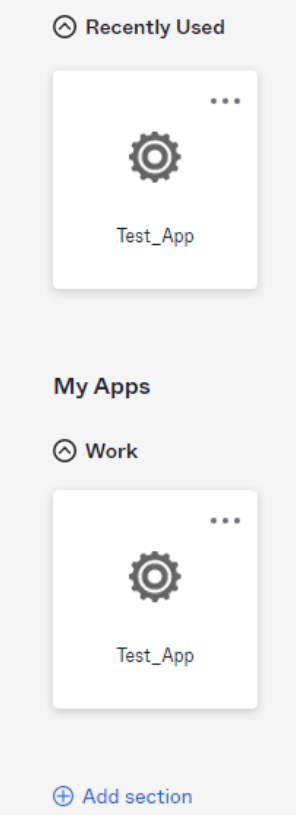
—Quick Links—

- What is OKTA Authentication?on the next page
- Logging in to the Domain URLon page 26
- Configurationon page 26
- Login Page/Agreement Message Redirectson page 26
- Invalid Username/Passwordon page 27
- Authenticationon page 27
- Bad Request/400 Erroron page 27
- System Claim Evaluation Erroron page 28
- Additional Resourceson page 28

What is OKTA Authentication?



OKTA authentication integrates multi-factor authentication into the BUILDER login process so user accounts have increased security. OKTA also acts as an optional, time-saving way to log in to local instances of the BUILDER application. Once OKTA has been configured successfully, users can authenticate their accounts with a target domain.



When users are redirected to the BUILDER application, a token is validated as a result of the authorization code redirect workflow process.

Logging in to the Domain URL

Before you begin the Configurationbelow process, you need to have an OKTA account created and assigned to the test app via the administration panel.

To log in to the Domain URL:

(example: https://dev-**example**.okta.com/, with **example** representing your specially assigned domain ID).

Before configuring, consult your data manager to establish the properties required to run a local instance of BUILDER.

Configuration

To complete your OKTA configuration, perform the following steps.

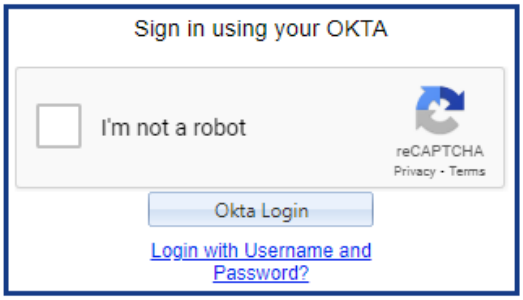
- Copy the domain URL into the Configuration table under the OktaVersion ConfigName.
- In the BUILDER repo, in the Developer Support Files Folder:
    - Copy the web.okta.config file -Navigate to the Configs folder of the web project and paste the file.

Note: Remember to update the value fields with the correct target OKTA domain admin panel data.

- Make sure there is a BUILDER account set up for that instance which has a matching username and email address associated to the OKTA account.

Note: If you have any issues configuring your OKTA authentication, contact your data manager.

Login Page/Agreement Message Redirects

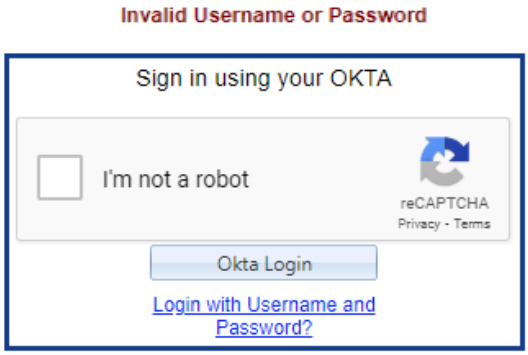


Issue: Users are redirected to the Login page or an Agreement Message with an "OKTA Login Error" message.

Solution: The OKTA account was configured incorrectly. Minimal logging may be implemented. Perform another Configurationabove with the steps to ensure your OKTA account is configured correctly.

Invalid Username/Password

Issue: An Invalid Username/Password message appears in red text on the Login page.



Solution: Verify that the email addresses used for OKTA and BUILDER are identical. The Invalid User-name/Password message indicates that no email address in BUILDER is associated with the email address returned by OKTA.

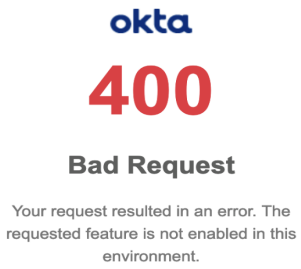
Authentication

Issue: The Login does not authenticate at the Domain URL.

Solution: The Domain URL stored in the Configuration Table in the database is missing the forward slash ("/") at the end of the string. Insert a forward slash ("/") at the end of the string so the Login will authenticate as intended.

Bad Request/400 Error

Issue: There is a Bad Request/400 Error on the OKTA Login page.



Solution: Click the OKTA Login button on the BUILDER Login module, then confirm the URL parameters that appear.

(**Example**:.../v1/authorize?**client_id**=&**response_type=code&scope=openid%20email&**redirect_uri**=&**state=state-296bc9a0-a2a2-4a57-be1a-d0e2fd9bb601").

Notice that there is no value between the first "**=**" and the first "**&**" in the example URL. When confirming the client_id parameter, there must be a value between the "**=**" and "**&**" in the request URL.

Note: If there is a value between the "**=**" and the "**&**" in the request URL, but the Bad Request/400 Error appears, review the redirect_uri parameter of the request. Make sure there is a value present between the subsequent "**=**" and "**&**" and that it matches the production instance URL. Otherwise, there is a configuration issue that needs to be addressed.

System Claim Evaluation Error

Issue: OKTA authentication is believed to be successful; however, the user is diverted to the BUILDER login page.

Solution: Look for error messages in the URL. If none are present, review the OKTA logs for a System Claim Evaluation Error. A System Claim Evaluation Error indicates that the username and/or email address has not been set on the OKTA account. Confirm the values are set, and that the user account is assigned to the correct app in the OKTA administration console.

Note: Refer to the OKTA System Claim Evaluation Error Solution in the Additional Resources for further details.

Additional Resources

- Decoding and Validating Access Tokens
- How to Request an Authorization Code
- JWT Validation Guide
- Access Token Validation Guide
- System Claim Evaluation Error Solution

About BUILDER Permissions Roles

WARNING: The privileges assigned to each user Role tend to change somewhat over time. Therefore, although the capabilities listed below under each Role will be mostly correct, they might not be 100% accurate at this time.

Each user is assigned to one or more Roles. Roles are allowed varying degrees of program access rights in the software system. The possible Roles include:

Administrator

A **BUILDER** Administrator A user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings.can perform the following functions relating to system administration and user management:

- administer users
- assign users to Roles
- change application settings

- design the specifications to be met by user passwords
- clear record locks

To reduce the chance of data loss, the following functions can only be performed by an Administrator: A user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings.

- delete an Organization
- delete a Site
- delete a Complex

In order to perform these deletions, the AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. must also have sufficient non-AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. privileges in order to access the Organization, Site, or Complex to be deleted.

Note: If the Organization, Site, or Complex is empty of contents, it may also be deleted by a Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. with specific permission for the relevant location in inventory.

Inventorior

An InventoriorA user with Inventorior Role can add and edit records below the Building level. can perform the following functions:

- add a Building
- add and delete inventory items at all levels below Building
- input and edit inventory information at the Inventory screens (all levels)
- generate reports

Note: An InventoriorA user with Inventorior Role can add and edit records below the Building level. has no access to either the condition tree or functionality tree.

Note: An inventorior can not check out or import a BREDBUILDER Remote Entry Database (BuilderRED) file; this needs to be done by an Inspection SupervisorA user with Inspection Supervisor Role has all the rights of an Inspector, and can also create inspection schedules or above.

Inspector

In addition to all the rights of an Inventorior,A user with Inventorior Role can add and edit records below the Building level. an InspectorPerson who performs inspections to be input into BUILDER or ROOFER. As a permissions Role, Inspectors can input and edit inventory information in Inventory mode, and can input and edit inspection information from the Condition Assessment screen. can perform the following functions:

- add an inspection
- input and edit inspection information at the Condition Assessment screen
- add a functional area and add inventory to it
- edit a functional area
- delete a functional area
- add, edit, or delete a functional assessment

Note: An inspector can not check out or import a BREDBUILDER Remote Entry Database (BuilderRED) file; this needs to be done by an Inspection SupervisorA user with Inspection Supervisor Role has all the rights of an Inspector, and can also create inspection schedules or above.

Inspection Supervisor

In addition to all the rights of an InspectorPerson who performs inspections to be input into BUILDER or ROOFER. As a permissions Role, Inspectors can input and edit inventory information in Inventory mode, and can input and edit inspection information from the Condition Assessment screen., an Inspection SupervisorA user with Inspection Supervisor Role has all the rights of an Inspector, and can also create inspection schedules can perform the following functions:

- import and export data to and from BuilderRED
- add inspection schedules
- perform Rapid Inspection

Note: An Inspection SupervisorA user with Inspection Supervisor Role has all the rights of an Inspector, and can also create inspection schedules does not have permission to delete Buildings/facilities.

Work Planner

A Work Planner can perform a large number of functions directly related to work planning, plus some additional privileges. In addition to all the rights of an Inspection SupervisorA user with Inspection Supervisor Role has all the rights of an Inspector, and can also create inspection schedules, a Work Planner can perform the following functions:

- delete a Building
- enter or change **RSL**[1]Remaining Service Life (remaining service life)
- delete an inspection (condition assessment)

Work planning functions that can be done by Work Planner or above are as follows:

- add and edit work plans
- add and edit a scenario
- copy a scenario to a work plan
- add and edit standards

---

[1]Remaining service life.

- add and edit policies
- add and edit policy sequences
- add and edit prioritization schemes
- add and edit cost books
- add and edit funding

Master Planner

In addition to all the rights of a Work Planner, a Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. can perform the following functions:

- generate multi-year work plan scenarios
- edit any and all data saved by other users of the program
- add an Organization
- add a Site
- add a Complex
- delete standards
- delete policies
- delete policy sequences
- delete prioritization schemes
- delete cost books
- delete service life books

Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. is the highest level of non-AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. user privileges.

Remote Entry Using BuilderRed

Remote Inspection and Inventory Entry Using BuilderRED

This topic

- Introduces the **BUILDER** Remote Entry Database (BuilderRED) tool.
- Provides the download location.
- Explains briefly what the tool can do.
- Links to topics giving detailed instructions for exporting to and importing from BuilderRED.

What is BuilderRED?

The **BUILDER**™ Remote Entry Database (BuilderRED, or BREDBUILDER Remote Entry Database (BuilderRED)) is an optional tool designed for use with **BUILDER**. It allows you to (1) capture and collect inventory and inspection data using a Windows tablet or laptop as you walk through a Building, and then (2) later, load that data into the BUILDER database. The inspection data collected can be either for condition assessment or for functionality assessment.

You can download BREDBUILDER Remote Entry Database (BuilderRED) from the SMSSustainment Management System community user's group website at https://support.sms.erdc.dren.mil/downloads/bred-versions.

Collecting Inventory Data

When performing inventory, Buildings and their subparts can be created in BuilderRED, then imported into **BUILDER**. If the Buildings have already been created in **BUILDER**, they can be exported to BuilderRED, where inventory details can be entered on-site, then imported back into **BUILDER**.

Performing Inspections

Inspectors can use BuilderRED to enter condition assessment data in BUILDER format and then import it into **BUILDER**. Standard functionality assessments are also built into BuilderRED. These assessments can be initiated and filled out in the field, then imported into **BUILDER**.

Export and Import

The following topics cover how to Export Data to BuilderRED and Import Data from BuilderRED.

Export Data to BuilderRED

You can choose to export database items to BuilderRED (aka BREDBUILDER Remote Entry Database (BuilderRED)) either (a) with or (b) without the images that are linked to these items.

Below are some recommendations for best practices to follow to help ensure successful and less time-consuming export of files to BuilderRED:

Best Practice Recommendation #1: Be sure to observe the 30-day time limit on editing inspections and re-importing them into **BUILDER**, or the time limit in effect for your implementation of **BUILDER** if it differs from 30 days.

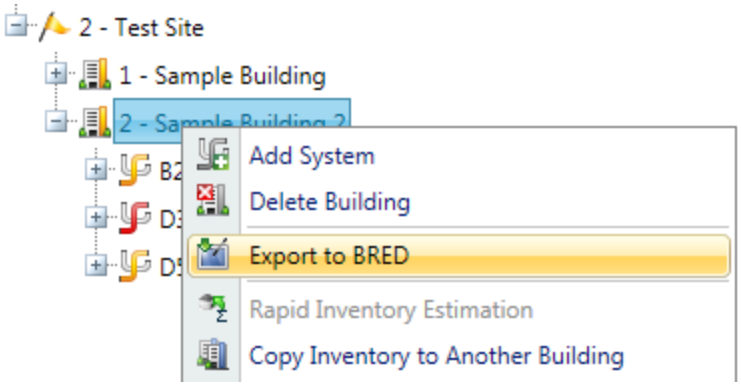
Best Practice Recommendation #2: Some Facilities (Buildings) within your Site can already contain several hundred photos. If you know beforehand that you will not need to view or edit these existing photos in BuilderRED, the best practice is to just download the BRED file without images.

Best Practice Recommendation #3: 800 pixels is the recommended maximum width and maximum height for images to be used in BuilderRED.

The next section describes how to export both database information and images to BuilderRED. For instructions on exporting database information without images, see Export Database Information Alone to BuilderRED.

Export Database Information and Images to BuilderRED

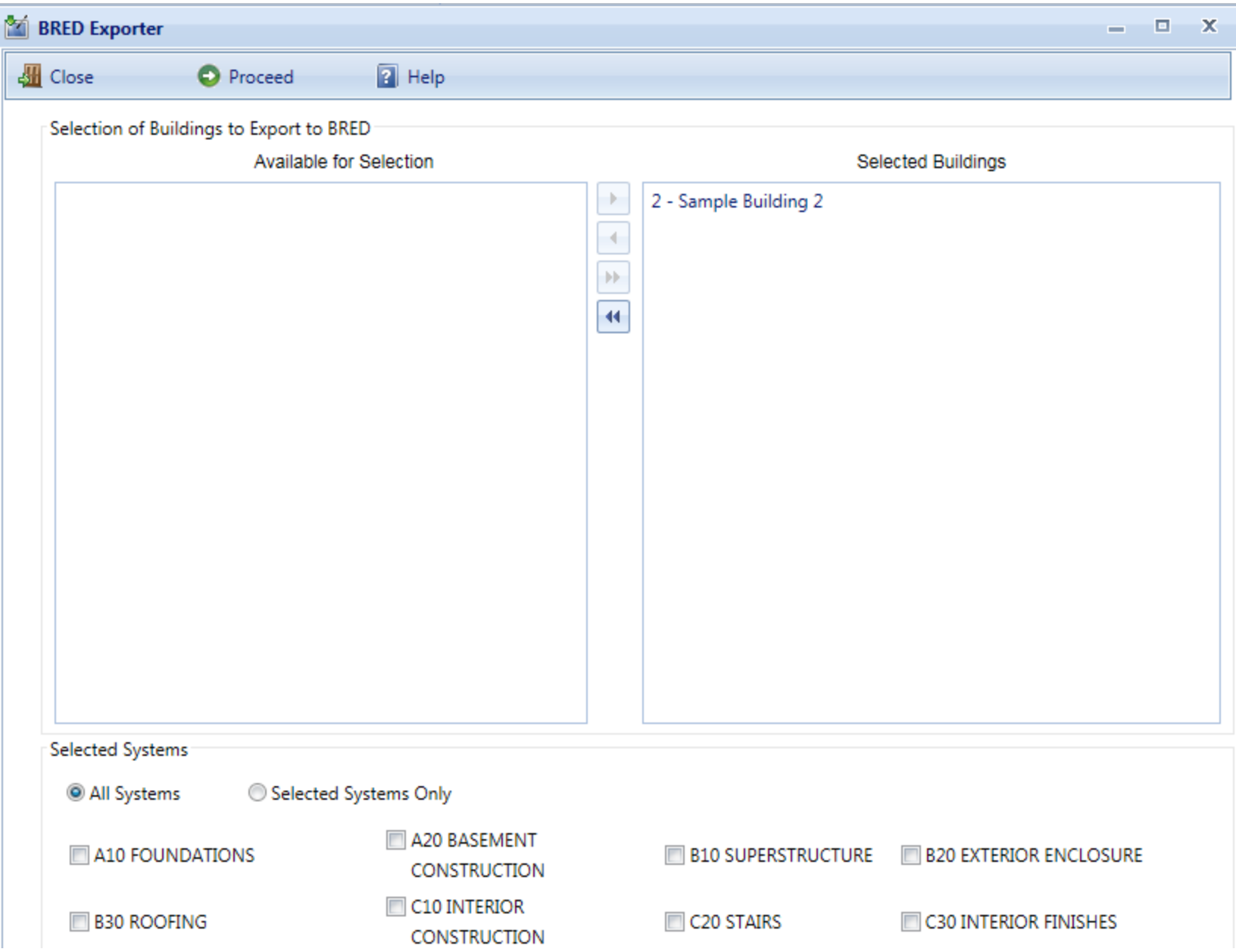
- In the **BUILDER** navigation tree, right-click the lowest level node (Site, Complex, or Building) that contains the items you wish to export.
- Select the “Export to BRED” option:



- In the "BRED Exporter" popup window, highlight the Building(s) you want to export, using the arrows to move Buildings in or out of the Selected Buildings list. Consult the following table to see ways you can select buildings.

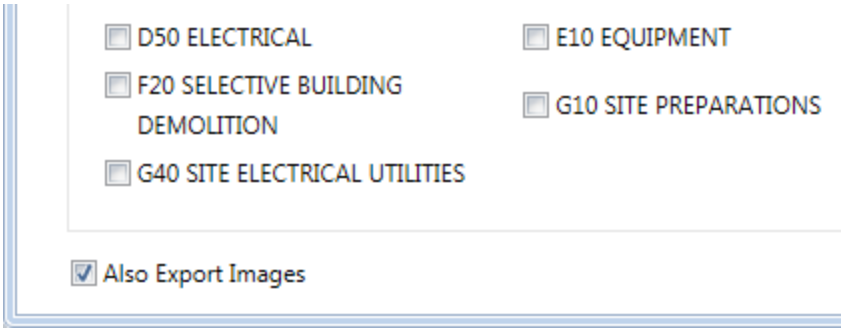
All Buildings:	Activate the double arrow.
One Building:	• Select the Building. • Activate the single arrow.
Multiple Buildings, con-	• Select the first Building. • Press and hold **SHIFT**, then select the last Building.

tiguous in the list:	• Release **SHIFT**. • Activate the single arrow.
Multiple Buildings, not contiguous in the list:	• Select the first Building. • Press and hold **CTRL**, then select each subsequent Building desired. • Release **CTRL**. • Activate the single arrow.
To deselect a highlighted Building from the list:	a. Press and hold **CTRL**, then select the Building. b. Alternatively, you can wait until the Building has been moved to the right-hand column under "Selected Buildings", then select the Building, and activate the single arrow pointing to the left. This will move the Building back into the "Available for Selection" column.

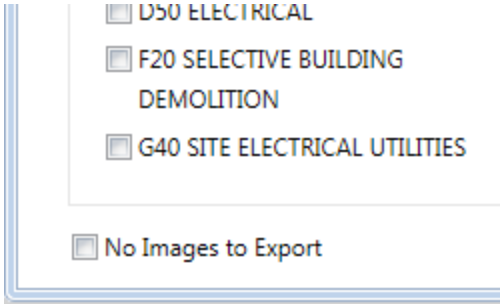


- Once the desired Buildings are in the Selected Buildings column, do one of the following in the lower section of the "BREDBUILDER Remote Entry Database (BuilderRED) Exporter" window:
  a. Select **All Systems** (radio button; this is the default); or
  b. Select the **Selected Systems Only** radio button, then mark the checkboxes for specific systems.

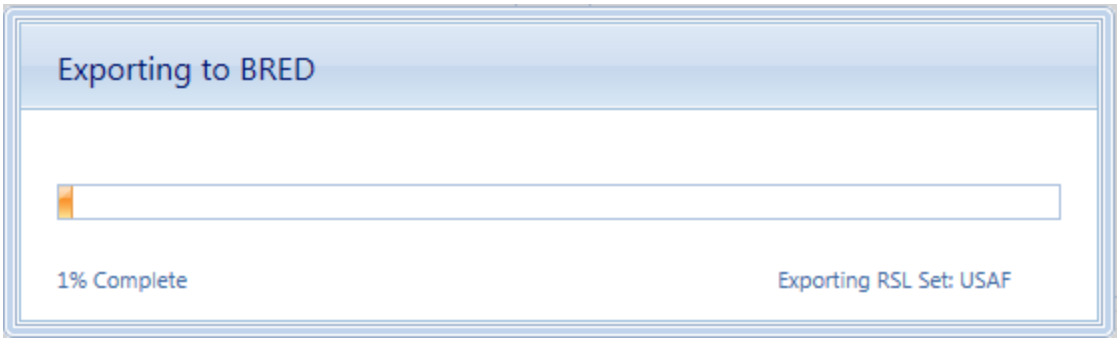
- (Optional) In order to download images with the BRED file, you must select “Also Export Images” at the bottom of BRED Exporter Window, as shown below:



Note: If instead of “Also Export Images” you see “No Images to Export” it means that the Building(s) you have selected to export do(es) not currently have any images:



- To start the export, activate the **Proceed** button near the top of the window. *A progress bar will display as the BREDBUILDER Remote Entry Database (BuilderRED) database file is downloaded*:

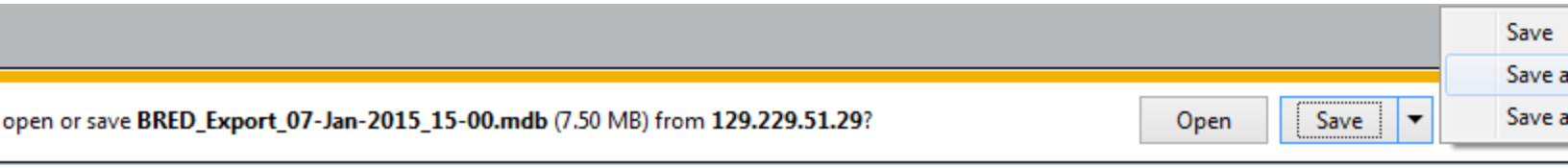


By activating the **Proceed** button, the following tasks are accomplished:

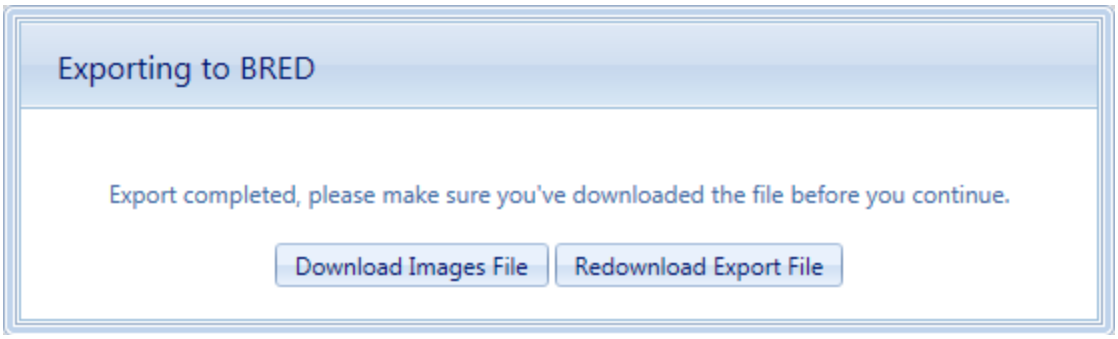
- A Microsoft Access database is created, which will be identified by the path and name you choose after the export has completed. The database will contain the inventory and condition assessment data for the selected Systems in the Buildings in the Selected Buildings list. This database is accessible to a computer with the BRED BUILDER Remote Entry Database (BuilderRED) software, where inventory and/or condition assessment data can be recorded. Once complete, this file can be imported into **BUILDER** to add the new data is added to the database.
- The Building inventory records of the selected Systems that were exported are locked so changes cannot be made to them in **BUILDER** while being edited with BREDBUILDER Remote Entry Database

(BuilderRED). The records are unlocked when the BRED BUILDER Remote Entry Database (BuilderRED) data is imported back into the database.

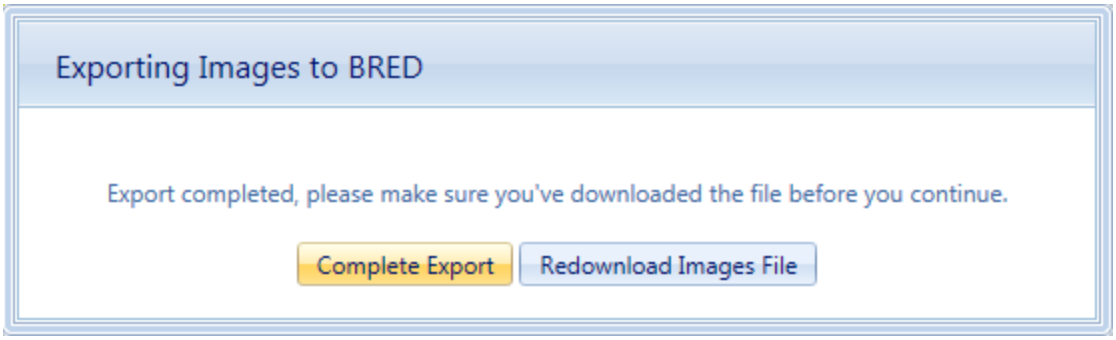
- After the database file has successfully downloaded, select the “Save As” option to designate a file location for it:



- If the BREDBUILDER Remote Entry Database (BuilderRED) file did not download correctly, select “Redownload Export File.” Otherwise, select “Download Images File” to start the second download (the download of the images file into BREDBUILDER Remote Entry Database (BuilderRED)):



- After the second download completes, activate “Save As” and designate the **same file location** as your BRED BUILDER Remote Entry Database (BuilderRED) database file.
- Lastly, select “Complete Export” to finish the export process:

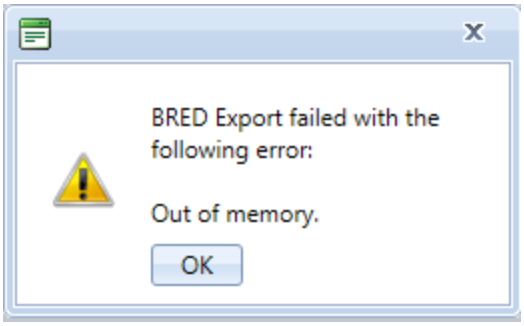


Time Limit on Editing Inspections

Once the export is complete, you can use BuilderRED to collect Inventory data or perform Inspections.

Note: It is a common standard to have a 30-day time limit from the date of an Inspection to edit the Inspection or the comments in it. This time limit applies both in BuilderRED and after the data has been imported back into BUILDER.

Known Issue with Image Export from Builder



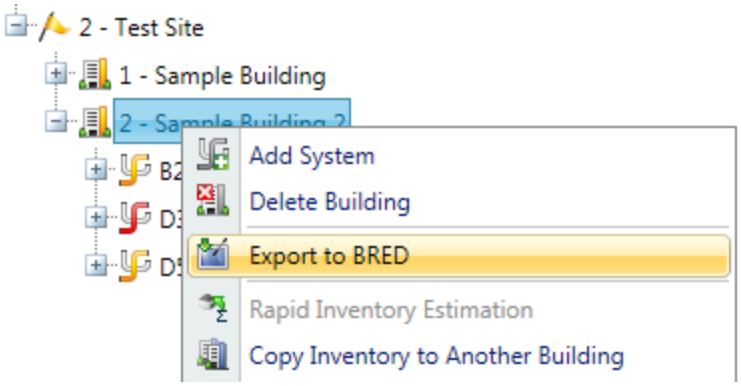
This issue applies to versions of BUILDER 3.3.9 and older.

If the BRED BUILDER Remote Entry Database (BuilderRED) Export error message shown above displays after you try to download the image file from BUILDER, that indicates that somewhere in the exported files there is an attachment (such as a PDF, an Excel file, etc.) that is not an image. The workaround is to export the Building(s) without images.

Export Database Information Alone to BuilderRED

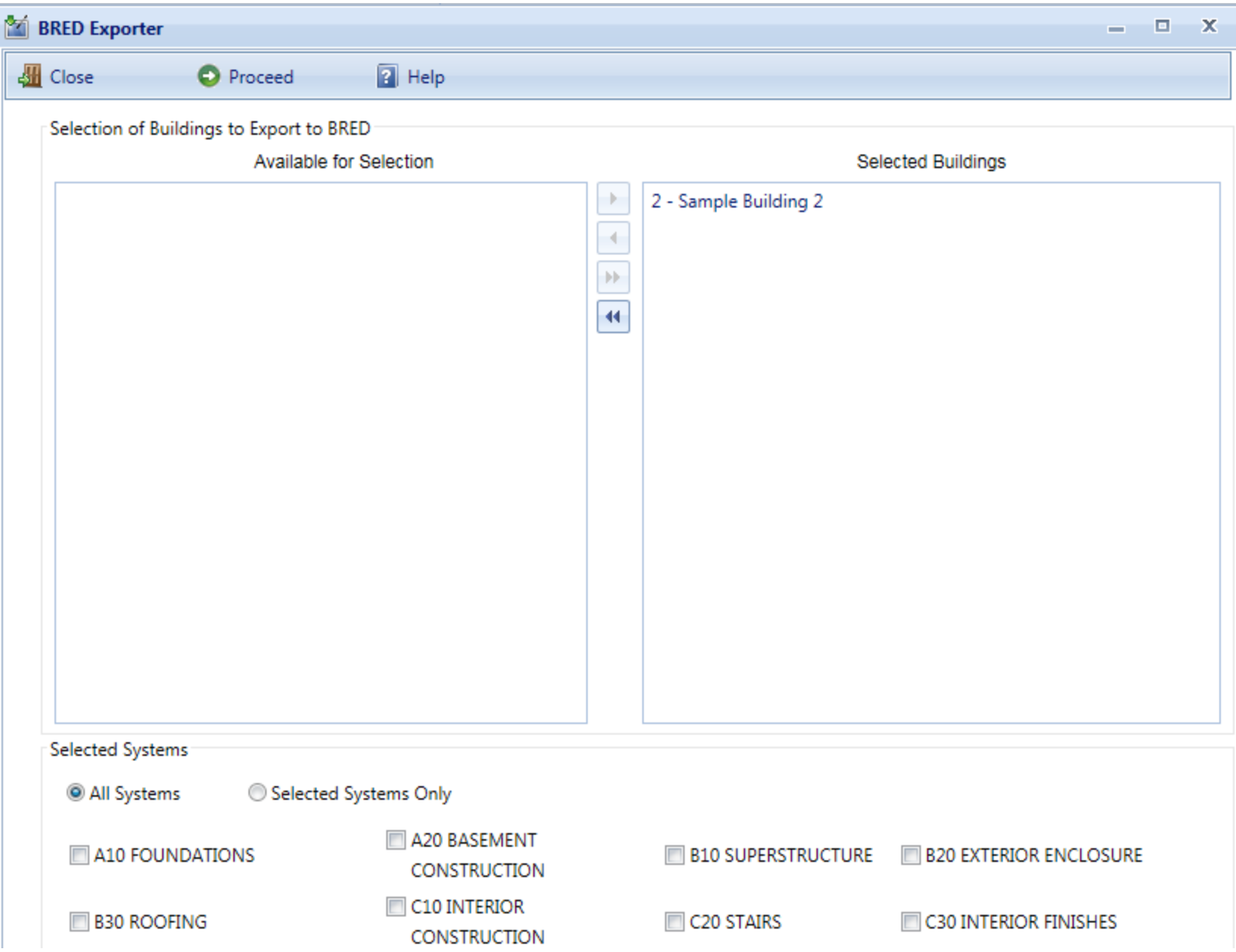
This section outlines the procedure to export data from **BUILDER** to BuilderRED without any of the associated image files.

- In the **BUILDER** navigation tree, right-click the lowest level node (Site, Complex, or Building) that contains the items you wish to export.
- Select the “Export to BRED BUILDER Remote Entry Database (BuilderRED)” option:



In the "BRED BUILDER Remote Entry Database (BuilderRED) Exporter" popup window, highlight the Building(s) you want to export, using the arrows to move Buildings in or out of the Selected Buildings list. Refer to the following table to see different ways you can select Buildings.

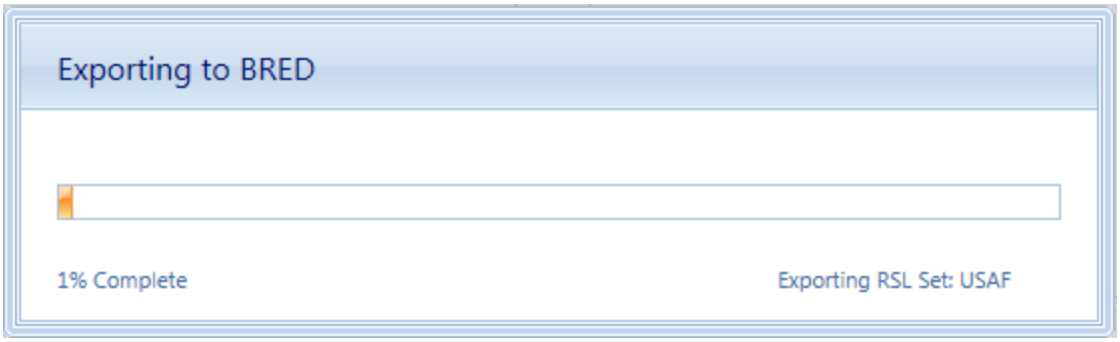
All Buildings:	Activate the double arrow.
One Building:	• Select the Building. • Activate the single arrow.
Multiple Buildings, contiguous in the list:	• Select the first Building. • Press and hold **SHIFT**, then select the last Building. • Release **SHIFT**. • Activate the single arrow.
Multiple Buildings, not contiguous in the list:	• Select the first Building. • Press and hold **CTRL**, then select each subsequent Building desired. • Release **CTRL**. • Activate the single arrow.
To deselect a highlighted Building from the list:	a. Press and hold **CTRL**, then select the Building. b. Alternatively, you can wait until the Building has been moved to the right-hand column under "Selected Buildings", then select the Building, and activate the single arrow pointing to the left. This will move the Building back into the "Available for Selection" column.



- Once the desired Buildings are in the Selected Buildings column, do one of the following in the lower section of the "BREDBUILDER Remote Entry Database (BuilderRED) Exporter" window:
  a. Select **All Systems** (radio button; this is the default); or
  b. Select the **Selected Systems Only** radio button, then mark the checkboxes for specific systems.

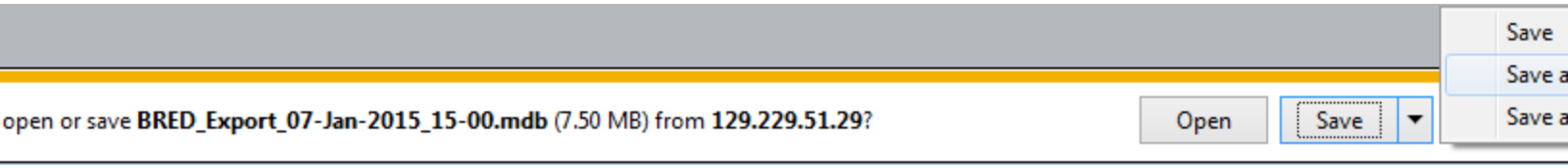
- In order to download the BRED BUILDER Remote Entry Database (BuilderRED) file without down-loading the associated images, make sure that the Also Export Images checkbox at the bottom of the BRED BUILDER Remote Entry Database (BuilderRED) Exporter Window is *not* checked.

- To start the export, activate the **Proceed** button near the top of the window. *A progress bar will display as the BRED BUILDER Remote Entry Database (BuilderRED) database file is downloaded*:

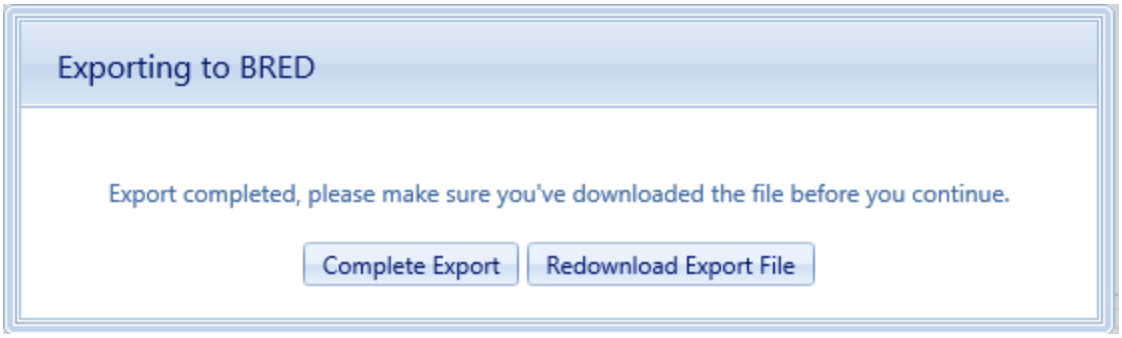


By activating the **Proceed** button, the following tasks are accomplished:

- A Microsoft Access database is created, which will be identified by the path and name you choose after the export has completed. The database will contain the inventory and condition assessment data for the selected Systems in the Buildings in the Selected Buildings list. This database is accessible to a computer with the BRED BUILDER Remote Entry Database (BuilderRED) software, where inventory and/or condition assessment data can be recorded. Once complete, this file can be imported into BUILDER to add the new data is added to the database.
- The Building inventory records of the selected Systems that were exported are locked so changes cannot be made to them in **BUILDER** while being edited with BRED BUILDER Remote Entry Database (BuilderRED). The records are unlocked when the BREDBUILDER Remote Entry Database (BuilderRED) data is imported back into the database.
- After the database file has successfully downloaded, select the “Save As” option to designate a file location for it:



- If the BRED BUILDER Remote Entry Database (BuilderRED)file did not download correctly, select “Redownload Export File.” Otherwise, select “Complete Export” to finish the export process:



Time Limit on Editing Inspections

Once the export is complete, you can use BuilderRED to collect Inventory data or perform Inspections.

Note: It is a common standard to have a 30-day time limit from the date of an Inspection to edit the Inspection or the comments in it. This time limit applies both in BuilderRED and after the data has been imported back into BUILDER.

Unlock Inventory Files

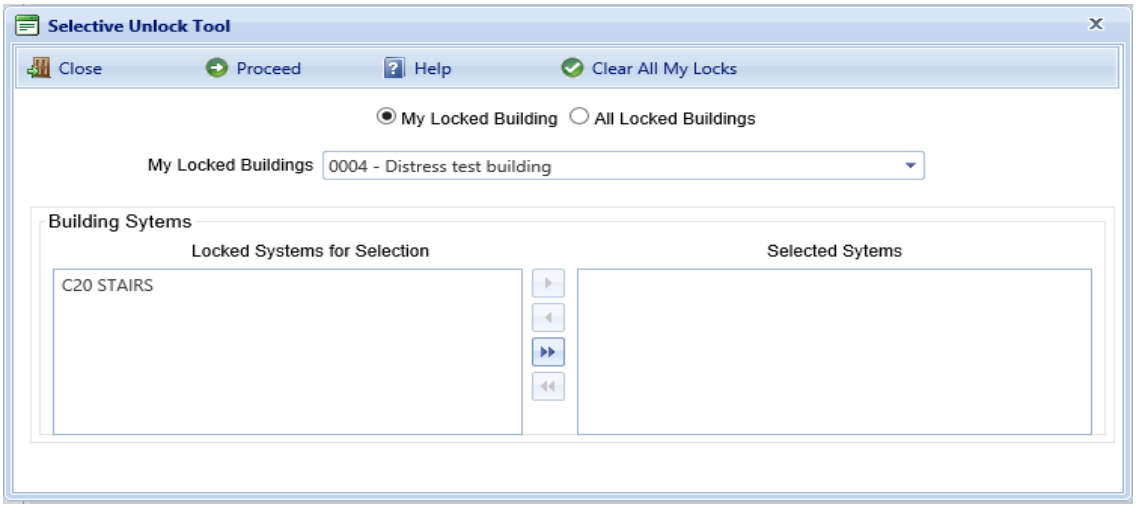
When an inventory file is exported to BuilderRED, it is locked in BUILDER. If you need to unlock your or another user's file, use the tool provided from the main menu bar at **Tools > Unlock My Buildings**. This topic explains how.

Unlock File(s) Locked by You

Unlock All Files You Locked

To unlock all of your locked files in a given Building,

- At the main menu, navigate to **Tools > Unlock My Buildings**. (Location in the navigation tree doesn't matter.) *The "Selective Unlock Tool" popup window will appear.*



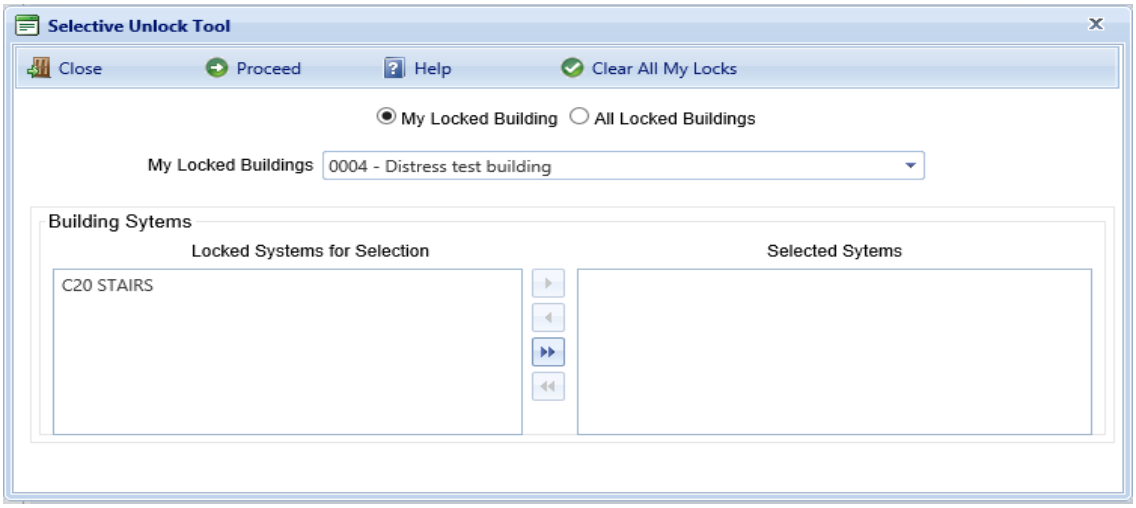
- In the popup window, make sure the **My Locked Building** radio button is selected.
- Select the desired Building from the dropdown list in the **My Locked Buildings** field. *The locked Systems in that Building will appear under **Locked Systems for Selection**.*
- Activate **Clear All My Locks** on the toolbar.

After the procedure is finished, you should see a message "System locks have been cleared" at the lower left of the popup window. Alternatively, there may be a message such as "Current user does not have any locked buildings or systems."

Unlock Selected File(s) You Locked

Files are unlocked System by System. To unlock one or more selected files that you locked,

- At the main menu, navigate to **Tools > Unlock My Buildings**. (Location in the navigation tree doesn't matter.) *The "Selective Unlock Tool" popup window will appear.*



- In the popup window, make sure the **My Locked Building** radio button is selected.

- Select the desired Building from the dropdown list in the **My Locked Buildings** field. *The locked Systems in that Building will appear under Locked Systems for Selection.*
- In the *Locked Systems for Selection* column, select the desired System(s) and use the right arrow button to move it or them to the **Selected Systems** column. The double right arrow button will move all Systems shown to the **Selected Systems** column.
- Activate **Proceed** on the toolbar.

After the procedure is finished, you should see a message "System locks have been cleared" at the lower left of the popup window. Alternatively, there may be a message such as "Current user does not have any locked buildings or systems."

To unlock files locked by others, see Unlock Files Locked by Other Users.

Unlock Files Locked by Other Users

Unlock All Files Locked by Other Users

To unlock all files locked by other users, follow the instructions under the heading Unlock All Files You Locked above, but select the radio button **All Locked Buildings** instead of **My Locked Building**.

Unlock Selected File(s) Locked by Other Users

To unlock one or more selected files locked by other users, follow the instructions under "Unlock Selected File (s) You Locked" above, but select the radio button **All Locked Buildings** instead of **My Locked Building**.

Import Data from BuilderRED to BUILDER

Overview of the Import Process

In order to load data collected using BREDBUILDER Remote Entry Database (BuilderRED) into the BUILDER database, you will need to import the database from BREDBUILDER Remote Entry Database (BuilderRED) into BUILDER. It is important to note that the database file containing your new data must be loaded so that the BUILDER program has access to its path and can complete the importing process.

If you added new images during Inventory or Inspections, then importing your information back into BUILDER will be done in two steps: (1) importing the BREDBUILDER Remote Entry Database (BuilderRED) database into BUILDER, and (2) importing the image archive file.

These two steps may be followed by an optional third step: (3) performing a manual condition rollup. This step is optional because the system performs automated rollups nightly.

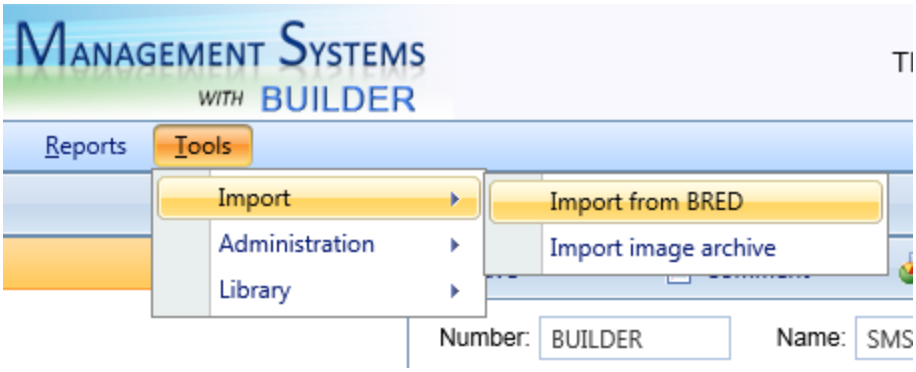
If you have no images to import, then you can go straight from importing the BREDBUILDER Remote Entry Database (BuilderRED) database information into BUILDER to performing a rollup.

How To Import Database Information

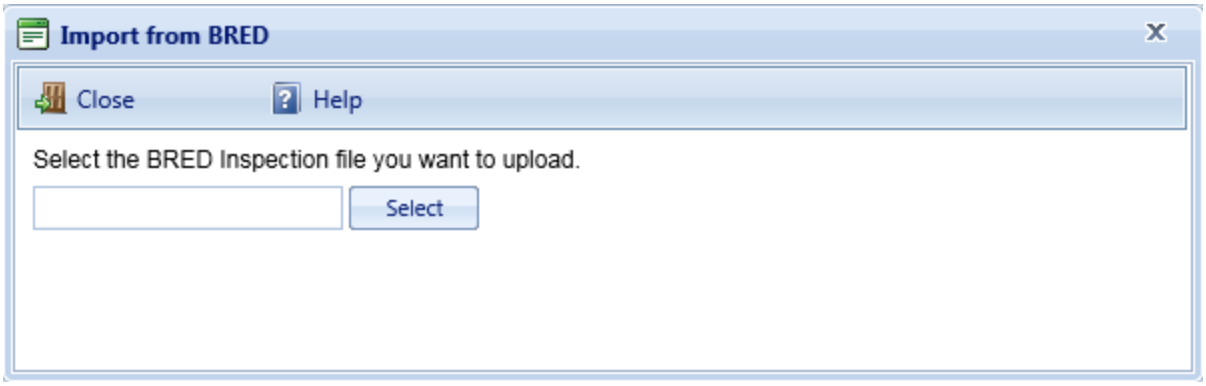
After you have finished adding, editing, and deleting Inventory and/or Inspections data, the updated database must be imported back into BUILDER, to assess the condition of the installation and to plan maintenance and repair.

To import database information into BUILDER from BuilderRED:

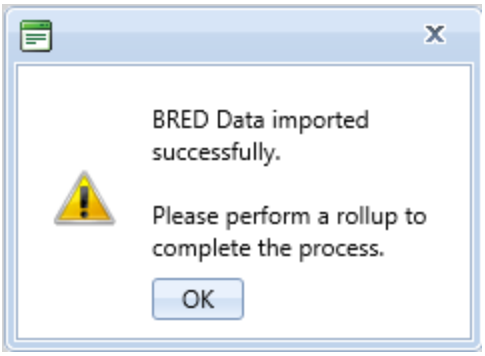
- Save all changes to the database in BuilderRED.
- Open BUILDER.
- Select Tools > Import > Import from BREDBUILDER Remote Entry Database (BuilderRED) starting at the main menu.



The "Import from BREDBUILDER Remote Entry Database (BuilderRED)" popup window will appear:



- Locate the database you wish to import, by either (a) entering the full path and file name in the text box or (b) activating the **Select** button, navigating to the database file, and selecting it.
- All changes to the database will be imported into BUILDER and you will see a popup window with the following message:



- If you don't have any images to be imported into BUILDER, activate **OK**. You are finished with the import, and can perform a rollup if you wish.
- **IMPORTANT: I**f you have images to import from BuilderRED, it is recommended that you NOT activate **OK** to perform a manual condition rollup at this point. Instead, close the popup box by activating the "x," then follow the instructions in the next section:

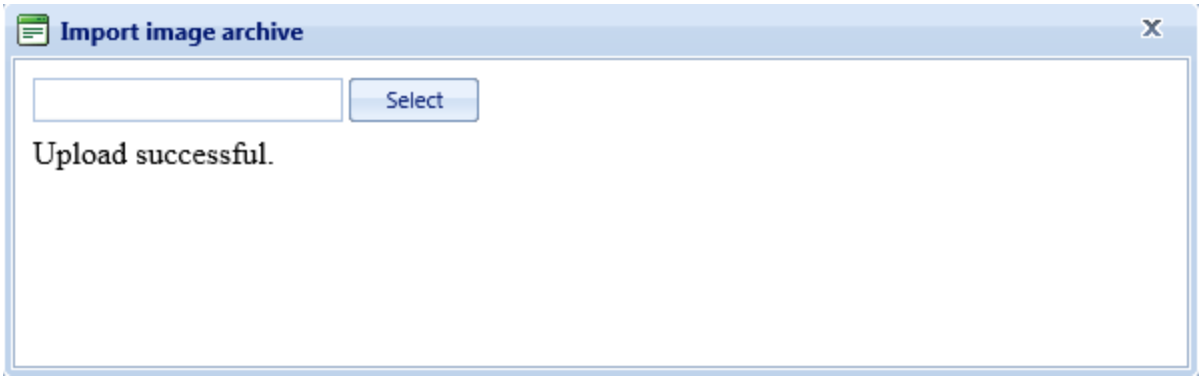
How To Import Images

The process of importing images makes use of an image archive file that has the extension .bredpackage. By default, the image archive file has the same name as the .mdb BREDBUILDER Remote Entry Database (BuilderRED) data file containing the imported data, except for the extension.

WARNING: It is very important that the name of the image archive file match the name of the .mdb data file. If you rename one of these files, be sure to rename the other one identically (except for the extension). Images will not be found by the BREDBUILDER Remote Entry Database (BuilderRED) (.mdb) file if the .bredpackage file name doesn't match.

To import images into BUILDER from BuilderRED:

- If you have new images that need to be imported from BREDBUILDER Remote Entry Database (BuilderRED), this procedure needs to be done *after* importing the database information (see section above).
- Select Tools > Import > Import image archive starting at the main menu. (The "Import image archive" popup window will appear.)
- Locate the image ("bredpackage") file corresponding to the database you just imported, by either (a) entering the full path and file name in the text box or (b) activating **Select**, navigating to the database file, and selecting it. The image archive will be in the same location as the database file, and similarly named except that the extension is .bredpackage instead of .mdb.
- When you see the message "Upload successful," close the "Import image archive" window. Follow with a manual condition rollup as warranted (see next section).



Should I Perform a Rollup after Import?

The items you import from BuilderRED are unlocked as soon as the import is complete, whether you do a manual condition rollup or not. However, the condition and Functionality Indexes will not yet have been updated.

If you only performed inventory with BuilderRED, you need to do a rollup only if

- one or more cost books or other reference books have changed, or
- you wish to see updated PRVs or RSLs immediately instead of waiting on BUILDER's automated rollup (performed overnight)

If you entered inspection data in BuilderRED, performing a rollup after the import is completed allows you to see the changes in the following indexes right away:

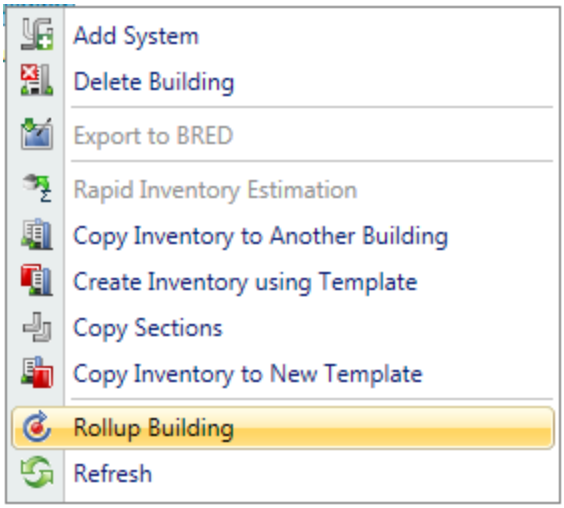
- condition indexes
- functionality indexes
- performance indexes

If you do not perform a rollup at this time, the SMSSustainment Management System will do the rollup automatically overnight, and the updated index figures will be available the next day.

How To Perform a Manual Rollup after Importing from BuilderRED

To perform a manual rollup, do one of the following:

a. Right-click the affected Building (or Complex, if multiple Buildings were exported from the same Complex). Then select "Rollup Building" or "Rollup Complex."



b. Alternatively, select the Building (or Complex, if multiple Buildings were exported from the same Complex) and activate the Rollup icon on the toolbar.

You have the option to roll up the entire Site in similar fashion, but be aware that a Site rollup can take an extremely long time. It would typically be less time consuming to sequentially select the applicable Complexes and Buildings for manual rollup.

Inventory

Introduction to Inventory

Planning Inventory

This topic

- Provides valuable advice about how to plan the organizational structure of your inventory.
- Provides links to features that can potentially help streamline the inventory process.

Your BUILDER™ inventory serves as the foundation for all that you will do with the BUILDER application. The first steps in using BUILDER are (1) to plan the hierarchical asset "tree" describing the physical inventory you manage (the subject of this topic) and (2) to construct the upper levels of that tree. The next step is to perform inventory to fill the database represented by that hierarchical tree.

The process of putting initial data into BUILDER will probably be your single most intensive effort in working with the program, but it is a one-time effort that can be aided by features described in the section on Rapid Inventory Methods.

Tip: Crucial to the planning process for a new implementation of BUILDER is the issue of who decides the scope and organization of the hierarchical asset tree. It is recommended that this high-level planning step)–determining the scope and organization of the tree)–not be contracted out, even if "filling in" the asset tree at the lower levels (Buildings or Complexes and below) will be performed by contractors. A useful planning guidance document for government agencies and their contractors is ERDC/CERL SR 16-3, BUILDER™ Sustainment Management System Implementation Planning Guide, downloadable at https://support.sms.erdc.dren.mil/downloads/erdc-cerl-technical-publications.

Planning the Organizational Structure

Organization Level

Because the most convenient approach is to build out the **BUILDER** asset tree from the top down, if you are introducing **BUILDER** for the first time and creating the tree structure for your real property data, it is preferable to analyze in advance the final scope anticipated for entry and management of properties, and to create the Organization levels that will be needed in the long run even if they will not be filled with content in the short run.

Organizations are unique in the **BUILDER** hierarchy in that they can be nested multiple levels deep if desired. Note, however, that this flexibility brings with it the responsibility for careful planning.

Site Level

Begin by grouping your Buildings into logical management units, typically by their geographic regions, which are represented by Site records in the **BUILDER** database. The Site provides a natural way to group Buildings and to apply properties that are regional in nature, such as the cost of operations and maintenance (O&M) work and the heating, ventilation and cooling (HVAC) climate.

Building Level

Next, create Building records for the Buildings at one of your Sites. A Building record includes critical information such as how the Building is used, its size, age, and number of floors. You will find that **BUILDER** also allows you to store, at your option, a variety of other information about a Building, such as whether it is a historical structure or a whether it is a child-occupied facility. You will also have the option to establish a Mission Dependency Index to measure quantitatively how critical the Building is to the mission for which it is used.

Complex Level

Conceptually, the Complex level in the **BUILDER** hierarchy comes between the Site level and the Building level. However, unlike a Site, a Complex for organizing Buildings is *optional*, and a Complex is often not created until after its constituent Buildings (or at least some of them) have been added to BUILDER.

System Level

After establishing the Building level, you begin working down toward the end level of Component-Sections hierarchically, starting with the major Systems of a Building. The Systems in BUILDER are specified by the UNIFORMAT II Classification for Building Elements (Level 2), as shown in BUILDER Systems and Components.

You will create the Building's Systems by selecting each applicable System from a dropdown pick list. See BUILDER Systems and Components for a list of available Systems.

For advice on how best to allocate inventory into Systems, Components, and Sections, see About Identifying Systems, Components and Sections.

Component Level

Each System is further decomposed into Components (UNIFORMAT Level 3 elements). Again, you will create the Component records by selecting from a pick list of Components applicable to a given System. BUILDER Systems and Components shows a selection of typical Components for some of the BUILDER Systems.

Component-Section Level

Creating the Component-Section ("Section") records is the most difficult and time-consuming aspect of creating the BUILDER inventory

After creating records for at least one System and at least one Component in a System, you are ready to add records that describe the individual physical items in the Building: the doors, walls, windows, plumbing fixtures, heating units, etc. These items are called Component-Sections, or simply Sections.

Component-Sections are the management unit in BUILDER. You inspect them and plan work for them, and BUILDER applies its condition assessment algorithms to them in calculating their condition index.

BUILDER uses embedded data and automated processes to determine a wealth of information about each Component-Section: its expected service life, its likely subcomponents and how its condition affects the Section as a whole, and the cost of replacing, painting, repairing, and removing it. As you might imagine, for an automated system to be able to do all of this, there are some strict rules about how you define Component-Sections.

A Component-Section consists of items that meet all of these criteria:

- All belong to the same Component.
- All are of the same Component type.
- All are of the same material/equipment category.

For example, in the Component "Exterior Doors," glass personnel doors and metal overhead doors belong in different Sections.

As long as the requirement for not mingling (a) types or (b) material/equipment category in the same Component-Section is met, you will have considerable flexibility in how you group similar items together to form a Component-Section. For example, wood doors on different sides of the Building could be grouped together. Alternatively, if weather degradation based on compass orientation is a significant factor, then west doors, north doors, etc. might be assigned to separate Component-Sections.

Once a Component-Section has been identified by (1) Component type and (2) material/equipment category, BUILDER will have sufficient information to establish a clear link between the Section (Component-Section) and the embedded data and computations that BUILDER brings to the process in order to help you with your management tasks.

Additional Guidance

Details, examples, and some suggestions about how to undertake the process of completing your BUILDER inventory are contained in the topic About Identifying Systems, Components and Sections.

Inventory Rollup

Plant replacement value and remaining service life are inventory-related pieces of information that are aggregated upwards through the inventory tree by use of a "rollup." This topic introduces both automated and manual rollups in BUILDER.

Only inventory-related processes performed by a rollup are explained here. Condition and functionality information aggregated by a rollup are explained elsewhere in the documentation.

What does a Rollup Do?

Inventory-related processes accomplished by a rollup are as follows:

- current remaining service life (**RSL**[1]Remaining Service Life) is estimated for all Sections
- **RSL**[2]Remaining Service Life information is reflected upwards through the inventory tree
- Plant Replacement Value (**PRV**[3]Plant Replacement Value. For an inventory item above the Building level, this number will be the aggregate of the PRV of all Buildings included in that item.) is updated at all levels: For example, if new Sections, Components, or Systems have been added to a Building, its **PRV**[4]Plant Replacement Value. For an inventory item above the Building level, this number will be the aggregate of the PRV of all Buildings included in that item. will increase

To see a full list of all rollup processes, not just those pertaining to inventory, activate here to see the list, or consult the BUILDER AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. section of the documentation.

Automated Rollup

BUILDER automatically "rolls up" inventory, condition, and functionality information nightly. (For installations with U.S. Army Corps of Engineers support service, this begins at about 6:00 p.m.). Starting at the Section level, aggregated Section-level information in each Component is recorded for the Component; aggregated Component-level information is recorded for each System; aggregated System-level information is recorded for each Building, and so forth up the entire inventory tree.

Manual Rollup

You can manually initiate a rollup if you wish. It's a good idea to do so when:

- you have entered a large quantity of inventory into BUILDER; or
- you believe that **PRV**[5]Plant Replacement Value. For an inventory item above the Building level, this number will be the aggregate of the PRV of all Buildings included in that item. or **RSL**[6]**Remaining**

---

[1]Remaining service life.

[2]Remaining service life.

[3]Plant Replacement Value. This number will be the aggregate of the PRV of all inventory items contained within the current inventory item.

[4]Plant Replacement Value. This number will be the aggregate of the PRV of all inventory items contained within the current inventory item.

[5]Plant Replacement Value. This number will be the aggregate of the PRV of all inventory items contained within the current inventory item.

[6]Remaining service life.

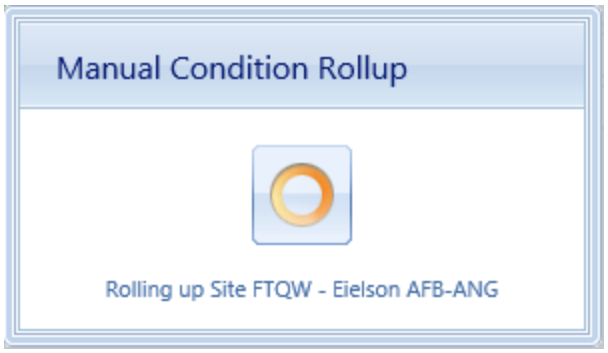
Service Life information has changed since the last automated rollup and you wish to see the latest values

Roll Up a Building

To roll up a Building,

- Navigate to the Building in the inventory tree.
- Right-click it.
- Select "Rollup Building" from the list of options.

While the rollup is being performed, a popup window similar to the one below will be displayed onscreen:

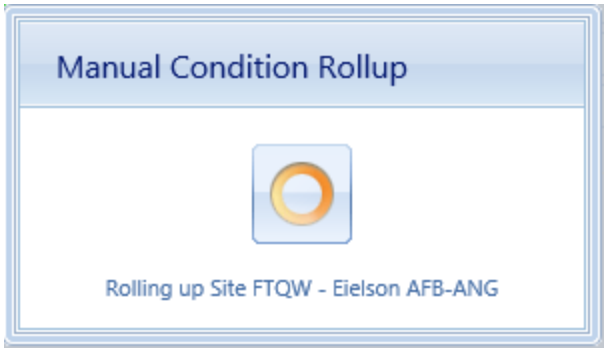


Roll Up a Complex

To roll up a Complex,

- Navigate to the Complex in the inventory tree.
- Right-click it.
- Select "Rollup Complex" from the list of options.

While the rollup is being performed, a popup window similar to the one below will be displayed onscreen:



Roll Up a Site

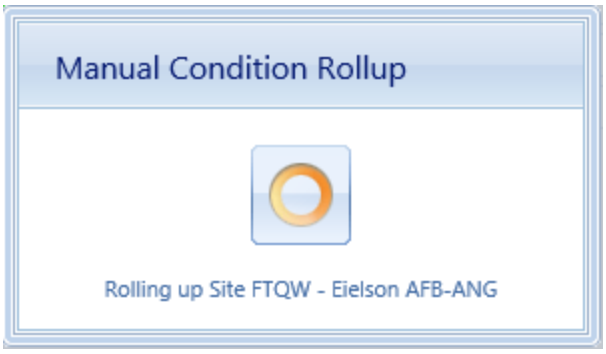
Caution: Rolling up an entire Site can take an extremely long time (sometimes hours). If you initiate this rollup and want to cancel it, the only way to do this is to activate the "X" at the upper right of your browser window to

close the window. Then log back into BUILDER from another browser window.

To roll up a Site,

- Navigate to the Site in the inventory tree.
- Right-click it.
- Select "Rollup Site" from the list of options.

While the rollup is being performed, a popup window similar to the one below will be displayed onscreen:



Full Rollup

If you have AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. permission in BUILDER, you can initiate a manual rollup of the entire asset tree by selecting **Tools > Administration > Manual Condition Rollup** from the main menu. See the BUILDER Administration section of the documentation for instructions and screen shots.

Organizations

Working with Organizations

An Organization is the highest level possible in the hierarchical asset tree. This topic briefly introduces the features of an Organization, and how to use it in organizing real property inventory. It also provides links to the operations that can be performed at the Organization level.

Organization is the highest level in the asset tree. (The tree may be referred to generically as the asset tree, or specifically as the inventory tree, condition tree, or functionality tree when performing tasks in one of those areas.) Tasks performed at the Organization level are generally prioritization, planning, and budgeting, rather than day-to-day management.

The Organization level in the **BUILDER** hierarchy is an optional level above the Site level, enabling progressive aggregation of information up the inventory tree. Progressive aggregation in possible because unlike other levels in the **BUILDER** hierarchy, Organizations can be nested multiple levels deep if desired. This

allows the hierarchical structure of the inventory tree to be made as deep as it needs to be to reflect the structure of your company or organization.

The usefulness of an Organization is that if multiple Sites are to be managed, or if it is desired to aggregate **BUILDER** information across a region or network comprising more than one Site, then Sites can be grouped into one or more Organizations. Even though Organization is the highest level available, however, it is not a required level in the hierarchy. An individual inventory tree may start with either one (and only one) Organization, or one (and only one) Site at the topmost level of that tree.

Note: Preferably, Organizations *should* be established before Sites. This task is best assigned to a **BUILDER** AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings., once the initial planning stage has been performed.

Organization Tasks

Tasks that can be performed on Organizations are:

Add an Organization
Edit Organization Inventory Data
Delete an Organization

Add an Organization

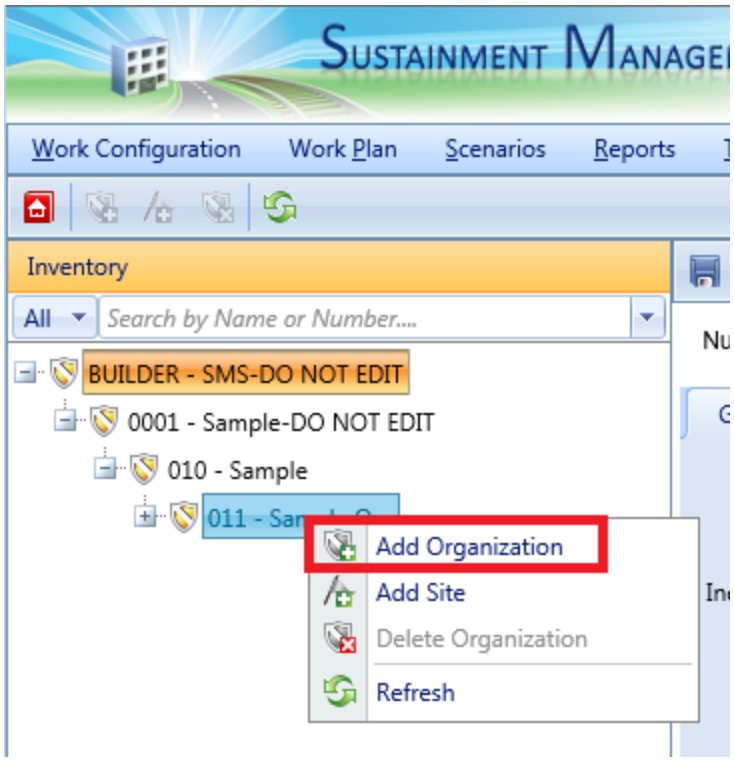
This topic shows how to add an Organization and describes the required information to be entered. Additional information that can be entered is described in Edit Organization Inventory Data.

Permissions Note: This action requires Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. or AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. permission for the relevant asset.

To add a new Organization,

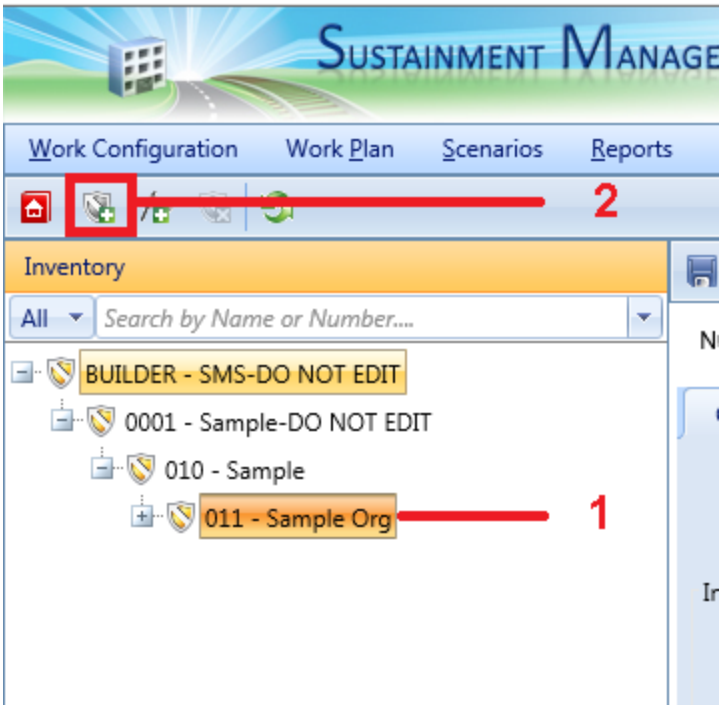
- Navigate in the inventory tree to the Organization you wish to add the new Organization under. this will be referred to as the "parent" Organization.

- Do one of the following:
  a. Right-click the parent Organization. Then select "Add Organization" from the options.

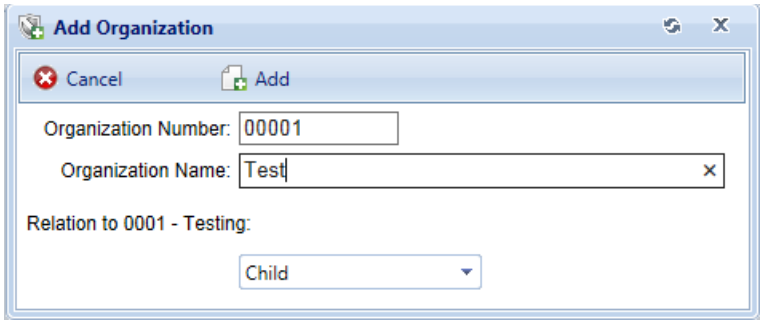


  b. Alternatively, select the parent Organization. Then activate the **Add Organization** icon on the

main toolbar, above the navigation tree.



The "Add Organization" popup window will appear.



- Enter required data, as described in the section below.

Enter Required Organization Data

This documentation segment describes the minimum data to be entered when creating a new Organization. Other data that can be entered is described in Edit Organization Inventory Data.

In the "Add Organization" popup window, enter the following required data:

- **Organization ID Number**. Enter the identifying number for the Organization. Organization Number may be left blank if you wish to supply only a name. You must enter at least Organization name or an Organization number, and the combination of the two must be unique among the Organizations in the

navigation tree.

Specifications: The ID Number is limited to 12 alphanumeric characters.

- **Organization Name**. Enter the identifying name for this Organization, limited to 50 alphanumeric characters. Organization Name may be left blank if you wish to supply only a number. You must enter at least a Organization name or an Organization number, and the combination of the two must be unique among the Organizations in the navigation tree.

  Specifications: The name is limited to 50 alphanumeric characters.

  Best Practice Recommendation: Avoid using single quotes, double quotes, and ampersands. These characters can interfere with query formation.

- **Relation**. Specify the relation of the Organization being created to the selected existing Organization or Site on the inventory tree. There are three options for the relation:
  a. **Child** - The Organization will be placed under the selected Organization. A child Organization can only be created when an Organization is selected in the inventory tree; an Organization cannot be the child of a Site.
  b. **Parent** - The Organization will be placed above the selected Organization or Site.

     WARNING: Do NOT use the parent relation option without engaging in close *advance* coordination with a **BUILDER** support representative.

  c. **Sibling** - The Organization will be placed at the same level as the selected Organization.

     Note: The top ("root") level Organization is not allowed to have a sibling Organization.

Confirm or Cancel

Once the required minimum Organization data is entered,

a. Activate the **Add** button on the popup toolbar to create the Organization.
b. Alternatively, to close the window without creating the Organization, activate the **Cancel** button.

Login Again to View

To see the new Organization appear in the inventory tree, log out of the program and then log back in again.

Note: This action is needed only for newly created Organizations. Other levels of newly-created inventory will appear immediately in the tree.

Next Steps

For information about entering additional information concerning the Organization, see Edit Organization Inventory Data.

Organization Tasks

Other tasks that can be performed on Organizations are:

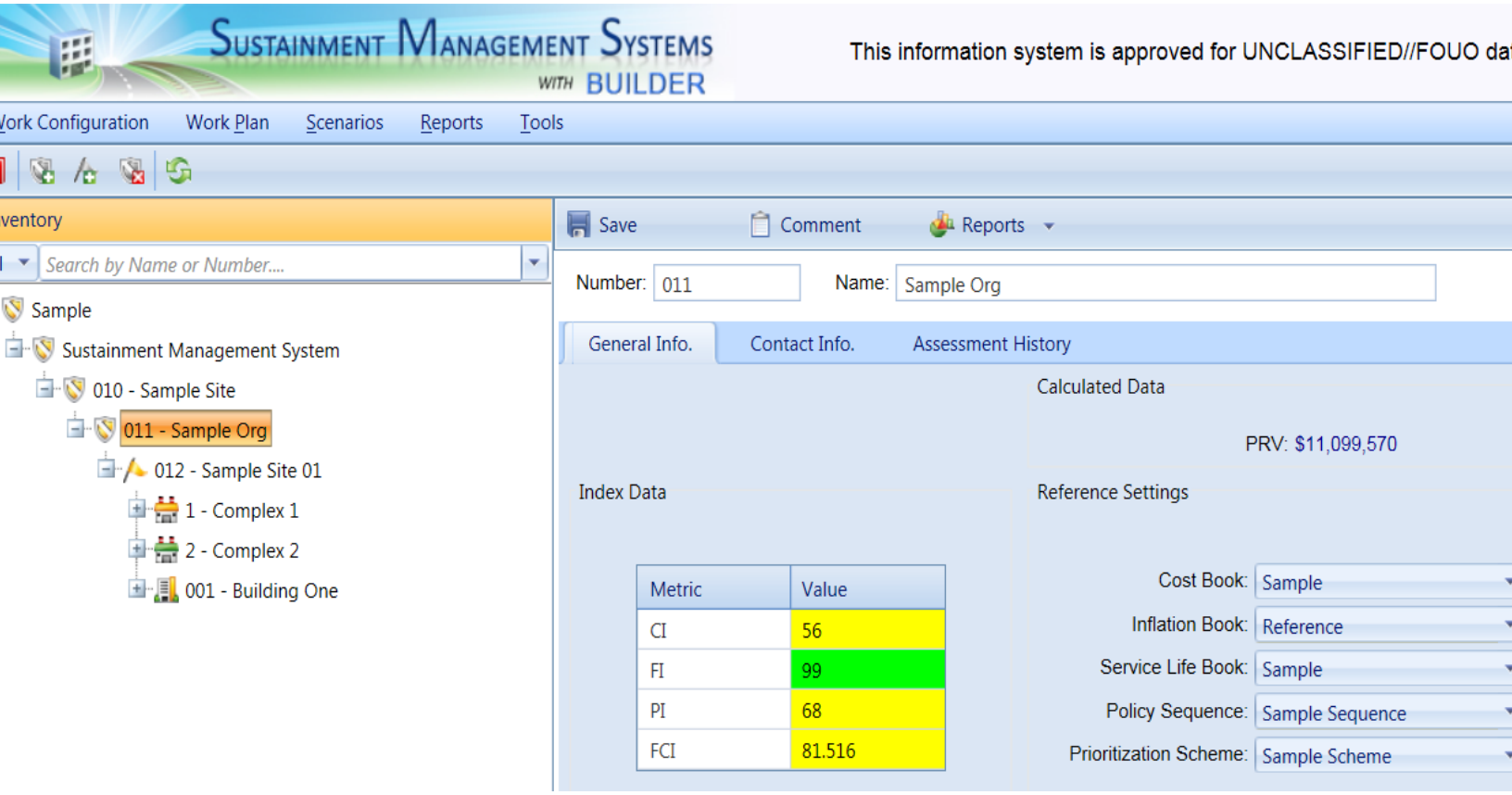
- Edit Organization Inventory Data
- Delete an Organization

General information about Organizations can be found at Working with Organizations.

Edit Organization Inventory Data

This topic describes the information that can be viewed and edited at the Organization data screen. The data will be in the content area of the screen.

To edit data in an Organization, select the Organization in the inventory tree.



Information about the Organization will be presented on an ID line and at several tabs. You can use the content area toolbar to perform actions such as saving changes, or adding or editing comments.

- Toolbar
- ID Line
- General Information Tab
- Contact Information Tab
- Assessment History Tab
- Organization Attributes Tab

Toolbar

The toolbar at the top of the content area provides you with these options:

- **Save**. Saves changes made to the asset's data.
- **Comment**. Allows you to add, edit, and view comments about the selected asset.
- **Reports**. Launches the Report Selection tool, which gives you access to a list of standard reports relevant to the asset's inventory. See Generate a Report or the report generation topic associated with the inventory level of the asset.

NOTE: At the Organization level, no Standard reports are provided; but if Custom reports have been created, they can be accessed using the **Reports** button on the content area toolbar.

ID Line

On the ID line, you can edit the following:

- **Organization ID Number**. The ID Number is limited to 12 alphanumeric characters.
- **Organization Name**. Organization Name is allowed 50 alphanumeric characters.

  Best Practice Recommendation: Avoid using single quotes, double quotes, and ampersands. These characters can interfere with query formation.

General Information Tab

Initially after an Organization is selected in the inventory tree, the General Information (**General Info.**) tab is shown and the following information can be edited there:

Index Data

The following index data is shown under Index Data; the metric shown is for the Organization as a whole.

Note: The information at this fieldset is read-only.

- Condition Index (Organization **CI**[1]). The Organization **CI**[2]Condition Index displays the average **CI**[3] of the Buildings in the Organization, weighted by replacement cost. This metric provides an overall sense of the condition of the group as a whole.
- Functionality Index (Organization **FI**[4]). The Organization **FI**[5] displays the average **FI**[6] of the Buildings in the Organization, weighted by replacement cost. This metric provides an overall sense of the functionality of the Organization as a whole.
- Performance Index (Organization **PI**[7]). The Organization **PI**[8] displays the average **PI**[9] of the Buildings in the Organization, weighted by replacement cost. This metric provides an overall sense of the performance of the Organization as a whole.
- Facility Condition Index (Organization **FCI**[10]). The Organization **FCI**[11] displays the average **FCI**[12] of the Buildings in the Organization, weighted by replacement cost.

Calculated Data

Note: The information at this fieldset is read-only.

- Plant Replacement Value (**PRV**[13]). The aggregate Plant Replacement Value of the Buildings in the Organization.

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[1]Condition Index

[2]Condition Index

[3]Condition Index

[4]Functionality Index.

[5]Functionality Index.

[6]Functionality Index.

[7]Performance Index. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. If no functional assessment has been performed, the FI is assigned a value of 100.

[8]Performance Index. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. If no functional assessment has been performed, the FI is assigned a value of 100.

[9]Performance Index. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. If no functional assessment has been performed, the FI is assigned a value of 100.

[10]Facility Condition Index.

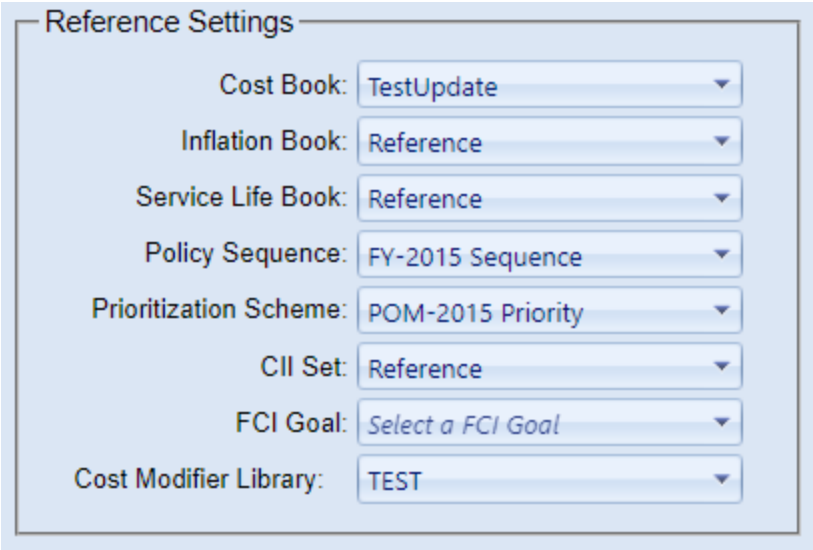
[11]Facility Condition Index.

[12]Facility Condition Index.

Reference Settings

FCI[1] goals (also called FCI[2] targets) are a recent addition to the reference settings. Their role is explained at the documentation for the **General Info.** tab at the Building-level inventory screen, under the heading "Applied FCI[3] Goal."

An FCI[4] goal can be set in the reference settings, where Site-level settings will override Organization-level settings if both are set. This setting can furthermore be overridden manually at the Building-level inventory screen.



Each reference setting provides a dropdown list of options to select from:

- **Cost Book**. From the dropdown list, select either the Reference cost book or a custom cost book to be used for the entire inventory of the Site. The cost book selected will provide inventory replacement and defect repair costs for inventory.
- **Inflation Book**. From the dropdown list, select either the Reference inflation book or a custom inflation book to be used for the entire inventory of the Site. The inflation book selected provides inflation multipliers per year for the projected replacement costs and defect repair costs for the inventory.
- **Service Life Book.** From the dropdown list, select either the Reference service life book or a custom service life book to be used for the entire inventory of the Site. The service life book selected will estimate the remaining service life of Component-Sections in the inventory on the basis of its life expectancy and condition. Also, the service life is used in estimating a rate of deterioration in the condition index of a Component-Section when no more than one inspection has been recorded.

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[1]Facility Condition Index.
[2]Facility Condition Index.
[3]Facility Condition Index.
[4]Facility Condition Index.

- **Policy Sequence**. From the dropdown list, select either the Reference policy sequence or a custom policy sequence to be used for the entire inventory of the Site. The policy sequence selected will establish the order of precedence for applying policies so that only one standard is chosen for the inventory in the Building.
- **Prioritization Scheme**. From the dropdown list, select the prioritization scheme to be used for the entire inventory of the Site. The prioritization scheme selected will prioritize and rank your work plan in a quick, objective, repeatable, and representative method with the touch of a button.
- CII Set. Select either the Reference (default) CII set, or a custom CII set if available.
- **FCI**[1] Goal. Select an **FCI**[2] goal from the dropdown list.
- **Cost Modifier Library**. Select the cost modifier library you wish to use for the entire inventory of the Site. The active library selected determines the cost modifiers available for assignment at the Site, Complex, Building, System, Component, or Section levels within the Organization.

CAUTION: Reference data can be set at the Organization level and at the Site level. If this data is set at both levels, the reference settings at the Site level will override the reference settings at the Organization level.

Contact Information Tab

The contact information for the Organization can be viewed and edited by selecting the Contact Information (**Contact Info.**) tab.

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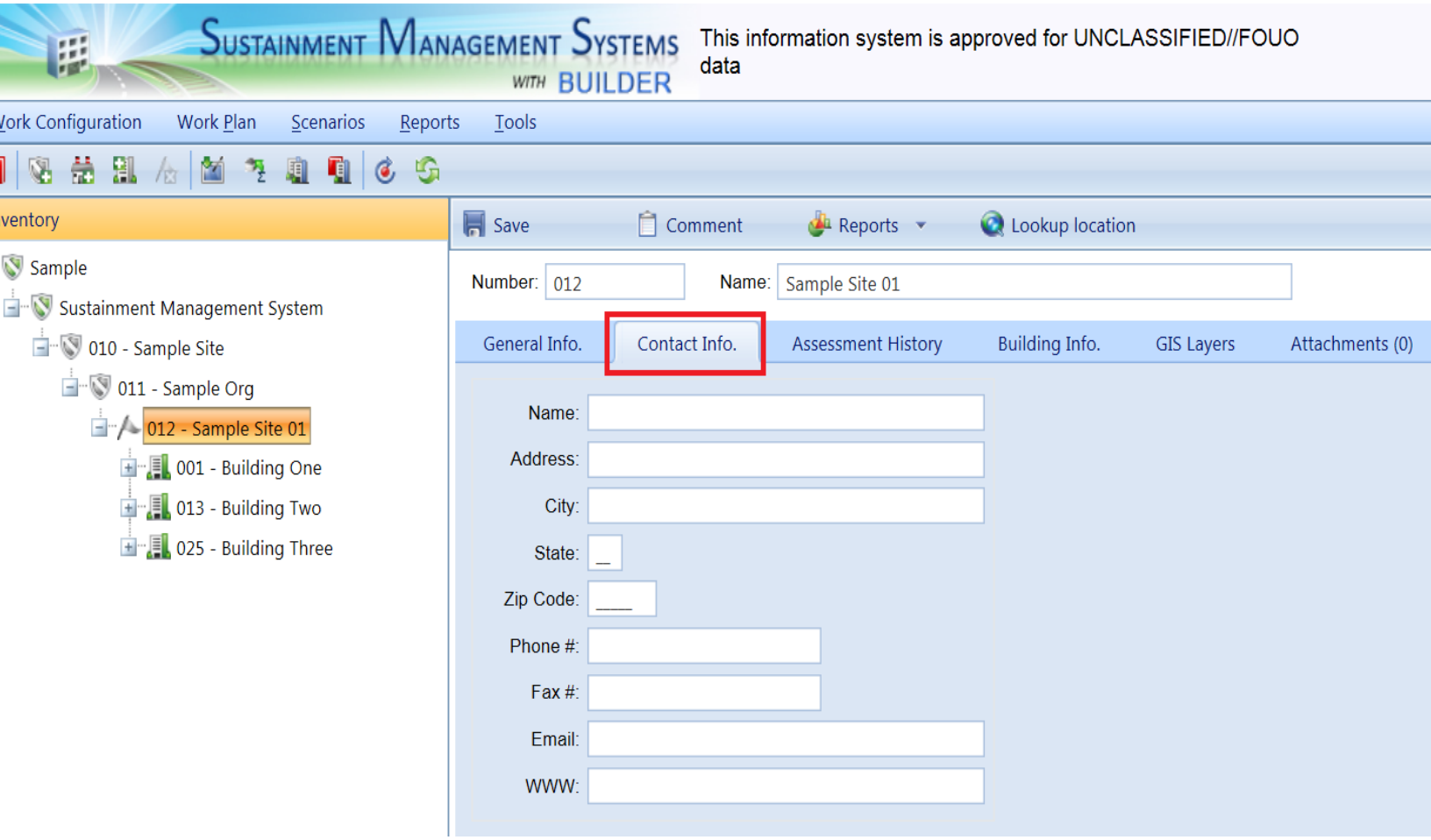
[1]Facility Condition Index.

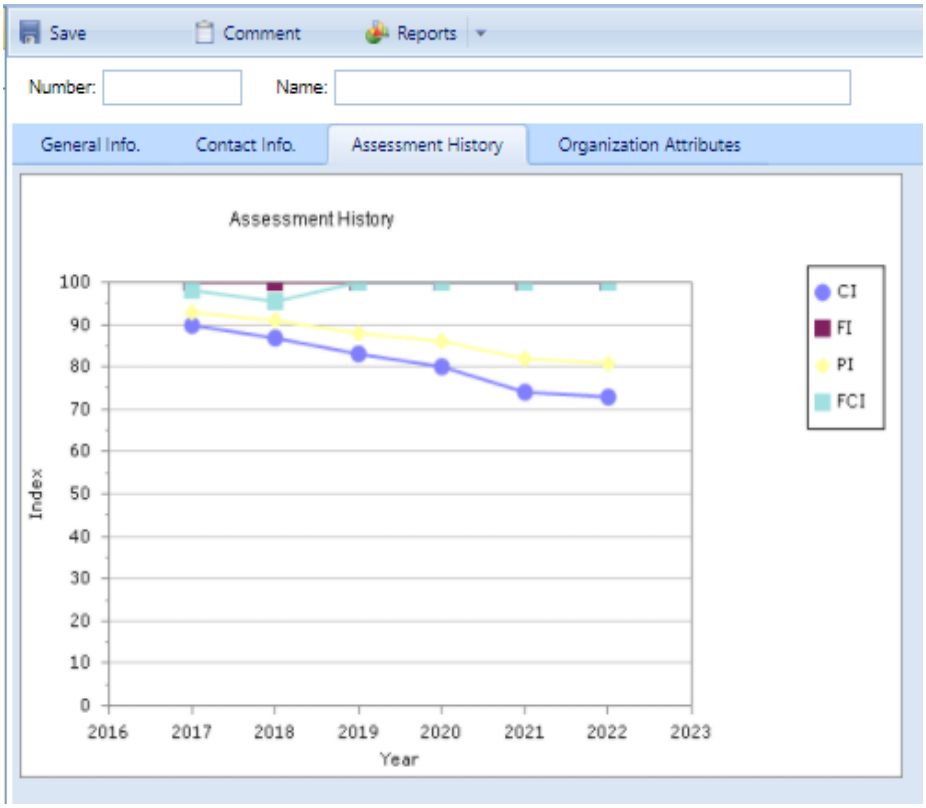
[2]Facility Condition Index.



All of the additional Organization information is optional. It includes data regarding the official point of contact (POC) for the Organization:

- **Name**. Enter the name of the Organization point of contact. Limit: 30 alphanumeric characters.
- **Address**. Enter the official street address of the Organization. Limit: 30 alphanumeric characters).
- **City**. Enter the city of the Organization. Limit: 15 alphanumeric characters.
- **State**. Enter the state of the Organization. Limit: 2 alphanumeric characters.
- **Zip Code**. Enter the zip code of the Organization. Limit: 10 alphanumeric characters.
- **Phone Number**. Enter the phone number of the Organization POC. Limit: 20 alphanumeric characters.
- **FAX Number**. Enter the FAX number of the Organization POC. Limit: 20 alphanumeric characters.
- **Email Address**. Enter the email address of the Organization POC. Limit: 75 alphanumeric characters.
- **WWW**. Enter the URL (Web address) for the Organization. Limit: 75 alphanumeric characters.

Assessment History Tab



The **Assessment History** tab provides a graph of the condition, functionality, performance, and **FCI**[1] history of the Organization, displaying the Organization **CI**[2], Organization **FI**[3], Organization, and Organization **FCI**[4] over time.

Note: The information at this tab is read-only.

Organization Attributes Tab

Custom asset attributes can be added at each inventory level–from Organization down through Section–in two different ways: by using "active attributes" or by using "Admin managed attributes."

"Unassigned" *Admin managed attributes* are a collection of pre-named attributes that have been determined by the **BUILDER** instance's owner (for example, a corporation, or the Air Force, or the Army). They are templated or common attributes that are seen as likely to be used often. Although these attributes are made avail-

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[1]Facility Condition Index.

[2]Condition Index

[3]Functionality Index.

[4]Facility Condition Index.

able from the outset after installing **BUILDER**, they still need to be assigned before they can be used to help describe an asset.

Additional Admin managed attributes can be created, but only by a **BUILDER** Administrator or a user with Master Planner Role.

Active attributes are very flexible and can be created and assigned by any user with inventory privileges.

CAUTION: Unless a standardized procedure for assigning active attributes is implemented and enforced, the flexibility of active attributes can make incorporating them into reports more difficult and time consuming, because multiple people can create them and there is no built-in consistency.

With respect to creating reports, Admin managed attributes will be easier to report on in a consistent fashion, because they are managed by a **BUILDER** Administrator (or a user with Master Planner Role). Also, Admin managed attributes are available to all assets that are at the same inventory level. Active attributes, on the other hand, would be prone to being named inconsistently and make reporting more difficult.

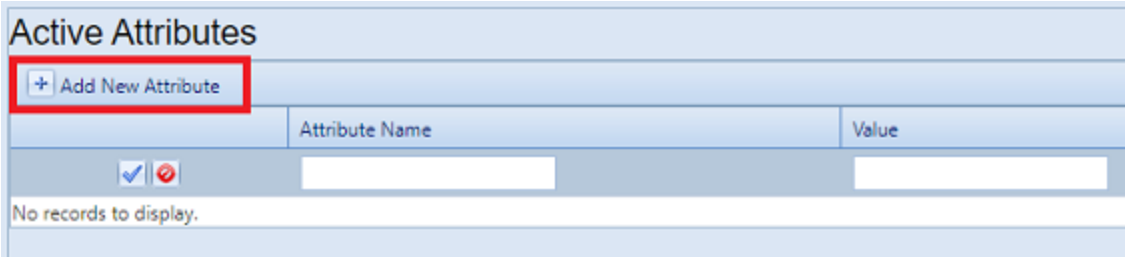
Active Attributes

Under **Active Attributes** at the top half of the Attributes screen, you can add, edit, or delete custom attributes for this level of inventory.

Add an Active Attribute

To add a custom inventory attribute,

- Directly under the **Active Attributes** header, activate **Add New Attribute**. This will generate a new row in the **Active Attributes** table.



- Enter a name and value for your attribute into the table.
- If you want to apply an architect name, press the **Enter** key on your keyboard at this point . The popup "Add Architect" will appear. Enter the name of the architect, then select **OK**.
- When finished with the entry, *activate the blue checkmark icon at the left side of the row* to save the entry. Alternatively, to cancel and delete the entry before saving, activate the red circle with a slash icon (located to the right of the blue checkmark).

CAUTION: Your new attribute will not be saved if you (a) exit without activating the blue checkmark or (b) initiate adding a new custom inventory attribute (by activating the **Add New Attribute** button) before saving with the blue checkmark.

- Repeat steps 1 through 4 for each custom inventory attribute you wish to add.

Edit an Active Attribute

To edit an attribute,

- Activate the pencil icon in the attribute's table row.
- Make the desired changes.
- Finally, activate the blue checkmark icon at the left to save the changes.

Delete an Active Attribute

To delete an attribute,

- In the table of active attributes, locate the row containing the attribute you wish to delete.
- To the right of the **Value** field, activate the Delete icon (red "X"). *A confirmation popup will appear, asking "Delete record?"*
- Select **OK** to delete, or **Cancel** to stop the process.

Admin Managed Attributes

Under **Unassigned Admin Managed Attributes** at the bottom left of the Attributes screen, you can choose to assign an existing Admin managed attribute to the asset whose data screen you have open. You can also change the value of an attribute after it has been assigned.

Note: Attributes that are in the table under the header **Admin Managed Attributes** are already assigned to the asset whose data screen you are in.

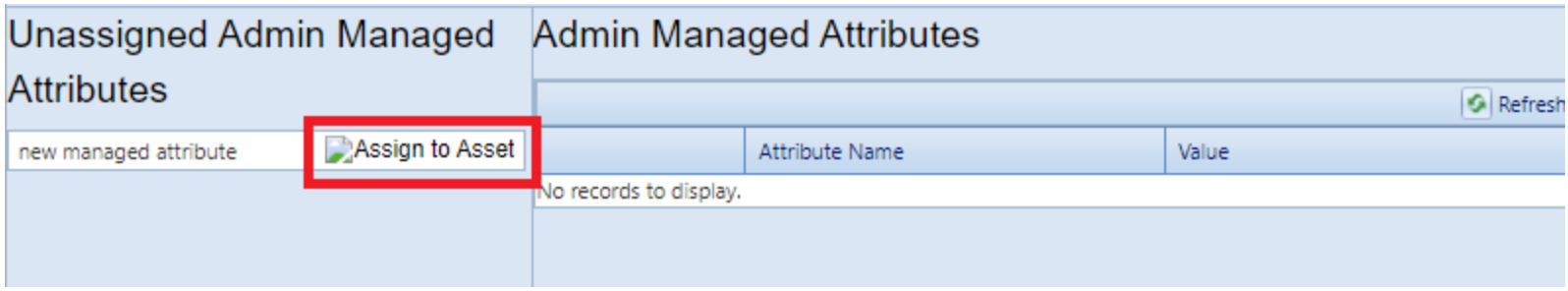
Only a **BUILDER** Administrator or a user with the Master Planner Role can create, edit (other than changing the value), or delete/unassign custom Admin managed attributes for the selected asset. Also, once an Admin managed attribute has been moved from the **Unassigned Admin Managed Attributes** column into **Admin Managed Attributes**, this action cannot be reversed except by a **BUILDER** Administrator or a user with Master Planner Role. More detail about Administrator-specific inventory attribute tasks can be found at Manage Custom Inventory Attributes.

Assign an Unassigned Attribute to Admin Management

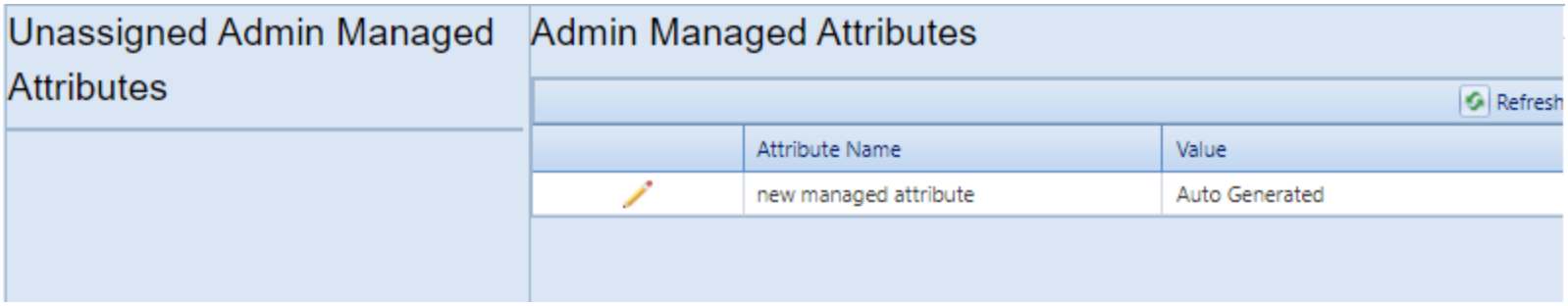
You may see one or more items listed under the header **Unassigned Admin Managed Attributes** at the lower left of the Attributes screen. These are attributes that are available at this inventory level but that have not been assigned to the selected asset. If no items are listed under the header **Unassigned Admin Managed Attributes**, there are none available to be assigned. (They may have already been assigned and thus transferred to the **Admin Managed Attributes** table.)

To assign an unassigned asset to Admin management,

In the **Unassigned Admin Managed Attributes** column, activate **Assign to Asset**.



This will immediately populate the inventory item in that row under **Admin Managed Attributes** instead.

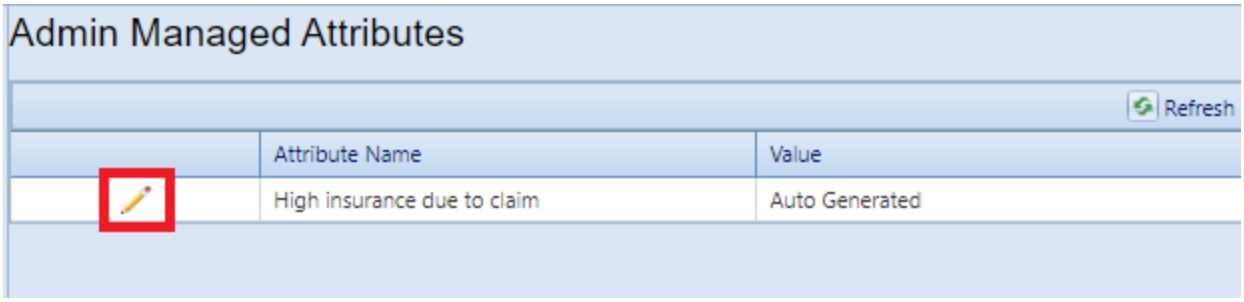


Note: The assignment action is not reversible, except by a **BUILDER** Administrator or a user with the Master Planner Role.

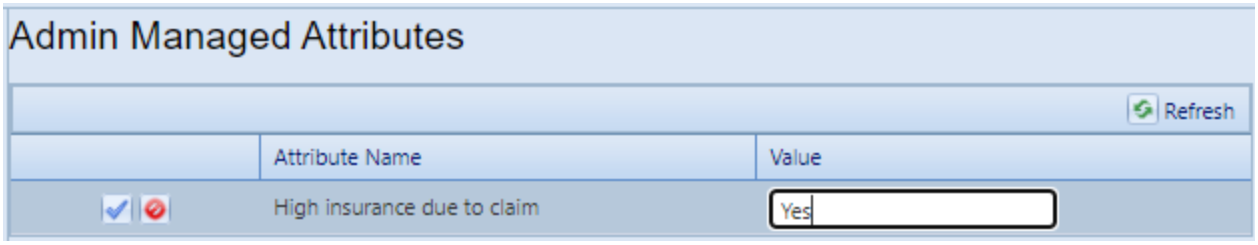
Change the Value of an Admin Managed Attribute

To change the value of an asset under Admin management,

- Under **Admin Managed Attributes**, activate the pencil icon in the attribute's table row, and wait for the row to change appearance.



- Make the desired change in the **Value** column.



- Finally, activate the blue checkmark icon at the left to save the changes (or the red Cancel icon to cancel the change).

Organization Tasks

Other tasks that can be performed on Organizations are:

Add an Organization
Delete an Organization

General information about Organizations can be found at Working with Organizations.

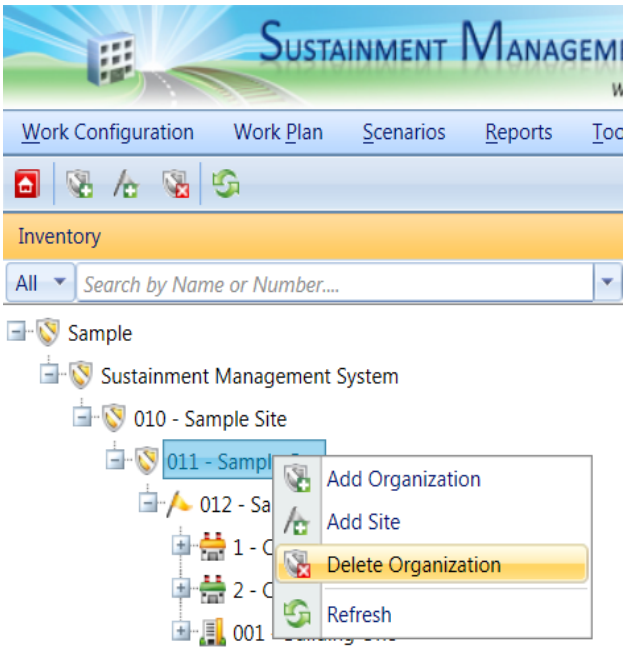
Delete an Organization

This topic shows how to delete an Organization, which also deletes all other records (Sites, Buildings, etc.) contained in the Organization.

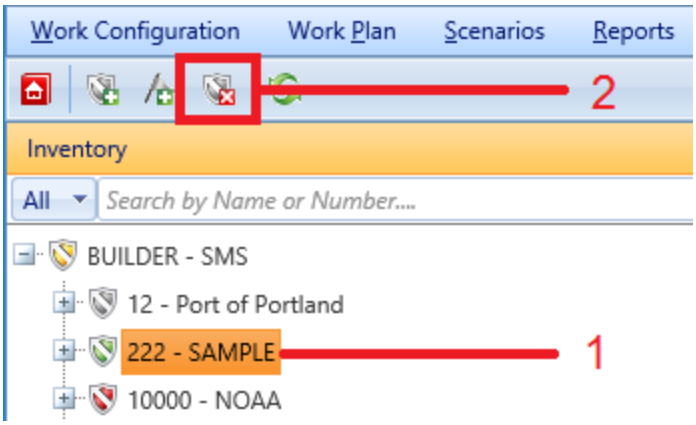
Permissions Note: This action requires AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. permission. If the inventory item is empty of any contents, then the deletion may also be performed by a Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. with permission for the relevant location in inventory.

To delete an Organization, navigate to it in the inventory tree and do one of the following:

a. Right-click the Organization. Then select "Delete Organization."



b. Alternatively, select the Organization, then activate the **Delete Organization** icon on the menu tool-bar.



WARNING: Deleting an Organization will also delete all inventory (Complexes, Buildings, Systems, Components, and Sections) in that Organization. This is a significant step to take and should only be done when you are certain that you wish to clear the entire inventory of the Organization you have selected.

Best Practice Recommendation: Making frequent backups of your inventory database will protect you from significant data losses if mistakes in deleting are made.

Organization Tasks

Other tasks that can be performed on Organizations are:

Add an Organization
Edit Organization Inventory Data

General information about Organizations can be found at Working with Organizations.

Sites

Add a Site

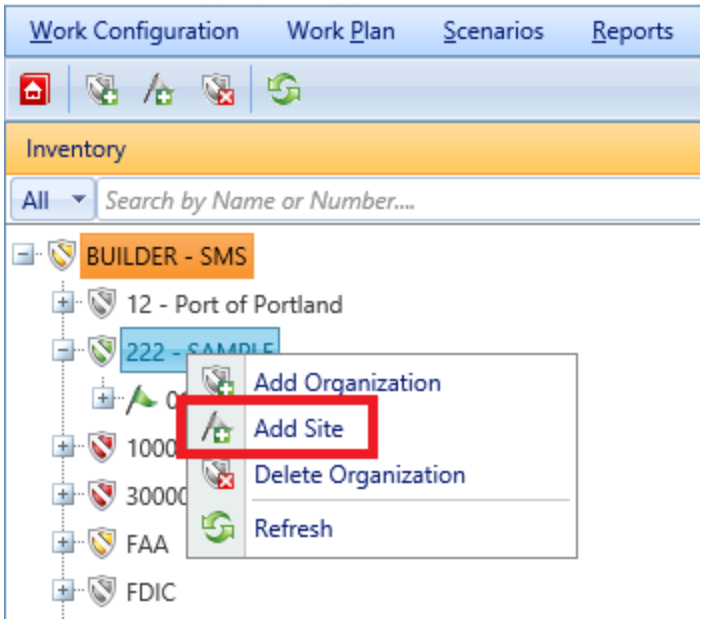
This topic shows how to add a Site and describes the initial information to be entered. The topic Edit Site Inventory Dataon page 76 describes additional information that can be entered for the Site.

A type of data unique to Sites is a set of location factors including (1) Area Cost FactorA multiplier that adjusts national average labor/material/equipment costs to better reflect local costs. For example, in a remote area with high shipping costs and a tight labor market, the Area Cost Factor might be 1.3. The Area Cost Factor is generally a number between 0.8 and 1.2 for continental U.S. locations, but it can be even greater than 2.0 in high-cost geographic locations., (2) seismic zone, and (3) HVAC zone. During the process of adding a Site you will have the option to auto-apply factors from an existing geographic location. This same auto-apply option will be available from the Site's data screen toolbar after the Site is added to the inventory tree, or you can choose to manually edit the factors later.

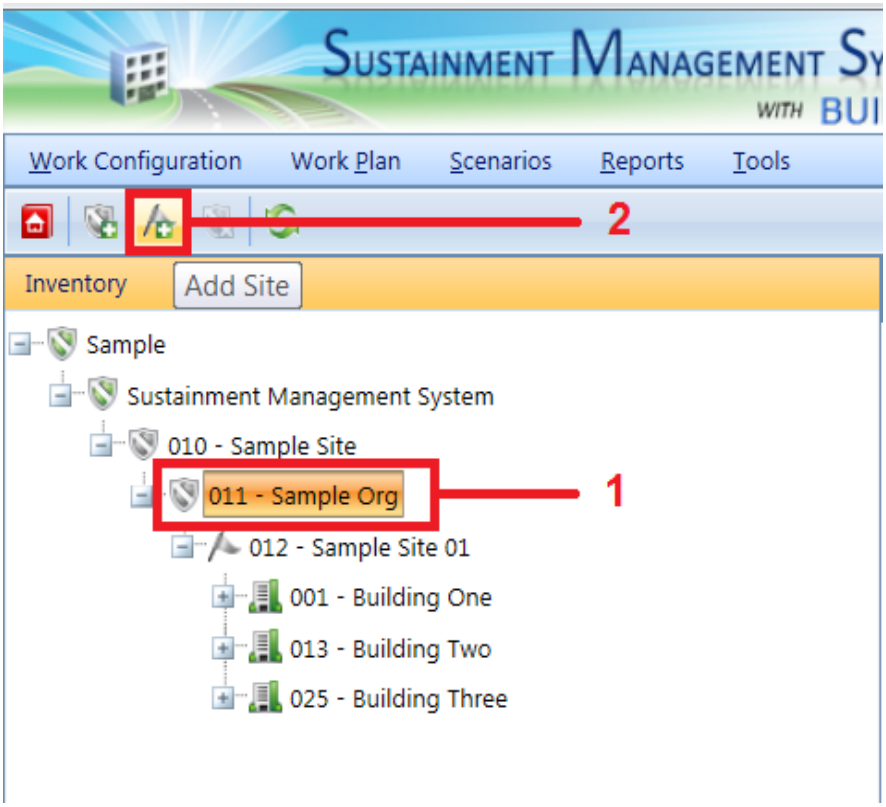
Permissions Note: This action requires Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. or AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. permission for the relevant asset.

To add a new Site to an Organization, navigate to that Organization in the inventory tree and do one of the following:

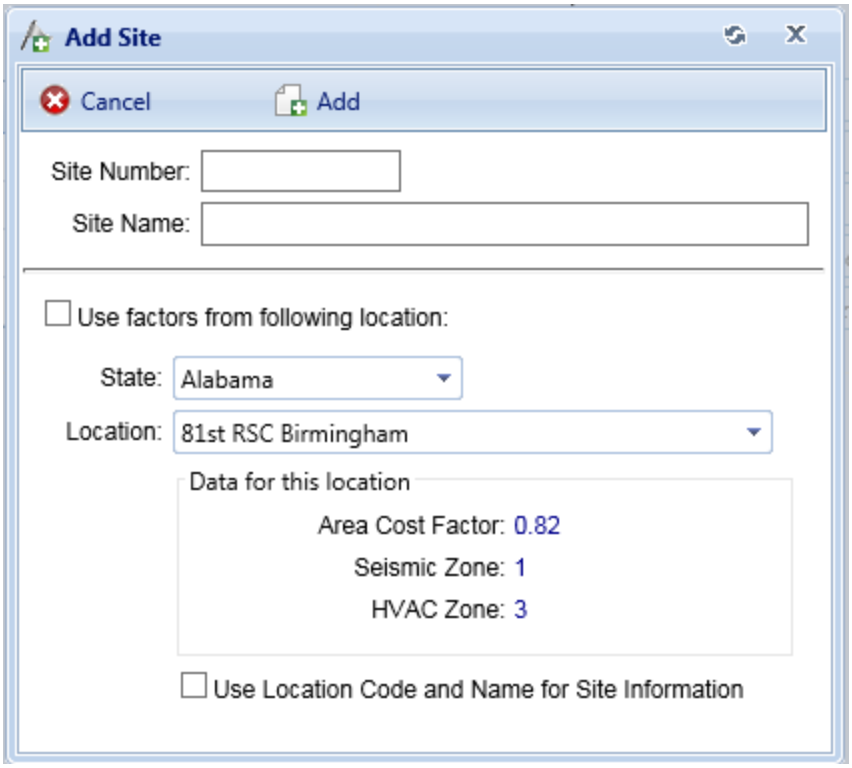
a. Right-click the Organization where the Site is to be located. Then select "Add Site" from the options.



b. Alternatively, select the Organization. Then activate the **Add Site** icon on the main toolbar, as shown below.



The "Add Site" popup window will appear.



Enter Initial Site Information

This documentation segment describes the initial data to be entered when creating a new Site. Other data that can be entered is described in Edit Site Inventory Dataon page 76.

In the "Add Site" popup window, enter the following data:

- **Site Number (Required)**. Enter the identifying number for the Site. Site Number may be left blank if you wish to supply only a name. You must enter at least a Site name or a Site number, and the combination of the two must be unique in the navigation tree.

  Specifications: The ID Number is limited to 12 alphanumeric characters.

- **Site Name (Required)**. Enter the identifying name for this Site. Site Name may be left blank if you wish to supply only a number. You must enter at least a Site name or a Site number, and the combination of the two must be unique in the navigation tree.

  Specifications: The name is limited to 50 alphanumeric characters.

  Best Practice Recommendation: Avoid using single quotes, double quotes, and ampersands. These characters can interfere with query formation.

- **Location Factors (Optional)**. In the "Add Site" popup, you can choose to use the location factors from a selected geographical location; this is described below. If you choose not to do this, each of these factors will be initially set to the default value of 1.00.

  If you want to manually designate Area Cost FactorA multiplier that adjusts national average labor/material/equipment costs to better reflect local costs. For example, in a remote area with high shipping costs and a tight labor market, the Area Cost Factor might be 1.3. The Area Cost Factor is generally a number between 0.8 and 1.2 for continental U.S. locations, but it can be even greater than 2.0 in high-cost geographic locations., seismic zone, and/or HVAC zone, you will need to do that by editing the Site after it has been added.

Copy Factors from a Listed Location (Optional)

In the "Add Site" popup window, you are given the opportunity to copy and auto-apply Site location factors (Area Cost FactorA multiplier that adjusts national average labor/material/equipment costs to better reflect local costs. For example, in a remote area with high shipping costs and a tight labor market, the Area Cost Factor might be 1.3. The Area Cost Factor is generally a number between 0.8 and 1.2 for continental U.S. locations, but it can be even greater than 2.0 in high-cost geographic locations., seismic zone, and HVAC zone) from an existing location. The **BUILDER** database contains this data for most major cities in the United States as well as for Department of Defense installations.

To copy an existing location's factors into your Site, mark the **Use factors from following location** checkbox and select a location from the dropdown lists.

Copying factors from an existing location can also be done later by selecting **Lookup Location** from the Site toolbar.

Note: Until you set location factors either by copying from a location or manually editing them at the Site data page, they will all be set by default to 1.00.

Confirm or Cancel

Once you have entered the initial Site data in the popup,

a. Activate the **Add** button on the popup toolbar to create the Site. Additional Site details can then be added as described in Edit Site Inventory Dataon the next page.
b. Alternatively, to close the window without creating the Site, activate the **Cancel** button.

Next Steps

For information about entering additional information concerning the Site, see Edit Site Inventory Dataon the next page.

Site Tasks

Other tasks that can be performed on Sites are:

Edit Site Inventory Databelow
Generate Site Reportson page 94
Delete a Siteon page 97

For an overview of Sites, see Working with Sites.

Edit Site Inventory Data

This topic describes the information that can be viewed and edited at the Site data screen. The data will be in the content area of the screen.

A type of data unique to Sites is a set of location factors including (1) Area Cost FactorA multiplier that adjusts national average labor/material/equipment costs to better reflect local costs. For example, in a remote area with high shipping costs and a tight labor market, the Area Cost Factor might be 1.3. The Area Cost Factor is generally a number between 0.8 and 1.2 for continental U.S. locations, but it can be even greater than 2.0 in high-cost geographic locations., (2) seismic zone, and (3) HVAC zone. These factors can be assigned manually, or you can take advantage of the option to auto-apply factors from an existing geographic location.

To edit the inventory data for a specific Site, first select the Site in the inventory tree.

Information about the Site will be presented on an ID line and at several tabs. You can use the content area toolbar to perform actions such as saving changes, or adding or editing comments.

If you want to change the lookup location for the Site, that is also done at the content area toolbar at the Site level.

- **Toolbar**
- **ID Line**
- **General Information Tab**
- **Contact Information Tab**
- **Assessment History Tab**
- **Facility Summary Tab**
- **Cost Modifiers Tab**
- **Attachments Tab**
- **Site Attributes Tab**

Toolbar

- **Save**. Saves changes made to the Site data.
- **Comment**. Allows you to add, edit, and view comments about the Site.
- **Reports**. Launches the Report Selection tool, which gives you access to a list of standard reports relevant to Site inventory. See Generate Site Reportson page 94.

- **Lookup Location**. Launches the site selection window, where you can adopt location factors (Area Cost FactorA multiplier that adjusts national average labor/material/equipment costs to better reflect local costs. For example, in a remote area with high shipping costs and a tight labor market, the Area Cost Factor might be 1.3. The Area Cost Factor is generally a number between 0.8 and 1.2 for continental U.S. locations, but it can be even greater than 2.0 in high-cost geographic locations., seismic zone, and HVAC zone) from an existing location. See How to Use the Lookup Location Button to Set Site Location Factors.

ID Line

On the ID line, you can edit the following:

- **Site ID Number**. The ID Number is limited to 12 alphanumeric characters.
- **Site Name**. Site Name is allowed 50 alphanumeric characters.

  Best Practice Recommendation: Avoid using single quotes, double quotes, and ampersands. These characters can interfere with query formation.

General Information Tab

After a Site is selected in inventory tree, the **General Information** tab (abbreviated **General Info.**) is the first information shown, containing the following:

Location Factors

Location factors are introduced at the Site level, and specifying these factors is unique to the Site level in the inventory tree. You can change these location factors manually in the fields listed in the "Location Factors" fieldset (refer to the information in the list below), or by auto-applying information using the **Lookup Location** button on the toolbar (see How to Use the Lookup Location Button to Set Site Location Factors).

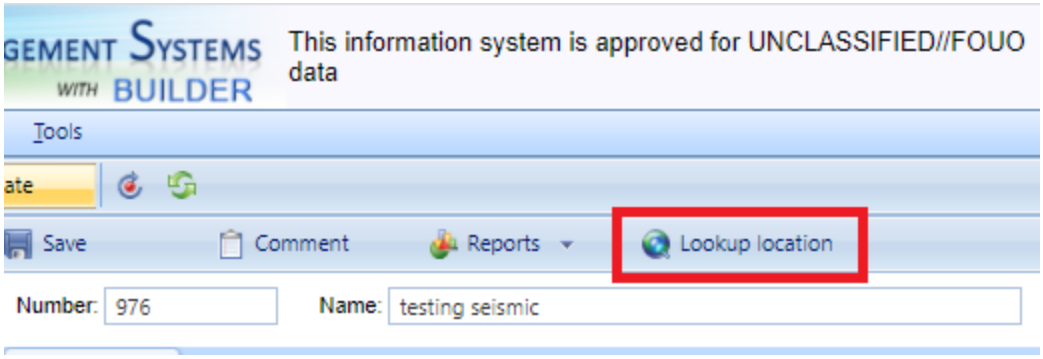
- Area Cost FactorA multiplier that adjusts national average labor/material/equipment costs to better reflect local costs. For example, in a remote area with high shipping costs and a tight labor market, the Area Cost Factor might be 1.3. The Area Cost Factor is generally a number between 0.8 and 1.2 for continental U.S. locations, but it can be even greater than 2.0 in high-cost geographic locations.. The Area Cost FactorA multiplier that adjusts national average labor/material/equipment costs to better reflect local costs. For example, in a remote area with high shipping costs and a tight labor market, the Area Cost Factor might be 1.3. The Area Cost Factor is generally a number between 0.8 and 1.2 for continental U.S. locations, but it can be even greater than 2.0 in high-cost geographic locations. is a multiplier used to adjust national average cost for labor/materials/equipment to local costs. It is generally a number between 0.8 and 1.2 for continental U.S. locations, but it can be even greater than 2.0 in high-cost geographic locations. The Area Cost FactorA multiplier that adjusts national average labor/material/equipment costs to better reflect local costs. For example, in a remote area with high shipping costs and a tight labor market, the Area Cost Factor might be 1.3. The Area Cost Factor is generally a number between 0.8 and 1.2 for continental U.S. locations, but it can be even greater than 2.0 in high-cost geographic locations. is set at the Site level.

- **Seismic Zone**. The seismic zone is an integer from 1 to 7 following the Federal Emergency Management Agency's (FEMAFederal Emergency Management Agency's) U.S. seismic zoning. Determine your Site's seismic zone by consulting the seismic map of the U.S. seismic zones, which can be accessed by activating the **Map** button next to the **Seismic Zone** dropdown selection box. The seismic zone is set at the Site level.
- **HVAC Zone**. The HVAC zone is an integer from 1 to 11. You can set your Site's HVAC zone by activating the **Lookup Location** button on the toolbar, then selecting "State" and "Location" from the dropdown lists in the popup window, and finally activating the **Select** button on the toolbar in the popup. Alternatively, you can determine your Site's HVAC zone by consulting the map of the U.S. HVAC zones, which can be accessed by activating the **Map** button next to the HVAC Zone text box. The HVAC zone is set at the Site level.

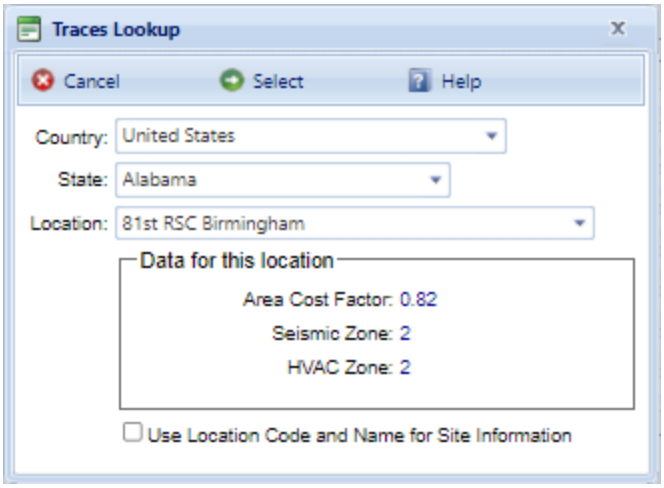
How to Use the Lookup Location Button to Set Site Location Factors

Site location factors can be set or changed after you add the Site to the inventory tree. To manually set values for the location factors, see Location Factors. Or, to take advantage of data stored in **BUILDER** for many locations worldwide, follow these instructions:

- In the content area toolbar, activate the **Lookup Location** button.



A popup will appear:



- In the popup, select a country.
- If the Site is in the United States, select the state; otherwise, skip this step.
- Select the location within the country or state where your Site is. The location list includes *Department of Defense installations and* most major cities in the United States.
- If the location of your particular Site is not listed, you can select a location close to your Site.
- Activate the **Select** (Proceed) button to automatically fill in the Location Factors data fields at your Site's **General Information** tab.

  Note: If instead you activate the **Cancel** button, you will return to the Site content screen without making changes.

If you mark the **Use Location Code and Name for Site Information** checkbox, the location from the lookup list will be used as the name of your Site. If you leave that checkbox unmarked, your designated Site Number and Site Name will be preserved.

CAUTION: Once you activate the **Use Location Code and Name for Site Information** checkbox , this will overwrite your Site information with that of the location you are copying factors from. If you mark the **Use Location Code and Name for Site Information** checkbox unintentionally, then you can rename your Site at the ID line in the Site content pane.

Index Data

Note: The information at this fieldset is read-only.

- Site Condition Index (Site CISite Condition Index - a condition rating for the target Site. The Site CI is computed by taking the average of the BCIs of each Building at the Site, weighted by replacement cost.). The Site CISite Condition Index - a condition rating for the target Site. The Site CI is computed by taking the average of the BCIs of each Building at the Site, weighted by replacement cost. displays the average **CI**[1]Condition Index of the Buildings in the Site, weighted by replacement cost. This metric

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[1]Condition Index

provides an overall sense of the condition of the Site as a whole.

- Site Functionality Index (Site **FI**[1]Functionality Index). The Site **FI**[2]Functionality Index displays the average **FI**[3]Functionality Index of the Buildings in the Site, weighted by replacement cost. This metric provides an overall sense of the functionality of the Site as a whole.
- Site Performance Index (Site **PI**[4]Performance Index. See also: BPI. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight.). The Site **PI**[5]Performance Index. See also: BPI. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. displays the average **PI**[6]Performance Index. See also: BPI. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. of the Buildings in the Site, weighted by replacement cost. This metric provides an overall sense of the performance of the Site as a whole.
- Site Facility Condition Index (Site **FCI**[7]). The Site **FCI**[8] metric provides an overall sense of deferred repair work at the Site level. It differs from the Site CISite Condition Index - a condition rating for the target Site. The Site CI is computed by taking the average of the BCIs of each Building at the Site, weighted by replacement cost. in that it is a monetary based metric. The formula is: **FCI**[9] = (1- $current repair needs/$**PRV**[10]Plant Replacement Value. For an inventory item above the Building level, this number will be the aggregate of the PRV of all Buildings included in that item.) x 100, where the

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[1]Functionality Index.

[2]Functionality Index.

[3]Functionality Index.

[4]Performance Index. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. If no functional assessment has been performed, the FI is assigned a value of 100.

[5]Performance Index. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. If no functional assessment has been performed, the FI is assigned a value of 100.

[6]Performance Index. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. If no functional assessment has been performed, the FI is assigned a value of 100.

[7]Facility Condition Index.

[8]Facility Condition Index.

[9]Facility Condition Index.

[10]Plant Replacement Value. This number will be the aggregate of the PRV of all inventory items contained within the current inventory item.

dollar amount of repair needs is obtained from **BUILDER** work items. More information about the **FCI**[1] is available at Facility Condition Index, or via the Glossary.

Calculated Data

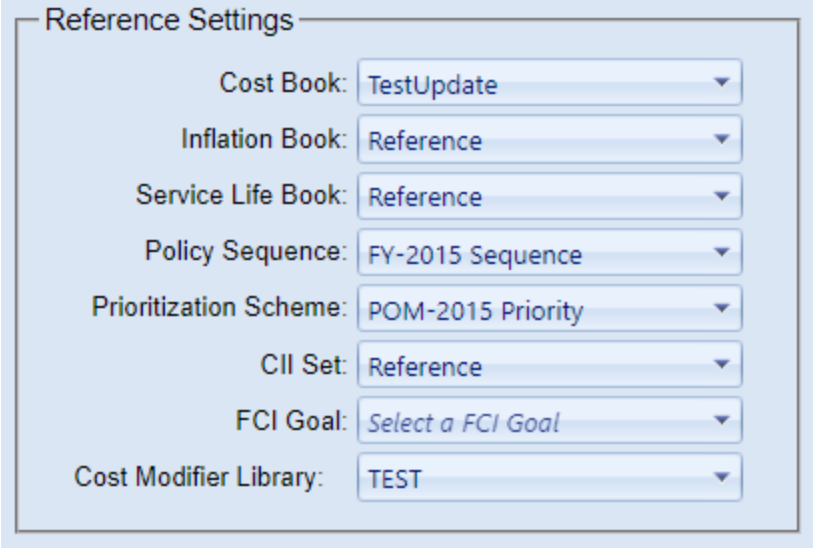
Note: The information at this fieldset is read-only.

- **Number of Facilities**. Displays the number of Buildings included in the Site inventory.
- **PRV**[2]Plant Replacement Value. For an inventory item above the Building level, this number will be the aggregate of the PRV of all Buildings included in that item.. Displays the aggregate Plant Replacement Value of the Buildings at the Site, computed by adding the individual Building replacement costs.

Reference Settings

FCI[3] goals (also called **FCI**[4] targets) are a recent addition to the reference settings. Their role is explained at the documentation for the **General Info.** tab at the Building-level inventory screen, under the heading "Applied **FCI**[5] Goal."

An **FCI**[6] goal can be set in the reference settings, where Site-level settings will override Organization-level settings if both are set. This setting can furthermore be overridden manually at the Building-level inventory screen.



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[1]Facility Condition Index.

[2]Plant Replacement Value. This number will be the aggregate of the PRV of all inventory items contained within the current inventory item.

[3]Facility Condition Index.

[4]Facility Condition Index.

[5]Facility Condition Index.

[6]Facility Condition Index.

Each reference setting provides a dropdown list of options to select from.

- **Cost Book**. From the dropdown list, select the cost book to be used for the entire inventory of the Site. The cost book selected will provide inventory replacement and defect repair costs for inventory.
- **Inflation Book**. From the dropdown list, select the inflation book to be used for the entire inventory of the Site. The inflation book selected provides inflation multipliers per year for the projected replacement costs and defect repair costs for the inventory.
- **Service Life Book.** From the dropdown list, select the service life book to be used for the entire inventory of the Site. The service life book selected will estimate the remaining service life of Component-Sections in the inventory on the basis of its life expectancy and condition. Also, the service life is used in estimating a rate of deterioration in the condition index of a Component-Section when no more than one inspection has been recorded.
- **Policy Sequence**. From the dropdown list, select the policy sequence to be used for the entire inventory of the Site. The policy sequence selected will establish the order of precedence for applying policies so that only one standard is chosen for the inventory in the Building.
- **Prioritization Scheme**. From the dropdown list, select the prioritization scheme to be used for the entire inventory of the Site. The prioritization scheme selected will prioritize and rank your work plan in a quick, objective, repeatable, and representative method with the touch of a button.
- CII**Component Importance Index.** This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. Set. Select either the Reference (default) CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. set, or a custom CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. set if available.
- **FCI**[1] Goal. Select an **FCI**[2] goal from the dropdown list.
- **Cost Modifier Library**. Select the cost modifier library you wish to use for the entire inventory of the Site. The active library selected determines the cost modifiers available for assignment at the Complex, Building, System, Component, or Section levels within the Site.

CAUTION: Reference data can be set at the Organization level and at the Site level. If this data is set at both levels, the reference settings at the Site level will override the reference settings at the Organization level.

Contact Information Tab

Point of contact (POC) information for the Site may be viewed and edited by selecting the Contact Information (**Contact Info.**) tab. The available fields are as follows:

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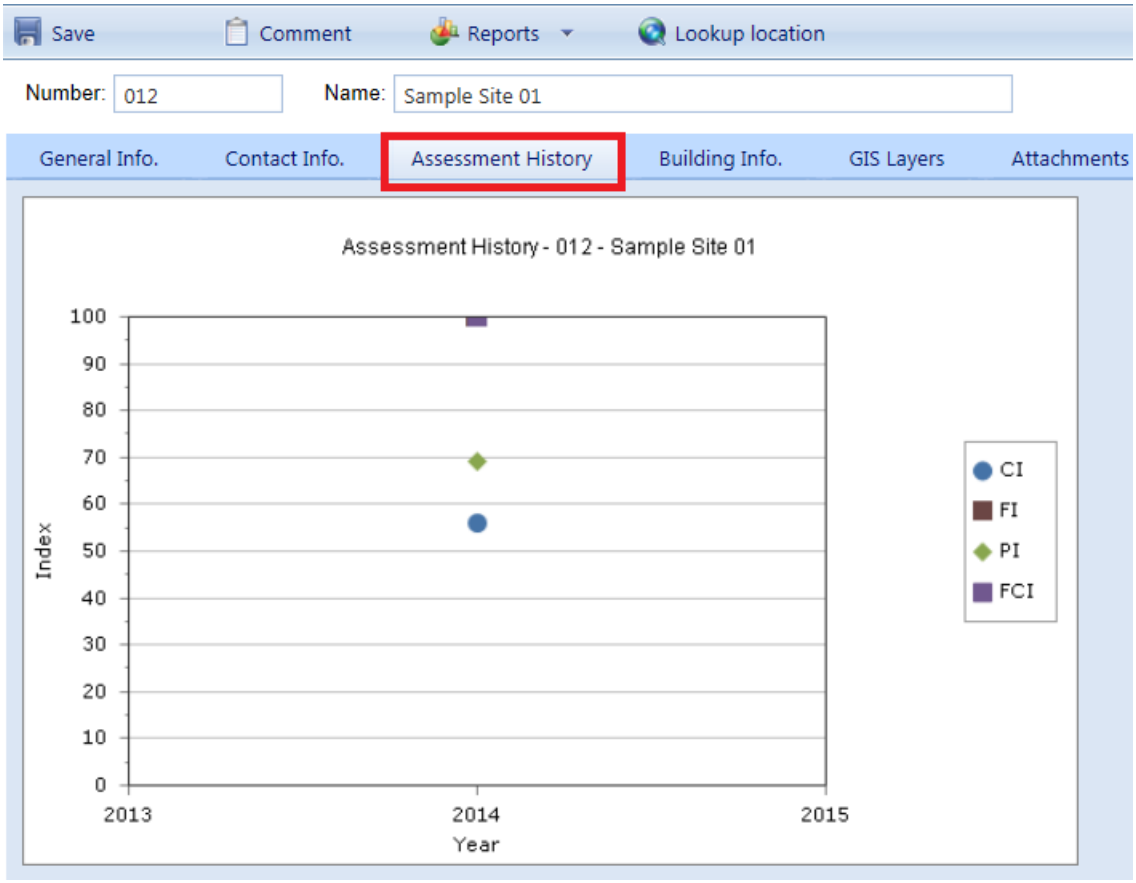
[1]Facility Condition Index.

[2]Facility Condition Index.

- **Name.** Enter the name of the Site point of contact. Limit: 30 alphanumeric characters.
- **Address**. Enter the official street address of the Site. Limit: 30 alphanumeric characters.
- **City**. Enter the city where the Site is located. Limit: 15 alphanumeric characters.
- **State**. Enter the state where the Site is located. Limit: 2 alphanumeric characters.
- **Zip Code**. Enter the zip code of the Site. Limit: 10 alphanumeric characters.
- **Phone Number**. Enter the phone number of the Site POC. Limit: 20 alphanumeric characters.
- **FAX Number**. Enter the FAX number of the Site POC. Limit: 20 alphanumeric characters.
- **Email Address**. Enter the email address of the Site POC. Limit: 75 alphanumeric characters.
- **WWW**. Enter the URL (Web address) for this Site. Limit: 75 alphanumeric characters.

Assessment History Tab

Note: The information at this tab is read-only.



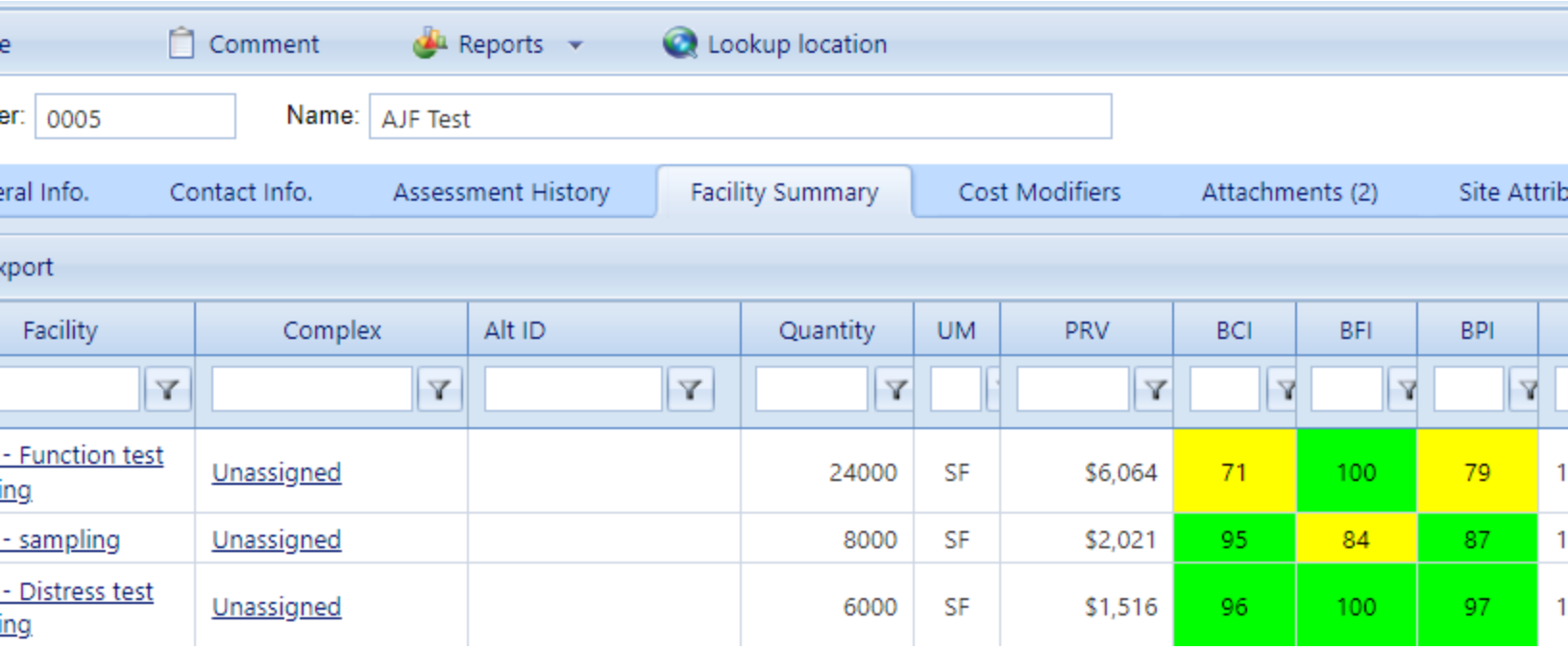
The Assessment History tab provides a graph of the condition, functionality, and performance history of the Site, displaying the Site CISite Condition Index - a condition rating for the target Site. The Site CI is computed by taking the average of the BCIs of each Building at the Site, weighted by replacement cost., Site **FI**[1]Func-

[1]Functionality Index.

tionality Index Site **PI**[1]Performance Index. See also: BPI. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight., and Site **FCI**[2] over time.

Facility Summary Tab

Basic information regarding Buildings at the Site is available under the **Facility Summary** tab. All of the data shown at this tab is read-only; however, which information is displayed can be influenced using the search filters provided. Each column shown at the **Facility Summary** tab is described below.



- **Facility**. Displays the Building number and name of each Building at the Site.
- **Complex**. Displays the Complex that the Building is part of, if applicable.
- **Alt ID**. Displays alternate ID such as RPUID for the Building, if applicable.
- **Quantity.** The primary measure of the size of the facility. For Buildings this will usually be square feet, if the unit of measure (UMUnit of Measure. Examples: Each; LF (linear feet)) selected at User Preferences is "English."
- **Unit of Measure** (UMUnit of Measure. Examples: Each; LF (linear feet)). Displays the unit of measure in use.

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[1]Performance Index. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. If no functional assessment has been performed, the FI is assigned a value of 100.
[2]Facility Condition Index.

- **Plant Replacement Value** (**PRV**[1]Plant Replacement Value. For an inventory item above the Building level, this number will be the aggregate of the PRV of all Buildings included in that item.). Displays the aggregate Plant Replacement Value of the Buildings at the Site.
- **Building Condition Index** (BCIBuilding Condition Index - a condition rating for the overall Building. For each Building, the BCI is computed by taking the average of its Systems' CIs (SCIs), weighted by replacement cost.). Displays the current **CI**[2]Condition Index of each Building at the Site.
- **Building Functionality Index** (BFIBuilding Functionality Index - computed from the results of a functionality assessment.). Displays the current **FI**[3]**Functionality Index** of each Building at the Site.
- **Building Performance Index** (BPIBuilding Performance Index - a measure of a Building's overall performance, derived from a weighted combination of the BCI and BFI, where the lower of the two values is given two-thirds of the weight and the higher of the two values is given one-third of the weight. If no functional assessment has been performed, the BFI is assigned a value of 100.). Displays the current **PI**[4]Performance Index. See also: BPI. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. of each Building at the Site.
- **Facility Condition Index** (**FCI**[5]). Displays the current **FCI**[6] of each Building at the Site.

Additionally, the Site CISite Condition Index - a condition rating for the target Site. The Site CI is computed by taking the average of the BCIs of each Building at the Site, weighted by replacement cost., Site **FI**[7]Functionality Index, Site **PI**[8]Performance Index. See also: BPI. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. and Site **FCI**[9] are shown at the top of the tab, which are the average of each index of the Buildings at the Site, weighted by replacement cost.

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[1]Plant Replacement Value. This number will be the aggregate of the PRV of all inventory items contained within the current inventory item.

[2]Condition Index

[3]Functionality Index.

[4]Performance Index. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. If no functional assessment has been performed, the FI is assigned a value of 100.

[5]Facility Condition Index.

[6]Facility Condition Index.

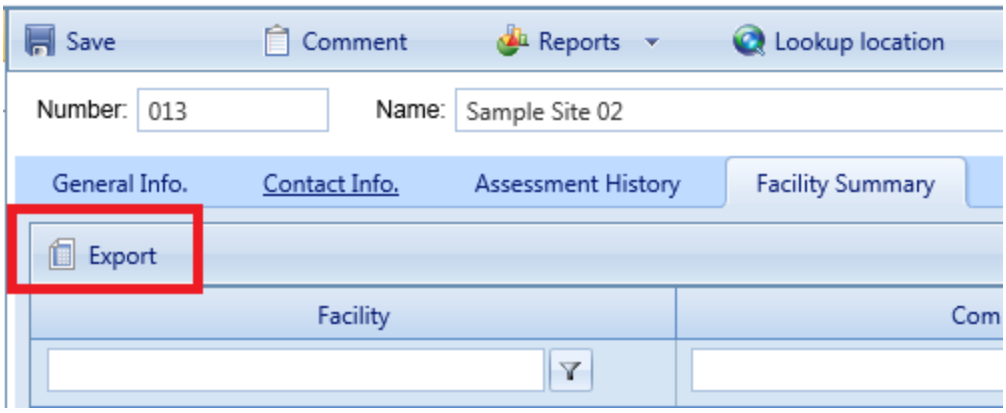
[7]Functionality Index.

[8]Performance Index. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. If no functional assessment has been performed, the FI is assigned a value of 100.

[9]Facility Condition Index.

Export Information from the Facility Summary Tab

All the information at the **Facility Summary** tab can be exported to a Microsoft Excel spreadsheet by activating the **Export** button, located below "Number" on the ID line.



Cost Modifiers Tab

The **Cost Modifiers** tab displays a table showing assigned cost modifiers, and allows you to view and assign cost multipliers or adders.

Note: Existing cost modifiers that affect the Site level may have been assigned at different inventory levels, but from a Site data page you can only assign a Site-level cost modifier.

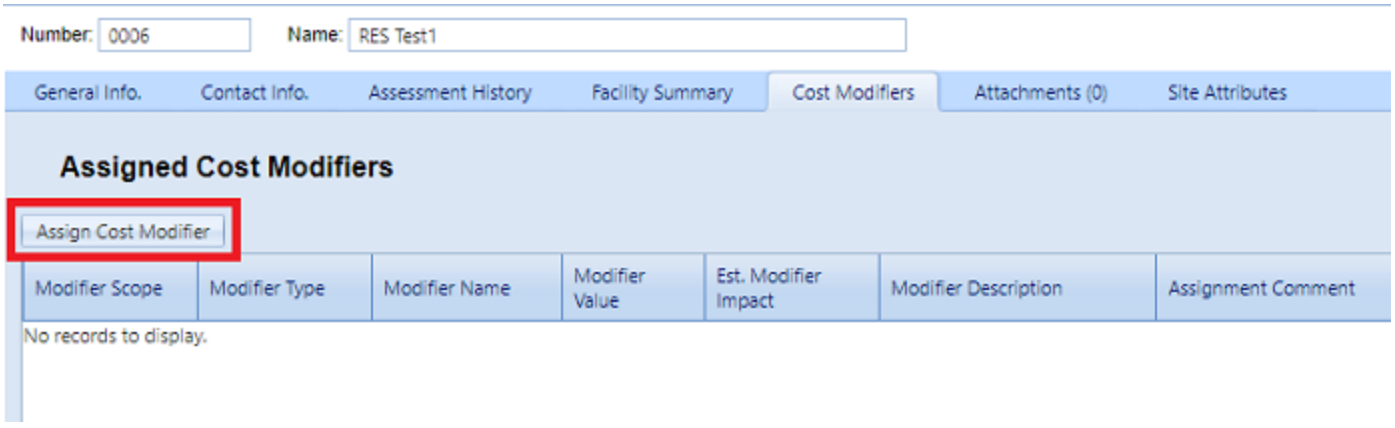
Modifier Scope

At the Site level, the Assigned Cost Modifiers table will show you all modifiers assigned to that Site.

Assign a Modifier

To assign a modifier to your Site from available options,

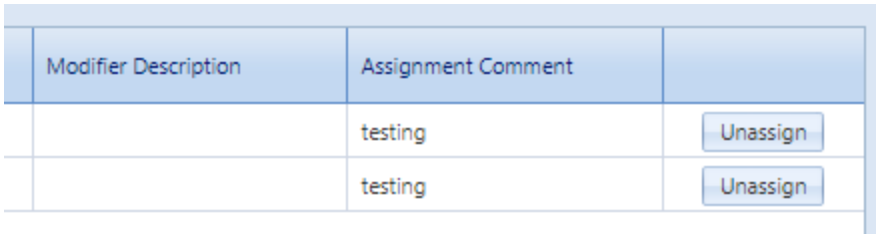
- Activate the **Assign Cost Modifier** button.



- In the "New Site Modifier Assignment" popup, select a cost modifier from the dropdown list.
- Add a comment if desired.
- Activate **Add** on the popup toolbar. *You should see your selected modifier added to the table of cost modifiers.*

Unassign a Modifier

To unassign a modifier, first navigate to where the modifier was assigned, then activate the **Unassign** button in the rightmost column of the Assigned Cost Modifiers table.



A Site-level cost modifier can be unassigned only at the Site level, a Building-level cost modifier can be unassigned only at the Building level, etc.

More about Cost Modifiers

For more about cost modifiers, see the **Cost Modifiers** chapter in the **BUILDER Reference Data Guide**.

Attachments Tab

At the **Attachments** tab, you have the option to view or change the asset's attachments.

View Attachment(s)

The **Attachments** tab will show whether any files have been attached to the asset's record. The number in parentheses after the word "Attachments" shows how many of them have been attached.

To view one or more attachments,

- Activate the **Attachments** tab. *If attachments are present, a table will display their type, title, and description*.
- Activate the link in the **Title** column. *The attachment will appear in the "Image Viewer" popup window.*
- When finished viewing, activate the **Close** button on the popup window toolbar. and you will be returned to the table of attachments.
- Repeat the two steps immediately above for additional attachments as desired.

Add an Attachment

At the **Attachments** tab on the asset's data page, you have the option to attach files (images and other documents) to the asset's record. An attached file might be a photograph, an electronic image of written notes or diagrams made during inventory, or a file generated on a computer.

Acceptable Attachment Formats

The attachment may be in any of the following formats:

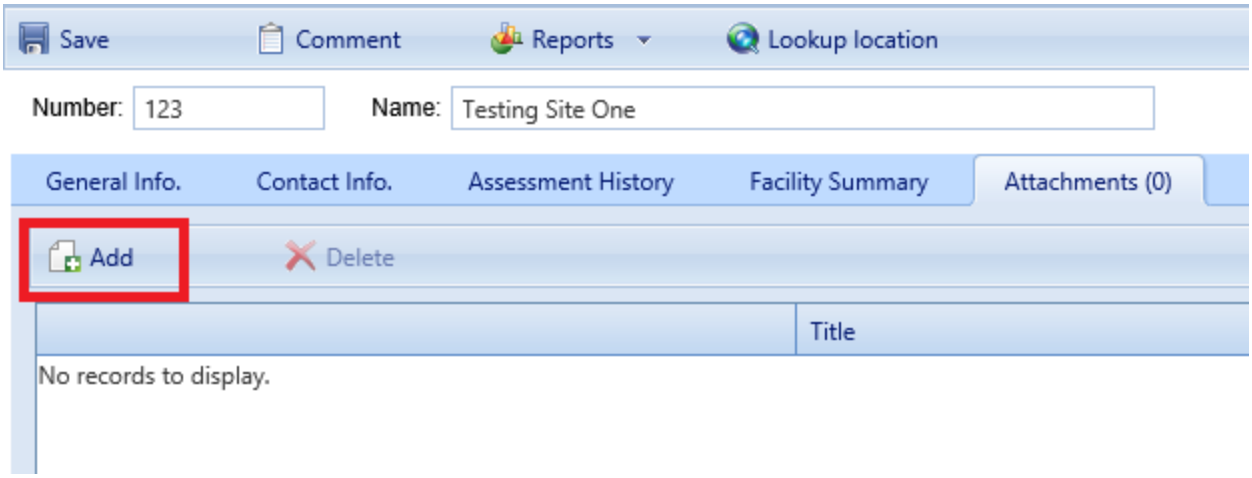
- .jpg
- .jpeg
- .png
- .zip
- .doc
- .pdf

Note: As of January 31, 2022, .doc format is allowed, but not .docx.

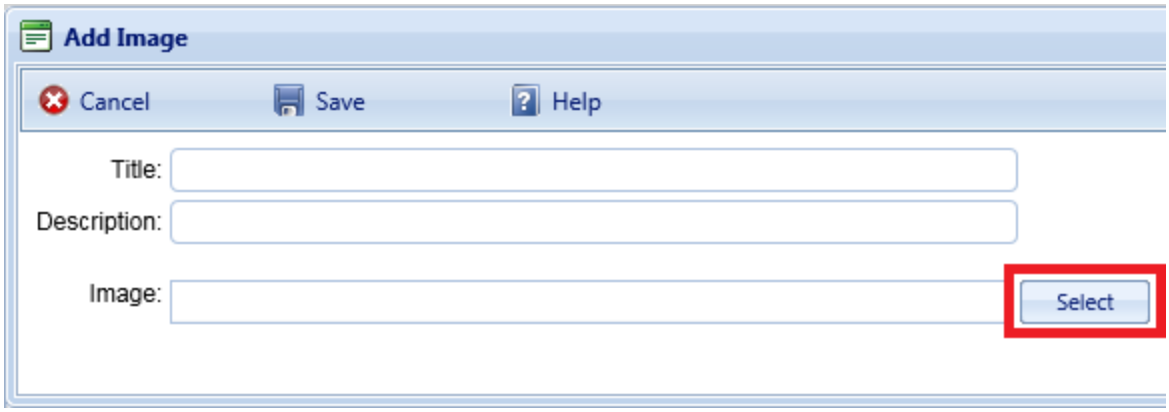
Attach

To attach a file,

- At the **Attachments** tab, activate the **Add** button in the toolbar below the row of tabs.



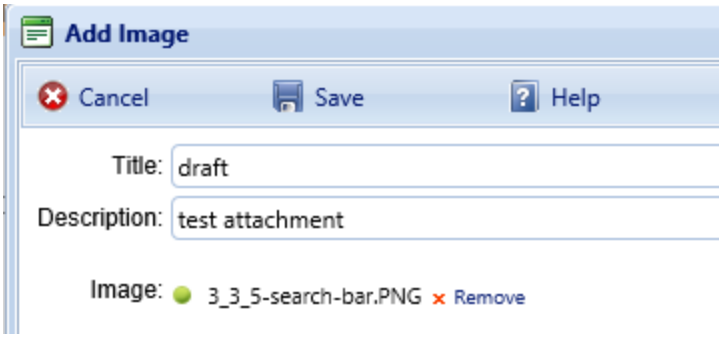
This will open the "Add Image" popup window:



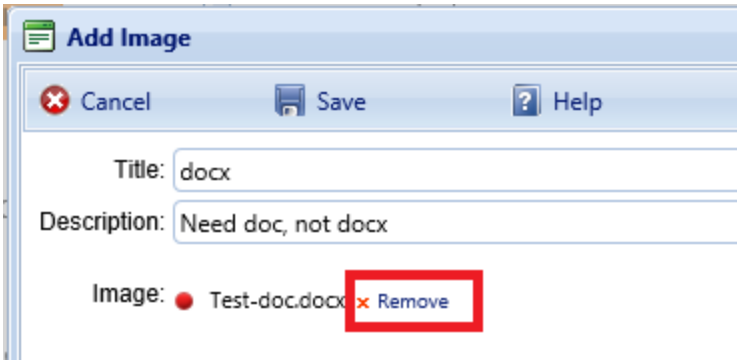
- Enter Title and Description information for the attachment.
- Activate the **Select** button to the right of the "Image" field.
- Browse to the desired image or other file and select it for attachment. If a red dot appears next to your file name in the "Add Image" popup, see Attachment Troubleshooting*, below*.
- If you are adding an attachment at the Building level, use the **Image Type** radio buttons to indicate whether the attachment is a Key Plan, a Section Plan, or "Other."
- Once the required attachment data is entered, activate the **Save** button on the popup toolbar. Alternatively, to close the popup window without attaching the selected file or image, activate the **Cancel** button.

Attachment Troubleshooting

If the selected attachment is in an acceptable format, the "Image" field will show a green dot (plus a label that gives you the option to remove the attachment).



However, if it is not in an acceptable format, the "Image" field will show a red dot. Activate "Remove" and select an attachment file in one of the formats listed at Acceptable Attachment Formats.



Edit Attachment Metadata

You can edit the title and/or description of an attachment as follows:

- Navigate to the **Attachments** tab to view the attachments table.
- Activate a link in the **Title** column. The attachment will appear in the "Image Viewer" popup window.

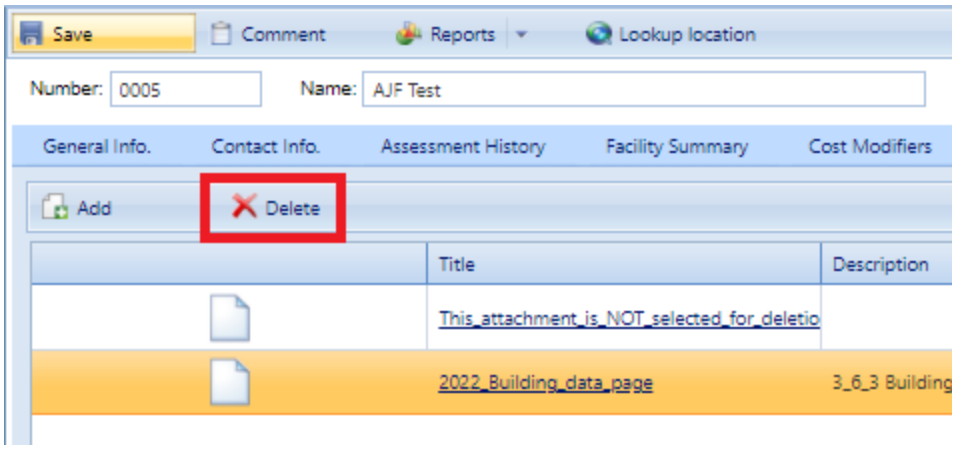
- In the header section above the attachment, make the desired changes in the **Title** and/or **Description** field(s).
- Activate **Save** on the popup toolbar to store your changes and return to the table of attachments.
- Alternatively, if you want to cancel the change, activate **Close** on the popup toolbar. *You will be returned to the table of attachments*.

If you wish to change the contents of the attachment, you will need to delete the existing attachment file and add a new one.

Delete an Attachment

To delete an attachment,

- Navigate to the **Attachments** tab to view the attachments table.
- Select the attachment you wish to delete (do *not* activate the link in the **Title** column). *When properly selected, that record in the table will change background color as illustrated below, and only then will the* ❌ *Delete icon be selectable:*



- Activate the **Delete** button above the table.
- Activate **Yes** in the confirmation box to delete the attachment, or No to cancel.

Site Attributes Tab

This tab concerns custom attributes that have been or can be created for the Site.

Custom asset attributes can be added at each inventory level–from Organization down through Section–in two different ways: by using "active attributes" or by using "Admin managed attributes."

"Unassigned" **Admin managed attributes** are a collection of pre-named attributes that have been determined by the **BUILDER** instance's owner (for example, a corporation, or the Air Force, or the Army). They are templated or common attributes that are seen as likely to be used often. Although these attributes are made available from the outset after installing **BUILDER**, they still need to be assigned before they can be used to help describe an asset.

Additional Admin managed attributes can be created, but only by a **BUILDER** AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. or a user with Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. Role.

Active attributes are very flexible and can be created and assigned by any user with inventory privileges.

CAUTION: Unless a standardized procedure for assigning active attributes is implemented and enforced, the flexibility of active attributes can make incorporating them into reports more difficult and time consuming, because multiple people can create them and there is no built-in consistency.

With respect to creating reports, Admin managed attributes will be easier to report on in a consistent fashion, because they are managed by a **BUILDER** AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. (or a user with Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. Role). Also, Admin managed attributes are available to all assets that are at the same inventory level. Active attributes, on the other hand, would be prone to being named inconsistently and make reporting more difficult.

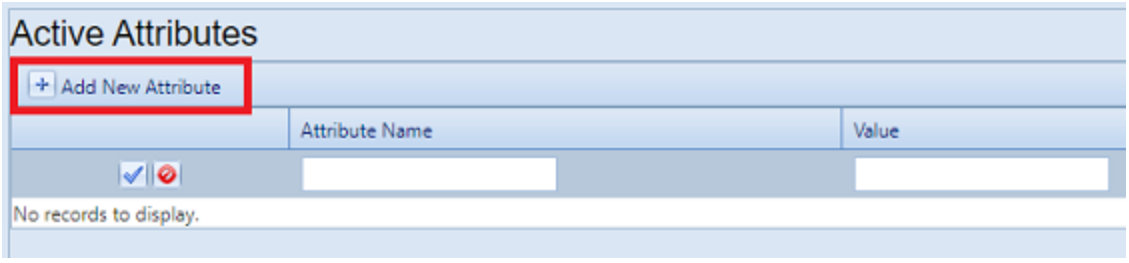
Active Attributes

Under **Active Attributes** at the top half of the Attributes screen, you can add, edit, or delete custom attributes for this level of inventory.

Add an Active Attribute

To add a custom inventory attribute,

- Directly under the **Active Attributes** header, activate **Add New Attribute**. This will generate a new row in the **Active Attributes** table.



- Enter a name and value for your attribute into the table.
- If you want to apply an architect name, press the **Enter** key on your keyboard at this point . The popup "Add Architect" will appear. Enter the name of the architect, then select **OK**.
- When finished with the entry, *activate the blue checkmark icon at the left side of the row* to save the entry. Alternatively, to cancel and delete the entry before saving, activate the red circle with a slash icon

(located to the right of the blue checkmark).

CAUTION: Your new attribute will not be saved if you (a) exit without activating the blue checkmark or (b) initiate adding a new custom inventory attribute (by activating the **Add New Attribute** button) before saving with the blue checkmark.

- Repeat the steps listed above for each custom inventory attribute you wish to add.

Edit an Active Attribute

To edit an attribute,

- Activate the pencil icon in the attribute's table row.
- Make the desired changes.
- Finally, activate the blue checkmark icon at the left to save the changes.

Delete an Active Attribute

To delete an attribute,

- In the table of active attributes, locate the row containing the attribute you wish to delete.
- To the right of the **Value** field, activate the Delete icon (red "X"). *A confirmation popup will appear, asking "Delete record?"*
- Select **OK** to delete, or **Cancel** to stop the process.

Admin Managed Attributes

Under **Unassigned Admin Managed Attributes** at the bottom left of the Attributes screen, you can choose to assign an existing Admin managed attribute to the asset whose data screen you have open. You can also change the value of an attribute after it has been assigned.

Note: Attributes that are in the table under the header **Admin Managed Attributes** are already assigned to the asset whose data screen you are in.

Only a **BUILDER** AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. or a user with the Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. Role can create, edit (other than changing the value), or delete/unassign custom Admin managed attributes for the selected asset. Also, once an Admin managed attribute has been moved from the **Unassigned Admin Managed Attributes** column into **Admin Managed Attributes**, this action cannot be reversed except by a **BUILDER** AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. or a user with Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. Role. More detail about AdministratorA user with BUILDER or ROOFER

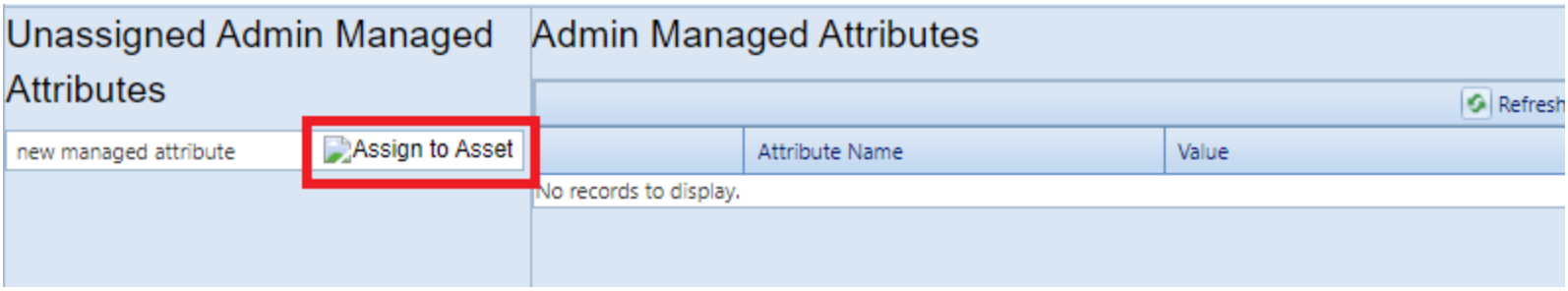
Administrator Role can administer users, assign users to Roles, and change software configuration settings.-specific inventory attribute tasks can be found at Manage Custom Inventory Attributes.

Assign an Unassigned Attribute to Admin Management

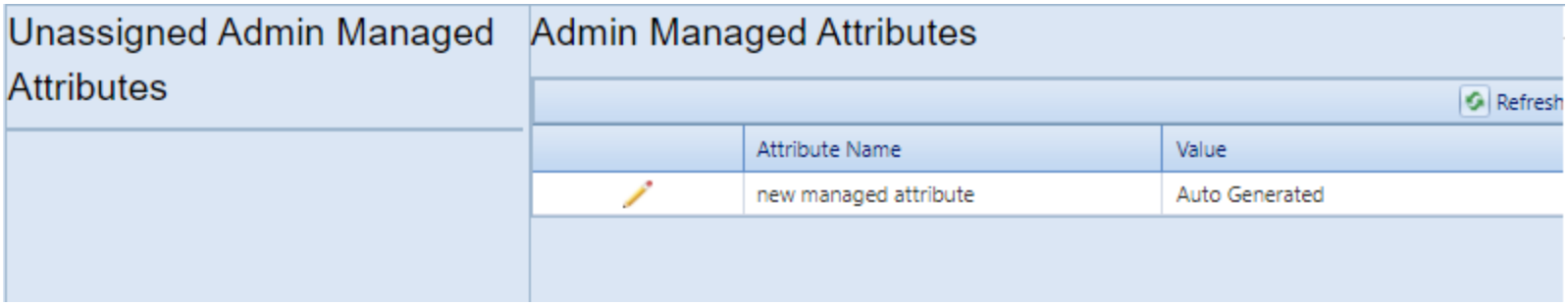
You may see one or more items listed under the header **Unassigned Admin Managed Attributes** at the lower left of the Attributes screen. These are attributes that are available at this inventory level but that have not been assigned to the selected asset. If no items are listed under the header **Unassigned Admin Managed Attributes**, there are none available to be assigned. (They may have already been assigned and thus transferred to the **Admin Managed Attributes** table.)

To assign an unassigned asset to Admin management,

In the **Unassigned Admin Managed Attributes** column, activate **Assign to Asset**.



*This will immediately populate the inventory item in that row under **Admin Managed Attributes** instead.*

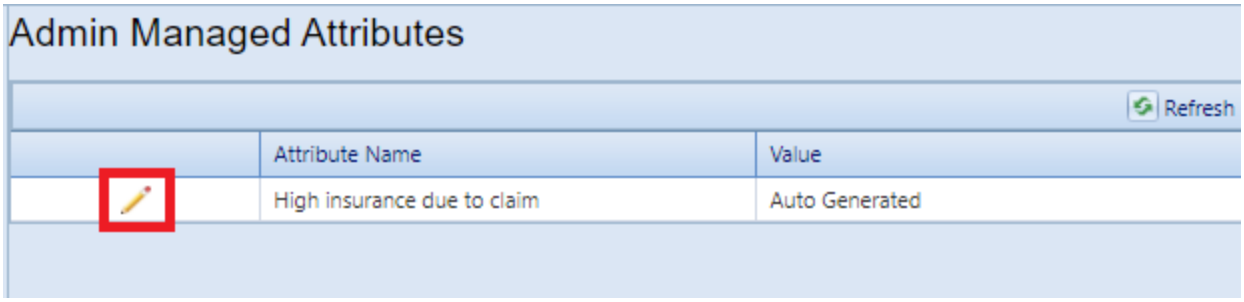


Note: The assignment action is not reversible, except by a **BUILDER** AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. or a user with the Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. Role.

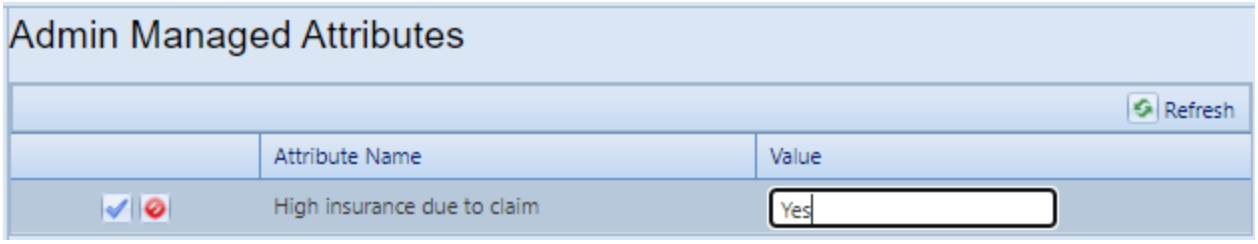
Change the Value of an Admin Managed Attribute

To change the value of an asset under Admin management,

- Under **Admin Managed Attributes**, activate the pencil icon in the attribute's table row, and wait for the row to change appearance.



- Make the desired change in the **Value** column.



- Finally, activate the blue checkmark icon at the left to save the changes (or the red Cancel icon to cancel the change).

Site Tasks

Other tasks that can be performed on Sites are:

Add a Site
Generate Site Reports
Delete a Site

For an overview of Sites, see Working with Sites.

Generate Site Reports

This topic shows how to locate, select, and generate Site-level reports.

There are two locations where you can generate reports:

a. At the main menu bar. The selection of reports listed here is divided into categories: Inventory, Condition Assessment, Functionality Assessment, and Work Planning.
b. At the content area toolbar.

The first section below provides instructions for generating Site-level reports from the Site's content area toolbar. Reports generated here will be restricted in scope to the selected Site.

The next section after that one provides instructions for generating a report starting at the main menu.

Generate Report at Building Data Screen

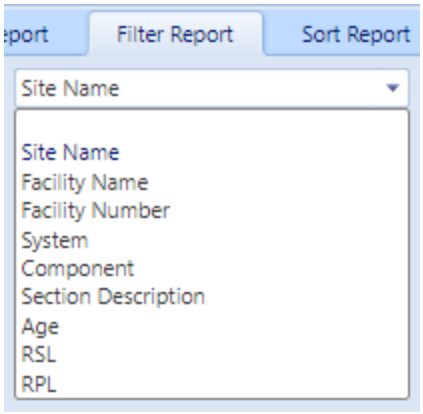
Scope of Report

When you generate a report while you are at the Site level of the inventory tree, the report will contain only data that applies to Buildings in the currently selected Site.

How to Generate

To generate a report from a Site's inventory data screen,

- Activate the **Reports** button on the content area toolbar. (The content area toolbar is directly above the ID line.) *The "Reports" popup will open.*
- From the dropdown, select **Standard** reports.
- At the **Select a Report** field, activate the dropdown arrow. *A multi-page list of reports will be made available*.
- In the list, select a report. For example, select "Remaining Service Life (**RSL**[1]Remaining Service Life) Detail". (To find the **RSL**[2]Remaining Service Life report, you will probably need to scroll down the list.)
- Optionally, you can then select one or more filters at locations and inventory levels where the **Filter Report** option is active. For example, using the Age filter, you can have the **RSL**[3]Remaining Service Life report show only items that are 10 years old or more. This is the list of filters available for the **RSL**[4]Remaining Service Life report:



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[1]Remaining service life.
[2]Remaining service life.
[3]Remaining service life.
[4]Remaining service life.

- After setting any desired filters, and selecting a Sort order if desired, activate **View Report** on the popup's toolbar. *The report will be displayed in a popup titled "Report Viewer."*
- From the "Report Viewer" popup, you can choose to download or print the report.

Generate Report from Main Menu

Scope of Report

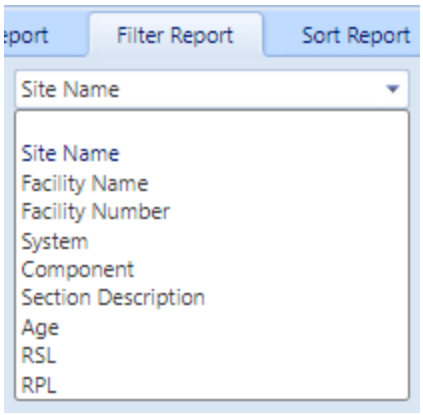
Reports are not made available at the Organization level. By default, unless you have used filters to further restrict what is included in the report, the scope of the report will be the Site, Building, System, Component, or Component-Section where you are located in the Inventory tree when you activate the **Reports** button.

How to Generate

To generate a report from the main menu,

- Activate the **Reports** button at the main menu.
- In the "Reports" popup, open the BUILDER entry by activating the plus button.
- Next, open the desired category: Inventory, Condition Assessment, Functionality Assessment, or Work Planning. For this example, open Inventory.
- In the expanded list of reports, scroll down to the desired report and select it.
- Optionally, you can then select one or more filters at locations and inventory levels where the **Filter Report** option is active. For example, you can select the "Age" filter and direct the **RSL**[1]Remaining Service Life report to show only items that are 10 years old or more.

  For example, this is the list of filters available for the **RSL**[2]Remaining Service Life report at the Site level:



- After setting any desired filters, and selecting a Sort order if desired, activate **View Report** on the

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[1]Remaining service life.

[2]Remaining service life.

popup's toolbar. *The report will be displayed in a popup titled "Report Viewer."*
- From the "Report Viewer" popup, you can choose to download or print the report.

Export Report

To export a report, see instructions at Export a Report.

Site Tasks

Other tasks that can be performed on Sites are:

Add a Site
Edit Site Inventory Data
Delete a Site

For an overview of Sites, see Working with Sites.

Delete a Site

This topic shows how to delete a Site, which also deletes all other records (Buildings, Systems, etc.) contained in the Site.

Permissions Note: This action requires AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. permission. If the inventory item is empty of any contents, then the deletion may also be performed by a Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. with permission for the relevant location in inventory.

To delete a Site, navigate to it in the inventory tree and do one of the following:

a. Right-click the Site. Then select "Delete Site."
b. Alternatively, select the Site, then activate the **Delete Site** icon on the menu toolbar.

WARNING: Deleting a Site deletes all inventory (Complexes, Buildings, Systems, Components, and Sections) in that Site. This is a significant step to take and should only be done when certain that you wish to clear the entire inventory of the selected Site.

Best Practice Recommendation: Making frequent backups of the inventory database will protect you from significant data losses if an unintended deletion is performed.

Site Tasks

Other tasks that can be performed on Sites are:

- Add a Site
- Edit Site Inventory Data
- Generate Site Reports

For an overview of Sites, see Working with Sites.

Complexes

Working with Complexes

A Complex is an optional level in the asset tree, used to group Buildings/facilities together into one management unit. This topic briefly introduces the features of a Complex and how to use it in organizing your real property inventory. It also provides links to the operations that can be performed at the Complex level.

About Grouping Buildings into Complexes

BUILDER allows you to group multiple Buildings at a Site into an optional organizational level between Sites and Buildings, called a Complex. This is especially useful if your inventory has a large number of Buildings at a single location.

The grouping may be based on a similarity between the Buildings, or it may have a different basis such as who manages the group, or who the Buildings are leased from or to.

Each Building may belong to at most one Complex, but it is not required for a Building to be in a Complex at all. Three alternative strategies are possible:

a. You may choose not to use Complexes at all, in which case Buildings will be listed directly under their Site in the inventory tree.
b. You can group all of your Buildings into Complexes.
c. You can create Complexes, but you may also have Buildings at your Site that are not assigned to any Complex. In this case, you may choose either to list unassigned Buildings directly under their Site, or to create a Complex named "Unassigned" which will have all such Buildings listed under it in the inventory tree.

Complex Tasks

Tasks that can be performed on Complexes are:

Add a Complex
Edit Complex Inventory Data
Delete a Complex

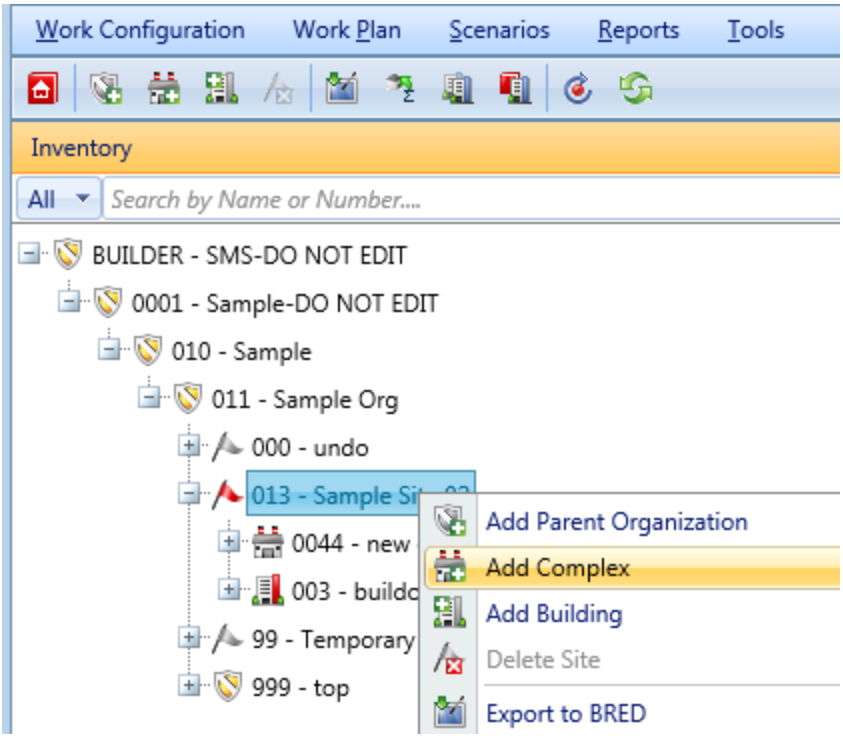
Add a Complex

This topic shows how to add a Complex and describes the required information to be entered. Additional information that can be entered is described in Edit Complex Inventory Data.

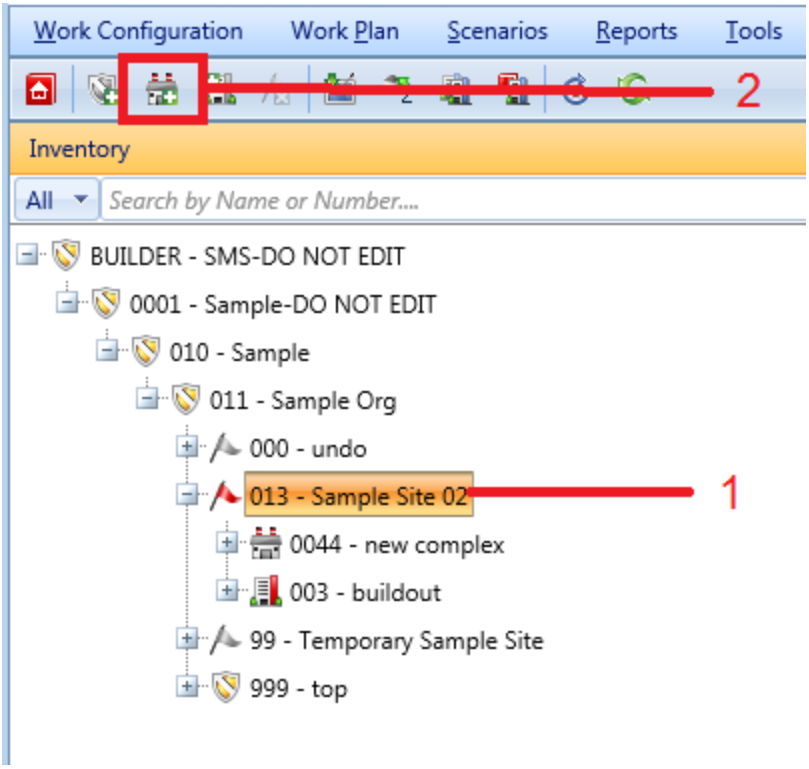
Permissions Note: This action requires Work Planner permission or above for the relevant location in inventory.

To add a new Complex to a Site, navigate to that Site in the inventory tree and do one of the following:

a. Right-click the Site. Then select "Add Complex" from the options.



b. Alternatively, select the Site, then activate the **Add Complex** icon on the main toolbar, as shown below.



The "Add Complex" popup window will appear.

Enter Required Complex Data

This documentation segment describes the minimum data to be entered when creating a new Complex. Other data that can be entered is described in Edit Complex Inventory Data

In the "Add Complex" popup window, enter the following required data:

- **Complex Number**. Enter the identifying number for the Complex. The Complex Number field may be left blank if you wish to supply only a name. You must enter at least a Complex name or a Complex

number, and the combination of the two must be unique within the Site.

Specifications: The Complex The ID Number is limited to 12 alphanumeric characters.

- **Complex Name**. Enter the identifying name for this Complex. The Complex Name field may be left blank if you wish to supply only a number. You must enter at least a Complex name or a Complex number, and the combination of the two must be unique within the Site.

  Specifications: The name is limited to 50 alphanumeric characters.

  Best Practice Recommendation: Avoid using single quotes, double quotes, and ampersands. These characters can interfere with query formation.

Confirm or Cancel

Once the required minimum Complex data is entered,

a. Activate the **Add** button on the popup toolbar to create the Complex. Additional Complex details can then be added as described in Edit Complex Inventory Data.
b. Alternatively, to close the window without creating the Complex, activate the Cancel button.

Assign One or More Buildings to a Complex

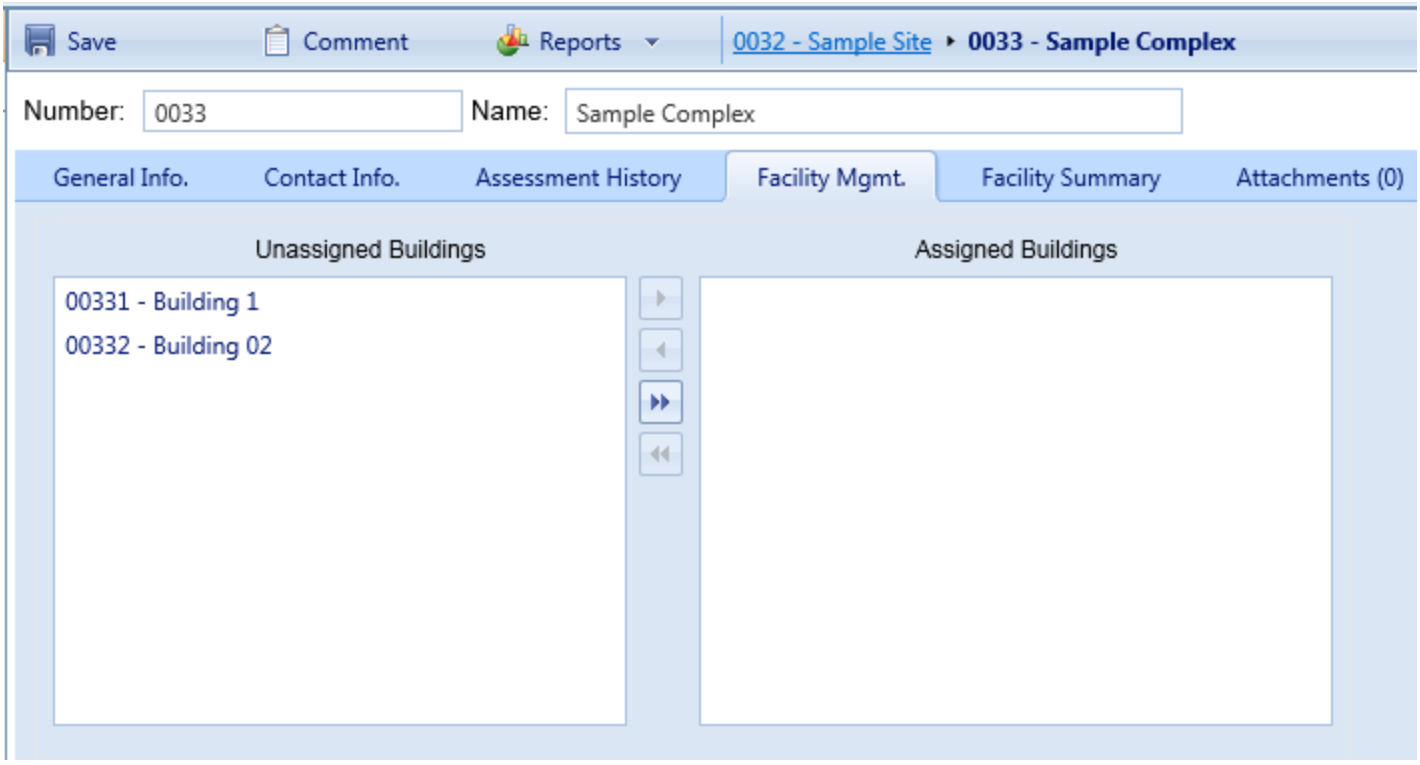
Complexes can be used to group similar Buildings, but assigning a Building to a Complex is optional. The steps below outline how to assign (move) or unassign (remove) a Building to/from a Complex.

To prepare for assigning Buildings to a Complex, first navigate to the Complex in the inventory tree and select it.

In the content area (illustrated below), select the **Facility Mgmt.** tab. This will bring up two columns:

- **Unassigned Buildings** (the column on the left) lists Buildings available to be assigned to a Complex.
- **Assigned Buildings** (the column on the right) lists Buildings already assigned to the selected Complex.

Note: The Buildings and the Complex must be in the same Site.



Move Buildings into a Complex

To move one or more Buildings from the **Unassigned Buildings** column into the Complex, use the arrow keys located between the two columns as described below.

To move all of the Buildings into the Complex,

- Activate the button with double right-pointing arrows.
- Use the **Save** button on the content area toolbar to lock in your change.

To move one Building into the Complex,

- Select the Building in the **Unassigned Buildings** column.
- Activate the single right-pointing arrow.
- Use the **Save** button on the content area toolbar to lock in your change.

To move multiple Buildings into the Complex,

- Select the Buildings in the **Unassigned Buildings** column, using the **Shift** and/or **Ctrl** keys as needed.
- Activate the single right-pointing arrow.

  Note: In the Assigned Buildings column, newly assigned Buildings will show on a green background until you save.

- Use the **Save** button on the content area toolbar to lock in your change.

Remove Buildings from a Complex

To move one or more Buildings from the Complex back into the **Unassigned Buildings** column, use the arrow keys located between the two columns as described below.

To move all of the Buildings,

- Activate the button with double left-pointing arrows.
- Use the **Save** button on the content area toolbar to lock in your change.

To move one Building,

- Select the Building in the **Assigned Buildings** column.
- Activate the single left-pointing arrow.
- Use the **Save** button on the content area toolbar to lock in your change.

To move multiple Buildings,

- Select the Buildings in the **Assigned Buildings** column, using the **Shift** and **Ctrl** keys as needed.
- Activate the single left-pointing arrow.
- Use the **Save** button on the content area toolbar to lock in your change.

Move Buildings from one Complex to Another

To move a Building from one Complex to a different one, you must first navigate to the Complex it is assigned to and unassign it (see **Remove Buildings from a Complex**, immediately above). Then navigate to the destination Complex and follow the instructions in **Move Buildings into a Complex**, above).

Complex Tasks

Other tasks that can be performed on Complexes are:

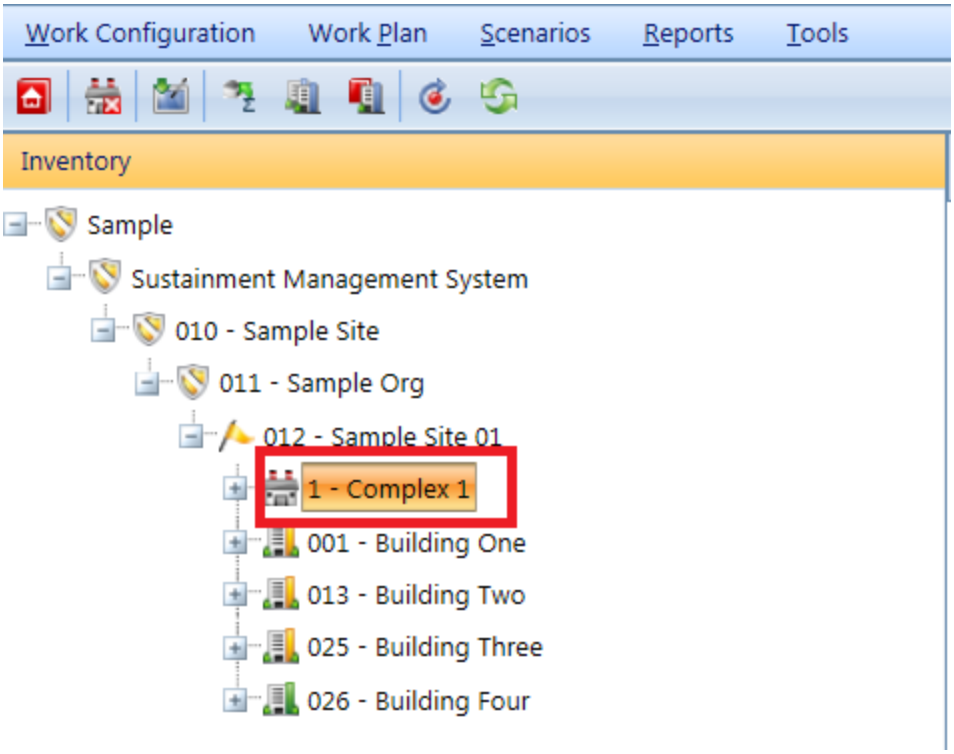
Assign Buildings to a Complex
Edit Complex Inventory Data
Generate Complex Reports
Delete a Complex

For an overview of Complexes, see Working with Complexes.

Edit Complex Inventory Data

This topic describes the information that can be viewed and edited at the Complex data screen.

To edit the inventory data for a specific Complex, first select the Complex in the inventory tree.



The following sections describe information that can be obtained and actions that can be performed on the Complex.

Information about the Site will be presented on an ID line and at several tabs. You can use the content area toolbar to perform actions such as saving changes, or adding or editing comments.

- **Toolbar**
- **ID Line**
- **General Information Tab**
- **Contact Information Tab**
- **Assessment History Tab**
- **Facility Management Tab**
- **Facility Summary Tab**
- **Cost Modifiers Tab**
- **Attachments Tab**
- **Complex Attributes Tab**

Toolbar

The following options are available at the content area toolbar:

- **Save**. Saves changes made to the Complex data.
- **Comment**. Allows you to add, edit, and view comments about the Complex.
- **Reports**. Launches the Report Selection tool, which gives you access to a list of standard reports relevant to Complex inventory. See Generate Complex Reports.

ID Line

On the ID line, you can edit the following:

- **Complex ID Number**. The ID Number is limited to 12 alphanumeric characters.
- **Complex Name**. Complex Name is allowed 50 alphanumeric characters. **Best Practice Recommendation:** Avoid using single quotes, double quotes, and ampersands. These characters can interfere with query formation.

General Information Tab

Initially, after a Complex is selected in the inventory tree, the **General Information** tab (abbreviated **General Info.**) is shown with the following information:

- **Index Data (Read-Only)**.
  - **Complex Condition Index** (Complex CI). The Complex CI displays the average **CI**[1] of the buildings in the Complex, weighted by replacement cost. This metric provides an overall sense of the condition of the Complex as a whole.
  - **Complex Functionality Index** (Complex **FI**[2]). The Complex **FI**[3] displays the average **FI**[4] of the buildings in the Complex, weighted by replacement cost. This metric provides an overall sense of the functionality of the Complex as a whole.
  - **Complex Performance Index** (Complex **PI**[5]). The Complex **PI**[6] displays the average **PI**[7] of the buildings in the Complex, weighted by replacement cost. This metric provides an overall sense of the performance of the Complex as a whole.

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[1] Condition Index

[2] Functionality Index.

[3] Functionality Index.

[4] Functionality Index.

[5] Performance Index. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. If no functional assessment has been performed, the FI is assigned a value of 100.

[6] Performance Index. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. If no functional assessment has been performed, the FI is assigned a value of 100.

[7] Performance Index. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. If no functional assessment has been performed, the FI is assigned a value of 100.

- **Complex Facility Condition Index** (Complex **FCI**[1]). The Complex **FCI**[2] metric provides an overall sense of deferred repair work at the Complex level. It differs from the Complex CI in that it is a monetary based metric. The formula is: **FCI**[3] = (1- $current repair needs/$**PRV**[4]) x 100, where the dollar amount of repair needs is obtained from **BUILDER** work items. More information about the **FCI**[5] is available at Facility Condition Index, or via the Glossary.

- Calculated Data (Read-Only).
  - **Number of Facilities**. Displays the number of Buildings included in the Complex inventory.
  - **PRV**[6]Plant Replacement Value. For an inventory item above the Building level, this number will be the aggregate of the PRV of all Buildings included in that item.. Displays the aggregate Plant Replacement Value of the Buildings at the Complex, computed by adding the individual Building replacement costs.

Contact Information Tab

Point of contact (POC) information for the Complex may be viewed and edited by selecting the Contact Information (**Contact Info.**) tab. The available fields are as follows:

- **Name**. Enter the name of the Complex point of contact. Limit: 30 alphanumeric characters.
- **Address**. Enter the official street address of the Complex. Limit: 30 alphanumeric characters.
- **City**. Enter the city where the Complex is located. Limit: 15 alphanumeric characters.
- **State**. Enter the state where the Complex is located. Limit: 2 alphanumeric characters.
- **Zip Code**. Enter the zip code of the Complex. Limit: 10 alphanumeric characters.
- **Phone Number**. Enter the phone number of the Complex POC. Limit: 20 alphanumeric characters.
- **FAX Number**. Enter the FAX number of the Complex POC. Limit: 20 alphanumeric characters.
- **Email Address**. Enter the email address of the Complex POC. Limit: 75 alphanumeric characters.
- **WWW**. Enter the World Wide Web (WWW) URL address for this Complex. Limit: 75 alphanumeric characters.

Assessment History Tab

Note: The information at this tab is read-only.

---

[1]Facility Condition Index.

[2]Facility Condition Index.

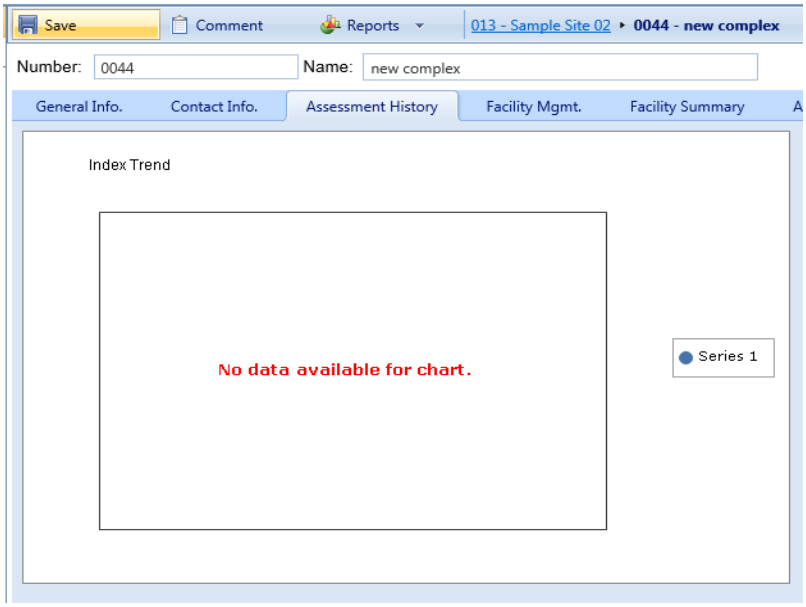
[3]Facility Condition Index.

[4]Plant Replacement Value. This number will be the aggregate of the PRV of all inventory items contained within the current inventory item.

[5]Facility Condition Index.

[6]Plant Replacement Value. This number will be the aggregate of the PRV of all inventory items contained within the current inventory item.

The Assessment History tab provides a graph of the condition, functionality, performance and **FCI**[1] history of the Complex, displaying the Complex CI, Complex **FI**[2], Complex **PI**[3] and Complex **FCI**[4] over time.



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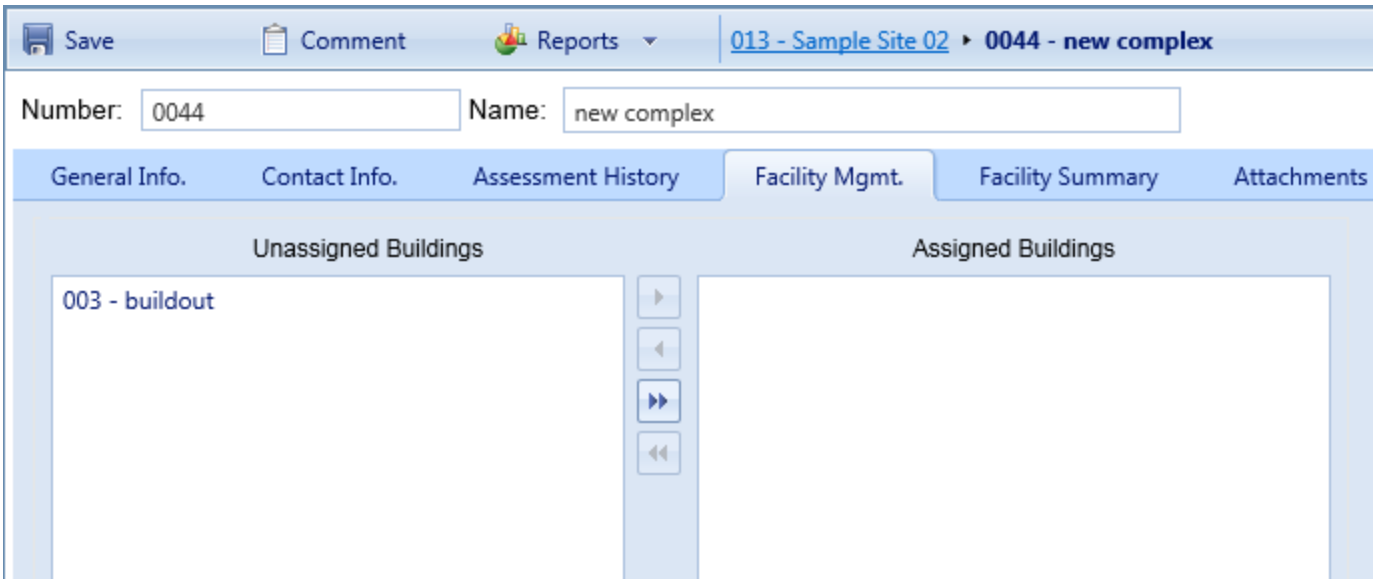
[1]Facility Condition Index.

[2]Functionality Index.

[3]Performance Index. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. If no functional assessment has been performed, the FI is assigned a value of 100.

[4]Facility Condition Index.

Facility Management Tab



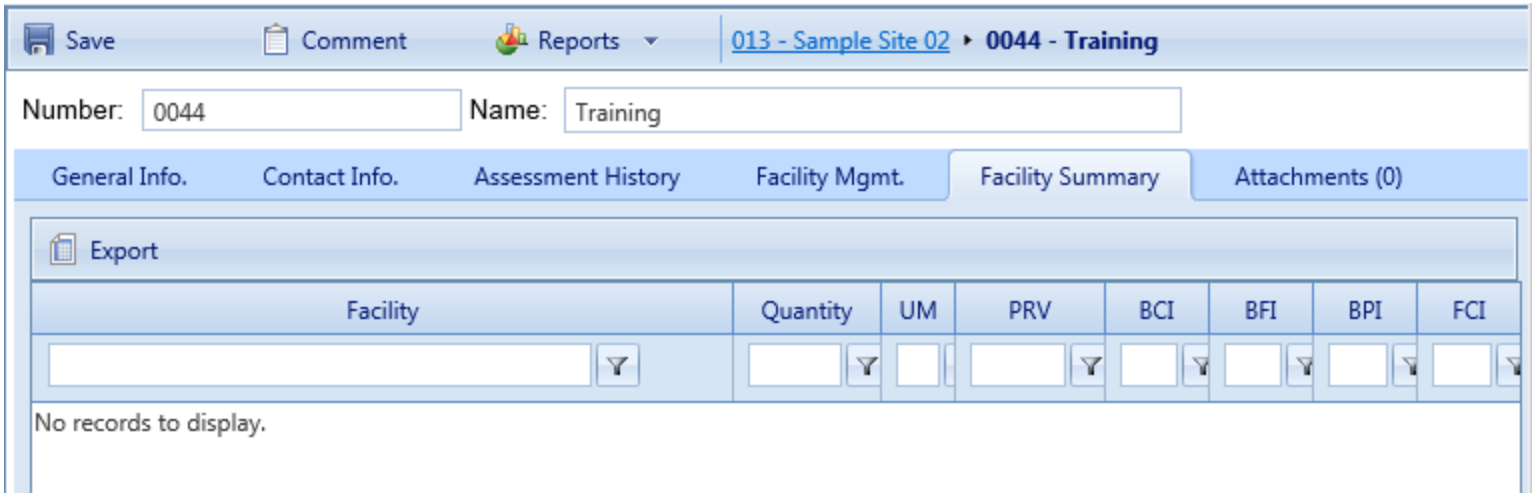
The Facility Management (**Facility Mgmt.**) tab lists the Buildings currently assigned to the Complex. Buildings can be assigned to or removed from the Complex at this tab. The Buildings are separated into two columns:

- **Unassigned Buildings**. Lists the Buildings at the Site that are not assigned to a Complex.
- **Assigned Buildings**. Lists the Buildings assigned to the current Complex.

The topic Assign Buildings to a Complex shows instructions for moving Buildings in and out of a Complex.

Facility Summary Tab

Basic information regarding Buildings at the Complex is available under the **Facility Summary** tab. All of the data shown at this tab is read-only; however, which information is displayed can be influenced using the search filters provided. Each column shown at the **Facility Summary** tab is described below.

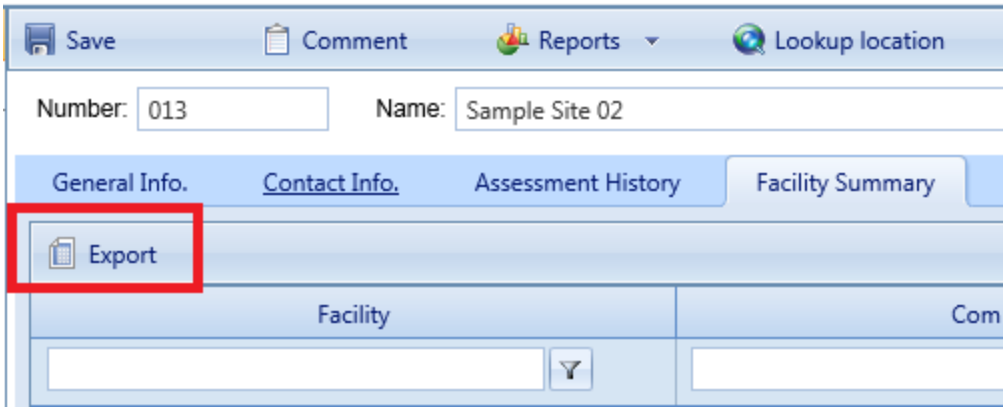


- **Facility**. Displays the number and name of each Building in the Complex.
- **Quantity**. This is the primary measure of the size of the facility. For buildings, it will usually be square feet, if the User Preferences (UM) selected at User Preferences is "English."
- **Unit of Measure** (UM). Displays the unit of measure in use.
- **Plant Replacement Value** (**PRV**[1]). Displays the aggregate Plant Replacement Value of the Buildings in the Complex.
- **Building Condition Index** (BCI) . Displays the current Building Condition Index of each Building in the Complex.
- **Building Functionality Index** (BFI). Displays the current Building Functionality Index of each Building in the Complex.
- **Building Performance Index** (BPI). Displays the current Building Performance Index of each Building in the Complex.
- **Facility Condition Index** (**FCI**[2]). Displays the current Facility Condition Index of each Building in the Complex.

Additionally, the Complex CI, Complex **FI**[3] Complex **PI**[4] See also: BPI. and Complex **FCI**[5] are shown at the top of the tab, which are the average of each index of the Buildings in the Complex weighted by replacement cost.

Export Information from the Facility Summary Tab

All the information at the **Facility Summary** tab can be exported to a Microsoft Excel spreadsheet by activating the **Export** button, located below "Number" on the ID line.



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[1]Plant Replacement Value. This number will be the aggregate of the PRV of all inventory items contained within the current inventory item.
[2]Facility Condition Index.
[3]Functionality Index.
[4]Performance Index. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. If no functional assessment has been performed, the FI is assigned a value of 100.
[5]Facility Condition Index.

Cost Modifiers Tab

The **Cost Modifiers** tab displays a table showing assigned cost modifiers, and allows you to view and assign cost multipliers or adders.

Note: Existing cost modifiers that affect the Complex level may have been assigned either at the Site or the Complex level, but from a Complex data page you can only assign a Complex-level cost modifier.

Modifier Scope

At the Complex level, the Assigned Cost Modifiers table will show you all of the following:

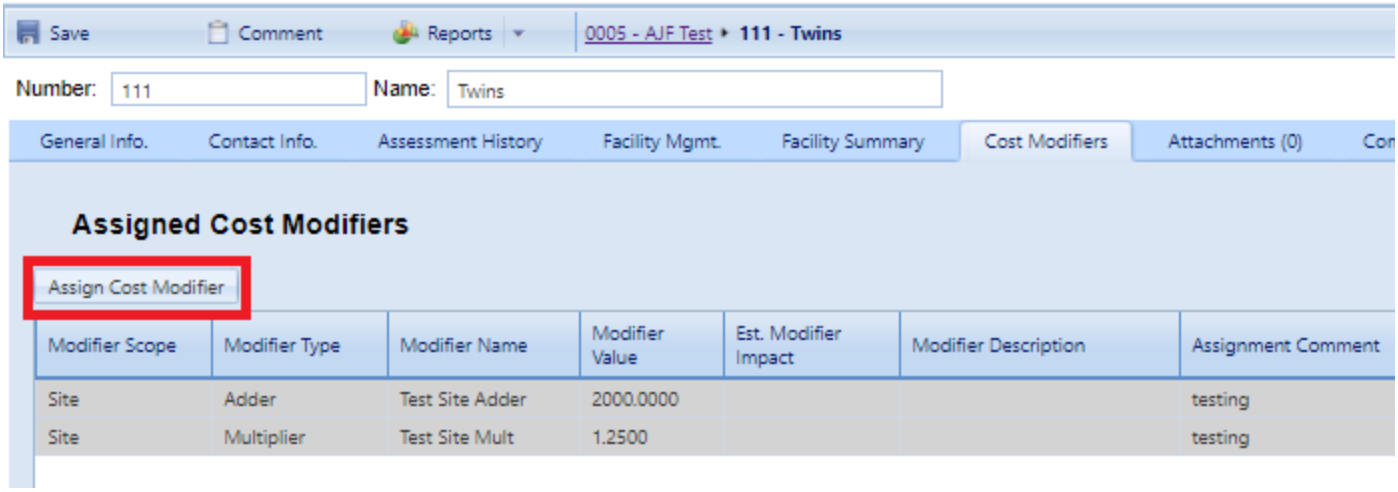
- all modifiers assigned to that Complex
- all modifiers assigned to the Site the Complex is in

The scope of each modifier is shown in the **Modifier Scope** column.

Assign a Modifier

To assign a modifier to your Complex from available options,

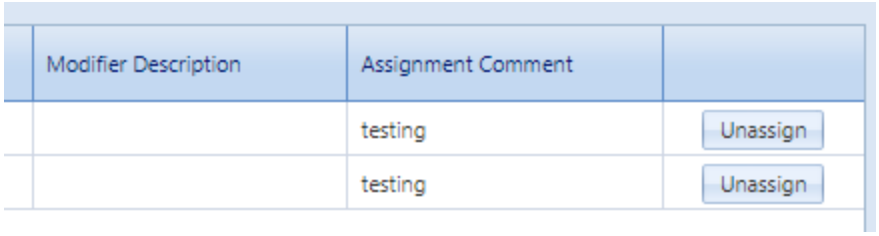
- Activate the **Assign Cost Modifier** button.



- In the "New Complex Modifier Assignment" popup, select a cost modifier from the dropdown list.
- Add a comment if desired.
- Activate **Add** on the popup toolbar. *You should see your selected modifier added to the table of cost modifiers.*

Unassign a Modifier

To unassign a modifier, first navigate to where the modifier was assigned, then activate the Unassign button in the rightmost column of the Assigned Cost Modifiers table.



A Site-level cost modifier can be unassigned only at the Site level, a Building-level cost modifier can be unassigned only at the Building level, etc.

More about Cost Modifiers

For more about cost modifiers, see the **Cost Modifiers** chapter in the **BUILDER Reference Data Guide**.

Attachments Tab

At the **Attachments** tab, you have the option to view or change the asset's attachments.

View Attachment(s)

The **Attachments** tab will show whether any files have been attached to the asset's record. The number in parentheses after the word "Attachments" shows how many of them have been attached.

To view one or more attachments,

- Activate the **Attachments** tab. *If attachments are present, a table will display their type, title, and description*.
- Activate the link in the **Title** column. *The attachment will appear in the "Image Viewer" popup window.*
- When finished viewing, activate the **Close** button on the popup window toolbar. and you will be returned to the table of attachments.
- Repeat the two steps immediately above for additional attachments as desired.

Add an Attachment

At the **Attachments** tab on the asset's data page, you have the option to attach files (images and other documents) to the asset's record. An attached file might be a photograph, an electronic image of written notes or diagrams made during inventory, or a file generated on a computer.

Acceptable Attachment Formats

The attachment may be in any of the following formats:

- .jpg
- .jpeg
- .png
- .zip

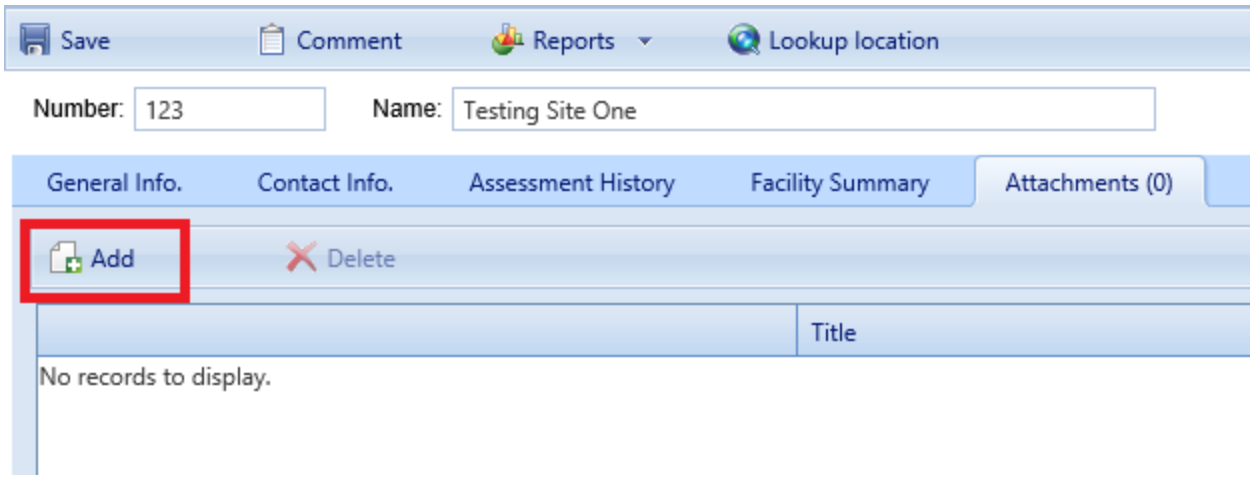
- .doc
- .pdf

Note: As of January 31, 2022, .doc format is allowed, but not .docx.

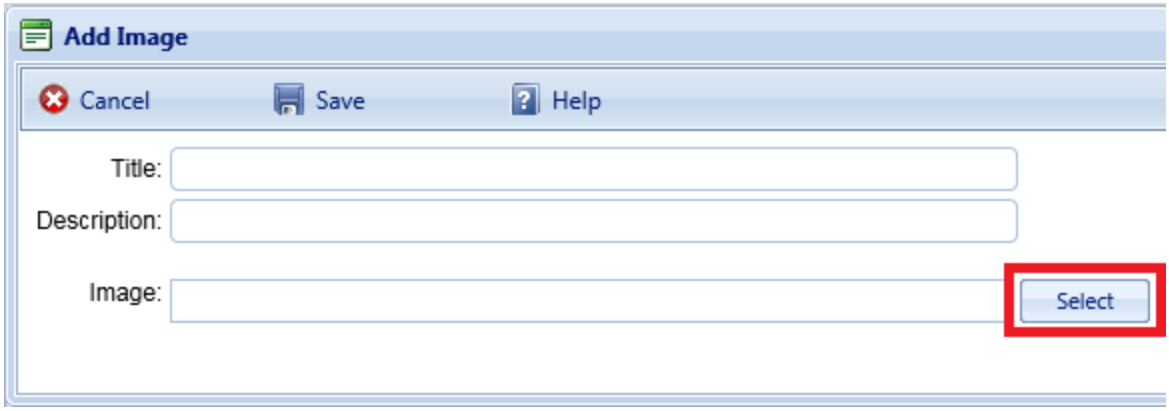
Attach

To attach a file,

- At the **Attachments** tab, activate the **Add** button in the toolbar below the row of tabs.



This will open the "Add Image" popup window:

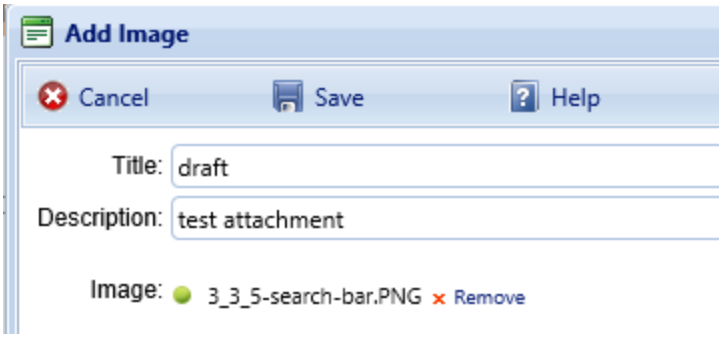


- Enter Title and Description information for the attachment.
- Activate the **Select** button to the right of the "Image" field.
- Browse to the desired image or other file and select it for attachment. *If a red dot appears next to your file name in the "Add Image" popup, see Attachment Troubleshooting, below*.
- If you are adding an attachment at the Building level, use the **Image Type** radio buttons to indicate whether the attachment is a Key Plan, a Section Plan, or "Other."

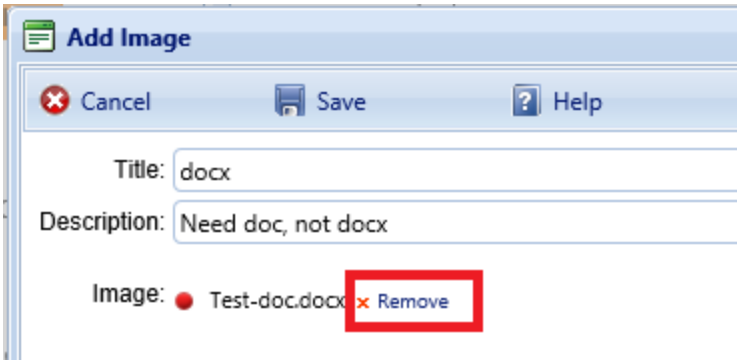
- Once the required attachment data is entered, activate the **Save** button on the popup toolbar. Alternatively, to close the popup window without attaching the selected file or image, activate the **Cancel** button.

Attachment Troubleshooting

If the selected attachment is in an acceptable format, the "Image" field will show a green dot (plus a label that gives you the option to remove the attachment).



However, if it is not in an acceptable format, the "Image" field will show a red dot. Activate "Remove" and select an attachment file in one of the formats listed at Acceptable Attachment Formats.



Edit Attachment Metadata

You can edit the title and/or description of an attachment as follows:

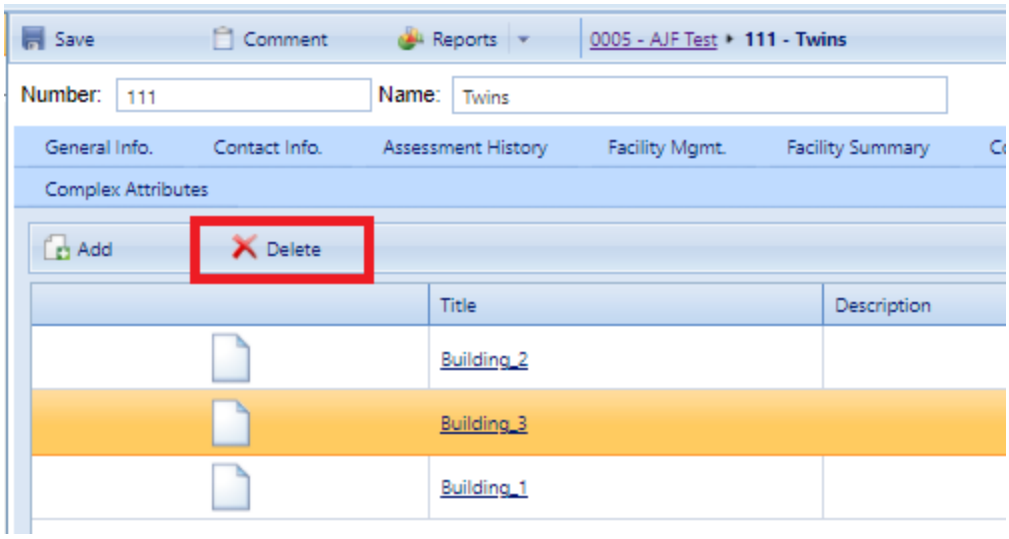
- Navigate to the **Attachments** tab to view the attachments table.
- Activate a link in the **Title** column. *The attachment will appear in the "Image Viewer" popup window.*
- In the header section above the attachment, make the desired changes in the **Title** and/or **Description** field(s).
- Activate **Save** on the popup toolbar to store your changes and return to the table of attachments.
- Alternatively, if you want to cancel the change, activate **Close** on the popup toolbar. *You will be returned to the table of attachments*.

If you wish to change the contents of the attachment, you will need to delete the existing attachment file and add a new one.

Delete an Attachment

To delete an attachment,

- Navigate to the **Attachments** tab to view the attachments table.
- Select the attachment you wish to delete (do *not* activate the link in the **Title** column). *When properly selected, that record in the table will change background color as illustrated below, and only then will the* ❌ *Delete icon be selectable:*



- Activate the **Delete** button above the table.
- Activate **Yes** in the confirmation box to delete the attachment, or **No** to cancel.

Complex Attributes Tab

Custom asset attributes can be added at each inventory level–from Organization down through Section–in two different ways: by using "active attributes" or by using "Admin managed attributes."

"Unassigned" **Admin managed attributes** are a collection of pre-named attributes that have been determined by the **BUILDER** instance's owner (for example, a corporation, or the Air Force, or the Army). They are templated or common attributes that are seen as likely to be used often. Although these attributes are made available from the outset after installing **BUILDER**, they still need to be assigned before they can be used to help describe an asset.

Additional Admin managed attributes can be created, but only by a **BUILDER** Administrator or a user with Master Planner Role.

Active attributes are very flexible and can be created and assigned by any user with inventory privileges.

CAUTION: Unless a standardized procedure for assigning active attributes is implemented and enforced, the flexibility of active attributes can make incorporating them into reports more difficult and time consuming, because multiple people can create them and there is no built-in consistency.

With respect to creating reports, Admin managed attributes will be easier to report on in a consistent fashion, because they are managed by a **BUILDER** Administrator (or a user with Master Planner Role). Also, Admin managed attributes are available to all assets that are at the same inventory level. Active attributes, on the other hand, would be prone to being named inconsistently and make reporting more difficult.

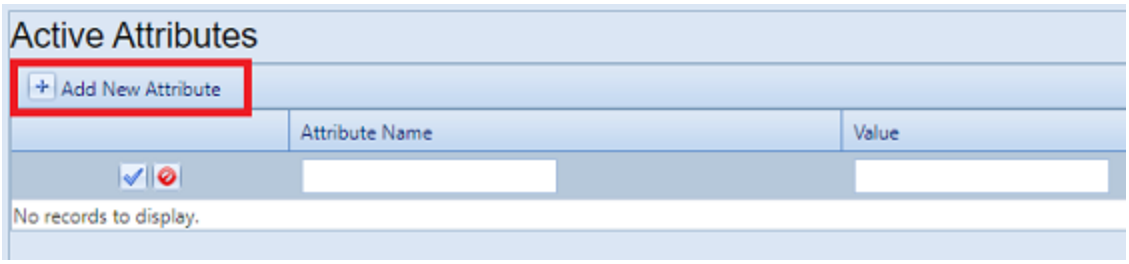
Active Attributes

Under **Active Attributes** at the top half of the Attributes screen, you can add, edit, or delete custom attributes for this level of inventory.

Add an Active Attribute

To add a custom inventory attribute,

- Directly under the **Active Attributes** header, activate **Add New Attribute**. This will generate a new row in the **Active Attributes** table.



- Enter a name and value for your attribute into the table.
- If you want to apply an architect name, press the **Enter** key on your keyboard at this point . The popup "Add Architect" will appear. Enter the name of the architect, then select **OK**.
- When finished with the entry, *activate the blue checkmark icon at the left side of the row* to save the entry. Alternatively, to cancel and delete the entry before saving, activate the red circle with a slash icon (located to the right of the blue checkmark).

  CAUTION: Your new attribute will not be saved if you (a) exit without activating the blue checkmark or (b) initiate adding a new custom inventory attribute (by activating the **Add New Attribute** button) before saving with the blue checkmark.

- Repeat the steps listed above for each custom inventory attribute you wish to add.

Edit an Active Attribute

To edit an attribute,

- Activate the pencil icon in the attribute's table row.
- Make the desired changes.
- Finally, activate the blue checkmark icon at the left to save the changes.

Delete an Active Attribute

To delete an attribute,

- In the table of active attributes, locate the row containing the attribute you wish to delete.
- To the right of the **Value** field, activate the Delete icon (red "X"). *A confirmation popup will appear, asking "Delete record?"*
- Select **OK** to delete, or **Cancel** to stop the process.

Admin Managed Attributes

Under **Unassigned Admin Managed Attributes** at the bottom left of the Attributes screen, you can choose to assign an existing Admin managed attribute to the asset whose data screen you have open. You can also change the value of an attribute after it has been assigned.

Note: Attributes that are in the table under the header **Admin Managed Attributes** are already assigned to the asset whose data screen you are in.

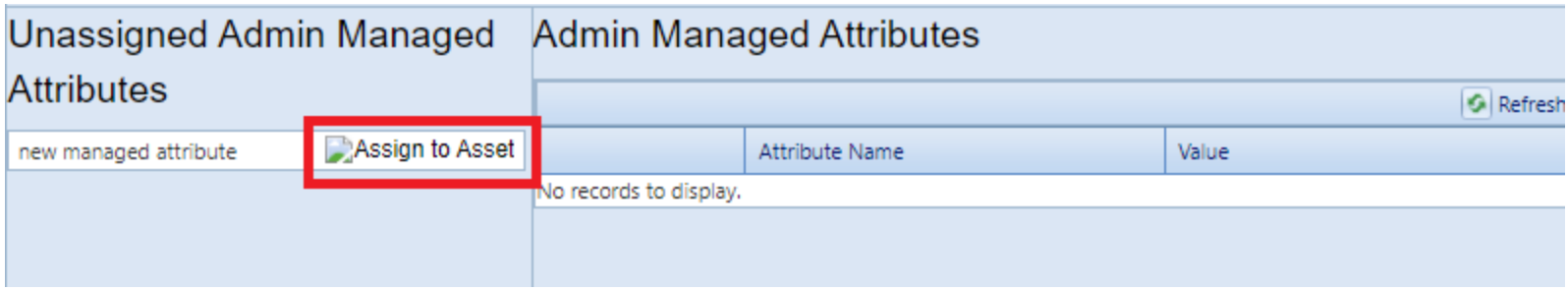
Only a **BUILDER** Administrator or a user with the Master Planner Role can create, edit (other than changing the value), or delete/unassign custom Admin managed attributes for the selected asset. Also, once an Admin managed attribute has been moved from the **Unassigned Admin Managed Attributes** column into **Admin Managed Attributes**, this action cannot be reversed except by a **BUILDER** Administrator or a user with Master Planner Role. More detail about Administrator-specific inventory attribute tasks can be found at Manage Custom Inventory Attributes.

Assign an Unassigned Attribute to Admin Management

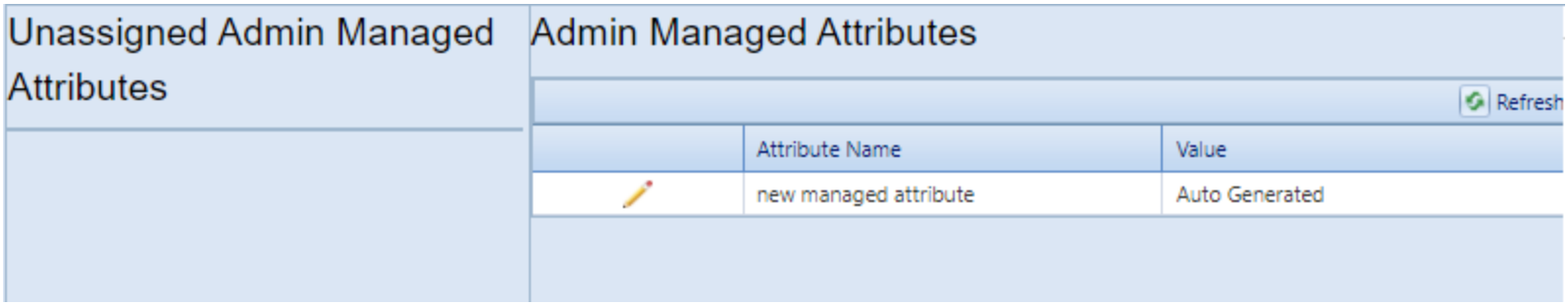
You may see one or more items listed under the header **Unassigned Admin Managed Attributes** at the lower left of the Attributes screen. These are attributes that are available at this inventory level but that have not been assigned to the selected asset. If no items are listed under the header **Unassigned Admin Managed Attributes**, there are none available to be assigned. (They may have already been assigned and thus transferred to the **Admin Managed Attributes** table.)

To assign an unassigned asset to Admin management,

In the **Unassigned Admin Managed Attributes** column, activate **Assign to Asset**.



*This will immediately populate the inventory item in that row under **Admin Managed Attributes** instead.*

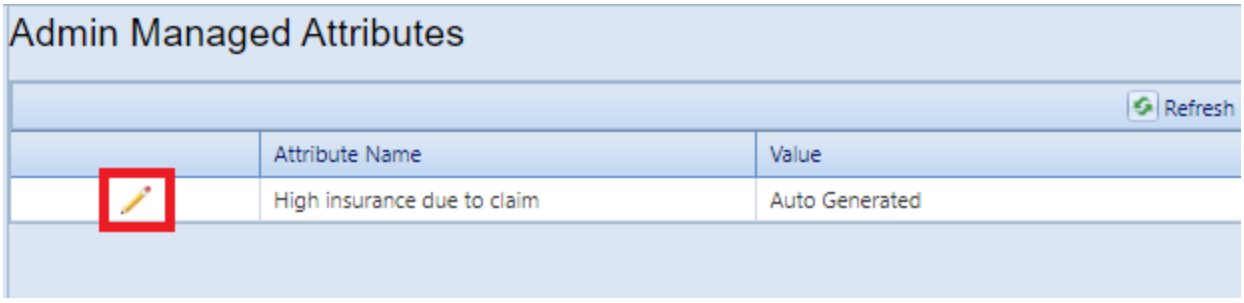


Note: The assignment action is not reversible, except by a **BUILDER** Administrator or a user with the Master Planner Role.

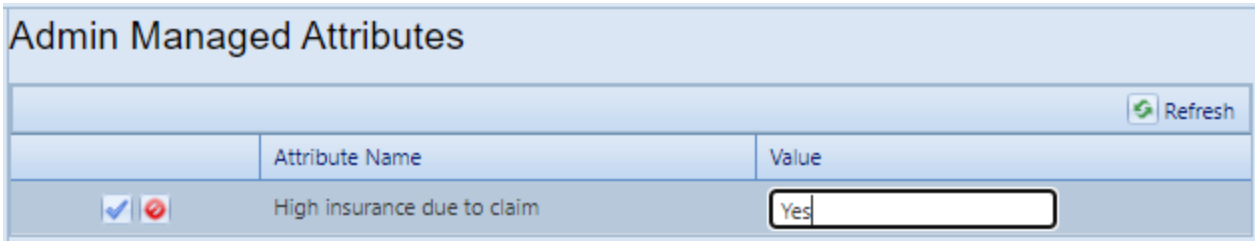
Change the Value of an Admin Managed Attribute

To change the value of an asset under Admin management,

- Under **Admin Managed Attributes**, activate the pencil icon in the attribute's table row, and wait for the row to change appearance.



- Make the desired change in the **Value** column.



- Finally, activate the blue checkmark icon at the left to save the changes (or the red Cancel icon to cancel the change).

Complex Tasks

Other tasks that can be performed on Complexes are:

Add a Complex
Assign Buildings to a Complex
Generate Complex Reports
Delete a Complex

For an overview of Complexes, see Working with Complexes.

Generate Complex Reports

This topic shows how to locate, select, and generate Complex-level reports.

There are two locations where you can generate reports:

a. At the main menu bar. The selection of reports listed here is divided into categories: Inventory, Condition Assessment, Functionality Assessment, and Work Planning.
b. At the content area toolbar.

The first section below provides instructions for generating Complex-level reports from the Complex's content area toolbar. Reports generated here will be restricted in scope to the selected Complex.

The next section after that one provides instructions for generating a report starting at the main menu.

Generate Report at Complex Data Screen

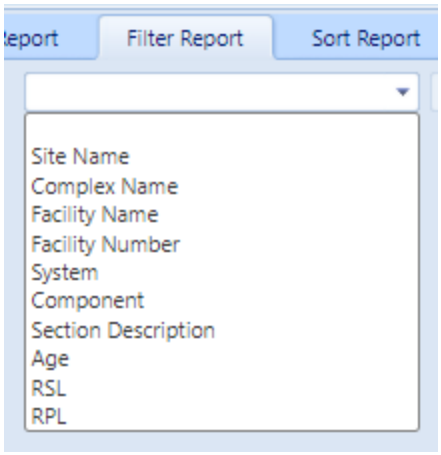
Scope of Report

When you generate a report while you are at the Complex level of the inventory tree, the report will contain data only for the currently selected Complex.

How to Generate

To generate a report,

- Activate the **Reports** button on the content area toolbar. (The content area toolbar is directly above the ID line.) *The "Reports" popup will open.*
- From the dropdown, select **Standard** reports.
- At the **Select a Report** field, activate the dropdown arrow. *A multi-page list of reports will be made available*.
- In the list, select a report. For example, "Remaining Service Life (**RSL**[1]) Detail". (To find the **RSL**[2] report, you will probably need to scroll down the list.)
- Optionally, you can then select one or more filters at locations and inventory levels where the **Filter Report** option is active. For example, by selecting the "Age" filter, you can have the **RSL**[3] report show only items that are 10 years old or more. This is the list of filters available for the **RSL**[4] report at the Complex level:



- After setting any desired filters, and selecting a Sort order if desired, activate **View Report** on the popup's toolbar. *The report will be displayed in a popup titled "Report Viewer."*
- From the "Report Viewer" popup, you can choose to download or print the report.

Generate Report from Main Menu

Scope of Report

Reports are not made available at the Organization level. By default, unless you have used filters to further restrict what is included in the report, the scope of the report will be the Site, Building, System, Component, or

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[1]Remaining service life.
[2]Remaining service life.
[3]Remaining service life.
[4]Remaining service life.

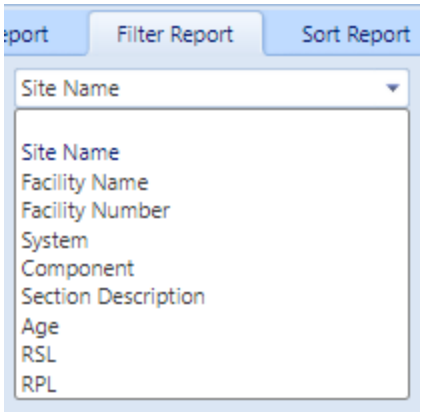
Component-Section where you are located in the Inventory tree when you activate the **Reports** button.

How to Generate

To generate a report from the main menu,

- Activate the **Reports** button at the main menu.
- In the "Reports" popup, open the BUILDER entry by activating the plus button.
- Next, open the desired category: Inventory, Condition Assessment, Functionality Assessment, or Work Planning. For this example, open Inventory.
- In the expanded list of reports, scroll down to the desired report and select it.
- Optionally, you can then select one or more filters at locations and inventory levels where the **Filter Report** option is active. For example, you can select the "Age" filter and direct the **RSL**[1]Remaining Service Life report to show only items that are 10 years old or more.

  For example, this is the list of filters available for the **RSL**[2]Remaining Service Life report at the Site level:



- After setting any desired filters, and selecting a Sort order if desired, activate **View Report** on the popup's toolbar. *The report will be displayed in a popup titled "Report Viewer."*
- From the "Report Viewer" popup, you can choose to download or print the report.

Export Report

To export a report, see instructions at Export a Report.

Complex Tasks

Other tasks that can be performed on Complexes are:

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[1]Remaining service life.

[2]Remaining service life.

Add a Complex
Assign Buildings to a Complex
Edit Complex Inventory Data
Delete a Complex

For an overview of Complexes, see Working with Complexes.

Delete a Complex

This topic shows how to delete a Complex, which also deletes all other records (Buildings, Systems, etc.) contained in the Complex.

Permissions Note: This action requires AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. permission. If the inventory item is empty of any contents, then the deletion may also be performed by a Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. with permission for the relevant location in inventory.

To delete a Complex, navigate to it in the inventory tree and do one of the following:

a. Right-click the Complex. Then select "Delete Complex."
b. Alternatively, select the Complex, then activate the **Delete Complex** icon on the main toolbar.

WARNING: Deleting a Complex deletes all inventory (Buildings, Systems, Components, and Sections) in the Complex. This is a significant step to take and should only be done when you are certain that you wish to clear the entire inventory of the Complex you have selected.

Best Practice Recommendation: Making frequent backups of your inventory database will protect you from significant data losses if mistakes in deleting are made.

Complex Tasks

Other tasks that can be performed on Complexes are:

Add a Complex
Assign Buildings to a Complex
Edit Complex Inventory Data
Generate Complex Reports

For an overview of Complexes, see Working with Complexes.

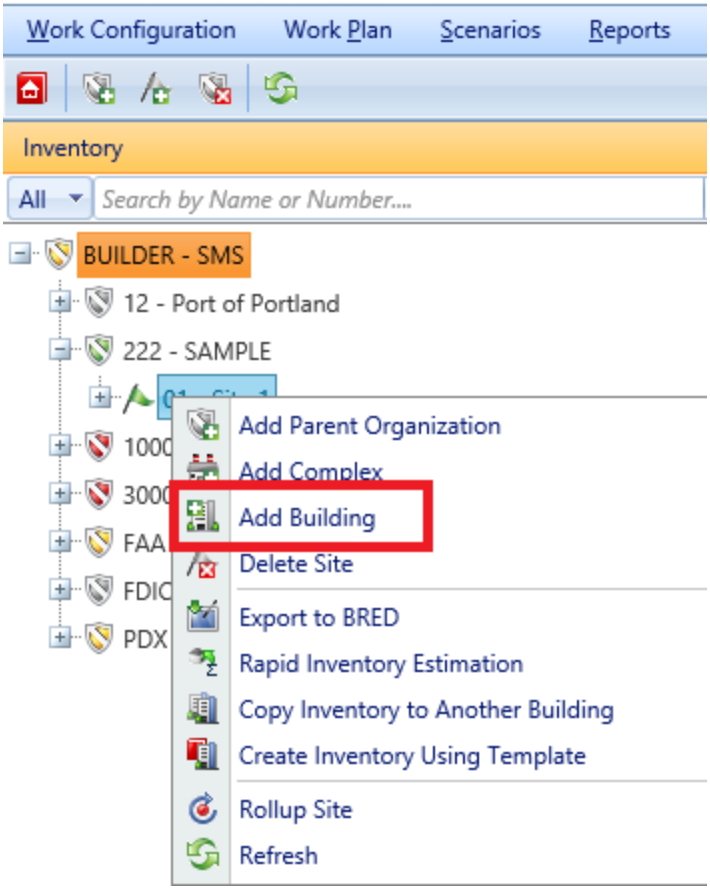
Buildings

Add a Building

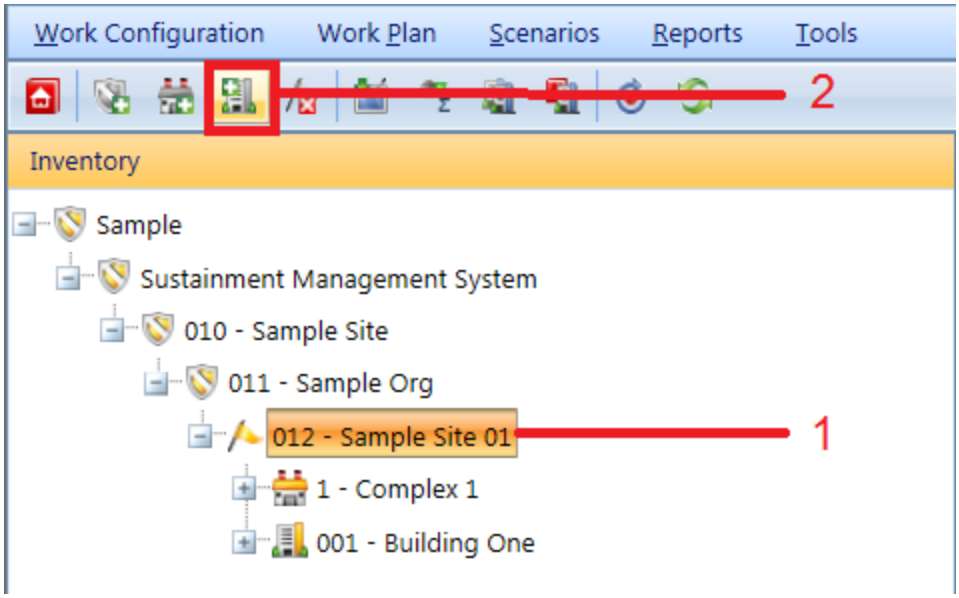
This topic shows how to add a Building and describes the required information to be entered. The topics Edit Building General Information and Edit Additional Building Inventory Data describe additional information that can be entered.

After you Add a Site, you can add Buildings to your inventory. To add a new Building to a Site, navigate to that Site in the inventory tree and do *one* of the following:

a. Right-click the Site. Then select "Add Building" from the options.



b. Alternatively, select the Site, then activate the **Add Building** icon on the main toolbar, as shown below.



Enter Required Building Information

In the "Add Building" popup window, enter the following required data:

- **Building Number**. Enter the identifying number for the Building. For DoD applications, the RPUID is helpful here. The Building Number field may be left blank if you wish to supply only a name. You must enter at least a Building name or a Building number, and the combination of the two must be unique within the Site.

  Specifications: The Building The ID Number is limited to 12 alphanumeric characters.

  Best Practice Recommendation: Because the Building number is alphanumeric instead of numeric, the alphabetic ordering of Buildings in a list will follow character order rather than number order: for example, Building number 10 will be listed before Building number 2. To avoid this situation, use the correct number of leading zeros (for example, use 02 or 002 or 0002 instead of 2), depending on the maximum number of digits used in numbering Buildings.

- **Building Name**. Enter the identifying name for this Building. The Building Name field may be left blank if you wish to supply only a number. You must enter at least a Building name or a Building number, and the combination of the two must be unique within the Site.

  Specifications: The name is limited to 50 alphanumeric characters.

  Best Practice Recommendation: Avoid using single quotes, double quotes, and ampersands. These characters can interfere with query formation.

- **Building Use**. Select the Building Use category from the dropdown list that most closely matches the Building's use. If you are a Department of Defense activity, BUILDER should display familiar category codes for your service.

- **Construction Type**. Select the construction type from the dropdown list that matches the Building. Construction type options include:
  - Permanent
  - Leased
  - Semi-Permanent
  - Temporary
- **Status (Current Status)**. Select the appropriate status of the Building from the dropdown list. See About the Building Current Status Property for more information. Status type options include:
  - Active
  - Demolished
  - To be acquired
  - To be built
  - To be demolished
  - To be transferred
  - Transferred
  - Vacant

  The default Building status is "Active." The last four of these values indicate that the designated Building is not currently part of the inventory, and two others indicate that the Building will be removed from the inventory in the future.

  The options "To be acquired" and "To be built" allow you to enter future Buildings into the inventory and to plan for their maintenance in Scenarios even though they are not presently owned. Along with Transferred and Demolished, these options allow you to keep information about the Building in your database without the data on these Buildings affecting your current condition indices.

  The options "Transferred" and "Demolished" allow you to keep records for Buildings that are no longer in the physical inventory. Such records are ignored in processes that should only consider current Buildings, such as condition rollups and work planning.

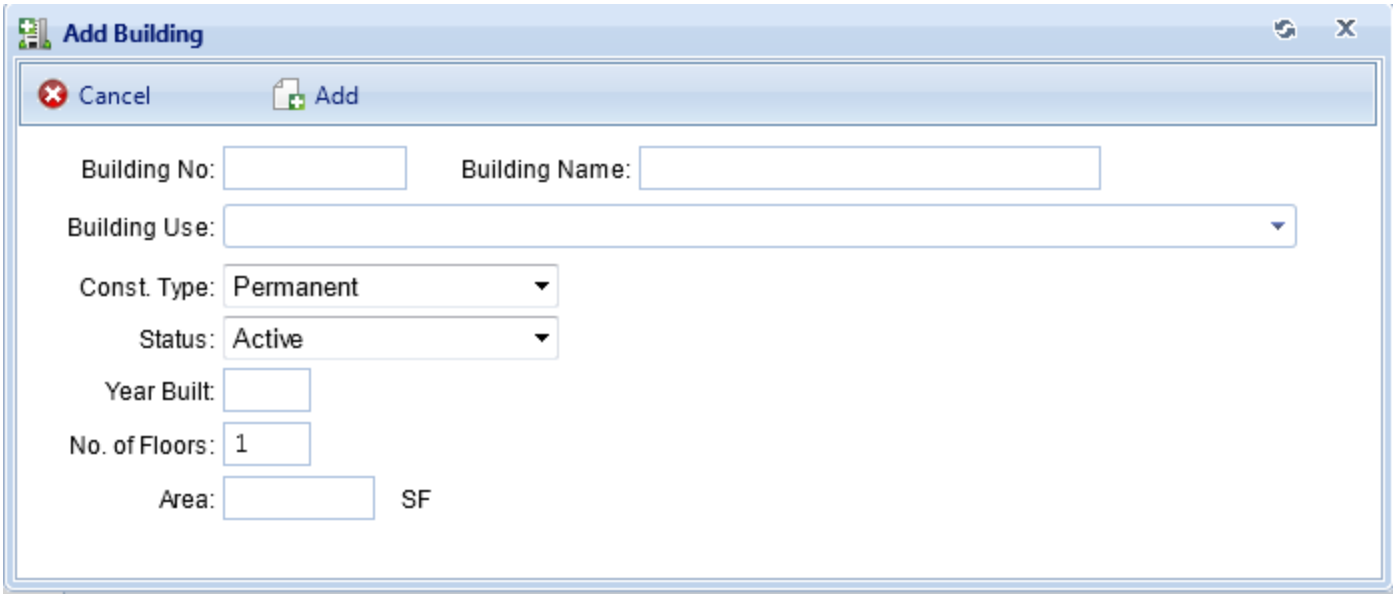
  In essence, the Current Status property allows you to enter future Buildings into the inventory and to plan for their maintenance even though they are not presently owned. In addition, the Current Status property allows you to keep records for Buildings that are no longer in the physical inventory.

  Some of the Status options have suboptions available, but the suboptions are not required information. They are described in more detail in Edit Building General Information.

- **Does Not Contain (New as of Version 3.4.0)**. If there are Systems that the Building does not contain, you can indicate this by selecting from the dropdown list.
- **Year Built**. Enter the year construction of the Building was completed. This data element determines the age of the Building, which is a critical factor in BUILDER's decision-making processes.
- **Year Renovated (New as of Version 3.4.0)**. If the Building has been renovated, enter the year that the renovation was completed.

- **Number of Floors**. Enter the number of floors of the Building. This data element is used to estimate the size of the Building's footprint by dividing the area by the number of floors.
- **Area**. Enter the gross area of the Building.

This data is required because BUILDER's internal algorithms generally have parameters determined by the Building's Building Use, size, age, number of floors, status, and construction type, so it is essential that the information be provided as a part of creating the Building record.



Confirm or Cancel

Once the required minimum Building data is entered,

a. Activate the **Add** button on the popup toolbar to create the Building. *The Building Summary window will open to allow you to immediately add to and edit the Building data at the various tabs. These tabs are described in* Edit Building General Information *and* Edit Additional Building Inventory Data.
b. Alternatively, to close the window without creating the new Building, activate the Cancel button.

Next Steps

For information about entering additional information concerning the Building, see the topics Edit Building General Information and Edit Additional Building Inventory Data.

To put the Building into a named Complex, see the topic Assign Buildings to a Complex.

Building Tasks

Other tasks that can be performed on Buildings are:

Edit Building General Information
Edit Additional Building Inventory Data

Assign Buildings to a Complex
Generate Building Reports
Delete a Building

Additional useful information can be found here:

About the Building Current Status Property
Use Current Status to Track Non-Current Inventory
About the Mission Dependency Index

Assign Buildings to a Complex

This topic explains how to assign one or more Buildings to a named Complex. Buildings that are not moved into a named Complex, and appear directly under a Site in the navigation tree, are seen by the **BUILDER** program to be in the Complex called "Unassigned."

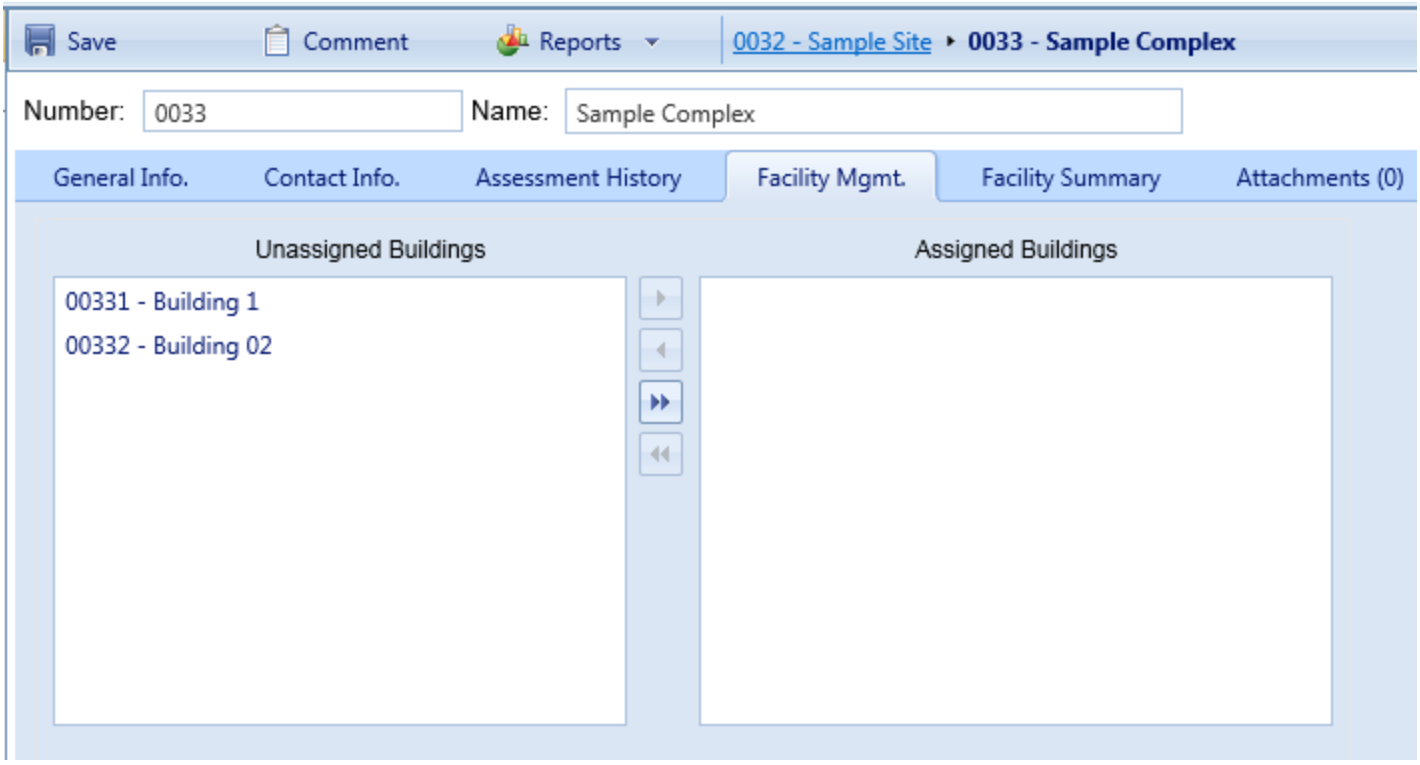
Complexes can be used to group similar Buildings, but assigning a Building to a Complex is optional. The steps below outline how to assign (move) or unassign (remove) a Building to/from a Complex.

To prepare for assigning Buildings to a Complex, first navigate to the Complex in the inventory tree and select it.

In the content area (illustrated below), select the **Facility Mgmt.** tab. This will bring up two columns:

- **Unassigned Buildings** (the column on the left) lists Buildings available to be assigned to a Complex.
- **Assigned Buildings** (the column on the right) lists Buildings already assigned to the selected Complex.

Note: The Buildings and the Complex must be in the same Site.



Move Buildings into a Complex

To move one or more Buildings from the **Unassigned Buildings** column into the Complex, use the arrow keys located between the two columns as described below.

To move all of the Buildings into the Complex,

- Activate the button with double right-pointing arrows.
- Use the **Save** button on the content area toolbar to lock in your change.

To move one Building into the Complex,

- Select the Building in the **Unassigned Buildings** column.
- Activate the single right-pointing arrow.
- Use the **Save** button on the content area toolbar to lock in your change.

To move multiple Buildings into the Complex,

- Select the Buildings in the **Unassigned Buildings** column, using the **Shift** and/or **Ctrl** keys as needed.
- Activate the single right-pointing arrow.

  Note: In the Assigned Buildings column, newly assigned Buildings will show on a green background until you save.

- Use the **Save** button on the content area toolbar to lock in your change.

Remove Buildings from a Complex

To move one or more Buildings from the Complex back into the **Unassigned Buildings** column, use the arrow keys located between the two columns as described below.

To move all of the Buildings,

- Activate the button with double left-pointing arrows.
- Use the **Save** button on the content area toolbar to lock in your change.

To move one Building,

- Select the Building in the **Assigned Buildings** column.
- Activate the single left-pointing arrow.
- Use the **Save** button on the content area toolbar to lock in your change.

To move multiple Buildings,

- Select the Buildings in the **Assigned Buildings** column, using the **Shift** and **Ctrl** keys as needed.
- Activate the single left-pointing arrow.
- Use the **Save** button on the content area toolbar to lock in your change.

Move Buildings from one Complex to Another

To move a Building from one Complex to a different one, you must first navigate to the Complex it is assigned to and unassign it (see **Remove Buildings from a Complex**, immediately above). Then navigate to the destination Complex and follow the instructions in **Move Buildings into a Complex**, above).

Building Tasks

Other tasks that can be performed on Buildings are:

Add a Building
Edit Building General Information
Edit Additional Building Inventory Data
Generate Building Reports
Delete a Building

Additional useful information can be found here:

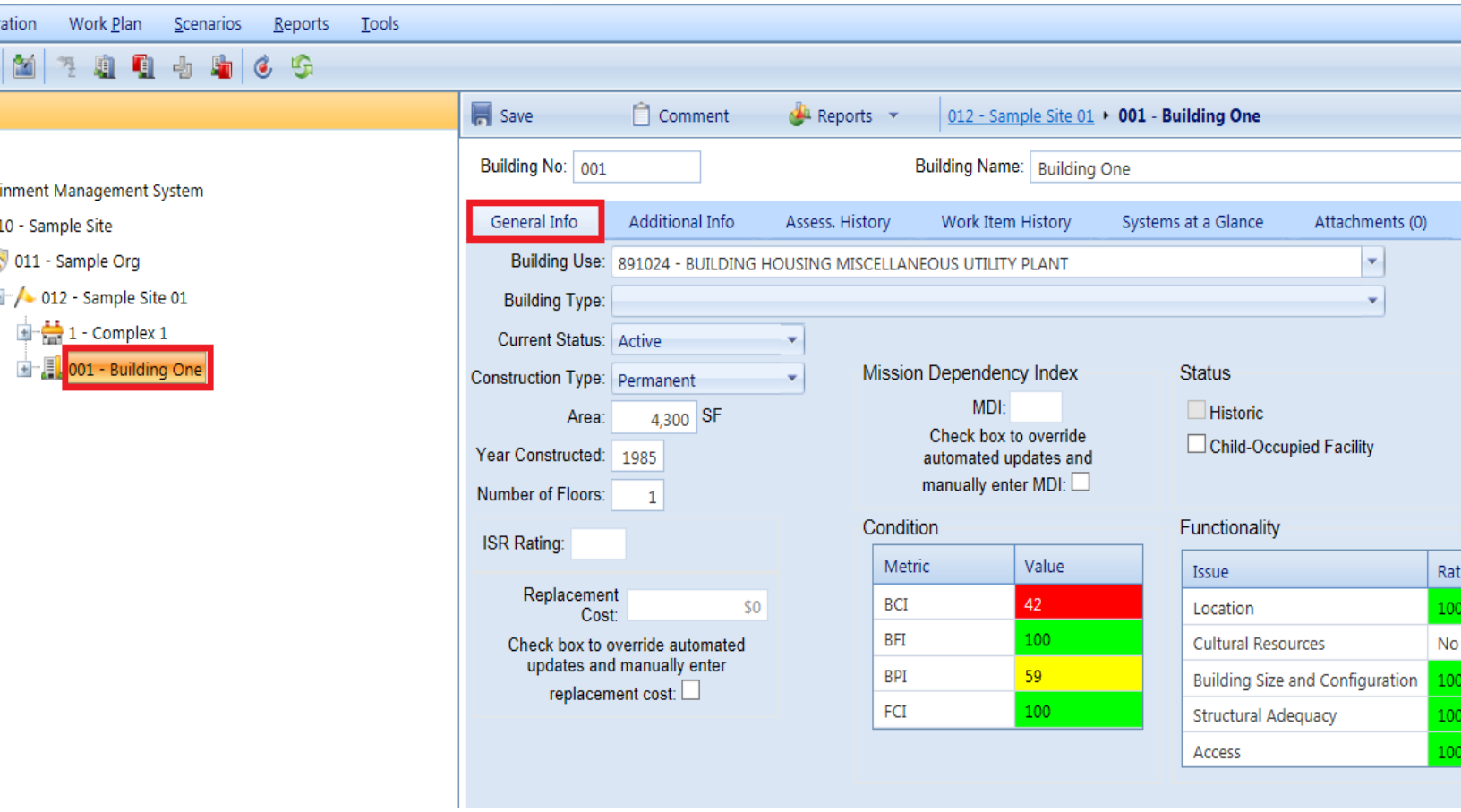
About the Building Current Status Property
Use Current Status to Track Non-Current Inventory

Edit Building General Information

This topic describes the information that can be found and edited at the **General Information** tab on the Building screen. Additional Building information is described in Edit Additional Building Inventory Data.

The sections below, as well as the topic Edit Additional Building Inventory Data, describe information that can be obtained about and actions that can be performed on the Building.

To view and edit Building inventory data, select the Building in the inventory tree.



By default, the **General Information** tab (abbreviated **General Info**) will appear.

ID Line

On the ID line, you can edit the following:

- **Building ID Number**. The ID Number is limited to 12 alphanumeric characters.
- **Building Name**. Building Name is allowed 50 alphanumeric characters. **Best Practice Recommendation:** Avoid using single quotes, double quotes, and ampersands. These characters can interfere with query formation.

General Building Information Tab

Initially after a Building is selected in the inventory tree, the **General Information** tab is shown with the following information, all of which is required:

Type, Age, and Size Data

- **Building Use**. From the dropdown list, select the Building Use category that most closely matches the Building's use. For a Department of Defense activity, **BUILDER** should display familiar category codes for your service.
- **Current Status**. From the dropdown list, select the appropriate Building status. See About the Building Current Status Property for more information. Status type options include:
  - Active
  - To be acquired
  - To be built
  - To be demolished
  - To be transferred
  - Demolished
  - Transferred
  - Vacant

  The options "To be acquired" and "To be built" allow you to enter future Buildings into the inventory and to plan for their maintenance in Scenarios even though they are not presently owned. Along with Transferred and Demolished, these options allow you to keep information about the Building in your database without the data on these Buildings affecting your current condition indices.

  The options "Transferred" and "Demolished" allow you to keep records for Buildings that are no longer in the physical inventory. Such records are ignored in processes that should only consider current Buildings, such as condition rollups and work planning.

- **Effective Year of Status**. When you select a Building status other than the default "Active" status, you must also provide a year in which the permanent status will take effect. For vacant, demolished, and transferred Buildings, the effective year is the year the action occurred. For future ("To be") status options, the effective year is the year the future event will occur–i.e., the year the Building will actually be built, acquired, transferred, or demolished.
- **Construction Type**. Select the construction type from the dropdown list that matches the Building. Construction type options include:
  - Permanent
  - Semi-Permanent
  - Temporary
  - Leased
- **Area**. Enter the gross area of the Building.
- **Year Constructed**.Enter the year that construction of the Building was completed. This data element determines the age of the Building, which is a critical factor in BUILDER's decision-making processes.

- **Number of Floors**. Enter the number of floors of the Building. This data element is used to estimate the size of the Building's footprint by dividing the area by the number of floors.

Calculated Data

Data calculated by **BUILDER** is usually read-only. However, **Replacement Cost** and Mission Dependency Index (**MDI**[1]Mission Dependency Index - measures the relative importance of a Building) each have a checkbox that allows manual entry or manual override of the system-calculated figure.

- **Replacement Cost**. This data element contains the current replacement cost for a Building of the current Building's use and size under current construction standards. **BUILDER** provides a cost module to estimate the replacement cost. If you don't check the manual override checkbox, the cost module will update the replacement cost using the default cost book, adjusted for inflation and geographic location when costs are updated.

  CAUTION: If you check the manual override checkbox, the cost module will not affect this Building's replacement cost, and you will have to periodically update its replacement cost manually to account for inflation.

  Note: Geographic location is set at the Site level. Cost and inflation books are part of Work Configuration. They are discussed under **Data Libraries** in the online documentation or in the **BUILDER** Reference Data Guide downloadable PDF as well as being mentioned in Work Configuration documentation.

- **Mission Dependency Index**. The availability of the Mission Dependency Index (**MDI**[2]) is the result of ongoing U.S. Navy research to develop a process for computing a 0-100 index that measures how critical the facility is to the overall mission of its owner. This measure allows user input to shape an automated planning process that uses metrics and rules to identify and prioritize budget allocations and work plans. See About the Mission Dependency Index for more information about the **MDI**[3].

  Note: As of July 2016, the **MDI**[4] is currently not calculated within **BUILDER**. See the following section, How To Enter or Change the Mission Dependency Index (MDI).

How To Enter or Change the Mission Dependency Index (MDI)

To enter or change the **MDI**[5]Mission Dependency Index - measures the relative importance of a Building,

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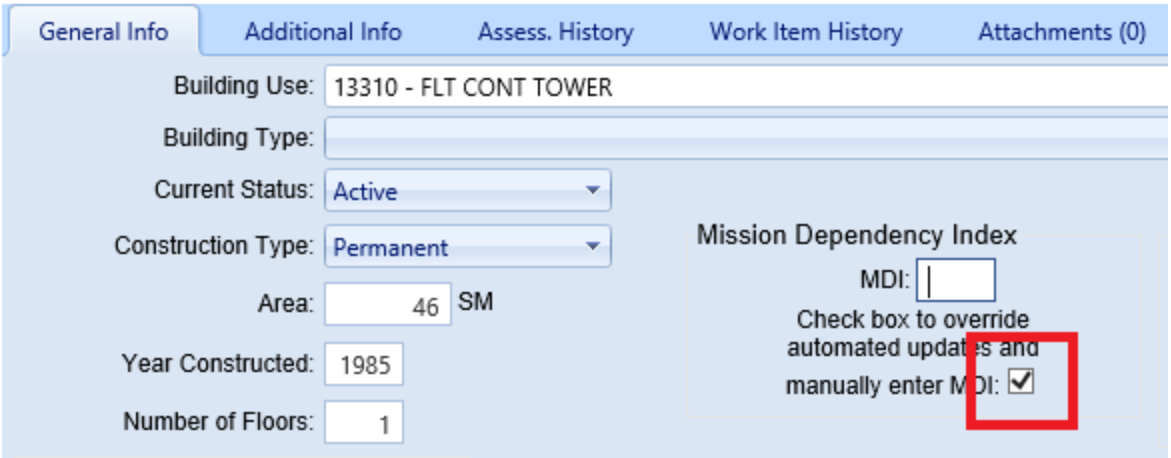
[1]Mission Dependency Index
[2]Mission Dependency Index
[3]Mission Dependency Index
[4]Mission Dependency Index
[5]Mission Dependency Index

- First check the override box at the Building's **General Information** tab:



- Next, enter the desired **MDI**[1] score in the entry box above the checkbox.
- Finally, activate the **Save** icon in the content area toolbar.

Index Data (Read-Only)

All of the indices below are updated every time a rollup is performed. *(See Appendix A: About Rollup)*

- **Building Condition Index** (BCI). The BCI measures the condition of the Building as a whole. It is computed by averaging the condition indices of the Building's Systems, weighted by the replacement costs of the systems.
- **Building Functionality Index** (BFI). The BFI measures the functionality of the Building as a whole. It is computed from the results of a functionality assessment of the Building as a whole.
- **Building Performance Index** (BPI). The BPI measures the overall performance of the Building as a whole. It is computed using a weighted combination of the BCIBuilding Condition Index - a condition rating for the overall Building. For each Building, the BCI is computed by taking the average of its Systems' CIs (SCIs), weighted by replacement cost. and BFI.
- **Facility Condition Index** (**FCI**[2]). The **FCI**[3] metric provides an overall sense of deferred repair work. It differs from the BCI in that it is a monetary based metric. The formula is: **FCI**[4] = (1- $current repair needs/$**PRV**[5]) x 100, where the dollar amount of repair needs is obtained from **BUILDER** work items. More information about the **FCI**[6] is available at Facility Condition Index, or via the Glossary.

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[1]Mission Dependency Index

[2]Facility Condition Index.

[3]Facility Condition Index.

[4]Facility Condition Index.

[5]Plant Replacement Value. This number will be the aggregate of the PRV of all inventory items contained within the current inventory item.

[6]Facility Condition Index.

Status

- **Historic Building (Read-Only)**. This checkbox indicates whether or not the Building is historic. It is automatically marked if a functionality assessment has been performed in the Building and it has been determined that the Building is historic or has cultural resources in the Building.

  Note: This feature is not selectable. It is calculated by **BUILDER**.

- **Child-Occupied Facility**. This checkbox indicates whether or not the facility is child-occupied. You can mark or un-mark this box as appropriate.
- **High Security**. This checkbox indicates whether or not the facility is deemed High Security. You can mark or un-mark this box as appropriate. Because working at a high security location generally increases labor time and other costs, this feature will apply higher security-related cost factors if the cost books have been set up for this in advance.

  Note: This feature will have no effect unless the cost books have been appropriately modified.

- **Additional Access**. This checkbox indicates whether or not the facility has access issues, such as radioactivity or remote location. You can mark or un-mark this box as appropriate. Because working at a location with access issues generally increases labor time and other costs, this feature will apply higher access-related cost factors if the cost books have been set up for this in advance.

  Note: This feature will have no effect unless the cost books have been appropriately modified.

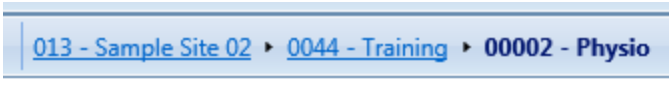
Additional Information Tabs

See Edit Additional Building Inventory Data for details available at additional information tabs in the Building level.

Toolbar

The following buttons and information are available at the content screen toolbar:

- **Save**. Saves changes made to the Building data.
- **Comment**. Allows you to add, edit, or view comments about the Building.
- **Reports**. Launches the Report Selection tool, which gives you access to a list of standard reports relevant to Building inventory. See Generate Building Reports.
- **Breadcrumbs**. The breadcrumbs shown on the toolbar provide both orientation and an alternative method of navigation:



Building Tasks

Other tasks that can be performed on Buildings are:

Add a Building
Edit Additional Building Inventory Data
Assign Buildings to a Complex
Generate Building Reports
Delete a Building

Additional useful information can be found here:

About the Building Current Status Property
Use Current Status to Track Non-Current Inventory

Edit Additional Building Inventory Data

This topic describes information that can be viewed and edited at all of the Building data screen tabs except the **General Information** tab. Information at the General Information tab is described in the topic Edit Building General Information.

Additional Building data is displayed and can be edited at the **Additional Information**, **Assessment History**, Work ItemA discrete work activity applied to a single managed object such as a Component-Section, intended to improve its life cycle performance. Provided by Mike Grussing to AJF in email June 17, 2019. **History**, **Systems at a Glance**, **Cost Modifiers**, and **Attachments** tabs when a Building is selected in the inventory tree

Information about the Building will be presented on an ID line and at several tabs. You can use the content area toolbar to perform actions such as saving changes, or adding or editing comments.

- **Toolbar**
- **ID Line**
- **General Information Tab**
- **Additional Information Tab**
- **Assessment History Tab**
- **Work Item History Tab**
- **Systems at a Glance Tab**
- **Cost Modifiers Tab**
- **Attachments Tab**
- **Building Attributes Tab**

Toolbar

The toolbar at the top of the content area provides you with these options:

- **Save**. Saves changes made to the asset's data.
- **Comment**. Allows you to add, edit, and view comments about the selected asset.
- **Reports**. Launches the Report Selection tool, which gives you access to a list of standard reports relevant to the asset's inventory. See Generate Building Reports

ID Line

On the ID line, you can edit the following:

- **Complex ID Number**. The ID Number is limited to 12 alphanumeric characters.
- **Complex Name**. Complex Name is allowed 50 alphanumeric characters.

Best Practice Recommendation: Avoid using single quotes, double quotes, and ampersands. These characters can interfere with query formation.

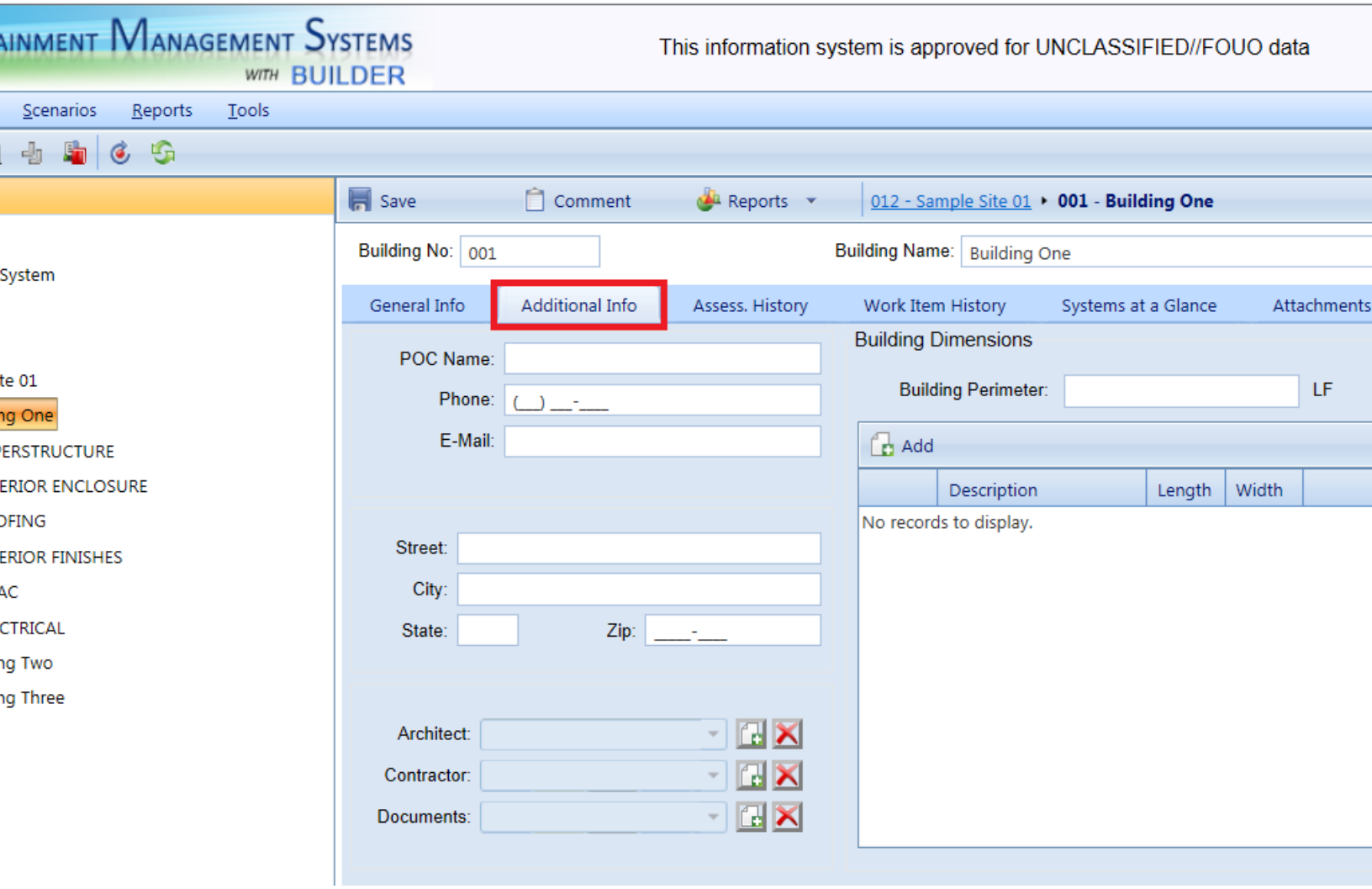
General Information Tab

General information for the Building is explained in detail in the topic Edit Building General Information.

Additional Information Tab

Additional information shown at this tab includes address, point of contact, architect, contractor, and documents information for the Building, plus various Building dimensions, if they have been entered.

To view or edit this information, select the **Additional Info** tab on the Building screen:



All of the additional Building information is optional and includes:

Point of Contact

- **POC Name**. The name of the point of contact for the Building. Limit: 30 characters.
- **Phone**. The Building POC's phone number. Limit: 20 characters.
- **Email**. The Building POC's Email address. Limit: 75 characters.

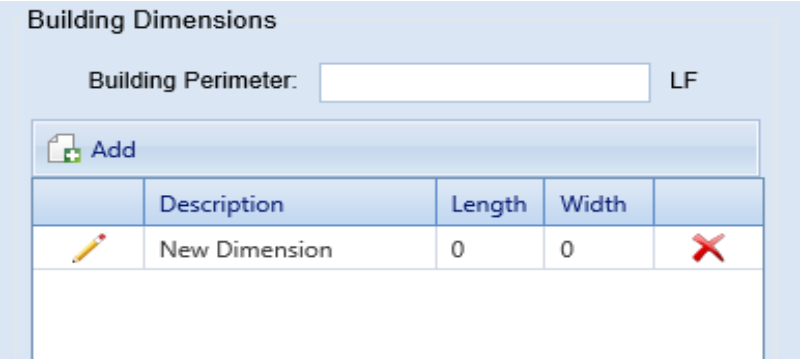
Address

- **Street**. The Building's street address. Limit: 30 characters.
- **City**. The city portion of the Building's address. Limit: 15 characters.
- **State**. The state portion of the Building's address. Limit: 2 characters.
- **Zip**. The zip code of the Building's address. Limit: 10 characters.

Building Design

- **Architect**. Lists the architects of the Building. Add and delete names by using the adjacent buttons. Each architect's name is limited to 30 characters.
- **Contractor**. Lists the contractors of the Building. Add and delete names by using the adjacent buttons. Each contractor's name is limited to 30 characters.
- **Documents**. Lists the documents related to the Building. Add and delete document names by using the adjacent buttons. Each document's name is limited to 24 characters.

Dimensions



The "Building Dimensions" area contains information about perimeter, description, length, and width. The Building perimeter can be entered directly in the form field; however, for Description, Length, or Width, see instructions below about adding or editing an entry.

Add an Entry

If there are no entries in the Description/Length/Width table, activate the **Add** button above the table, then select the pencil icon in the leftmost column of the table to enable data entry. When finished with entry, make sure to activate the blue check mark to the left of the entry, then **Save** at the content area toolbar.

Alternatively, if you wish to cancel the entry, select the red no-entry button below the blue check mark. This will erase any data you have entered into the table, but that row of the table will persist unless you fail to activate **Save** at the content area toolbar.

Edit an Entry

If there is an entry you wish to edit in the Description/Length/Width table, select the pencil icon of that entry to enable editing. When you are finished editing, make sure to activate the blue check mark to the left of the entry, then **Save** at the toolbar.

Alternatively, if you wish to cancel the edit, activate the red no-entry button below the blue check mark.

The following information can be added or edited here:

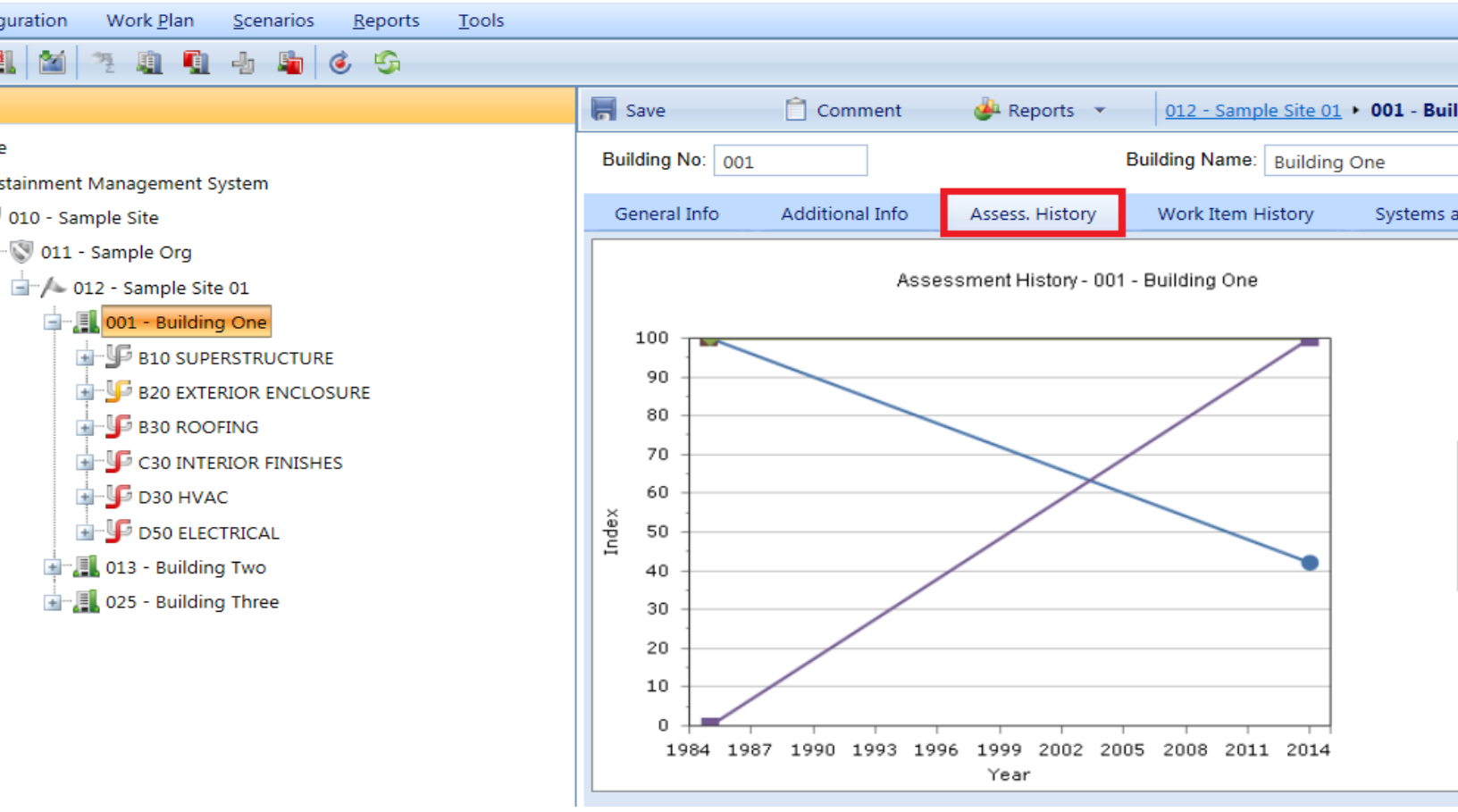
- **Perimeter**. Enter the linear measure of the perimeter of the Building.
- **Description**. Enter a description of the distinct areas of the Building you wish to add dimensions for. For example, you may list "East Wing/West Wing," or "Offices/Library/Warehouse," or "Public Areas/Secure Areas." Each description is limited to 50 characters.
- **Length**. Enter the length of the area identified in the description.
- **Width**. Enter the width of the area identified in the description.

Note: The unit of measure is indicated just after the Building Perimeter field above the table.

Assessment History Tab

Note: The information at this tab is read-only.

The **Assess. History** tab displays a graph showing how different metrics in the Building have changed over time.

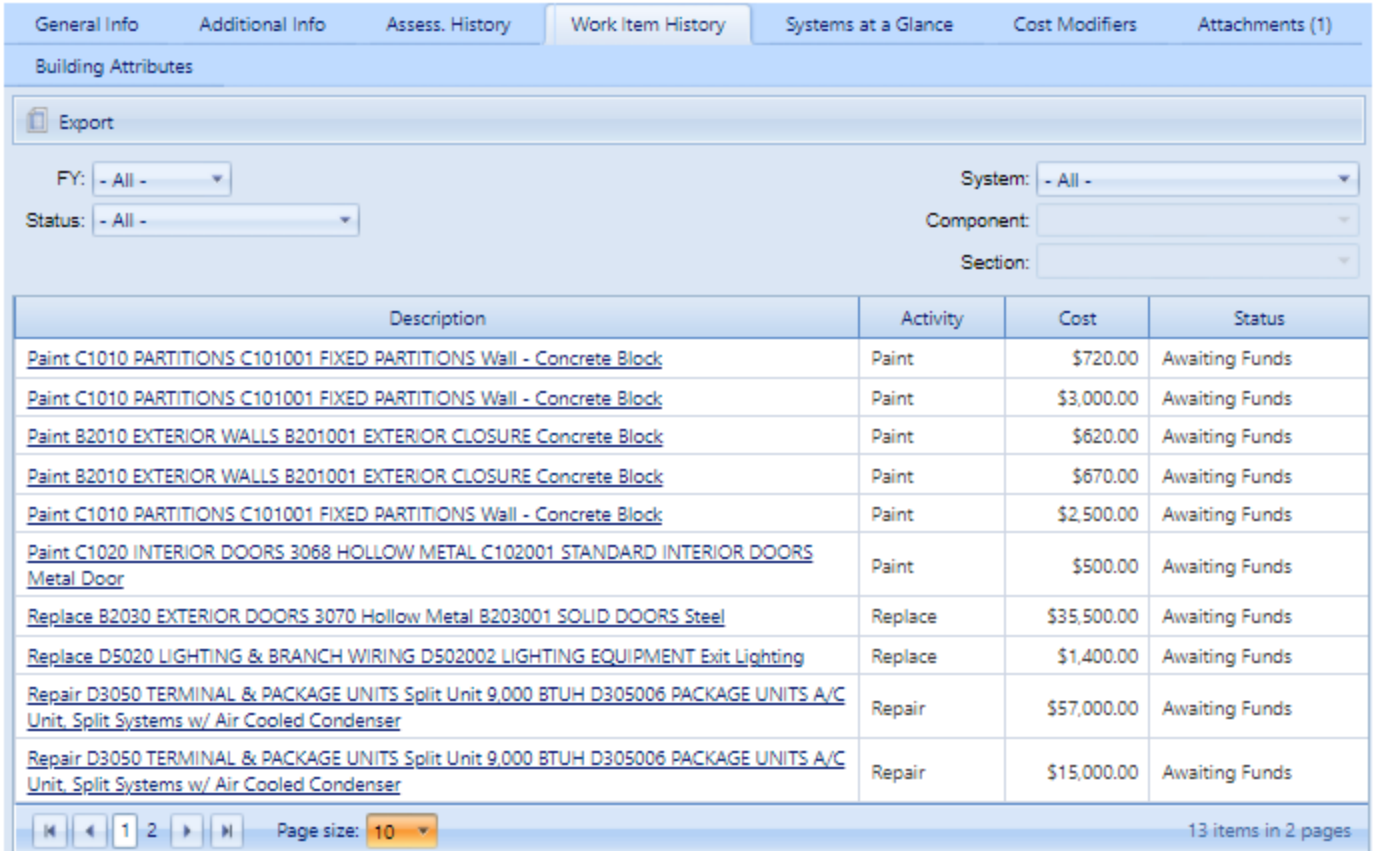


Work Item History Tab

This tab shows a list of the work items that have been performed and/or are scheduled to be performed in the Building. The work items can be filtered by FY, status, System, Component, or Section using the dropdown

lists on the screen.

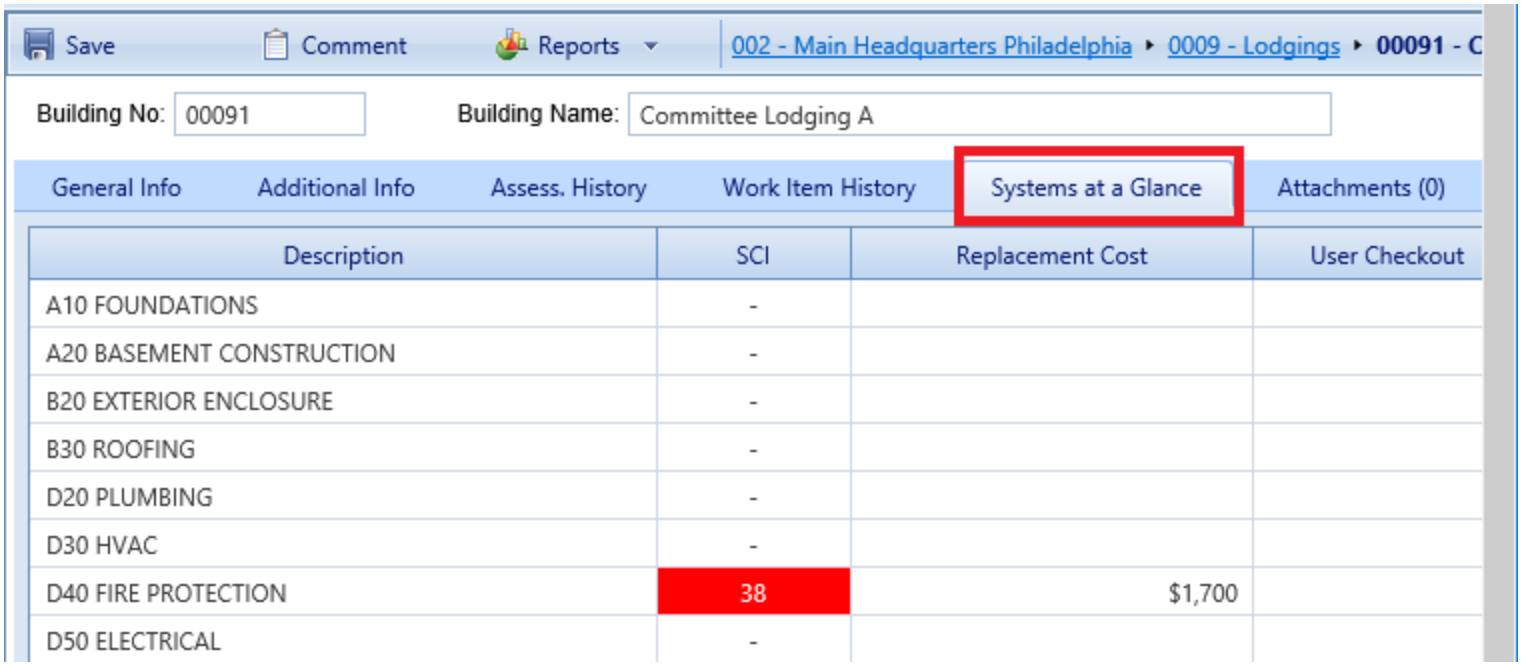
For more information on work items, see the Work Planning Overview.



Systems at a Glance Tab

Note: All of the data shown at this tab is read-only.

Basic information regarding the Systems in the Building can be viewed by selecting the **Systems at a Glance** tab. The **Systems at a Glance** tab shows the systems inventoried in the Building, each system's condition index (SCISystem Condition Index - a condition rating for a Building System. For each System, the SCI is computed by taking the average of its Components' CIs, weighted by replacement cost.), and the replacement cost of each system. If the Building file is checked out for BuilderRED use, the **User Checkout** column shows who has the Building file checked out.



Cost Modifiers Tab

The **Cost Modifiers** tab displays a table showing assigned cost modifiers, and allows you to view and assign cost multipliers or adders.

Note: Existing cost modifiers that affect the Building level may have been assigned at different inventory levels, but from a Building data page you can only assign a Building-level cost modifier.

Modifier Scope

At the Building level, the Assigned Cost Modifiers table will show you all of the following:

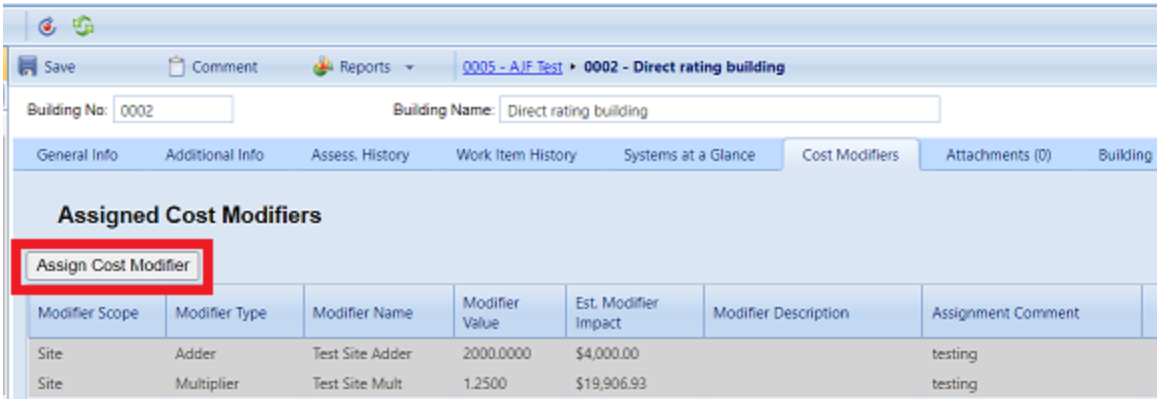
- all modifiers assigned to that Building
- if applicable, all modifiers assigned to the Complex the Building is in
- all modifiers assigned to the Site the Building is in

The scope of each modifier is shown in the **Modifier Scope** column.

Assign a Modifier

To assign a modifier to your Building from available options,

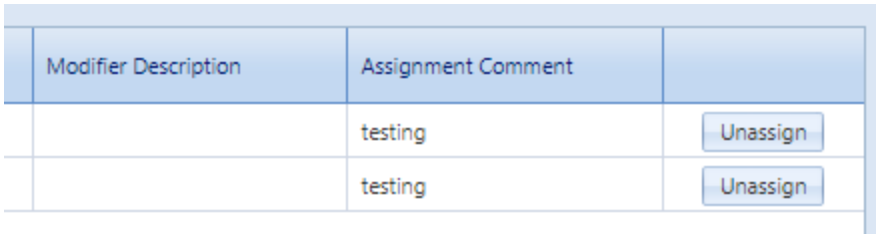
- Activate the **Assign Cost Modifier** button.



- In the "New Facility Modifier Assignment" popup, select a cost modifier from the dropdown list.
- Add a comment if desired.
- Activate **Add** on the popup toolbar. *You should see your selected modifier added to the table of cost modifiers.*

Unassign a Modifier

To unassign a modifier, first navigate to where the modifier was assigned, then activate the **Unassign** button in the rightmost column of the Assigned Cost Modifiers table.



A Site-level cost modifier can be unassigned only at the Site level, a Building-level cost modifier can be unassigned only at the Building level, etc.

More about Cost Modifiers

For more about cost modifiers, see the **Cost Modifiers** chapter in the *BUILDER Reference Data Guide*.

Attachments Tab

At the **Attachments** tab, you have the option to view or change the asset's attachments.

View Attachment(s)

The **Attachments** tab will show whether any files have been attached to the asset's record. The number in parentheses after the word "Attachments" shows how many of them have been attached.

To view one or more attachments,

- Activate the **Attachments** tab. *If attachments are present, a table will display their type, title, and description*.
- Activate the link in the **Title** column. *The attachment will appear in the "Image Viewer" popup window.*
- When finished viewing, activate the **Close** button on the popup window toolbar. and you will be returned to the table of attachments.
- Repeat the two steps immediately above for additional attachments as desired.

Add an Attachment

At the **Attachments** tab on the asset's data page, you have the option to attach files (images and other documents) to the asset's record. An attached file might be a photograph, an electronic image of written notes or diagrams made during inventory, or a file generated on a computer.

Acceptable Attachment Formats

The attachment may be in any of the following formats:

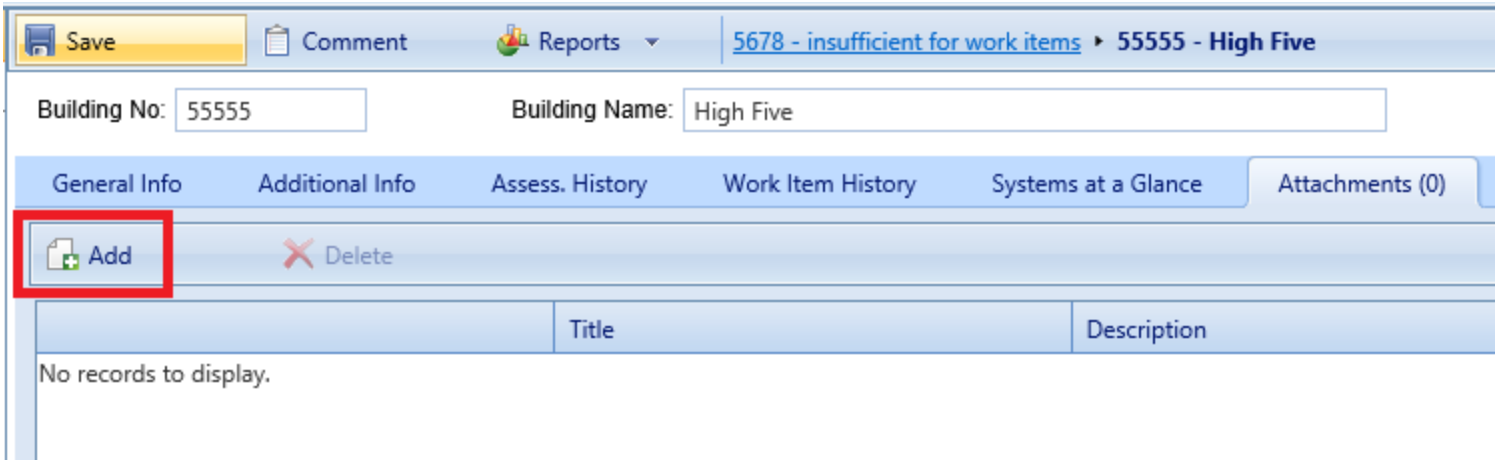
- .jpg
- .jpeg
- .png
- .zip
- .doc
- .pdf

Note: As of January 31, 2022, .doc format is allowed, but not .docx.

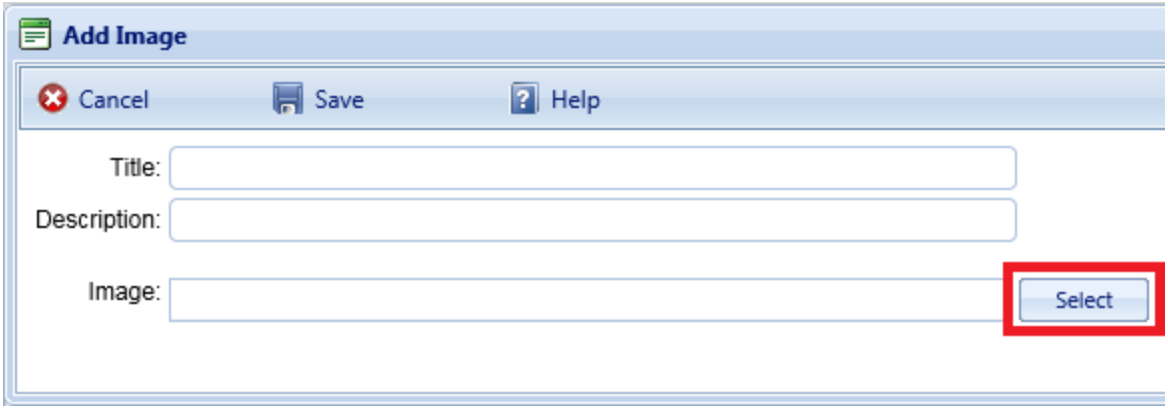
Attach

To attach a file,

- At the **Attachments** tab, activate the **Add** button in the toolbar below the row of tabs.



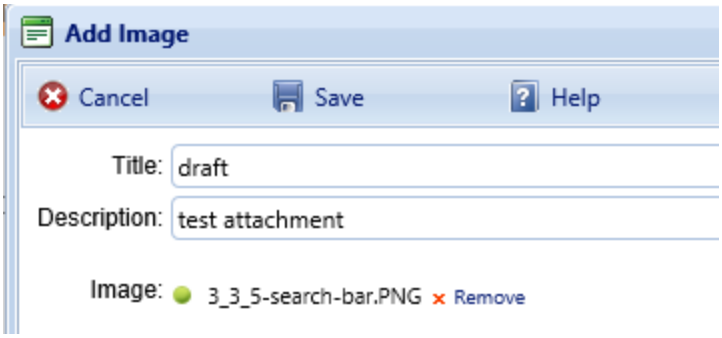
This will open the "Add Image" popup window:



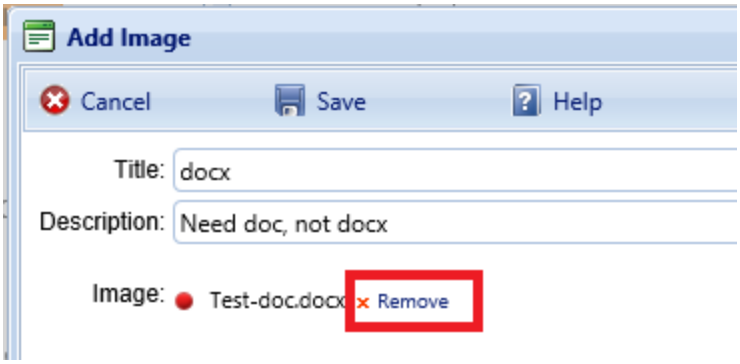
- Enter Title and Description information for the attachment.
- Activate the **Select** button to the right of the "Image" field to browse to the desired image or other file.
- If you are adding an attachment at the Building level, use the **Image Type** radio buttons to indicate whether the attachment is a Key Plan, a Section Plan, or "Other."
- Once the required attachment data is entered,
    a. Activate the **Save** button on the popup toolbar.
    b. Alternatively, to close the popup window without attaching the selected file or image, activate the **Cancel** button.

Attachment Troubleshooting

If the selected attachment is in an acceptable format, the "Image" field will show a green dot (plus a label that gives you the option to remove the attachment).



However, if it is not in an acceptable format, the "Image" field will show a red dot. Activate "Remove" and select an attachment file in one of the formats listed at the header Acceptable Attachment Formats.



Edit Attachment Metadata

You can edit the title and/or description of an attachment as follows:

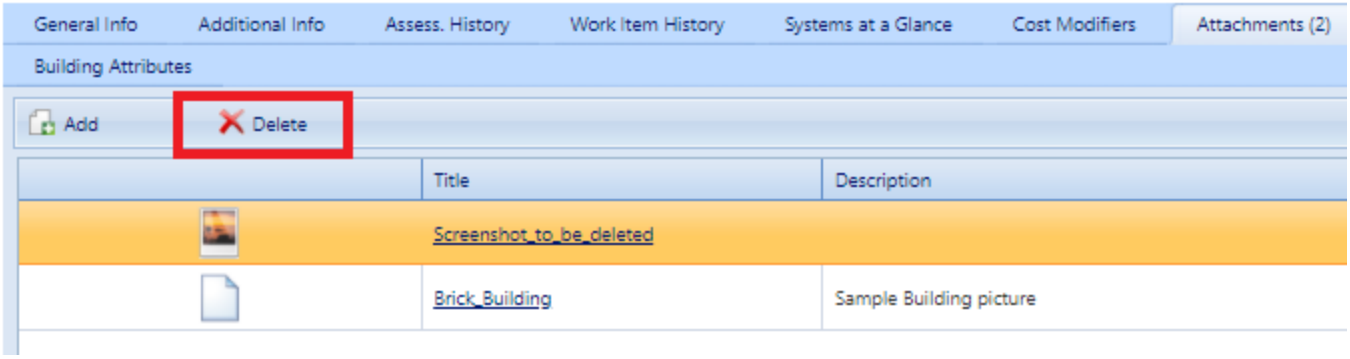
- Navigate to the **Attachments** tab to view the attachments table.
- Activate a link in the **Title** column. *The attachment will appear in the "Image Viewer" popup window.*
- In the header section above the attachment, make the desired changes in the **Title** and/or **Description** field(s).
- Activate **Save** on the popup toolbar to store your changes and return to the table of attachments.
- Alternatively, if you want to cancel the change, activate **Close** on the popup toolbar. *You will be returned to the table of attachments*.

If you wish to change the contents of the attachment, you will need to delete the existing attachment file and add a new one.

Delete an Attachment

To delete an attachment,

- Navigate to the **Attachments** tab to view the attachments table.
- Select the attachment you wish to delete (do *not* activate the link in the **Title** column). *When properly selected, that record in the table will change background color as illustrated below, and only then will the ✕ Delete icon be selectable:*



- Activate the **Delete** button above the table.
- Activate **Yes** in the confirmation box to delete the attachment, or **No** to cancel.

Building Attributes Tab

This tab concerns custom attributes that have been or can be created for the Building.

Custom asset attributes can be added at each inventory level–from Organization down through Section–in two different ways: by using "active attributes" or by using "Admin managed attributes."

"Unassigned" **Admin managed attributes** are a collection of pre-named attributes that have been determined by the **BUILDER** instance's owner (for example, a corporation, or the Air Force, or the Army). They are templated or common attributes that are seen as likely to be used often. Although these attributes are made available from the outset after installing **BUILDER**, they still need to be assigned before they can be used to help describe an asset.

Additional Admin managed attributes can be created, but only by a **BUILDER** AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. or a user with Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. Role.

Active attributes are very flexible and can be created and assigned by any user with inventory privileges.

CAUTION: Unless a standardized procedure for assigning active attributes is implemented and enforced, the flexibility of active attributes can make incorporating them into reports more difficult and time consuming, because multiple people can create them and there is no built-in consistency.

With respect to creating reports, Admin managed attributes will be easier to report on in a consistent fashion, because they are managed by a **BUILDER** AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. (or a user with Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. Role). Also, Admin managed attributes are available to all assets that are at the same inventory level. Active attributes, on the other hand, would be prone to being named inconsistently and make reporting more difficult.

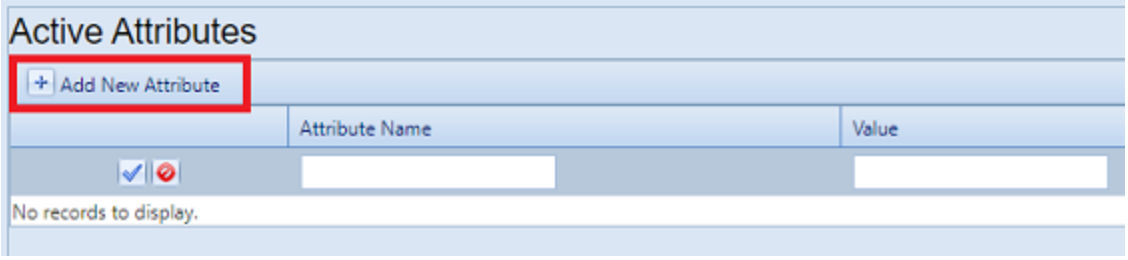
Active Attributes

Under **Active Attributes** at the top half of the Attributes screen, you can add, edit, or delete custom attributes for this level of inventory.

Add an Active Attribute

To add a custom inventory attribute,

- Directly under the **Active Attributes** header, activate **Add New Attribute**. This will generate a new row in the **Active Attributes** table.



- Enter a name and value for your attribute into the table.
- If you want to apply an architect name, press the **Enter** key on your keyboard at this point . The popup "Add Architect" will appear. Enter the name of the architect, then select **OK**.
- When finished with the entry, *activate the blue checkmark icon at the left side of the row* to save the entry. Alternatively, to cancel and delete the entry before saving, activate the red circle with a slash icon (located to the right of the blue checkmark).

  CAUTION: Your new attribute will not be saved if you (a) exit without activating the blue checkmark or (b) initiate adding a new custom inventory attribute (by activating the **Add New Attribute** button) before saving with the blue checkmark.

- Repeat the steps listed above for each custom inventory attribute you wish to add.

Edit an Active Attribute

To edit an attribute,

- Activate the pencil icon in the attribute's table row.
- Make the desired changes.
- Finally, activate the blue checkmark icon at the left to save the changes.

Delete an Active Attribute

To delete an attribute,

- In the table of active attributes, locate the row containing the attribute you wish to delete.
- To the right of the **Value** field, activate the Delete icon (red "X"). *A confirmation popup will appear, asking "Delete record?"*
- Select **OK** to delete, or **Cancel** to stop the process.

Admin Managed Attributes

Under **Unassigned Admin Managed Attributes** at the bottom left of the Attributes screen, you can choose to assign an existing Admin managed attribute to the asset whose data screen you have open. You can also change the value of an attribute after it has been assigned.

Note: Attributes that are in the table under the header **Admin Managed Attributes** are already assigned to the asset whose data screen you are in.

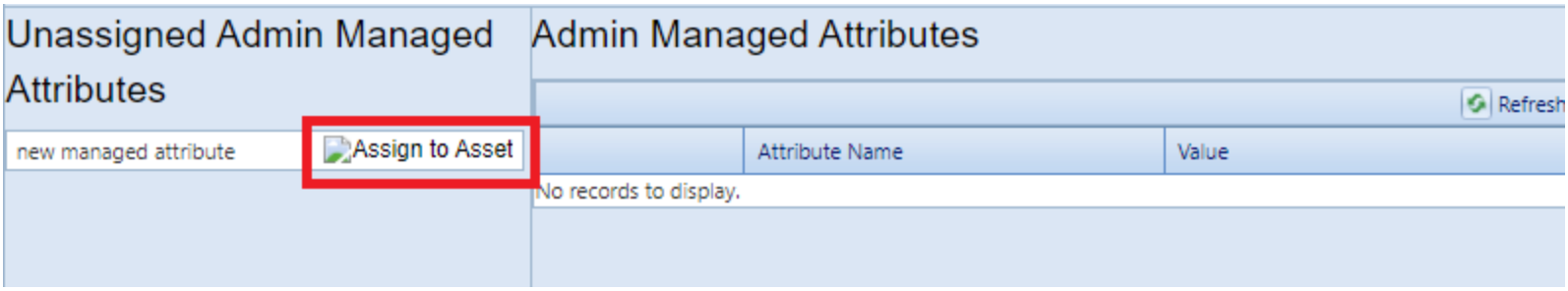
Only a **BUILDER** AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. or a user with the Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. Role can create, edit (other than changing the value), or delete/unassign custom Admin managed attributes for the selected asset. Also, once an Admin managed attribute has been moved from the **Unassigned Admin Managed Attributes** column into **Admin Managed Attributes**, this action cannot be reversed except by a **BUILDER** AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. or a user with Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. Role. More detail about AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings.-specific inventory attribute tasks can be found at Manage Custom Inventory Attributes.

Assign an Unassigned Attribute to Admin Management

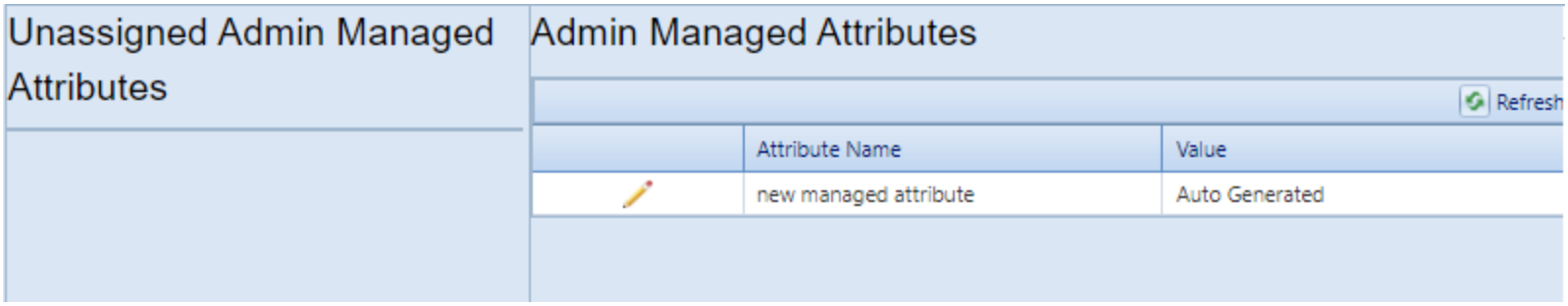
You may see one or more items listed under the header **Unassigned Admin Managed Attributes** at the lower left of the Attributes screen. These are attributes that are available at this inventory level but that have not been assigned to the selected asset. If no items are listed under the header **Unassigned Admin Managed Attributes**, there are none available to be assigned. (They may have already been assigned and thus transferred to the **Admin Managed Attributes** table.)

To assign an unassigned asset to Admin management,

In the **Unassigned Admin Managed Attributes** column, activate **Assign to Asset**.



*This will immediately populate the inventory item in that row under **Admin Managed Attributes** instead.*

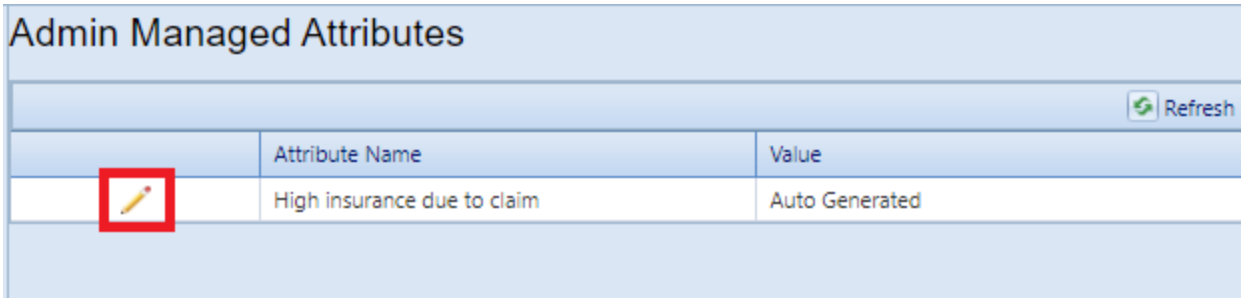


Note: The assignment action is not reversible, except by a **BUILDER** AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. or a user with the Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. Role.

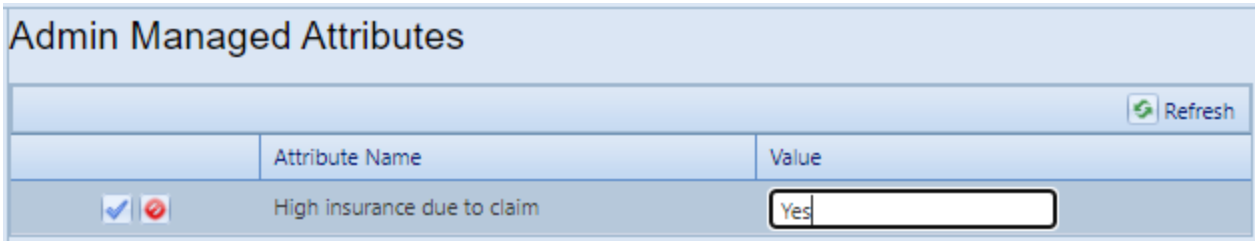
Change the Value of an Admin Managed Attribute

To change the value of an asset under Admin management,

- Under **Admin Managed Attributes**, activate the pencil icon in the attribute's table row, and wait for the row to change appearance.



- Make the desired change in the **Value** column.



- Finally, activate the blue checkmark icon at the left to save the changes (or the red Cancel icon to cancel the change).

Building Tasks

Other tasks that can be performed on Buildings are:

Add a Building
Edit Building General Information
Assign Buildings to a Complex
Generate Building Reports
Delete a Building

Additional useful information can be found here:

About the Building Current Status Property
Use Current Status to Track Non-Current Inventory
About the Mission Dependency Index

Generate Building Reports

This topic shows how to locate, select, and generate Building-level reports.

There are two locations where you can generate reports:

a. At the main menu bar. The selection of reports listed here is divided into categories: Inventory, Condition Assessment, Functionality Assessment, and Work Planning.
b. At the content area toolbar.

The first section below provides instructions for generating Building-level reports from the Building's content area toolbar. Reports generated here will be restricted in scope to the selected Building .

The next section after that one provides instructions for generating a report starting at the main menu.

Generate Report at Building Data Screen

Scope of Report

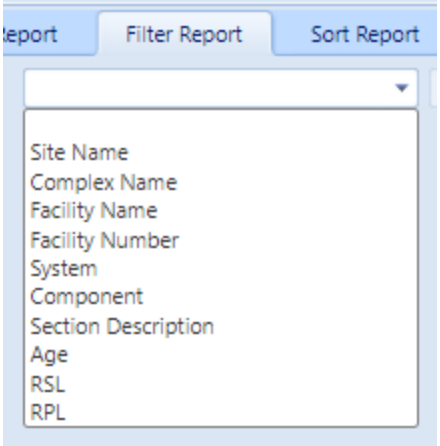
When you generate a report while you are at the Building level of the inventory tree, the report will contain data only for the currently selected Building.

How to Generate

To generate a report,

- Activate the **Reports** button on the content area toolbar. (The content area toolbar is directly above the ID line.) *The "Reports" popup will open.*
- From the dropdown, select **Standard** reports.
- At the **Select a Report** field, activate the dropdown arrow. *A multi-page list of reports will be made available*.

- In the list, select a report. For example, "Remaining Service Life (**RSL**[1]) Detail". (To find the **RSL**[2] report, you will probably need to scroll down the list.)
- Optionally, you can then select one or more filters at locations and inventory levels where the **Filter Report** option is active. For example, by selecting the "Age" filter, you can have the **RSL**[3] report show only items that are 10 years old or more. This is the list of filters available for the **RSL**[4] report at the Building level:



- After setting any desired filters, and selecting a Sort order if desired, activate **View Report** on the popup's toolbar. *The report will be displayed in a popup titled "Report Viewer."*
- From the "Report Viewer" popup, you can choose to download or print the report.

Generate Report from Main Menu

Scope of Report

Reports are not made available at the Organization level. By default, unless you have used filters to further restrict what is included in the report, the scope of the report will be the Site, Building, System, Component, or Component-Section where you are located in the Inventory tree when you activate the **Reports** button.

How to Generate

To generate a report from the main menu,

- Activate the **Reports** button at the main menu.
- In the "Reports" popup, open the BUILDER entry by activating the plus button.

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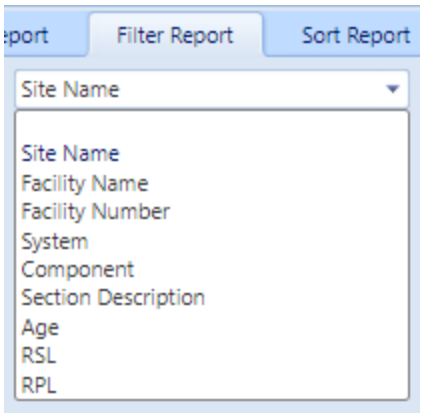
[1]Remaining service life.
[2]Remaining service life.
[3]Remaining service life.
[4]Remaining service life.

- Next, open the desired category: Inventory, Condition Assessment, Functionality Assessment, or Work Planning. For this example, open Inventory.
- In the expanded list of reports, scroll down to the desired report and select it.
- Optionally, you can then select one or more filters at locations and inventory levels where the **Filter Report** option is active. For example, you can select the "Age" filter and direct the **RSL**[1]Remaining Service Life report to show only items that are 10 years old or more.

  For example, this is the list of filters available for the **RSL**[2]Remaining Service Life report at the Site level:



- After setting any desired filters, and selecting a Sort order if desired, activate **View Report** on the popup's toolbar. *The report will be displayed in a popup titled "Report Viewer."*
- From the "Report Viewer" popup, you can choose to download or print the report.

Export Report

To export a report, see instructions at Export a Report.

Building Tasks

Other tasks that can be performed on Buildings are:

Add a Building
Edit Building General Information
Edit Additional Building Inventory Data
Assign Buildings to a Complex
Delete a Building

Additional useful information can be found here:

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[1]Remaining service life.
[2]Remaining service life.

[About the Building Current Status Property]
[Use Current Status to Track Non-Current Inventory]
[About the Mission Dependency Index]

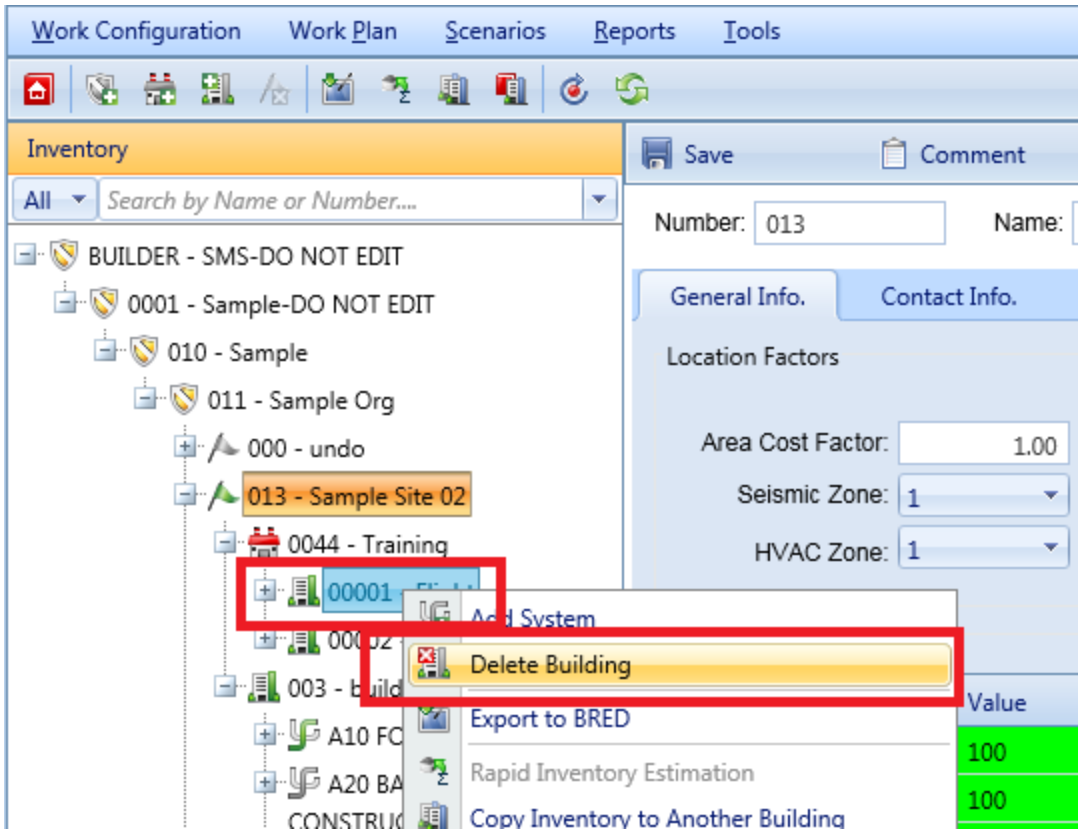
Delete a Building

This topic shows how to delete a Building. It also recommends an alternative to deletion that preserves Building records without allowing them to affect the calculation of indices.

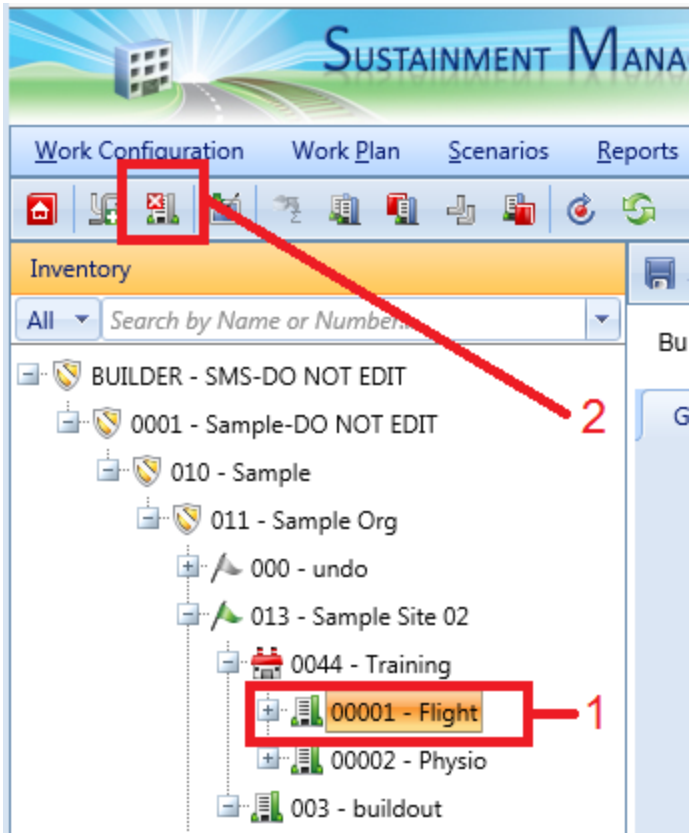
Permissions Note: This action requires Work Planner permission or above for the relevant location in inventory.

To delete a Building, navigate to it in the inventory tree and do one of the following:

a. Right-click the Building. Then select "Delete Building."



b. Alternatively, select the Building, then activate the **Delete Building** icon on the menu toolbar:



WARNING: Deleting a Building deletes all the inventory (Systems, Components, and Sections) in the Building. This is a significant step to take and should only be done when you are certain that you wish to clear the entire inventory of the Building you have selected. *Making frequent backups of your inventory database will protect you from significant data losses if mistakes in deleting are made.*

Best Practice Recommendation: Instead of deleting a Building, you can use the Current Status property to mark buildings that have been demolished or transferred to another owner. With this method, the Building's records remain in the database, but the Building is ignored in processes that should only consider current buildings. See Use Current Status to Track Non-Current Inventory.

Building Tasks

Other tasks that can be performed on Buildings are:

- Add a Building
- Edit Building General Information
- Edit Additional Building Inventory Data
- Assign Buildings to a Complex
- Generate Building Reports

Additional useful information can be found here:

About the Building Current Status Property
Use Current Status to Track Non-Current Inventory
About the Mission Dependency Index

About the Mission Dependency Index

The Mission Dependency Index (**MDI**[1]Mission Dependency Index - measures the relative importance of a Building) is a risk-based metric to link facilities to specific mission elements, and it measures how important a particular Building or facility is to the mission.

Each Building can have an **MDI**[2]Mission Dependency Index - measures the relative importance of a Building score in the 0-100 range, where 100 is most critical and 0 is least critical. With such a score available, the most critical Buildings can be easily identified, especially by the automated computer decision processes used by BUILDER.

The Mission Dependency Index is typically obtained from an organization's real property database of record. For those organizations where the **MDI**[3]Mission Dependency Index - measures the relative importance of a Building is not a real property data element, the score can be entered directly on the Building Summary screen, as shown in Override: How To Enter or Change the Mission Dependency Index (MDI).

For more information about determining the score for the Mission Dependency Index, users can refer to the following links:

- http://ascelibrary.org/doi/pdf/10.1061/9780784409589#page=152
- http://www.assetinsights.net/Glossary/G_Mission_Dependency_Index.html
- http://www.dtic.mil/dtic/tr/fulltext/u2/a552791.pdf

The **MDI**[4]Mission Dependency Index - measures the relative importance of a Building was developed by the Naval Facilities Engineering Command Engineering Service Center (Antelman and Miller 2002) and the U.S. Coast Guard Office of Civil Engineering. **MDI**[5]Mission Dependency Index - measures the relative importance of a Building scores identify the severity of loss of mission-enabling facilities and infrastructure.

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[1]Mission Dependency Index
[2]Mission Dependency Index
[3]Mission Dependency Index
[4]Mission Dependency Index
[5]Mission Dependency Index

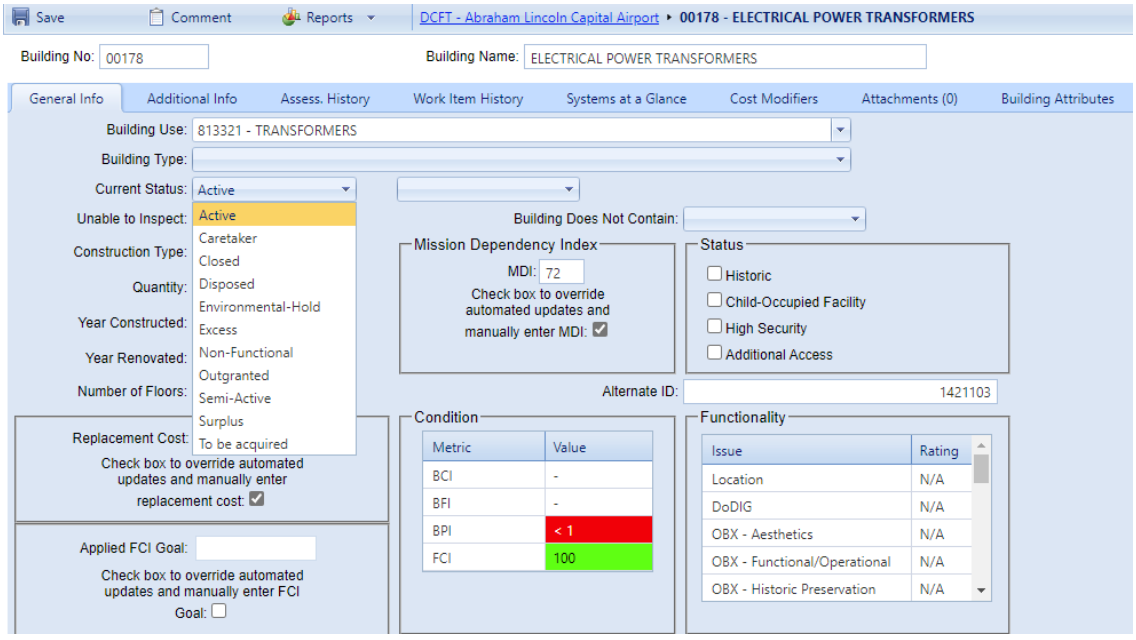
About the Building Current Status Property

The Current Status property of a Building allows you to maintain database records for Buildings not currently in your physical inventory, whether for historical purposes or future planning. A Building's current status is used in the decision processes of both BUILDER and Scenarios, and it is the basis for a number of useful capabilities, including allowing you to:

- Define policies so that Buildings scheduled for demolition are maintained at a lower standards than might generally apply. Simply use the Current Status as one of the attributes used to define a policy and assign standards as appropriate to each status type.
- Define work prioritization schemes that consider future changes in a Building's status in prioritizing work items. This can be done by using the Current Status property as an initial split in your prioritization scheme and assigning weights appropriate for each status type (using 0 weight for non-current status types).
- Plan for the maintenance load of Buildings to be added to your inventory in the future by analyzing a Scenario.
- Change the status of a Building dynamically during a Scenario simulation to study the effects of a changing inventory on the budget and the work load.

Note: Select Building-level field values have been locked for general users in order to maintain the integrity of data and systems connections. For additional information, please contact your data manager.

The Current Status property is set on the Building data screen at the General Information tab (see Edit Building General Information). Local variation (which is typically in the form of an added option) is possible due to database customization, but generally the Current Status property has one of the following values:



- **Active**. This is the default status. Use this status for Buildings that are currently utilized for 6 months or more annually. This status is the end status for Buildings with the status "To Be Acquired."
    - **Note:** This status generates work items.
- **Caretaker**. Select this status when a Building requires minimal maintenance for safety and security.
    - **Note:** This status generates work items.
- **Closed**.Choose the **Closed** status when a Building is not currently being used or maintained.
    - **Note:** This status **does not** generate work items.
- **Disposed**. Use this status when a Building has been demolished—or when a Building has been conveyed or transferred out of the government's inventory.
    - **Note**: This status **does not** generate work items.
- **Environmental Hold**. Select **Environmental Hold** when a Building is not currently in use due to any environmental issues or concerns.
    - **Note:** This status **does not** generate work items.
- **Excess**. Use the **Excess** classification when a Building is no longer required to meet current or future needs of the Federal Government, but it has been approved for future federal use.
    - **Note:** This status generates work items.
- **Non-Functional**. Choose the **Non-Functional** option when a Building cannot be occupied or used for any purpose until functionality returns to a habitable or usable condition.
    - **Note:** This status generates work items.
- **Outgranted**. Select the **Outgranted** status when Building rights have been granted to a non-DoD agency.
    - **Note:** This status **does not** generate work items.
- **Semi-Active**. Choose this status if the Building is used less than 6 months a year (such as training centers).
    - **Note:** This status generates work items.
- **Surplus**. A Building can be classified as a **Surplus** asset when it is not required to meet current or future federal governmental needs and responsibilities.
    - **Note:** This status **does not** generate work items.
- **To Be Acquired**. Use this status to enter inventory records for an existing Building prior to its acquisition. *The effective year of this status is the year in which the Building is expected to be acquired.* You will be able to edit the Building and inspection data for this type of Building, and BUILDER's condition and remaining service life predictions will be applied based on the inspection data entered. In this way, you will be able to estimate the maintenance requirements of such a Building prior to its acquisition. In a Scenarios simulation, this feature allows you to acquire Buildings as the simulation progresses.
    - **Note:** This status **does not** generate work items.

Two of these values indicate that the designated Building is not currently part of the inventory: **To Be Acquired** and **Disposed**.

The Current Status property allows you to enter future Buildings into the inventory and to plan for their maintenance in Scenarios even though they are not presently owned. In addition, the Current Status property

allows you to keep records for Buildings that are no longer in the physical inventory. Such records are ignored in processes that should only consider current Buildings, such as condition rollups and work planning.

Best Practice Recommendation: When you delete a Building, you actually remove all database records associated with that Building. If you wish to keep the records, whether for historical purposes, analysis, or possible transfer to another BUILDER database (perhaps the Building is being transferred from one property book to another), you should simply set the Current Status property to an appropriate value.

Use Current Status to Track Non-Current Inventory

This topic shows how the Current Status property can be used to keep historical records of demolished or transferred Buildings, or to anticipate short-term and long-term needs for Buildings about to be built or otherwise acquired.

The Building-level Current Status property allows you to have records in your BUILDER database for Buildings that are not currently in your physical inventory. This is useful for Buildings at both ends of the lifecycle. You may keep records for Buildings that have been demolished or transferred, and you may add Buildings planned for future construction or acquisition.

Add Future Buildings

Using the Current Status property, it is possible to enter Buildings into the database before they are actually in the physical inventory. This includes Buildings under construction (designated with status "To be built") and existing Buildings being considered for acquisition from another owner (designated with status "To be acquired").

"To Be Acquired"

By setting the Current Status property to "To be acquired" and entering data in advance, you will be able to anticipate short-term work requirements for existing Buildings about to be acquired. In BUILDER, the "To be acquired" status can also be used to plan long-term maintenance requirements for future Buildings using Scenarios.

Enter Inventory Records

Use this status to enter inventory records for a new Building prior to its acquisition.

Record Inspection Results

Once you have entered inventory records for a Building with status "To be acquired," you may record inspection results prior to acquisition. The BUILDER processes that determine remaining service life and condition prediction will track the condition of the Building after it is first entered and prior to its acquisition.

Generate a Work Plan

With inspection results, BUILDER will be able to generate a work plan for the Building to upgrade it (or its roofing, in the case of ROOFER) to your established standards. Such information could be invaluable in planning for the load such a Building will place on both short and long term budgets.

"To Be Built"

Enter Inventory Records

Use this status to enter inventory records for a new Building prior to its commissioning for occupancy.

No Recording of Inspection Results

If you enter a Building with status "To be built," you may not record new inspections until the status changes to "Active." The **BUILDER** processes that determine remaining service life and condition prediction will skip such a Building under the assumption that quality assurance during the construction process will force all Systems to a condition index of 100 prior to commissioning.

Use Scenarios to Simulate "Active" Status (BUILDER Only)

The advantage of entering the Building before it is built is that you may include it in Scenarios to measure its long-term effects on work plans and budgets That is, the scenario can change the status of a new Building to "Active" at a scheduled time and begin treating it as a normal Building with predictable deterioration rates and work requirements.

Keep Records of Past Buildings (Demolished, Transferred)

In earlier versions of **BUILDER**, the only way to exclude a Building from automated assessment and planning processes was to delete the Building. With this approach, all records related to the Building were actually deleted from the database.

Now the Current Status property gives you another option.

If you have records in the **BUILDER** database for a Building which is to be demolished or transferred to another owner, you can keep the inventory, inspection, and work history records in the database, while at the same time making the Building invisible to **BUILDER**'s automated processes, simply by changing the Building's status to "Demolished" or "Transferred."

Best Practice Recommendation: When you delete a Building, you actually remove all database records associated with that Building. If you wish to keep the records, whether for historical purposes, analysis, or possible transfer to another **BUILDER** database (perhaps the Building is being transferred from one property book to another), then you should simply set the Current Status property to the appropriate value, either "Demolished" or "Transferred."

Below is a summary of what happens when a Building has the status of either "Demolished" or "Transferred":

- **Inventory records are locked.** You will be unable to change the Building's data properties or its composition.
- **Condition and Functionality Assessment records are locked.** You will be unable to change existing records or to add new records.
- **Functionality Assessment records are locked (BUILDER only).** You will be unable to change existing records or to add new records.
- **Work Planning records are locked.** You will be unable to change existing records or to add new records.
- **Cost data is not updated.** The Building's cost data will not be affected by annual cost updates at the beginning of the calendar year.
- **The RSL[1]Remaining Service Life and CI[2]Condition Index or** RCI**Roof Condition Index values will not be updated** for the Building.
- **The Building will not be considered during automatic work generation.**
- **The Building will not appear in Scenarios simulations (applies to BUILDER only).** If the Building's status is changed to "Demolished" or "Transferred" during a Scenarios simulation, it will have records for the years prior to its status change and then after that date in the scenario, it will be treated as above. That is, there will be no further updates of data, no new inspections, no changes in condition or service life, etc.

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[1]Remaining service life.

[2]Condition Index

Systems

Working with Systems

The System level in the **BUILDER** hierarchy is what allows your real property inventory to conform to Level 2 of the UNIFORMAT II system shown in BUILDER Systems and Components. This topic briefly introduces the features of a System and how to use it in organizing real property inventory. It also provides links to the operations that can be performed at the System level.

The System level in **BUILDER** is designed to match the UNIFORMAT II building classification system. Because of this, there are a limited number of Systems that you can select from. However, you are not required to have one of each and every possible kind of System from the list in the Building.

Things you can do at the System level are:

- view condition history
- view a table of the Components contained in the System
- assign or unassign System-level cost modifiers (these modifiers are values to multiply by or to add to the cost of an asset to account for factors such as remote site location or local market anomalies in cost of materials)
- view, add, or delete attachments
- add, edit, or delete custom System attributes
- generate reports.

System Tasks

Tasks that can be performed on Systems are:

Add a System
Edit System Data
Generate System Reports
Delete a System

About Identifying Systems, Components and Sections

This topic provides valuable advice to assist in the process of dividing Buildings into their constituent Systems, Component, and Component-Sections.

After you Add a Building and have entered its required data elements, you should identify the Systems, Components and Component-Sections in the Building. Your decomposition of a Building into its Systems and the decomposition of those Systems into Components will be very straightforward. The formation of Component-

Sections, however, will require some thought on your part. BUILDER manages Buildings at the Component-Section level, and you will inspect Component-Sections and plan work for Component-Sections.

BUILDER's representation of Building Component-Sections has been designed for flexibility. With flexibility comes choices; choices that add complexity to the process. Pay particular attention to the subsection Defining Component-Sections *below*.

As an alternative option to adding all Systems, Components, and Component-Sections manually, BUILDER provides several mechanisms to speed the inventory process. For example, you can Copy Inventory to Another Building or Add Building Inventory Using a Template.

Defining Systems

Systems are used to help you organize the records for the actual physical items in your Building. You may create only one System of each System type for any given Building. When you add a new System to a Building, the dropdown list of choices for which kind of System to add will include only those Systems that have not already been added to the Building. See Add a System for details.

Defining Components

Like Systems, Components are used to help organize the records of the actual physical items in the Building. The Components that can be added to a System will depend on the System representation you have chosen for the Building. You may create only one Component of each type for each System. When you add a Component, the list of choices will include only those Components that have not already been created for that System. See Add a Component for details.

If you have a Component that is not in the list of available Component options, please contact your SMSSustainment Management System support agent. BUILDER does not have a feature for user-defined Components. Each Component has a number of data elements associated with it (varieties of types and materials, costs, service lives, standard units of measure, inspectable subcomponents, etc.) which must be researched before the Component can be added.

Defining Component-Sections

Component-Sections (also called Sections) of a Building are the key structures in a BUILDER inventory. The System and Component structures are organizational in nature, serving to categorize what is in a Building into manageable groups. Component-Sections actually represent the physical items of a Building, belong to a particular Component, and have the following properties:

- component type
- material/equipment type
- quantity
- age
- whether or not it is painted, and, if so, when it was last painted and paint type

BUILDER has been designed to be flexible in allowing you to represent your Building's Component-Sections in a number of ways to support how you intend to manage them. Some examples may be helpful:

- Building A has 5 exterior doors (System: Exterior Closure, Component: Exterior Door). Four of the doors are metal personnel doors and the fifth is a metal overhead door. Because there are two different types of doors (personnel, overhead), you will have to create at least two Component-Sections. In this situation, you should create a Component-Section for the metal overhead door and enter the appropriate data about it. You don't need to create a Component-Section name for this door because there is only one. For the four metal personnel doors, if you intend to manage them as a unit, create one more Component-Section and enter the appropriate data about the doors. Again, you don't need to enter a Component-Section name because you are only creating one Section of this material and type.
- Building A has 5 exterior doors (System: Exterior Closure, Component: Exterior Door). You lease Building A to two tenants X and Y. Two metal personnel doors and a metal overhead door are in the tenant X area, and the other two metal personnel doors are in the tenant Y area. Because you plan to inspect and maintain the doors by tenant, you create three Component-Sections:
    - Tenant X Metal Personnel with quantity 2
    - Tenant X Metal Overhead with quantity 1
    - Tenant Y Metal Personnel with quantity 2.

When you create each Component-Section for Tenant X, you use "Tenant X" as the name of the Section. Do the same for Tenant Y. In fact, you may want to name every Section (especially Interior Construction Sections) in the Tenant X area "Tenant X." When you inspect the Building, you can use the Component-Section name to distinguish Component-Sections belonging to each of the tenants.

- Building A has two reciprocating 20-ton chillers (System: HVAC, Component: Cooling Unit/Plant). If they are the same age and you plan to manage them as a unit, then create one Component-Section with quantity 2. However, if you want to manage them individually, or if they were installed at different times and may therefore have different maintenance requirements, then create two Component-Sections of quantity 1 each. Because both Component-Sections have the same equipment type (Reciprocating 20-30 Ton) and component type (Chillers), you will have to have distinct Component-Section names for the two Component-Sections. You may use their barcode IDs as the Component-Section names of you wish.
- Building B has 50 interior wood personnel doors, all alike and all installed when the Building was built. You originally create one Component-Section with quantity 50 for these doors. You may have several years of inspection data regarding the doors, which have deteriorated uniformly over time. With the current inspection, however, two of the doors are found to be severely damaged and will have to be replaced. If the two doors remain in their original Component-Section, inspection samples for these two doors will have to be marked as "non-representative." When the condition index is calculated, the condition of the two doors, which are only 4% of the Component-Section, will have only a small impact on the overall Section **CI**[1]Condition Index. Because you will be replacing the two doors, perhaps with

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[1]Condition Index

a different quality of door because they may be subject to higher user abuse, you should use component sectioning to isolate the two doors. To do this, reduce the original Component-Section quantity to 48. Then create a new Component-Section for the two damaged doors and enter the current inspection data for this new Component-Section, which will then have a low **CI**[1] Condition Index.

From these examples you can see that some thought will have to be given to how you decompose a Building into Component-Sections. Hopefully, you can also see that BUILDER is flexible enough to allow you to manage at the level of detail that you choose. See Working with Component-Sections for details.

Inventory Suggestions

It is not necessary to do a complete inventory initially. Implementation funds and/or time may be limited, so it is possible and permissible to begin with only some of the Component-Sections and expand the inventory on an as-needed basis. If the desire is to begin with a limited set, the following suggestions are made:

- Focus on the Components that are most critical to Building function
- Focus on the Components that traditionally dominate Maintenance and Rehabilitation (M&RMaintenance and Rehabilitation) needs.

When sectioning, a few rules of thumb are offered:

- To avoid a data burden, use the smallest number of Sections possible to meet managerial needs. For example, it is usually not necessary to individually Section every room, each exterior wall, etc.
- Because material differences (e.g. wood vs. masonry) are criteria for sectioning, only create Sections for material differences when the quantity is significant enough to warrant individual management attention. For example, an exterior wall may be made of wood, but a few square feet of wall is made of masonry, essentially for decoration. The wood wall is clearly a Section, but what about the masonry? Should it be its own Section? If the masonry quantity is a mere fraction of the wood and work would be accomplished on the masonry at the same time as the wood (in other words, the entire wall is being managed as a unit), then there is no need to create a Section just for the masonry. However, if the quantities of both the wood and masonry are significant, then create Sections for both.
- Equipment sectioning should be thought out carefully when multiple units of the same equipment are present. For example, there may be three air handling units of the same type, age, etc. In this case, there could be one Section with the quantity of three, or three Sections with the quantity of one. Which approach should be taken? If the desire is to manage them as essentially one unit as far as planning repair and replacement, then one Section will suffice. However, if it is expected that over time, they will be replaced individually, etc, then each should be its own Section.
- Obtaining accurate an accurate quantity can be difficult, and often times there are many sources for obtaining quantity. These include drawings, actual measurement or count, or other records. It must be understood that the more detailed or accurate the count or measurement, the more costly it is to collect the data. Extracting information from records, including drawings, and doing a field validation is

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[1] Condition Index

the most costly. Reasonable estimates within reasonable error are very acceptable as it will result in reasonable error in BUILDER's analyses. For example, the wall finish may truly be 10,634 SF. An estimate of 11,000 SF will suffice for planning purposes especially if the cost to get the true value is twice that for an estimate. Component-Sections that cover an area (SF or SM) are the most difficult to obtain with precision whereas those that are "each" are the easiest. Generally, field count the "each" Component-Sections and estimate the others. The estimates can be refined in the future when projects are developed for M&RMaintenance and Rehabilitation work.

- *Care should be taken when establishing Year Built/Renewed*. Error here will result in erroneous remaining service lives and add error to the projected year when M&RMaintenance and Rehabilitation should be performed. Experience has shown, however, that sometimes the year in which Component-Sections were replaced, rehabilitated, or initially installed/constructed is truly unknown as the records are no longer available. In those cases, make a reasonable estimate and mark the **Estimated** checkbox. Often, there are people who will remember when that work was done, at least in a generalized way (e.g. early 1990s). Fortunately, through subsequent inspections and condition assessments, the Year Installed/Built becomes less important, as BUILDER's prediction models will use the condition assessment information to adjust the remaining service life and to predict when M&RMaintenance and Rehabilitation will be required in the future.

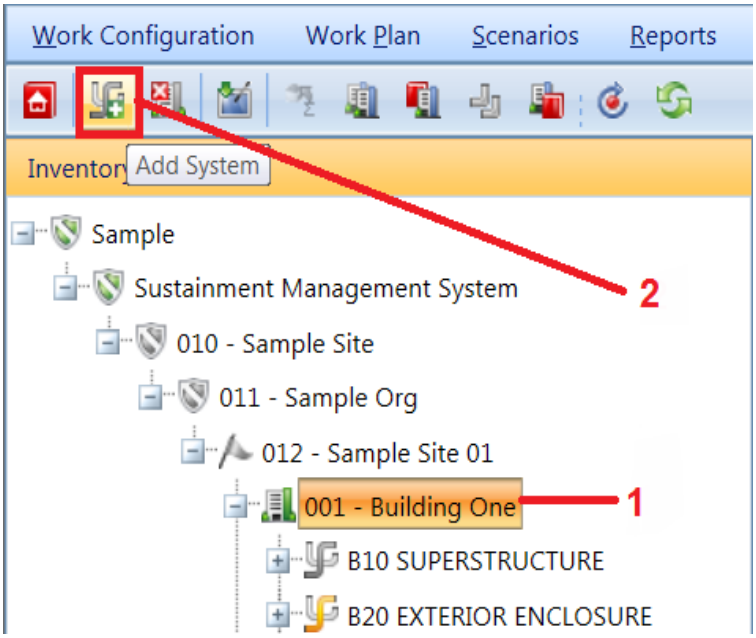
Add a System

This topic shows how to add a System and describes the required minimum information to be entered. The topic Edit System Data describes additional information that can be entered for the System.

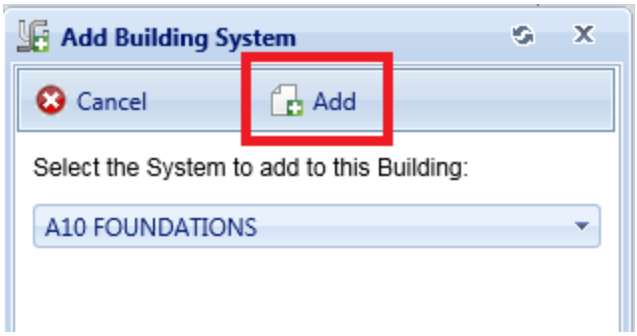
Tip: Please be familiar with the topic About Identifying Systems, Components and Sections before proceeding with this topic.

To add a new System to an existing Building, navigate to the Building in the inventory tree and do one of the following:

a. Right-click the Building. Then select "Add System" from the options.
b. Alternatively, as shown below, select the Building (1). Then activate the **Add System** icon (2) on the main toolbar:



The "Add Building System" popup window will appear.



Activate the dropdown list and select the System you wish to add to the Building. Then activate the **Add** button on the popup toolbar to add the System. (If you do not wish to add a System to the Building, activate the **Cancel** button instead.)

Note: Each Building can contain only one System of each type. The dropdown list for adding a System will display only the System types that don't already exist in the Building.

Once the System is added, you can select it in the inventory tree to view or edit its data, or to add Components within it (see Add a Component or Working with Components).

For information about adding or editing System-level data, see Edit System Data. This includes how to view condition analysis or data on Components in the System, or to view or edit cost modifiers, attachments, or custom System attributes.

System Tasks

Other tasks that can be performed on Systems are:

Edit System Data
Generate System Reports
Delete a System

For an overview of Systems, see Working with Systems.

Edit System Data

This topic describes the information that can be viewed and edited at the System data screen.

Information about the System selected in the inventory tree is presented on an ID line and at several tabs. The content area toolbar gives you access to generating System-level reports.

- **Toolbar**
- **ID Line**
- **Condition Analysis Tab**
- **Components at a Glance Tab**
- **Cost Modifiers Tab**
- **Attachments Tab**
- **System Attributes Tab**

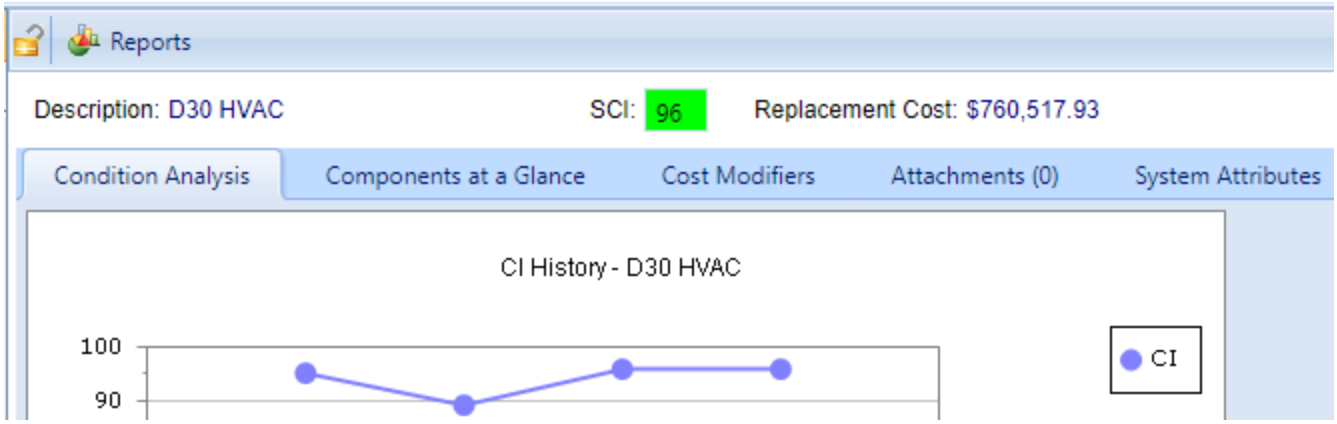
Toolbar

The toolbar at the top of the content area provides you with this option:

- **Reports**. Launches the Report Selection tool, which gives you access to a list of standard reports relevant to the asset's inventory. See Generate System Reports.

ID Line

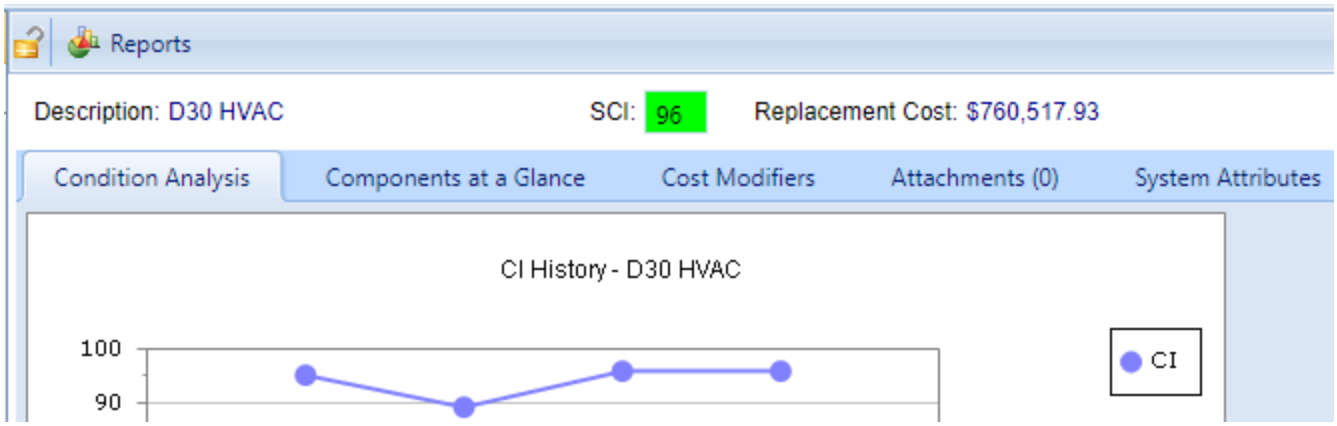
At the top of the System data page you will see the System description in the ID line at the top of the System's content area. On the ID line, the System Condition Index (SCISystem Condition Index - a condition rating for a Building System. For each System, the SCI is computed by taking the average of its Components' CIs, weighted by replacement cost.) and System replacement cost field will be blank until (1) underlying inventory has been entered and (2) a rollup has been performed. The replacement cost is calculated via rollup from the underlying Sections. To do the rollup, navigate to the Building the System is contained in, then activate the Rollup Building icon, , on the Building's toolbar.



Condition Analysis Tab

Note: The information at this tab is read-only.

The Condition Analysis tab displays a graph of the **CI**[1] Condition Index history of the System over time. The graph is not editable.



Components at a Glance Tab

Note: The information at this tab is read-only.

Basic information regarding the Components in the System can be viewed by selecting the "Components at a Glance" tab. The table at this tab shows:

- the Components inventoried in the System
- each Building Component's condition index (BCCIBuilding Component Condition Index - a condition rating for the target Building Component. For each Component, the BCCI is computed by taking the average of its Sections' CIs, weighted by replacement cost)
- the replacement cost of each Component

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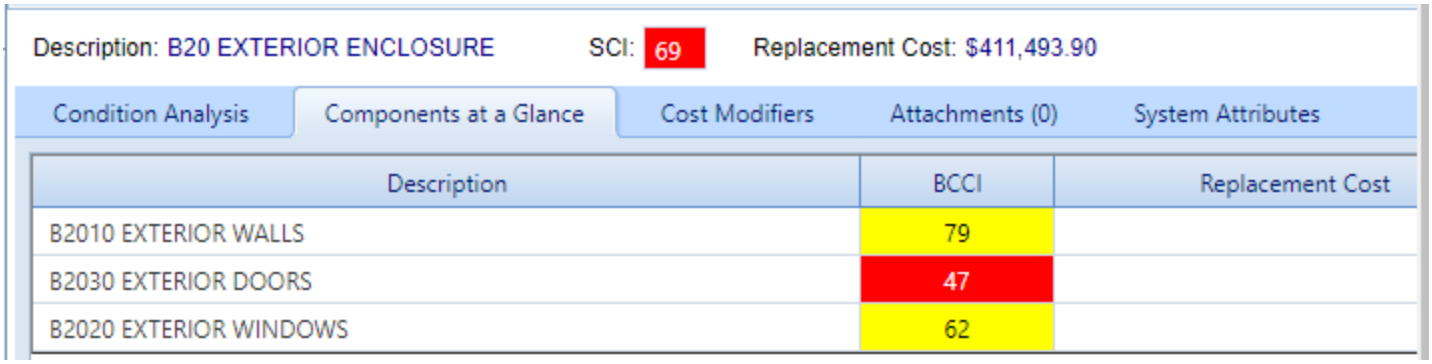
[1] Condition Index

The replacement cost is computed from BUILDER's cost models based on Component type and quantity, and the BCCIBuilding Component Condition Index - a condition rating for the target Building Component. For each Component, the BCCI is computed by taking the average of its Sections' CIs, weighted by replacement cost is computed based on condition assessment data for the Sections contained in the Component.



Cost Modifiers Tab

The **Cost Modifiers** tab displays a table showing assigned cost modifiers, and allows you to view and assign cost multipliers or adders.

Note: Existing cost modifiers may have been assigned at different inventory levels, but from a System data page you can only assign a System level cost modifier.

Modifier Scope

At the System level, the Assigned Cost Modifiers table will show you all of the following:

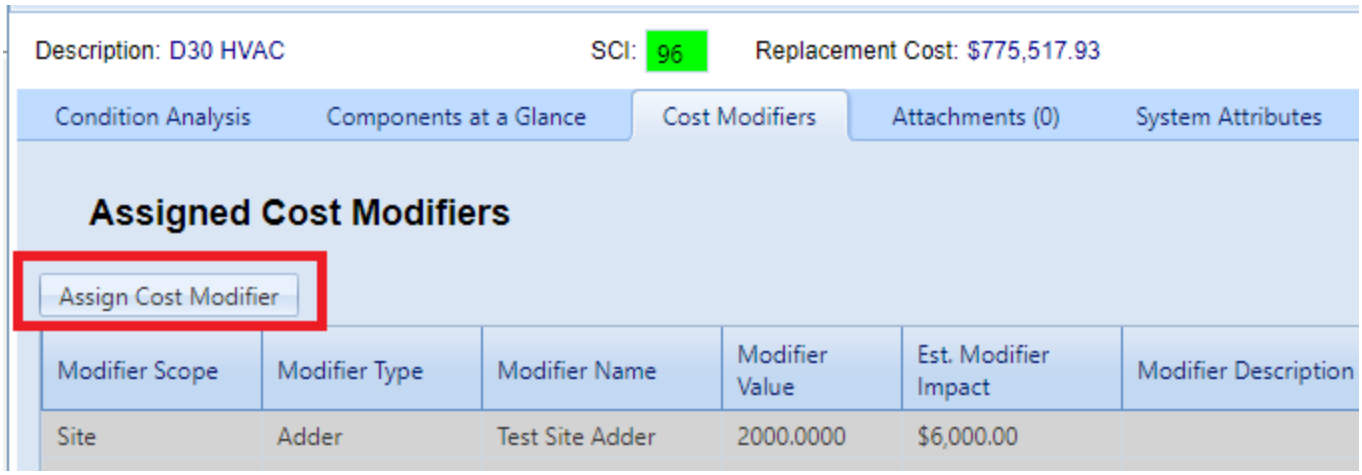
- all modifiers assigned to that System
- all modifiers assigned to the Building the System is in
- if applicable, all modifiers assigned to the Complex the System is in
- all modifiers assigned to the Site the System is in

The scope of each modifier is shown in the **Modifier Scope** column.

Assign a Modifier

To assign a modifier to your System from available options,

- Activate the **Assign Cost Modifier** button.



- In the "New System Modifier Assignment" popup, select a cost modifier from the dropdown list.
- Add a comment if desired.
- Activate **Add** on the popup toolbar. *You should see your selected modifier added to the table of cost modifiers.*

Unassign a Modifier

To unassign a modifier, activate the **Unassign** button in the rightmost column of the Assigned Cost Modifiers table.

More about Cost Modifiers

For more about cost modifiers, see.

Attachments Tab

At the **Attachments** tab, you have the option to view or change the asset's attachments. You can Add an Attachment , Edit Attachment Metadata, Delete an Attachment, or delete and replace an attachment to change its contents. For troubleshooting while adding an attachment, see Attachment Troubleshooting.

View Attachment(s)

The **Attachments** tab will show whether any files have been attached to the asset's record. The number in parentheses after the word "Attachments" shows how many of them have been attached.

To view one or more attachments,

- Activate the **Attachments** tab. *If attachments are present, a table will display their type, title, and description*.
- Activate the link in the **Title** column. *The attachment will appear in the "Image Viewer" popup window.*

- When finished viewing, activate the **Close** button on the popup window toolbar. and you will be returned to the table of attachments.
- Repeat the two steps immediately above for additional attachments as desired.

Add an Attachment

At the **Attachments** tab on the asset's data page, you have the option to attach files (images and other documents) to the asset's record. An attached file might be a photograph, an electronic image of written notes or diagrams made during inventory, or a file generated on a computer.

Acceptable Attachment Formats

The attachment may be in any of the following formats:

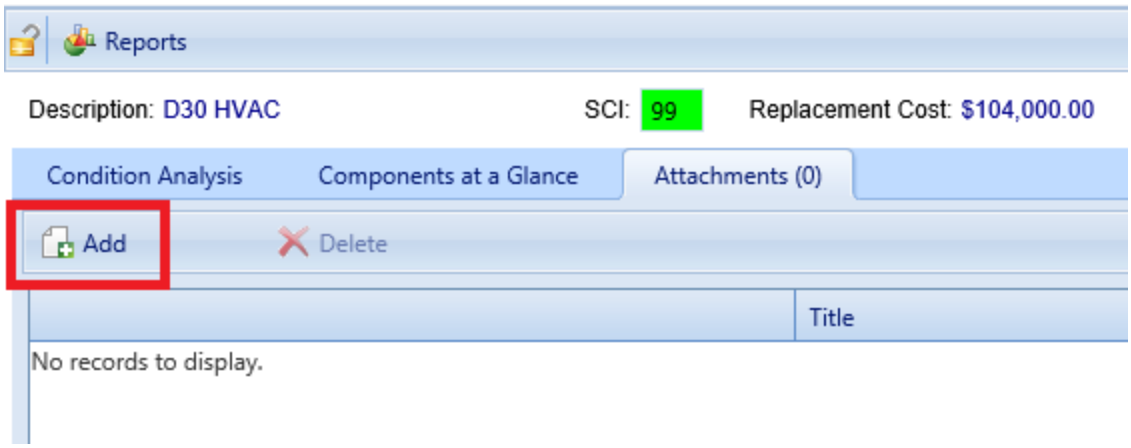
- .jpg
- .jpeg
- .png
- .zip
- .doc
- .pdf

Note: As of January 31, 2022, .doc format is allowed, but not .docx.

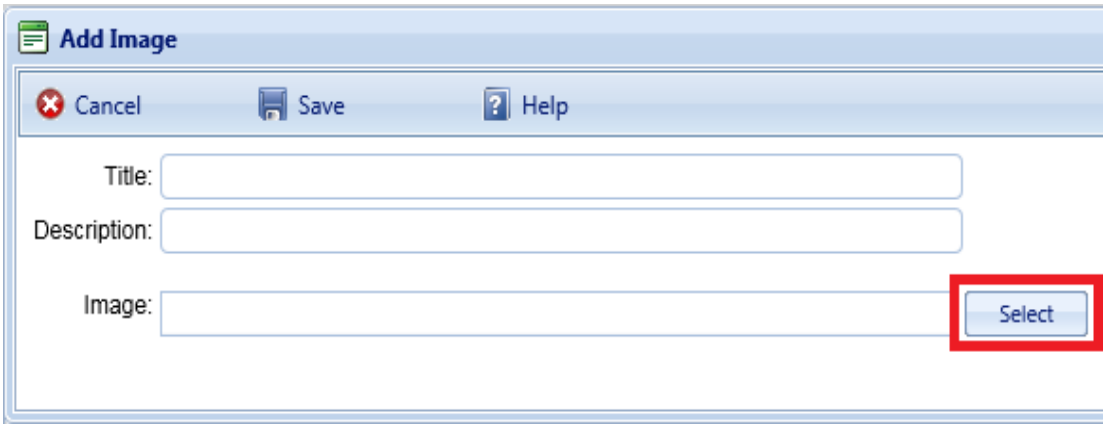
Attach

To attach a file,

- At the **Attachments** tab, activate the **Add** button in the toolbar below the row of tabs.



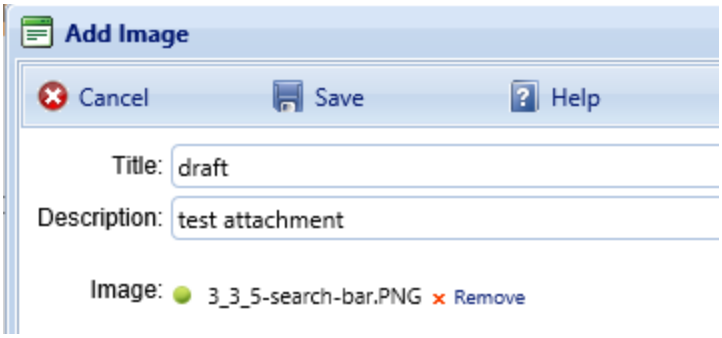
This will open the "Add Image" popup window:



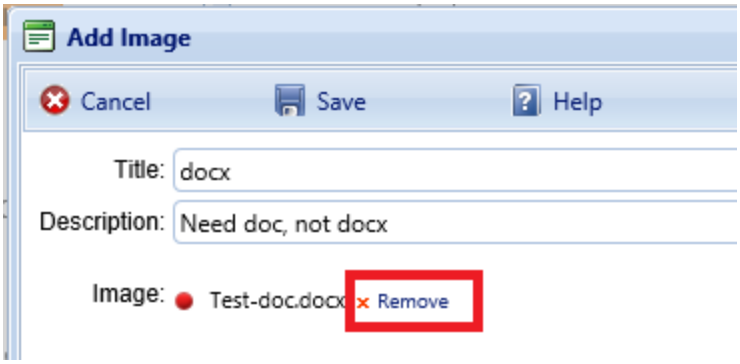
- Enter Title and Description information for the attachment.
- Activate the **Select** button to the right of the "Image" field to browse to the desired image or other file.
- If you are adding an attachment at the Building level, use the **Image Type** radio buttons to indicate whether the attachment is a Key Plan, a Section Plan, or "Other."
- Once the required attachment data is entered,
    a. Activate **Save** on the popup toolbar.
    b. Alternatively, to close the popup window without attaching the selected file or image, activate the **Cancel** button.

Attachment Troubleshooting

If the selected attachment is in an acceptable format, the "Image" field will show a green dot (plus a label that gives you the option to remove the attachment).



However, if it is not in an acceptable format, the "Image" field will show a red dot. Activate "Remove" and select an attachment file in one of the formats listed Acceptable Attachment Formats.



Edit Attachment Metadata

You can edit the title and/or description of an attachment as follows:

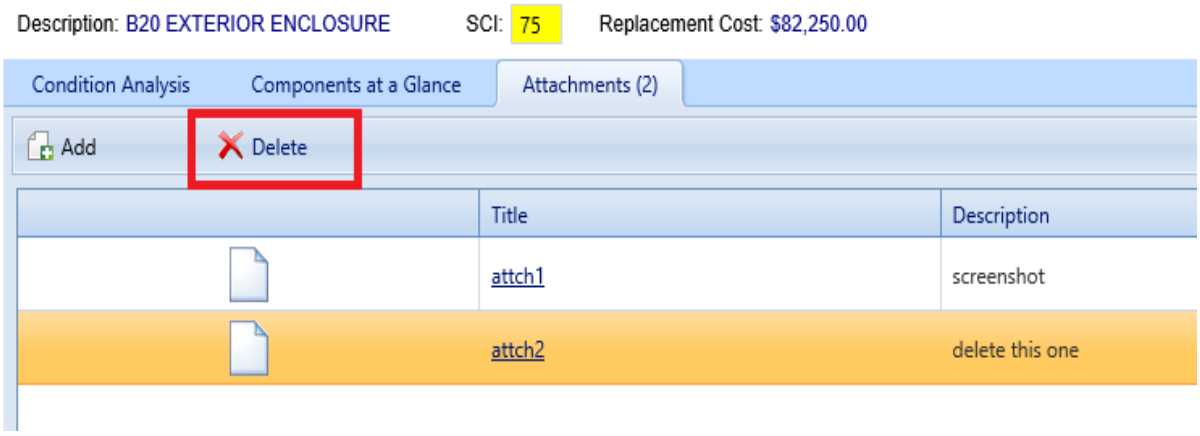
- Navigate to the **Attachments** tab to view the attachments table.
- Activate a link in the **Title** column. *The attachment will appear in the "Image Viewer" popup window.*
- In the header section above the attachment, make the desired changes in the **Title** and/or **Description** field(s).
- Activate **Save** on the popup toolbar to store your changes and return to the table of attachments.
- Alternatively, if you want to cancel the change, activate **Close** on the popup toolbar. *You will be returned to the table of attachments*.

If you wish to change the contents of the attachment, you will need to delete the existing attachment file and add a new one.

Delete an Attachment

To delete an attachment,

- Navigate to the **Attachments** tab to view the attachments table.
- Select the attachment you wish to delete (do *not* activate the link in the **Title** column). *When properly selected, that record in the table will change background color as illustrated below:*



- Activate the **Delete** button above the table.
- Activate **Yes** in the confirmation box to delete the attachment, or **No** to cancel.

System Attributes Tab

This tab concerns custom attributes that have been or can be created for the System.

Custom asset attributes can be added at each inventory level–from Organization down through Section–in two different ways: by using "active attributes" or by using "Admin managed attributes."

"Unassigned" **Admin managed attributes** are a collection of pre-named attributes that have been determined by the **BUILDER** instance's owner (for example, a corporation, or the Air Force, or the Army). They are templated or common attributes that are seen as likely to be used often. Although these attributes are made available from the outset after installing **BUILDER**, they still need to be assigned before they can be used to help describe an asset.

Additional Admin managed attributes can be created, but only by a **BUILDER** AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. or a user with Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. Role.

Active attributes are very flexible and can be created and assigned by any user with inventory privileges.

CAUTION: Unless a standardized procedure for assigning active attributes is implemented and enforced, the flexibility of active attributes can make incorporating them into reports more difficult and time consuming, because multiple people can create them and there is no built-in consistency.

With respect to creating reports, Admin managed attributes will be easier to report on in a consistent fashion, because they are managed by a **BUILDER** AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. (or a user with Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. Role). Also, Admin managed attributes are available to all assets that are at the same inventory level. Active attributes, on the other hand, would be prone to being named inconsistently and make reporting more difficult.

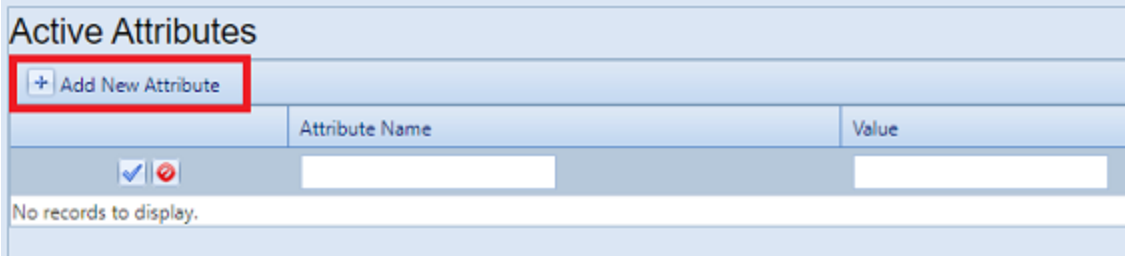
Active Attributes

Under **Active Attributes** at the top half of the Attributes screen, you can add, edit, or delete custom attributes for this level of inventory.

Add an Active Attribute

To add a custom inventory attribute,

- Directly under the **Active Attributes** header, activate **Add New Attribute**. This will generate a new row in the **Active Attributes** table.



- Enter a name and value for your attribute into the table.
- If you want to apply an architect name, press the **Enter** key on your keyboard at this point . The popup "Add Architect" will appear. Enter the name of the architect, then select **OK**.
- When finished with the entry, *activate the blue checkmark icon at the left side of the row* to save the entry. Alternatively, to cancel and delete the entry before saving, activate the red circle with a slash icon (located to the right of the blue checkmark).

  CAUTION: Your new attribute will not be saved if you (a) exit without activating the blue checkmark or (b) initiate adding a new custom inventory attribute (by activating the **Add New Attribute** button) before saving with the blue checkmark.

- Repeat the steps listed above for each custom inventory attribute you wish to add.

Edit an Active Attribute

To edit an attribute,

- Activate the pencil icon in the attribute's table row.
- Make the desired changes.
- Finally, activate the blue checkmark icon at the left to save the changes.

Delete an Active Attribute

To delete an attribute,

- In the table of active attributes, locate the row containing the attribute you wish to delete.
- To the right of the **Value** field, activate the Delete icon (red "X"). *A confirmation popup will appear, asking "Delete record?"*
- Select **OK** to delete, or **Cancel** to stop the process.

Admin Managed Attributes

Under **Unassigned Admin Managed Attributes** at the bottom left of the Attributes screen, you can choose to assign an existing Admin managed attribute to the asset whose data screen you have open. You can also change the value of an attribute after it has been assigned.

Note: Attributes that are in the table under the header **Admin Managed Attributes** are already assigned to the asset whose data screen you are in.

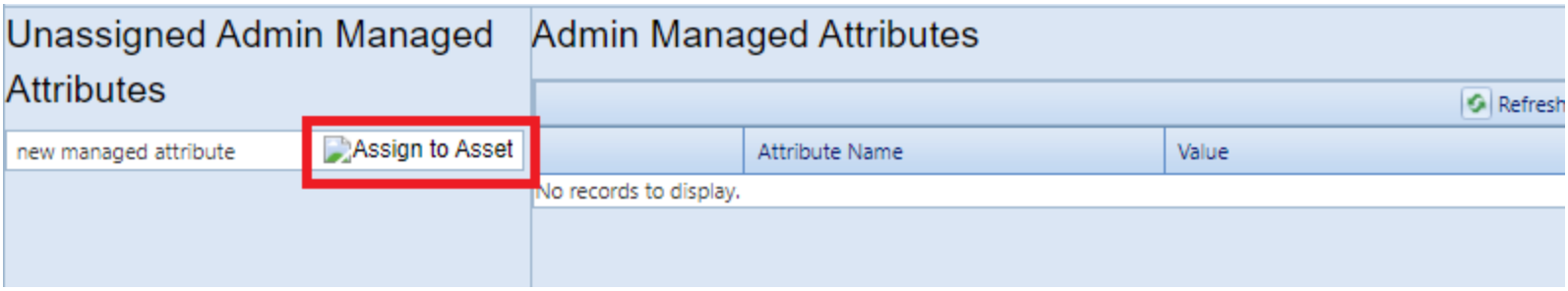
Only a **BUILDER** AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. or a user with the Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. Role can create, edit (other than changing the value), or delete/unassign custom Admin managed attributes for the selected asset. Also, once an Admin managed attribute has been moved from the **Unassigned Admin Managed Attributes** column into **Admin Managed Attributes**, this action cannot be reversed except by a **BUILDER** AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. or a user with Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. Role. More detail about AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings.-specific inventory attribute tasks can be found at Manage Custom Inventory Attributes.

Assign an Unassigned Attribute to Admin Management

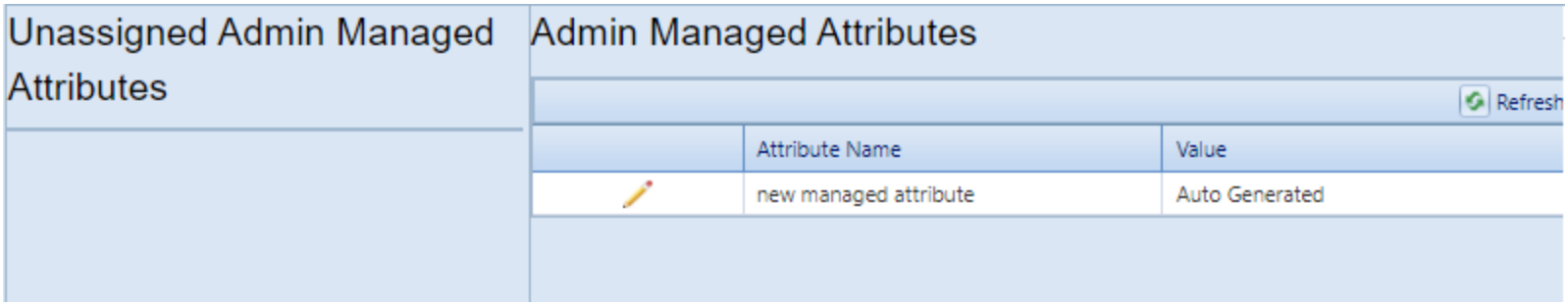
You may see one or more items listed under the header **Unassigned Admin Managed Attributes** at the lower left of the Attributes screen. These are attributes that are available at this inventory level but that have not been assigned to the selected asset. If no items are listed under the header **Unassigned Admin Managed Attributes**, there are none available to be assigned. (They may have already been assigned and thus transferred to the **Admin Managed Attributes** table.)

To assign an unassigned asset to Admin management,

In the **Unassigned Admin Managed Attributes** column, activate **Assign to Asset**.



*This will immediately populate the inventory item in that row under **Admin Managed Attributes** instead.*

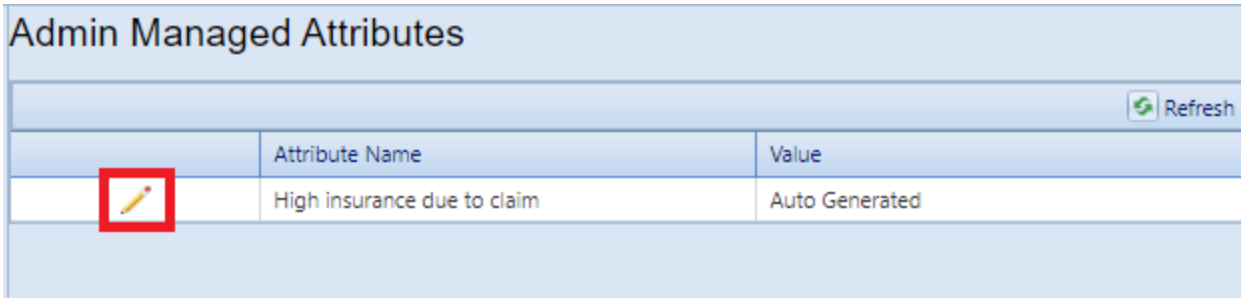


Note: The assignment action is not reversible, except by a **BUILDER** AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. or a user with the Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. Role.

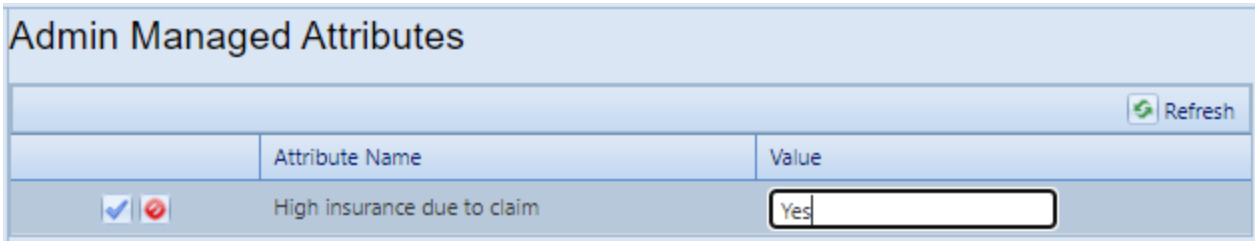
Change the Value of an Admin Managed Attribute

To change the value of an asset under Admin management,

- Under **Admin Managed Attributes**, activate the pencil icon in the attribute's table row, and wait for the row to change appearance.



- Make the desired change in the **Value** column.



- Finally, activate the blue checkmark icon at the left to save the changes (or the red Cancel icon to cancel the change).

System Tasks

Other tasks that can be performed on Systems are:

Add a System
Generate System Reports
Delete a System

For an overview of Systems, see Working with Systems.

Generate System Reports

This topic shows how to locate, select, and generate System-level reports.

There are two locations where you can generate reports:

a. At the main menu bar. The selection of reports listed here is divided into categories: Inventory, Condition Assessment, Functionality Assessment, and Work Planning.
b. At the content area toolbar.

The first section below provides instructions for generating System-level reports from the System's content area toolbar. Reports generated here will be restricted in scope to the selected System. There is also a section showing specifically how to generate a list of System inventory.

A later section provides instructions for generating a report starting at the main menu.

Generate Report at System Data Screen

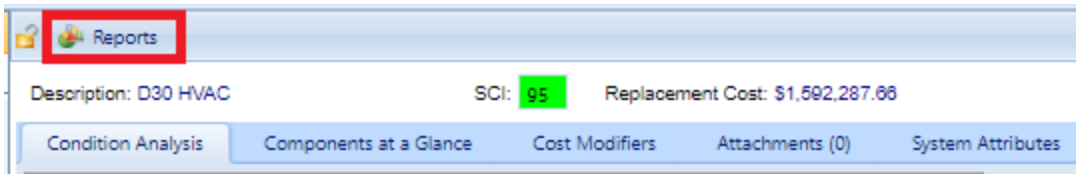
Scope of Report

When you generate a report while you are at the System level of the inventory tree, the report will contain data only for Components and Sections in the currently selected System.

How To Generate

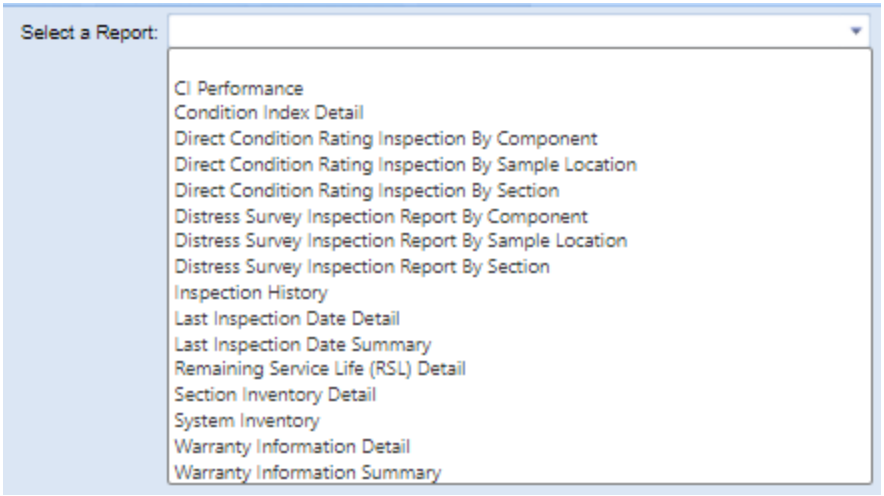
To generate a report,

- Activate the **Reports** button on the content area toolbar (above the System's Description).



The Reports popup will appear.

- At the **Select a Report** field, activate the dropdown arrow. *The following selection of reports shown in the screenshot will be displayed*.



- In the list, select a report (for example, "Remaining Service Life (**RSL**[1]Remaining Service Life) Detail").
- Activate **View Report** on the popup's toolbar. *The report will be displayed in a popup titled "Report Viewer."*
- From the "Report Viewer" popup, you can choose to download or print the report.

Generate List of System Inventory

To generate a list of Components and Sections in the currently selected System,

- Activate the **Reports** button on the toolbar at the top of the System's content area. *The "Reports" popup will open.*

  Note: If you select the **Reports** button on the menu bar instead, you will also be able to generate the System Inventory report, but the available reports will be organized differently; Step 2 will not work.

- At the **Select a Report** field, activate the dropdown arrow to see the list of available reports.
- In the list, select "System Inventory."
- Activate **View Report** on the popup's toolbar. *The report will be displayed in a popup titled "Report Viewer."*
- From the "Report Viewer" popup, you can choose to download or print the report.

Generate Report from Main Menu

Scope of Report

Reports are not made available at the Organization level. By default, unless you have used filters to further restrict what is included in the report, the scope of the report will be the Site, Building, System, Component, or Component-Section where you are located in the Inventory tree when you activate the **Reports** button.

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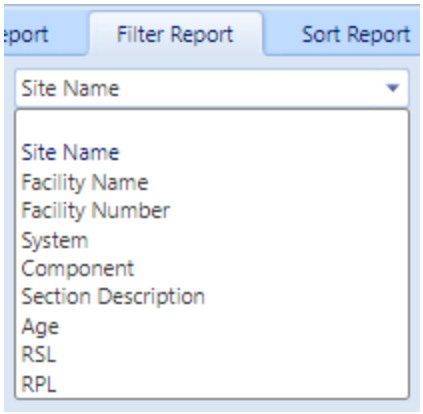
[1]Remaining service life.

How to Generate

To generate a report from the main menu,

- Activate the **Reports** button at the main menu.
- In the "Reports" popup, open the BUILDER entry by activating the plus button.
- Next, open the desired category: Inventory, Condition Assessment, Functionality Assessment, or Work Planning. For this example, open Inventory.
- In the expanded list of reports, scroll down to the desired report and select it.
- Optionally, you can then select one or more filters at locations and inventory levels where the **Filter Report** option is active. For example, you can select the "Age" filter and direct the **RSL**[1]Remaining Service Life report to show only items that are 10 years old or more.

  For example, this is the list of filters available for the **RSL**[2]Remaining Service Life report at the Site level:



- After setting any desired filters, and selecting a Sort order if desired, activate **View Report** on the popup's toolbar. *The report will be displayed in a popup titled "Report Viewer."*
- From the "Report Viewer" popup, you can choose to download or print the report.

Export Report

To export a report, see instructions at Export a Report.

System Tasks

Other tasks that can be performed on Systems are:

Add a System
Edit System Data
Delete a System

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[1]Remaining service life.
[2]Remaining service life.

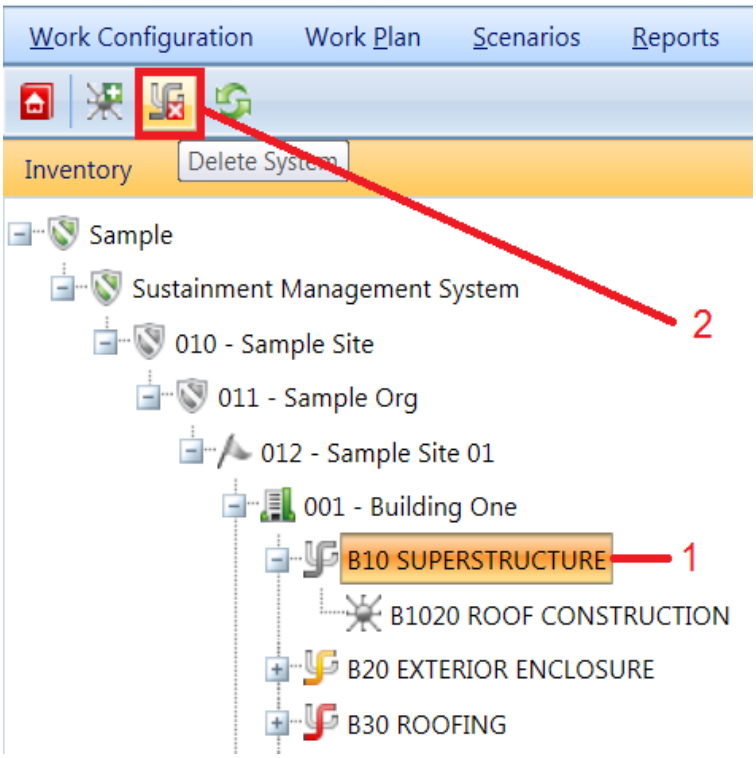
For an overview of Systems, see Working with Systems.

Delete a System

This topic describes how to delete a System from a Building.

To delete a System from a Building, navigate to the System in the inventory tree and do **one** of the following:

a. Right-click the System. Then select "Delete System."
b. Alternatively, select the System. Then activate the **Delete System** icon in the menu toolbar.



WARNING: Deleting a System will delete all inventory (Components and Sections) in the System. This is a significant step to take and should only be done when you are certain that you wish to clear the entire inventory of the System you have selected.

Best Practice Recommendation: Making frequent backups of your inventory database will protect you from significant data losses if mistakes in deleting are made.

System Tasks

Other tasks that can be performed on Systems are:

Add a System
Edit System Data

- Generate System Reports

For an overview of Systems, see Working with Systems.

BUILDER Systems and Components

This topic presents the identifying numbers and names of the Systems and Components used in **BUILDER**.

To divide a Building into Systems and Components, BUILDER follows the Naval Facilities Engineering Command (NAVFAC) UNIFORMAT II classification for building elements (Level 2 and 3).*

*see https://www.wbdg.org/ffc/navy-navfac/design-build-request-proposal/uniformat-structure.

Level 2	Level 3
A10 Foundations	A1010 Standard Foundations
	A1020 Special Foundations
	A1030 Slab on Grade
A20 Basement Construction	A2010 Basement Excavation
	A2020 Basement Walls
B10 Superstructure	B1010 Floor Construction
	B1020 Roof Construction
B20 Exterior Closure	B2010 Exterior Walls
	B2020 Exterior Windows
	B2030 Exterior Doors
B30 Roofing	B3010 Roof Coverings
	(Note: Roof openings are a subcategory of Roof Coverings)
C10 Interior Construction	C1010 Partitions
	C1020 Interior Doors
	C1030 Specialties
C20 Stairs	C2010 Stair Construction
C30 Interior Finishes	C3010 Wall Finishes
	C3020 Floor Finishes
	C3030 Ceiling Finishes
	C3040 Interior Coatings and Special Finishes
D10 Conveying	D1010 Elevators and Lifts
	D1020 Weight Handling Equipment
	D1030 Escalators and Moving Walks
	D1090 Other Conveying Systems

D20 Plumbing	D2010 Plumbing Fixtures
	D2020 Domestic Water Distribution
	D2030 Sanitary Waste
	D2040 Rain Water Drainage
	D2090 Other Plumbing Systems
D30 HVAC	D3010 Energy Supply
	D3020 Heat Generating Systems
	D3030 Cooling Generating Systems
	D3040 Distribution Systems
	D3050 Terminal & Package Units
	D3060 Controls & Instrumentation
	D3070 Systems Testing & Balancing
	D3080 HVAC Valves
	D3090 Other HVAC Systems & Equipment
D40 Fire Protection	D4010 Fire Alarm and Detection Systems
	D4020 Fire Suppression Water Supply and Equipment
	D4030 Standpipe Systems
	D4040 Sprinklers
	D4050 Fire Protection Specialties
	D4090 Other Fire Protection Systems
D50 Electrical	D5010 Electrical Service & Distribution
	D5020 Lighting & Branch Wiring
	D5030 Communication & Security
	D5090 Other Electrical Services
E10 Equipment	E1010 Commercial Equipment
	E1020 Institutional Equipment
	E1030 Vehicular Equipment
	E1090 Other Equipment
E20 Furnishings	E2010 Fixed Furnishings
	E2020 Movable Furnishings

F10 Special Construction	F1010 Special Structures
	F1020 Integrated Construction
	F1030 Special Construction Systems
	F1040 Special Facilities
	F1050 Special Controls and Instrumentation
F20 Selective Building Demolition	F2010 Building Elements Demolition
	F2020 Hazardous Components Abatement
G10 Site Preparations	G1010 Site Clearing
	G1020 Site Demolition & Relocations
	G1030 Site Earthwork
	G1040 Hazardous Waste Remediation
G20 Site Improvements	G2010 Roadways
	G2020 Parking Lots
	G2030 Pedestrian Paving
	G2040 Site Development
	G2050 Landscaping
	G2060 Airfield Paving
G30 Site Civil/Mechanical Utilities	G3010 Water Supply
	G3020 Sanitary Sewer
	G3030 Storm Sewer
	G3040 Heating Distribution
	G3050 Cooling Distribution
	G3060 Fuel Distribution
	G3090 Other Site Mechanical Utilities
G40 Site Electrical Utilities	G4010 Electrical Distribution
	G4020 Site Lighting
	G4030 Site Communication and Security
	G4090 Other Site Electrical Utilities

Components

Working with Components

The Component level in the BUILDER hierarchy is what allows your real property inventory to conform to Level 3 of the UNIFORMAT II system shown in BUILDER Systems and Components. This topic describes the operations that can be performed at the Component level.

Things you can do at the Component level are:

- view condition history
- view a table of the Sections contained in the Component
- assign or unassign Component-level cost modifiers (these modifiers are values to multiply by or to add to the cost of an asset, to account for factors such as remote site location or local market anomalies in cost of materials)
- view, add, or delete attachments
- add, edit, or delete custom Component attributes
- generate reports

Component Tasks

Tasks that can be performed on Components are:

Add a Component
Edit Component Data
Generate Component Reports
Delete a Component

About Identifying Systems, Components and Sections

This topic provides valuable advice to assist in the process of dividing Buildings into their constituent Systems, Component, and Component-Sections.

After you Add a Building and have entered its required data elements, you should identify the Systems, Components and Component-Sections in the Building. Your decomposition of a Building into its Systems and the decomposition of those Systems into Components will be very straightforward. The formation of Component-Sections, however, will require some thought on your part. BUILDER manages Buildings at the Component-Section level, and you will inspect Component-Sections and plan work for Component-Sections.

BUILDER's representation of Building Component-Sections has been designed for flexibility. With flexibility comes choices; choices that add complexity to the process. Pay particular attention to the subsection Defining Component-Sections *below*.

As an alternative option to adding all Systems, Components, and Component-Sections manually, BUILDER provides several mechanisms to speed the inventory process. For example, you can Copy Inventory to Another Building or Add Building Inventory Using a Template.

Defining Systems

Systems are used to help you organize the records for the actual physical items in your Building. You may create only one System of each System type for any given Building. When you add a new System to a Building, the dropdown list of choices for which kind of System to add will include only those Systems that have not already been added to the Building. See Add a System for details.

Defining Components

Like Systems, Components are used to help organize the records of the actual physical items in the Building. The Components that can be added to a System will depend on the System representation you have chosen for the Building. You may create only one Component of each type for each System. When you add a Component, the list of choices will include only those Components that have not already been created for that System. See Add a Component for details.

If you have a Component that is not in the list of available Component options, please contact your SMSSustainment Management System support agent. BUILDER does not have a feature for user-defined Components. Each Component has a number of data elements associated with it (varieties of types and materials, costs, service lives, standard units of measure, inspectable subcomponents, etc.) which must be researched before the Component can be added.

Defining Component-Sections

Component-Sections (also called Sections) of a Building are the key structures in a BUILDER inventory. The System and Component structures are organizational in nature, serving to categorize what is in a Building into manageable groups. Component-Sections actually represent the physical items of a Building, belong to a particular Component, and have the following properties:

- component type
- material/equipment type
- quantity
- age
- whether or not it is painted, and, if so, when it was last painted and paint type

BUILDER has been designed to be flexible in allowing you to represent your Building's Component-Sections in a number of ways to support how you intend to manage them. Some examples may be helpful:

- Building A has 5 exterior doors (System: Exterior Closure, Component: Exterior Door). Four of the doors are metal personnel doors and the fifth is a metal overhead door. Because there are two different types of doors (personnel, overhead), you will have to create at least two Component-Sections. In this situation, you should create a Component-Section for the metal overhead door and enter the appropriate data about it. You don't need to create a Component-Section name for this door because there is only one. For the four metal personnel doors, if you intend to manage them as a unit, create one more Component-Section and enter the appropriate data about the doors. Again, you don't need to enter a Component-Section name because you are only creating one Section of this material and type.
- Building A has 5 exterior doors (System: Exterior Closure, Component: Exterior Door). You lease Building A to two tenants X and Y. Two metal personnel doors and a metal overhead door are in the tenant X area, and the other two metal personnel doors are in the tenant Y area. Because you plan to inspect and maintain the doors by tenant, you create three Component-Sections:
    - Tenant X Metal Personnel with quantity 2
    - Tenant X Metal Overhead with quantity 1
    - Tenant Y Metal Personnel with quantity 2.

When you create each Component-Section for Tenant X, you use "Tenant X" as the name of the Section. Do the same for Tenant Y. In fact, you may want to name every Section (especially Interior Construction Sections) in the Tenant X area "Tenant X." When you inspect the Building, you can use the Component-Section name to distinguish Component-Sections belonging to each of the tenants.

- Building A has two reciprocating 20-ton chillers (System: HVAC, Component: Cooling Unit/Plant). If they are the same age and you plan to manage them as a unit, then create one Component-Section with quantity 2. However, if you want to manage them individually, or if they were installed at different times and may therefore have different maintenance requirements, then create two Component-Sections of quantity 1 each. Because both Component-Sections have the same equipment type (Reciprocating 20-30 Ton) and component type (Chillers), you will have to have distinct Component-Section names for the two Component-Sections. You may use their barcode IDs as the Component-Section names of you wish.
- Building B has 50 interior wood personnel doors, all alike and all installed when the Building was built. You originally create one Component-Section with quantity 50 for these doors. You may have several years of inspection data regarding the doors, which have deteriorated uniformly over time. With the current inspection, however, two of the doors are found to be severely damaged and will have to be replaced. If the two doors remain in their original Component-Section, inspection samples for these two doors will have to be marked as "non-representative." When the condition index is calculated, the condition of the two doors, which are only 4% of the Component-Section, will have only a small impact on the overall Section **CI**[1]Condition Index. Because you will be replacing the two doors, perhaps with a different quality of door because they may be subject to higher user abuse, you should use component sectioning to isolate the two doors. To do this, reduce the original Component-Section quantity

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[1]Condition Index

to 48. Then create a new Component-Section for the two damaged doors and enter the current inspection data for this new Component-Section, which will then have a low **CI**[1] Condition Index.

From these examples you can see that some thought will have to be given to how you decompose a Building into Component-Sections. Hopefully, you can also see that BUILDER is flexible enough to allow you to manage at the level of detail that you choose. See Working with Component-Sections for details.

Inventory Suggestions

It is not necessary to do a complete inventory initially. Implementation funds and/or time may be limited, so it is possible and permissible to begin with only some of the Component-Sections and expand the inventory on an as-needed basis. If the desire is to begin with a limited set, the following suggestions are made:

- Focus on the Components that are most critical to Building function
- Focus on the Components that traditionally dominate Maintenance and Rehabilitation (M&RMaintenance and Rehabilitation) needs.

When sectioning, a few rules of thumb are offered:

- To avoid a data burden, use the smallest number of Sections possible to meet managerial needs. For example, it is usually not necessary to individually Section every room, each exterior wall, etc.
- Because material differences (e.g. wood vs. masonry) are criteria for sectioning, only create Sections for material differences when the quantity is significant enough to warrant individual management attention. For example, an exterior wall may be made of wood, but a few square feet of wall is made of masonry, essentially for decoration. The wood wall is clearly a Section, but what about the masonry? Should it be its own Section? If the masonry quantity is a mere fraction of the wood and work would be accomplished on the masonry at the same time as the wood (in other words, the entire wall is being managed as a unit), then there is no need to create a Section just for the masonry. However, if the quantities of both the wood and masonry are significant, then create Sections for both.
- Equipment sectioning should be thought out carefully when multiple units of the same equipment are present. For example, there may be three air handling units of the same type, age, etc. In this case, there could be one Section with the quantity of three, or three Sections with the quantity of one. Which approach should be taken? If the desire is to manage them as essentially one unit as far as planning repair and replacement, then one Section will suffice. However, if it is expected that over time, they will be replaced individually, etc, then each should be its own Section.
- Obtaining accurate an accurate quantity can be difficult, and often times there are many sources for obtaining quantity. These include drawings, actual measurement or count, or other records. It must be understood that the more detailed or accurate the count or measurement, the more costly it is to collect the data. Extracting information from records, including drawings, and doing a field validation is the most costly. Reasonable estimates within reasonable error are very acceptable as it will result in reasonable error in BUILDER's analyses. For example, the wall finish may truly be 10,634 SF. An

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[1] Condition Index

estimate of 11,000 SF will suffice for planning purposes especially if the cost to get the true value is twice that for an estimate. Component-Sections that cover an area (SF or SM) are the most difficult to obtain with precision whereas those that are "each" are the easiest. Generally, field count the "each" Component-Sections and estimate the others. The estimates can be refined in the future when projects are developed for M&RMaintenance and Rehabilitation work.

- *Care should be taken when establishing Year Built/Renewed*. Error here will result in erroneous remaining service lives and add error to the projected year when M&RMaintenance and Rehabilitation should be performed. Experience has shown, however, that sometimes the year in which Component-Sections were replaced, rehabilitated, or initially installed/constructed is truly unknown as the records are no longer available. In those cases, make a reasonable estimate and mark the **Estimated** checkbox. Often, there are people who will remember when that work was done, at least in a generalized way (e.g. early 1990s). Fortunately, through subsequent inspections and condition assessments, the Year Installed/Built becomes less important, as BUILDER's prediction models will use the condition assessment information to adjust the remaining service life and to predict when M&RMaintenance and Rehabilitation will be required in the future.

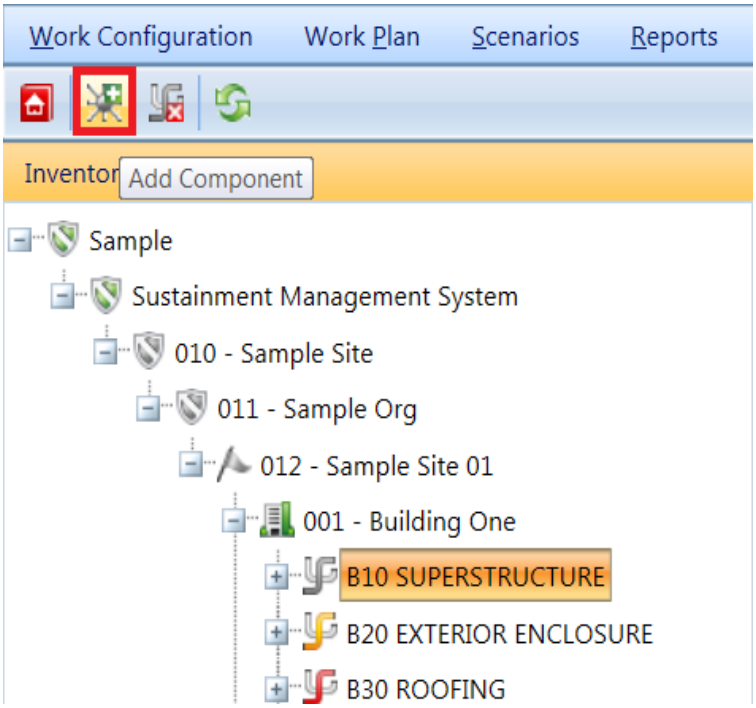
Add a Component

This topic shows how to add a Component and describes the minimum required information to be entered. The topic Edit Component Data describes additional information that can be entered for the Component.

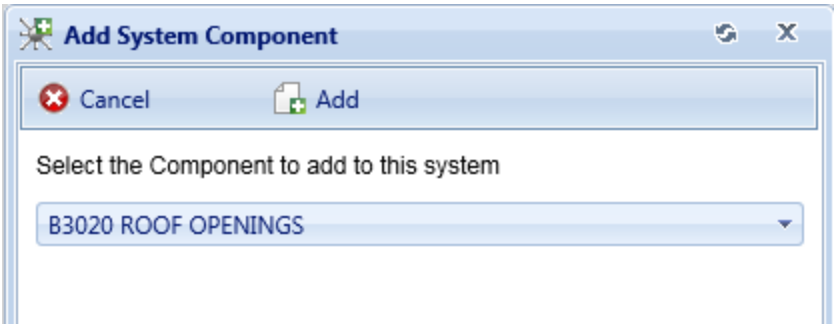
Note: Please be familiar with the topic About Identifying Systems, Components and Sections before proceeding with this topic.

To add a new Component to an existing System, navigate to the System in the inventory tree and do one of the following:

a. Right-click the System. Then select "Add Component" from the options.
b. Alternatively, as shown below, select the System in the inventory tree. Then activate the **Add Component** icon on the main toolbar:



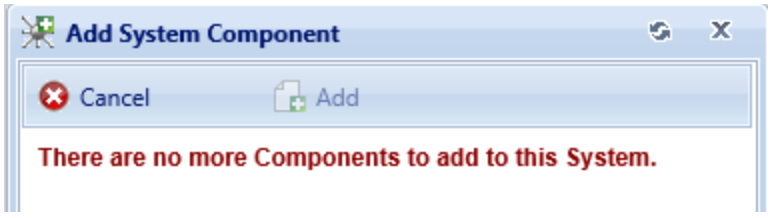
The "Add System Component" popup window will appear.



From the dropdown list, select the Component you wish to add. Then activate the **Add** button on the popup toolbar to add the Component.

Alternatively, if you do not wish to add a Component to the System, activate the **Cancel** button instead.

Note: Each System can contain at most one Component of each type. The dropdown list for adding a Component will display only the component types that don't already exist for the System. If the System already contains all permissible Component types, you will see this message:



Once the System is added, you can navigate to it in the tree and activate it to view or edit its data, view or edit cost modifiers, add attachments, or view or edit custom System inventory attributes.

Component Tasks

Other tasks that can be performed on Components are:

Edit Component Data
Generate Component Reports
Delete a Component

For an overview of Components, see Working with Components.

Edit Component Data

The Component level in the BUILDER hierarchy is what allows your real property inventory to conform to Level 3 of the UNIFORMAT II system shown in BUILDER Systems and Components. This topic describes the information that can be viewed and edited at the Component data screen.

After you add a component, you can navigate to it in the tree and activate it to view or edit its data, view or edit cost modifiers, add attachments, or view or edit custom System inventory attributes. You can also view a condition analysis and see a table of the Sections it contains.

Information about the Component selected in the inventory tree is presented on an ID line and at several tabs. The content area toolbar gives you access to generating Component-level reports.

- **Toolbar**
- **ID Line**
- **Condition Analysis Tab**
- **Sections at a Glance Tab**
- **Cost Modifiers Tab**
- **Attachments Tab**
- **Component Attributes Tab**

ID Line

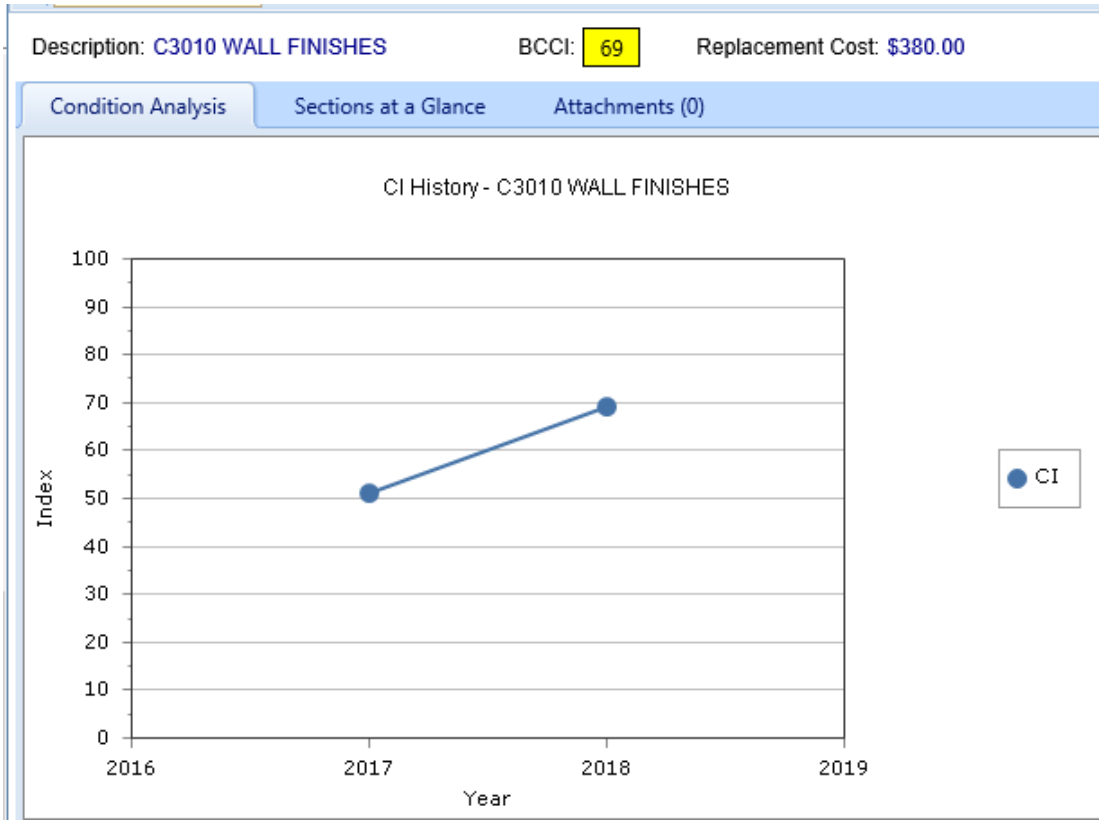
At the top of the data page you will see the Component name and description. The (Building) Component Condition Index (BCCIBuilding Component Condition Index - a condition rating for the target Building Component. For each Component, the BCCI is computed by taking the average of its Sections' CIs, weighted by replacement cost) and Component replacement cost fields will be blank until underlying inventory has been entered and a rollup has been performed. The replacement cost is calculated via rollup from the underlying Sections.

Additional information regarding the component is found in the different tabs and is described below.

Condition Analysis Tab

Note: The information at this tab is read-only.

The Condition History tab displays a graph of the **CI**[1] Condition Index history of the Component over time.



Sections at a Glance Tab

Note: The information at this tab is read-only.

Basic information regarding the Sections in the Component can be viewed by selecting the "Sections at a Glance" tab. The table at this tab shows:

- the Sections inventoried in the Component
- each Component-Section's condition index (CSCIComponent-Section Condition Index - a condition rating for the target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, then subtracting that deduct value from the maximum possible rating of 100.

---

[1] Condition Index

The deduct value computation differs for each condition assessment method.)

- the replacement cost of each Section

All of the data shown at this tab is read-only

Cost Modifiers Tab

The **Cost Modifiers** tab displays a table showing assigned cost modifiers, and allows you to view and assign cost multipliers or adders.

Note: Existing cost modifiers that affect the Component level may have been assigned at different inventory levels, but from a Component data page you can only assign a Component-level cost modifier.

Modifier Scope

At the Component level, the Assigned Cost Modifiers table will show you all of the following:

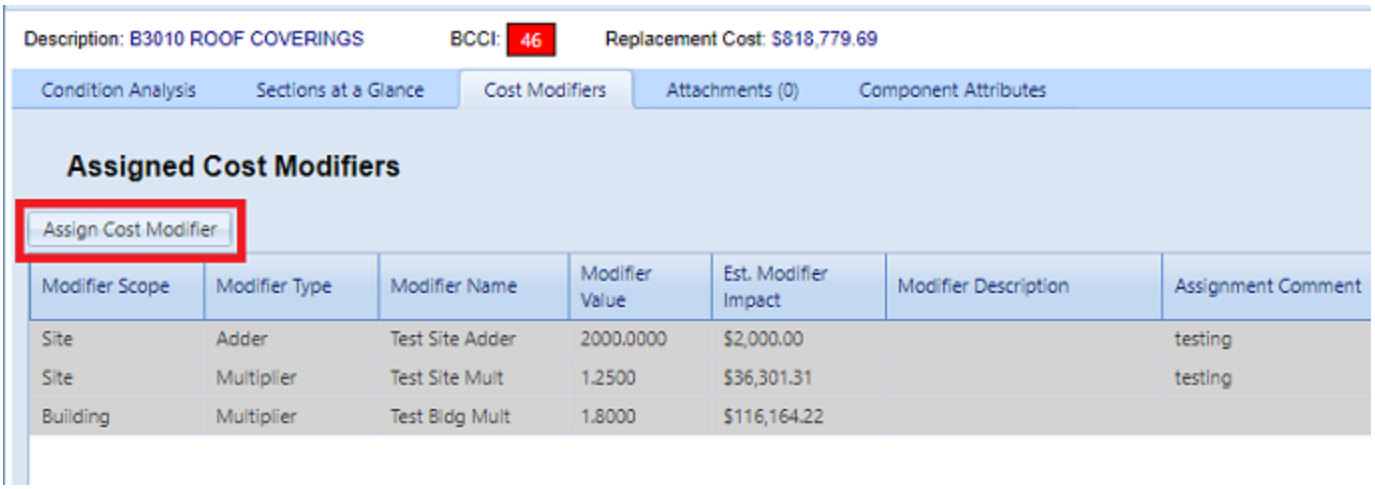
- all modifiers assigned to that Component
- all modifiers assigned to the System the Component is in
- all modifiers assigned to the Building the Component is in
- if applicable, all modifiers assigned to the Complex the Component is in
- all modifiers assigned to the Site the Component is in

The scope of each modifier is shown in the **Modifier Scope** column.

Assign a Modifier

To assign a modifier to your Component from available options,

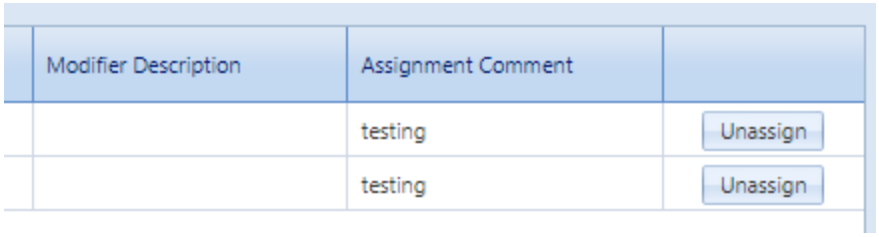
- Activate the **Assign Cost Modifier** button.



- In the "New Component Modifier Assignment" popup, select a cost modifier from the dropdown list.
- Add a comment if desired.
- Activate **Add** on the popup toolbar. *You should see your selected modifier added to the table of cost modifiers.*

Unassign a Modifier

To unassign a modifier, first navigate to where the modifier was assigned, then activate the **Unassign** button in the rightmost column of the Assigned Cost Modifiers table.



A Site-level cost modifier can be unassigned only at the Site level, a Building-level cost modifier can be unassigned only at the Building level, etc.

More about Cost Modifiers

For more about cost modifiers, see the **Cost Modifiers** chapter in the ***BUILDER*** *Reference Data Guide*.

Attachments Tab

At the **Attachments** tab, you have the option to view or change the asset's attachments.

In addition to attaching files, you can also view attachments, delete attachments, or edit the data associated with them.

View Attachment(s)

The **Attachments** tab will show whether any files have been attached to the asset's record. The number in parentheses after the word "Attachments" shows how many of them have been attached.

To view one or more attachments,

- Activate the **Attachments** tab. *If attachments are present, a table will display their type, title, and description*.
- Activate the link in the **Title** column. *The attachment will appear in the "Image Viewer" popup window.*
- When finished viewing, activate the **Close** button on the popup window toolbar. and you will be returned to the table of attachments.
- Repeat the two steps immediately above for additional attachments as desired.

Add an Attachment

At the **Attachments** tab on the asset's data page, you have the option to attach files (images and other documents) to the Component's record. An attached file might be a photograph, an electronic image of written notes or diagrams made during inventory, or a file generated on a computer.

Acceptable Attachment Formats

The attachment may be in any of the following formats:

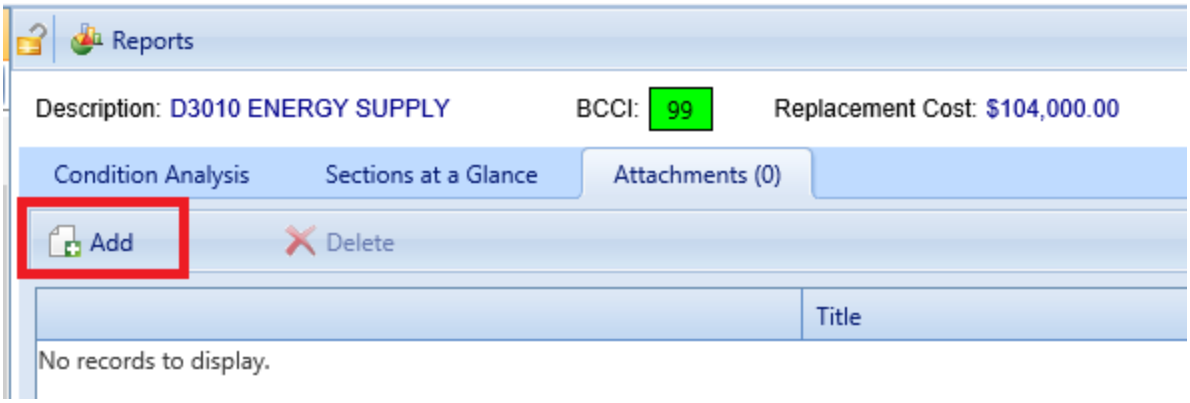
- .jpg
- .jpeg
- .png
- .zip
- .doc
- .pdf

Note: As of January 31, 2022, .doc format is allowed, but not .docx.

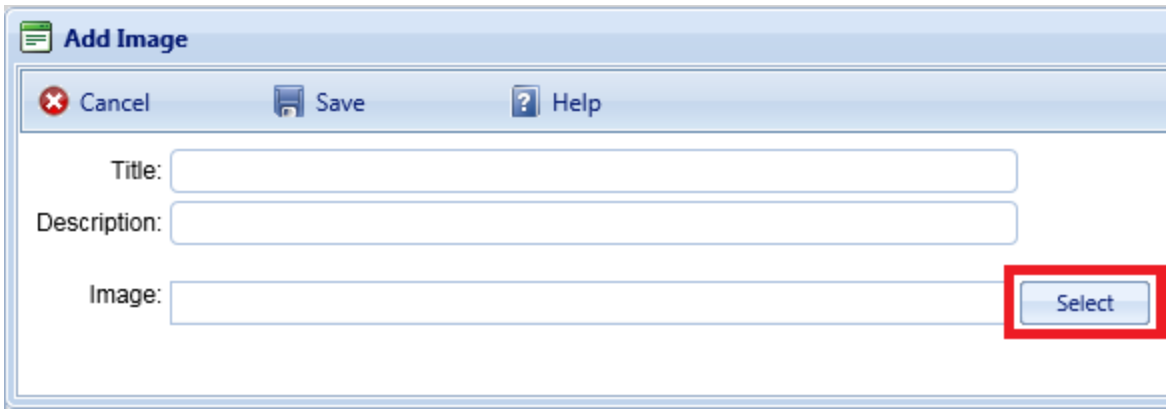
Attach

To attach a file,

- At the **Attachments** tab, activate the **Add** button in the toolbar below the row of tabs.



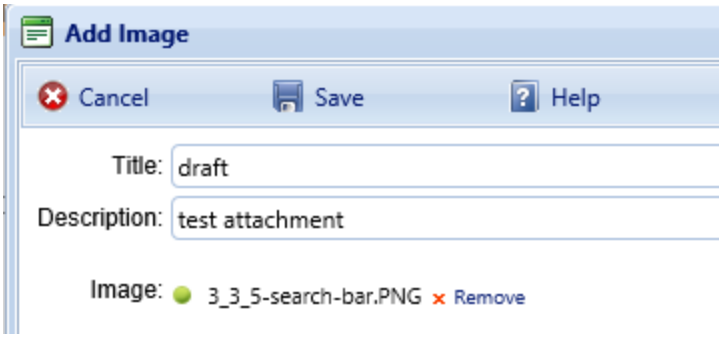
This will open the "Add Image" popup window:



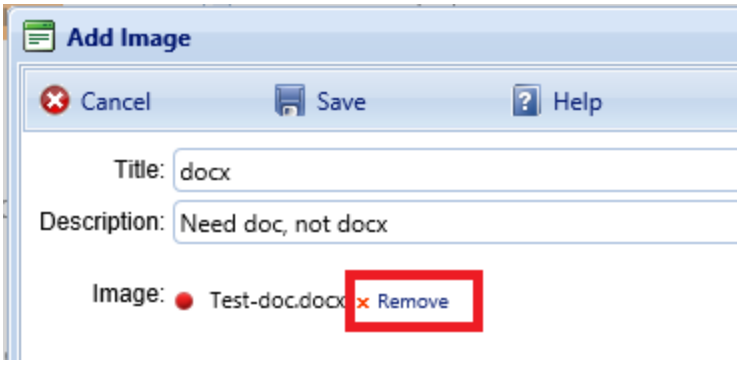
- Enter Title and Description information for the attachment.
- Activate the **Select** button to the right of the **Image** field to browse to the desired image or other type of file.
- If adding an attachment at the Building level, use the **Image Type** radio buttons to indicate whether the attachment is a Key Plan, a Section Plan, or "Other."
- Once the required attachment data is entered, activate **Save** on the popup toolbar. (Alternatively, to close the popup window without attaching the selected file or image, activate the **Cancel** button.)

Attachment Troubleshooting

If the selected attachment is in an acceptable format, the "Image" field will show a green dot (plus a label that gives you the option to remove the attachment).



If it is not in an acceptable format, the "Image" field will show a red dot. Activate "Remove" and select an attachment file in one of the formats listed at Acceptable Attachment Formats.



Edit Attachment Metadata

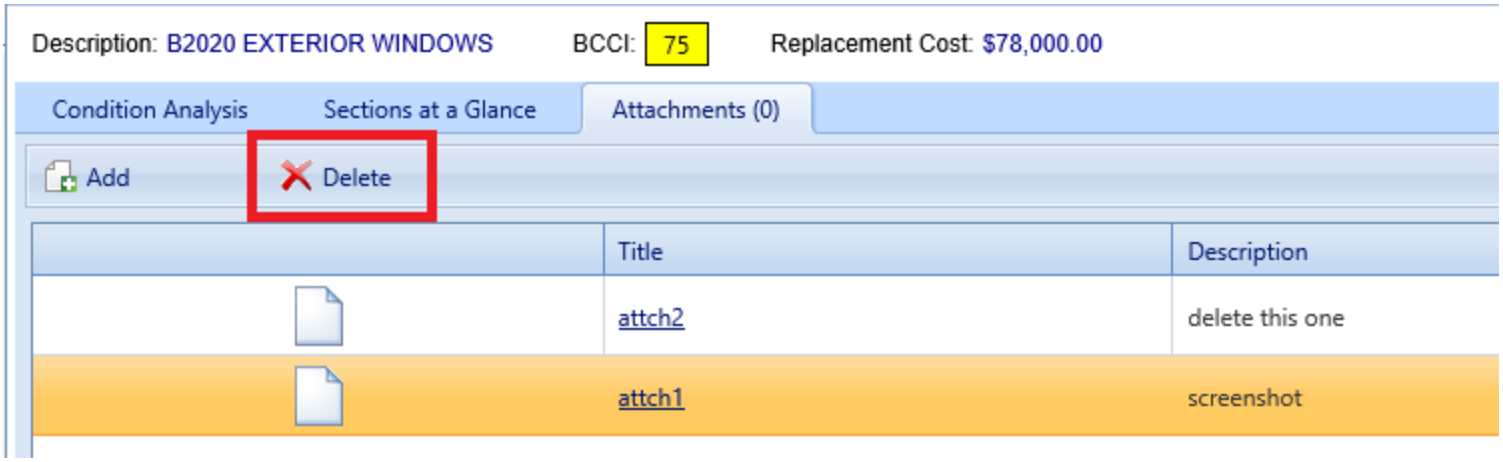
You can edit the title and/or description of an attachment as follows:

- Navigate to the **Attachments** tab to view the attachments table.
- Activate a link in the **Title** column. *The attachment will appear in the "Image Viewer" popup window.*
- In the header section above the attachment, make the desired changes in the Title and/or **Description** field(s).
- Activate **Save** on the popup toolbar to store your changes and return to the table of attachments.
- Alternatively, if you want to cancel the change, activate **Close** on the popup toolbar. *You will be returned to the table of attachments*.

If you wish to change the contents of the attachment, you will need to delete the existing attachment file and add a new one.

Delete Attachment

- Navigate to the **Attachments** tab to view the attachments table. Select the attachment you wish to delete (do *not* activate the link in the **Title** column). *When properly selected, that record in the table will change background color as illustrated below:*



- Activate the **Delete** button above the table.
- Activate **Yes** in the confirmation box to delete the attachment, or **No** to cancel.

Component Attributes Tab

Custom asset attributes can be added at each inventory level–from Organization down through Section–in two different ways: by using "active attributes" or by using "Admin managed attributes."

"Unassigned" **Admin managed attributes** are a collection of pre-named attributes that have been determined by the **BUILDER** instance's owner (for example, a corporation, or the Air Force, or the Army). They are templated or common attributes that are seen as likely to be used often. Although these attributes are made available from the outset after installing **BUILDER**, they still need to be assigned before they can be used to help describe an asset.

Additional Admin managed attributes can be created, but only by a **BUILDER** AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. or a user with Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. Role.

Active attributes are very flexible and can be created and assigned by any user with inventory privileges.

CAUTION: Unless a standardized procedure for assigning active attributes is implemented and enforced, the flexibility of active attributes can make incorporating them into reports more difficult and time consuming, because multiple people can create them and there is no built-in consistency.

With respect to creating reports, Admin managed attributes will be easier to report on in a consistent fashion, because they are managed by a **BUILDER** AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. (or a user with Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. Role). Also, Admin managed attributes are available to all assets that

are at the same inventory level. Active attributes, on the other hand, would be prone to being named inconsistently and make reporting more difficult.

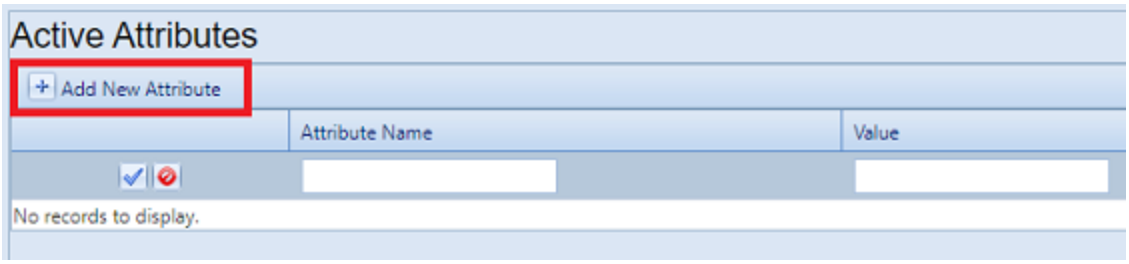
Active Attributes

Under **Active Attributes** at the top half of the Attributes screen, you can add, edit, or delete custom attributes for this level of inventory.

Add an Active Attribute

To add a custom inventory attribute,

- Directly under the **Active Attributes** header, activate **Add New Attribute**. This will generate a new row in the **Active Attributes** table.



- Enter a name and value for your attribute into the table.
- If you want to apply an architect name, press the **Enter** key on your keyboard at this point . The popup "Add Architect" will appear. Enter the name of the architect, then select **OK**.
- When finished with the entry, *activate the blue checkmark icon at the left side of the row* to save the entry. Alternatively, to cancel and delete the entry before saving, activate the red circle with a slash icon (located to the right of the blue checkmark).

  CAUTION: Your new attribute will not be saved if you (a) exit without activating the blue checkmark or (b) initiate adding a new custom inventory attribute (by activating the **Add New Attribute** button) before saving with the blue checkmark.

- Repeat steps 1 through 4 for each custom inventory attribute you wish to add.

Edit an Active Attribute

To edit an attribute,

- Activate the pencil icon in the attribute's table row.
- Make the desired changes.
- Finally, activate the blue checkmark icon at the left to save the changes.

Delete an Active Attribute

To delete an attribute,

- In the table of active attributes, locate the row containing the attribute you wish to delete.
- To the right of the **Value** field, activate the Delete icon (red "X"). *A confirmation popup will appear, asking "Delete record?"*
- Select **OK** to delete, or **Cancel** to stop the process.

Admin Managed Attributes

Under **Unassigned Admin Managed Attributes** at the bottom left of the Attributes screen, you can choose to assign an existing Admin managed attribute to the asset whose data screen you have open. You can also change the value of an attribute after it has been assigned.

Note: Attributes that are in the table under the header **Admin Managed Attributes** are already assigned to the asset whose data screen you are in.

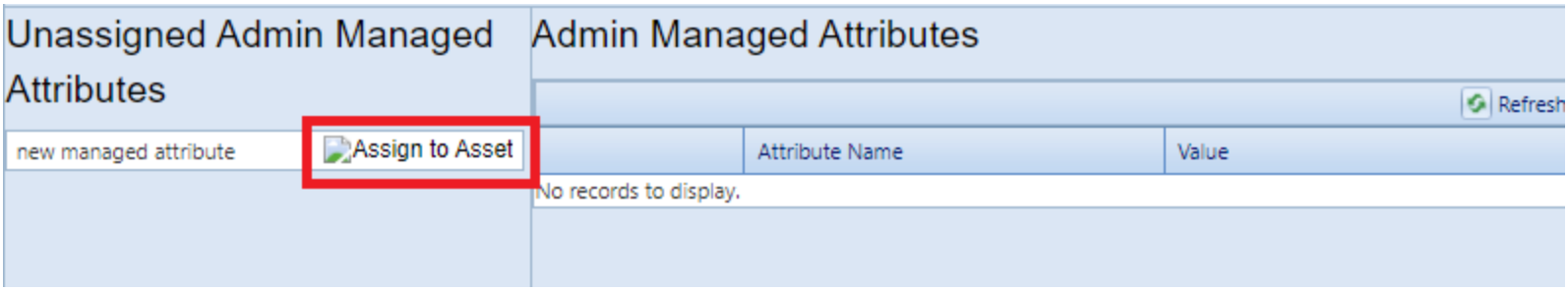
Only a **BUILDER** AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. or a user with the Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. Role can create, edit (other than changing the value), or delete/unassign custom Admin managed attributes for the selected asset. Also, once an Admin managed attribute has been moved from the **Unassigned Admin Managed Attributes** column into **Admin Managed Attributes**, this action cannot be reversed except by a **BUILDER** AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. or a user with Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. Role. More detail about AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings.-specific inventory attribute tasks can be found at Manage Custom Inventory Attributes.

Assign an Unassigned Attribute to Admin Management

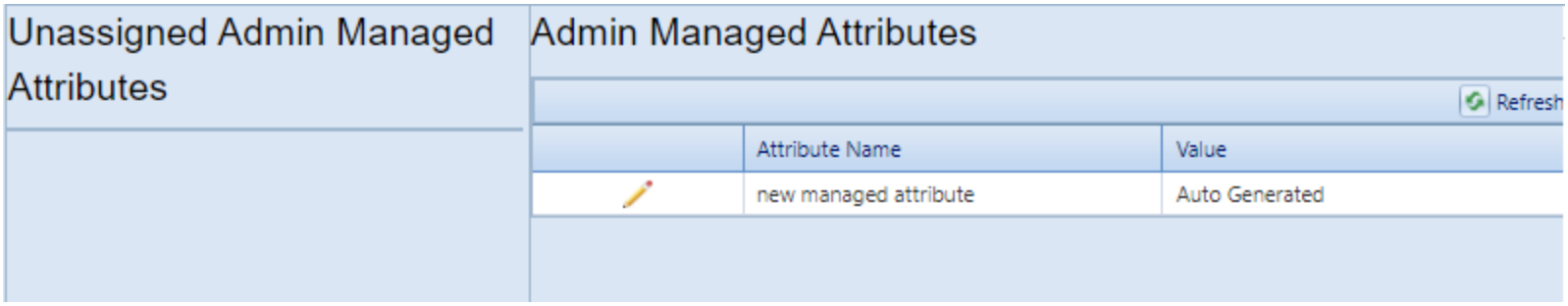
You may see one or more items listed under the header **Unassigned Admin Managed Attributes** at the lower left of the Attributes screen. These are attributes that are available at this inventory level but that have not been assigned to the selected asset. If no items are listed under the header **Unassigned Admin Managed Attributes**, there are none available to be assigned. (They may have already been assigned and thus transferred to the **Admin Managed Attributes** table.)

To assign an unassigned asset to Admin management,

In the **Unassigned Admin Managed Attributes** column, activate **Assign to Asset**.



*This will immediately populate the inventory item in that row under **Admin Managed Attributes** instead.*

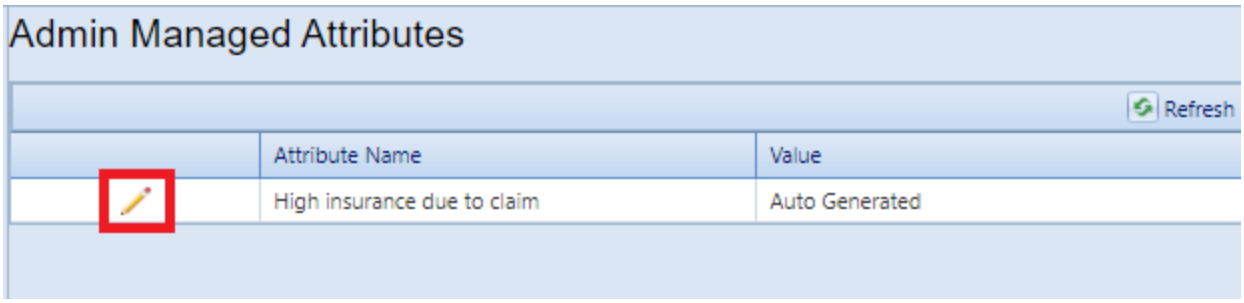


Note: The assignment action is not reversible, except by a **BUILDER** AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. or a user with the Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. Role.

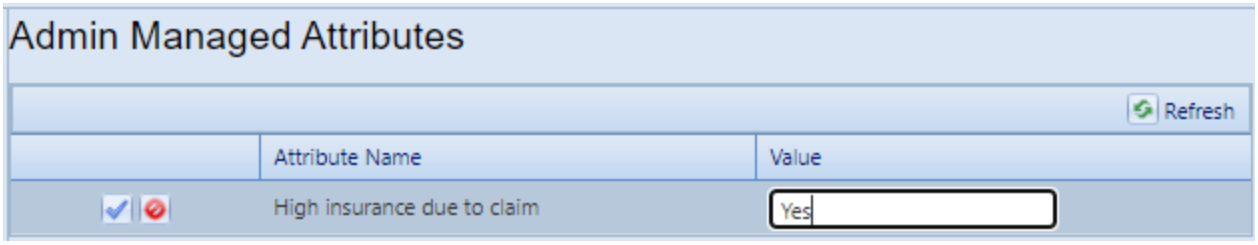
Change the Value of an Admin Managed Attribute

To change the value of an asset under Admin management,

- Under **Admin Managed Attributes**, activate the pencil icon in the attribute's table row, and wait for the row to change appearance.



- Make the desired change in the **Value** column.



- Finally, activate the blue checkmark icon at the left to save the changes (or the red Cancel icon to cancel the change).

Toolbar

The toolbar at the top of the content area provides you with this option:

- **Reports**. Launches the Report Selection tool, which gives you access to a list of standard reports relevant to the asset's inventory. See Generate Component Reports.

Component Tasks

Other tasks that can be performed on Components are:

Add a Component
Edit Component Data
Delete a Component

For an overview of Components, see Working with Components.

Generate Component Reports

This topic shows how to locate, select, and generate Component-level reports.

There are two locations where you can generate reports:

a. At the main menu bar. The selection of reports listed here is divided into categories: Inventory, Condition Assessment, Functionality Assessment, and Work Planning.
b. At the content area toolbar.

The first section below provides instructions for generating Component-level reports from the Component's content area toolbar. Reports generated here will be restricted in scope to the selected Component.

The next section after that one provides instructions for generating a report starting at the main menu.

Generate Report at Component Data Screen

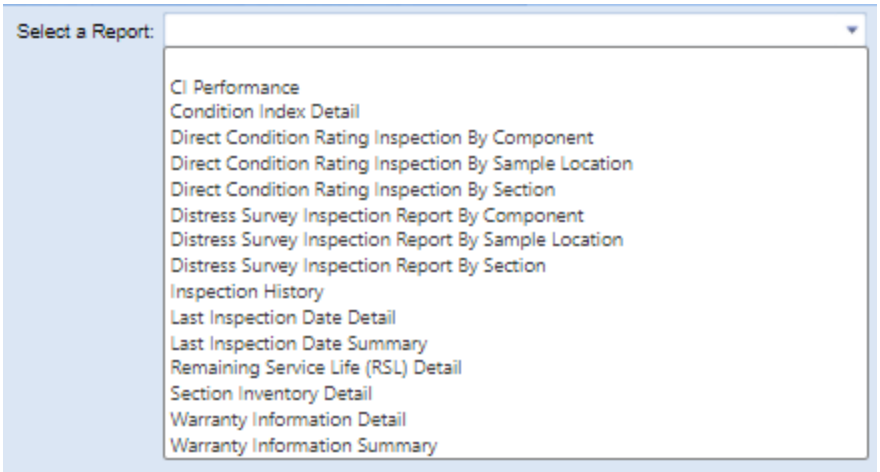
Scope of Report

When you generate a report while you are at the Component level of the inventory tree, the report will contain data only for Sections in the currently selected Component.

How To Generate

To generate a report,

- Activate the **Reports** button on the content area toolbar. (The content area toolbar is directly above the ID line.) *The "Reports" popup will open.*
- At the **Select a Report** field, activate the dropdown arrow. *The following selection of reports shown in the screenshot will be displayed*.



- In the list, select a report (for example, "Remaining Service Life (**RSL**[1]Remaining Service Life) Detail").
- Activate **View Report** on the popup's toolbar. *The report will be displayed in a popup titled "Report Viewer."*
- From the "Report Viewer" popup, you can choose to download or print the report.

Generate Report from Main Menu

Scope of Report

Reports are not made available at the Organization level. By default, unless you have used filters to further restrict what is included in the report, the scope of the report will be the Site, Building, System, Component, or Component-Section where you are located in the Inventory tree when you activate the **Reports** button.

How to Generate

To generate a report from the main menu,

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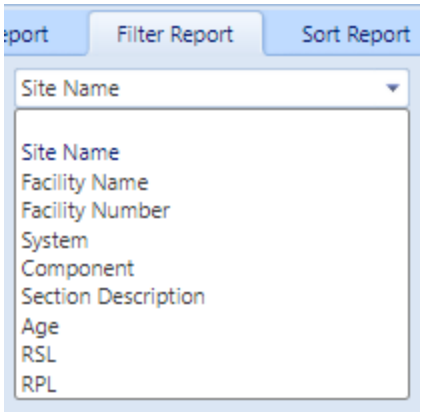
[1]Remaining service life.

- Activate the **Reports** button at the main menu.
- In the "Reports" popup, open the BUILDER entry by activating the plus button.
- Next, open the desired category: Inventory, Condition Assessment, Functionality Assessment, or Work Planning. For this example, open Inventory.
- In the expanded list of reports, scroll down to the desired report and select it.
- Optionally, you can then select one or more filters at locations and inventory levels where the **Filter Report** option is active. For example, you can select the "Age" filter and direct the **RSL**[1]Remaining Service Life report to show only items that are 10 years old or more.

  For example, this is the list of filters available for the **RSL**[2]Remaining Service Life report at the Site level:



- After setting any desired filters, and selecting a Sort order if desired, activate **View Report** on the popup's toolbar. *The report will be displayed in a popup titled "Report Viewer."*
- From the "Report Viewer" popup, you can choose to download or print the report.

Export Report

To export a report, see instructions at Export a Report.

Component Tasks

Other tasks that can be performed on Components are:

Add a Component
Edit Component Data
Delete a Component

For an overview of Components, see Working with Components.

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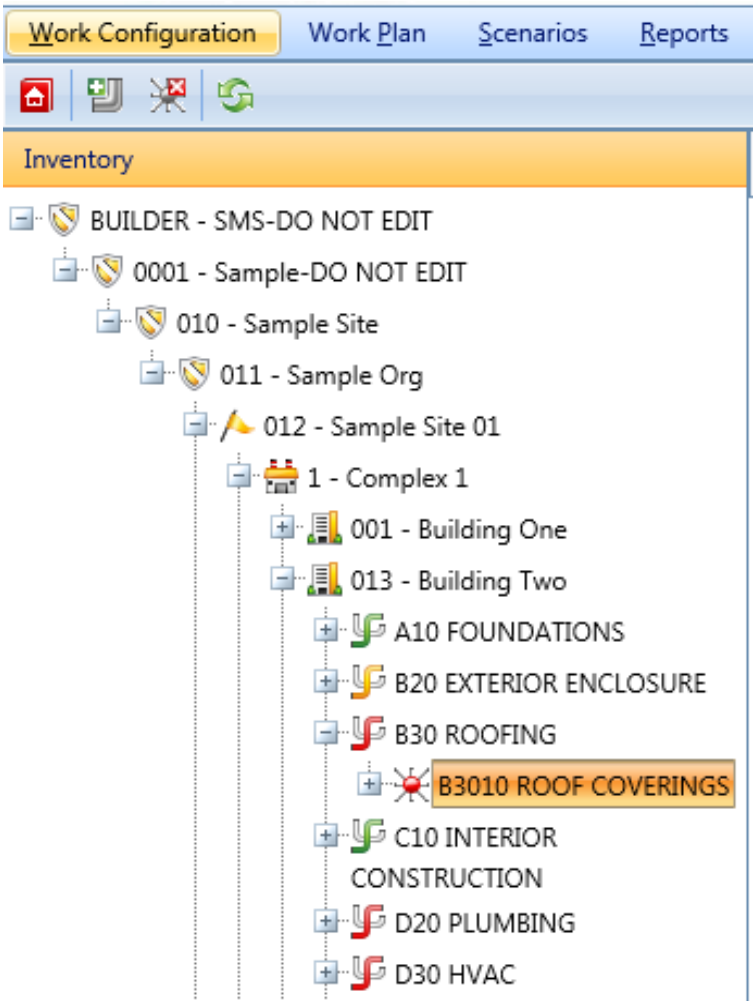
[1]Remaining service life.
[2]Remaining service life.

Delete a Component

This topic describes how to delete a Component from a System.

To delete a Component, navigate to it in the inventory tree and do *one* of the following:

a. Right-click the Component. Then select "Delete Component."
b. Alternatively, select the Component, then activate the **Delete Component** icon on the menu toolbar.



WARNING: Deleting a Component will delete all Sections in the Component. Be sure that you wish to take this action. This is a significant step to take and should only be done when you are certain that you wish to clear the entire inventory of the Component you have selected.

Best Practice Recommendation: Making frequent backups of your inventory database will protect you from significant data losses if mistakes in deleting are made.

Component Tasks

Other tasks that can be performed on Components are:

- Add a Component
- Edit Component Data
- Generate Component Reports

For an overview of Components, see Working with Components.

BUILDER Systems and Components

This topic presents the identifying numbers and names of the Systems and Components used in **BUILDER**.

To divide a Building into Systems and Components, BUILDER follows the Naval Facilities Engineering Command (NAVFAC) UNIFORMAT II classification for building elements (Level 2 and 3).*

*see https://www.wbdg.org/ffc/navy-navfac/design-build-request-proposal/uniformat-structure.

Level 2	Level 3
A10 Foundations	A1010 Standard Foundations
	A1020 Special Foundations
	A1030 Slab on Grade
A20 Basement Construction	A2010 Basement Excavation
	A2020 Basement Walls
B10 Superstructure	B1010 Floor Construction
	B1020 Roof Construction
B20 Exterior Closure	B2010 Exterior Walls
	B2020 Exterior Windows
	B2030 Exterior Doors
B30 Roofing	B3010 Roof Coverings
	(Note: Roof openings are a subcategory of Roof Coverings)
C10 Interior Construction	C1010 Partitions
	C1020 Interior Doors
	C1030 Specialties
C20 Stairs	C2010 Stair Construction
C30 Interior Finishes	C3010 Wall Finishes
	C3020 Floor Finishes
	C3030 Ceiling Finishes
	C3040 Interior Coatings and Special Finishes
D10 Conveying	D1010 Elevators and Lifts
	D1020 Weight Handling Equipment
	D1030 Escalators and Moving Walks
	D1090 Other Conveying Systems

D20 Plumbing	D2010 Plumbing Fixtures
	D2020 Domestic Water Distribution
	D2030 Sanitary Waste
	D2040 Rain Water Drainage
	D2090 Other Plumbing Systems
D30 HVAC	D3010 Energy Supply
	D3020 Heat Generating Systems
	D3030 Cooling Generating Systems
	D3040 Distribution Systems
	D3050 Terminal & Package Units
	D3060 Controls & Instrumentation
	D3070 Systems Testing & Balancing
	D3080 HVAC Valves
	D3090 Other HVAC Systems & Equipment
D40 Fire Protection	D4010 Fire Alarm and Detection Systems
	D4020 Fire Suppression Water Supply and Equipment
	D4030 Standpipe Systems
	D4040 Sprinklers
	D4050 Fire Protection Specialties
	D4090 Other Fire Protection Systems
D50 Electrical	D5010 Electrical Service & Distribution
	D5020 Lighting & Branch Wiring
	D5030 Communication & Security
	D5090 Other Electrical Services
E10 Equipment	E1010 Commercial Equipment
	E1020 Institutional Equipment
	E1030 Vehicular Equipment
	E1090 Other Equipment
E20 Furnishings	E2010 Fixed Furnishings
	E2020 Movable Furnishings

F10 Special Construction	F1010 Special Structures
	F1020 Integrated Construction
	F1030 Special Construction Systems
	F1040 Special Facilities
	F1050 Special Controls and Instrumentation
F20 Selective Building Demolition	F2010 Building Elements Demolition
	F2020 Hazardous Components Abatement
G10 Site Preparations	G1010 Site Clearing
	G1020 Site Demolition & Relocations
	G1030 Site Earthwork
	G1040 Hazardous Waste Remediation
G20 Site Improvements	G2010 Roadways
	G2020 Parking Lots
	G2030 Pedestrian Paving
	G2040 Site Development
	G2050 Landscaping
	G2060 Airfield Paving
G30 Site Civil/Mechanical Utilities	G3010 Water Supply
	G3020 Sanitary Sewer
	G3030 Storm Sewer
	G3040 Heating Distribution
	G3050 Cooling Distribution
	G3060 Fuel Distribution
	G3090 Other Site Mechanical Utilities
G40 Site Electrical Utilities	G4010 Electrical Distribution
	G4020 Site Lighting
	G4030 Site Communication and Security
	G4090 Other Site Electrical Utilities

Sections

Working with Component-Sections

The Component-Section level in the **BUILDER** hierarchy is where inspections actually take place. This topic describes operations that can be performed at the Component-Section level.

Note: Please be familiar with the topic About Identifying Systems, Components and Sections before proceeding with this topic.

Section Name, Equipment Type, Subtype

A Component-Section (also called Section) is described by its name, its material/equipment category, and its Component subtype. You may have multiple Component-Sections of the same material/equipment category and Component subtype, but if so, then each such Section must have a unique name. Or, you may have multiple Sections of the same name as long as they are located in different Systems and Components.

Tips for Working with Component-Sections

A given Component-Section name may be re-used where Sections are located in different Systems and Components. This allows the Component-Section name to be used in organizing your inventory and condition assessment procedures. For example, you may use the Section name "Room 101" for the Sections representing the floor, walls, doors, plumbing, HVAC etc. in Room 101. When inspecting Room 101, all of the Building Sections with the name "Room 101" can be easily selected.

Sampling

A method that can save time on inspections is to do *sampling*; that is, to inspect representative Section-Components rather than all Section-Components. Information about sampling in **BUILDER**'s Condition Assessment documentation can help with determining if sampling is an approach you will want to use.

If you will want to inspect samples, it's wise to plan in advance a strategy for dividing Components into Component-Sections in a way that will facilitate easier sampling. An example is to designate one location or a small set of locations, such as "Room 101" described in Tips for Working with Component-Sections above, where a sampling inspection can be conveniently performed on multiple Component-Section types at the same location.

Section Tasks

Tasks that can be performed on Component-Sections are:

- Add a Component-Section
- Edit a Component-Section
- Generate Component-Section Reports
- Delete a Component-Section

About Identifying Systems, Components and Sections

This topic provides valuable advice to assist in the process of dividing Buildings into their constituent Systems, Component, and Component-Sections.

After you Add a Building and have entered its required data elements, you should identify the Systems, Components and Component-Sections in the Building. Your decomposition of a Building into its Systems and the decomposition of those Systems into Components will be very straightforward. The formation of Component-Sections, however, will require some thought on your part. BUILDER manages Buildings at the Component-Section level, and you will inspect Component-Sections and plan work for Component-Sections.

BUILDER's representation of Building Component-Sections has been designed for flexibility. With flexibility comes choices; choices that add complexity to the process. Pay particular attention to the subsection Defining Component-Sections *below*.

As an alternative option to adding all Systems, Components, and Component-Sections manually, BUILDER provides several mechanisms to speed the inventory process. For example, you can Copy Inventory to Another Building or Add Building Inventory Using a Template.

Defining Systems

Systems are used to help you organize the records for the actual physical items in your Building. You may create only one System of each System type for any given Building. When you add a new System to a Building, the dropdown list of choices for which kind of System to add will include only those Systems that have not already been added to the Building. See Add a System for details.

Defining Components

Like Systems, Components are used to help organize the records of the actual physical items in the Building. The Components that can be added to a System will depend on the System representation you have chosen for the Building. You may create only one Component of each type for each System. When you add a Component, the list of choices will include only those Components that have not already been created for that System. See Add a Component for details.

If you have a Component that is not in the list of available Component options, please contact your SMSSustainment Management System support agent. BUILDER does not have a feature for user-defined Components. Each Component has a number of data elements associated with it (varieties of types and materials, costs, service lives, standard units of measure, inspectable subcomponents, etc.) which must be researched before the Component can be added.

Defining Component-Sections

Component-Sections (also called Sections) of a Building are the key structures in a BUILDER inventory. The System and Component structures are organizational in nature, serving to categorize what is in a Building into manageable groups. Component-Sections actually represent the physical items of a Building, belong to a particular Component, and have the following properties:

- component type
- material/equipment type
- quantity
- age
- whether or not it is painted, and, if so, when it was last painted and paint type

BUILDER has been designed to be flexible in allowing you to represent your Building's Component-Sections in a number of ways to support how you intend to manage them. Some examples may be helpful:

- Building A has 5 exterior doors (System: Exterior Closure, Component: Exterior Door). Four of the doors are metal personnel doors and the fifth is a metal overhead door. Because there are two different types of doors (personnel, overhead), you will have to create at least two Component-Sections. In this situation, you should create a Component-Section for the metal overhead door and enter the appropriate data about it. You don't need to create a Component-Section name for this door because there is only one. For the four metal personnel doors, if you intend to manage them as a unit, create one more Component-Section and enter the appropriate data about the doors. Again, you don't need to enter a Component-Section name because you are only creating one Section of this material and type.
- Building A has 5 exterior doors (System: Exterior Closure, Component: Exterior Door). You lease Building A to two tenants X and Y. Two metal personnel doors and a metal overhead door are in the tenant X area, and the other two metal personnel doors are in the tenant Y area. Because you plan to inspect and maintain the doors by tenant, you create three Component-Sections:
    - Tenant X Metal Personnel with quantity 2
    - Tenant X Metal Overhead with quantity 1
    - Tenant Y Metal Personnel with quantity 2.

When you create each Component-Section for Tenant X, you use "Tenant X" as the name of the Section. Do the same for Tenant Y. In fact, you may want to name every Section (especially Interior Construction Sections) in the Tenant X area "Tenant X." When you inspect the Building, you can use the Component-Section name to distinguish Component-Sections belonging to each of the tenants.

- Building A has two reciprocating 20-ton chillers (System: HVAC, Component: Cooling Unit/Plant). If they are the same age and you plan to manage them as a unit, then create one Component-Section with quantity 2. However, if you want to manage them individually, or if they were installed at different times and may therefore have different maintenance requirements, then create two Component-Sections of quantity 1 each. Because both Component-Sections have the same equipment type (Reciprocating 20-30 Ton) and component type (Chillers), you will have to have distinct Component-Section

names for the two Component-Sections. You may use their barcode IDs as the Component-Section names of you wish.

- Building B has 50 interior wood personnel doors, all alike and all installed when the Building was built. You originally create one Component-Section with quantity 50 for these doors. You may have several years of inspection data regarding the doors, which have deteriorated uniformly over time. With the current inspection, however, two of the doors are found to be severely damaged and will have to be replaced. If the two doors remain in their original Component-Section, inspection samples for these two doors will have to be marked as "non-representative." When the condition index is calculated, the condition of the two doors, which are only 4% of the Component-Section, will have only a small impact on the overall Section **CI**[1]Condition Index. Because you will be replacing the two doors, perhaps with a different quality of door because they may be subject to higher user abuse, you should use component sectioning to isolate the two doors. To do this, reduce the original Component-Section quantity to 48. Then create a new Component-Section for the two damaged doors and enter the current inspection data for this new Component-Section, which will then have a low **CI**[2]Condition Index.

From these examples you can see that some thought will have to be given to how you decompose a Building into Component-Sections. Hopefully, you can also see that BUILDER is flexible enough to allow you to manage at the level of detail that you choose. See Working with Component-Sections for details.

Inventory Suggestions

It is not necessary to do a complete inventory initially. Implementation funds and/or time may be limited, so it is possible and permissible to begin with only some of the Component-Sections and expand the inventory on an as-needed basis. If the desire is to begin with a limited set, the following suggestions are made:

- Focus on the Components that are most critical to Building function
- Focus on the Components that traditionally dominate Maintenance and Rehabilitation (M&RMaintenance and Rehabilitation) needs.

When sectioning, a few rules of thumb are offered:

- To avoid a data burden, use the smallest number of Sections possible to meet managerial needs. For example, it is usually not necessary to individually Section every room, each exterior wall, etc.
- Because material differences (e.g. wood vs. masonry) are criteria for sectioning, only create Sections for material differences when the quantity is significant enough to warrant individual management attention. For example, an exterior wall may be made of wood, but a few square feet of wall is made of masonry, essentially for decoration. The wood wall is clearly a Section, but what about the masonry? Should it be its own Section? If the masonry quantity is a mere fraction of the wood and work would be accomplished on the masonry at the same time as the wood (in other words, the entire wall is being

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[1]Condition Index

[2]Condition Index

managed as a unit), then there is no need to create a Section just for the masonry. However, if the quantities of both the wood and masonry are significant, then create Sections for both.

- Equipment sectioning should be thought out carefully when multiple units of the same equipment are present. For example, there may be three air handling units of the same type, age, etc. In this case, there could be one Section with the quantity of three, or three Sections with the quantity of one. Which approach should be taken? If the desire is to manage them as essentially one unit as far as planning repair and replacement, then one Section will suffice. However, if it is expected that over time, they will be replaced individually, etc, then each should be its own Section.
- Obtaining accurate an accurate quantity can be difficult, and often times there are many sources for obtaining quantity. These include drawings, actual measurement or count, or other records. It must be understood that the more detailed or accurate the count or measurement, the more costly it is to collect the data. Extracting information from records, including drawings, and doing a field validation is the most costly. Reasonable estimates within reasonable error are very acceptable as it will result in reasonable error in BUILDER's analyses. For example, the wall finish may truly be 10,634 SF. An estimate of 11,000 SF will suffice for planning purposes especially if the cost to get the true value is twice that for an estimate. Component-Sections that cover an area (SF or SM) are the most difficult to obtain with precision whereas those that are "each" are the easiest. Generally, field count the "each" Component-Sections and estimate the others. The estimates can be refined in the future when projects are developed for M&RMaintenance and Rehabilitation work.
- *Care should be taken when establishing Year Built/Renewed*. Error here will result in erroneous remaining service lives and add error to the projected year when M&RMaintenance and Rehabilitation should be performed. Experience has shown, however, that sometimes the year in which Component-Sections were replaced, rehabilitated, or initially installed/constructed is truly unknown as the records are no longer available. In those cases, make a reasonable estimate and mark the **Estimated** checkbox. Often, there are people who will remember when that work was done, at least in a generalized way (e.g. early 1990s). Fortunately, through subsequent inspections and condition assessments, the Year Installed/Built becomes less important, as BUILDER's prediction models will use the condition assessment information to adjust the remaining service life and to predict when M&RMaintenance and Rehabilitation will be required in the future.

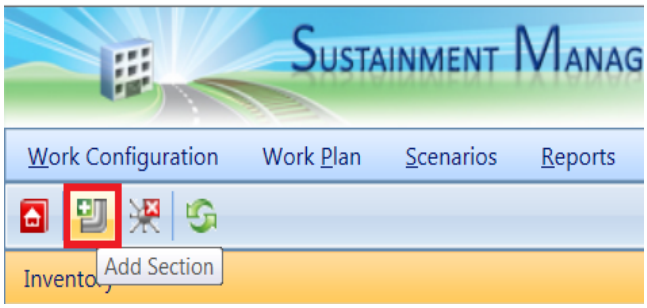
Add a Component-Section

This topic shows how to add a Component-Section (also called Section) and describes the required information to be entered. Additional information that can be entered for the Section is described in Edit a Component-Section.

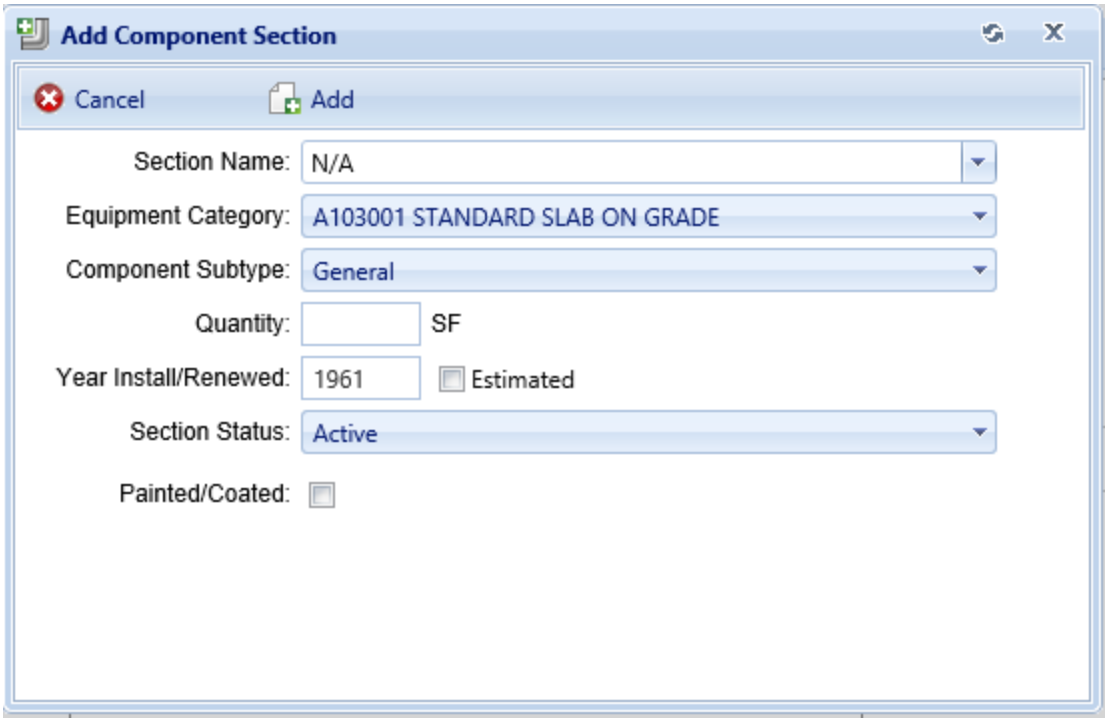
Note: Please be familiar with the topic About Identifying Systems, Components and Sections before proceeding with this topic.

To add a new Section to an existing Component,

- Navigate to the Component in the inventory tree.
- Do *one* of the following:
  a. Right-click the Component. Then select "Add Section" from the options.
  b. Alternatively, select the Component in the inventory tree. Then activate the **Add Section** icon on the main toolbar.



At this point, the "Add Component Section" popup screen will appear. Instructions for filling in the fields follow.



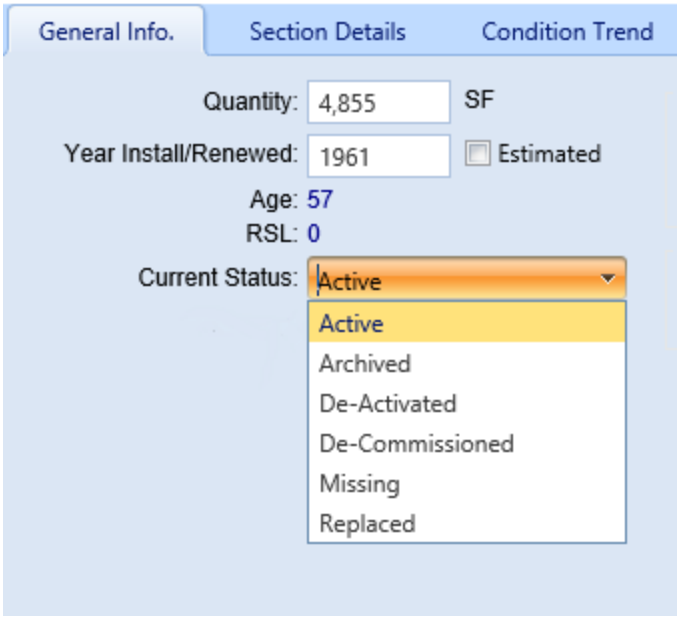
- In the "Add Component Section" popup, record the following data:
  - **Section Name**. Enter the name of the Component-Section.You may either type in a new Component-Section name or select a name from the dropdown list.

    A Section is described by its name, its material/equipment category, and its Component subtype. You may have multiple Sections of the same material/equipment category and Component subtype, but each such Section must have a unique name. A given Section name may be re-

used, however, where Sections are located in different Systems and Components. This allows the Section name to be used in organizing your inventory and condition assessment procedures. For example, you may use the Section name "Room 101" for the Sections representing the floor, walls, doors, plumbing, HVAC etc. in Room 101. When inspecting Room 101, all of the Building Sections with the name "Room 101" can be easily selected.

To simplify the process of creating multiple types of Sections with the same Section name, the Section Name property includes a dropdown list of current Section names for the building. You may either type in a new Section name or select a name from the dropdown list.

- **Material/Equipment Category**. Select the material/equipment category of the Section from the dropdown list. Each Component has a set of distinct material/equipment categories. For example, a "Door" Component has material categories "Wood," "Metal," "Glass," etc.
- **Component Subtype**. Select the Component subtype of the Section from the dropdown list. Each Component type and material/equipment category has a set of distinct Component subtypes. For example, a "Door" Component with material category "Wood" has Component subtypes of "Personnel," "Overhead," etc.
- **Quantity**. Enter the quantity of the Section.
- **Year Install/Renewed**. Enter the four-digit year the Section was either (a) built or installed or (b) renewed.
- **"Estimated" checkbox.** If you have no record of the year the Component-Section was installed or last replaced, you can enter an estimated year and mark the **Estimated** checkbox. Initially, **BUILDER** algorithms estimate the year the Component-Section was last replaced. The default value is the Building's year of construction if the age of the building is less than 1.5 times the expected service life of the Section. If the estimating algorithm is used or you are unsure of when the Component-Section was built or renewed, make sure you mark the **Estimated** checkbox.
- **Section Status** (also displayed as **Current Status**, but which is *not* the same as Current Status at the Building inventory level). A status field has been added to the Component-Section data page. The default value is "Active." Here you can assign a status to the Section. Options are shown in the dropdown list.



- **Painted/Coated**. Mark this checkbox if the Component-Section is painted or has a surface coating. *Additional fields will appear below when this checkbox is marked, including BUILDER's estimate of remaining paint life (RPL)*.
- **Year Painted/Coated**. If the Component-Section is marked as painted, enter the four-digit year it was last painted or coated. If you have no record of the year, you can enter an estimated year and mark the **Estimated** checkbox. Initially, BUILDER algorithms estimate the year in which the Component-Section was last painted or coated. The default value is the Building's year of construction if the age of the Building is less than 1.5 times the expected paint life of the Component-Section.

  Best Practice: If the estimating algorithm is being used, or if you are unsure of when the Component-Section was last painted or coated, make sure you mark the **Estimated** checkbox.

- **Paint Type**. If the Component-Section is marked as painted/coated, select the paint/coating type from the dropdown list.

- After entering the data described above, activate the **Add** button on the popup toolbar to add the Component-Section to your inventory. Alternatively, if you do not wish to add it, activate the **Cancel** button to close the popup.

Section Tasks

Other tasks that can be performed on Component-Sections are:

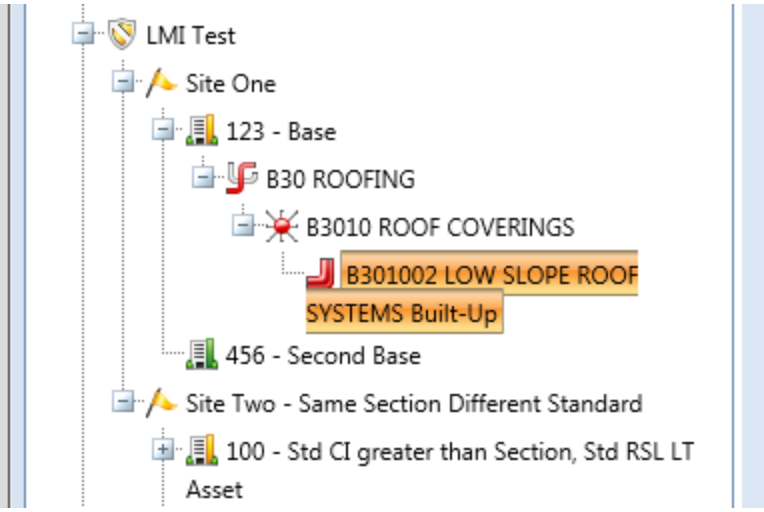
Edit a Component-Section
Generate Component-Section Reports
Delete a Component-Section

For an overview of Sections, see Working with Component-Sections.

Edit a Component-Section

The Component-Section level in the **BUILDER** hierarchy is where inspections actually take place. This topic describes information that can be viewed and edited at the Section data screen.

Data for a given Component-Section can be viewed and edited by selecting the Component-Section in the inventory tree:



Information about the Component-Section selected in the inventory tree will be presented on an ID line and at several tabs. You can use the content area toolbar to perform actions such as saving changes, or adding or editing comments.

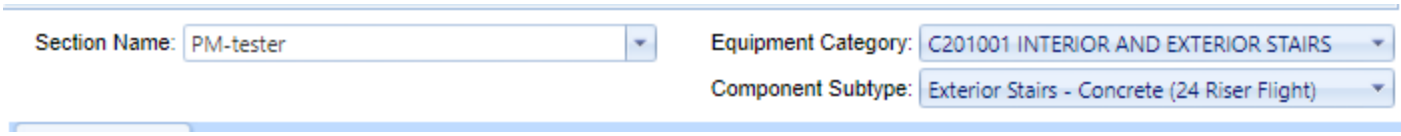
- **Toolbar**
- **ID Line**
- **General Information Tab**
- **Section Details Tab**
- **Condition Trend Tab**
- **Inspection History Tab**
- **Cost Modifiers Tab**
- **Attachments Tab**
- **Section Attributes Tab**

Toolbar

- **Save**. Saves changes made to the Section.
- **Comment**. Allows you to add, edit, and view comments about the Section.
- **Reports**. Launches the Report Selection tool, which gives you access to a list of standard reports relevant to Section inventory. See Generate Component-Section Reports for details about how to select and generate a report.

ID Line

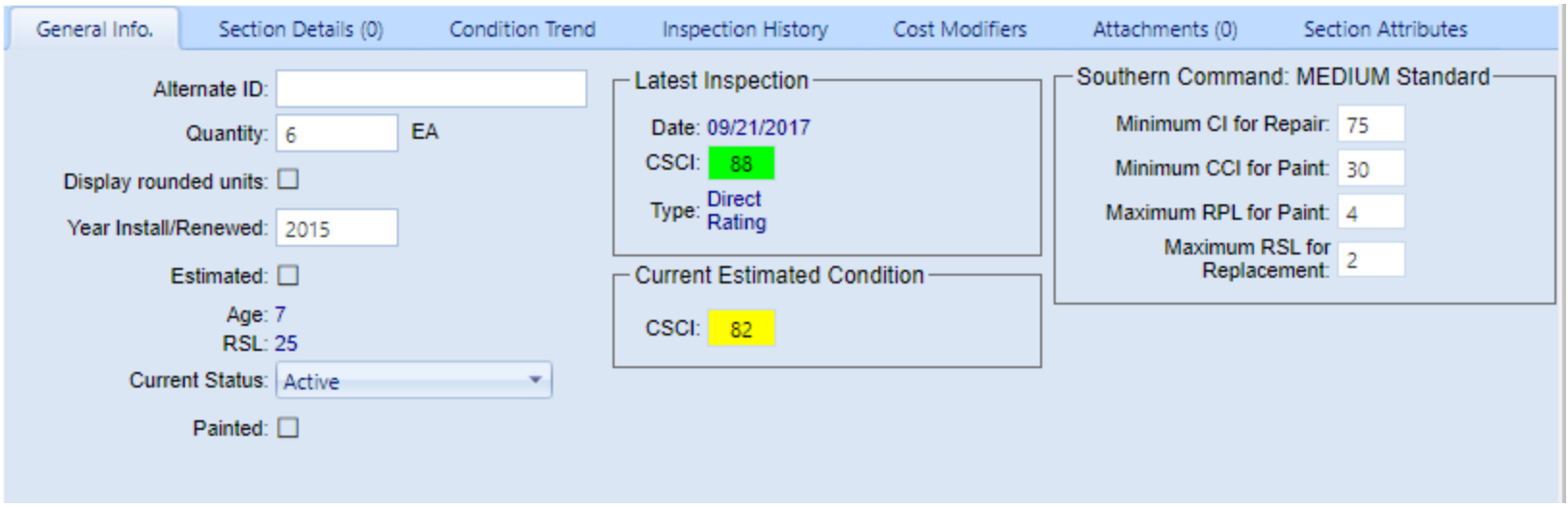
The Section ID line shows you the Section name, equipment category, and component subtype.



General Information Tab

When you select a Component-Section in the inventory navigation tree, the **General Information** (abbreviated **General Info.**) tab is shown first by default. This is where all of the Component-Section data described in the Add a Component-Section topic, and more, can be edited.

CAUTION: Be sure to save your edits using the **Save** icon in the content area toolbar.



Data at this tab includes:

- **Alternate ID**. This is where you can enter or edit an ID number corresponding to standards internal to your organization.
- **Quantity**. As entered when adding the Section, or later edited.
- **Display Rounded Units**. This checkbox allows you to specify units be rounded to the nearest whole number (previously this was the silent default in **BUILDER**).

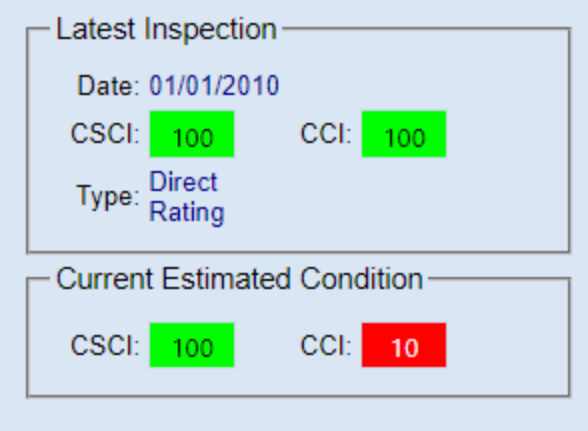
- **Year Installed/Renewed**. As entered when adding the Section, or as later edited.
- **Estimated**. This checkbox should show as marked if the Year Installed was marked as Estimated when adding the Section, or has since been determined to be estimated.
- **Age (Read-Only)**. Displays the age of the Component-Section, calculated from the Year Installed.
- **RSL**[1] (Read-Only). Displays the remaining service life, in years, of the Section. The remaining service life is calculated during the rollup process using age, Section service life, and Section condition index trend.
- **Current Status**. This is the **Section Status** selected when adding the Section, or as later edited.
- **Painted**. This checkbox should be marked if the Section has been painted or coated.
- **Latest Inspection (Read-Only)**. Displays the date that the last condition assessment was performed on the Section, and the inspection type. Also displayed is the Component-Section Condition Index (CSCI) computed on the inspection date, based on the assessment results.

  Note: The CSCI displayed in the "Latest Inspection" fieldset is the condition on the date of inspection, *not* the current condition.

  If the Component-Section is painted, the Coating Condition Index (CCI) computed at the last inspection date will also be shown.

- **Current Estimated Condition (Read-Only)**. Displays the estimated CSCI based on service life and condition index trend. The estimated CSCIComponent-Section Condition Index - a condition rating for the target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, then subtracting that deduct value from the maximum possible rating of 100. The deduct value computation differs for each condition assessment method. is computed during the rollup process.

  If the Component-Section is painted, the current estimated CCICoating Condition Index will also be shown.



[1]Remaining service life.

The following fields, in the "Test" fieldset, show numbers that have been set using **BUILDER**'s "Standards" capability to generate work items, if this procedure has been done. For more information about applying standards, see Work Configuration Overview and Add a Condition Standard.

- **Minimum CI[1] for Repair (Read-Only)**. This field shows what threshold Condition Index value will trigger a work item. For Component-Sections with a **CI**[2] above this value, no work item is triggered. For Component-Sections with a **CI**[3] at or below this value, a work item is triggered.Minimum CCI. This field shows the threshold value for the Coating Condition Index. For painted Component-Sections with a CCI above this value, no paint work item is triggered. For painted Component-Sections with a CCI at or below this value, a paint work item is triggered.
- **Maximum RPL for Paint (Read-Only)**. This field shows the threshold value for remaining paint life. For painted Component-Sections with a RPL greater than this value, no paint work item is triggered. For painted Component-Sections with a CCICoating Condition Index at or less than this value, a paint work item is triggered.
- **Maximum RSL[4] for Replacement (Read-Only)**. This field shows the threshold value for remaining service life. For Component-Sections with a **RSL**[5] above this value, replacement would not be considered as an option unless it is more cost effective to replace than to repair.

Section Details Tab

As a supplement to information shown at the **General Information** tab, details regarding individual pieces of equipment that are part of the Component-Section can be stored at the **Section Details** tab. For information how to add, edit, or delete Section Details, see the Add, Edit, or Delete Section Details topic.

Condition Trend Tab

Note: The information at this tab is read-only.

The **Condition Trend** tab shows the trend of the CSCI based on inspection information, as well as the projected CSCI trend into the future based on observed deterioration rates and expected service life.

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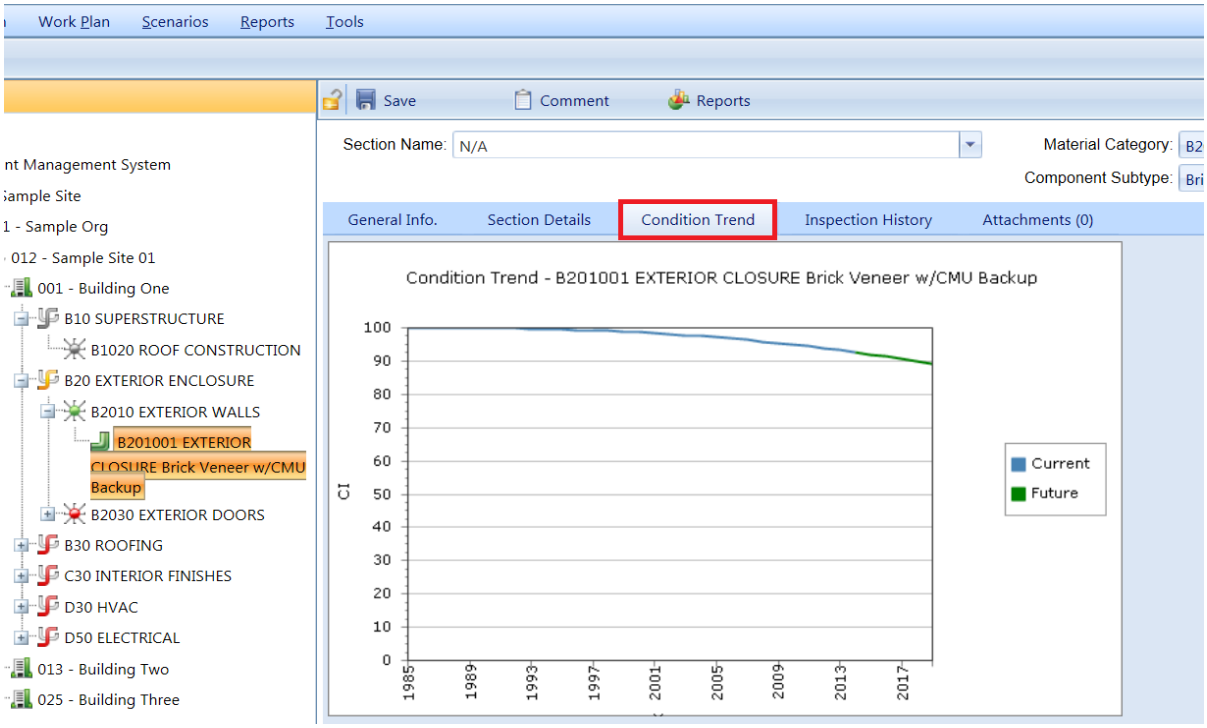
[1]Condition Index

[2]Condition Index

[3]Condition Index

[4]Remaining service life.

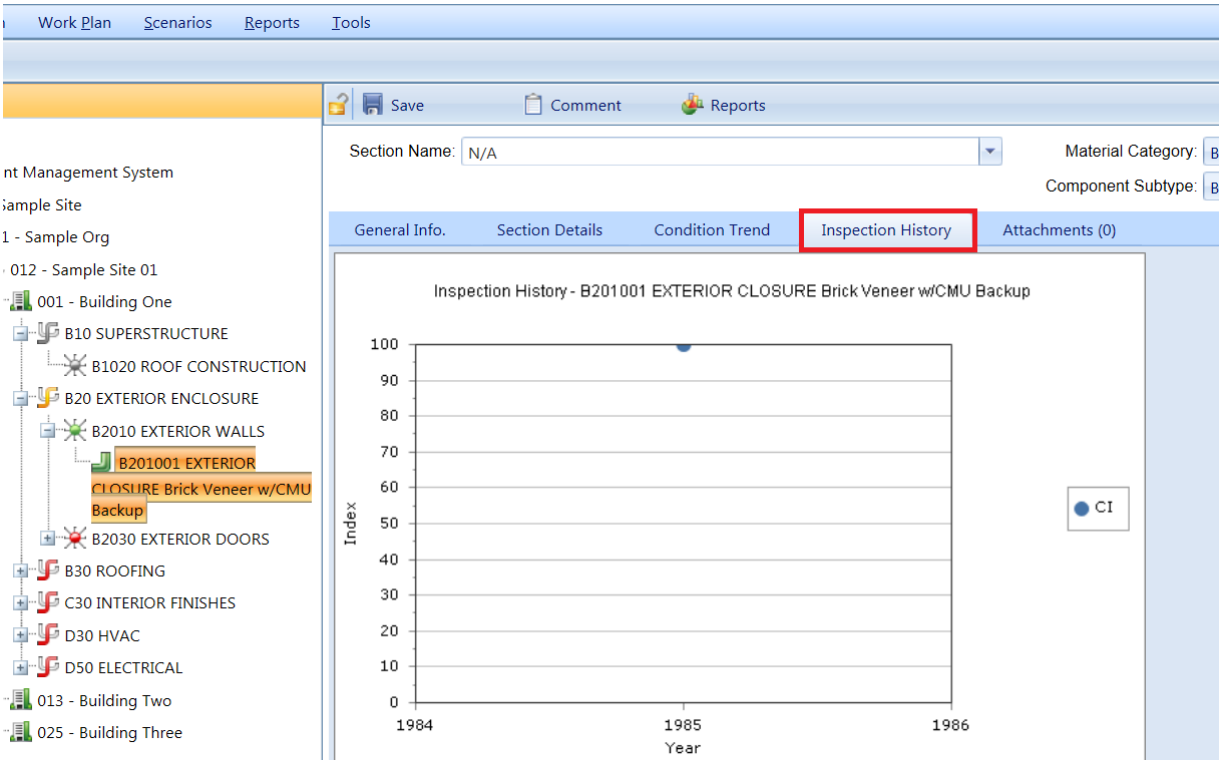
[5]Remaining service life.



Inspection History Tab

Note: The information at this tab is read-only.

The **Inspection History tab** displays a graph of the CSCI history of the Component-Section over time, based on inspection information.



Cost Modifiers Tab

The **Cost Modifiers** tab displays a table showing assigned cost modifiers, and allows you to view and assign cost multipliers or adders.

Note: Existing cost modifiers that affect the Section level may have been assigned at different inventory levels, but from a Section data page you can only assign a Section-level cost modifier.

Modifier Scope

At the Section level, the Assigned Cost Modifiers table will show you all of the following:

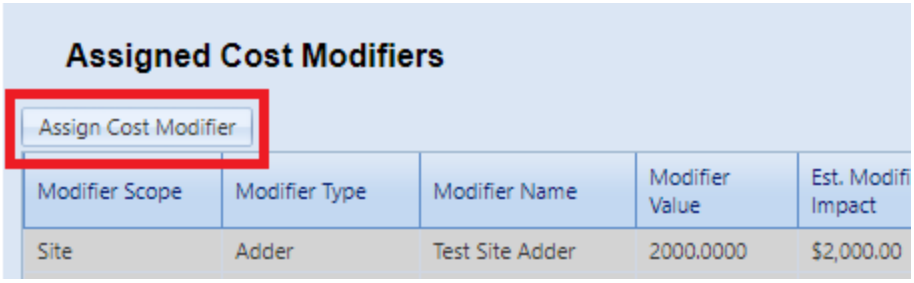
- all modifiers assigned to that Section
- all modifiers assigned to the Component the Section is in
- all modifiers assigned to the System the Section is in
- all modifiers assigned to the Building the Section is in
- if applicable, all modifiers assigned to the Complex the Section is in
- all modifiers assigned to the Site the Section is in

The scope of each modifier is shown in the **Modifier Scope** column.

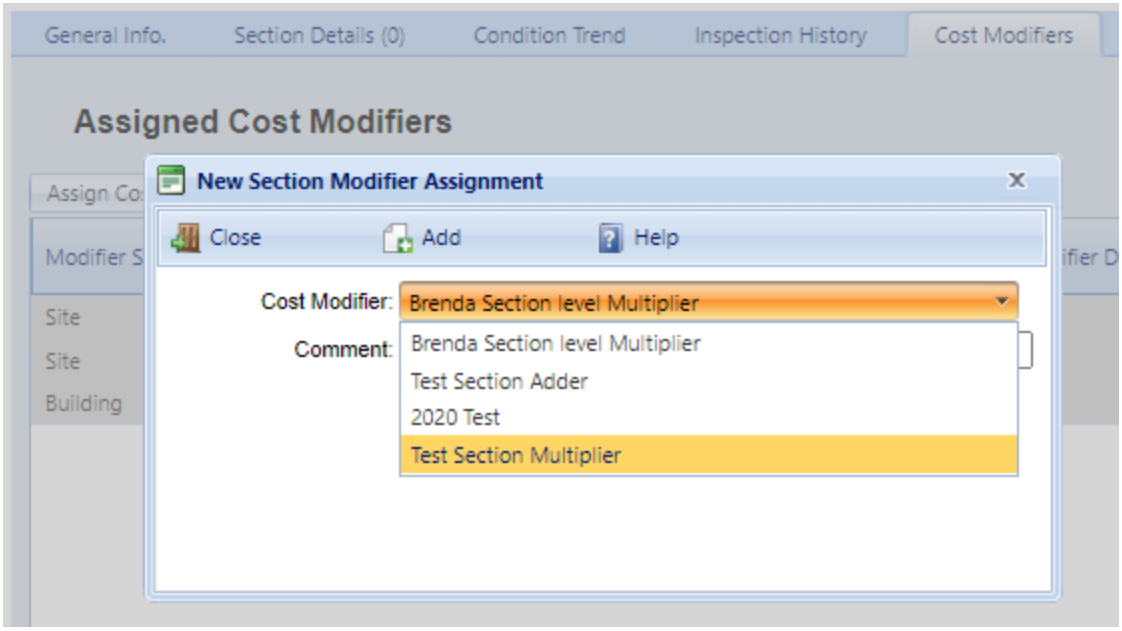
Assign a Modifier

To assign a modifier to your Section from available options,

- Activate the **Assign Cost Modifier** button.



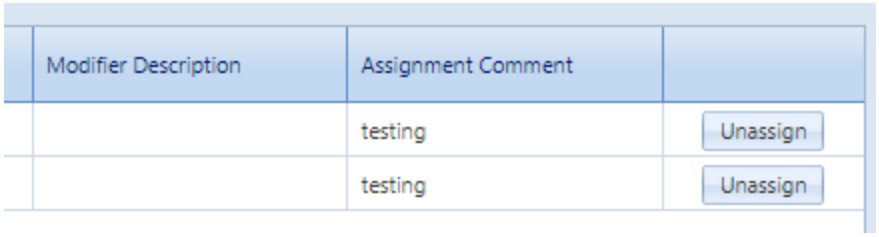
- In the "New Section Modifier Assignment" popup, select a cost modifier from the dropdown list.



- Add a comment if desired.
- Activate **Add** on the popup toolbar. *You should see your selected modifier added to the table of cost modifiers.*

Unassign a Modifier

To unassign a modifier, first navigate to where the modifier was assigned, then activate the **Unassign** button in the rightmost column of the Assigned Cost Modifiers table.



A Site-level cost modifier can be unassigned only at the Site level, a Building-level cost modifier can be unassigned only at the Building level, etc.

More about Cost Modifiers

For more about cost modifiers, see the **Cost Modifiers** chapter in the ***BUILDER*** *Reference Data Guide*.

Attachments Tab

At the **Attachments** tab, you have the option to view or change the asset's attachments. At the Component-Section level, you can choose to view just the Section attachments, just the Section Details attachments, or both.

View Attachment(s)

The **Attachments** tab will show whether any files have been attached to the asset's record. The number in parentheses after the word "Attachments" shows how many of them have been attached.

To view one or more attachments,

- Activate the **Attachments** tab. *If attachments are present, a table will display their type, title, and description*.
- Activate the link in the **Title** column. *The attachment will appear in the "Image Viewer" popup window.*
- When finished viewing, activate the **Close** button on the popup window toolbar. and you will be returned to the table of attachments.
- Repeat the two steps immediately above for additional attachments as desired.

At the Component-Section level, you can choose to view just the Section attachments, just the Section Details attachments, or both.

Add an Attachment

At the **Attachments** tab on the asset's data page, you have the option to attach files (images and other documents) to the asset's record. An attached file might be a photograph, an electronic image of written notes or diagrams made during inventory, or a file generated on a computer.

Acceptable Attachment Formats

The attachment may be in any of the following formats:

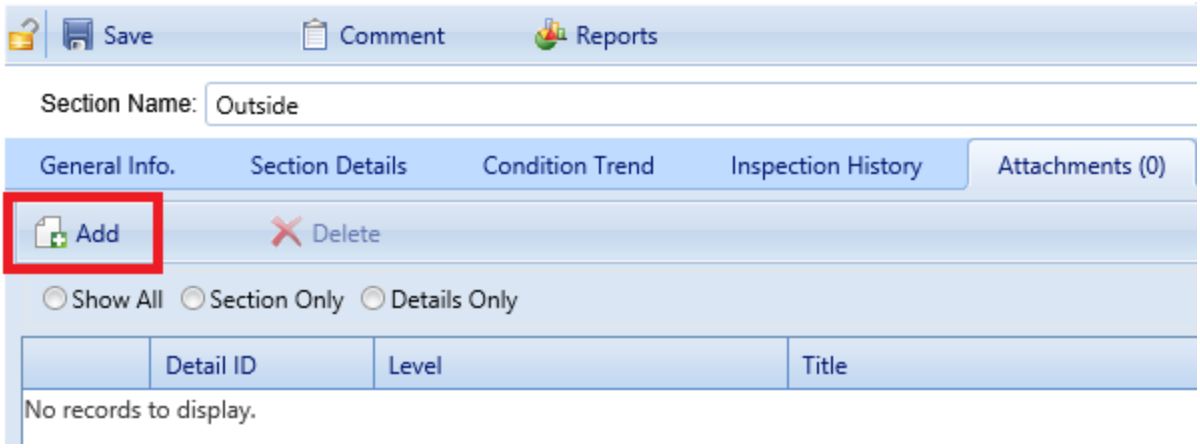
- .jpg
- .jpeg
- .png
- .zip
- .doc
- .pdf

Note: As of January 31, 2022, .doc format is allowed, but not .docx.

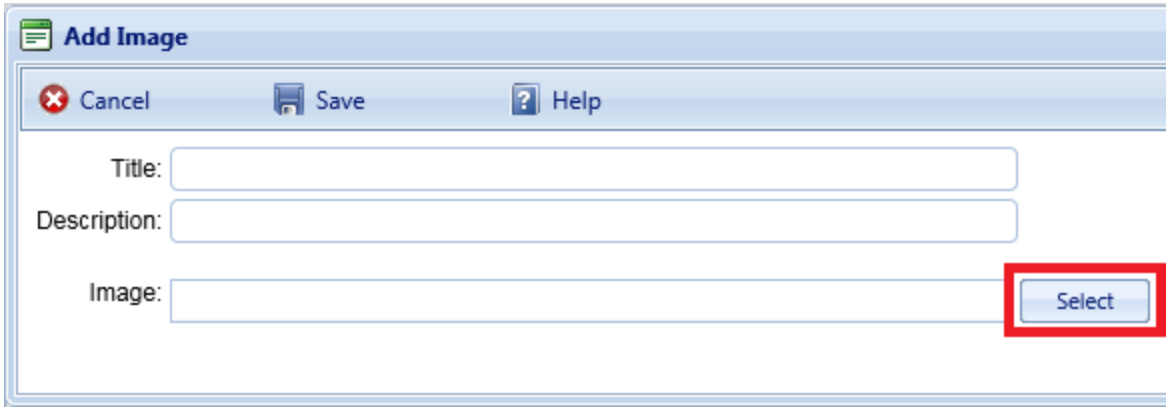
Attach

To attach a file,

- At the **Attachments** tab, activate the **Add** button in the toolbar below the row of tabs.



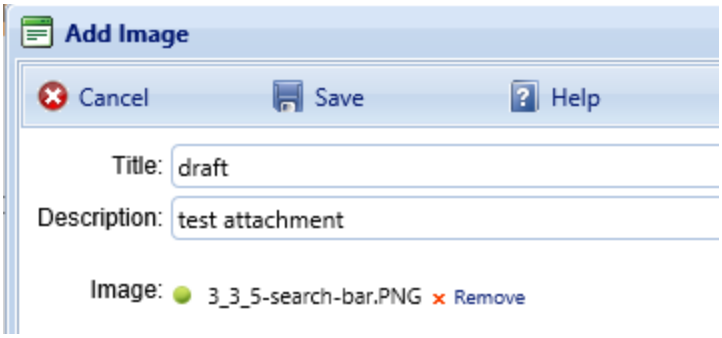
This will open the "Add Image" popup window:



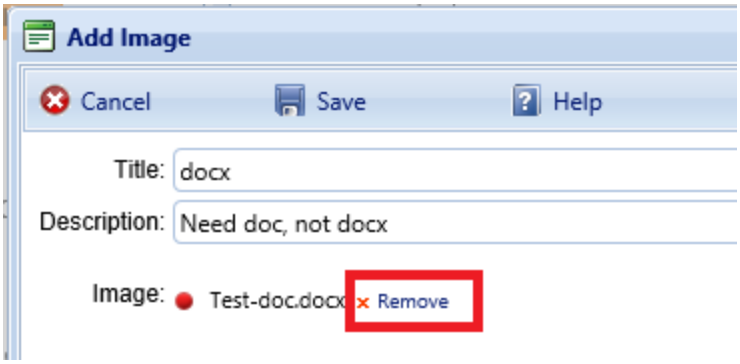
- In the popup, enter Title and Description information for the attachment.
- Activate the **Select** button to the right of the "Image" field.
- Browse to the desired image or other file and select it for attachment. *If a red dot appears next to your file name in the "Add Image" popup, see Attachment Troubleshooting, below*.
- If you are adding an attachment at the Building level, use the **Image Type** radio buttons to indicate whether the attachment is a Key Plan, a Section Plan, or "Other."
- Once the required attachment data is entered,
  a. Activate **Save** on the popup toolbar.
  b. Alternatively, to close the popup window without attaching the selected file or image, activate the **Cancel** button.

Attachment Troubleshooting

If the selected attachment is in an acceptable format, the "Image" field will show a green dot (plus a label that gives you the option to remove the attachment).



However, if it is not in an acceptable format, the "Image" field will show a red dot. Activate "Remove" and select an attachment file in one of the formats listed at Acceptable Attachment Formats.



Edit Attachment Metadata

You can edit the title and/or description of an attachment as follows:

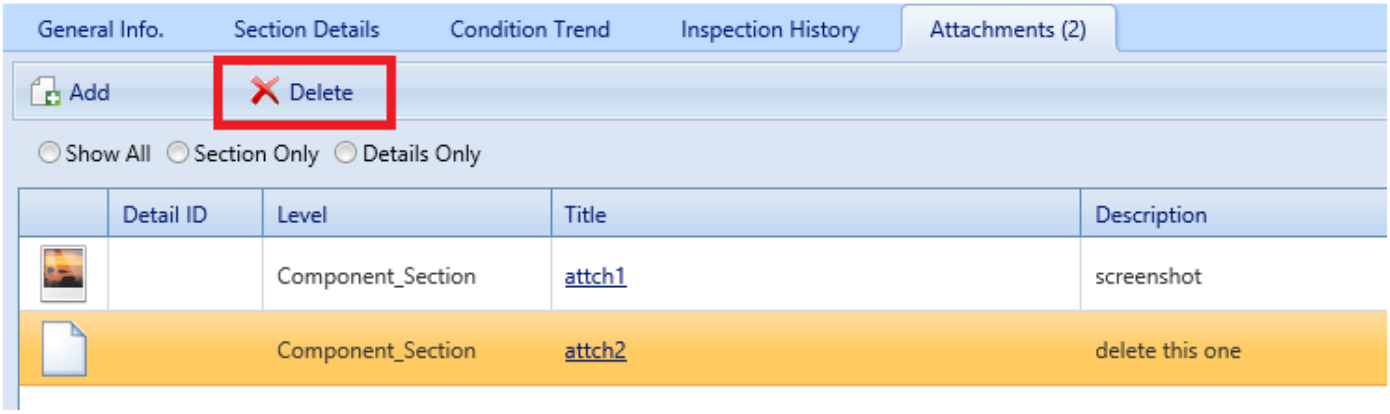
- Navigate to the **Attachments** tab to view the attachments table.
- Activate a link in the **Title** column. *The attachment will appear in the "Image Viewer" popup window.*
- In the header section above the attachment, make the desired changes in the **Title** and/or **Description** field(s).
- Activate **Save** on the popup toolbar to store your changes and return to the table of attachments.
- Alternatively, if you want to cancel the change, activate **Close** on the popup toolbar. *You will be returned to the table of attachments*.

If you wish to change the contents of the attachment, you will need to delete the existing attachment file and add a new one.

Delete an Attachment

To delete an attachment,

- Navigate to the **Attachments** tab to view the attachments table.
- Select the attachment you wish to delete (do *not* activate the link in the Title column). *When properly selected, that record in the table will change background color as illustrated below:*



- Activate the **Delete** button above the table.
- Activate **Yes** in the confirmation box to delete the attachment, or **No** to cancel.

Section Attributes Tab

Custom asset attributes can be added at each inventory level–from Organization down through Section–in two different ways: by using "active attributes" or by using "Admin managed attributes."

"Unassigned" *Admin managed attributes* are a collection of pre-named attributes that have been determined by the **BUILDER** instance's owner (for example, a corporation, or the Air Force, or the Army). They are templated or common attributes that are seen as likely to be used often. Although these attributes are made available from the outset after installing **BUILDER**, they still need to be assigned before they can be used to help describe an asset.

Additional Admin managed attributes can be created, but only by a **BUILDER** Administrator or a user with Master Planner Role.

Active attributes are very flexible and can be created and assigned by any user with inventory privileges.

CAUTION: Unless a standardized procedure for assigning active attributes is implemented and enforced, the flexibility of active attributes can make incorporating them into reports more difficult and time consuming, because multiple people can create them and there is no built-in consistency.

With respect to creating reports, Admin managed attributes will be easier to report on in a consistent fashion, because they are managed by a **BUILDER** Administrator (or a user with Master Planner Role). Also, Admin managed attributes are available to all assets that are at the same inventory level. Active attributes, on the other hand, would be prone to being named inconsistently and make reporting more difficult.

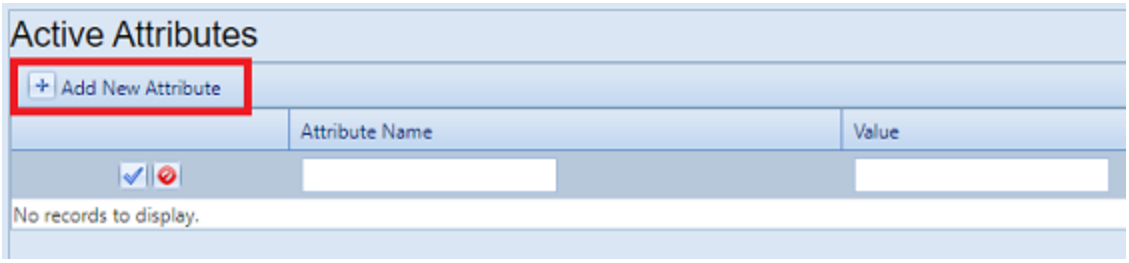
Active Attributes

Under **Active Attributes** at the top half of the Attributes screen, you can add, edit, or delete custom attributes for this level of inventory.

Add an Active Attribute

To add a custom inventory attribute,

- Directly under the **Active Attributes** header, activate **Add New Attribute**. This will generate a new row in the **Active Attributes** table.



- Enter a name and value for your attribute into the table.
- If you want to apply an architect name, press the **Enter** key on your keyboard at this point . The popup "Add Architect" will appear. Enter the name of the architect, then select **OK**.
- When finished with the entry, *activate the blue checkmark icon at the left side of the row* to save the entry. Alternatively, to cancel and delete the entry before saving, activate the red circle with a slash icon (located to the right of the blue checkmark).

  CAUTION: Your new attribute will not be saved if you (a) exit without activating the blue checkmark or (b) initiate adding a new custom inventory attribute (by activating the **Add New Attribute** button) before saving with the blue checkmark.

- Repeat the steps listed above for each custom inventory attribute you wish to add.

Edit an Active Attribute

To edit an attribute,

- Activate the pencil icon in the attribute's table row.
- Make the desired changes.
- Finally, activate the blue checkmark icon at the left to save the changes.

Delete an Active Attribute

To delete an attribute,

- In the table of active attributes, locate the row containing the attribute you wish to delete.
- To the right of the **Value** field, activate the Delete icon (red "X"). *A confirmation popup will appear, asking "Delete record?"*
- Select **OK** to delete, or **Cancel** to stop the process.

Admin Managed Attributes

Under **Unassigned Admin Managed Attributes** at the bottom left of the Attributes screen, you can choose to assign an existing Admin managed attribute to the asset whose data screen you have open. You can also change the value of an attribute after it has been assigned.

Note: Attributes that are in the table under the header **Admin Managed Attributes** are already assigned to the asset whose data screen you are in.

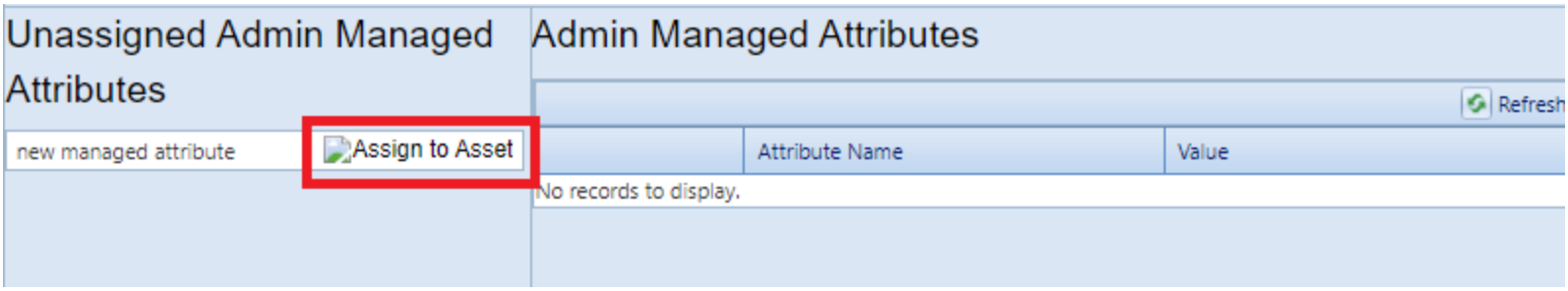
Only a **BUILDER** Administrator or a user with the Master Planner Role can create, edit (other than changing the value), or delete/unassign custom Admin managed attributes for the selected asset. Also, once an Admin managed attribute has been moved from the **Unassigned Admin Managed Attributes** column into **Admin Managed Attributes**, this action cannot be reversed except by a **BUILDER** Administrator or a user with Master Planner Role. More detail about Administrator-specific inventory attribute tasks can be found at Manage Custom Inventory Attributes.

Assign an Unassigned Attribute to Admin Management

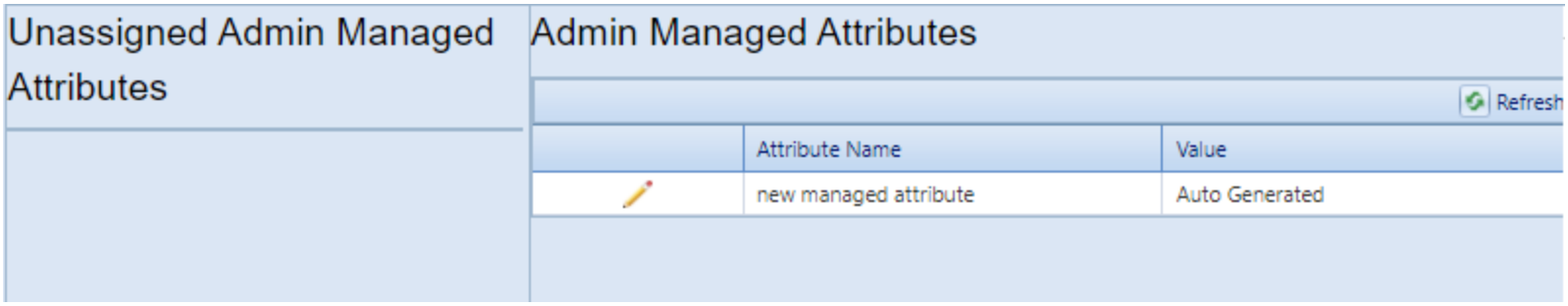
You may see one or more items listed under the header **Unassigned Admin Managed Attributes** at the lower left of the Attributes screen. These are attributes that are available at this inventory level but that have not been assigned to the selected asset. If no items are listed under the header **Unassigned Admin Managed Attributes**, there are none available to be assigned. (They may have already been assigned and thus transferred to the **Admin Managed Attributes** table.)

To assign an unassigned asset to Admin management,

In the **Unassigned Admin Managed Attributes** column, activate **Assign to Asset**.



*This will immediately populate the inventory item in that row under **Admin Managed Attributes** instead.*

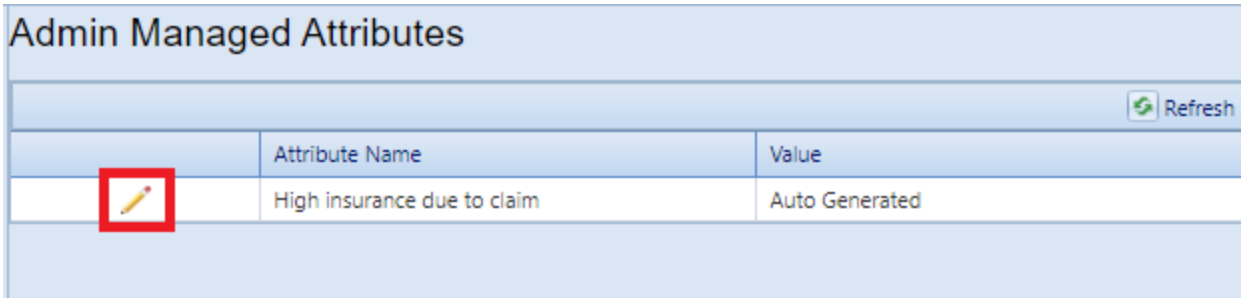


Note: The assignment action is not reversible, except by a **BUILDER** Administrator or a user with the Master Planner Role.

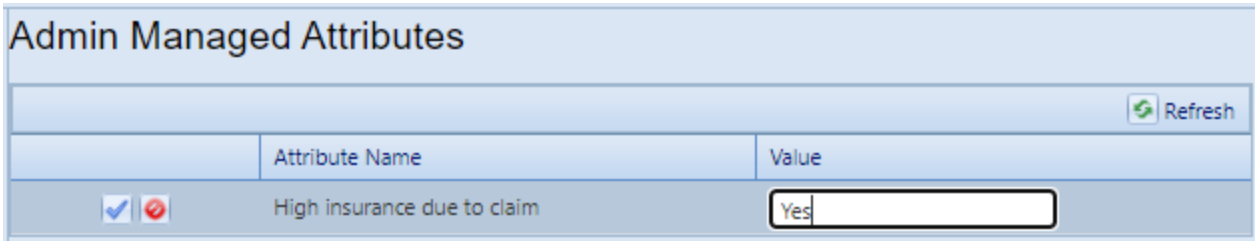
Change the Value of an Admin Managed Attribute

To change the value of an asset under Admin management,

- Under **Admin Managed Attributes**, activate the pencil icon in the attribute's table row, and wait for the row to change appearance.



- Make the desired change in the **Value** column.



- Finally, activate the blue checkmark icon at the left to save the changes (or the red Cancel icon to cancel the change).

Component-Section Tasks

Other tasks that can be performed on Component-Sections are:

Add a Component-Section
Generate Component-Section Reports

Delete a Component-Section

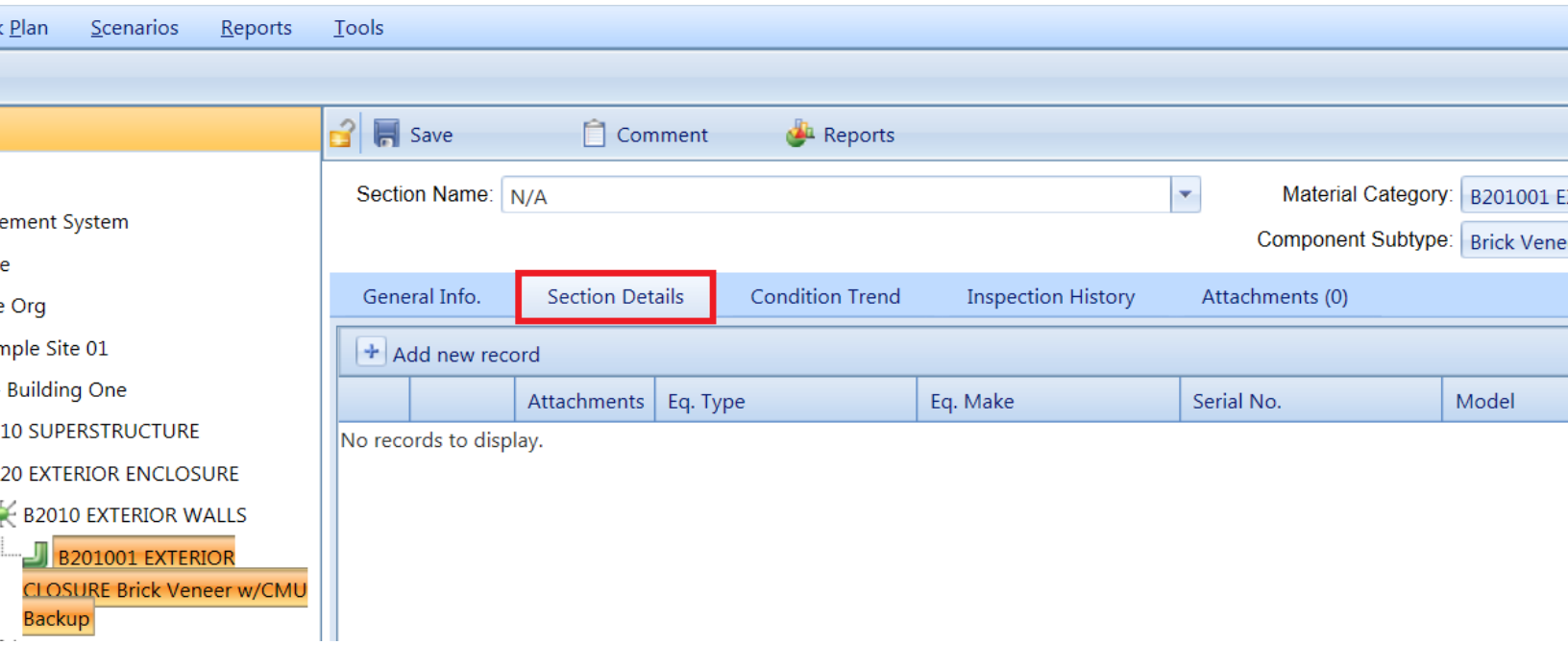
For an overview of Sections, see Working with Component-Sections.

Add, Edit, or Delete Section Details

The Section Details tab at the Section data screen is where you can record detailed information, such as serial number and warranty date, for equipment that constitutes a Section or is part of one. This topic describes how to add, edit, or delete Section Details.

Section Details include critical information regarding warranties, model number, manufacturer, equipment serial numbers and property identifiers, and location.

After defining a Section, you may add details regarding individual items of equipment or constructed elements (materials) at the **Section Details** tab, as shown below.



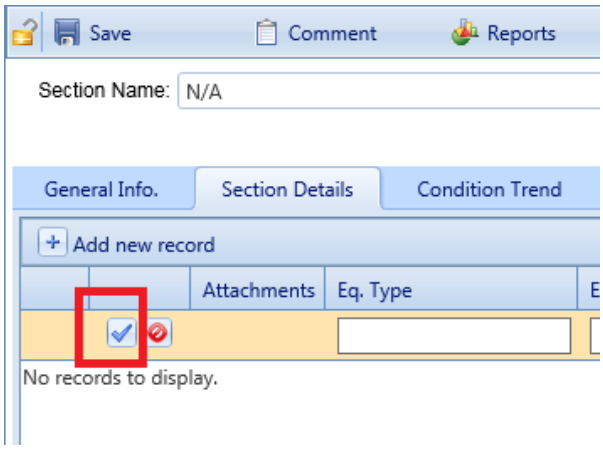
Add Section Details

To add Section Details,

- Activate the **Add new record** button (located just above the Section Details table column headers).
- Enter information; each of the fields is described in Edit Section Detail Data. You can use the **Tab** key to proceed left to right, from one entry field to another, or **Shift-Tab** to move from right to left.

- **IMPORTANT:** After entering the information, activate the checkmark icon, as shown below.

  Note: You may need to scroll back to the left side of the table to see the checkmark icon.



  Alternately, to exit the record without saving the data, activate the red **Cancel** icon next to the check-mark icon.

- When finished with entries, or intermittently, activate **Save** on the toolbar.

Attach a File

From the **Attachments** column of the Section Details table, you have the option to attach files to the Section Detail's record. An attached file might be a photograph, an electronic image of written notes or diagrams made during inventory, or a file generated on a computer.

Acceptable Attachment Formats

The attachment may be in any of the following formats:

- .jpg
- .jpeg
- .png
- .zip
- .doc
- .pdf

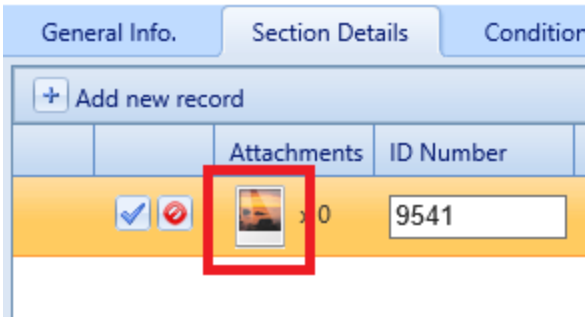
Note: As of January 31, 2022, .doc format is allowed, but not .docx.

You have the option to attach one or more files to the Section Detail's record.

Attach

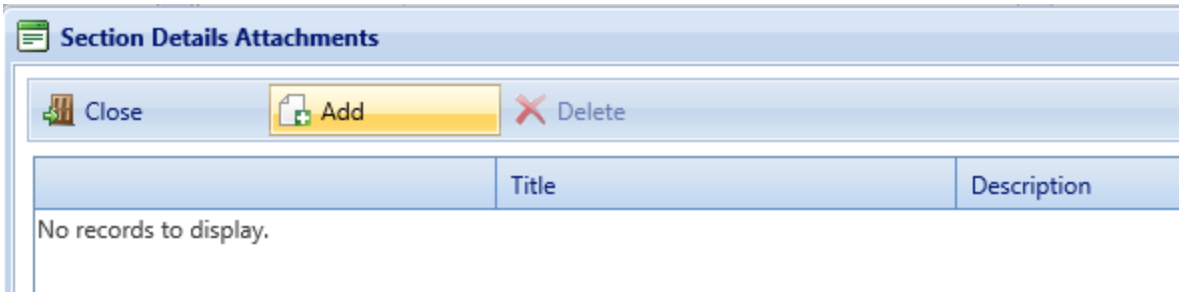
To attach a file,

- Activate the image in the **Attachments** column of the desired row in the Section Details table.

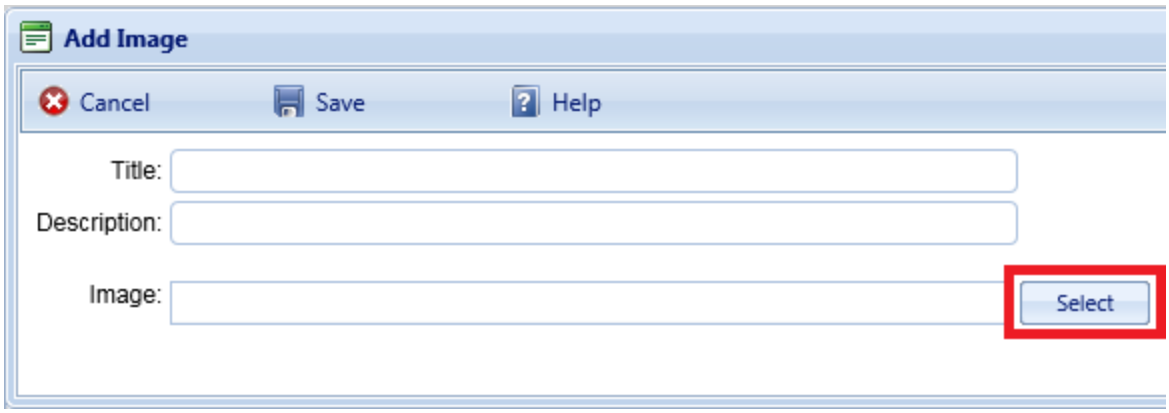


The "Section Details Attachments" popup window will appear.

- In the "Section Details Attachments" popup window, activate the **Add** button on the toolbar.



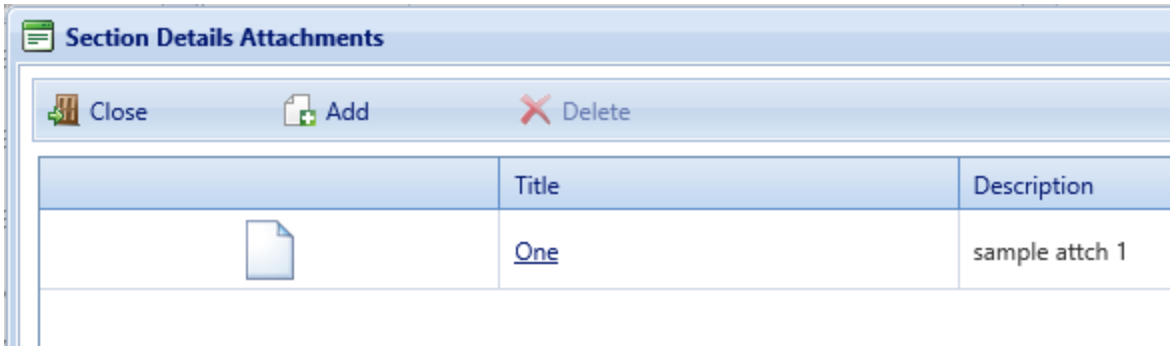
This will open the "Add Image" popup window:



- Enter Title and Description information for the attachment.
- Activate the **Select** button to the right of the "Image" field to browse to the desired image or other file.
- If you are adding an attachment at the Building level, use the Image Type radio buttons to indicate whether the attachment is a Key Plan, a Section Plan, or "Other."

- Once the required attachment data is entered,
  a. Activate **Save** on the popup toolbar.
  b. Alternatively, to close the popup window without attaching the selected file or image, activate the **Cancel** button.

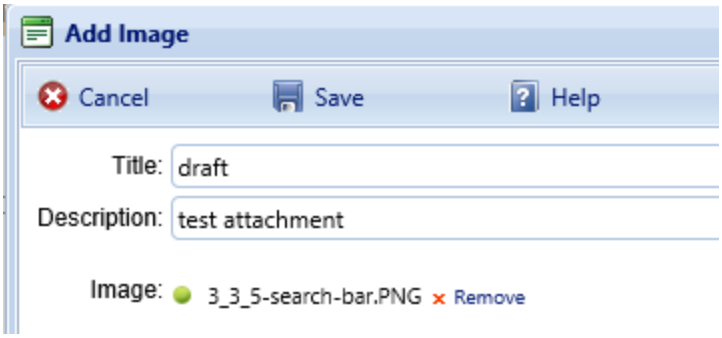
After you activate **Save** on the popup toolbar, an entry for the attachment will appear in the "Section Details Attachments" table in the popup.



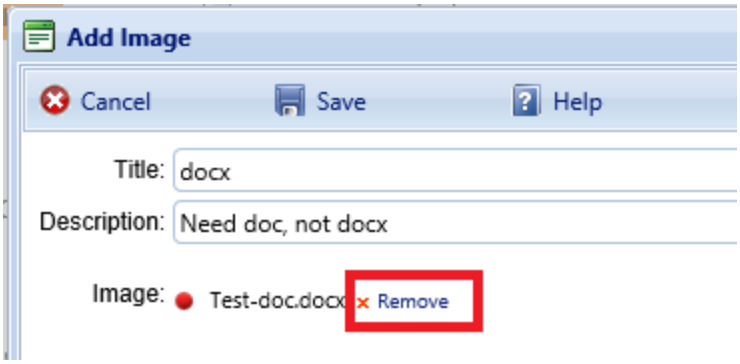
Section Detail attachments can also be accessed from the **Attachments** tab at the Section data screen by selecting either the **Show All** or **Details Only** radio button above the Section Attachments table.

Troubleshooting

If the selected attachment is in an acceptable format, the "Image" field will show a green dot (plus a label that gives you the option to remove the attachment).



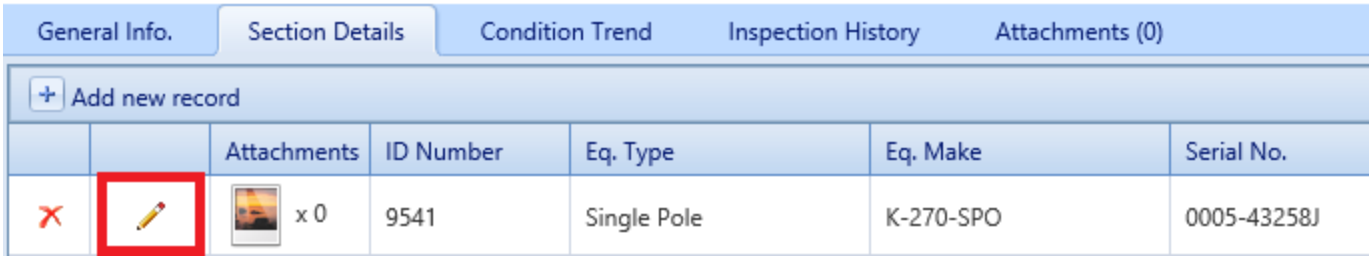
If it is not in an acceptable format, the "Image" field will show a red dot. Activate "Remove" and select an attachment file in one of the formats listed at Acceptable Attachment Formats.



Toolbar Options

- **Save**. Saves changes made to the Section Detail.
- **Comment**. Allows you to add, edit, and view comments about the Section Details.
- **Deleted: Images**. Note that this toolbar option has been removed. Images and other attachments are now initiated or accessed via the **Attachments** column of the Section Details table, or from the **Attachments** tab in the Section data page.
- **Reports.** Allows you to run standard BUILDER reports appropriate to the current inventory level.

Edit Section Detail Data



Because Section Detail data can be recorded for both equipment and non-equipment Section Detail items, some of the data elements (columns in the table of items at the **Section Details** tab) might not apply to a particular Section. Simply fill in the applicable data fields and leave the non-applicable fields blank. Section Detail data that can be entered includes:

- **ID Number**. (Required for individual items of equipment; not used for non-equipment types of Section Detail items). Enter the identifier for the individual equipment. Limit: 20 alphanumeric characters.
- **Equipment Type**. Enter the equipment type. Limit: 50 alphanumeric characters.
- **Equipment Make**. Enter the equipment make. Limit: 30 alphanumeric characters.
- **Serial Number**. Enter the serial number. Limit: 30 alphanumeric characters.
- **Model**. Enter the model. Limit: 20 alphanumeric characters.
- **Capacity**. Enter the capacity (such as gallons, horsepower, or MBH, depending on equipment type). Limited to 70 alphanumeric characters.
- **Manufacturer**. Enter the manufacturer. Limit: 40 alphanumeric characters.

- **Warranty Company**. If the item has a warranty, enter each warranty company, which is limited to 50 alphanumeric characters each. For each item, up to two warranty companies may be listed.
- **Warranty Date**. If the item has a warranty, select each warranty date using the dropdown calendar. For each item, up to two warranty dates may be listed, numbered to match the warranty company.
- **Location**. Enter where the time is located. Limit: 40 alphanumeric characters.
- **Date Manufactured**. Select the date the item was manufactured, using the dropdown calendar.
- **Control Type/Make**. Enter the Section control type or make. Limit: 50 alphanumeric characters.
- **Year Installed**. Enter the 4-digit year in which the item was installed.
- **Comment**. Enter comments about the Section Detail.

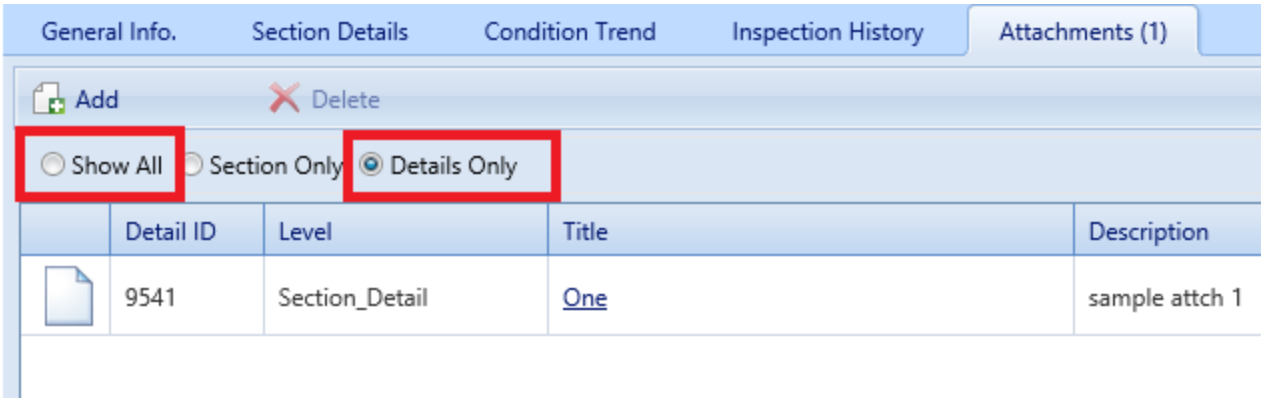
View Section Detail Attachments

Two methods are available to view Section Detail attachments: They can be accessed from either the **Attachments** or **Section Details** tab of the Section data page.

At the "Attachments" Tab

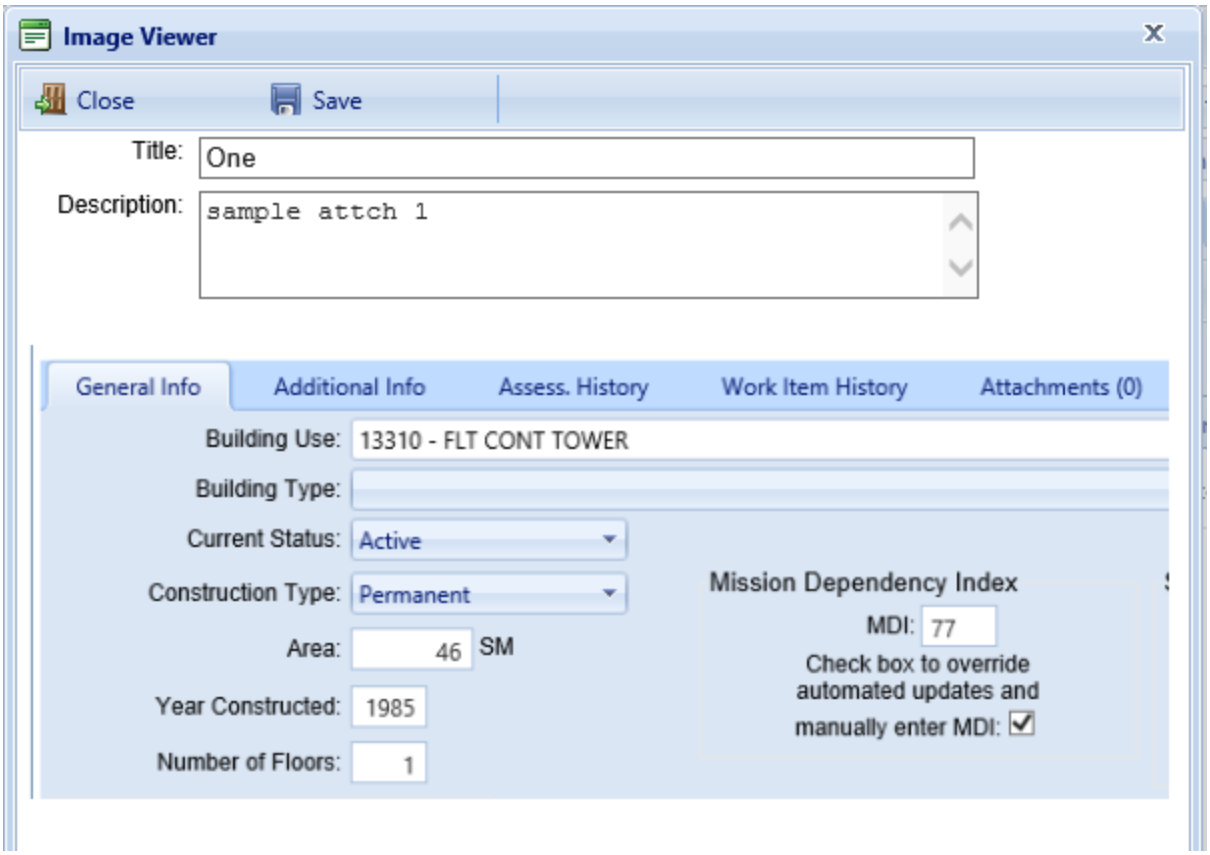
To view Section Details at the Attachments table at the **Attachments** tab,

- Select either the **Show All** or **Details Only** radio button.



- Next, activate the attachment's link, located in the **Title** column of the table. *The attachment will show in*

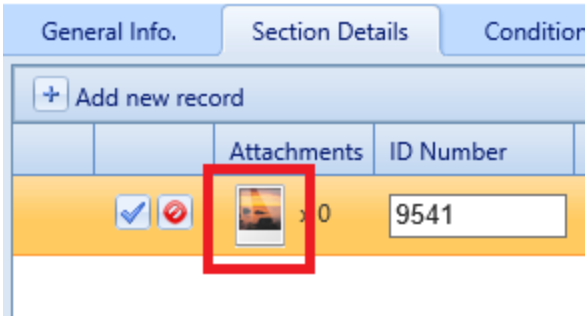
the "Image Viewer" popup window:



At the "Section Details" Tab

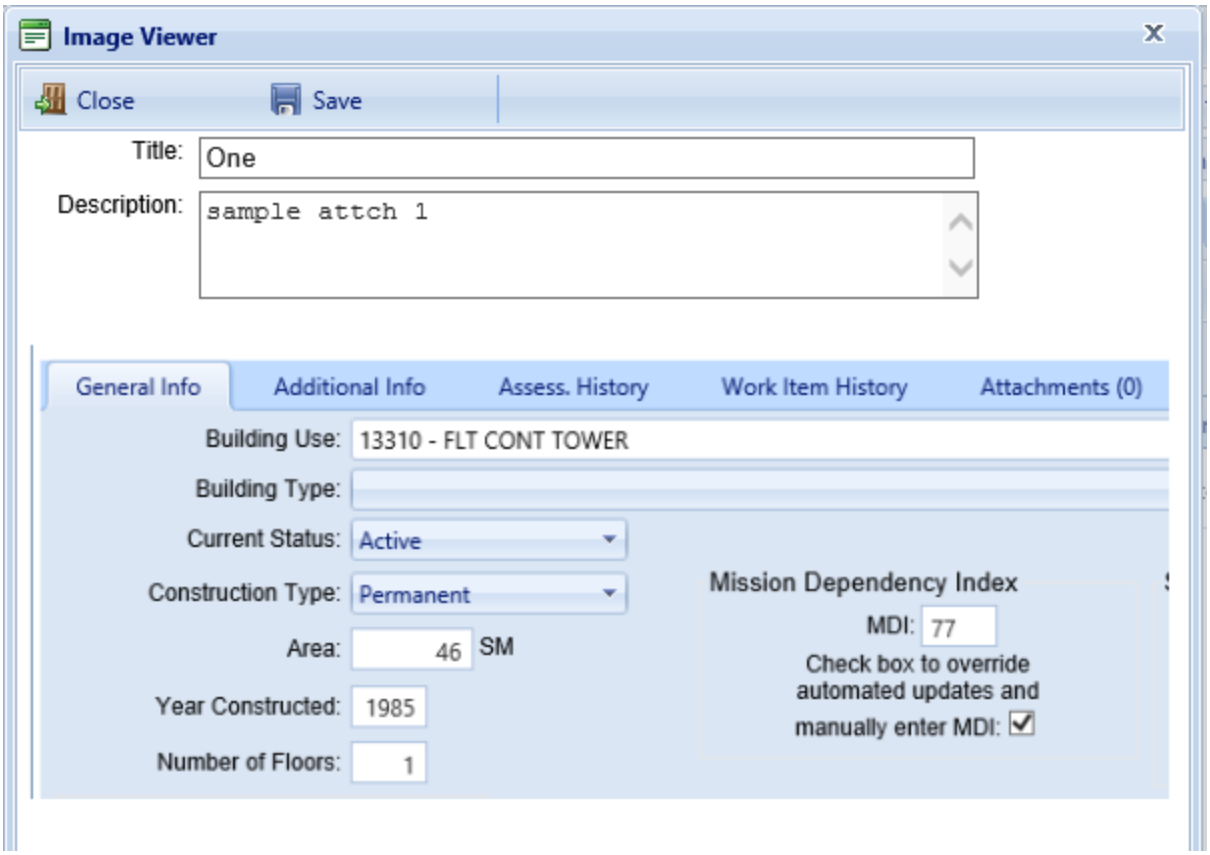
To view Section Details via the Section Details table at the **Section Details** tab,

- At the **Section Details** tab, activate the image in the **Attachments** column of the desired row in the Section Details table.



- Next, activate the attachment's link, located in the **Title** column of the table. *The attachment will show in*

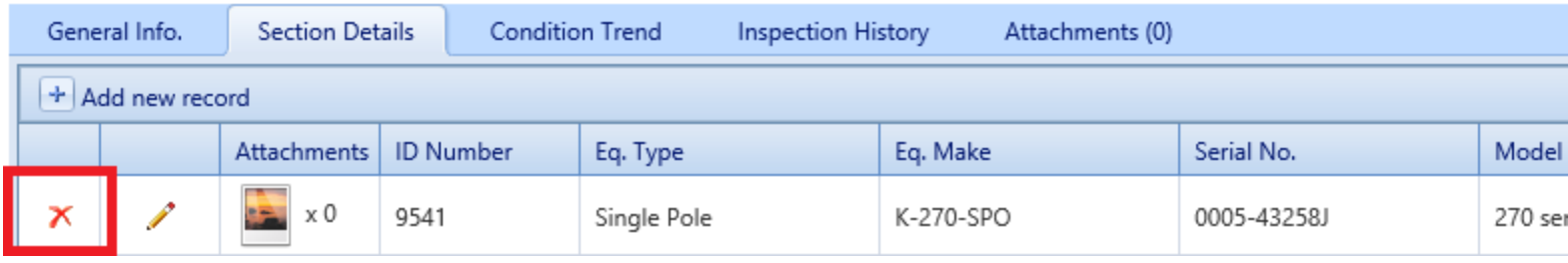
the "Image Viewer" popup window:



Delete a Section Detail

To delete a Section Detail,

- Open the **Section Details** tab at the data page for the relevant Section.
- In the row containing the Section Detail to be deleted, activate the red "X" in the first column by double-clicking:



- Activate **Yes** in the "Confirm Action" confirmation popup.

Generate Component-Section Reports

This topic shows how to locate, select, and generate Component-Section level reports.

There are two locations where you can generate reports:

a. At the main menu bar. The selection of reports listed here is divided into categories: Inventory, Condition Assessment, Functionality Assessment, and Work Planning.
b. At the content area toolbar.

The first documentation section below provides instructions for generating Section-level reports from the Section's content area toolbar. Reports generated here will be restricted in scope to the selected Component-Section.

The next documentation section after that one provides instructions for generating a report starting at the main menu.

Generate Component-Section Level Report

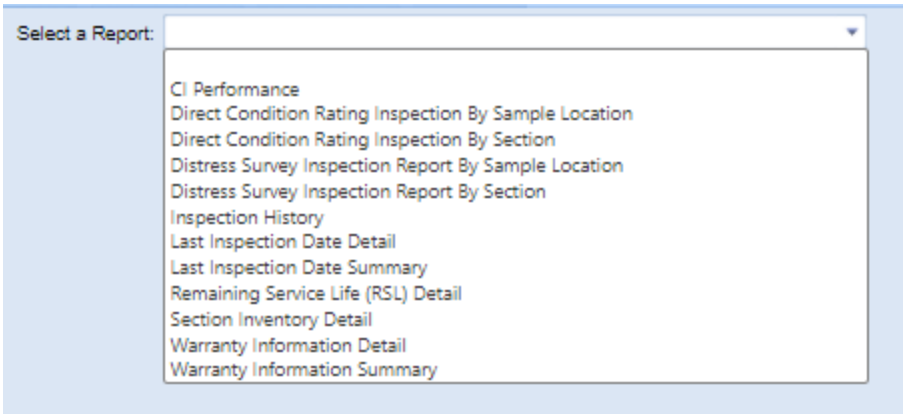
Scope of Report

When you generate a report while you are at the Component-Section level of the inventory tree, the report will contain data only for the currently selected Section.

How To Generate

To generate a report,

- Activate the **Reports** button on the content area toolbar. (The content area toolbar is directly above the ID line.) *The "Reports" popup will open.*
- At the **Select a Report** field, activate the dropdown arrow. *The following selection of reports shown in the screenshot will be displayed*.



- In the list, select a report (for example, "Remaining Service Life (**RSL**[1]Remaining Service Life) Detail").
- Activate **View Report** on the popup's toolbar. *The report will be displayed in a popup titled "Report Viewer."*
- From the "Report Viewer" popup, you can choose to download or print the report.

Generate Report from Main Menu

Scope of Report

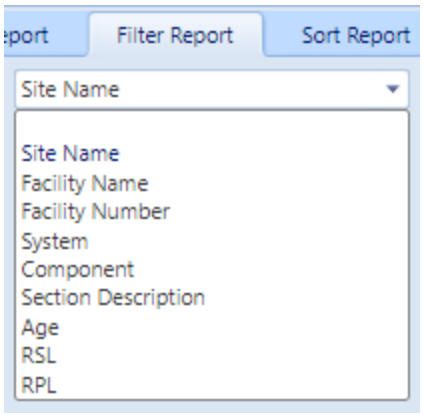
Reports are not made available at the Organization level. By default, unless you have used filters to further restrict what is included in the report, the scope of the report will be the Site, Building, System, Component, or Component-Section where you are located in the Inventory tree when you activate the **Reports** button.

How to Generate

To generate a report from the main menu,

- Activate the **Reports** button at the main menu.
- In the "Reports" popup, open the BUILDER entry by activating the plus button.
- Next, open the desired category: Inventory, Condition Assessment, Functionality Assessment, or Work Planning. For this example, open Inventory.
- In the expanded list of reports, scroll down to the desired report and select it.
- Optionally, you can then select one or more filters at locations and inventory levels where the **Filter Report** option is active. For example, you can select the "Age" filter and direct the **RSL**[2]Remaining Service Life report to show only items that are 10 years old or more.

  For example, this is the list of filters available for the **RSL**[3]Remaining Service Life report at the Site level:



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[1]Remaining service life.

[2]Remaining service life.

[3]Remaining service life.

- After setting any desired filters, and selecting a Sort order if desired, activate **View Report** on the popup's toolbar. *The report will be displayed in a popup titled "Report Viewer."*
- From the "Report Viewer" popup, you can choose to download or print the report.

Export Report

To export a report, see instructions at Export a Report.

Section Tasks

Other tasks that can be performed on Sections are:

Add a Component-Section
Edit a Component-Section
Delete a Component-Section

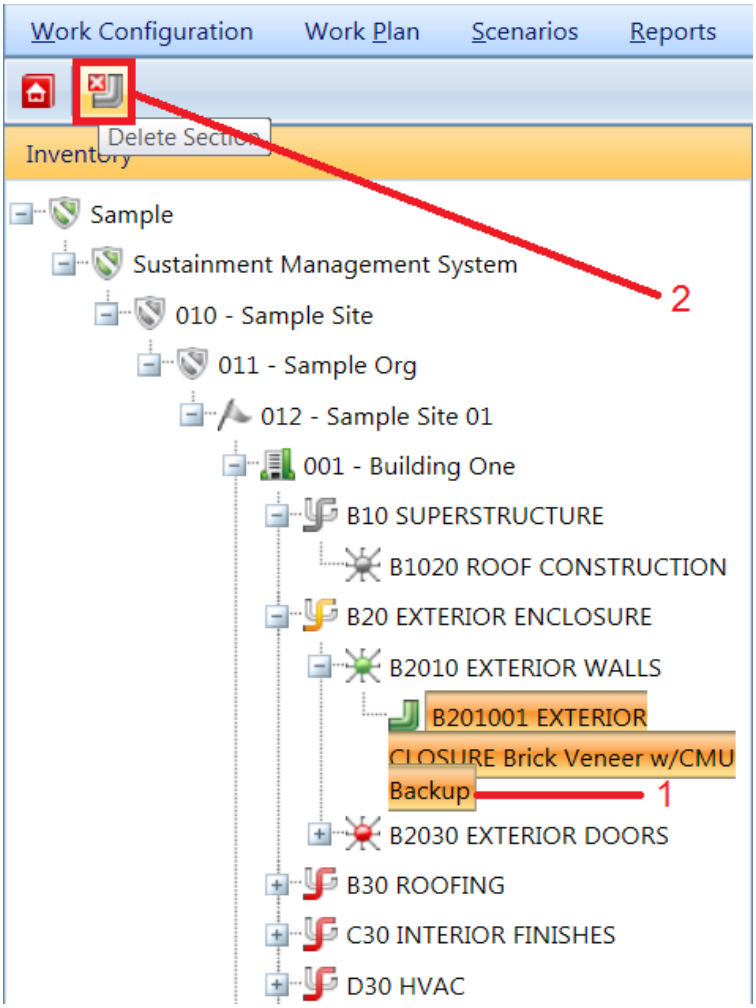
For an overview of Sections, see Working with Component-Sections.

Delete a Component-Section

This topic describes how to delete a Component-Section from a Component .

To delete a Component-Section, navigate to it in the inventory tree and do *one* of the following:

a. Right-click the Section, then select "Delete Section."
b. Alternatively, select the Section, then activate the **Delete Section** icon on the menu toolbar, as shown in steps 1 and 2 below.



Note: This is a significant step to take and should only be done when you are certain that you wish to clear the Component-Section you have selected from the inventory in the Building.

Best Practice Recommendation: Making frequent backups of your inventory database will protect you from significant data losses if mistakes in deleting are made.

Section Tasks

Other tasks that can be performed on Component-Sections are:

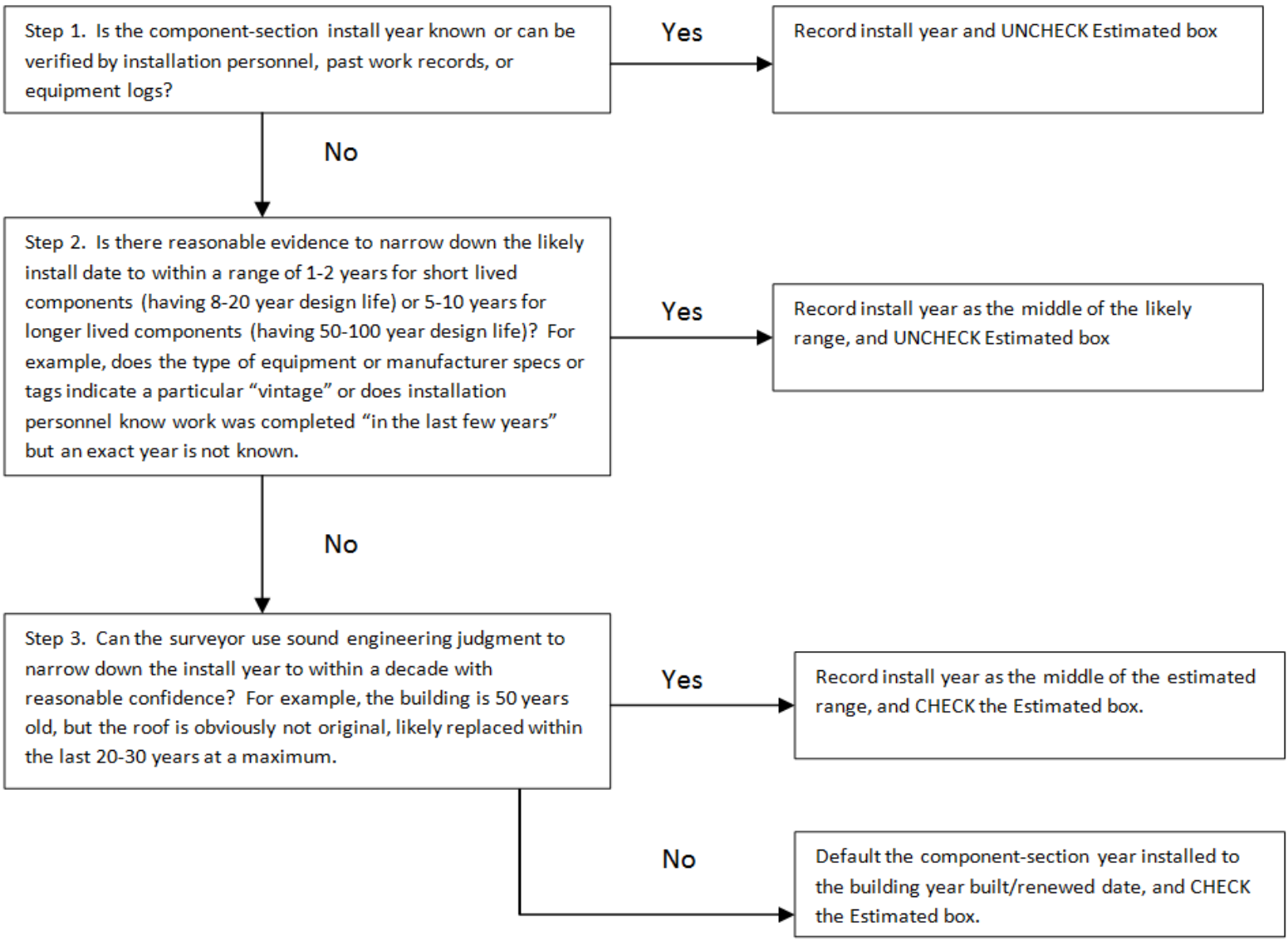
- Add a Component-Section
- Edit a Component-Section
- Generate Component-Section Reports

For an overview of Sections, see Working with Component-Sections.

The Effect of the "Estimated" Checkbox for a Component-Section

When entering the inventory for a Component-Section in **BUILDER**, one of the primary data elements that gets recorded is the year that Component-Section was installed or constructed. This denotes the time that the Component-Section was put in service, and is used by **BUILDER** to determine the Component-Section age and its projected life-cycle condition. It is a fundamental data element in the determination of a component's condition index.

There are cases where the Component-Section install date is explicitly known, such as if the component is original to the Building, or if the component was replaced recently and work records exist. There are also many cases where obtaining the exact install year for a Component-Section is difficult. This may be the case, for example, if the Component-Section is very old but not original to the Building, and the year when it was installed or replaced is not known. In these situations, the surveyor collecting and entering the data for that Component-Section should enter a year installed that best reflects the observed age based on professional judgment, and the year estimated check box shall be checked in **BUILDER** to reflect that. As a guide to determine the year installed for a Component-Section, the following flow diagram should be considered.



If a Component-Section's install year is estimated, as denoted by the check box, **BUILDER** will factor that into account when projecting the current condition index. The condition index reflects the expected condition state, based on life cycle information such as its age in relation to its expected service life, as well as inspection based observations against that component. When no inspection are recorded against the Component-Section, the projection of current Component-Section **CI**[1]Condition Index (CSCIComponent-Section Condition Index - a condition rating for the target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, then subtracting that deduct value from the maximum possible rating of 100. The deduct value computation differs for each condition assessment method.) is solely based on age of the component calculated from the year installed value, whether it is estimated or not. However, if an

[1]Condition Index

inspection is performed, the expected value gets adjusted based on the condition based observations that are observed.

Basically, what **BUILDER** is doing is reconciling any differences between the expected **CI**[1]Condition Index based on age, and the observed condition at a point in time based on the inspection. If the expected age based **CI**[2]Condition Index projection and observation-based inspected **CI**[3]Condition Index are not significantly different, the adjustments to the projected **CI**[4]Condition Index curve over time are relatively minor and the projected **CI**[5]Condition Index tends to be close to the last inspected **CI**[6]Condition Index in the time frame immediately after that inspection.

However, if the difference between the age-based expected **CI**[7]Condition Index and observation based inspected **CI**[8]Condition Index are drastically different, as may be the case where a component receives a high condition rating when its age is past its expected service life, the adjustment will be more significant. In these situations, **BUILDER** has to determine whether to place more emphasis on the age of the component, or the observed condition. If the estimated year installed box is check, **BUILDER** places less emphasis on the age-based **CI**[9]Condition Index, and the latest observation-based inspected **CI**[10]Condition Index controls the projected **CI**[11]Condition Index calculation. If the year installed check box is not checked, we have a higher confidence in the age of the Component-Section, and the age-based **CI**[12]Condition Index projection has more emphasis on the current **CI**[13]Condition Index calculation, limiting the amount that the expected service life is allowed to be adjusted.

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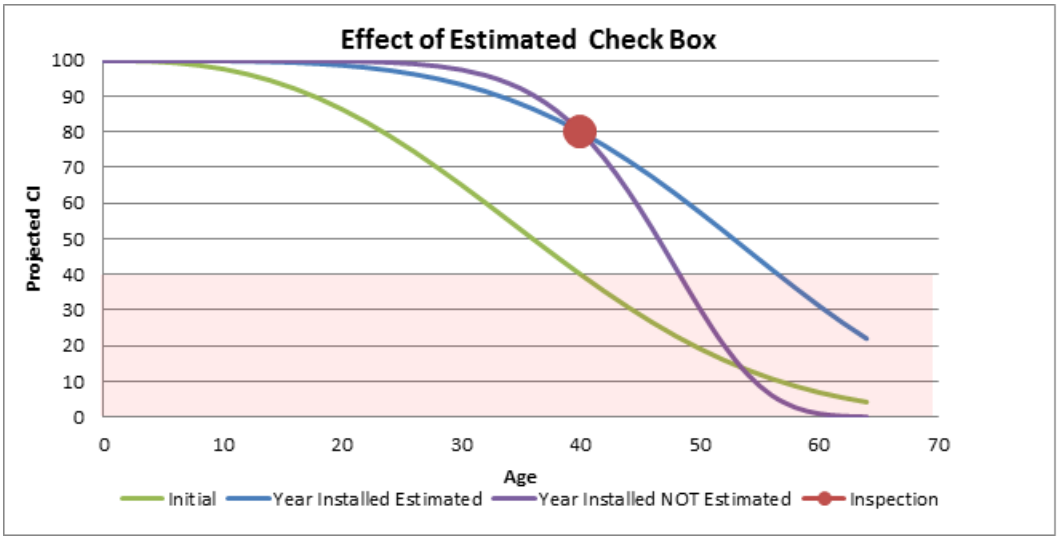
[1]Condition Index
[2]Condition Index
[3]Condition Index
[4]Condition Index
[5]Condition Index
[6]Condition Index
[7]Condition Index
[8]Condition Index
[9]Condition Index
[10]Condition Index
[11]Condition Index
[12]Condition Index
[13]Condition Index


Effect of Estimated Check Box
Projected CI
100
90
80
70
60
50
40
30
20
10
0
0
10
20
30
40
50
60
70
Age
Initial
Year Installed Estimated
Year Installed NOT Estimated
Inspection

Building Templates

Working with Building Templates

Building templates are one of BUILDER's methods for speeding up the process of initial inventory. They provide a convenient way to rapidly create Building inventory when:

- you have multiple Buildings with the same design and composition; or
- an existing template can be obtained that is similar to the Building you wish to create and populate with inventory

A template stores the basic data about a generic Building that can be used to create many Buildings at one time using an automated process that copies the structure of the template to each desired Building.

Recommendation: The template feature is designed to be used as an initial step in the construction of your inventory database. However, in order to achieve the greatest benefit from using templates, you must be very familiar with BUILDER's approach to inventorying a Building. See Add a Building and About Identifying Systems, Components and Sections for important information regarding how Buildings and their template counterparts are structured in the database.

One of the most time-consuming aspects of inventory is the decomposition of a Building into its Systems, Components, and Sections. The Building Template feature is designed to ease the inventory development process in BUILDER.

If your physical inventory contains a number of Buildings that are essentially of the same design and composition, you can establish a template for that design to use as a "cookie cutter" and then apply an automated process with the template to create the matching Buildings in your BUILDER inventory with little additional effort. These matching Buildings can then be edited to reflect any individual features that differ from the template used to create them.

Additionally, due to the ability to import and export Building templates, you may be able to save time by either importing or finding in your template library an existing template that is similar to the Building you wish to create and populate with inventory.

What Is a Building Template?

A Building template looks very much like a Building in BUILDER. Every data element belonging to a template or one of its substructures has a corresponding data element in a Building. A template has general Building data such as use, size, and number of floors as well as a decomposition into Systems, Components, Sections (including Section Details). If the template is designated as family housing, then you may specify data about each dwelling unit regarding number of rooms and types and makes of appliances. A template does *not* con-

tain data that is only known for each specific Building, such as its year of construction, its condition ratings, its costs, its location, etc.

Successful use of Building templates consists of three tasks:

- Creating or importing a template;
- Managing the template library; and
- Using a template to create one or more new Buildings.

About Creating a Template

BUILDER offers multiple options for creating a template:

Option A: Import

You can import templates from another user's template library for use in your own library. This import capability is especially useful for military installations, which may have many Buildings constructed from a few standard service-wide designs.

For instructions, see Import Procedure under Import a Building Template.

Option B: Use the Inventory of an Existing Building

Each Building in your inventory database is equipped with data elements comparable to those of a Building template. Therefore, you can use BUILDER's feature of copying a Building's inventory into a template to create a template quickly.

For instructions, see Copy Building Inventory to a Template.

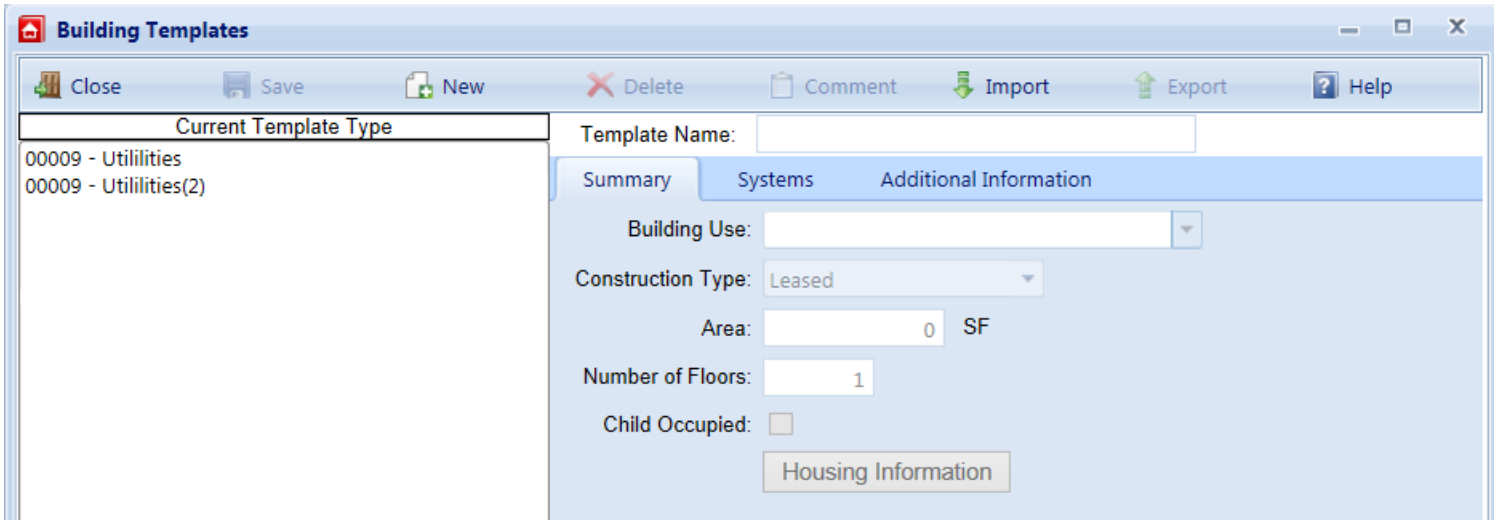
Option C: Enter Template Inventory

You can create a template by inputting each data element in much the same way that you create a Building.

For instructions, see Add a Building Template.

About Managing the Template Library

The "Building Templates" window serves as a dashboard for most of the tasks you can do with respect to Building templates.



An exception is creating a template by copying the inventory of an existing Building. This is done from the inventory tree.

Using the "Building Templates" window, you can add, edit, delete, import, or export a template. The topic titled Manage the Template Library gathers together in one place a collection of links to these tasks.

About Using a Template to Create Inventory

Once a template is established, a Building with the same design can be created in an automated fashion by copying the template data into the appropriate Building data elements. This process can save hours of manual input if you have multiple Buildings for which the template applies.

To learn how to use a template to create or expand the data either for one Building at a time, or for multiple Buildings at the same time, see Add Building Inventory Using a Template.

You can also share your template with others using the feature Export a Building Template.

Building Template Tasks

Building template tasks that can be performed are:

- Add Building Inventory Using a Template
- Import a Building Template
- Copy Building Inventory to a Template
- Add a Building Template
- Edit Building Template Data
- Delete a Building Template
- Manage the Template Library
- Export a Building Template

Add Building Inventory Using a Template

This topic describes how you can use an existing Building template to create new Buildings in your inventory. If there is no appropriately useful template in your template library, you can do one of the following:

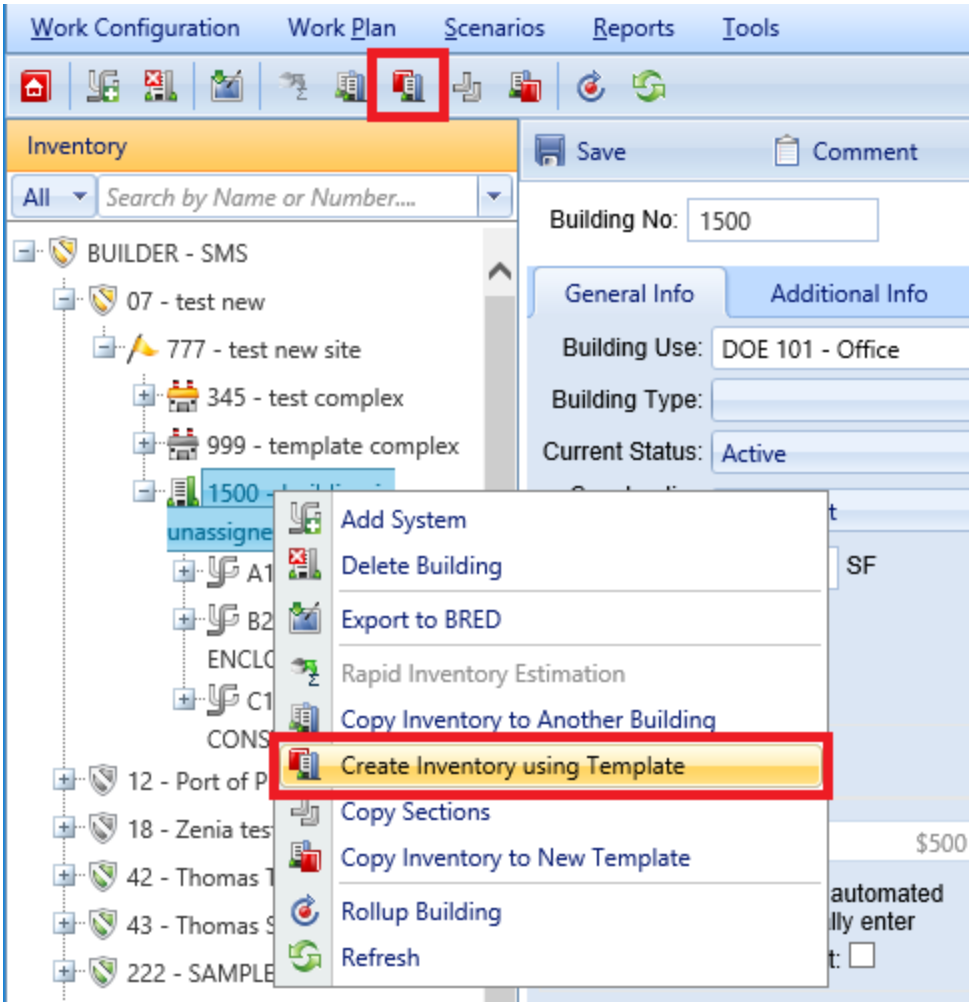
a. Copy and edit an existing template;
b. Import a template;
c. Create a new template from an existing Building; or
d. Create a new template "from scratch" and enter inventory into it.

Building templates provide a convenient method for rapidly creating your Building inventory when you have multiple Buildings with the same design and composition. A template stores the basic data about a generic Building and can be used to create many Buildings at one time using an automated process that copies the structure of the template to each desired Building. For more information about templates, see Working with Building Templates.

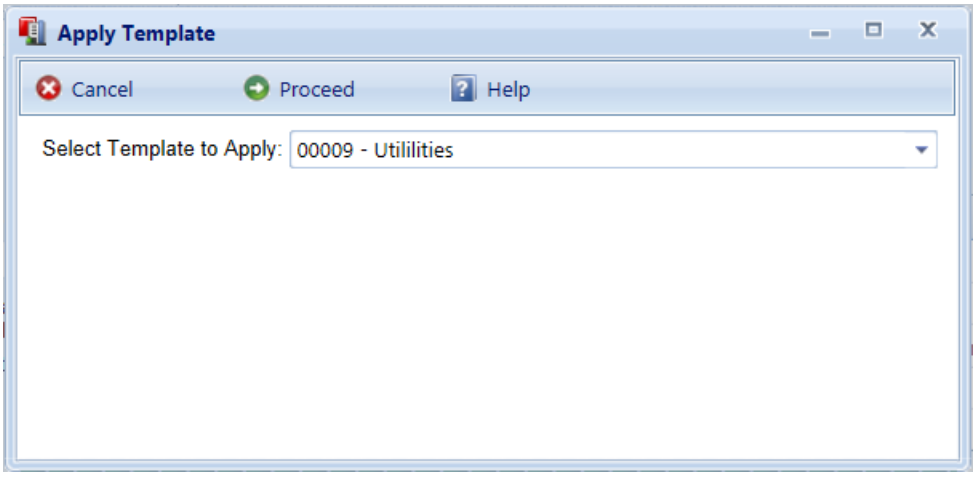
Add Building Template Inventory to One Existing Building

Once you have created a template, you can use it to create Building inventory. If you have an single existing Building and wish to expand its inventory using the template,

- Select the Building in the inventory tree.
- Take a look at the general information for the Building to make sure that the data for important properties such as Building Use, Area, and number of floors is correct.
- If you still wish to expand its inventory using the template, do one of the following:
  a. Right-click the Building whose inventory you wish to copy, then select "Create Inventory Using Template."
  b. Alternatively, activate the **Create Inventory Using Template** icon in the main toolbar, as shown below:



The "Apply Template" popup window will appear.



- Select from the dropdown list the template you wish to apply to the Building, then activate **Proceed**. Alternatively, if you do not wish to apply the template to the Building, activate the **Close** button.

  WARNING: When you activate **Proceed**, existing general information for the Building *may or may not be replaced with the template data*:

  a. If no Systems have been created for a Building, the template's Systems, Components, Sections, and Section Details will be copied to it.
  b. However, if a Building already has Systems, the template's Systems structure will not be copied to it.

  This same pattern applies to building dimensions, architects, contractors, and family housing records. That is, each of these template lists will be copied to a Building if and only if the Building's corresponding list is empty. Otherwise, the Building's existing list will be left unchanged.

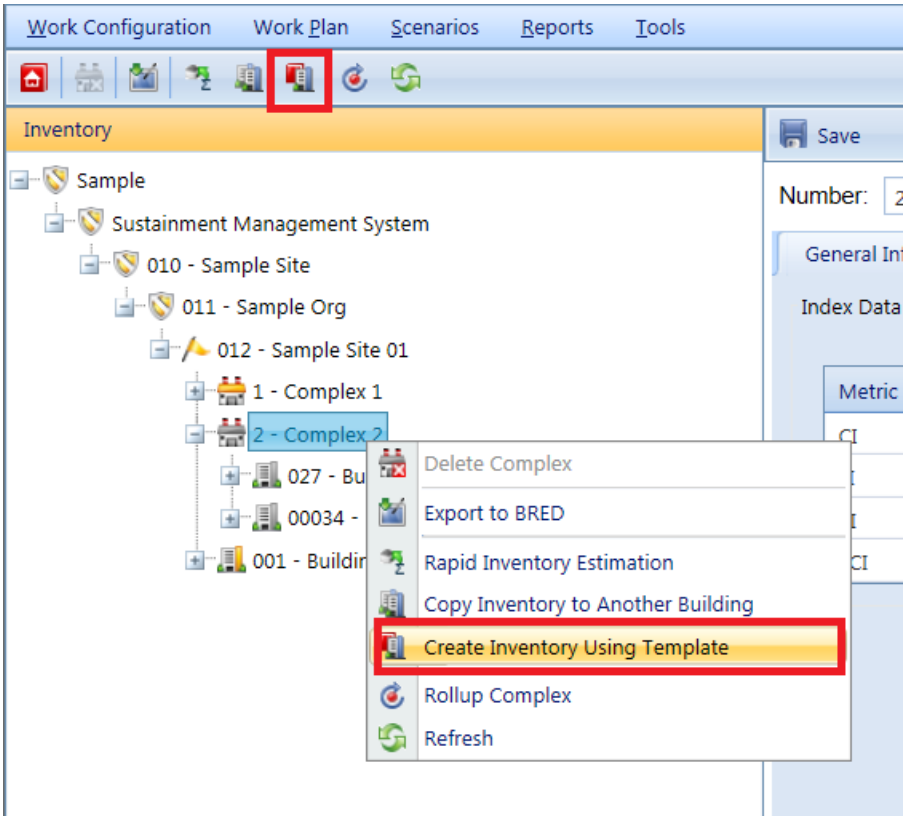
  Tip: If you are adding inventory to an existing Building, and Building Dimensions (**Additional Info** tab) have been populated by the template, double check these dimensions against the Area (**General Info** tab) that presumably was entered during Building creation, to see if they match.

When the template process is complete, a small popup window will announce "Application of template completed." You will be able to select each of the newly created Systems, Components, and Sections in the inventory tree and to edit the new data if adjustments need to be made. This same pattern applies to building dimensions, architects, contractors, and family housing records.

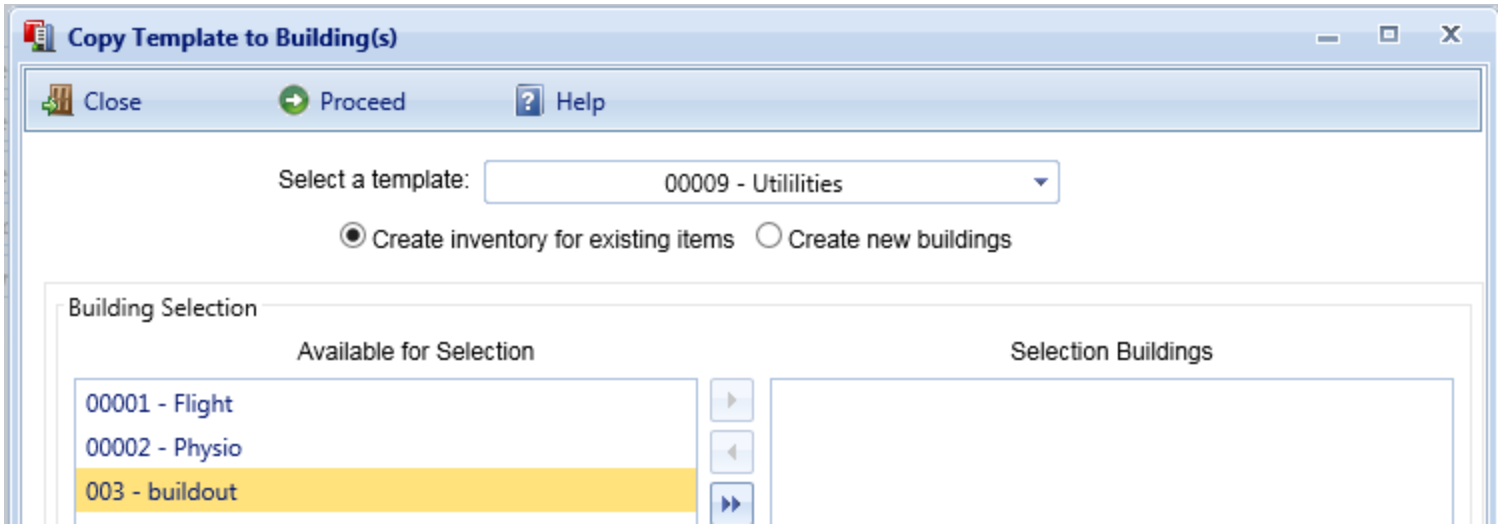
Add Building Template Inventory to Multiple Buildings

The most efficient way to use templates is to create the inventory for multiple similar Buildings at one time. To initiate the process of creating inventory for multiple Buildings using a template, follow these steps:

- Navigate to the smallest organizational item (node) in the inventory tree that contains all of the Buildings that will have inventory created from the template. Then do one of the following:
  a. Right-click the node. Then select "Create Inventory Using Template."
  b. Alternatively, select the node and then activate the **Create Inventory Using Template** icon in the main toolbar.



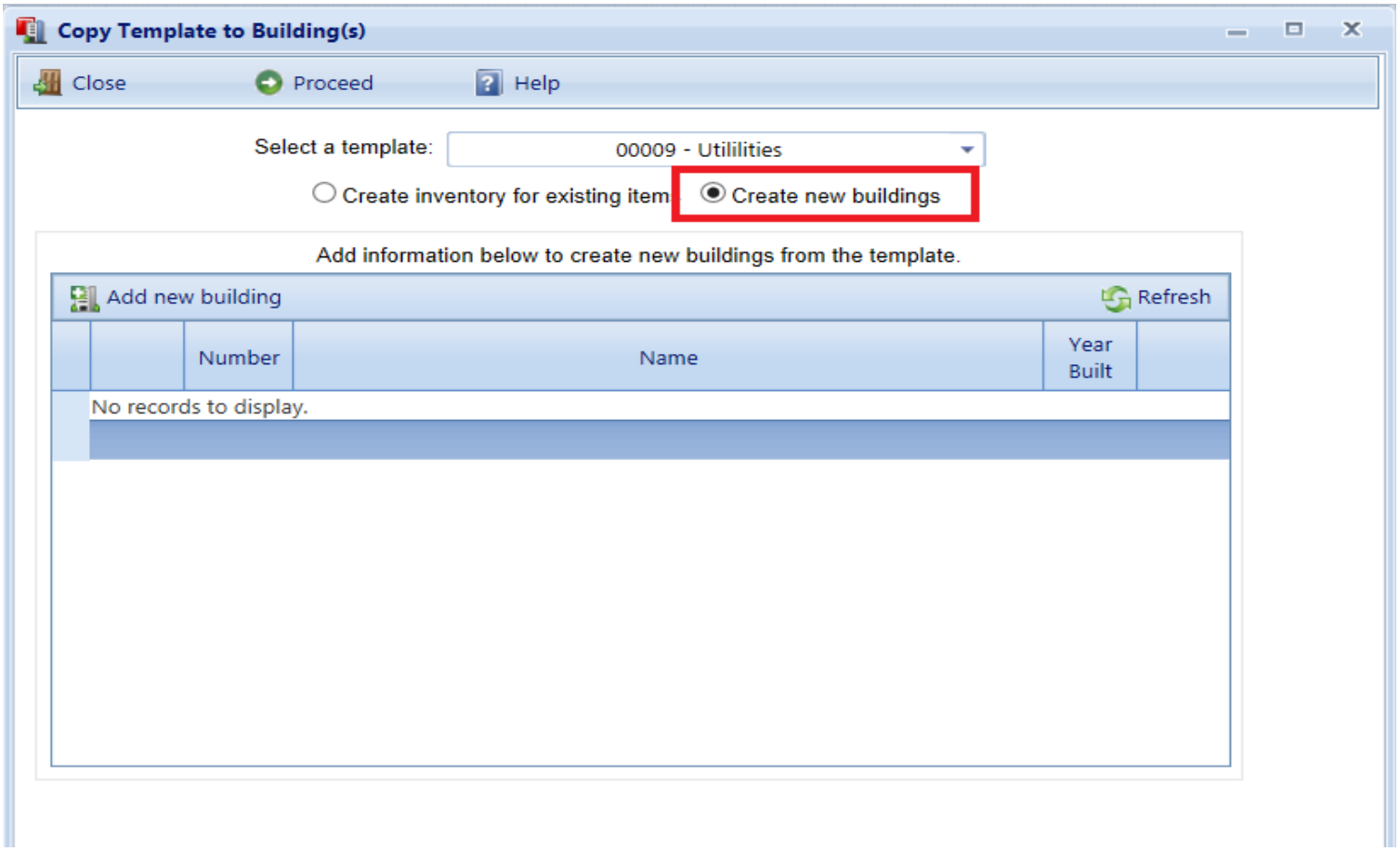
The "Copy Template to Building(s)" popup window will appear.



- In the **Select a template** field, activate the dropdown and select a template from the list.
- When applying a template to multiple Buildings, you have two options to choose from:
  a. Create new Buildings along with the template (continue reading at Option 1: Create New Buildings).

b. Alternatively, apply the template to multiple existing Buildings (continue reading at Option 2: Create Inventory for Existing Buildings).

Each option is described at a heading below.

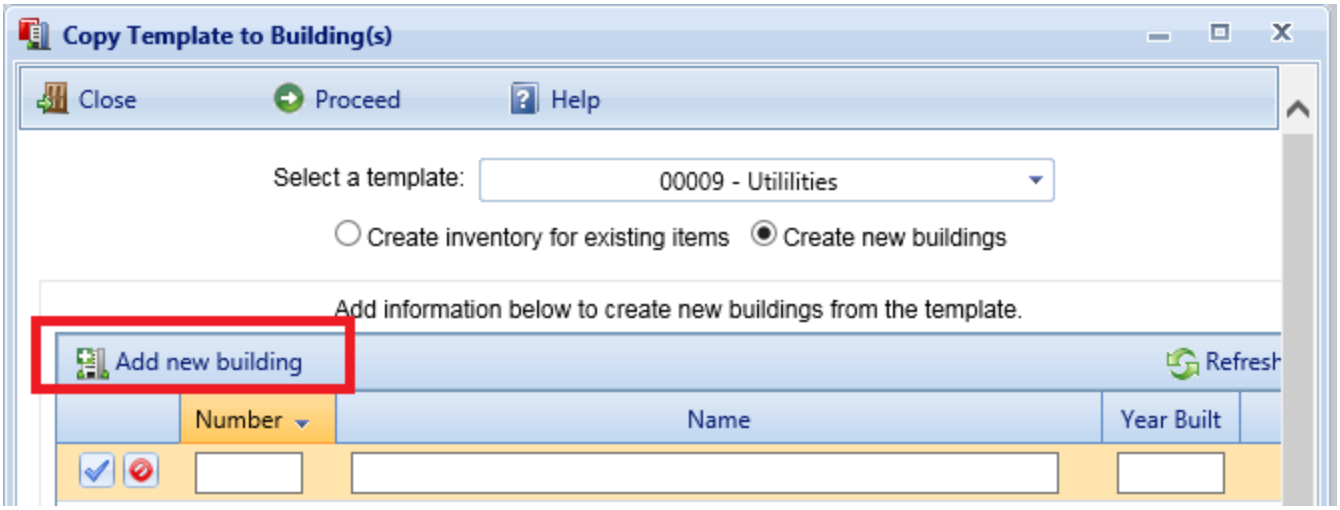


Option 1: Create New Buildings

The window shown above illustrates what happens when the **Create new buildings** radio button is activated. An information table, initially empty, will be created. Its headers are [Building] **Number**, [Building] **Name**, and **Year Built**. Year Built information may be entered later.

How to Add a Building to the Table

- To add a new Building to receive template inventory, activate the **Add Building** button to add a new Building to the table. A new row in the table will be created and expanded to receive information.



- For each new Building, you need to assign a Building number and/or name, and put this information in the table.
- When you are finished with the entry, activate the blue checkmark icon at the left side of the row, to save the entry. Alternatively, to cancel and delete the entry before saving, activate the red circle with slash at the left side of the row.

  Note: Activating **Add new building** during the entry process will also clear an unsaved entry.

- Repeat Steps 2 and 3 for each Building you wish to add and populate with template inventory.

Making Changes

- To edit an entry, activate the pencil icon, make the changes, then activate the checkmark at the left to save the changes.
- If you wish to delete any of the Buildings from the list, activate the red "X" at the right side of its row.

Finalizing the Table of New Buildings

- Review the list of Buildings; make changes as needed until the table accurately lists all of the new Buildings you wish to create using the template.
- Activate the **Proceed** button near the top of the popup window. This starts the process that will create each Building and copy the template data to it.

Note: The Building creation process may take a minute or so for each Building, depending upon the complexity of the template's data structure.

Refining the Template-Installed Inventory (Important!)

- When the process is complete, the new Buildings with their template-installed inventory will be available for editing. In particular, critical information that applies to each specific Building should be added immediately, especially the year of construction and dates associated with Sections because these data

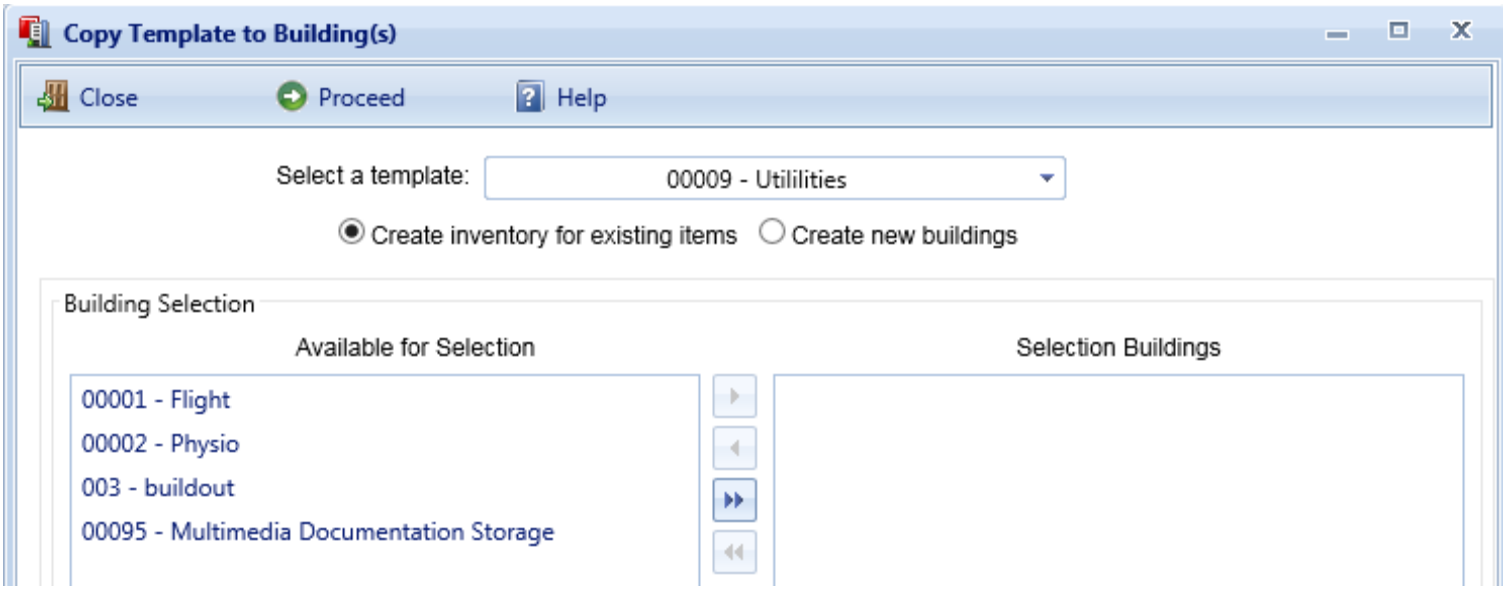
elements are used extensively in BUILDER's algorithms.
- Finally, when you have completed your inventory input, you should use BUILDER's cost estimating tool to establish current costs for all Buildings and their substructures.

Option 2: Create Inventory for Existing Buildings

If you choose to create inventory for existing Buildings (called "existing items" in the selection list),

- Activate this option by selecting the **Create inventory for existing items** radio button at the "Copy Template to Building(s)" popup window.

The appearance of the "Copy Template to Building(s)" popup window will remain as shown below:



In this window, the complete list of Buildings "Available for Selection" at the selected inventory level will be displayed on the left.

- Select the Buildings you want to expand using the selected template, and use the arrow buttons to move these Buildings to the "Selected Buildings" list on the right.
- When the "Selected Buildings" list is complete, activate the **Proceed** button. Alternatively, if you wish to cancel, activate the **Close** button.

WARNING: When you activate **Proceed**, existing general information for each Building *may or may not be replaced with the template data*:

a. If no Systems have been created for a Building, the template's Systems, Components, Sections, and Section Details will be copied to it.
b. However, if a Building already has Systems, the template's Systems structure will not be copied to it.

This same pattern applies to building dimensions, architects, contractors, and family housing records. That is, each of these template lists will be copied to a Building if and only if the Building's corresponding list is empty. Otherwise, the Building's existing list will be left unchanged.

Tip: If you are adding inventory to an existing Building, and Building Dimensions (**Additional Info** tab) have been populated by the template, double check these dimensions against the Area (**General Info** tab) that presumably was entered during Building creation, to see if they match.

- When the process is complete, edit each Building to add or verify critical data elements such as the year of construction, dates associated with Sections, and all quantities, because these data elements are used extensively in BUILDER's algorithms.
- Finally, when you have completed your inventory input, you should use BUILDER's cost estimating tool to establish current costs for all Buildings and their substructures.

Import a Building Template

BUILDER provides three methods for creating a Building template: (1) importing; (2) creating a template from an existing Building; or (3) creating a template from scratch and filling it with inventory.

This topic explains the first method, importing a template.

About Importing Building Templates

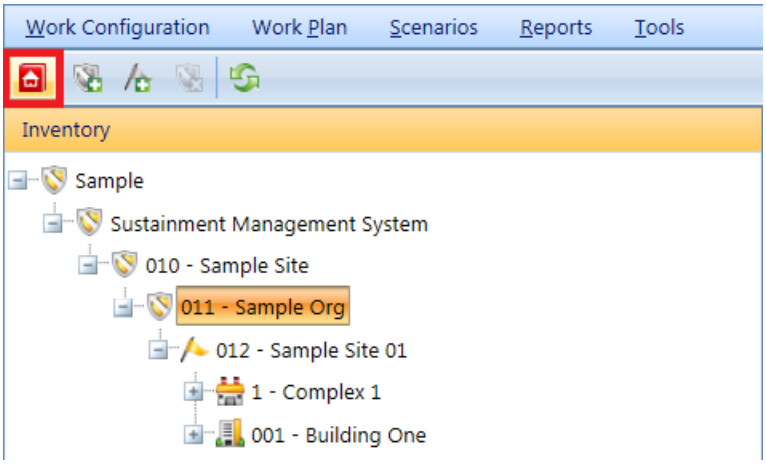
Building templates provide a convenient method for rapidly creating your Building inventory when you have multiple Buildings with the same design and composition. A template stores the basic data about a generic Building and can be used to create many Buildings at one time using an automated process that copies the structure of the template to each desired Building. For more information about templates, see Working with Building Templates.

BUILDER allows for different users to share Building templates by importing and exporting individual templates. This capability is especially useful for military installations, which may have many Buildings constructed from a few standard service-wide designs.

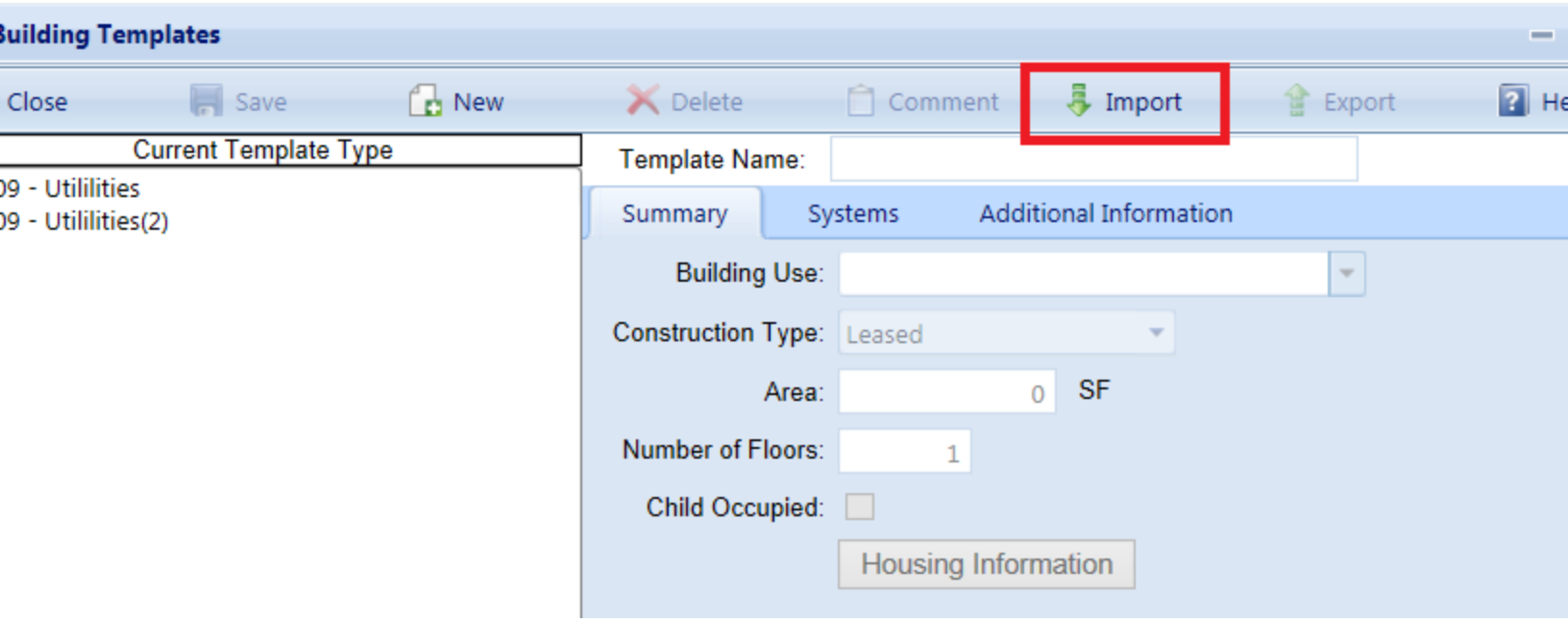
Import Procedure

To import a template,

- Open the template library from anywhere in the navigation tree by activating the **Building Templates** button on the main toolbar.

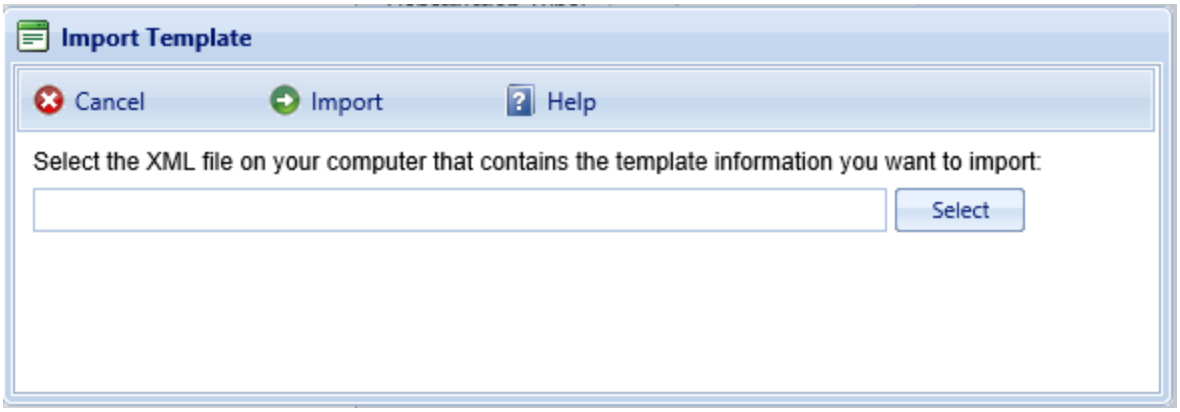


The "Building Templates" popup window will appear.



- Select **Import** from the toolbar (see red box above).

  The "Import Template" popup window will appear.



- Activate the **Select** button in the "Import Template" popup, then browse to and select the template you wish to import into your template library. The name of the template will appear in the text box to the left of the **Select** button.
- Finally, do one of the following:
  a. Activate the **Import** button on the toolbar to import the template.
  b. Alternatively, select the **Cancel** button to cancel the operation and return to the "Building Templates" window.

Before BUILDER imports your selections, checks of unique identifiers (internal data hidden from view) and template names are performed to avoid conflicts between your current template library and the template(s) being imported. Possible results are as follows:

- If duplicate identifiers are found, the selected template will not be imported because it already exists in your library.
- If you are attempting to import a template with the same name but a different unique identifier as an existing template in your library, then the importing process will stop with an error message indicating the problem templates. If you still wish to import the problem templates, change the names of the corresponding templates in your library so that they are distinct from the templates you wish to import. See Manage the Template Library for instructions regarding changing the name of a template in your library.

Note: The Building Use property of a template is dependent on the user category (Army, Navy, Air Force, Civilian, etc.). If you are managing an installation from one user category but importing Building templates from a different user category, then the template Building Use properties will not match any of the Building Use categories in your list. When you view each imported template, the Building Use property will be blank. You will have to select an appropriate Building Use property from your list of uses for each imported template. The template name can be used help select an appropriate use.

Copy Building Inventory to a Template

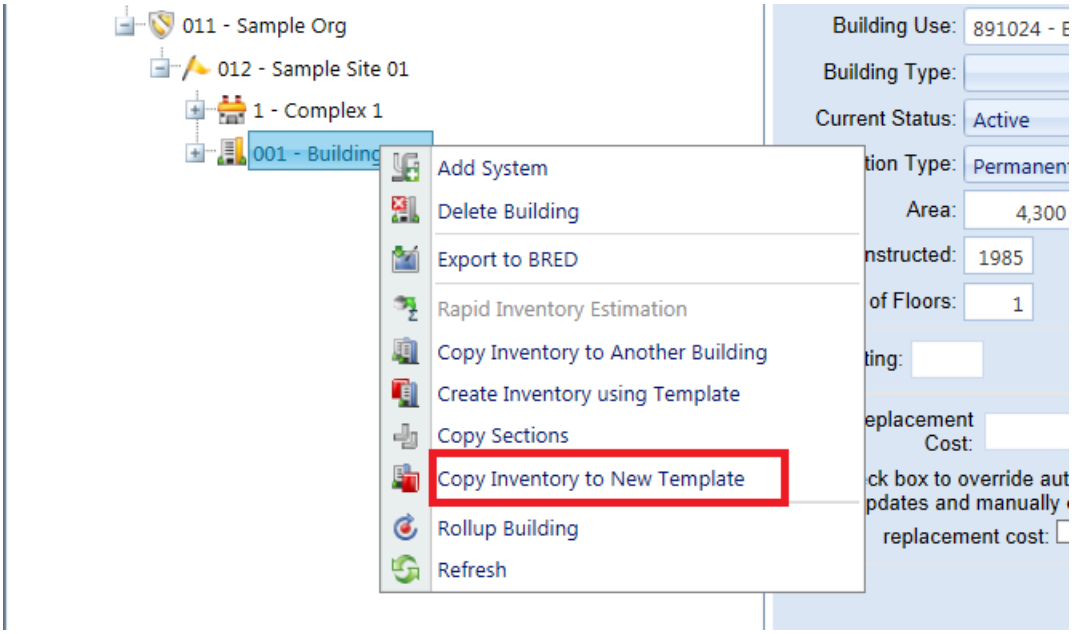
BUILDER provides three methods for creating a Building template: (1) importing; (2) creating a template from an existing Building; or (3) creating a template from scratch and filling it with inventory.

This topic explains the second method, creating a template from an existing Building in your inventory.

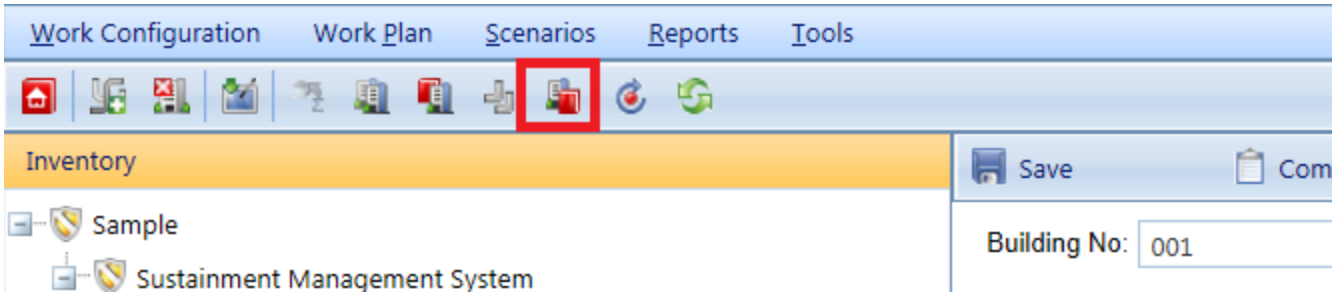
Building templates provide a convenient method for rapidly creating your Building inventory when you have multiple Buildings with the same design and composition. A template stores the basic data about a generic Building and can be used to create many Buildings at one time using an automated process that copies the structure of the template to each desired Building. For more information about templates, see Working with Building Templates.

To create a template by copying a Building in your inventory,

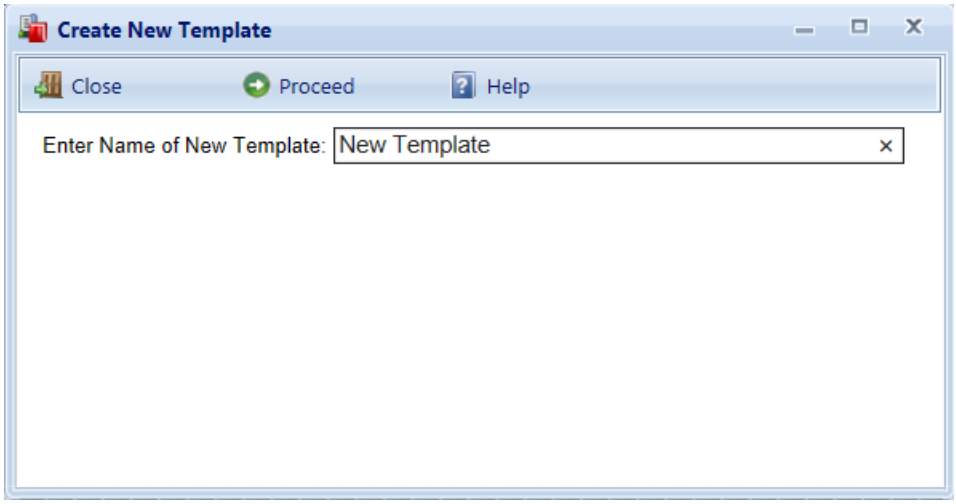
- Navigate to that Building in the inventory tree and do one of the following:
  a. Right-click the Building, then select "Copy Inventory to New Template."



  b. Alternatively, select the Building in the inventory tree. Then activate the **Copy Inventory to New Template** button on the main menu, above the navigation tree.



The "Create New Template" popup window will appear.



- Enter the name of new template, which must be unique among the templates in your library.

  Specifications: The name is limited to 50 alphanumeric characters.

  Best Practice Recommendation: Avoid using single quotes, double quotes, and ampersands. These characters can interfere with query formation.

  Tip: If you expect to create a large template library, especially if you anticipate sharing your library with others or importing other user's templates, then the template name you choose should be sufficiently descriptive of the Building type to allow it to be safely and efficiently selected for use.

- Finally, do one of the following:
  a. Activate the **Proceed** button on the popup toolbar to create the new template.
  b. Alternatively, activate **Close** if you wish to cancel the operation and close the popup.

Add a Building Template

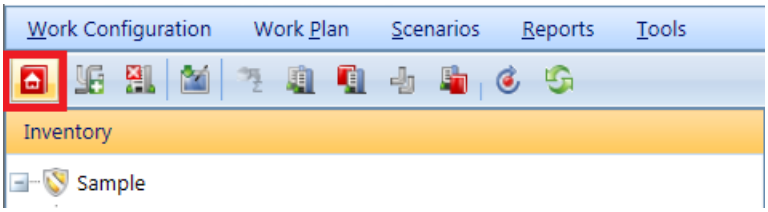
BUILDER provides three methods for creating a Building template: (1) importing; (2) creating a template from an existing Building; or (3) creating a template from scratch and filling it with inventory.

This topic explains the third method, creating a template from scratch and filling it with inventory.

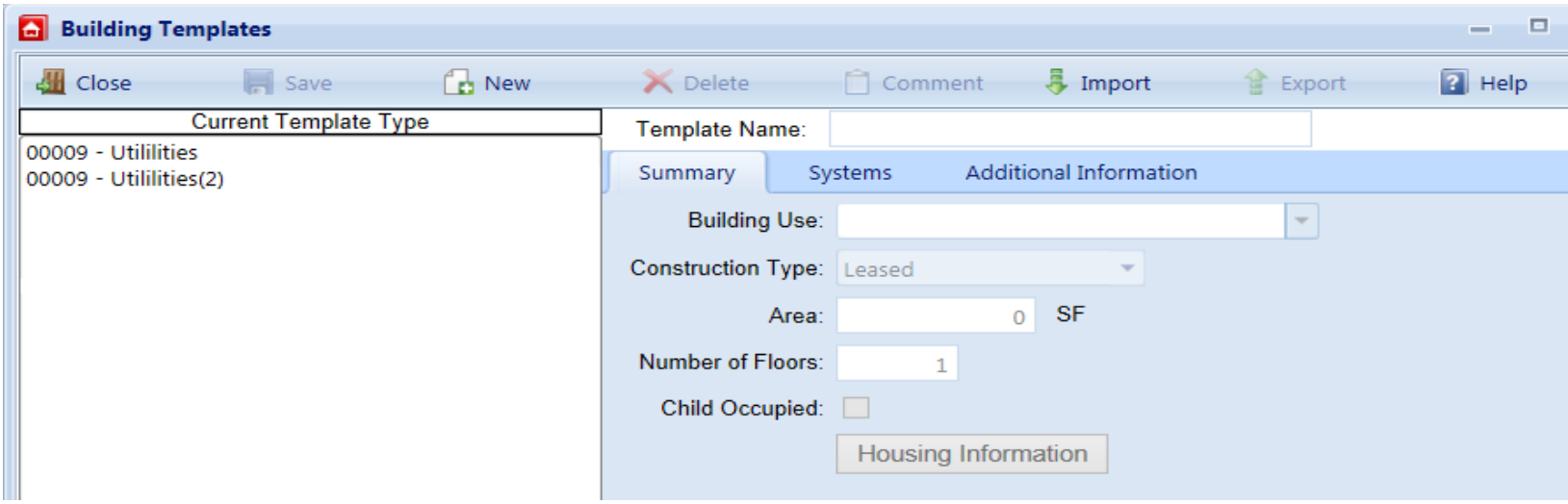
To create a new Building template and add it to the template library, perform the following steps:

Initiate and Name a New Template

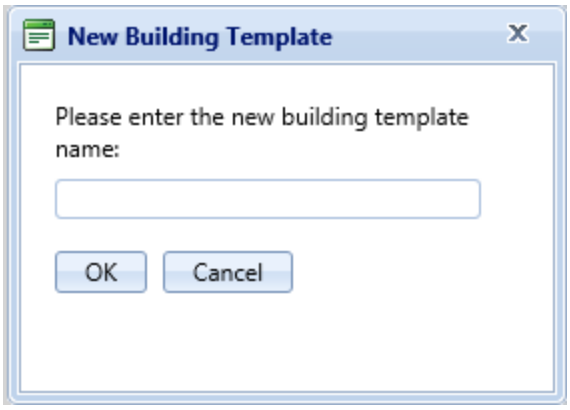
- From anywhere in the inventory tree, activate the **Building Templates** icon on the main toolbar.



The "Building Templates" popup window will appear.



- Activate the **New** button on the toolbar of the "Building Templates" popup window shown above. *The "New Building Template" popup window will appear.*



- Enter a name for the new Building template. This is the name that will appear in the template list and must be unique among the templates in your library.

  Specifications: The name is limited to 50 alphanumeric characters.

Best Practice Recommendation: Avoid using single quotes, double quotes, and ampersands. These characters can interfere with query formation.

Tip: If you expect to create a large template library, especially if you anticipate sharing your library with others or importing other user's templates, then the name you choose here should be sufficiently descriptive of the Building type to allow it to be safely and efficiently selected for use.

- Activate the **OK** button on the popup. (Alternatively, activate the Cancel button to exit the operation without creating a new template.)

Enter Summary Tab Data

Enter the following template data at the Summary tab:

- **Building Use**. From the dropdown list, select the Building Use that most closely matches the Building's use.
- **Construction Type**. Select from the dropdown list.
- **Construction Type.** Select from the dropdown list the construction type that matches the Building. Construction type options include:
  - Permanent
  - Semi-Permanent
  - Temporary
  - Leased
- **Area (Required)**. Enter the gross area of the Building; this will be square feet (SF) or square meters (SM), depending on the unit of measure selected in the User Preferences.
- **Number of Floors (Required)**. Enter the number of floors in the Building.
- **Child Occupied**. Mark this checkbox if the Building is child-occupied.

Save Summary Tab Data

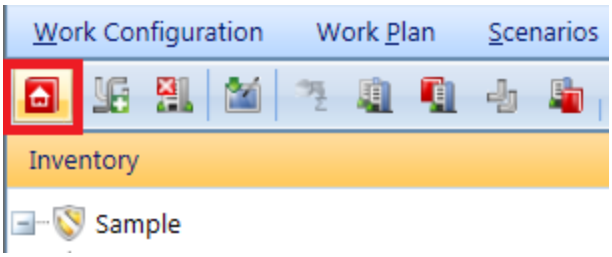
Activate **Save** on the popup toolbar to save your changes.

Enter Systems Tab Data

At the Systems tab is where you will enter the Systems, Components, Sections, and (as applicable) Section Details of your template. You will do this starting at the Systems level because the data at the Systems tab is arranged hierarchically, with Systems containing Components which contain Sections. Once a System is added, you may define Components for that System. Once a Component is added, you may define Sections for that Component. Decomposition follows the same pattern used for Buildings. However, Building-specific data (e.g. condition, age, year installed or built, year painted, and warranty dates and companies) is not used for templates.

Troubleshooting Tip: If the **Systems** tab is grayed out even though you saved all the required Summary information,

- Activate **Save** on the popup toolbar.
- Exit the popup (using the **Close** button or else the "**X**" in the upper right corner).
- Re-activate the Building Templates icon.



- Select your newly created and named template from the list. *All of the tabs should now display properly.*

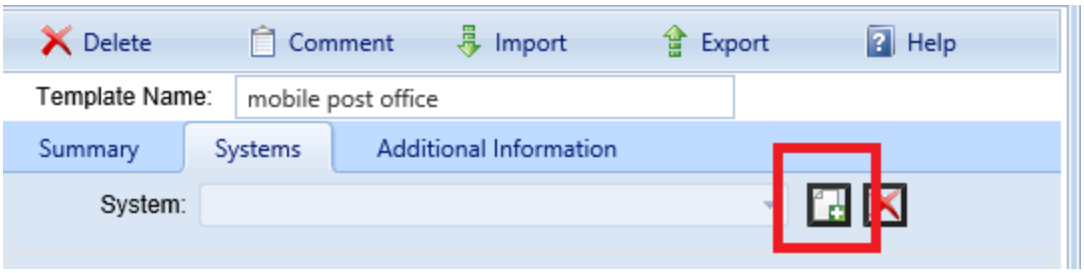
You will be using the buttons to the right of each respective field to add or delete inventory to the template.

Add a System

See About Identifying Systems, Components and Sections for a description of how Buildings are decomposed by System.

To add a System to the template,

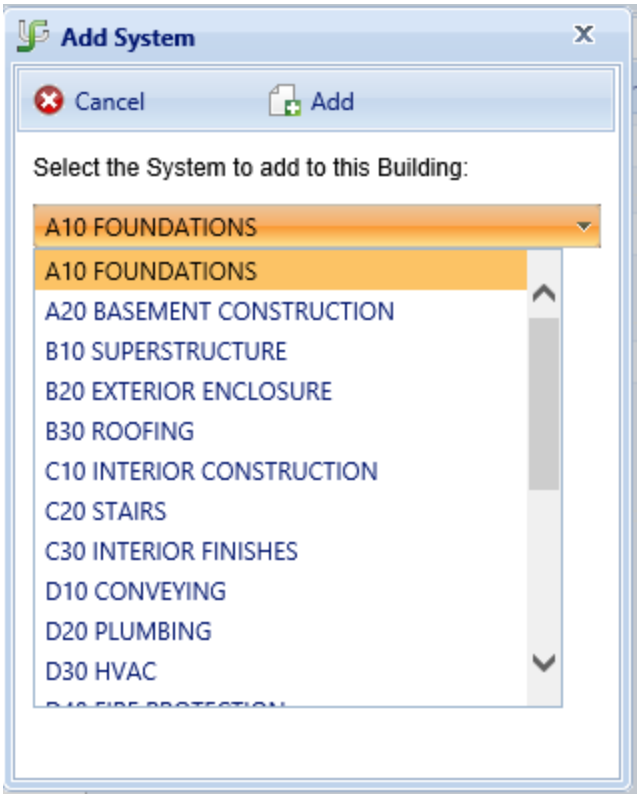
- Activate the **New** icon on the System line.



The "Add System" popup window will appear.

- In the "Add System" popup, activate the dropdown list.
- In the list, activate the desired System.

Note: Only one System at a time can be added to the template at a time using the "Add System" popup.



- Activate the **Add** button on the popup toolbar. The popup will disappear, and the selected System will be displayed on the System line at the **Systems** tab.

Repeat the steps above for all desired Systems. Alternatively, you can leave the newly added System displayed in the "System:" field and proceed to entering one or more of its Components.

Tip: Once you have added all the Systems you wish, if you choose to enter each of them at this point, it's a good idea to activate **Save** on the "Building Templates" popup toolbar to lock in your changes.

Add a Component

See About Identifying Systems, Components and Sections for a description of how Systems are decomposed by Component.

To add a Component to the template,

- Make sure the appropriate System is displayed in the "System:" field.
- Activate the **New** icon on the Component line. *The "Add Component" popup window will appear*.
- In the "Add Component " popup, activate the dropdown list.
- In the list, activate the desired Component .
- Activate the **Add** button on the popup toolbar. The popup will disappear, and the selected Component will be displayed on the Component line at the **Systems** tab.

Note: The number of Sections contained in the component will be displayed beneath the "Component" field.

Repeat the steps above for all desired Components. Alternatively, you can leave the newly added Component displayed in the "Component:" field and proceed to entering one or more of its Sections.

Add a Section

At the Section level, you will be entering the following data for each Section in your Building template:

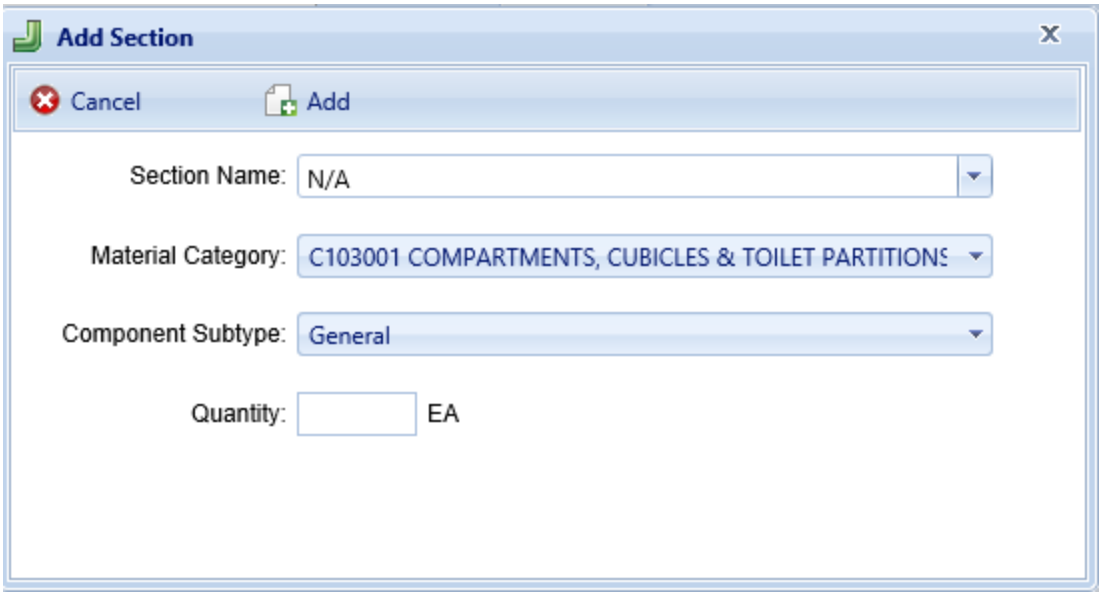
- **Section Name**. Enter a name that will distinguish this Section from others in the same Component.
- **Material Category**. Selected from the relevant dropdown list.
- **Component Subtype**. Selected from the dropdown list. This will be a material (wood, concrete, etc.), or in the case of equipment it will be equipment type.
- **Quantity**. Enter the number of items with the same specification that are contained in this Section.

See About Identifying Systems, Components and Sections for a description of how Components are decomposed by Section.

To add a Section to the template,

- Make sure the appropriate Component is displayed in the "Component:" field.
- Activate the **New** icon on the Section line.

  The "Add Section" popup window will appear.



- In the "Add Section" popup, enter the Section name; select the equipment or material category from the dropdown; select the Component subtype from the dropdown; and enter the Quantity. The unit of measure for the Quantity will vary depending on the type of Section.
- Activate the **Add** button on the popup toolbar. The popup will disappear, and the Section will be displayed on the Section line at the **Systems** tab.

Tip: When you've finished entering the Sections in a Component (or, alternatively, after entering each Section) it's a good idea to activate **Save** on the "Building Templates" toolbar to save your changes.

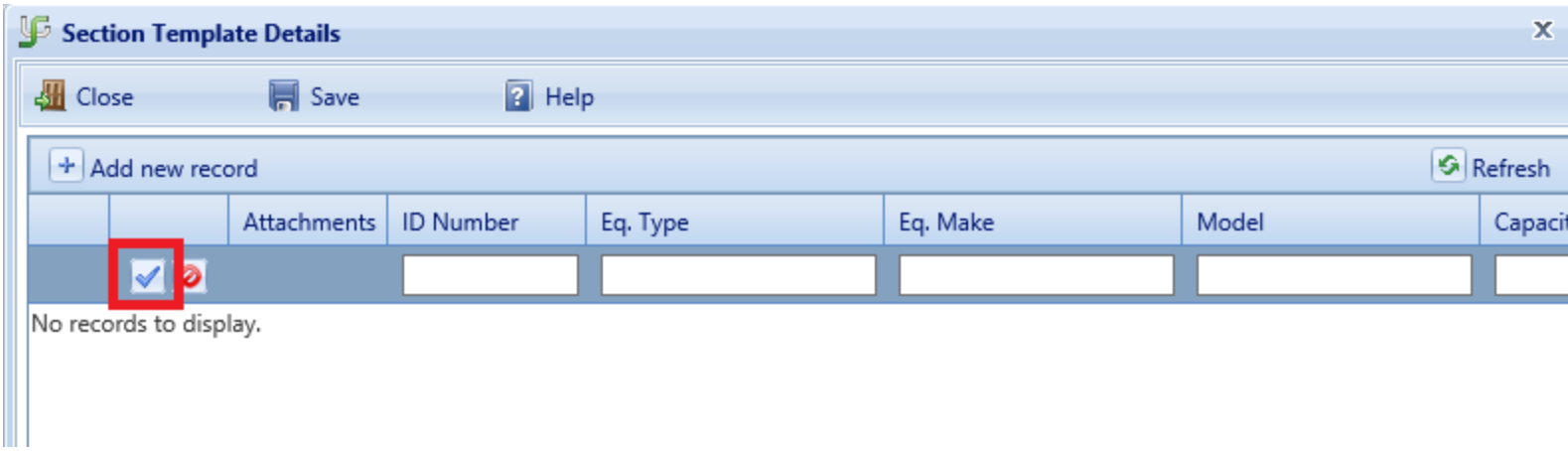
Enter Section Details

Additional data for the Section can be added by activating the **Details** button, which will launch the "Section Template Details" window.

To add Section Details,

- Activate the **Add new record** button (located just above the Section Details table column headers).
- Enter information. Each of the fields is described in Edit Section Detail Data in the inventory entry documentation. You can proceed left to right from one entry field to another using the **Tab** key, or right to left using **Shift-Tab**.
- **IMPORTANT:** After entering the information, activate the checkmark icon, as shown below.

  Note: You may need to scroll back to the left side of the table to see the checkmark icon.

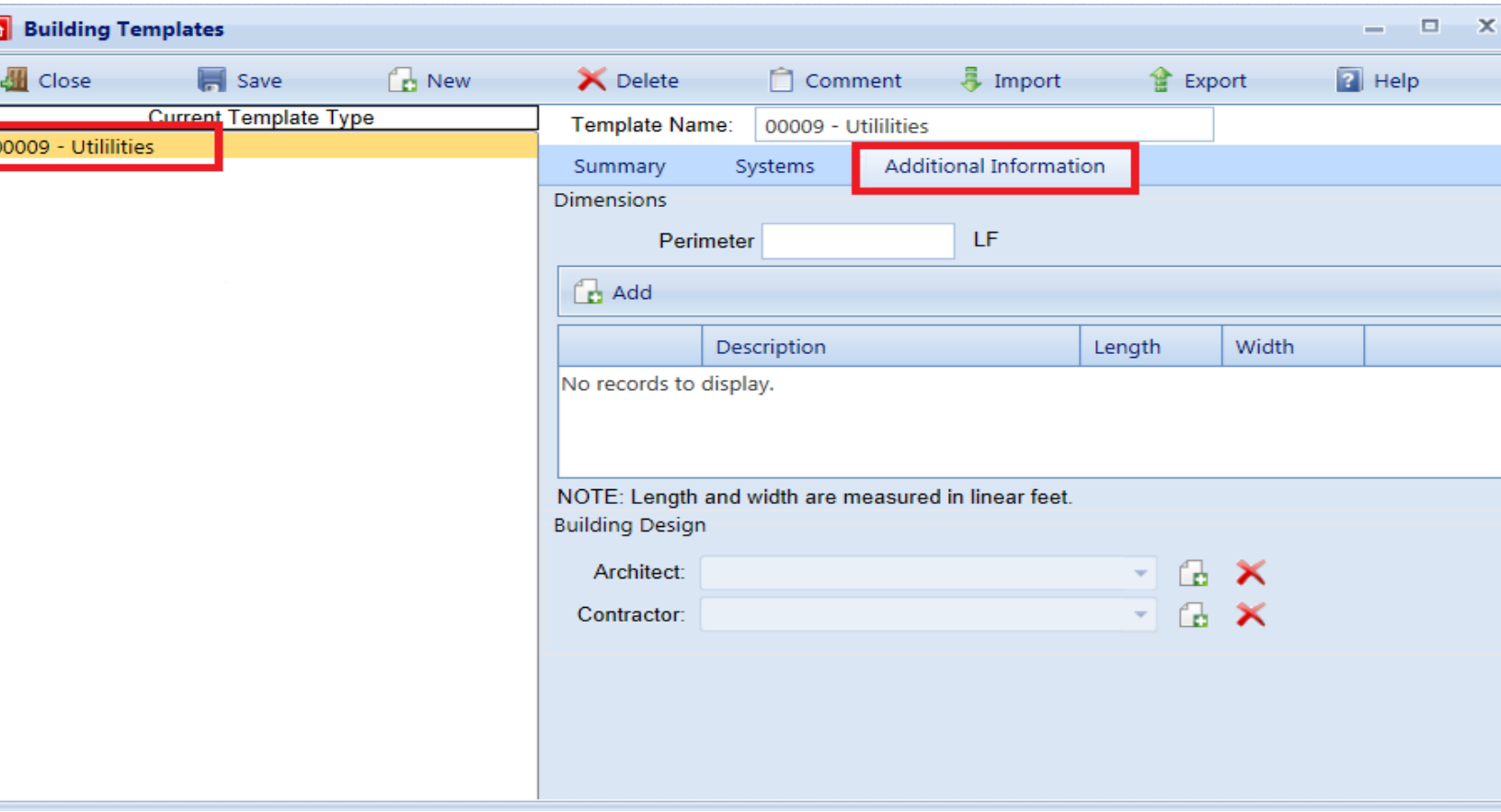


  Alternately, to exit the record without saving the data, activate the red **Cancel** icon next to the checkmark icon.

- When finished with entries, or intermittently, activate **Save** on the "Building Templates" toolbar.

Enter "Additional Information" Tab Data

Use the **Additional Information** tab to store additional Building data.



The data that can be recorded on this tab includes:

Dimensions

- **Perimeter.** Enter the linear measure of the perimeter of the Building.
- **Description.** Enter a description of the distinct areas of the Building you wish to add dimensions for. For example, you may list "East Wing/West Wing," or "Offices/Library/Warehouse," or "Public Areas/Secure Areas." Each description is limited to 50 alphanumeric characters. Use the **Add Dimension** and **Delete Dimension** buttons to add and delete items from the list.
- **Length.** Enter the length of the area identified in the description.
- **Width.** Enter the width of the area identified in the description.

Building Design

- **Architect.** Lists the architects of the Building. Add and delete names by using the adjacent buttons. Each architect's name is limited to 30 characters.
- **Contractor.** Lists the contractors of the Building. Add and delete names by using the adjacent buttons. Each contractor's name is limited to 30 characters.

Save Building Template Data

Before closing the "Building Templates" popup window, be sure to activate **Save** on the toolbar.

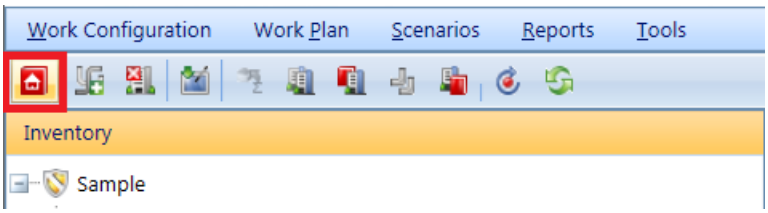
Edit Building Template Data

After a template has been added to the Building Templates library, it can be edited. It can also be enlarged by adding additional Systems, Components, or Sections. This topic explains how to edit the information in a Building template.

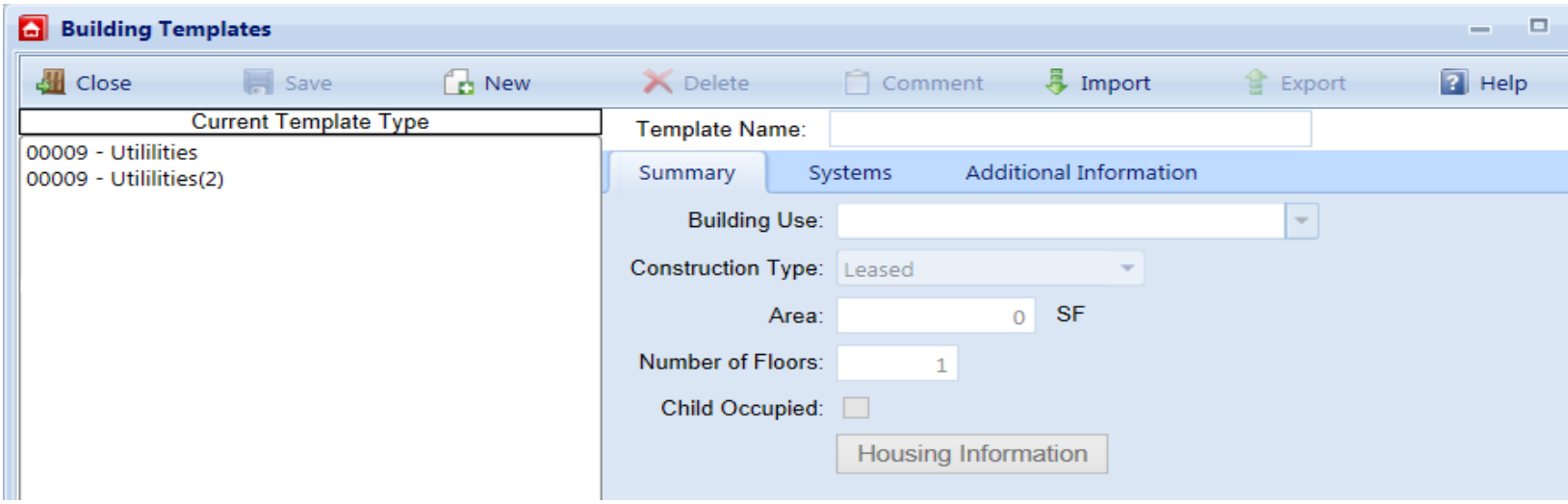
To edit a new Building template, perform the following steps:

Open a Template

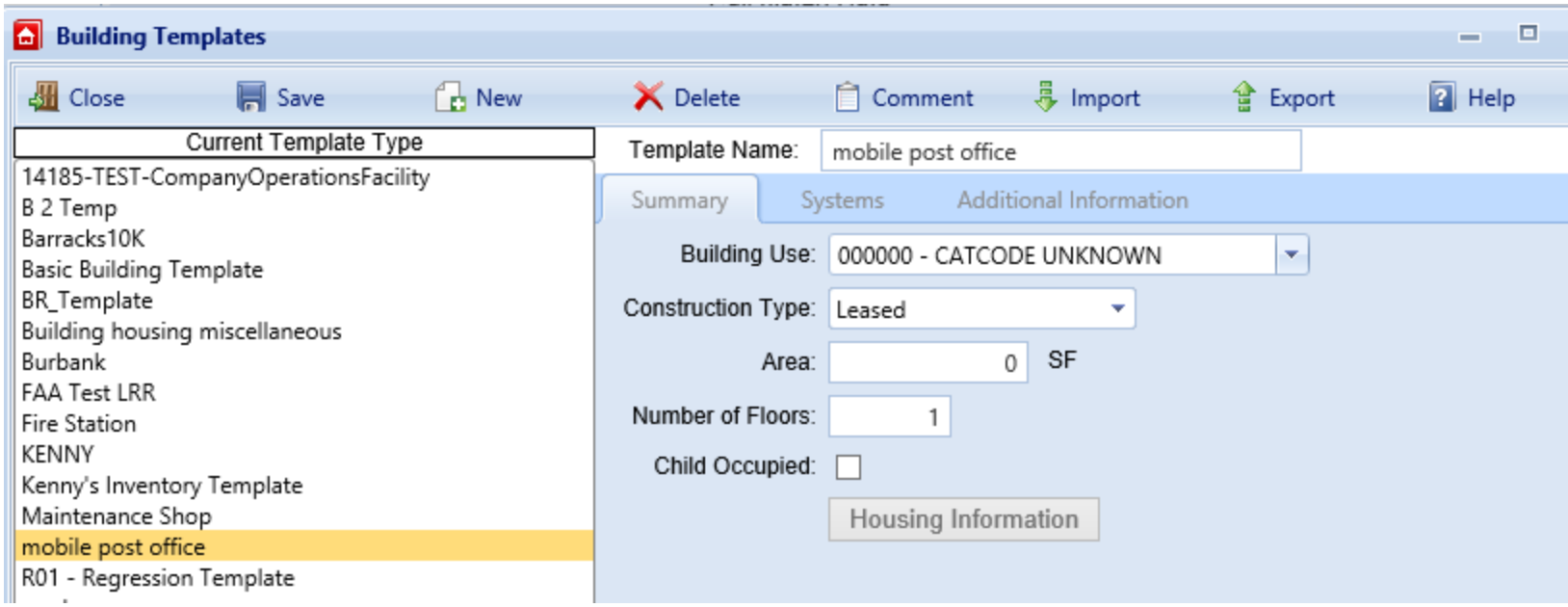
- From anywhere in the inventory tree, activate the **Building Templates** icon on the main toolbar.



The "Building Templates" popup window will appear.



- Select a template from the list at the left.



Edit Summary Tab Data

The following data appears at the **Summary** tab, and can be edited.

- **Name** (Required). The name that will appear in the template list and must be unique among the templates in your library. If you expect to create a large template library, especially if you anticipate sharing your library with others or importing other user's templates, then the name you choose here should be sufficiently descriptive of the Building type to allow it to be safely and efficiently selected for use.

  Specifications: The name is limited to 50 alphanumeric characters.

  Best Practice Recommendation: Avoid using single quotes, double quotes, and ampersands. These characters can interfere with query formation.

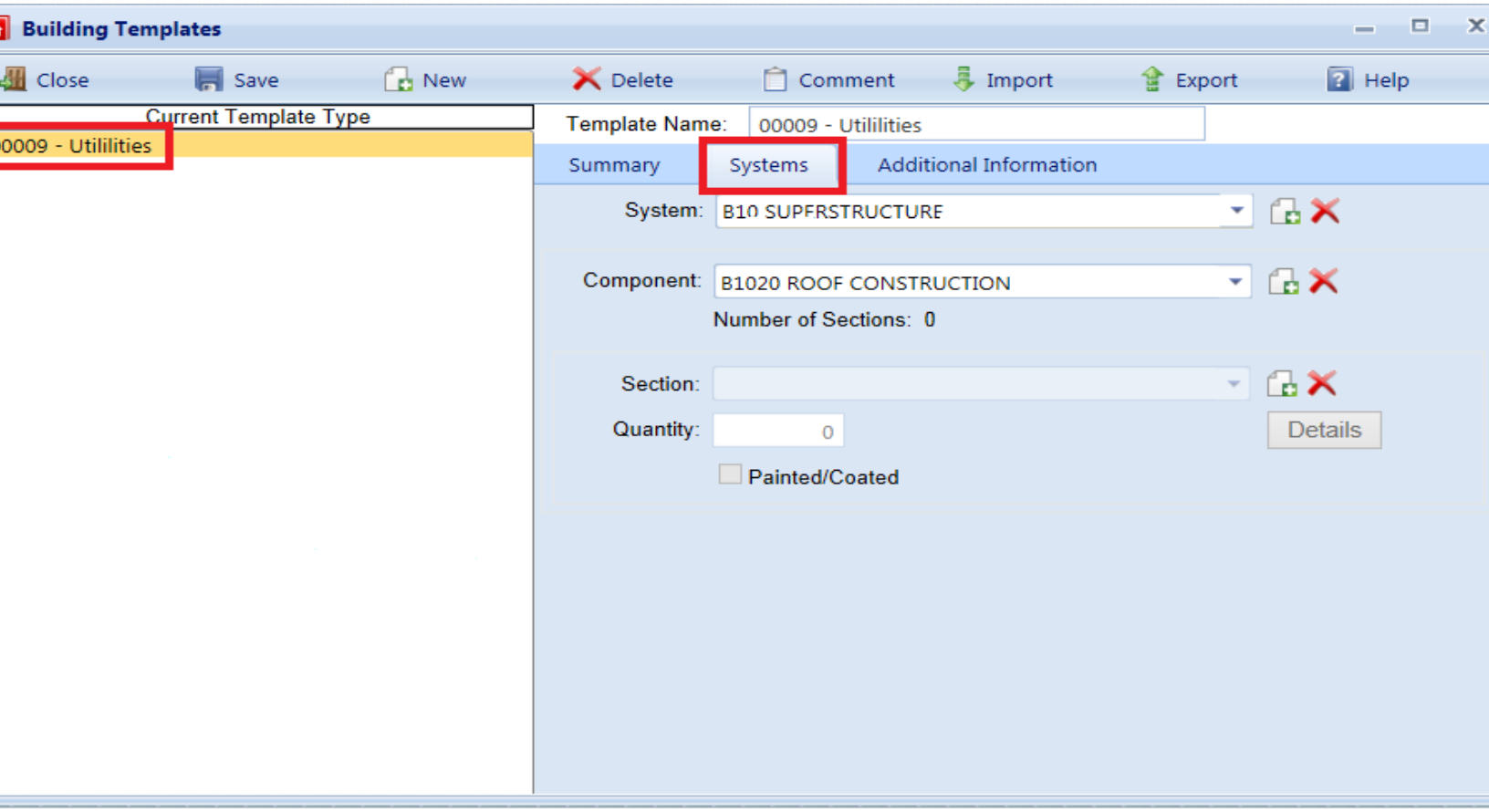
- **Building Use.** Select the Building Use from the dropdown list that most closely matches the Building's use.
- **Construction Type.** Select the construction type from the dropdown list that matches the Building. Construction type options include:
  - Permanent
  - Semi-Permanent
  - Temporary
  - Leased
- **Area** (Required). The gross area of the Building.
- **Number of Floors** (Required). The number of floors in the Building.
- **Child-Occupied.** Mark this checkbox if the facility is child-occupied.

Save Summary Tab Data

Activate **Save** on the "Building Templates" toolbar if you make changes at the **Summary** tab.

Edit Systems Tab Data

The **Systems** tab gives you access to the data regarding the decomposition of the Building into Systems, Components, and Sections.



At the **Systems** tab is where you will enter or edit information about the Systems, Components, Sections, and (as applicable) Section Details of your template. You will do this starting at the System level because the data at the **Systems** tab is arranged hierarchically, with Systems containing Components which contain Sections.

Use the buttons to the right of each respective dropdown list to add or delete inventory to the template. Once a System is added, you may define Components for that System. Once a Component is added, you may define Sections for that Component. This follows the same pattern used for Buildings, except that Building-specific data (e.g., condition, age, year installed or built, year painted, and warranty dates and companies) is not used for templates. See About Identifying Systems, Components and Sections for a description of how Buildings are decomposed by System.

System Level

Add a System

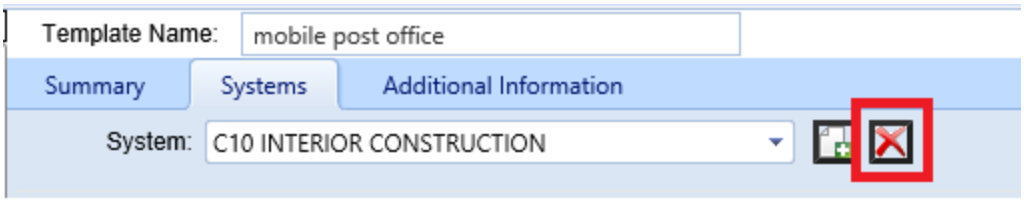
To add another System to the Building template, follow the instructions at Add a System in the topic Add a Building Template.

Edit System Contents

To change the contents of a System that already exists in the template, you will need to select that System at the System line; then select or add the appropriate Component on the Component line; then proceed as necessary through the levels to the Section line and (if applicable), the **Details** button to make the appropriate additions or changes.

Delete a System

To delete a System, select it from the dropdown list at the System line; then activate the **Delete** icon at the right of the System line.



Component Level

Add a Component

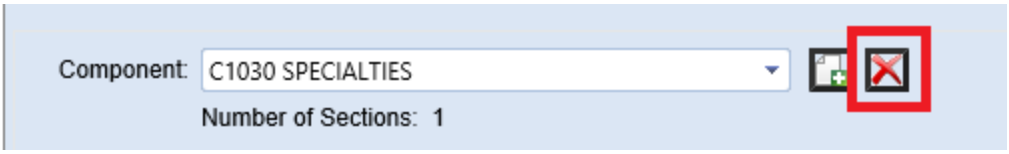
To add another Component to the Building template, follow the instructions at Add a Component in the topic Add a Building Template.

Edit Component Contents

To change the contents of a Component that already exists in the template, you will need to select that Component at the Component line; then select or add the appropriate Section on the Section line; and (if applicable), activate the **Details** button to make the appropriate additions or changes.

Delete a Component

To delete a Component , select it from the dropdown list at the Component line; then activate the **Delete** icon at the right of the Component line.



Section Level

Add a Section

To add another Section to the Building template, navigate to the Component it will be contained in; then follow the instructions at Add a Section in the topic Add a Building Template.

Edit Section Contents

Change Quantity

To change the quantity of a Section,

- Highlight the quantity in the Quantity box;
- Make the desired change; then
- Activate **Save** on the "Building Templates" menu bar.

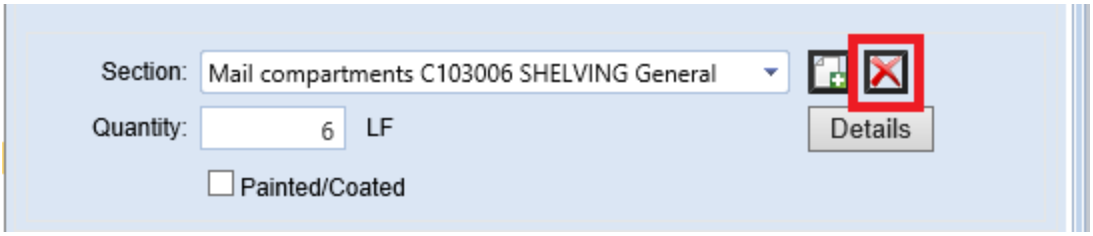
Change Section Details

To change the Section's Section Details,

- Activate the **Details** button; then
- Make the desired additions or changes. For more detailed instruction, see Add, Edit, or Delete Section Details.

Delete a Section

To delete a Section, select it from the dropdown list at the Section line; then activate the **Delete** icon at the right of the Section line.

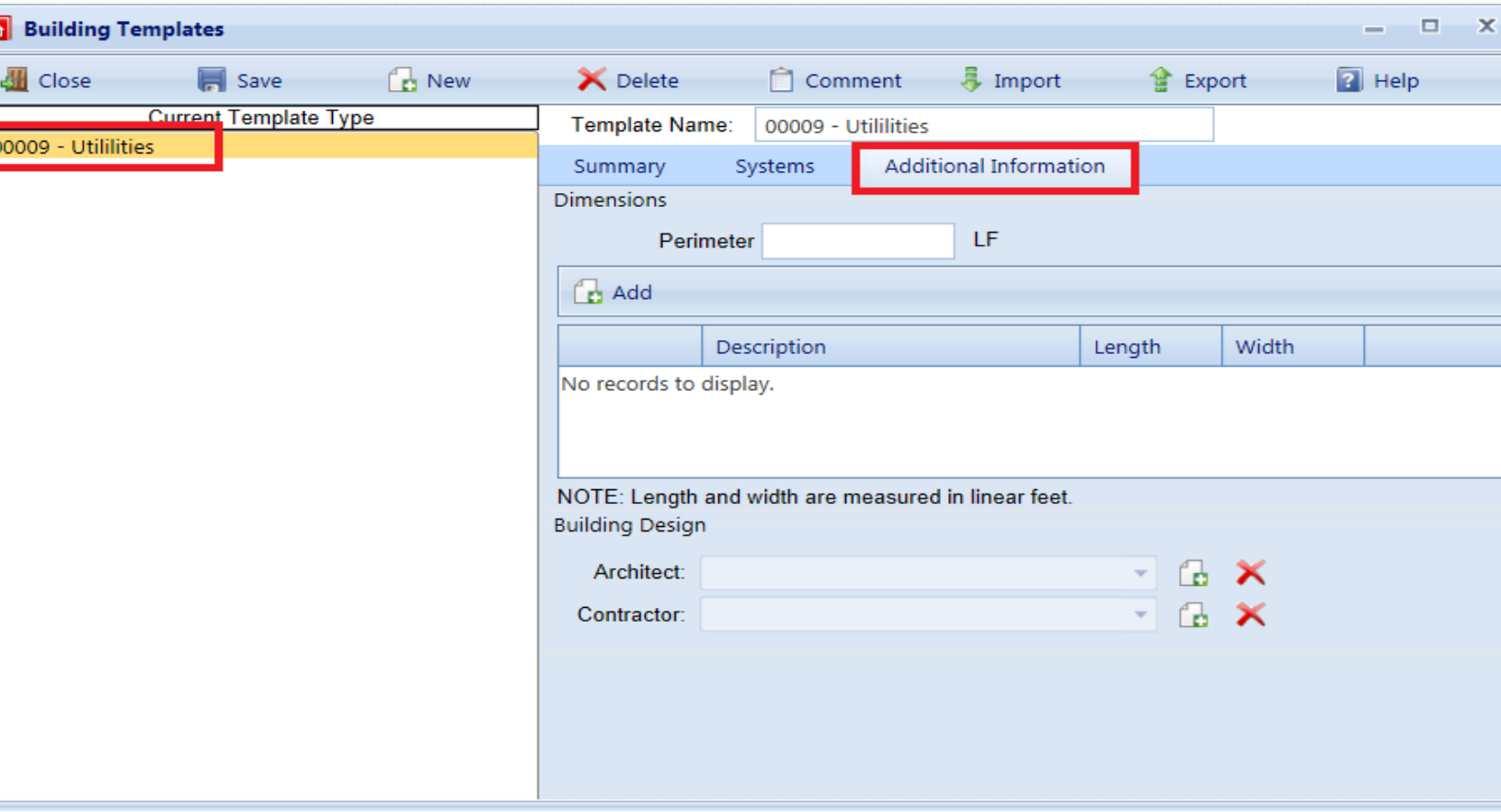


Save Systems Tab Data

Activate **Save** on the "Building Templates" toolbar to save the changes made at the **Systems** tab.

Edit "Additional Information" Tab Data

The **Additional Information** tab provides a location to store additional Building data.



The data that can be recorded and edited at this tab includes:

Dimensions

- **Perimeter.** Enter the linear measure of the perimeter of the Building.
- **Description.** Enter a description of the distinct areas of the Building you wish to add dimensions for. For example, you may list "East Wing/West Wing," or "Offices/Library/Warehouse," or "Public Areas/Secure Areas." Each description is limited to 50 alphanumeric characters. Use the **Add Dimension** and **Delete Dimension** buttons to add and delete items from the list.
- **Length.** Enter the length of the area identified in the description.
- **Width.** Enter the width of the area identified in the description.

Building Design

- **Architect.** Lists the architects of the Building. Add and delete names by using the adjacent buttons. Each architect's name is limited to 30 characters.
- **Contractor.** Lists the contractors of the Building. Add and delete names by using the adjacent buttons. Each contractor's name is limited to 30 characters.

Save Additional Information Tab Data

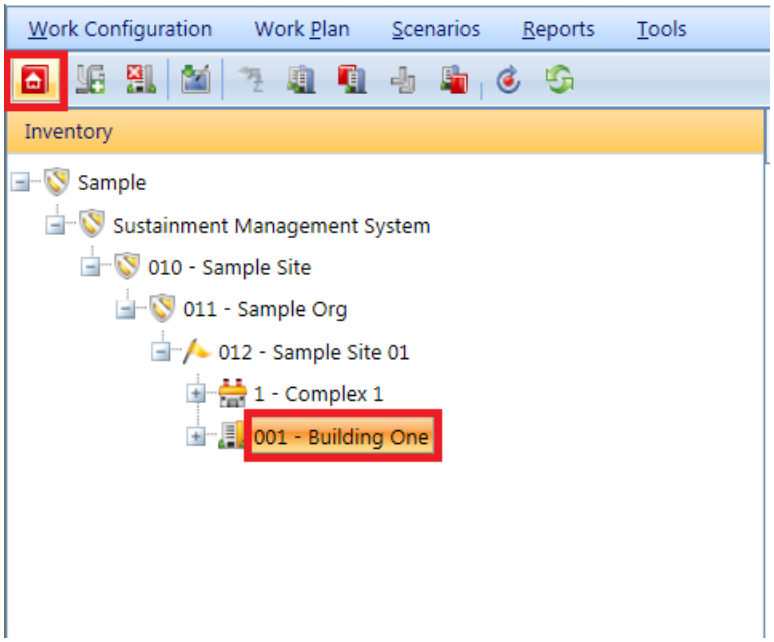
Activate **Save** on the "Building Templates" toolbar if you make changes at the **Additional Information** tab.

Delete a Building Template

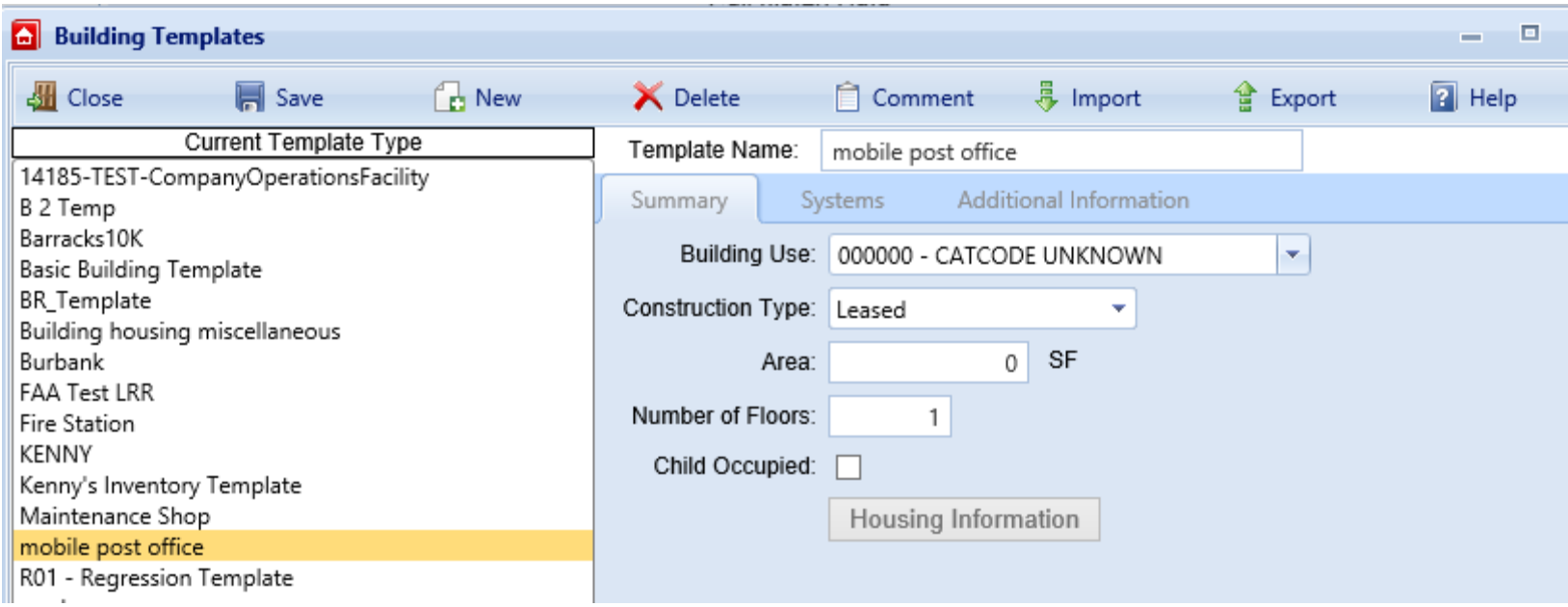
This topic explains how to delete a Building template.

To delete a Building template,

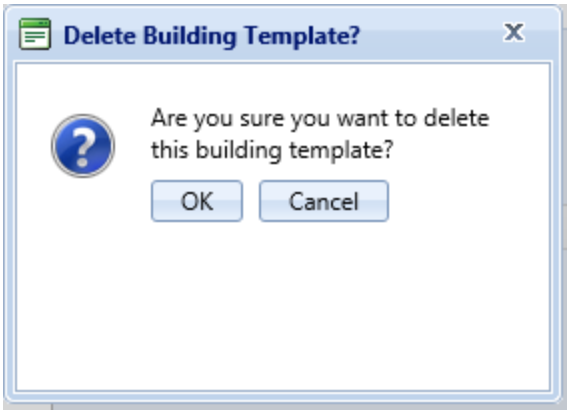
- From any location in the inventory tree, activate the **Building Templates** icon on the main toolbar.



The "Building Templates" popup window will appear.



- Select from the list of templates the one you wish to delete.
- While that template is highlighted, activate the ✕ **Delete** button in the popup toolbar. *A confirmation popup will appear.*



- Do one of the following:
  a. Activate the **OK** button in the confirmation popup to delete the template. The list of templates on the left side of the "Building Templates" window will refresh after the deletion.
  b. Alternatively, activate **Cancel** in the confirmation popup to cancel the operation and return to the "Building Templates" window.

.

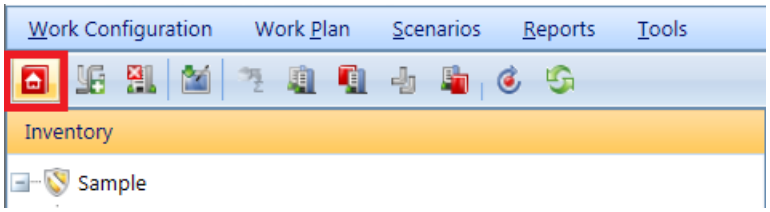
Manage the Template Library

This topic provides an overview of capabilities you can initiate at the "Building Templates" window in order to add to, manage, import to, and export from your library of Building Templates held in **BUILDER**.

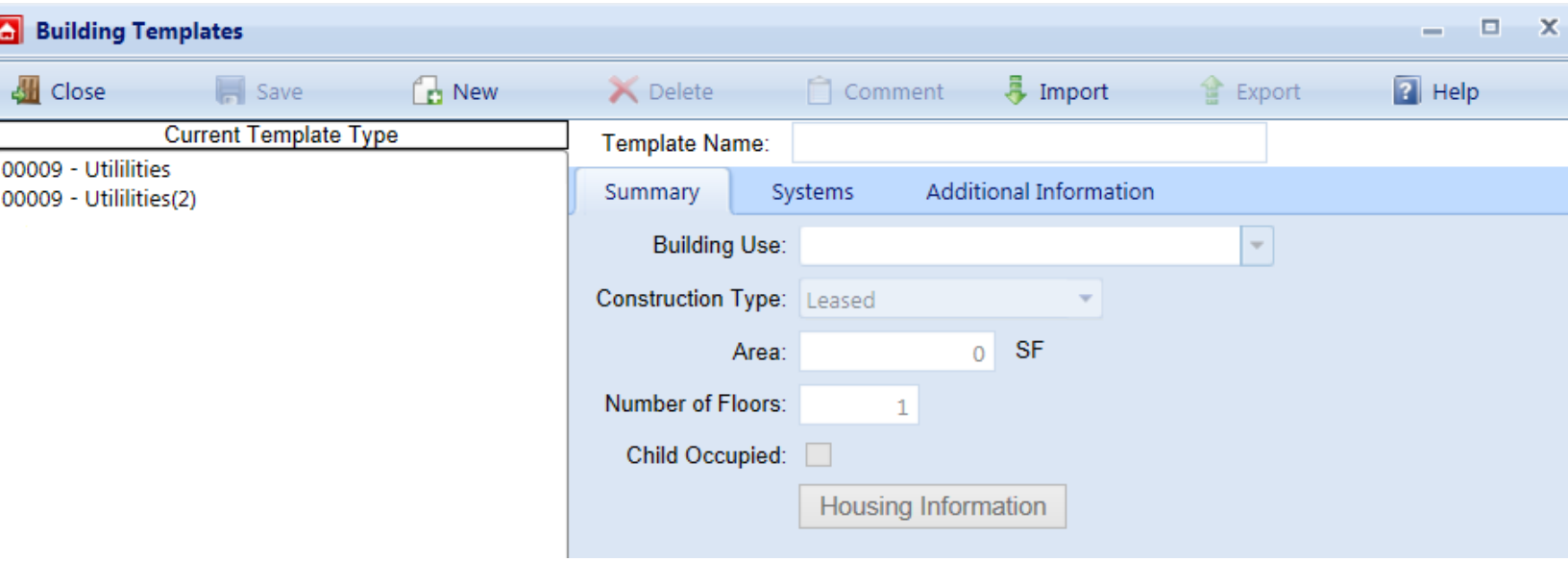
BUILDER stores all of the Building templates in your database in a template library. From the template library you can manually add, edit, and delete templates in your database, as well as import and export templates.

Open the Templates Window

To manage the template library, activate the **Building Templates** icon on the main toolbar. This can be done from any location in the inventory tree.



The "Building Templates" popup window will appear.



On the left side, the Building Templates window lists the current templates in the library. On the right sight, it shows the data for the selected template. The data shown at the different tabs are described in the topics Add a Building Template and Edit Building Template Data.

Toolbar Options

Options on the "Building Templates" toolbar are:

- **Close**. Closes the "Building Template" popup window.
- **Save**. Saves changes made to the Building templates.
- **New**. Initiates creating a new template "from scratch" where you can enter inventory detail. (See Add a Building Template.)
- **Delete**. Deletes the currently selected template.
- **Comment**. Allows you to add, edit, and view comments for the template.
- **Import**. Allows you to import templates from other sources.
- **Export**. Allows you to export templates to other sources.
- **Help**. Displays context-sensitive location in the online Help documentation.

Building Template Tasks

Operations that can be performed on Building templates are:

Import a Building Template
Copy Building Inventory to a Template
Add a Building Template
Edit Building Template Data
Export a Building Template
Delete a Building Template
Add Building Inventory Using a Template

Additional useful information can be found here:

Working with Building Templates

Export a Building Template

This topic explains how to export a template in order to be able to share it with others or to use it in a different instantiation of **BUILDER**.

About Exporting Building Templates

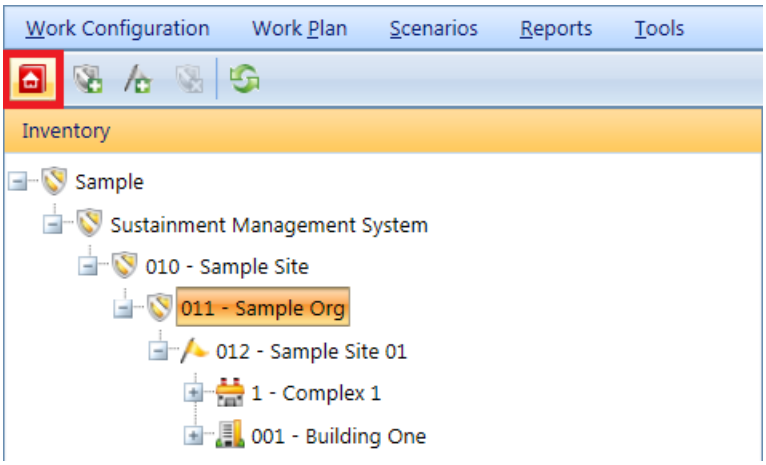
Building templates provide a convenient method for rapidly creating your Building inventory when you have multiple Buildings with the same design and composition. A template stores the basic data about a generic Building and can be used to create many Buildings at one time using an automated process that copies the structure of the template to each desired Building. For more information about templates, see Working with Building Templates.

BUILDER allows for different users to share Building templates by importing and exporting individual templates. This capability is especially useful for military installations, which may have many Buildings constructed from a few standard service-wide designs.

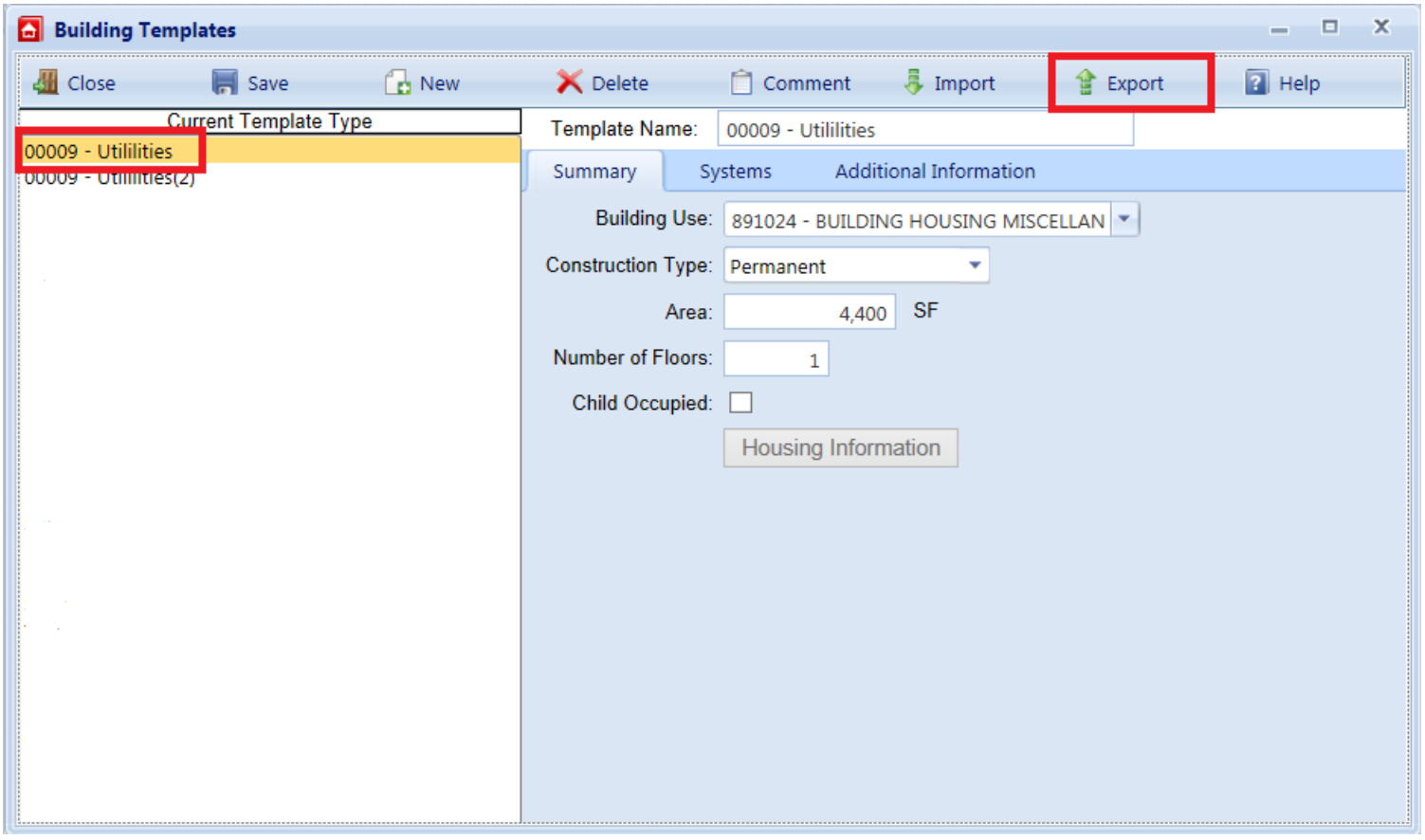
Export Procedure

To export a template,

- From anywhere in the inventory tree, activate the **Building Templates** button on the main toolbar.



The "Building Templates" popup window will appear.



- To export a template, highlight a template name in the listing on the left side of the Building Template window.
- Select **Export** from the toolbar.
- After the template has been successfully exported, you will be asked if you want to (a) save or (b) open the exported template.
    a. If you choose to save the template, you will be prompted for a path and file name for the exported template. The saved exported template can then be sent to other BUILDER users to be utilized in their template libraries.
    b. If you choose to open the exported template after the export is complete, the template will open as a XML document.

Rapid Inventory Methods

Working with Rapid Inventory Methods

This topic gives an overview of three ways that the BUILDER inventory creation process can be made faster. These methods depend on a level of similarity between Sections or Buildings.

Note: A previously available method, Embedded Building Models, has been discontinued.

One of the most time-consuming aspects of inventory is the decomposition of a Building into its Systems, Components, and Sections. To help with this Building decomposition, BUILDER™ has multiple alternative methods designed to help you quickly establish an inventory database for your Buildings. The main toolbar icon for each is shown in the listing below.

- Copy the inventory of one Building into another Building ("Copy Inventory to Another Building")
- Copy Sections using the Copy Sections tool (within the same Building only).
- Create and use Building templates

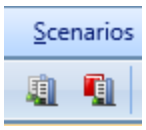
Method Availability

Site and Complex Level

At the Site and Complex level, these methods are available:

- Copy the inventory of one Building into another Building
- Create and use Building templates

The icons for these methods sit side by side on the BUILDER toolbar at the inventory levels where they are available for use.



Building Level

At the Building level, the Copy Sections tool also becomes available:

List of Rapid Inventory Methods

Method 1: Copy the Inventory of One Building into Another

One method that can ease the data input process is to copy the existing inventory of one Building into another Building. This provides a starter set of Systems, Components, and Sections that can then be refined, instead of all entered from scratch The amount of refinement needed will depend on the amount of similarity between the structures.

This inventory creation method is especially useful if you have a number of Buildings in your inventory that were all built at the same time using the same plans and specifications.

Tip: If you have more than two or three Buildings or facilities that are very similar to each other, you should consider creating a Building template instead of copying from another Building. If one of the applicable Buildings is already created and populated, it can be used to create that template.

For instructions on copying inventory from another Building, see Copy Inventory to Another Building.

Method 2: Copy Sections

Within a Building, the process of adding inventory can be accelerated by using the Copy Sections tool, which allows you to copy pre-existing Sections from one area of a Building to another area of the same Building. An example of when to use this tool is in a multistory building with similar or identical inventory on multiple floors. The first floor can be inventoried and then copied to other floors, saving time and reducing inventory costs.

For instructions, see Copy Sections.

Method 3: Create and Use Building Templates

Building templates are "cookie cutter" models that can be used to create Buildings with identical features. These template-generated Buildings can be used to get your inventory task off to a fast start, because their contents only need editing and adapting instead of each inventory item and sub-item being entered from scratch.

For an overview and a jumping-off location for instructions, see Working with Building Templates.

Copy Inventory to Another Building

This topic describes the option of copying the inventory of existing Building into a new Building. This has the potential to save time by allowing you to edit existing structures instead of decomposing the Building into Systems, Components, and Sections from scratch.

BUILDER has been designed to help you quickly establish an inventory database for your Buildings. One of the most time-consuming aspects is the decomposition of a Building into its Systems, Components, and Sections. One method that eases the data input process is copying a Building's inventory from one Building (the

source Building) to another (the target Building). This feature is very useful if you have a number of Buildings in your inventory that were all built at the same time using the same plans and specifications.

Follow the steps below to copy Building inventory.

Prepare the Source Building

Before you can copy a Building's inventory from one Building to another, you must first create the source Building and complete its inventory as fully as possible, including all of the related Building data.

Activate "Copy Inventory to Another Building"

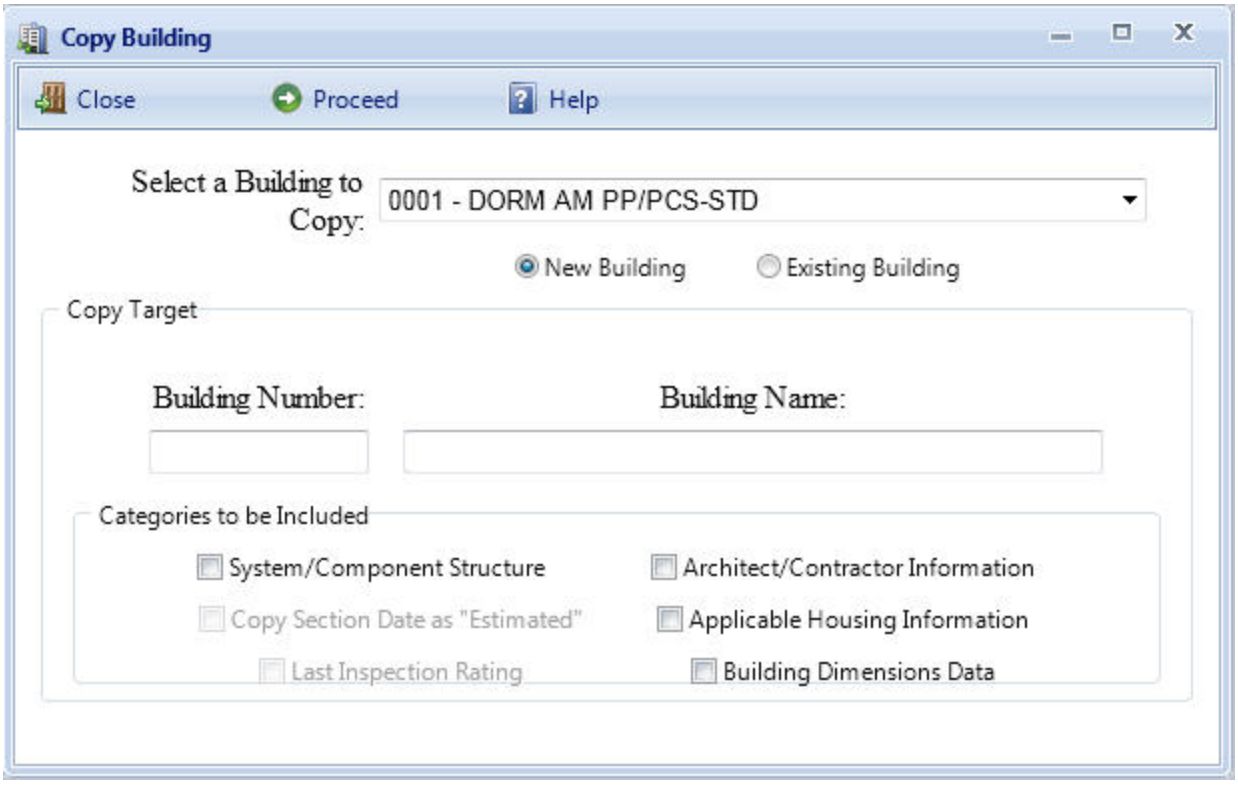
Once the source Building has been created, navigate to it in the inventory tree and do one of the following:

a. Right-click the source Building in the inventory tree. Then select "Copy Inventory to Another Building."
b. Alternatively, select the source Building in the inventory tree. Then activate the **Copy Inventory to Another Building** icon on the toolbar.

The "Copy Building" popup window will appear. The number and/or name of the source Building whose inventory you wish to copy, should appear in the "Select Building to Copy" dropdown list.

Enter Required Data

In the "Copy Building" popup, enter the data listed below.



- Just above the "Copy Target" area of the window, use the radio buttons to select whether you want to copy that Building's inventory to a New Building or into an Existing Building:
    a. If you select a **New Building**, you must supply Building Number and Building Name in the "Copy Target" area of the window. Building summary information such as year constructed will automatically be transferred into the new Building when you later activate **Proceed**.
    b. If you select an **Existing Building**, a dropdown list of Buildings currently in the inventory will be provided. Do the following:
        - From the list, select the Building you wish to copy the source Building's inventory to.
        - If you wish to use the Inventory Summary Information (such as year constructed, number of floors) of the source Building into the target Building, mark the **Copy Inventory Summary Information** checkbox. Otherwise, leave the checkbox blank.
- In the "Categories to be Included" area of the window, check all of the categories you wish to have copied to the target Building. The following record categories can be copied to the target Building:
    - **System/Component Structure**. Marking this checkbox will copy all of the Systems, Components, and Sections to the target Building.
        - **Copy Section Date as "Estimated."** Marking this checkbox will mark all of the Section install dates in the target Building as estimated. This checkbox can only be marked if the **System/Component Structure** checkbox is marked.
        - **Last Inspection Rating**. Marking this checkbox will copy the last condition assessment rating for each Section to the target Building. This checkbox can only be marked if the **System/Component Structure** checkbox is marked.
    - **Architect/Contractor Information**. Marking this checkbox will copy all of the architect and contractor information to the target Building.
    - **Building Dimension Data**. Marking this checkbox will copy all of the dimension data to the target Building.

Confirm or Cancel

Once the required data is entered, do one of the following:

a. Activate the **Proceed** button on the popup window's toolbar to start the copy process. After the copy process is complete, you can edit any of the copied Building's records if adjustments are necessary.
b. Alternatively, if you do not wish to copy the Building, activate the **Close** button on the popup window's toolbar.

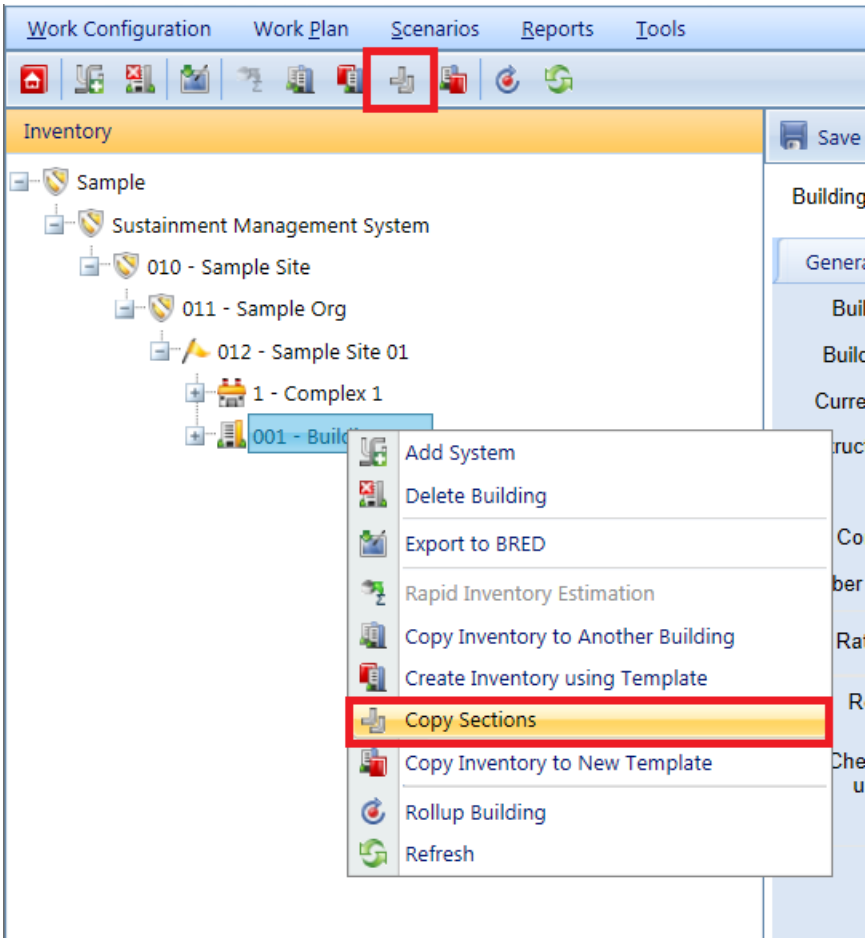
Copy Sections

BUILDER has been designed to help you quickly establish an inventory database for your Buildings. One of the most time-consuming aspects is the decomposition of a Building into its Systems, Components, and Sections. One method that eases the data input process is the Copy Sections tool, which allows you to copy pre-existing Sections from one area of a Building to another area of the same Building. An example of when to use this tool is in a multistory building with similar or identical inventory on multiple floors. The first floor can be inventoried and then copied to other floors, saving time and reducing inventory costs.

To use the Copy Sections tool,

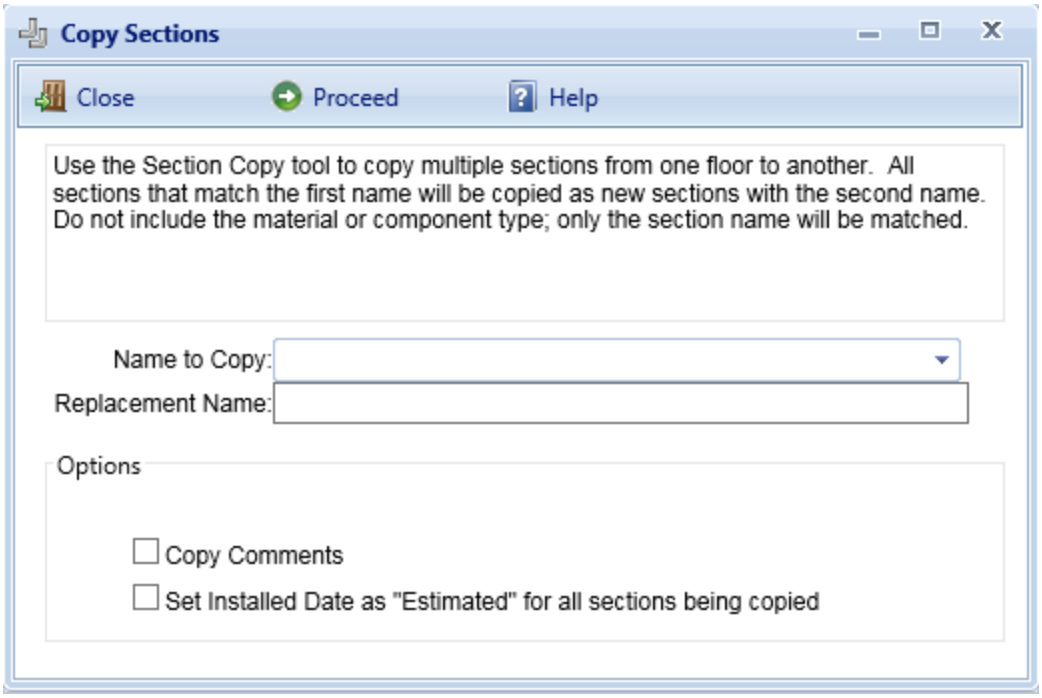
- Navigate in the inventory tree to Building into which you wish to copy the Section, then do one of the following:

    a. Right-click the Building. Then select "Copy Sections." (This is illustrated in the lower half of the screen shot below).



    b. Alternatively, select the Building, then activate the **Copy Sections** icon in the toolbar as shown above.

After your selection, the "Copy Sections" popup window will appear.



- In the "Copy Sections" popup, enter the following data:
  - **Name to Copy** (Required). Select the existing Section name to copy from the dropdown list. All Sections that match the selected name will be copied as new Sections.
  - **Replacement Name** (Required). Enter the replacement name for the copied Sections. The replacement name will appear as the Section name for the copied Sections.
  - **Copy Comment** (Optional). Mark the **Copy Comments** checkbox if you wish to copy the comments associated with the copied Sections and associate them with the replacement Sections also.
  - **Set Installed Date as "Estimated" for all Sections being copied** (Optional). Mark this checkbox if you want all of the replacement Sections' year installed to be marked as estimated.
- After all of the data has been entered, activate the **Proceed** button in the popup window toolbar to copy the Sections. The copied Sections will be added to the database and appear on the inventory tree. Alternatively, if you do not wish to copy the Sections, activate the **Cancel** button instead.

Working with Building Templates

Building templates are one of BUILDER's methods for speeding up the process of initial inventory. They provide a convenient way to rapidly create Building inventory when:

- you have multiple Buildings with the same design and composition; or
- an existing template can be obtained that is similar to the Building you wish to create and populate with inventory

A template stores the basic data about a generic Building that can be used to create many Buildings at one time using an automated process that copies the structure of the template to each desired Building.

Recommendation: The template feature is designed to be used as an initial step in the construction of your inventory database. However, in order to achieve the greatest benefit from using templates, you must be very familiar with BUILDER's approach to inventorying a Building. See Add a Building and About Identifying Systems, Components and Sections for important information regarding how Buildings and their template counterparts are structured in the database.

One of the most time-consuming aspects of inventory is the decomposition of a Building into its Systems, Components, and Sections. The Building Template feature is designed to ease the inventory development process in BUILDER.

If your physical inventory contains a number of Buildings that are essentially of the same design and composition, you can establish a template for that design to use as a "cookie cutter" and then apply an automated process with the template to create the matching Buildings in your BUILDER inventory with little additional effort. These matching Buildings can then be edited to reflect any individual features that differ from the template used to create them.

Additionally, due to the ability to import and export Building templates, you may be able to save time by either importing or finding in your template library an existing template that is similar to the Building you wish to create and populate with inventory.

What Is a Building Template?

A Building template looks very much like a Building in BUILDER. Every data element belonging to a template or one of its substructures has a corresponding data element in a Building. A template has general Building data such as use, size, and number of floors as well as a decomposition into Systems, Components, Sections (including Section Details). If the template is designated as family housing, then you may specify data about each dwelling unit regarding number of rooms and types and makes of appliances. A template does *not* contain data that is only known for each specific Building, such as its year of construction, its condition ratings, its costs, its location, etc.

Successful use of Building templates consists of three tasks:

- Creating or importing a template;
- Managing the template library; and
- Using a template to create one or more new Buildings.

About Creating a Template

BUILDER offers multiple options for creating a template:

Option A: Import

You can import templates from another user's template library for use in your own library. This import capability is especially useful for military installations, which may have many Buildings constructed from a few standard service-wide designs.

For instructions, see Import Procedure under Import a Building Template.

Option B: Use the Inventory of an Existing Building

Each Building in your inventory database is equipped with data elements comparable to those of a Building template. Therefore, you can use BUILDER's feature of copying a Building's inventory into a template to create a template quickly.

For instructions, see Copy Building Inventory to a Template.

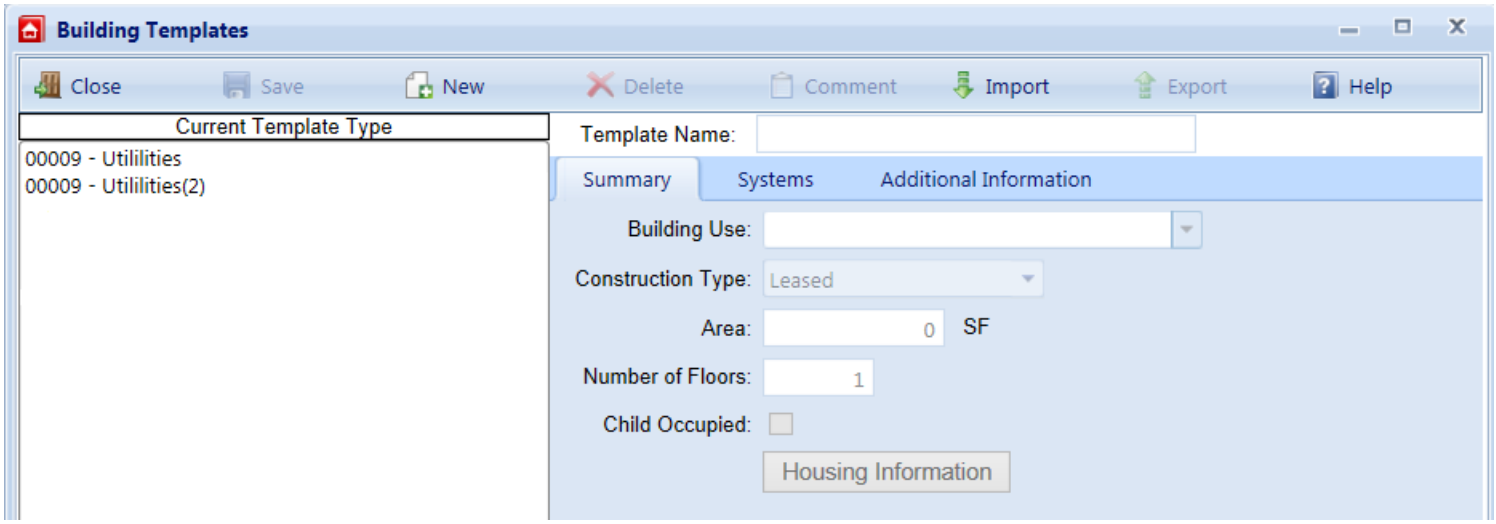
Option C: Enter Template Inventory

You can create a template by inputting each data element in much the same way that you create a Building.

For instructions, see Add a Building Template.

About Managing the Template Library

The "Building Templates" window serves as a dashboard for most of the tasks you can do with respect to Building templates.



An exception is creating a template by copying the inventory of an existing Building. This is done from the inventory tree.

Using the "Building Templates" window, you can add, edit, delete, import, or export a template. The topic titled Manage the Template Library gathers together in one place a collection of links to these tasks.

About Using a Template to Create Inventory

Once a template is established, a Building with the same design can be created in an automated fashion by copying the template data into the appropriate Building data elements. This process can save hours of manual input if you have multiple Buildings for which the template applies.

To learn how to use a template to create or expand the data either for one Building at a time, or for multiple Buildings at the same time, see Add Building Inventory Using a Template.

You can also share your template with others using the feature Export a Building Template.

Building Template Tasks

Building template tasks that can be performed are:

- Add Building Inventory Using a Template
- Import a Building Template
- Copy Building Inventory to a Template
- Add a Building Template
- Edit Building Template Data
- Delete a Building Template
- Manage the Template Library
- Export a Building Template

Unlock Inventory Files

Unlock Inventory Files

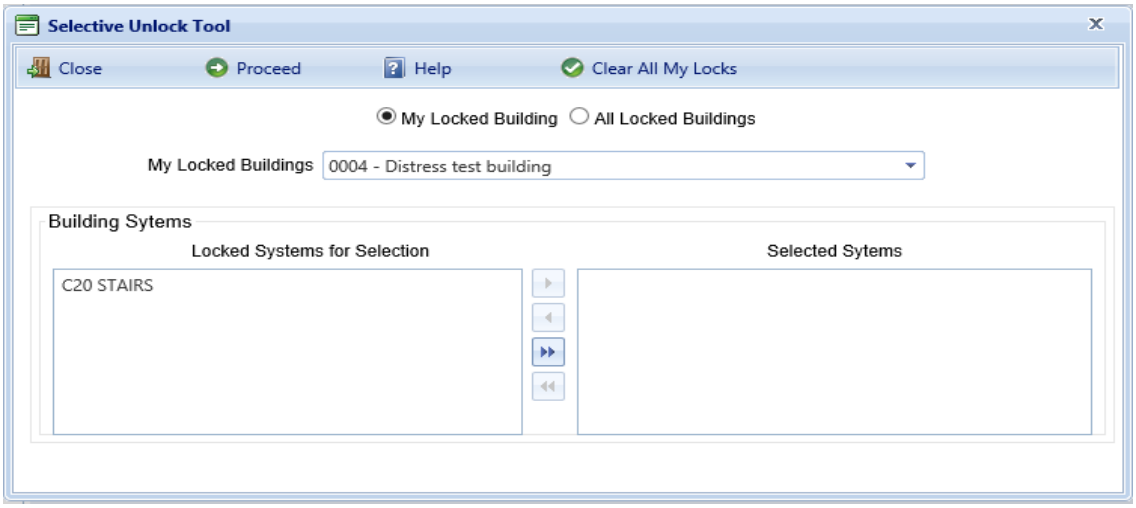
When an inventory file is exported to BuilderRED, it is locked in BUILDER. If you need to unlock your or another user's file, use the tool provided from the main menu bar at **Tools > Unlock My Buildings**. This topic explains how.

Unlock File(s) Locked by You

Unlock All Files You Locked

To unlock all of your locked files in a given Building,

- At the main menu, navigate to **Tools > Unlock My Buildings**. (Location in the navigation tree doesn't matter.) *The "Selective Unlock Tool" popup window will appear.*



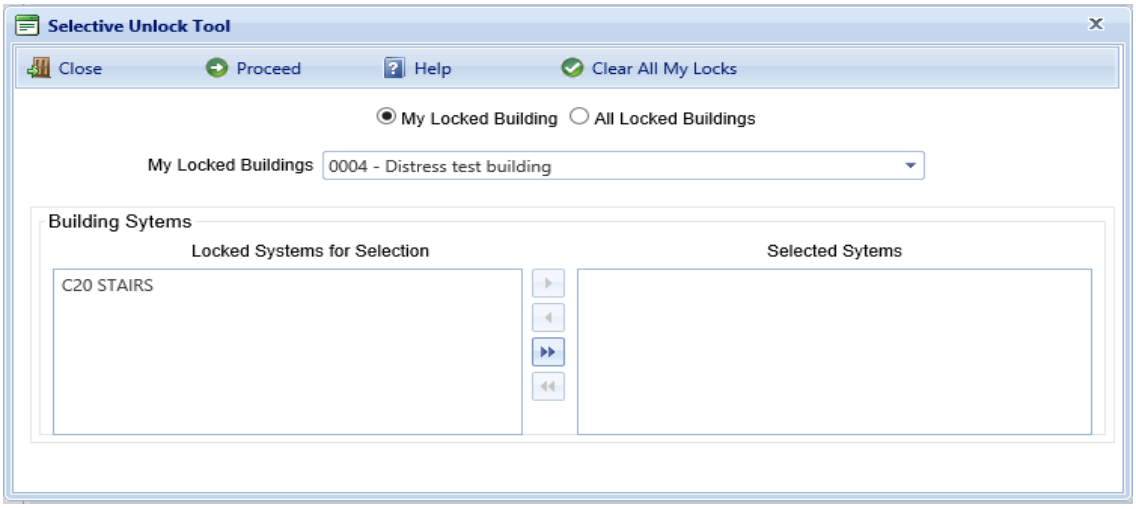
- In the popup window, make sure the **My Locked Building** radio button is selected.
- Select the desired Building from the dropdown list in the **My Locked Buildings** field. *The locked Systems in that Building will appear under **Locked Systems for Selection**.*
- Activate **Clear All My Locks** on the toolbar.

After the procedure is finished, you should see a message "System locks have been cleared" at the lower left of the popup window. Alternatively, there may be a message such as "Current user does not have any locked buildings or systems."

Unlock Selected File(s) You Locked

Files are unlocked System by System. To unlock one or more selected files that you locked,

- At the main menu, navigate to **Tools > Unlock My Buildings**. (Location in the navigation tree doesn't matter.) *The "Selective Unlock Tool" popup window will appear.*



- In the popup window, make sure the **My Locked Building** radio button is selected.
- Select the desired Building from the dropdown list in the **My Locked Buildings** field. *The locked Systems in that Building will appear under Locked Systems for Selection.*
- In the *Locked Systems for Selection* column, select the desired System(s) and use the right arrow button to move it or them to the **Selected Systems** column. The double right arrow button will move all Systems shown to the **Selected Systems** column.
- Activate **Proceed** on the toolbar.

After the procedure is finished, you should see a message "System locks have been cleared" at the lower left of the popup window. Alternatively, there may be a message such as "Current user does not have any locked buildings or systems."

To unlock files locked by others, see Unlock Files Locked by Other Users.

Unlock Files Locked by Other Users

Unlock All Files Locked by Other Users

To unlock all files locked by other users, follow the instructions under the heading Unlock All Files You Locked above, but select the radio button **All Locked Buildings** instead of **My Locked Building**.

Unlock Selected File(s) Locked by Other Users

To unlock one or more selected files locked by other users, follow the instructions under "Unlock Selected File (s) You Locked" above, but select the radio button **All Locked Buildings** instead of **My Locked Building**.

Work Configuration

Order of Standards, Policies, and Policy Sequences

In order for SMS work plans to function correctly, standards, policies, and policy sequences must be created and implemented in the proper order.

1. Standards

Work configuration must start with *standards*. Standards are numbers that act as *work triggers* and *inspection triggers*.

2. Policies

Policies apply the *standards* to specific inventory attributes such as System type or **RSL**[1].

3. Policy Sequences

Policy sequences determine the priority order in which the *policies* are applied.

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[1]Remaining service life.

Standards

About Standards

Defining standards is the first step in work configuration. Standards set threshold values for inventory properties or attributes such condition indexes, functionality indexes, and remaining service life. When a threshold is crossed, this can trigger an action in **BUILDER** such as initiating an inspection or generating a work item.

What do Standards Do?

Standards are the foundation of work configuration. They set threshold values for inventory attributes. For example, you can set up a standard which specifies that no inventory item should have a condition index lower than 70. When combined with a set of defined policies and a one or more specified policy sequences, the threshold value defined in a standard can, when crossed, trigger an action in **BUILDER** such as initiating an inspection or generating a work item.

Details

Any standard that you define for a particular Organization in the standards tree will be available throughout that Organization's scope; that is, available to all inventory items located beneath that Organization in the tree.

Therefore, if you are at a Site (for example) in the standards tree and do not see a "plus" box next to the **Condition Standards** folder or **Functionality Standards** folder indicating the presence of one or more standards in the folder, this does not necessarily mean that no standards are available for use at that Site. If standards have been defined at one or more parent Organizations above that Site, then all of those standards will be available for use at that Site when defining policies.

Next Step

After defining standards using information found at the links below, the next step in work configuration will be to define policies. Policies apply the standards to specific inventory attributes. (For more information on policies, see About Policies.)

Task Links

- Add a Condition Standard
- Edit a Condition Standard
- Condition Standard Data
- Delete a Condition Standard
- Add a Functionality Standard
- Edit a Functionality Standard
- Delete a Functionality Standard

Information Link

[Work Configuration Overview]

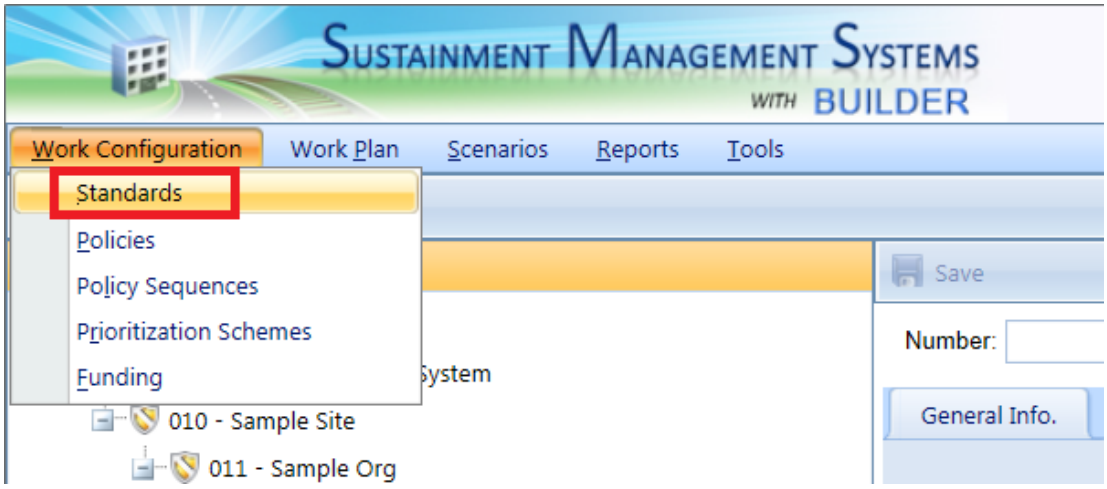
Add a Condition Standard

Standards can be applied Organization-wide, or they can be set Site by Site. This topic shows how to add a condition standard.

Permissions Note: This action requires Work Planner permission or above for the relevant location in inventory.

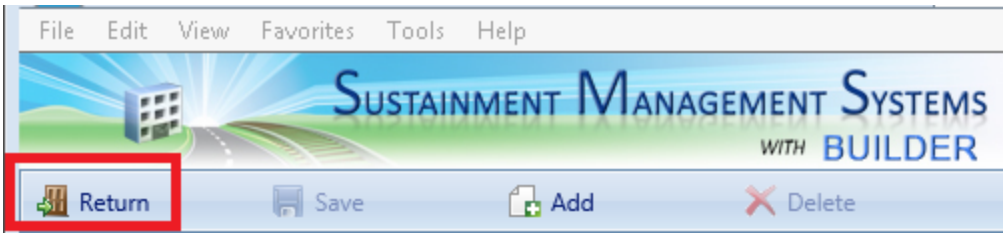
Navigate to Standards

To navigate to the window where you can add a condition standard, select Work Configuration > Standards from the main menu, as pictured below. You will be brought to the Standards window, with the Standards navigation tree at the left, showing only the top level Organization.



About the Standards Tree

By selecting Standards, you will leave your current navigation tree (Inventory, Condition, or Functionality) and enter the Standards tree. An indication of this change is the Return button on the left side of the main toolbar:



In the Standards tree, every Organization and every Site has a Condition Standards folder and a Functionality Standards folder. When you first enter the Standards screen, only the top level Organization will show these folders.

By expanding the tree at the Site or Organization level, folders for condition and functionality standards will appear. From these folders, new condition or functionality standards can be added and the existing standards can be viewed and edited.

Standards Toolbar

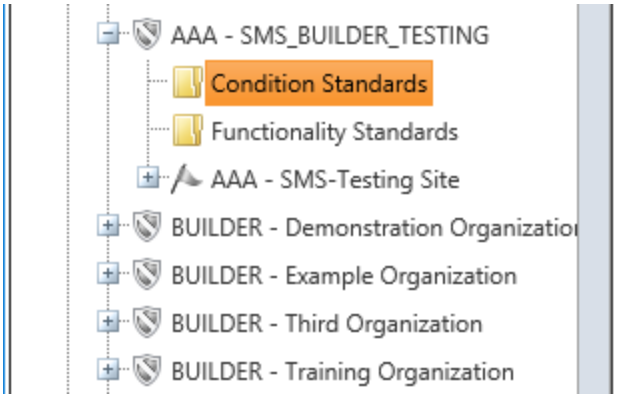
In the Standards window, the main toolbar will show the following options:

- Return. Closes the Standards window.
- Save. Saves changes made to the standards.
- Add. Initiates adding a new standard.
- Delete. Deletes the selected standard.

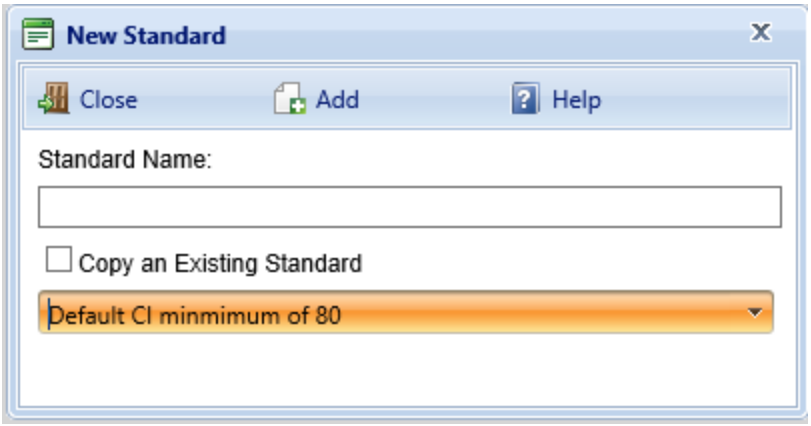
Create a New Condition Standard

To create a new condition standard,

- Navigate in the tree to the Condition Standards folder for the desired Organization or Site, and select it. This should cause the Add button on the toolbar to become visible.



- Activate the Add button on the toolbar. The "New Standard" popup window will appear.

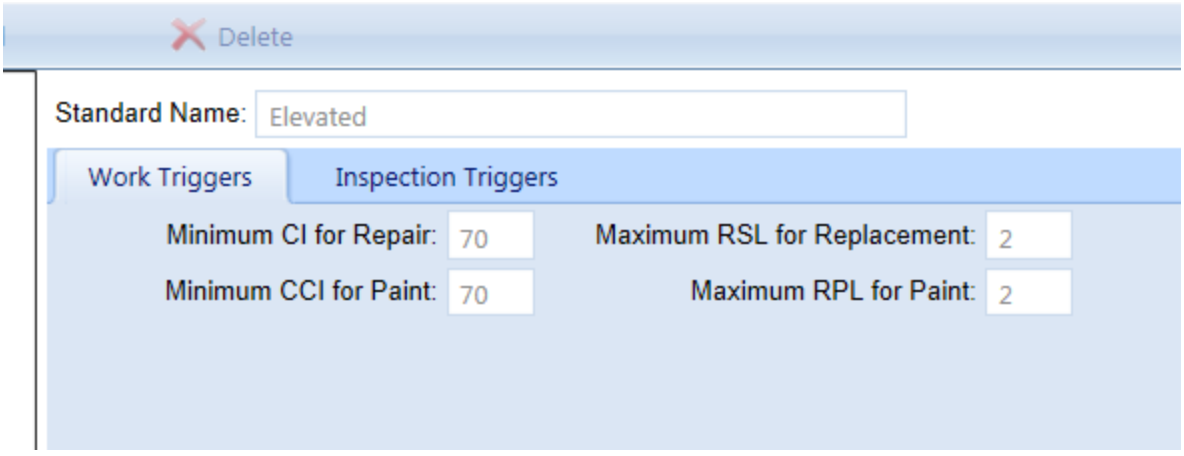


- In the Standard Name text box, enter a name for the standard. The name must be unique and is limited to 50 alphanumeric characters.

  Note: You may wish to keep the name much shorter than the allowed 50 characters in order to minimize wraparound in the name when it's displayed in the tree.

- Optional: If you want to copy data from an existing standard to the new one, first mark the Copy an Existing Standard checkbox, Next, from the dropdown list, select an existing standard to copy.
- Activate the Add button on the popup toolbar. (Alternatively, activate the Close button to cancel the operation and close the "New Standard" popup window.)

When you activate the Add button, the standards window will appear in the content pane and you can input data for the standard at the Work Triggers and Inspection Triggers tabs. These tabs will be described in the topic Condition Standard Data.



Enter Required Data

For the required data to be entered for the condition standard, see Condition Standard Data.

Save

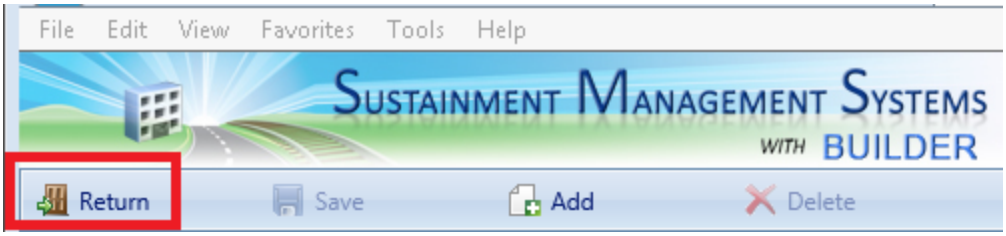
After adding data for a condition standard, make sure to activate the Save button on the toolbar to retain the information.

After saving, you can do any of the following:

- select a standard to edit it (Edit a Condition Standard)
- re-select the Condition Standards folder to add a new standard to it
- navigate to another folder
- exit the Standards window by activating the Return button

Exit Standards (Optional)

If you wish to exit the Standards area and return to your previous location, activate the Return button on the toolbar:



Related Links

Edit a Condition Standard
Condition Standard Data
Delete a Condition Standard
Work Configuration Overview
About Standards

Edit a Condition Standard

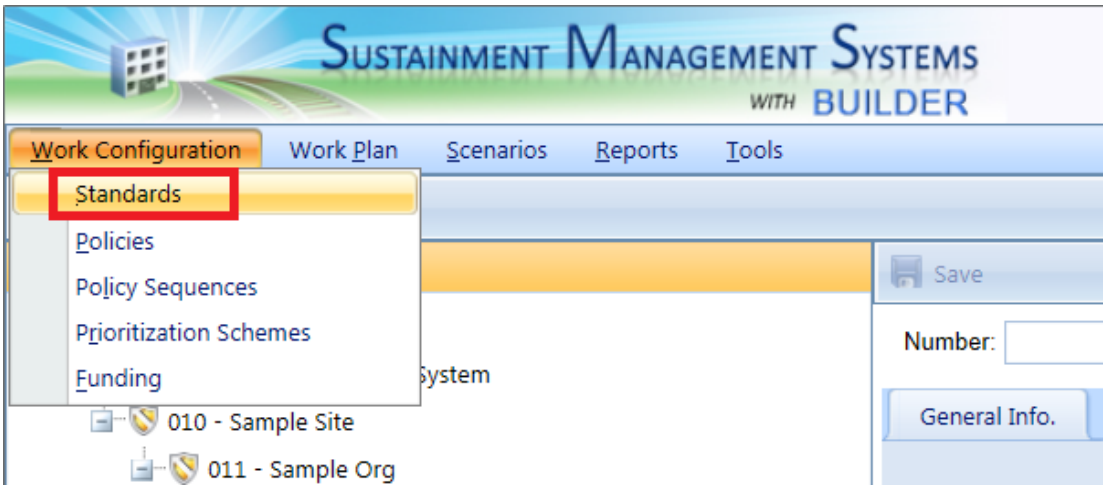
This topic shows how to edit an existing condition standard.

Permissions Note: This action requires Work Planner permission or above for the relevant location in inventory.

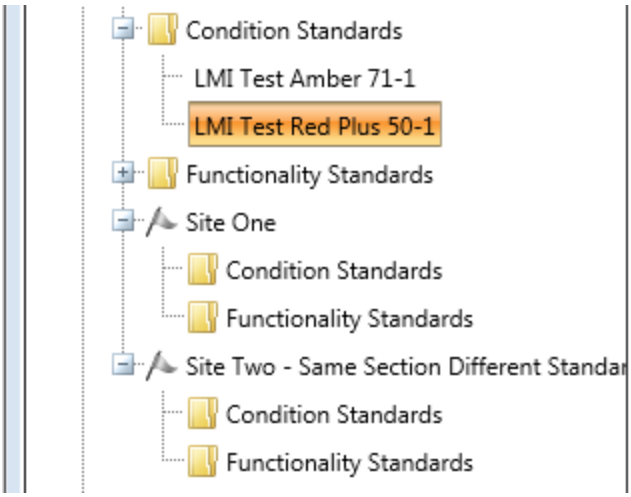
After a condition standard has been added, you can access the standard and edit its data.

Access the Condition Standard

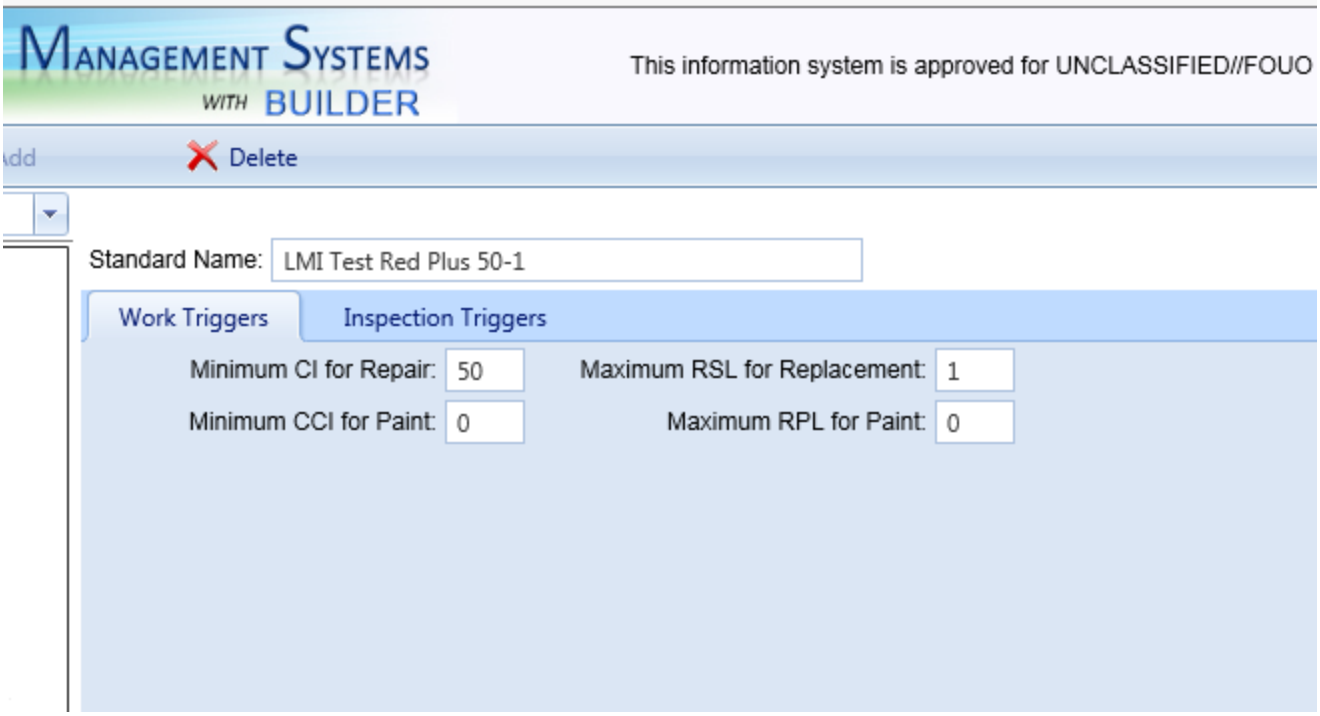
- Navigate to the window where you can edit a condition standard by selecting Work Configuration > Standards from the main menu. You will be brought to the Standards window. An indication of this change is the Return button on the left side of the main toolbar. If you are unfamiliar with the Standards window and navigation tree, you can read more at About the Standards Tree.



- Navigate in the Standards tree to the Condition Standards folder for the desired Organization or Site.
- Select the condition standard you wish to edit.



The standards window will appear in the content pane as shown below, and data can be input or changed for the standard (instructions below at Edit Condition Standard Data).



Edit Condition Standard Data

Condition data can be added or edited in the standard at the Work Triggers and Inspection Triggers tabs. See Condition Standard Data.

Also, the name of the condition standard may be changed, if desired. This is done in the Standard Name field above the tabs.

Save

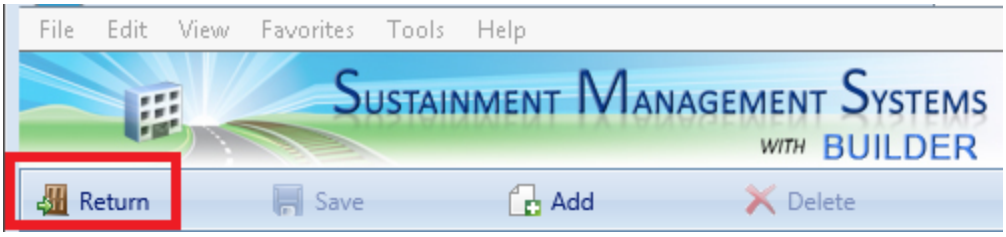
After editing the data, activate the Save button on the toolbar to save your changes to the condition standard.

After saving, you can do any of the following:

- select another standard to edit it (Edit a Condition Standard)
- re-select the Condition Standards folder to add a new standard to it
- navigate to a different folder
- exit the Standards window by activating the Return button

Exit Standards (Optional)

If you wish to exit the Standards area and return to your previous location, activate the Return button on the toolbar:



Related Links

Condition Standard Data
Add a Condition Standard
Delete a Condition Standard
Work Configuration Overview
About Standards

Condition Standard Data

This topic explains details about the data to be entered into a condition standard.

Condition data can be added or edited in the standard at the **Work Triggers** and **Inspection Triggers** tabs, described below.

Optionally, the name of the condition standard may be changed. This is done in the **Standard Name** field above the tabs.

Work Triggers Tab

When creating a condition standard you must enter a set of work triggers, or thresholds, to initiate work items for the inventory of your Building. The following data is required for each work trigger:

- **Minimum CI[1] for repair**: Enter the threshold value for the condition index. For Sections with a CI[2] above this value, no work item is triggered. For Sections with a CI[3] below this value, a work item is triggered.

---

[1]Condition Index
[2]Condition Index
[3]Condition Index

- **Maximum RSL[1] for replacement**: Enter the threshold value for remaining service life. For Sections with a **RSL**[2] above this value, replacement would not be considered as an option unless it is more cost effective to replace than to repair.
- **Minimum** CCI **for paint**: Enter the threshold value for the coating condition index. For painted Sections with a CCI above this value, no paint work item is triggered. For painted Sections with a CCI below this value, a paint work item is triggered.
- **Maximum RPL for paint**: Enter the threshold value for remaining paint life. For painted Sections with a RPL greater than this value, no paint work item is triggered. For painted Sections with a CCI less than this value, a paint work item is triggered.

Inspection Triggers Tab

The **Inspection Triggers** tab is pre-loaded with default data points. You may edit this data as desired to determine (1) when condition assessments should be performed and (2) the type of condition assessment to perform. The Inspection Triggers feature makes use of the Knowledge-Based Inspection Scheduling tool.

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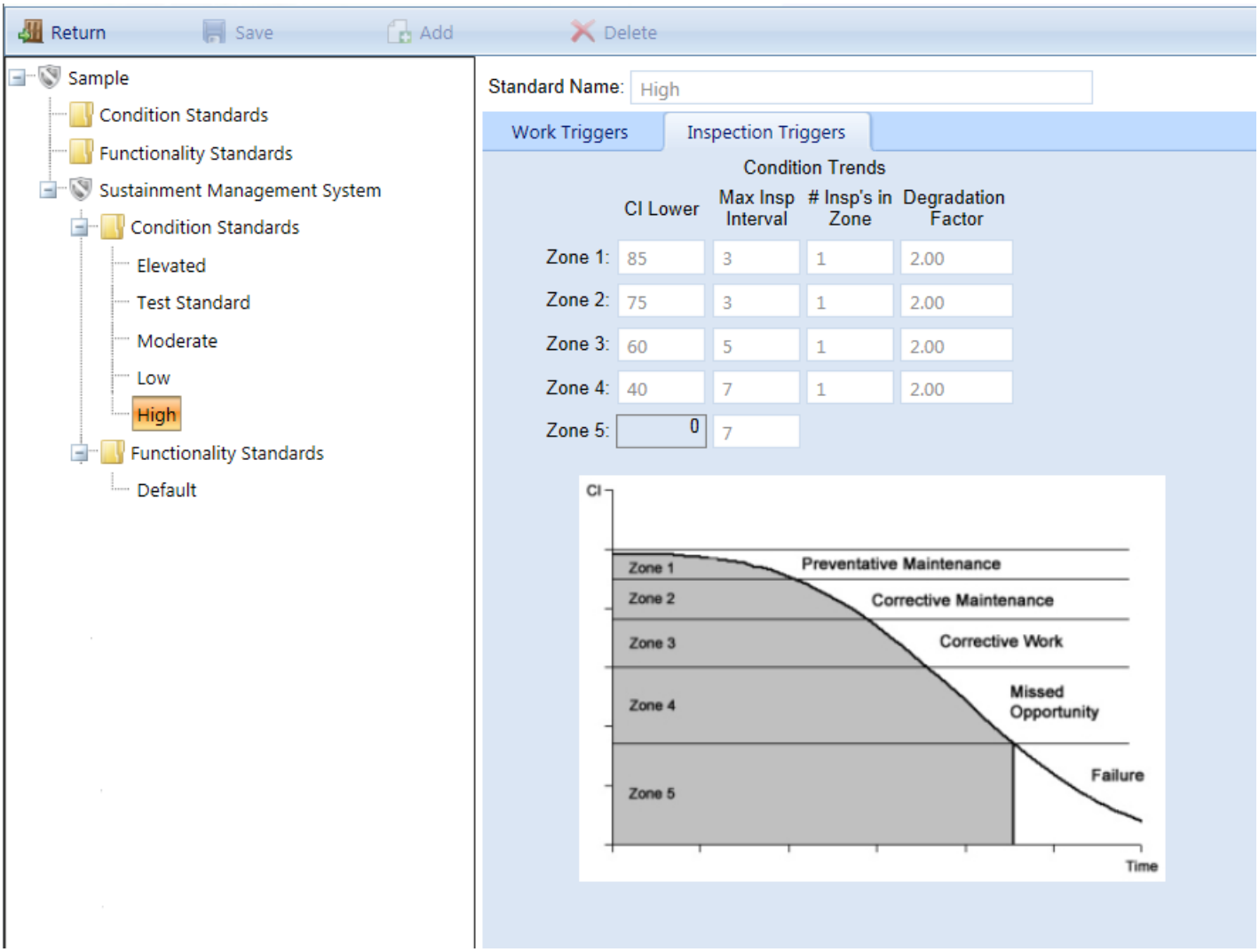
[1]Remaining service life.

[2]Remaining service life.



The data on this tab should be input for each of the condition zones. (For an explanation of each condition zone, see Section 2.5, **Condition Zones**, in the **Overview** chapter of the manual referenced immediately below.)

Resource: ERDC/CERL SR-18-7, *Knowledge-Based Condition Assessment Reference Manual for Building Component-Sections*, is available by download from the SMS community user's group website at https://support.sms.erdc.dren.mil/downloads/erdc-cerl-technical-publications.

The data to be entered for each condition zone includes:

- **CI**[1] **Lower**. Enter the lower bound of the **CI**[2] range of the condition zone. Providing the lower bound for each zone breaks the condition curve as shown in the screen above.
- **Maximum Inspection Interval**. Enter the maximum amount of time, in years, between condition assessments in each condition zone.
- **Number of Inspections in Zone**. Enter the *maximum* number of condition assessments that should be performed in each condition zone.
- **Degradation Factor**. Enter the ratio of the maximum relative rate of deterioration to the expected rate of deterioration when a condition assessment is triggered. That is, if the deterioration rate were set to 2, any measured deterioration rate greater than twice the expected rate would trigger another inspection.

Save

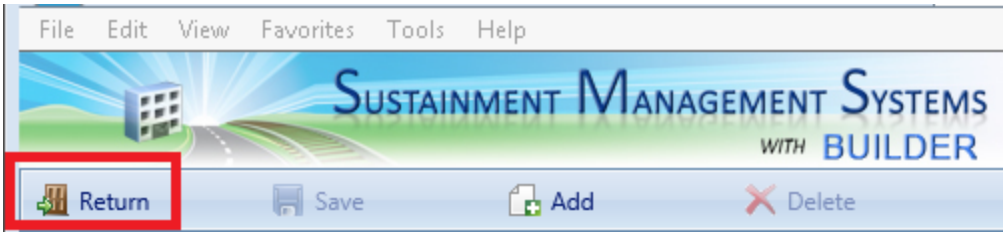
After adding data for a condition standard, make sure to activate the **Save** button on the toolbar to retain the information.

After saving, you can do any of the following:

- select a standard to edit it (Edit a Condition Standard)
- re-select the **Condition Standards** folder to add a new standard to it
- navigate to another folder
- exit the Standards window by activating the **Return** button

Exit Standards (Optional)

If you wish to exit the Standards area and return to your previous location, activate the **Return** button on the toolbar:



Related Links

Add a Condition Standard
Edit a Condition Standard
Delete a Condition Standard
Work Configuration Overview
About Standards

---

[1]Condition Index
[2]Condition Index

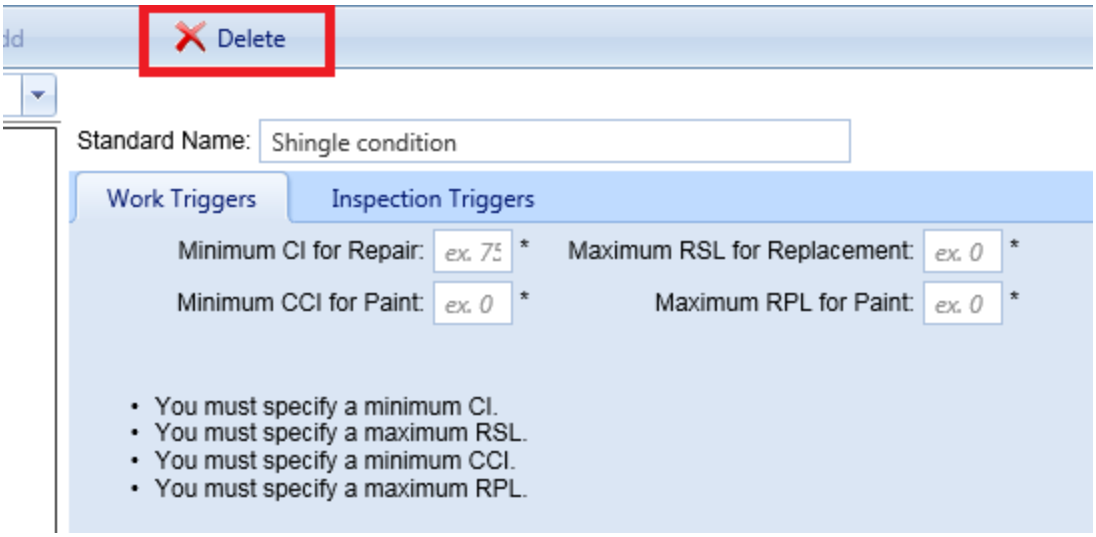
Delete a Condition Standard

Permissions Note: This action requires Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. or AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. permission for the relevant asset.

Option A: Delete in the Content Pane

If the condition standard you wish to delete is currently showing in the content pane, simply activate the **Delete** button on the toolbar. *You will be presented with a confirmation popup before the standard is deleted.*

Problems? If you are at the **Work Triggers** tab and no or insufficient data has been entered into the condition standard, the program may require you to complete the data entry before allowing the standard to be deleted.



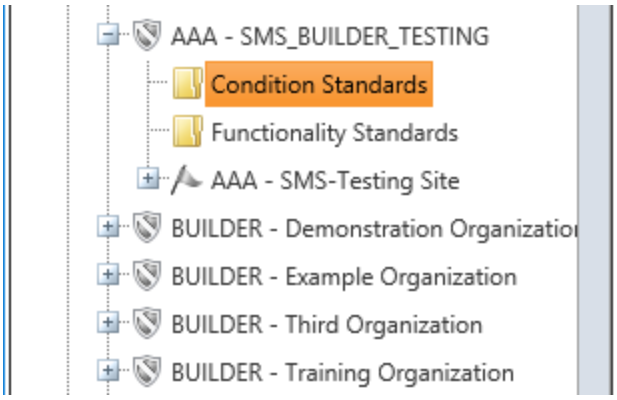
If the condition standard is not showing in the content screen, see Option B immediately below

Option B: Delete Starting in the Navigation Tree

If the condition standard is not showing in the content screen, navigate to the standard and then delete it, as described here:

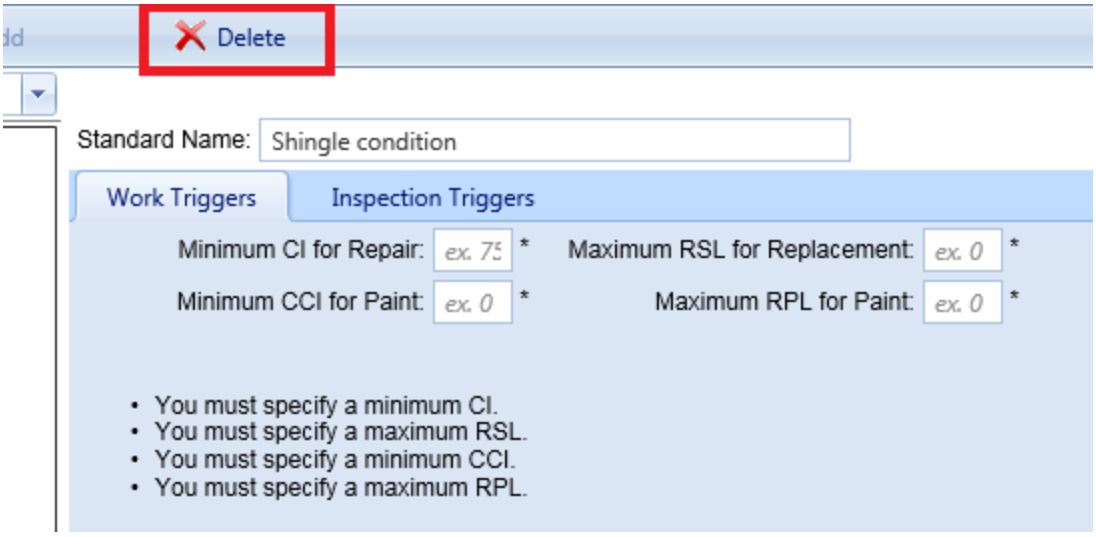
- Select **Work Configuration > Standards** from the main menu, if you are not already in the Standards tree.

- Navigate the Standards tree in the navigation pane until you reach the desired standard, and select it.



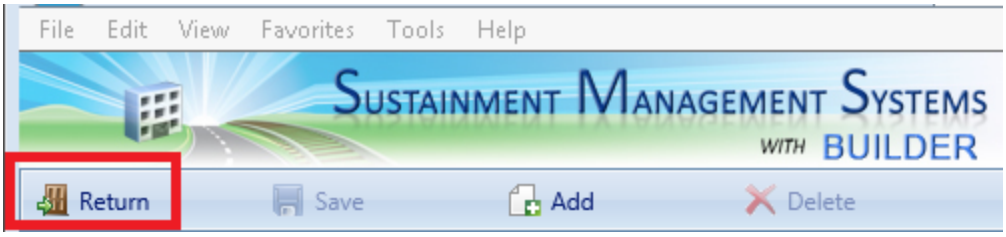
- When the standard appears in the content pane, activate the Delete Delete button on the toolbar. *You will be presented with a confirmation popup before the standard is deleted.*

  Problems? If you are at the **Work Triggers** tab and no or insufficient data has been entered into the condition standard, the program may require you to complete the data entry before allowing the standard to be deleted.



Exit Standards (Optional)

If you wish to exit the Standards area and return to your previous location, activate the **Return** button on the toolbar:



Related Links

- Add a Condition Standard
- Edit a Condition Standard
- Condition Standard Data
- Work Configuration Overview
- About Standards

Add a Functionality Standard

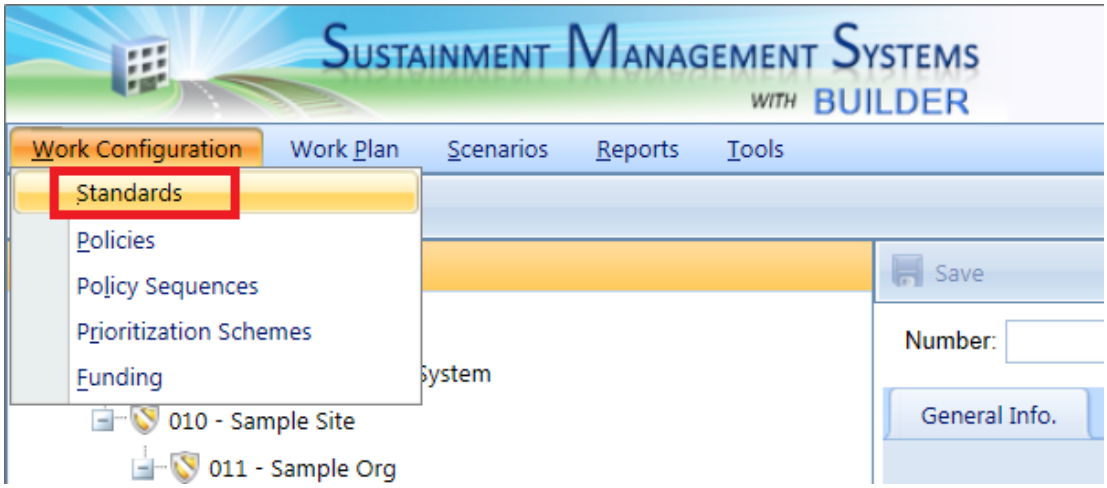
Standards can be applied Organization-wide, or they can be set Site by Site. This topic shows how to add a functionality standard.

Permissions Note: This action requires Work Planner permission or above for the relevant location in inventory.

Navigate to Standards

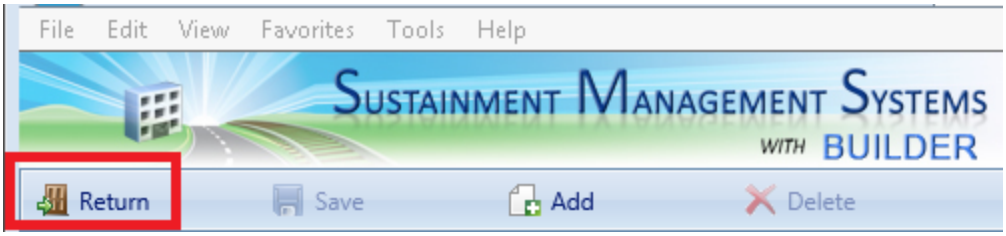
To navigate to the window where you can add a functionality standard, select Work Configuration > Standards from the main menu, as shown in the illustration below.

You will be brought to the Standards window, with the Standards navigation tree at the left, showing only the top level Organization.



About the Standards Tree

By selecting Standards, you will leave your current navigation tree (Inventory, Condition, or Functionality) and enter the Standards tree. An indication of this change is the Return button on the left side of the main toolbar:



In the Standards tree, every Organization and every Site has a Condition Standards folder and a Functionality Standards folder. When you first enter the Standards screen, only the top level Organization will show these folders.

By expanding the tree at the Site or Organization level, folders for condition and functionality standards will appear. From these folders, new condition or functionality standards can be added and the existing standards can be viewed and edited.

Standards Toolbar

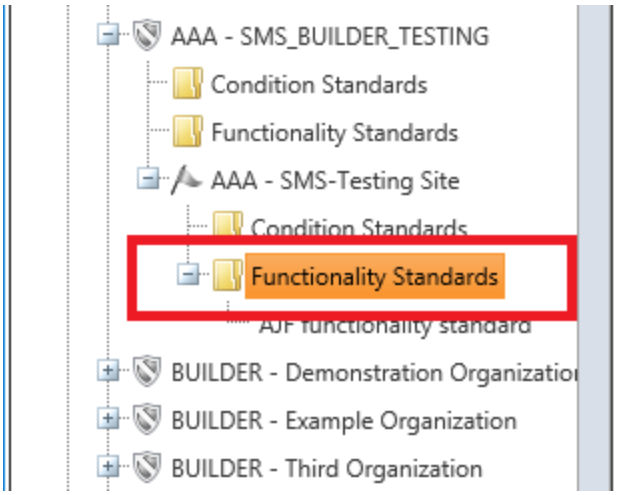
In the Standards window, the main toolbar will show the following options:

- Return. Closes the Standards window.
- Save. Saves changes made to the standards.
- Add. Initiates adding a new standard.
- Delete. Deletes the selected standard.

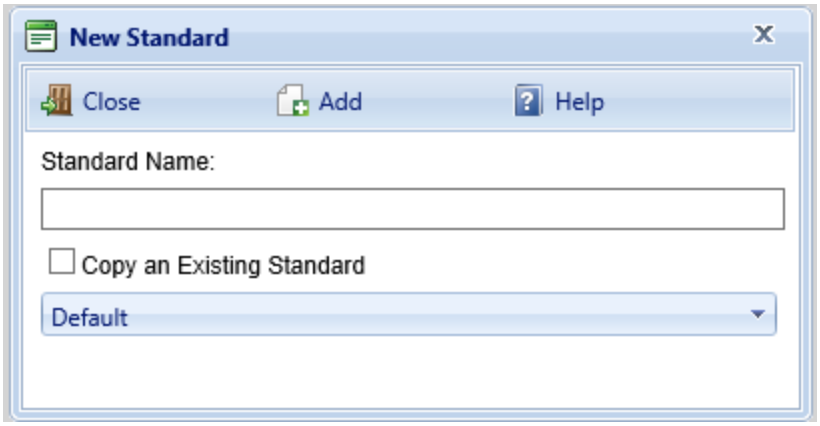
Create a New Functionality Standard

To create a new functionality standard,

- Navigate in the tree to the Functionality Standards folder for the desired Organization or Site, and select it. This should cause the Add button on the toolbar to become visible.



- Activate the Add button on the toolbar. The "New Standard" popup window will appear.



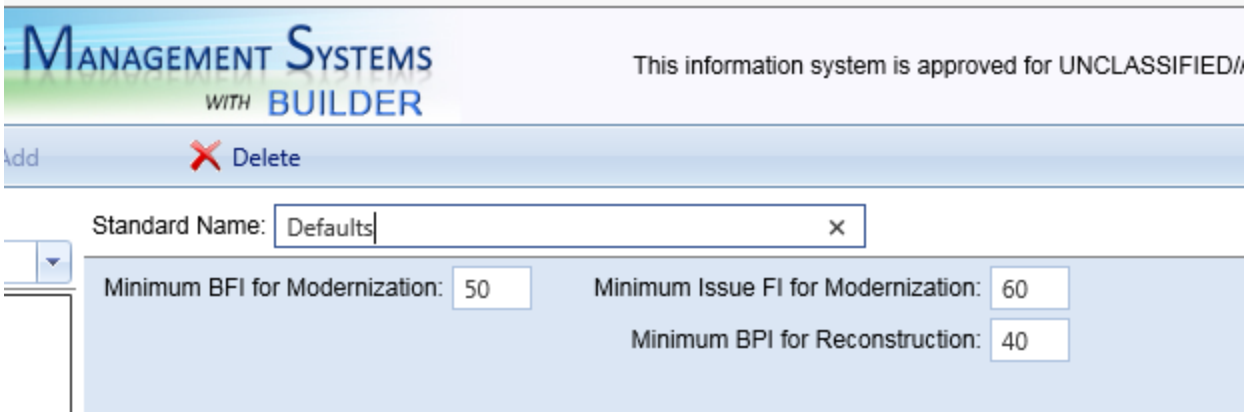
- In the Standard Name text box, enter a name for the standard. The name must be unique and is limited to 50 alphanumeric characters.

  Note: You may wish to keep the name much shorter than the allowed 50 characters in order to minimize wraparound in the name when it's displayed in the tree.

- Optional: If you want to copy data from an existing standard to the new one, first mark the Copy an Existing Standard checkbox, Next, from the dropdown list, select an existing standard to copy.
- Activate the Add button on the popup toolbar. (Alternatively, activate the Close button to cancel the operation and close the "New Standard" popup window.)

  Note: If the Add button is grayed out, this may mean that you do not have the appropriate permissions Role covering that location in inventory.

When you activate the Add button the standards window will appear in the content pane, and you can input data for the standard (instructions below at the topic Condition Standard Data.).



Enter Required Data

For each functionality standard, you must enter a set of work triggers, or thresholds, to initiate modernization work in Buildings at the Site or Organization selected; alternatively you may proceed with the default values provided.

- Minimum BFIBuilding Functionality Index - computed from the results of a functionality assessment. for Modernization. Enter the threshold value for the BFIBuilding Functionality Index - computed from the results of a functionality assessment.. For Buildings with a BFIBuilding Functionality Index - computed from the results of a functionality assessment. above this value, no modernization work is triggered. For Buildings with a BFIBuilding Functionality Index - computed from the results of a functionality assessment. below this value, modernization work is triggered.
- Minimum Issue **FI**[1]Functionality Index for Modernization. Enter the threshold value for the FIs for each individual functionality issue. For issues in the Building with an **FI**[2]Functionality Index above this value, no modernization work is triggered to correct the issue. For issues in the Building with an **FI**[3]Functionality Index below this value, modernization work is triggered.
- Minimum BPIBuilding Performance Index - a measure of a Building's overall performance, derived from a weighted combination of the BCI and BFI, where the lower of the two values is given two-thirds of the weight and the higher of the two values is given one-third of the weight. If no functional assessment has been performed, the BFI is assigned a value of 100. for Reconstruction. Enter the threshold value for the BPIBuilding Performance Index - a measure of a Building's overall performance, derived from a weighted combination of the BCI and BFI, where the lower of the two values is given two-thirds of the weight and the higher of the two values is given one-third of the weight. If no functional assessment has been performed, the BFI is assigned a value of 100.. For Buildings with a BPIBuilding

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[1]Functionality Index.

[2]Functionality Index.

[3]Functionality Index.

Performance Index - a measure of a Building's overall performance, derived from a weighted combination of the BCI and BFI, where the lower of the two values is given two-thirds of the weight and the higher of the two values is given one-third of the weight. If no functional assessment has been performed, the BFI is assigned a value of 100. above this value, no work is triggered. For Buildings with a BPIBuilding Performance Index - a measure of a Building's overall performance, derived from a weighted combination of the BCI and BFI, where the lower of the two values is given two-thirds of the weight and the higher of the two values is given one-third of the weight. If no functional assessment has been performed, the BFI is assigned a value of 100. below this value, the Building will be scheduled for demolition and reconstruction.

Save

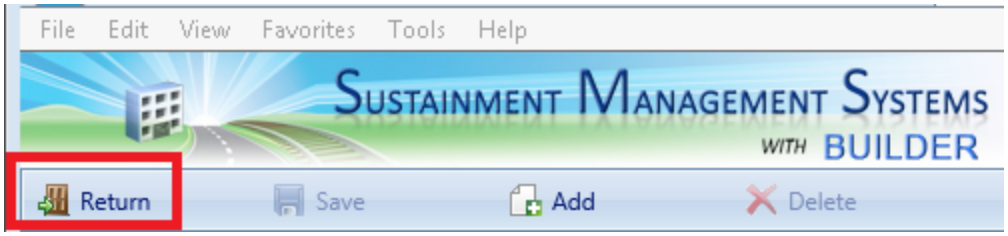
After adding the required data, activate the Save button on the toolbar.

After saving, you can do any of the following:

- select a standard to edit it (Edit a Functionality Standard)
- re-select the Functionality Standards folder to add a new standard to it
- navigate to a different folder
- exit the Standards window by activating the Return button

Exit Standards (Optional)

If you wish to exit the Standards area and return to your previous location, activate the Return button on the toolbar:



Related Links

Edit a Functionality Standard
Delete a Functionality Standard
Work Configuration Overview
About Standards

Edit a Functionality Standard

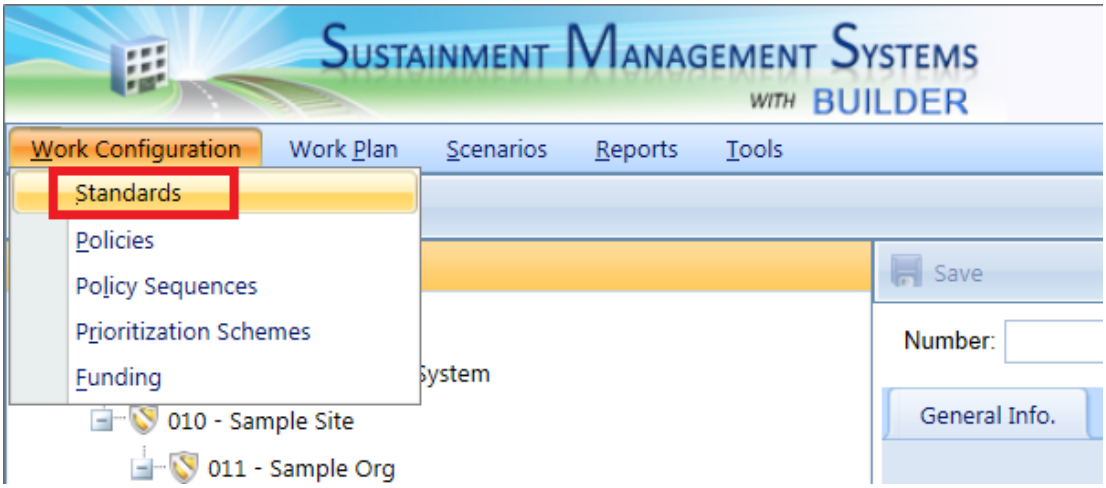
This topic shows how to edit an existing functionality standard.

Permissions Note: This action requires Work Planner permission or above for the relevant location in inventory.

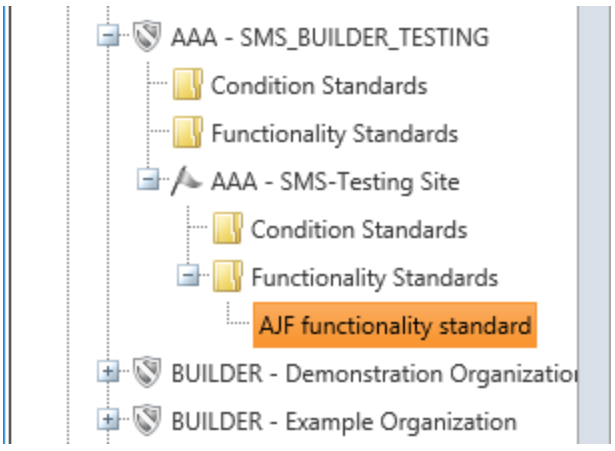
After a functionality standard has been added, you can access the standard and edit its data.

Access the Functionality Standard

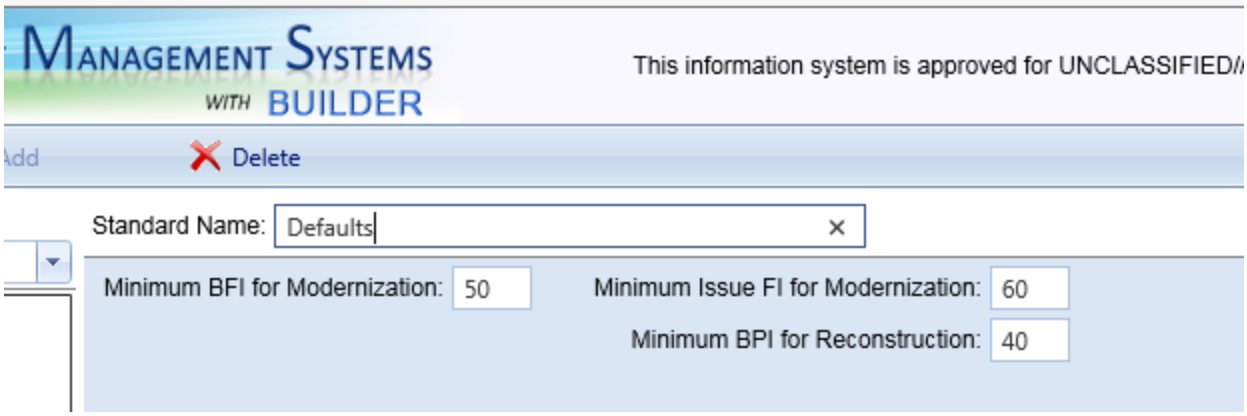
- Navigate to the window where you can edit a functionality standard by selecting Work Configuration > Standards from the main menu. You will be brought to the Standards window. An indication of this change is the Return button on the left side of the main toolbar. If you are unfamiliar with the Standards window and navigation tree, you can read more at About the Standards Tree.



- Navigate in the Standards tree to the Functionality Standards folder for the desired Organization or Site.
- Select the functionality standard you wish to edit.



The standards window will appear as shown below and data can be input or changed for the standard (instructions below at Edit Functionality Standard Data).



Edit Functionality Standard Data

Each functionality standard has a set of work triggers, or thresholds, to initiate modernization work in Buildings at the Site or Organization selected. These can be edited, following the guidelines listed below:

- Name. Enter or edit the functionality standard's name, which must be unique and is limited to 50 alphanumeric characters.

  Note: You may wish to keep the name much shorter than the allowed 50 characters in order to minimize wraparound in the name when it's displayed in the tree.

- Minimum BFIBuilding Functionality Index - computed from the results of a functionality assessment. for Modernization. Enter the threshold value for the BFIBuilding Functionality Index - computed from the results of a functionality assessment. For Buildings with a BFIBuilding Functionality Index - computed from the results of a functionality assessment. above this value, no modernization work is triggered. For Buildings with a BFIBuilding Functionality Index - computed from the results of a functionality assessment. below this value, modernization work is triggered.Minimum Issue **FI**[1]Functionality Index for Modernization. Enter the threshold value for the FIs for each individual functionality issue. For issues in the Building with an **FI**[2]Functionality Index above this value, no modernization work is triggered to correct the issue. For issues in the Building with an **FI**[3]Functionality Index below this value, modernization work is triggered.
- Minimum BPIBuilding Performance Index - a measure of a Building's overall performance, derived from a weighted combination of the BCI and BFI, where the lower of the two values is given two-thirds of the weight and the higher of the two values is given one-third of the weight. If no functional assessment has been performed, the BFI is assigned a value of 100. for Reconstruction. Enter the threshold value for the BPIBuilding Performance Index - a measure of a Building's overall performance, derived from a weighted combination of the BCI and BFI, where the lower of the two values is given two-thirds

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[1]Functionality Index.

[2]Functionality Index.

[3]Functionality Index.

of the weight and the higher of the two values is given one-third of the weight. If no functional assessment has been performed, the BFI is assigned a value of 100.. For Buildings with a BPIBuilding Performance Index - a measure of a Building's overall performance, derived from a weighted combination of the BCI and BFI, where the lower of the two values is given two-thirds of the weight and the higher of the two values is given one-third of the weight. If no functional assessment has been performed, the BFI is assigned a value of 100. above this value, no work is triggered. For Buildings with a BPIBuilding Performance Index - a measure of a Building's overall performance, derived from a weighted combination of the BCI and BFI, where the lower of the two values is given two-thirds of the weight and the higher of the two values is given one-third of the weight. If no functional assessment has been performed, the BFI is assigned a value of 100. below this value, the Building will be scheduled for demolition and reconstruction.

Save

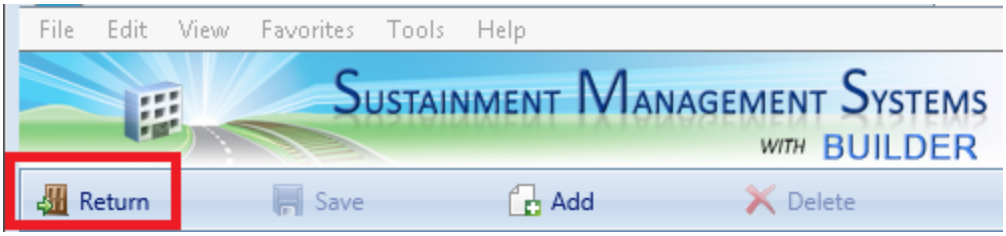
After editing the data, activate the Save button on the toolbar to save your changes to the functionality standard.

After saving, you can do any of the following:

- select another standard to edit it (Edit a Functionality Standard)
- re-select the Functionality Standards folder to add a new standard to it
- navigate to a different folder
- exit the Standards window by activating the Return button

Exit Standards (Optional)

If you wish to exit the Standards area and return to your previous location, activate the Return button on the toolbar:



Related Links

Add a Functionality Standard
Delete a Functionality Standard
Work Configuration Overview
About Standards

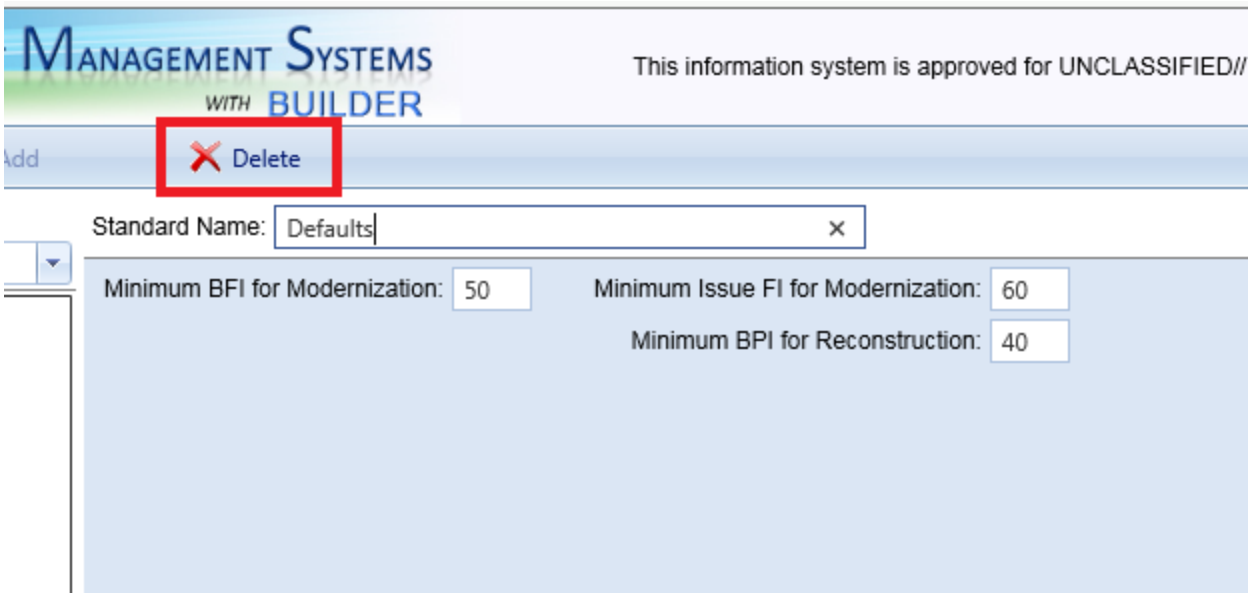
Delete a Functionality Standard

Permissions Note: This action requires Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. or AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. permission for the relevant asset.

Option A: Delete in the Content Pane

If the functionality standard you wish to delete is currently showing in the content pane, simply activate the Delete button on the toolbar. You will be presented with a confirmation popup before the standard is deleted.

Problems? If you are at the Work Triggers tab and no or insufficient data has been entered into the condition standard, the program may require you to complete the data entry before allowing the standard to be deleted.



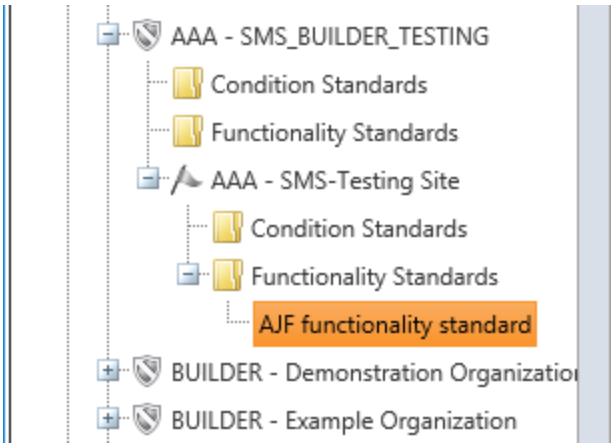
If the functionality standard is not showing in the content screen, see Option B immediately below.

Option B: Delete Starting in the Navigation Tree

If the functionality standard is not showing in the content screen, navigate to the standard and then delete it, as described here:

- Select Work Configuration > Standards from the main menu, if you are not already in the Standards tree.

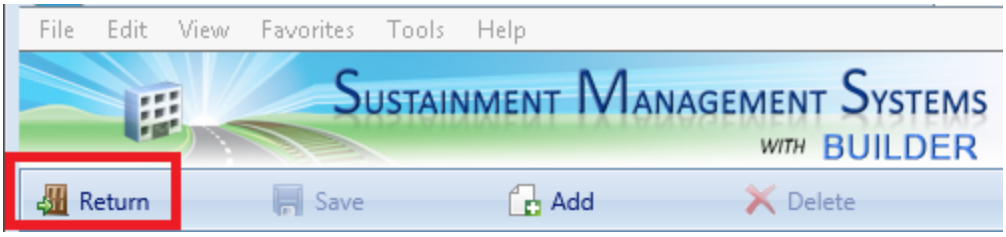
- Navigate the Standards tree in the navigation pane until you reach the desired standard, and select it.



- When the standard appears in the content pane, activate the Delete Delete button on the toolbar. You will be presented with a confirmation popup before the standard is deleted.

Exit Standards (Optional)

If you wish to exit the Standards area and return to your previous location, activate the Return button on the toolbar:



Related Links

Add a Functionality Standard
Edit a Functionality Standard
Work Configuration Overview
About Standards

Policies

About Policies

The second step in work configuration, after defining standards, is to define policies. Policies apply the standards to specific inventory items.

What do Policies Do?

After work configuration standards have been defined, policies apply the standards to specific inventory items. Policies are based on standards.

Examples

For example, you might want administrative Buildings to be maintained under the "High" condition standard and warehouses to be maintained under the "Low" condition standard. You would create a condition policy that links the respective standard with the appropriate Buildings.

As another example, you might want all of the Sections of an HVAC System in any Building to be maintained under the "High" condition standard. You would create another condition policy that links the "High" condition standard with HVAC Systems. That policy would not apply to any other System type.

Details

Note: When defining a policy, you have available to you not just standards (if any) that are defined at the location where you are defining the policy, but also any and all standards that have been defined at one or more parent Organizations above your location. All available standards will show in each dropdown list in the policy's Standard column.

Any policy that you define for a particular Organization in the policies tree will be available for use throughout that Organization's scope; that is, available to all inventory items located beneath that Organization in the tree.

Therefore, if you are at a Site (for example) in the policies tree and do not see a "plus" box next to the Condition Policies folder or Functionality Policies folder indicating the presence of one or more policies in the folder, it does not necessarily mean that no policies are defined for inventory items at that Site. If policies have been defined at one or more parent Organizations above that Site, then all of those policies will be available for use at that Site. For example, they will show as available when defining one or more policy sequences.

Next Step....

After defining policies using information at the links below, the next step in work configuration will be to define at least one policy sequence. When more than one policy can apply to a given inventory item, a policy sequence is required to prevent a conflict, so that only one standard is used in determining whether a work (or

inspection) trigger is to be activated. (For more information on policy sequences, see About Policy Sequences.)

Task Links

Add a Condition Policy
Edit a Condition Policy
Delete a Condition Policy
Add a Functionality Policy
Edit a Functionality Policy
Delete a Functionality Policy

Instructional Links

About Condition Policy Attributes
About Functionality Policy Attributes
Work Configuration Overview

Add a Condition Policy

Condition policies can be made to apply Organization wide, or they can be set Site by Site. This topic shows how to add a condition policy.

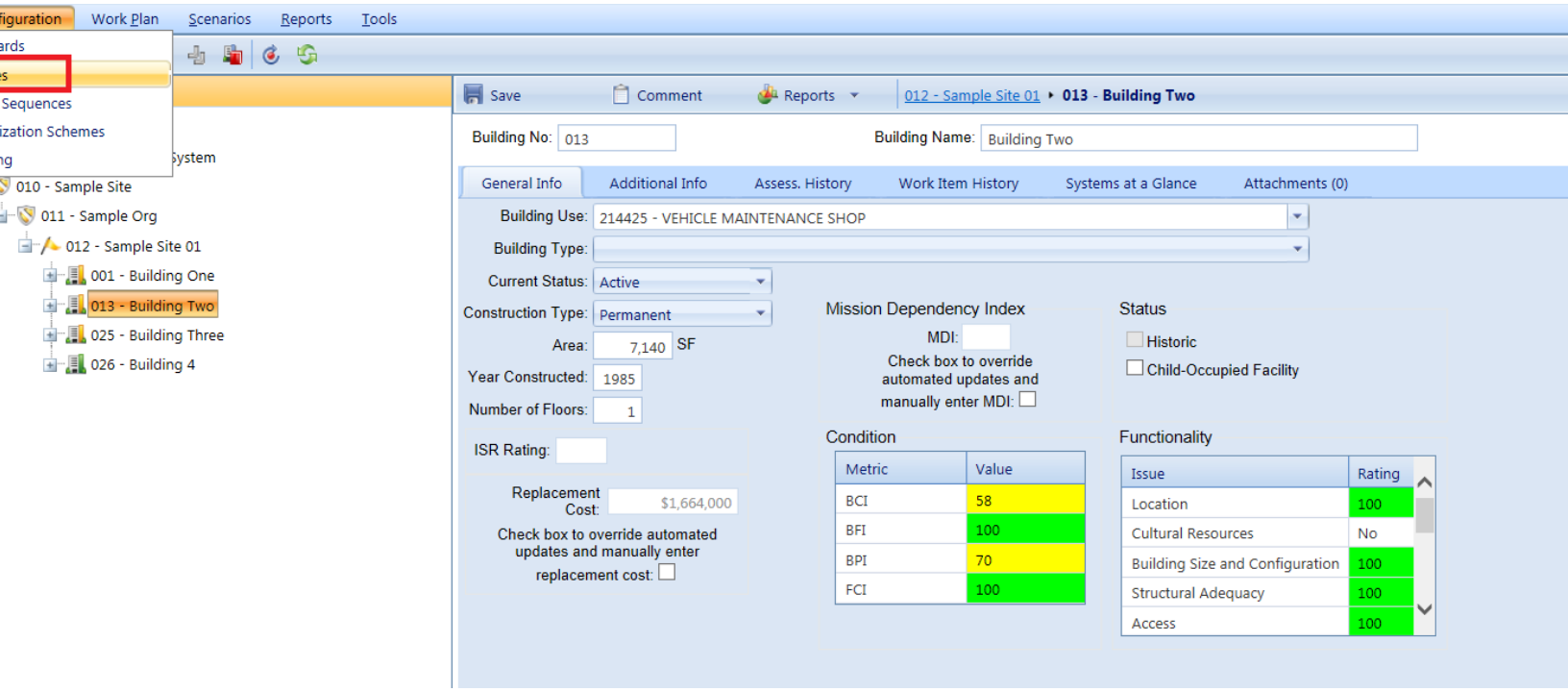
Permissions Note: This action requires Work Planner permission or above for the relevant location in inventory.

Navigate to the Policies

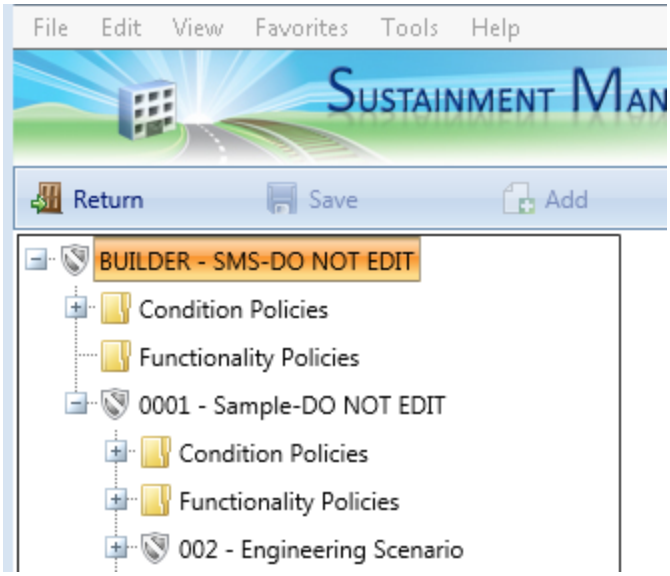
If you've already navigated to the needed location, you can skip to Create a New Condition Policy.

To navigate to the folders where you can add or edit policies,

- Activate Work Configuration > Policies in the main menu. You will be brought to the Policies window, with the Policies navigation tree at the left, showing only the top level Organization.



- Expand the tree to show folders for condition and functionality policies. At these folders, new condition or functionality policies can be added and the existing policies can be viewed and edited.



Policy Toolbar Options

On the toolbar above the policies navigation tree, only the toolbar options that are available at your current tree location will show as active; others will be grayed out.

- Return. Closes the Policies window.
- Save. Saves changes made to the policies.
- Add. Initiates adding a new policy.
- Delete. Deletes the selected policy.

Create a New Condition Policy

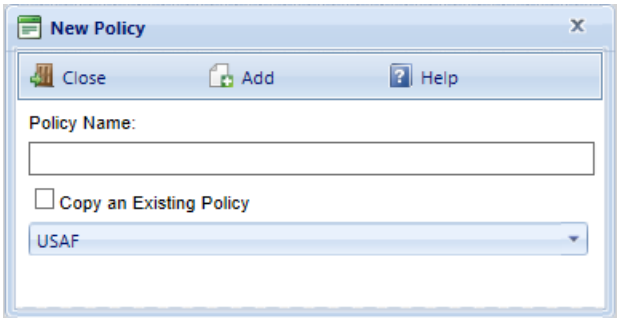
To create a condition policy,

- Select the appropriate Condition Policies folder on the tree. This should cause the Add button on the toolbar to become visible.

  Having difficulty? If needed, see Navigate to the Policies for how to navigate to a condition policy.

- Activate the Add button on the toolbar. The "New Policy" popup window will appear.

  Note: the Organization or Site level at which you are adding a policy denotes the level at which that policy can be applied. The policy can be applied at that Organization or Site level, or at any node in the tree that is beneath it.

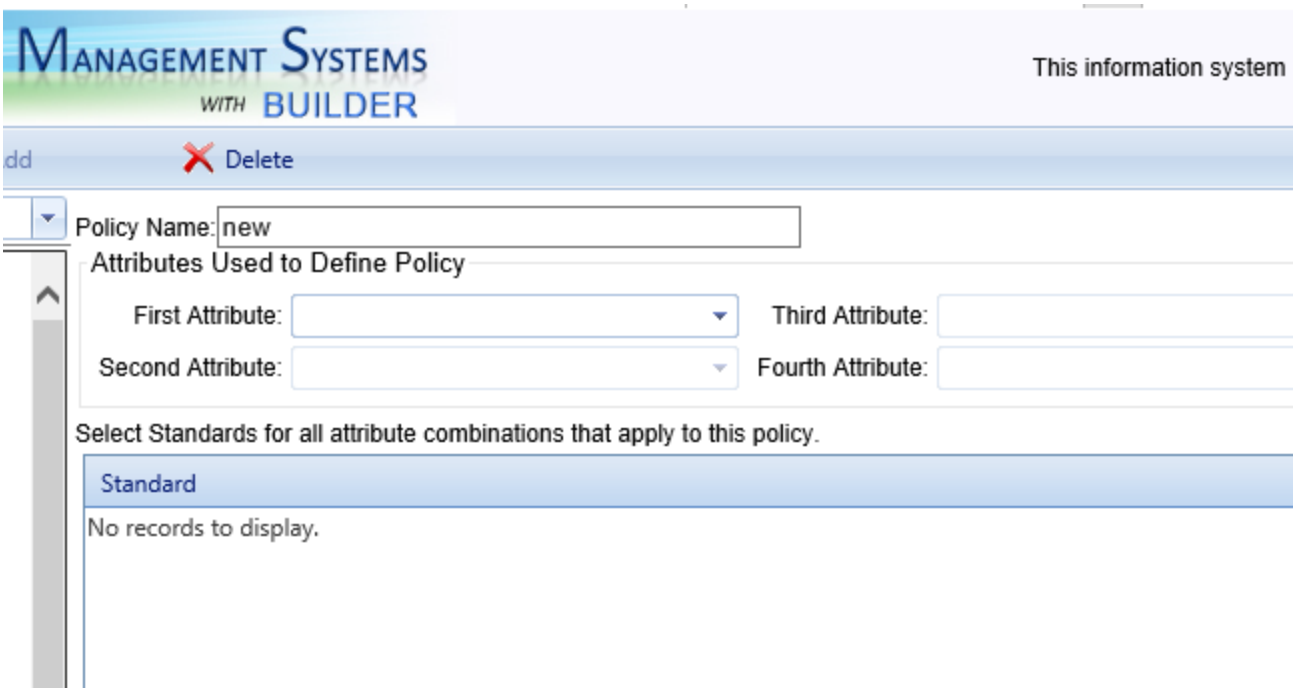


- Enter a name for the policy in the Policy Name text box. The name must be unique and is limited to 50 alphanumeric characters.

  Note: You may wish to keep the name much shorter than the allowed 50 characters in order to minimize wraparound in the name when it's displayed in the tree.

- If you want to copy data from an existing policy to the new one, mark the Copy an Existing Policy check-box and select from the dropdown list an existing policy to copy.
- Activate the Add button on the popup window toolbar. The policy window will open as shown below.

  Note: If the Add button is grayed out, this may mean that you don't have the appropriate permissions Role covering that location in inventory.



- Enter data for the policy, as described in Required Condition Policy Data below. Depending on the attribute(s) you select, the area of the screen below Standard will display different options. Before you select the first attribute, this area will display the phrase "No records to display."

Required Condition Policy Data

When you add a new condition policy, you must do the following to provide the data needed by the policy:

Select Attributes Used to Define the Policy

CAUTION: Even though the attribute selection can be edited after the policy is created, this can lead to unintended consequences that are time-consuming to fix when there is more than one attribute. It is advisable to spend time in advance, before creating the condition policy, adequately thinking out the selection of attributes needed.

- Select between one and four attributes to define the condition policy. These are selected consecutively as First Attribute, Second Attribute, Third Attribute, and Fourth Attribute. These attributes are simply field properties pertaining to the inventory item being evaluated. See the topic About Condition Policy Attributes for more detail about each attribute available. The selection of attributes takes place at the top of the condition policy content screen.
- For each attribute you select from the dropdown list in the field, the appropriate options will appear in the content pane.

  IMPORTANT: If you will be using more than one attribute in the policy, delay selecting Standards until you have designated all of the attributes that you plan to use.

- If the option listing is quite long, you will be given the option at the bottom of the screen to choose a page size (number of items listed per screen) appropriate to your computer screen size and resolution. A listing of page numbers will appear at the bottom of the screen to assist in navigating through the options.

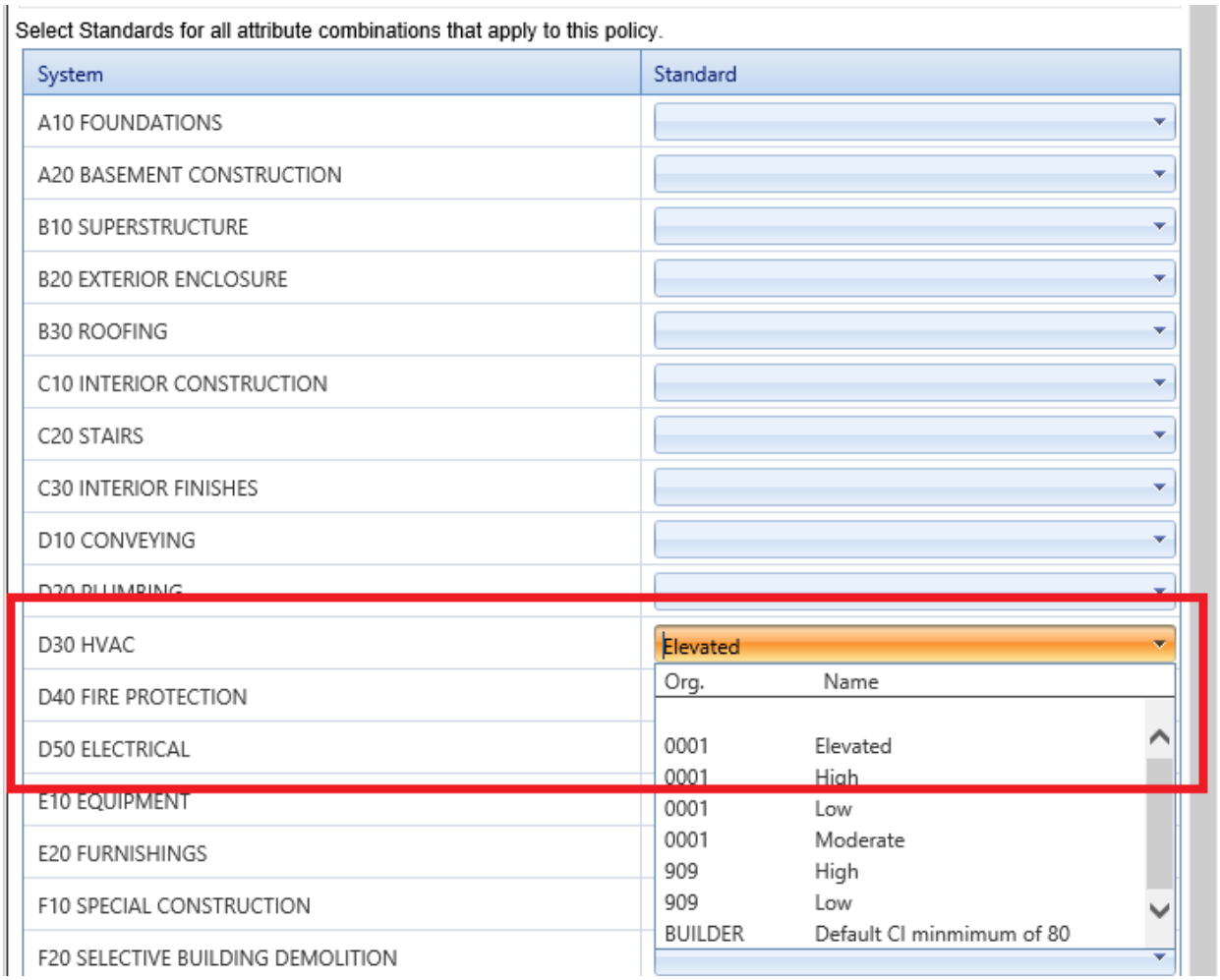
Select Standards

After selecting all of the attributes you plan to use for the policy, then select the Standards to be applied to some or all of the options presented for the attribute, or combination of attributes, selected for the policy.

Note: In most cases, you will not need to select a standard for each and every possibility presented.

Policy Using One Attribute

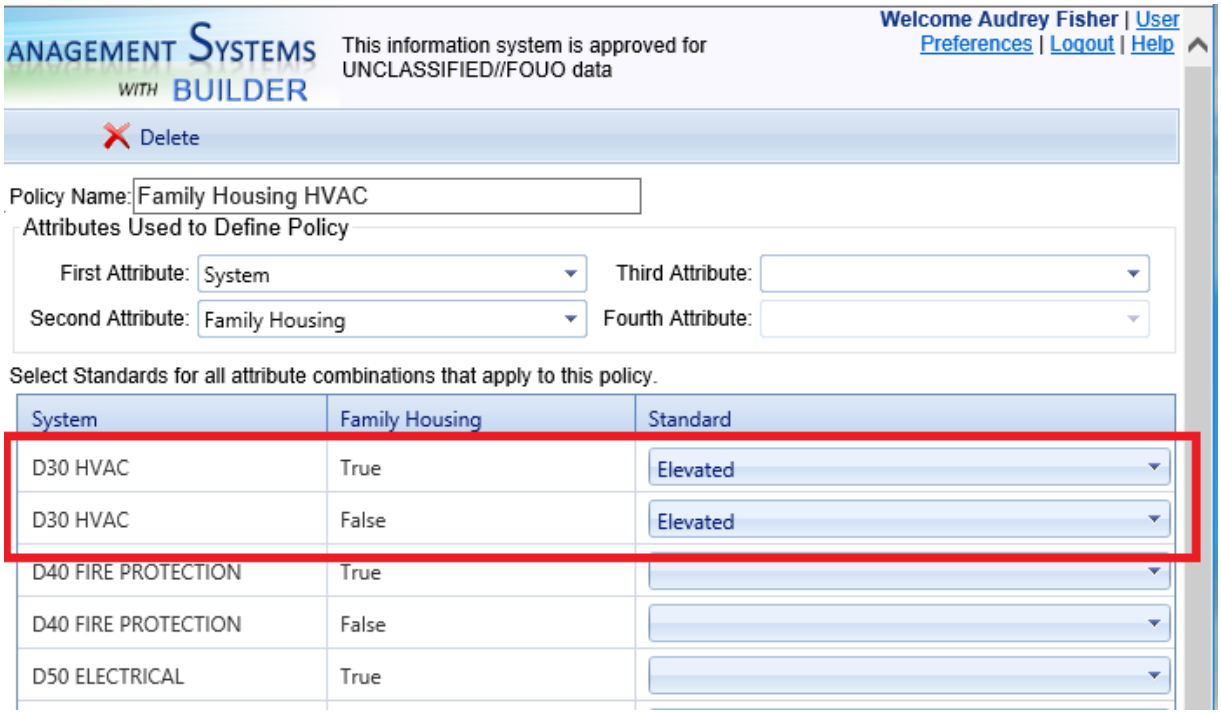
If the policy makes use of just one selected attribute, use the dropdown lists in the Standard column to apply standards to one or more of the options presented for that attribute. The example shown below is from the System attribute, used by itself:



Policy Using Multiple Attributes

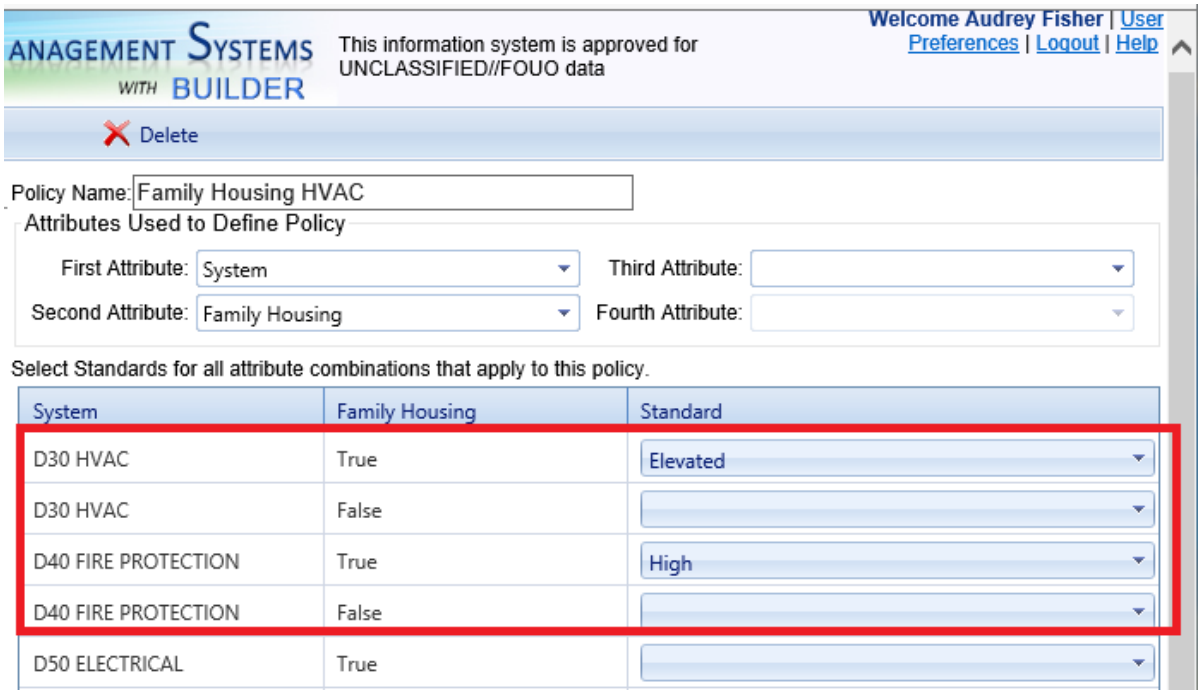
IMPORTANT: If you are using more than one attribute in the policy, delay selecting Standards until all applicable attributes have been selected. This is because when attributes are used in combination, a grid of attribute combinations will be presented (which is better), instead of option lists for each attribute separately.

- Once all attributes have been selected, a grid will appear in the lower part of the policy content screen that shows a grid that takes into account all possible combinations of the attributes selected for the policy. The number of options in the grid will be the result of multiplying the number of options available for each attribute selected in the policy. For example, 21 (number of Systems) x 6 (number of options for Building Number of Floors x 2 (any True/False attribute) = 252 grid options.
- You don't need to select a condition standard for every combination. Combinations for which no standard is specified are simply not dictated by the policy; the default standard defined by the selected policy sequence will be applied.
- The screenshot below shows the consequence of not waiting for all attributes to be selected before applying standards in policies using multiple attributes. In the section above, Policy Using One Attribute, the example shows selecting the "Elevated" standard for HVAC. Below is what results when the "Elevated" standard is selected for the HVAC system before the Family Housing attribute is added to the policy:



Note in the screenshot above that the "Elevated" standard has been applied to both the "True" and "False" case for the Family Housing attribute, when it should actually be applied only to the "True" case.

- The screenshot below shows the correction made to HVAC, and the "High" standard applied to the Fire Protection System for the Family Housing attribute only.



- Additional attributes: If a third attribute, Building Number of Floors, had been selected before applying standards, there would be the option of selecting, for example, the "Elevated" standard for the Fire Protection System in Family Housing having a Building Number of Floors of three or more (applied to the tiers "3 Floors," "4 Floors," "5 to 10 Floors," and "More than 10 Floors"), and the "High" standard applied to "1 Floor" or "2 Floors." Each additional attribute used in a policy multiplies the number of options

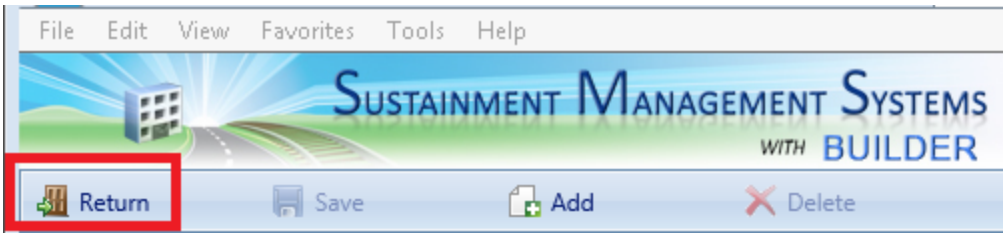
Save

IMPORTANT: After adding or editing a policy, make sure to activate the Save button in the toolbar to save the changes to the policy.

WARNING: Saving will not happen automatically, so you may lose data entries if you fail to save.

Exit Policies (Optional)

If you wish to exit the Policies area and return to your previous location, activate the Return button on the toolbar:



Related Links

Edit a Condition Policy
About Condition Policy Attributes
Delete a Condition Policy
Work Configuration Overview

Edit a Condition Policy

This topic shows how to edit an existing condition policy.

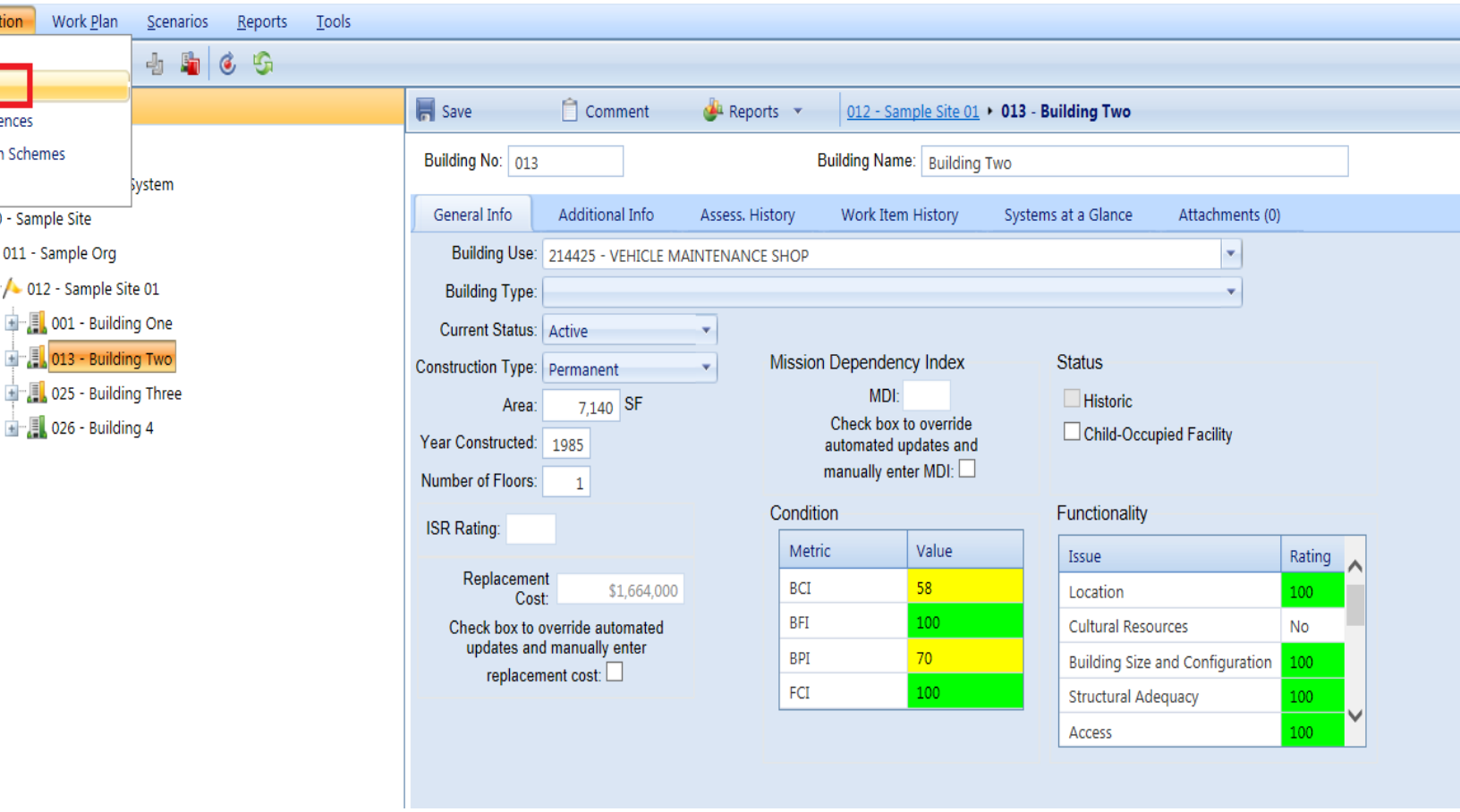
Permissions Note: This action requires Work Planner permission or above for the relevant location in inventory.

Navigate to the Policies

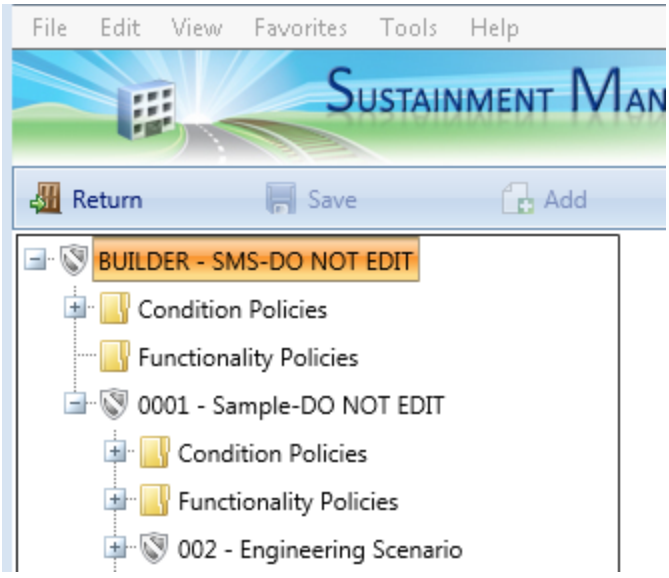
If you have already navigated to the needed location, you can skip to Edit Condition Policy Data.

To navigate to the folders where you can add or edit policies,

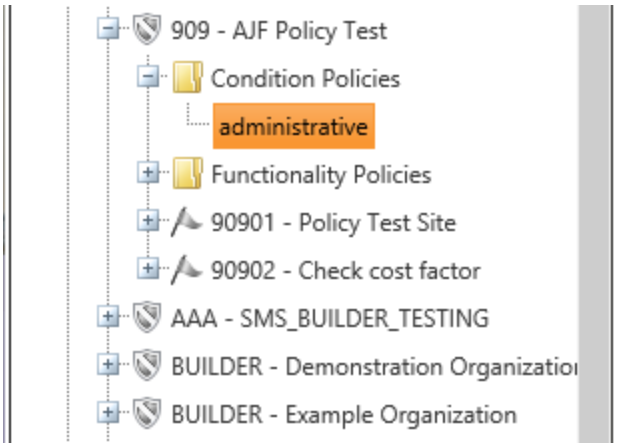
- Activate Work Configuration > Policies in the main menu. You will be brought to the Policies window, with the Policies navigation tree at the left, showing only the top level Organization.



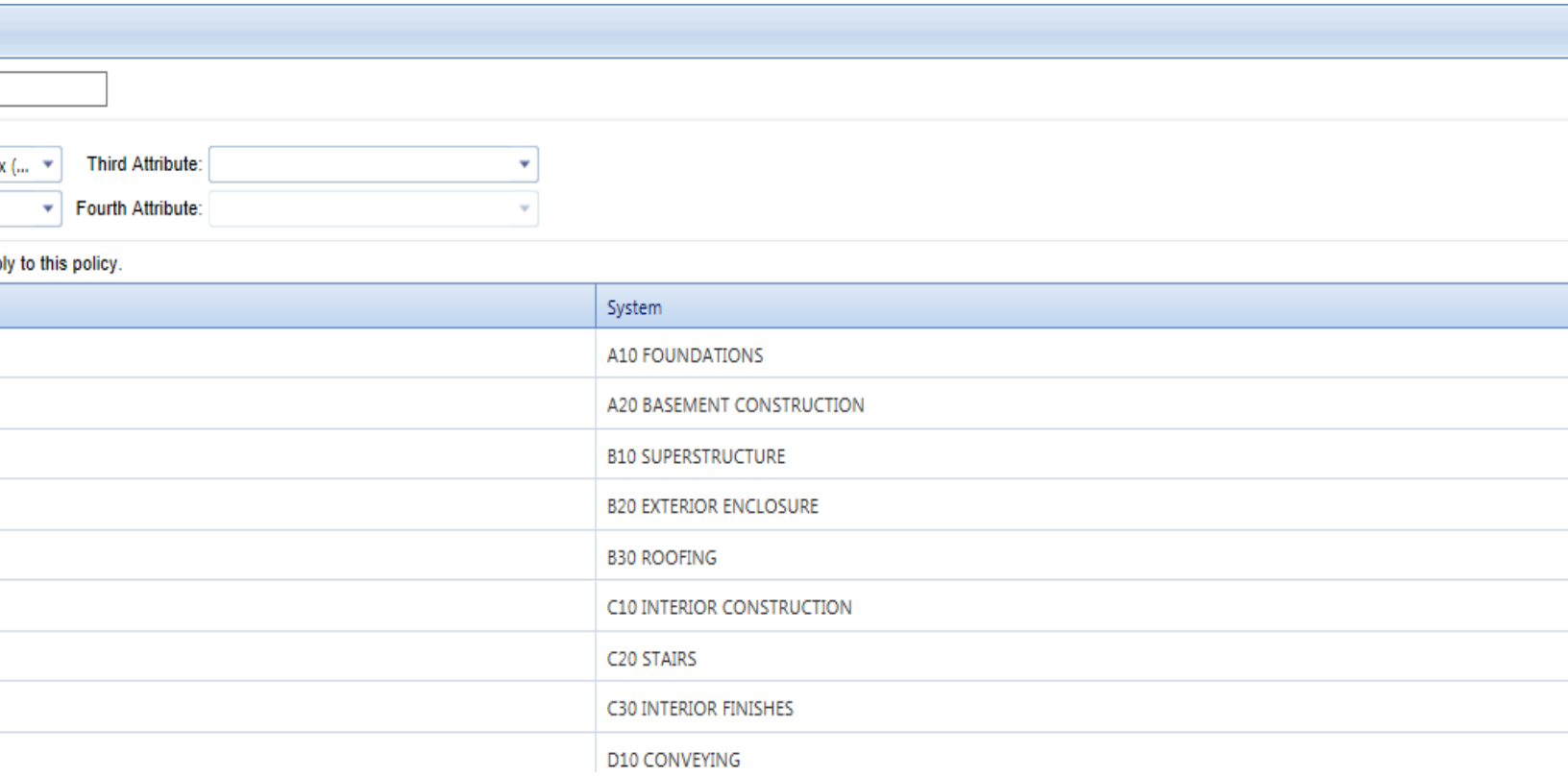
- Expand the tree to show folders for condition and functionality policies. From these folders, new condition or functionality policies can be added and the existing policies can be viewed and edited.



- Navigate in the Policy tree to the Condition Policies folder for the desired Organization or Site.
- Select the condition policy you wish to edit.



The policies window will appear in the content pane as shown below, and data can be input or changed for the policy (instructions below at Edit Condition Policy Data).



Policy Toolbar Options

On the toolbar above the navigation tree, only the toolbar options that are available at your current location will show as active; others will be grayed out.

- Return. Exits Policies and returns you to your previous location.
- Save. Saves changes made to the policy.
- Add. Initiates adding a new policy.
- Delete. Deletes the selected policy.

Edit Condition Policy Data

The following data can be edited in a condition policy:

- Name. The policy's name must be unique and is limited to 50 alphanumeric characters.

  Note: You may wish to keep the name much shorter than the allowed 50 characters in order to minimize wraparound in the name when it's displayed in the tree.

- Attribute selection used to define the Policy. Making changes to the attribute selection after standards data has been entered is not a good idea. Thinking out the attribute selection in advance is better.
  - Add an Attribute. You can add an attribute to a previously created condition policy. However, if you already applied standards to some of the options listed for existing attributes in the policy, these will apply to each and every option for your newly added attribute where your new attribute intersects the standard-defined options of the existing attributes. This may or may not be desirable. In the example given at Select Standards in the topic Add a Condition Policy, when the True/False attribute Family Housing was added to a policy where the "Elevated" standard had already been applied to the HVAC System, the "Elevated" standard was applied to both the HVAC System/Family Housing="True" combination and the HVAC System/Family Housing="False" combination. In this case, impact was minimal because the added attribute only had two options.
  - Delete an Attribute. You can delete an attribute from a previously created condition policy.

  For more detail about available policy attributes, see About Condition Policy Attributes.

- Standards applied to the attributes or attribute combinations. Assign condition standards to the various combinations of values of these field properties, so that when a Section's hierarchy has field properties matching a given combination of values, it will use the condition standard for that combination. The grid at the bottom of the window will show all combinations of the attributes selected. You do not need to select a condition standard for every combination. Combinations for which no condition standard is specified are simply not dictated by the policy; the default standard defined at Policy Sequences will be applied.

You can see more information about combining attributes at About Combining Condition Policy Attributes in the topic About Condition Policy Attributes.

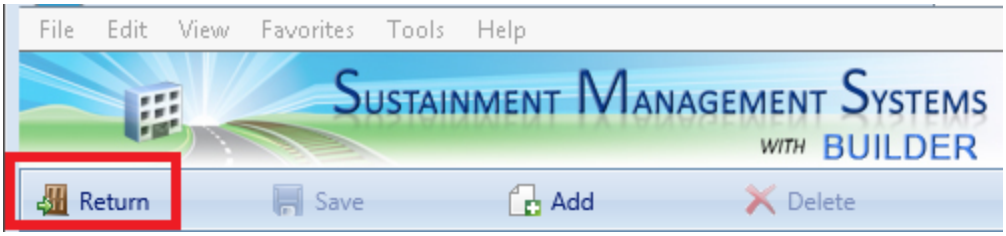
Save

IMPORTANT: After adding or editing a policy, make sure to activate the Save button in the toolbar to save the changes to the policy.

WARNING: Saving will not happen automatically, so you may lose data entries if you fail to save.

Exit Policies (Optional)

If you wish to exit the Policies area and return to your previous location, activate the Return button on the toolbar:



Related Links

- Add a Condition Policy
- About Condition Policy Attributes
- Delete a Condition Policy
- Work Configuration Overview

About Condition Policy Attributes

This topic lists the inventory item attributes that can be selected from when setting up work management policies and explains how to use them alone or in combination.

A condition policy can be based on any one, two, three, or four attributes pertaining to the inventory item(s) that will be evaluated by the policy. If you are creating a policy containing more than one attribute, be sure to familiarize with the section About Combining Condition Policy Attributes.

Some of the attributes shown in the dropdown list will have characteristics and options that make them similar but not identical to one or more other attributes. This is because the attribute options have been customized for different user groups with similar but not identical inventory groupings and analysis needs.

Note: It might not be necessary to designate a standard for each and every value range listed for your selected attributes. In Policy Sequences, a default condition standard is set for items that do not have a condition standard set for them in a policy. If a Standard field is left blank, the default standard specified under Policy Sequences will be used.

Available Policy Attributes

The same policy attributes are available for condition policy attributes and for functionality policy attributes, but the examples given may differ.

- Building Construction Type. When you select this attribute, you will be presented with the four Building Construction Types: "Permanent," "Semipermanent," "Temporary," and Leased." Using the dropdown lists in the Standard column, designate a condition standard for each. Example
- Building Historic. When you select this attribute, you will be presented with "True" and "False." Using the dropdown lists in the Standard column, designate a condition standard for each. Example
- Building Number of Floors. When you select this attribute, you will be presented with an entry form divided into the following categories: "1 Floor," "2 Floors," "3 Floors," "4 Floors," "5 to 10 Floors," and "More than 10 Floors." Using the dropdown lists in the Standard column, designate a condition standard for each category desired. If a Standard field is left blank, the default standard specified under Policy Sequences will be used. Example
- Building Type. When you select this attribute, you will be presented with a listing of various building frame types such as "Concrete Shear Walls" and "Steel Light Frame." Using the dropdown lists in the Standard column, designate a condition standard for each. Example
- Building Use Category. When you select this attribute, you will be presented with a listing of Building Use Categories. The broad categories listed here are those with one-digit category codes, the Building Functionality Group. Using the dropdown lists in the Standard column, designate a condition standard for each category desired. Example
- Building Vacant. When you select this attribute, you will be presented with "True" and "False." Using the dropdown lists in the Standard column, designate a condition standard for each. Example
- Building Year Constructed. When you select this attribute, you will be presented with tiers describing the Building's year of construction (ten years per tier, plus "Before 1900" and "Unknown"). Using the dropdown lists in the Standard column, designate a condition standard for each. Example
- Child-Occupied Facility. When you select this attribute, you will be presented with "True" and "False." Using the dropdown lists in the Standard column, designate a condition standard for each. Example
- Component. This attribute allows you to specify a standard for each Component available to the program. When you select "Component" as one of your attributes, you will be presented with a long list of Components. Each line shows the number (in UNIFORMAT II format) and name of a Component. Using the dropdown lists in the Standard column, designate a condition standard for each Component desired.

  Tip: A time-saving measure to consider is to use System as one of your attributes, and then to designate a standard here only for those Components whose standard should differ from the standard set for the System they are in.

  Note: You can find a table showing UNIFORMAT II Component ("Level 3") numbers in the Inventory section of the documentation, at BUILDER Systems and Components. In the PDF documentation, refer to the BUILDER Inventory Guide, Version 3.5.2 or later.

- Component Importance Index (CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance.). When you select this attribute, you will be presented with tiers showing ranges of decimal values for the Component Importance Index (CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance.), plus a tier for the value 1. Using the dropdown lists in the Standard column, designate a condition standard for each tier desired. Example
- Current Area **CI**[1].This attribute refers to the **CI**[2] of a Functional Area. The attribute may be used as part of either a condition policy or a functionality policy. When you select this attribute, you will be presented with tiers showing ranges of values for the Functional Area's **CI**[3]. Using the dropdown lists in the Standard column, designate a condition standard for each tier desired.
- Current Area **FI**[4].This attribute may be used as part of a condition policy; it is not restricted to use in a functionality policy. When you select this attribute, you will be presented with tiers showing ranges of values for the Functional Area's functionality index (**FI**[5]). Using the dropdown lists in the Standard column, designate a condition standard for each tier desired. Example
- Current Area Min Issue **FI**[6]. The "Min(imum) Issue **FI**[7]" attribute refers to the **FI**[8]Functionality Index of the functionality issue that scores the lowest in a functionality assessment. The issue so identified can be referred to as the "controlling issue." When you select this attribute, you will be presented with tiers showing ranges of values that the lowest-scoring **FI**[9] might have. Using the dropdown lists in the Standard column, designate a condition standard for each tier desired.

  Note: An alternative approach that also targets a specific functionality issue is to create a policy based on a specific functionality issue of your choice, rather than basing the policy on whatever issue scores the lowest. For example, you could create a rule that "Access" is not allowed to go below a particular score.

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[1]Condition Index
[2]Condition Index
[3]Condition Index
[4]Functionality Index.
[5]Functionality Index.
[6]Functionality Index.
[7]Functionality Index.
[8]Functionality Index.
[9]Functionality Index.

- Current Building **CI**[1]Condition Index. you will be presented with tiers showing ranges of values for the **CI**[2]Condition Index of the Building as a whole. Using the dropdown lists in the Standard column, designate a condition standard for each tier. Example
- Current Building **FCI**[3]. When you select this attribute, you will be presented with tiers showing ranges of values for the Building's Facility Condition Index (**FCI**[4]). Using the dropdown lists in the Standard column, designate a condition standard for each tier.

  Note: In BUILDER, the formula for the **FCI**[5] is one minus the ratio of repair needs to replacement cost, which translates to a Building with a higher **FCI**[6] being in better condition than a Building having a lower **FCI**[7].

- Current Building **FI**[8]Functionality Index. When you select this attribute, you will be presented with tiers showing ranges of values for the Building's **FI**[9]. Using the dropdown lists in the Standard column, designate a condition standard for each tier desired. Example
- Current Building Min Issue **FI**[10]Functionality Index. The "Min(imum) Issue **FI**[11]Functionality Index" attribute refers to the **FI**[12]Functionality Index of the functionality issue that scores the lowest in a functionality assessment. The issue so identified can be referred to as the "controlling issue." When you select this attribute, you will be presented with tiers showing ranges of values that the lowest-scoring **FI**[13]Functionality Index might have. Using the dropdown lists in the Standard column, designate a condition standard for each tier desired.

  Note: An alternative approach that also targets a specific functionality issue is to create a policy based on a specific functionality issue of your choice, rather than basing the policy on whatever issue scores the lowest. For example, you could create a rule that "Access" is not allowed to go below a particular score.

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[1]Condition Index
[2]Condition Index
[3]Facility Condition Index.
[4]Facility Condition Index.
[5]Facility Condition Index.
[6]Facility Condition Index.
[7]Facility Condition Index.
[8]Functionality Index.
[9]Functionality Index.
[10]Functionality Index.
[11]Functionality Index.
[12]Functionality Index.
[13]Functionality Index.

- Current Building **PI**[1]Performance Index. See also: BPI. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight.. When you select this attribute, you will be presented with tiers showing ranges of values for the Building's performance index (BPIBuilding Performance Index - a measure of a Building's overall performance, derived from a weighted combination of the BCI and BFI, where the lower of the two values is given two-thirds of the weight and the higher of the two values is given one-third of the weight. If no functional assessment has been performed, the BFI is assigned a value of 100.). Using the dropdown lists in the Standard column, designate a condition standard for each tier desired. Example
- Current Component **CI**[2]Condition Index. When you select this attribute, you will be presented with tiers showing ranges of values for the current Component's **CI**[3]Condition Index (BCCIBuilding Component Condition Index - a condition rating for the target Building Component. For each Component, the BCCI is computed by taking the average of its Sections' CIs, weighted by replacement cost). Using the dropdown lists in the Standard column, designate a condition standard for each tier desired.
- Current Section CCICoating Condition Index. When you select this attribute, you will be presented with tiers showing ranges of values for the current Section's coating condition index (CCICoating Condition Index). Using the dropdown lists in the Standard column, designate a condition standard for each tier desired.
- Current Section **CI**[4]Condition Index. When you select this attribute, you will be presented with tiers showing ranges of values for the current Section's **CI**[5]Condition Index (CSCIComponent-Section Condition Index - a condition rating for the target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, then subtracting that deduct value from the maximum possible rating of 100. The deduct value computation differs for each condition assessment method.). Using the dropdown lists in the Standard column, designate a condition standard for each tier desired.
- Current System **CI**[6]Condition Index. When you select this attribute, you will be presented with tiers showing ranges of values for the current System's **CI**[7]Condition IndexSCISystem Condition Index - a condition rating for a Building System. For each System, the SCI is computed by taking the average of its Components' CIs, weighted by replacement cost). Using the dropdown lists in the Standard column, designate a condition standard for each tier desired.

---

[1]Performance Index. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. If no functional assessment has been performed, the FI is assigned a value of 100.

[2]Condition Index

[3]Condition Index

[4]Condition Index

[5]Condition Index

[6]Condition Index

[7]Condition Index

- Estimated Work Cost. This attribute is used for Prioritization Schemes only.
- Facility Category (Army ISR). When you select this attribute, you will be presented with the three-digit facility category groupings used by Army ISR. Using the dropdown lists in the Standard column, designate a condition standard for each category grouping desired.
- Facility Category Code. When you select this attribute, you will be presented with a listing of facility category codes. Using the dropdown lists in the Standard column, designate a condition standard for each category code desired.

  Tip:A time-saving measure to consider is to use the broader attribute "Building Use Category" as one of your attributes, and then to designate a standard here only for those Facility Category Codes whose standard should differ from the standard set for the broader Building Use Category they also belong to.

- Facility Category Group (Army ISR). When you select this attribute, you will be presented with a listing of Facility Category Groups used by Army ISR. (Each of these has a code beginning with the letter "F.") Using the dropdown lists in the Standard column, designate a condition standard for each Category Group desired.
- Facility Mission Area (Army ISR). When you select this attribute, you will be presented with a listing of the five Facility Mission Areas used by Army ISR. Using the dropdown lists in the Standard column, designate a condition standard for each Facility Mission Area desired.
- Facility Mission Dependency Index (**MDI**[1]Mission Dependency Index - measures the relative importance of a Building). When you select this attribute, you will be presented with a listing of tiers of scores for the facility's **MDI**[2]Mission Dependency Index - measures the relative importance of a Building. The higher the **MDI**[3]Mission Dependency Index - measures the relative importance of a Building of a Building or other facility, the more critical it is to the mission. Using the dropdown lists in the Standard column, designate a condition standard for each tier desired. Example
- Facility Name. When you select this attribute, you will be presented with a list of facilities by name. Using the dropdown lists in the Standard column, designate a condition standard for each facility desired. Using this attribute, you can target individual facilities.
- Facility Subcategory (Army ISR). When you select this attribute, you will be presented with a listing of three-digit Facility Subcategories used by Army ISR. Using the dropdown lists in the Standard column, designate a condition standard for each subcategory desired.
- Facility Type. [Building/Pavement] When you select this attribute, you will be presented with a list of two facility types: "Building" and "Pavement." Using the dropdown lists in the Standard column, designate a condition standard for each.
- Facility Use (CatCode). See Facility Category Code.

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[1]Mission Dependency Index

[2]Mission Dependency Index

[3]Mission Dependency Index

- Family Housing. When you select this attribute, you will be presented with "True" and "False." Using the dropdown lists in the Standard column, designate a condition standard for each. An example of setting up a condition policy using this attribute is the case where you want to maintain certain systems, such as HVAC, to a higher standard in the case of Family Housing = "True." In this example case, you would use the Family Housing attribute in combination with an additional attribute, System. See Policy Using Multiple Attributes in the topic Add a Condition Policy for how to combine attributes successfully.
- Section Component Type. When you select this attribute, you will be presented with a listing of various specifications such as equipment volume or performance capacities, or tiers of pipe diameters. Using the dropdown lists in the Standard column, designate a condition standard for each item desired.
- Section Material/Equipment Type. When you select this attribute, you will be presented with a listing of the material types available for Component-Sections, ordered by number.

  Using the dropdown lists in the Standard column, designate a condition standard for each Section Component Type desired.
- Section Remaining Service Life. When you select this attribute, you will be presented with tiers showing ranges of values for the Section's remaining service life **RSL**[1]Remaining Service Life). Using the dropdown lists in the Standard column, designate a condition standard for each tier desired. Example
- Section Year Built/Installed. When you select this attribute, you will be presented with tiers describing the Section's Year Built /Installed (ten years per tier, plus "Before 1900" and "Unknown"). Using the dropdown lists in the Standard column, designate a condition standard for each tier desired. Example
- Section Years Since Inspection. When you select this attribute, you will be presented with tiers describing the amount of time passed since the latest inspection of the Section (ranging from "Less than 6 months ago" to "More than 5 years ago." Using the dropdown lists in the Standard column, designate a condition standard for each tier desired. Example
- System. This attribute allows you to specify a standard for each System available to the program. When you select System as one of your attributes, you will be presented with a list of Systems. Each line shows the number (in UNIFORMAT II format) and name of a System. Using the dropdown lists in the Standard column, designate a condition standard for each System desired.

---

[1]Remaining service life.

Note: You can find a table showing UNIFORMAT II System ("Level 2") numbers in the Inventory section of the documentation, at BUILDER Systems and Components. In the PDF documentation, refer to the BUILDER Inventory Guide, Version 3.5.2 or later.

- Work Activity. This attribute is used for Prioritization Schemes only.
- Work Completion Year. This attribute is used for Prioritization Schemes only.
- Work ROI. This attribute is used for Prioritization Schemes only.

About Combining Condition Policy Attributes

When you use more than one attribute to define a policy, BUILDER will construct a grid that takes into account all possible combinations of the attributes selected for the policy. The number of options in the grid will be the result of multiplying the number of options available for each attribute selected in the policy. For example, 21 (number of Systems) x 6 (number of options for Building Number of Floors x 2 (a True/False attribute) = 252 grid options.

You can see how additional attribute selections—especially those with a large number of options—can amplify the size of the grid you will need to deal with when applying standards to the desired combinations of options, so be careful in designing your policy.

When applying standards, you will rarely need to select a condition standard for every possible combination of options. Combinations for which no condition standard is specified are simply not dictated by the policy; the default standard defined at Policy Sequences will be applied.

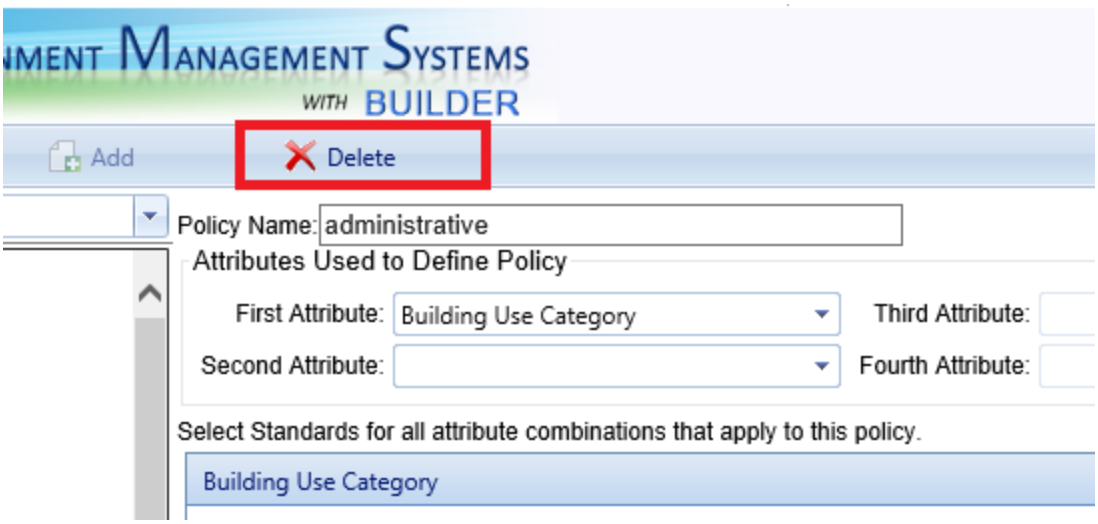
Instructions for combining condition policy attributes can be found at Policy Using Multiple Attributes in the topic Add a Condition Policy.

Delete a Condition Policy

Permissions Note: This action requires Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. or AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. permission for the relevant asset.

In the Content Pane

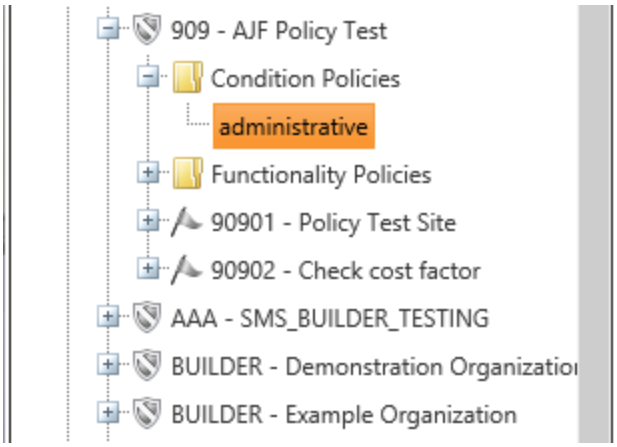
If the policy you wish to delete is currently showing in the content pane, simply activate the Delete button on the toolbar. You will be presented with a confirmation popup before the policy is deleted.



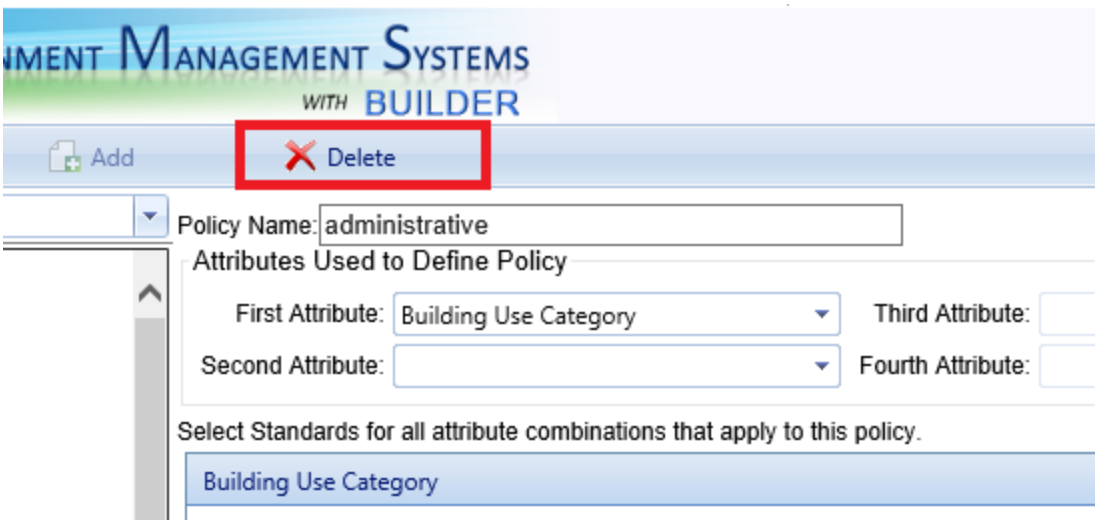
Starting in the Navigation Tree

If the policy is not showing in the content screen, navigate to the policy and then delete it, as described here:

- Select Work Configuration > Policies from the main menu, if you are not already in the Policies tree.
- Navigate the Policies tree in the navigation pane until you reach the desired policy, and select it.

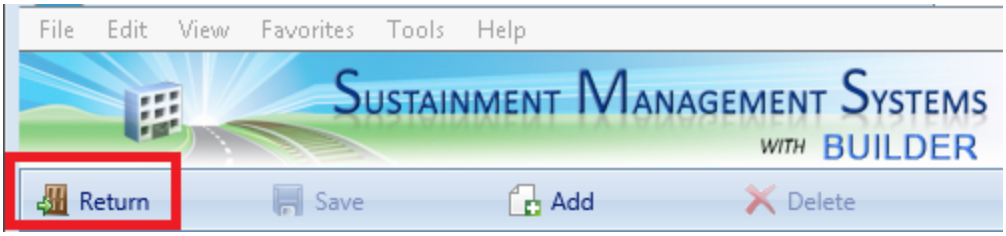


- When the policy appears in the content pane, activate the Delete Delete button on the toolbar. You will be presented with a confirmation popup before the policy is deleted.



Exit Policies (Optional)

If you wish to exit the Policies area and return to your previous location, activate the Return button on the tool-bar:



Related Links

- Add a Condition Policy
- Edit a Condition Policy
- About Condition Policy Attributes
- Work Configuration Overview

Add a Functionality Policy

Functionality policies can be made to apply Organization wide, or they can be set Site by Site. This topic shows how to add a functionality policy.

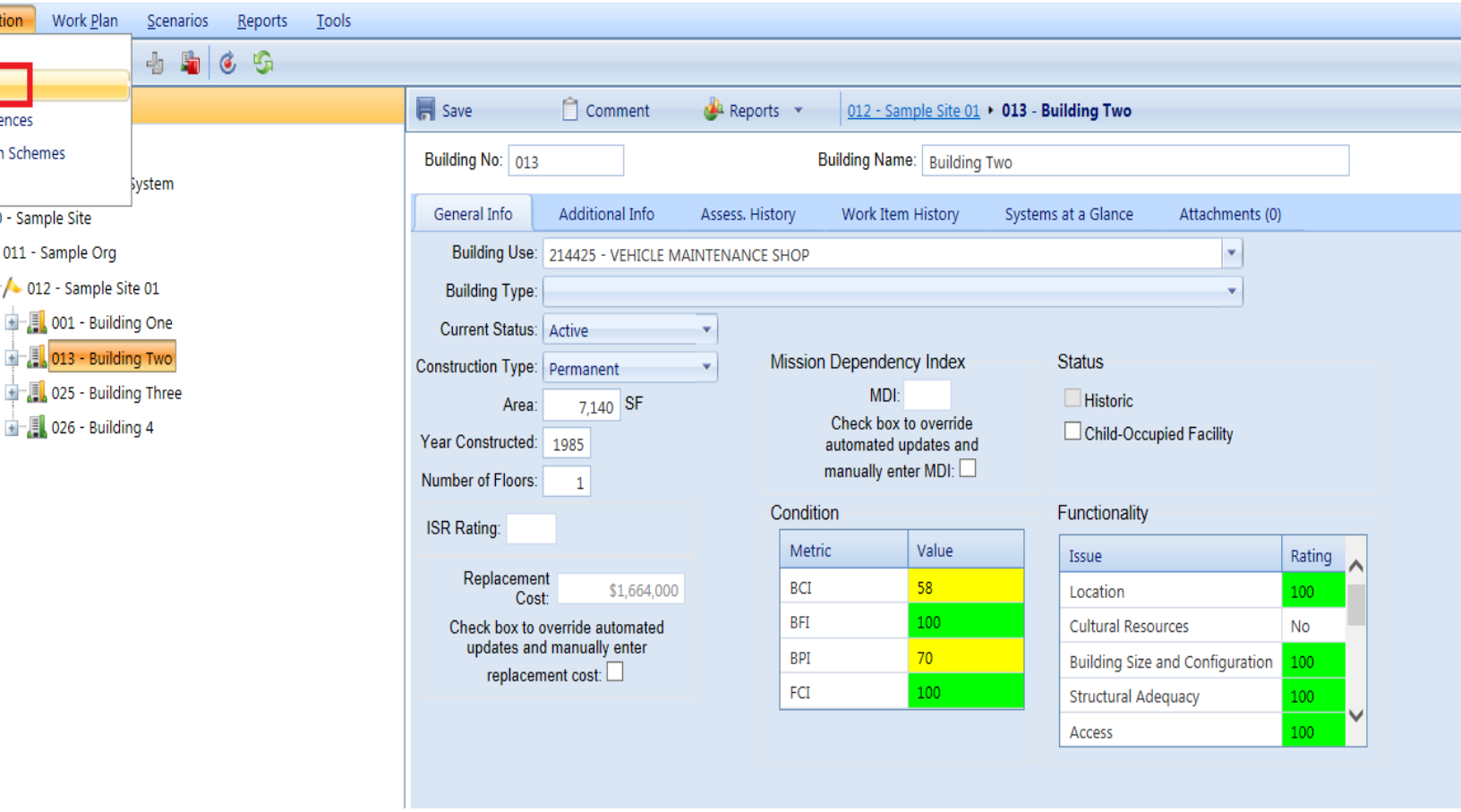
Permissions Note: This action requires Work Planner permission or above for the relevant location in inventory.

Navigate to the Policies

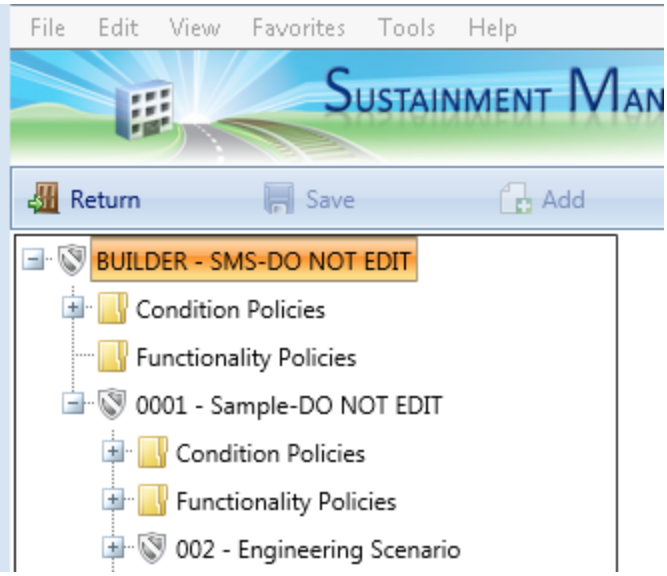
If you've already navigated to the needed location, you can skip to Create a New Functionality Policy.

To navigate to the folders where you can add or edit policies,

- Activate Work Configuration > Policies in the main menu. You will be brought to the Policies window, with the Policies navigation tree at the left, showing only the top level Organization.



- Expand the tree to show folders for condition and functionality policies. From these folders, new condition or functionality policies can be added and the existing policies can be viewed and edited.



Policy Toolbar Options

On the toolbar above the navigation tree, only the toolbar options that are available at your current tree location will show as active; others will be grayed out.

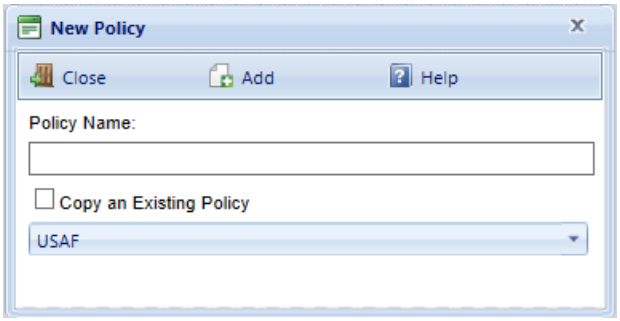
- Return. Closes the Policies window.
- Save. Saves changes made to the policies.
- Add. Initiates adding a new policy.
- Delete. Deletes the selected policy.

Create a New Functionality Policy

To create a functionality policy,

- Select the appropriate Functionality Policies folder on the tree. This should cause the Add button on the toolbar to become visible.
- Activate the Add button on the toolbar. The "New Policy" popup window will appear.

  Note: The Organization or Site level at which you are adding a policy denotes the level at which that policy can be applied. The policy can be applied at that Organization or Site level, or at any node in the tree that is beneath it.



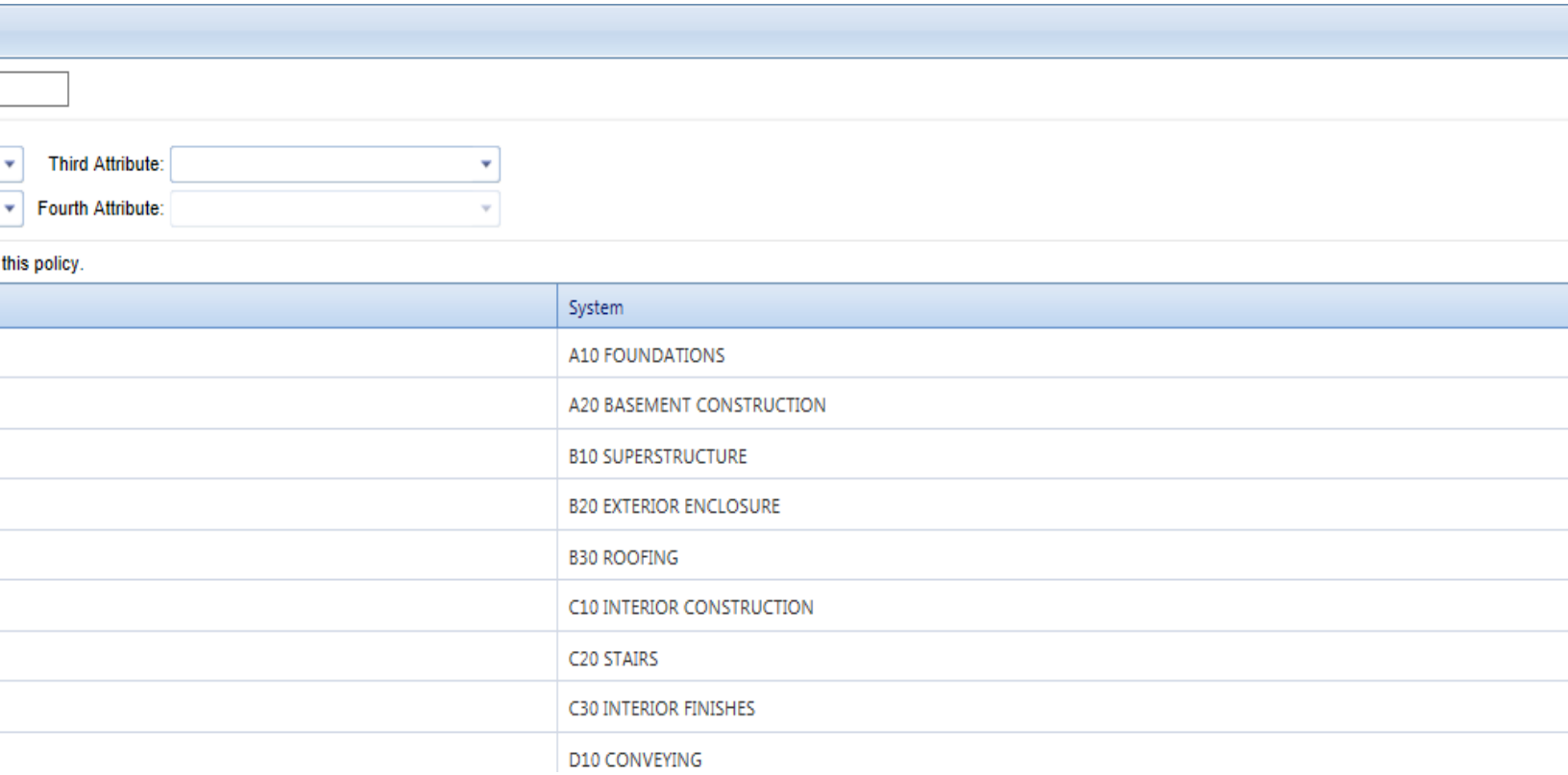
- In the Policy Name text box, enter a name for the policy. The name must be unique and is limited to 50 alphanumeric characters.

  Note: You may wish to keep the name much shorter than the allowed 50 characters in order to minimize wraparound in the name when it's displayed in the tree.

- If you want to copy data from an existing policy to the new one, mark the Copy an Existing Policy check-box and select from the dropdown list an existing policy to copy.
- Activate the Add button on the toolbar. The policy window will open as shown below.

  Note: If the Add button is grayed out, this may mean that you do not have the appropriate permissions Role covering that location in inventory.

- Enter data for the policy, as described in the section Required Functionality Policy Data below.



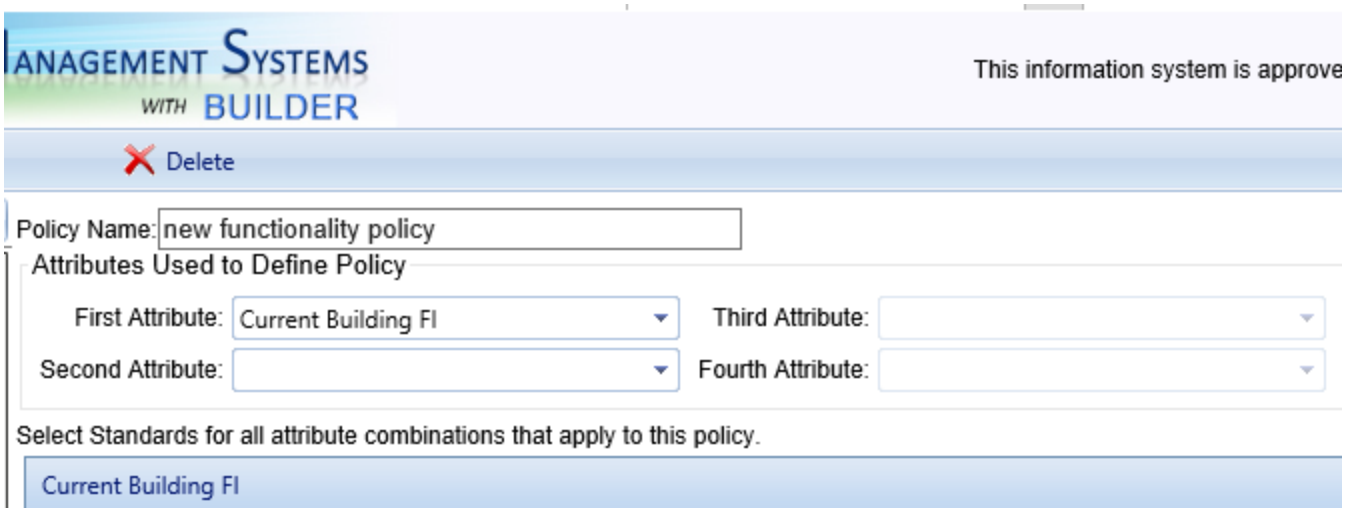
Required Functionality Policy Data

When you add a new functionality policy, you must do the following to provide the data needed by the policy:

Select Attributes Used to Define the Policy

CAUTION: Even though the attribute selection can be edited after the policy is created, this can lead to unintended consequences that are time-consuming to fix when there is more than one attribute. It is advisable to spend time in advance, before creating the functionality policy, adequately thinking out the selection of attributes needed.

- Select between one and four attributes to define the policy. These are selected consecutively as First Attribute, Second Attribute, Third Attribute, and Fourth Attribute. These attributes are simply field properties pertaining to the inventory item being evaluated. See the topic About Functionality Policy Attributes for more detail about each attribute available. The selection of attributes takes place at the top of the functionality policy content screen as shown below.



- For each attribute you select from the dropdown list in the field, the appropriate options will appear in the content pane.

  IMPORTANT: If you will be using more than one attribute in the policy, delay selecting Standards until you have designated all of the attributes that you plan to use.

- If the option listing is quite long, you will be given the option at the bottom of the screen to choose a page size (number of items listed per screen) appropriate to your computer screen size and resolution. A listing of page numbers will appear at the bottom of the screen to assist in navigating through the options.

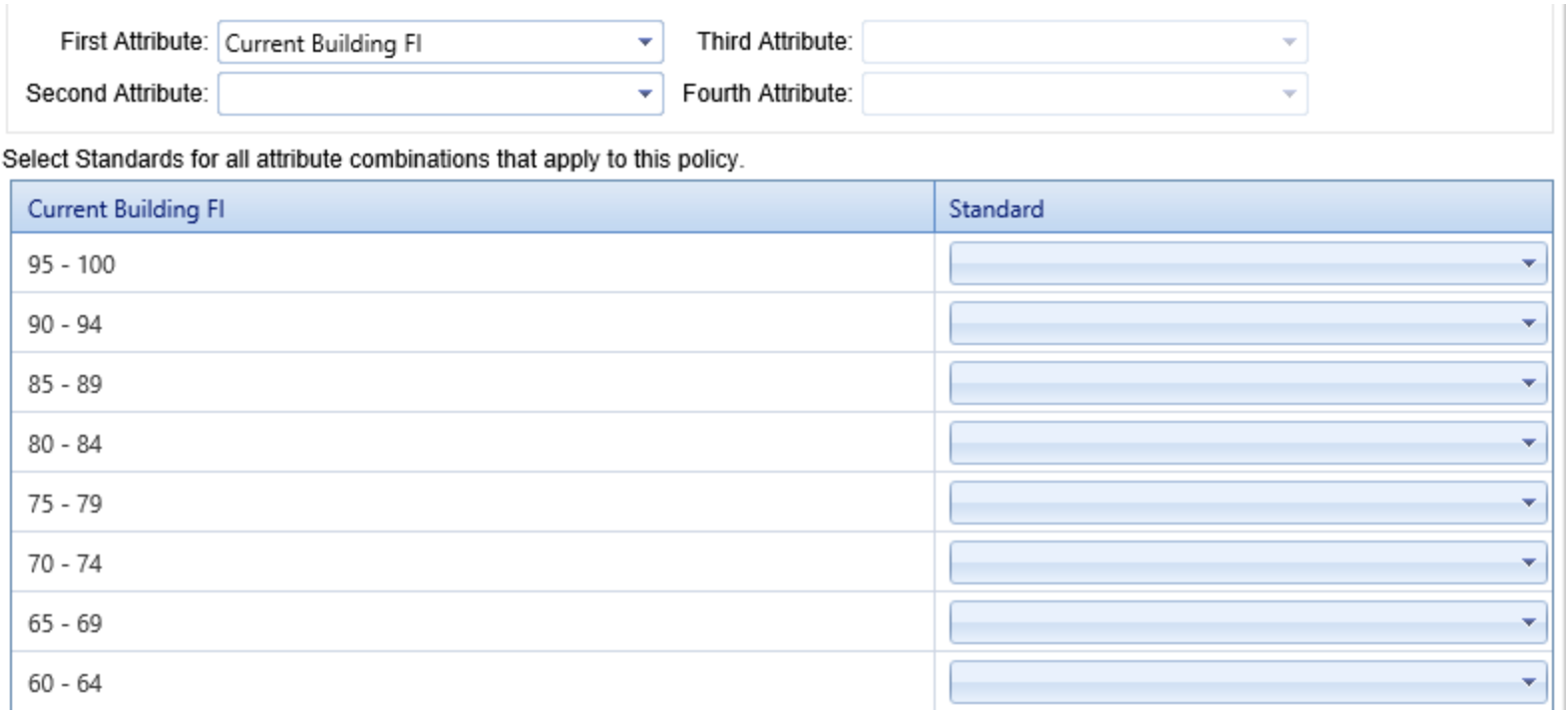
Select Standards

After selecting all of the attributes you plan to use for the policy, then select the Standards to be applied to some or all of the options presented for the attribute, or combination of attributes, selected for the policy.

Note: In most cases, you will not need to select a standard for each and every possibility presented.

Policy Using One Attribute

If the policy makes use of just one selected attribute, use the dropdown lists in the Standard column to apply standards to one or more of the options presented for that attribute. The example shown below is from the Current Building **FI**[1]Functionality Index attribute, used by itself:



Policy Using Multiple Attributes

IMPORTANT: If you are using more than one attribute in the policy, delay selecting Standards until all applicable attributes have been selected. This is because when attributes are used in combination, a grid of attribute combinations will be presented (which is better), instead of option lists for each attribute separately.

- Once all attributes have been selected, a grid will appear in the lower part of the policy content screen that displays all possible combinations of the attributes selected for the policy. The number of options in the grid will be the result of multiplying the number of options available for each attribute selected in the policy. For example, 20 (number of tiers available for the Current Building **FI**[2]Functionality Index attribute) x 9 (number of tiers available for Estimated Work Cost) = 180 grid options.

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[1]Functionality Index.

[2]Functionality Index.

- You do not need to select a functionality standard for every combination. Combinations for which no standard is specified are simply not dictated by the policy; the default standard defined by the selected policy sequence will be applied.

Save

IMPORTANT: After adding or editing a policy, make sure to activate the Save button in the toolbar to save the changes to the policy.

WARNING: Saving will not happen automatically, so you may lose data entries if you fail to save.

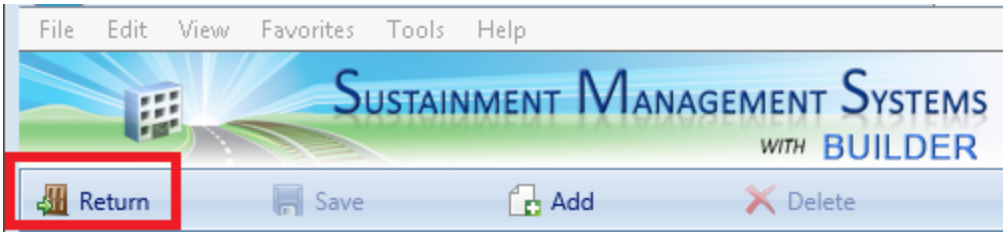
Editing a Functionality Policy

After a functionality policy has been added, you can edit its data by selecting the policy on the tree. When you are finished editing, make sure to activate the Save button on the toolbar to save changes made to the functionality policy.

For more detail on editing a functionality policy, see Edit a Functionality Policy.

Exit Policies (Optional)

If you wish to exit the Policies area and return to your previous location, activate the Return button on the toolbar:



Related Links

Edit a Functionality Policy
About Functionality Policy Attributes
Delete a Functionality Policy
Work Configuration Overview

Edit a Functionality Policy

This topic shows how to edit an existing functionality policy.

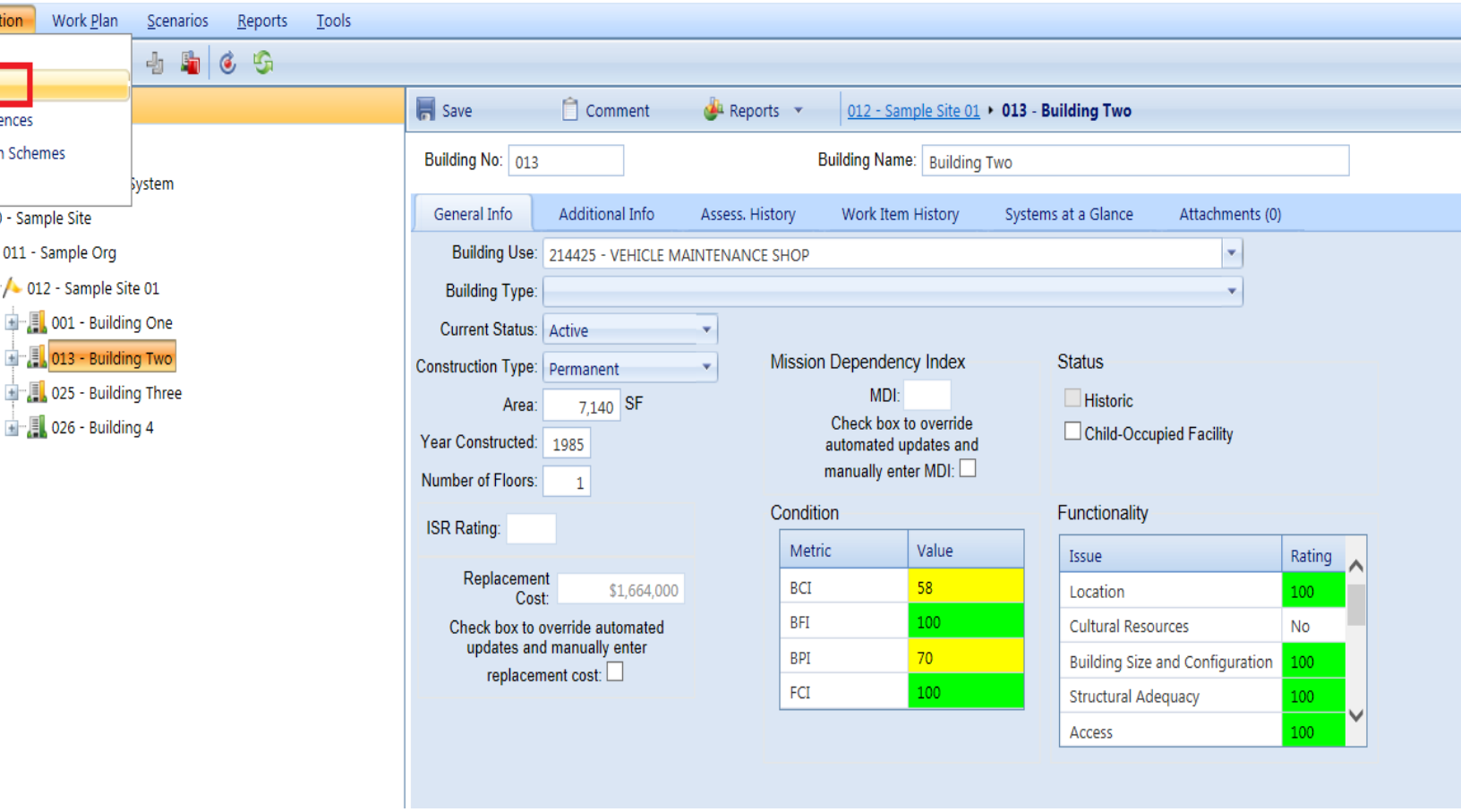
Permissions Note: This action requires Work Planner permission or above for the relevant location in inventory.

Navigating to the Policies

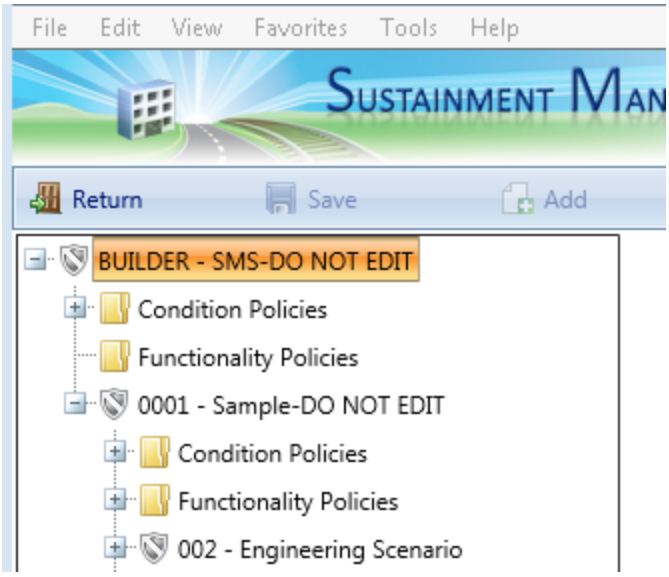
If you have already navigated to the needed location, you can skip to Edit Functionality Policy Data.

To navigate to the folders where you can add or edit policies,

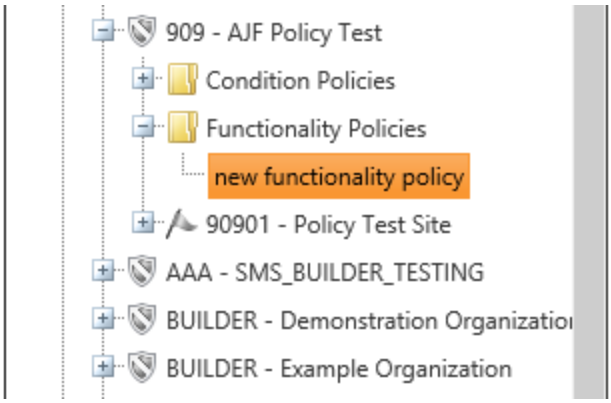
- Activate Work Configuration > Policies in the main menu. You will be brought to the Policies window, with the Policies navigation tree at the left, showing only the top level Organization.



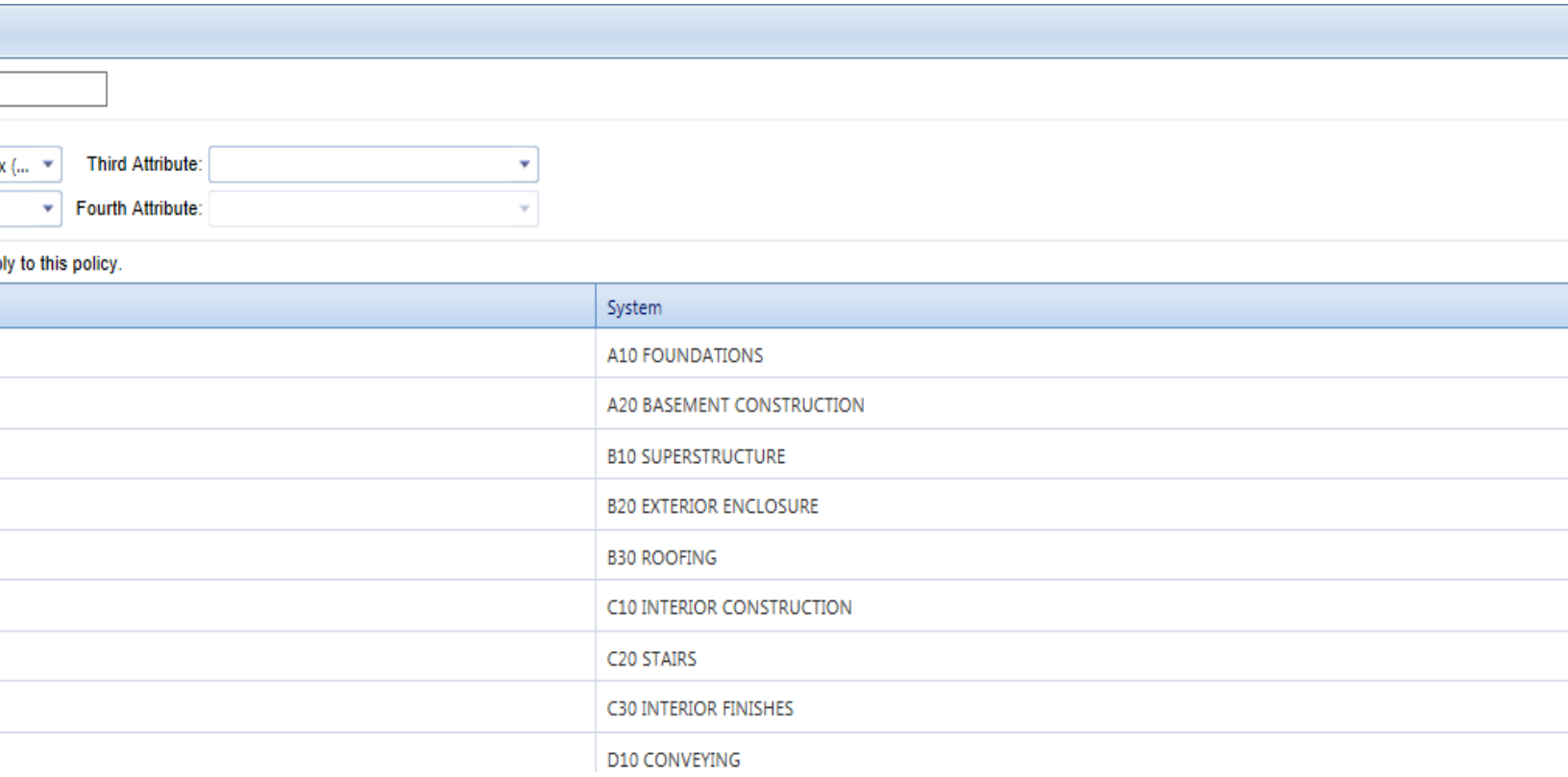
- Expand the tree to show folders for condition and functionality policies. From these folders, new condition or functionality policies can be added and the existing standards can be viewed and edited.



- Navigate in the Policy tree to the Functionality Policies folder for the desired Organization or Site.
- Select the functionality policy you wish to edit.



The policies window will appear in the content pane as shown below, and data can be input or changed for the policy (instructions below at Edit Functionality Policy Data).



Policy Toolbar Options

On the toolbar above the navigation tree, only the toolbar options that are available at your current location will show as active; others will be grayed out.

- Return. Exits Policies and returns you to your previous location.
- Save. Saves changes made to the policies.
- Add. Initiates adding a new policy.
- Delete. Deletes the selected policy.

Edit Functionality Policy Data

The following data can be edited in a functionality policy:

- Name. The policy name must be unique and is limited to 50 alphanumeric characters.

  Note: You may wish to keep the name much shorter than the allowed 50 characters in order to minimize wraparound in the name when it's displayed in the tree.

- Attribute selection used to define the Policy. Making changes to the attribute selection after standards data has been entered is not a good idea. Thinking out the attribute selection in advance is better.
  - Add an Attribute. You can add an attribute to a previously created functionality policy. However, if you already applied standards to some of the options listed for existing attributes in the policy,

these will apply to each and every option for your newly added attribute where your new attribute intersects the standard-defined options of the existing attributes. This may or may not be desirable. In the example given at Select Standards in the topic Add a Condition Policy, when the True/False attribute Family Housing was added to a policy where the "Elevated" standard had already been applied to the HVAC System, the "Elevated" standard was applied to both the HVAC System/Family Housing="True" combination and the HVAC System/Family Housing="False" combination. In this case, impact was minimal because the added attribute only had two options.

- Delete an Attribute. You can delete an attribute from a previously created functionality policy.

For more detail about available policy attributes, see About Functionality Policy Attributes.

- Standards applied to the attributes or attribute combinations. Assign functionality standards to the various combinations of values of these field properties, so that when a Section's hierarchy has field properties matching a given combination of values, it will use the functionality standard for that combination. The grid at the bottom of the window will show all combinations of the attributes selected. You do not need to select a functionality standard for every combination. Combinations for which no functionality standard is specified are simply not dictated by the policy; the default standard defined by the policy sequence used will be applied.

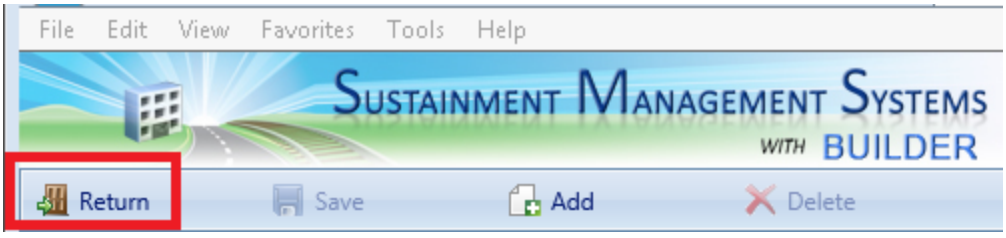
Save

IMPORTANT: After adding or editing a policy, make sure to activate the Save button in the toolbar to save the changes to the policy.

WARNING: Saving will not happen automatically, so you may lose data entries if you fail to save.

Exit Policies (Optional)

If you wish to exit the Policies area and return to your previous location, activate the Return button on the toolbar:



Related Links

Add a Functionality Policy
About Functionality Policy Attributes
Delete a Functionality Policy

Work Configuration Overview

About Functionality Policy Attributes

This topic lists the inventory item attributes that can be selected from when setting up work management policies and explains how to use them alone or in combination.

A condition policy can be based on any one, two, three, or four attributes pertaining to the inventory item(s) that will be evaluated by the policy. If you are creating a policy containing more than one attribute, be sure to familiarize with the section About Combining Functionality Policy Attributes.

Some of the attributes shown in the dropdown list will have characteristics and options that make them similar but not identical to one or more other attributes. This is because the attribute options have been customized for different user groups with similar but not identical inventory groupings and analysis needs.

Note: It might not be necessary to designate a standard for each and every value range listed for your selected attributes. In Policy Sequences, a default condition standard is set for items that do not have a condition standard set for them in a policy. If a Standard field is left blank, the default standard specified under Policy Sequences will be used.

Available Policy Attributes

The same policy attributes are available for condition policy attributes and for functionality policy attributes, but the examples given may differ.

- Building Construction Type. When you select this attribute, you will be presented with the four Building Construction Types: "Permanent," "Semipermanent," "Temporary," and Leased." Using the dropdown lists in the Standard column, designate a condition standard for each. Example
- Building Historic. When you select this attribute, you will be presented with "True" and "False." Using the dropdown lists in the Standard column, designate a condition standard for each. Example
- Building Number of Floors. When you select this attribute, you will be presented with an entry form divided into the following categories: "1 Floor," "2 Floors," "3 Floors," "4 Floors," "5 to 10 Floors," and "More than 10 Floors." Using the dropdown lists in the Standard column, designate a condition standard for each category desired. If a Standard field is left blank, the default standard specified under Policy Sequences will be used. Example
- Building Type. When you select this attribute, you will be presented with a listing of various building frame types such as "Concrete Shear Walls" and "Steel Light Frame." Using the dropdown lists in the Standard column, designate a condition standard for each. Example
- Building use Category. When you select this attribute, you will be presented with a listing of building use categories. The broad categories listed here are those with one-digit category codes, the Building Functionality Group. Using the dropdown lists in the Standard column, designate a condition standard for each category desired. Example

- Building Vacant. When you select this attribute, you will be presented with "True" and "False." Using the dropdown lists in the Standard column, designate a condition standard for each. Example
- Building Year Constructed. When you select this attribute, you will be presented with tiers describing the Building's year of construction (ten years per tier, plus "Before 1900" and "Unknown"). Using the dropdown lists in the Standard column, designate a condition standard for each. Example
- Child-Occupied Facility. When you select this attribute, you will be presented with "True" and "False." Using the dropdown lists in the Standard column, designate a condition standard for each. Example
- Component. This attribute allows you to specify a standard for each Component available to the program. When you select "Component" as one of your attributes, you will be presented with a long list of Components. Each line shows the number (in UNIFORMAT II format) and name of a Component. Using the dropdown lists in the Standard column, designate a condition standard for each Component desired.

  Tip: A time-saving measure to consider is to use System as one of your attributes, and then to designate a standard here only for those Components whose standard should differ from the standard set for the System they are in.

  Note: You can find a table showing UNIFORMAT II Component ("Level 3") numbers in the Inventory section of the documentation, at BUILDER Systems and Components. In the PDF documentation, refer to the BUILDER Inventory Guide, Version 3.5.2 or later.

- Component Importance Index (CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance.). When you select this attribute, you will be presented with tiers showing ranges of decimal values for the Component Importance Index (CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance.), plus a tier for the value 1. Using the dropdown lists in the Standard column, designate a condition standard for each tier desired. Example
- Current Area **CI**[1]Condition Index.This attribute refers to the **CI**[2]Condition Index of a Functional Area. The attribute may be used as part of either a condition policy or a functionality policy. When you select this attribute, you will be presented with tiers showing ranges of values for the Functional Area's **CI**[3]Condition Index. Using the dropdown lists in the Standard column, designate a condition standard for each tier desired.

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[1]Condition Index

[2]Condition Index

[3]Condition Index

- Current Area **FI**[1]Functionality Index. This attribute may be used as part of a condition policy; it is not restricted to use in a functionality policy. When you select this attribute, you will be presented with tiers showing ranges of values for the Functional Area's functionality index (**FI**[2]Functionality Index). Using the dropdown lists in the Standard column, designate a condition standard for each tier desired. Example
- Current Area Min Issue **FI**[3]Functionality Index. The "Min(imum) Issue **FI**[4]Functionality Index" attribute refers to the **FI**[5]Functionality Index of the functionality issue that scores the lowest in a functionality assessment. The issue so identified can be referred to as the "controlling issue." When you select this attribute, you will be presented with tiers showing ranges of values that the lowest-scoring **FI**[6]Functionality Index might have. Using the dropdown lists in the Standard column, designate a condition standard for each tier desired.

  Note: An alternative approach that also targets a specific functionality issue is to create a policy based on a specific functionality issue of your choice, rather than basing the policy on whatever issue scores the lowest. For example, you could create a rule that "Access" is not allowed to go below a particular score.

- Current Building **CI**[7]Condition Index. you will be presented with tiers showing ranges of values for the **CI**[8]Condition Index of the Building as a whole. Using the dropdown lists in the Standard column, designate a condition standard for each tier. Example
- Current Building **FCI**[9]. When you select this attribute, you will be presented with tiers showing ranges of values for the Building's Facility Condition Index (**FCI**[10]). Using the dropdown lists in the Standard column, designate a condition standard for each tier.

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[1]Functionality Index.
[2]Functionality Index.
[3]Functionality Index.
[4]Functionality Index.
[5]Functionality Index.
[6]Functionality Index.
[7]Condition Index
[8]Condition Index
[9]Facility Condition Index.
[10]Facility Condition Index.

Note: In BUILDER, the formula for the **FCI**[1] is one minus the ratio of repair needs to replacement cost, which translates to a Building with a higher **FCI**[2] being in better condition than a Building having a lower **FCI**[3].

- Current Building **FI**[4]Functionality Index. When you select this attribute, you will be presented with tiers showing ranges of values for the Building's **FI**[5]Functionality Index. Using the dropdown lists in the Standard column, designate a condition standard for each tier desired. Example
- Current Building Min Issue **FI**[6]Functionality Index. The "Min(imum) Issue **FI**[7]Functionality Index" attribute refers to the **FI**[8]Functionality Index of the functionality issue that scores the lowest in a functionality assessment. The issue so identified can be referred to as the "controlling issue." When you select this attribute, you will be presented with tiers showing ranges of values that the lowest-scoring **FI**[9]Functionality Index might have. Using the dropdown lists in the Standard column, designate a condition standard for each tier desired.

  Note: An alternative approach that also targets a specific functionality issue is to create a policy based on a specific functionality issue of your choice, rather than basing the policy on whatever issue scores the lowest. For example, you could create a rule that "Access" is not allowed to go below a particular score.

- Current Building **PI**[10]Performance Index. See also: BPI. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight.. When you select this attribute, you will be presented with tiers showing ranges of values for the Building's performance index (BPIBuilding Performance Index - a measure of a Building's overall performance, derived from a weighted combination of the BCI and BFI, where the lower of the two values is given two-thirds of the weight and the higher of the two values is given one-third of the weight. If no functional assessment

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[1]Facility Condition Index.

[2]Facility Condition Index.

[3]Facility Condition Index.

[4]Functionality Index.

[5]Functionality Index.

[6]Functionality Index.

[7]Functionality Index.

[8]Functionality Index.

[9]Functionality Index.

[10]Performance Index. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. If no functional assessment has been performed, the FI is assigned a value of 100.

has been performed, the BFI is assigned a value of 100.). Using the dropdown lists in the Standard column, designate a condition standard for each tier desired. Example

- Current Component **CI**[1]Condition Index. When you select this attribute, you will be presented with tiers showing ranges of values for the current Component's **CI**[2]Condition Index (BCCIBuilding Component Condition Index - a condition rating for the target Building Component. For each Component, the BCCI is computed by taking the average of its Sections' CIs, weighted by replacement cost). Using the dropdown lists in the Standard column, designate a condition standard for each tier desired.
- Current Section CCICoating Condition Index. When you select this attribute, you will be presented with tiers showing ranges of values for the current Section's coating condition index (CCICoating Condition Index). Using the dropdown lists in the Standard column, designate a condition standard for each tier desired.
- Current Section **CI**[3]Condition Index. When you select this attribute, you will be presented with tiers showing ranges of values for the current Section's **CI**[4]Condition Index (CSCIComponent-Section Condition Index - a condition rating for the target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, then subtracting that deduct value from the maximum possible rating of 100. The deduct value computation differs for each condition assessment method.). Using the dropdown lists in the Standard column, designate a condition standard for each tier desired.
- Current System **CI**[5]Condition Index. When you select this attribute, you will be presented with tiers showing ranges of values for the current System's **CI**[6]Condition Index (SCISystem Condition Index - a condition rating for a Building System. For each System, the SCI is computed by taking the average of its Components' CIs, weighted by replacement cost.). Using the dropdown lists in the Standard column, designate a condition standard for each tier desired.
- Estimated Work Cost. This attribute is used for Prioritization Schemes only.
- Facility Category (Army ISR). When you select this attribute, you will be presented with the three-digit facility category groupings used by Army ISR. Using the dropdown lists in the Standard column, designate a condition standard for each category grouping desired.
- Facility Category Code. When you select this attribute, you will be presented with a listing of facility category codes (at the time of this writing, 75 screens of content at 50 items per screen). Use the dropdown lists in the Standard column to designate a condition standard for each category code desired.

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[1]Condition Index

[2]Condition Index

[3]Condition Index

[4]Condition Index

[5]Condition Index

[6]Condition Index

Tip: A time-saving measure to consider is to use the broader attribute "Building Use Category" as one of your attributes, and then to designate a standard here only for those Facility Category Codes whose standard should differ from the standard set for the broader Building Use Category they belong in as well.

- Facility Category Group (Army ISR). When you select this attribute, you will be presented with a listing of Facility Category Groups used by Army ISR. (Each of these has a code beginning with the letter "F.") Using the dropdown lists in the Standard column, designate a condition standard for each Category Group desired.
- Facility Mission Area (Army ISR). When you select this attribute, you will be presented with a listing of the five Facility Mission Areas used by Army ISR. Using the dropdown lists in the Standard column, designate a condition standard for each Facility Mission Area desired.
- Facility Mission Dependency Index (**MDI**[1]Mission Dependency Index - measures the relative importance of a Building). When you select this attribute, you will be presented with a listing of tiers of scores for the facility's **MDI**[2]Mission Dependency Index - measures the relative importance of a Building. The higher the **MDI**[3]Mission Dependency Index - measures the relative importance of a Building of a Building or other facility, the more critical it is to the mission. Using the dropdown lists in the Standard column, designate a condition standard for each tier desired. Example
- Facility Name. When you select this attribute, you will be presented with a list of facilities by name. Using the dropdown lists in the Standard column, designate a condition standard for each facility desired. Using this attribute, you can target individual facilities.
- Facility Subcategory (Army ISR). When you select this attribute, you will be presented with a listing of three-digit Facility Subcategories used by Army ISR. Using the dropdown lists in the Standard column, designate a condition standard for each subcategory desired.
- Facility Type.[Building/Pavement] When you select this attribute, you will be presented with a listing of two facility types: "Building" and "Pavement." Using the dropdown lists in the Standard column, designate a condition standard for each.
- Facility Use (CatCode). See Facility Category Code.
- Family Housing. When you select this attribute, you will be presented with "True" and "False." Using the dropdown lists in the Standard column, designate a condition standard for each. An example of setting up a condition policy using this attribute is the case where you want to maintain certain systems, such as HVAC, to a higher standard in the case of Family Housing = "True." In this case, you would use the Family Housing attribute in combination with an additional attribute, System. See Policy Using Multiple Attributes in the topic Add a Condition Policy for how to combine attributes successfully.
- Section Component Type. When you select this attribute, you will be presented with a listing of various specifications such as equipment volume or performance capacities, or tiers of pipe diameters.

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[1]Mission Dependency Index

[2]Mission Dependency Index

[3]Mission Dependency Index

Using the dropdown lists in the Standard column, designate a condition standard for each item desired.

- Section Material/Equipment Type. When you select this attribute, you will be presented with a listing of the material types available for Component-Sections, ordered by number.

Using the dropdown lists in the Standard column, designate a condition standard for each Section Component Type desired.

- Section Remaining Service Life. When you select this attribute, you will be presented with tiers showing ranges of values for the Section's remaining service life (**RSL**[1]Remaining Service Life). Using the dropdown lists in the Standard column, designate a condition standard for each tier desired. Example
- Section Year Built/Installed. When you select this attribute, you will be presented with tiers describing the Section's Year Built /Installed (ten years per tier, plus "Before 1900" and "Unknown"). Using the dropdown lists in the Standard column, designate a condition standard for each tier desired. Example
- Section Years Since Inspection. When you select this attribute, you will be presented with tiers describing the amount of time passed since the latest inspection of the Section (ranging from "Less than 6 months ago" to "More than 5 years ago." Using the dropdown lists in the Standard column, designate a condition standard for each tier desired. Example
- System. This attribute allows you to specify a standard for each available System. When you select System as one of your attributes, you will be presented with a list of Systems. Each line shows the number (in UNIFORMAT II format) and name of a System. Use the dropdown lists in the Standard column to designate a condition standard for each System desired.

  Note: You can find a table showing UNIFORMAT II System ("Level 2") numbers in the Inventory section of the documentation, at BUILDER Systems and Components. In the PDF documentation, refer to the BUILDER Inventory Guide, Version 3.5.2 or later.

- Work Activity. This attribute is used for Prioritization Schemes only.
- Work Completion Year. This attribute is used for Prioritization Schemes only.
- Work ROI. This attribute is used for Prioritization Schemes only.

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[1]Remaining service life.

About Combining Functionality Policy Attributes

When you use more than one attribute to define a policy, BUILDER will construct a grid that takes into account all possible combinations of the attributes selected for the policy. The number of options in the grid will be the result of multiplying the number of options available for each attribute selected in the policy. For example, 21 (number of Systems) x 6 (number of options for Building Number of Floors x 2 (a True/False attribute) = 252 grid options.

You can see how additional attribute selections—especially those with a large number of options—can amplify the size of the grid you will need to deal with when applying standards to the desired combinations of options, so be careful in designing your policy.

When applying standards, you will rarely need to select a condition standard for every possible combination of options. Combinations for which no condition standard is specified are simply not dictated by the policy; the default standard defined at Policy Sequences will be applied.

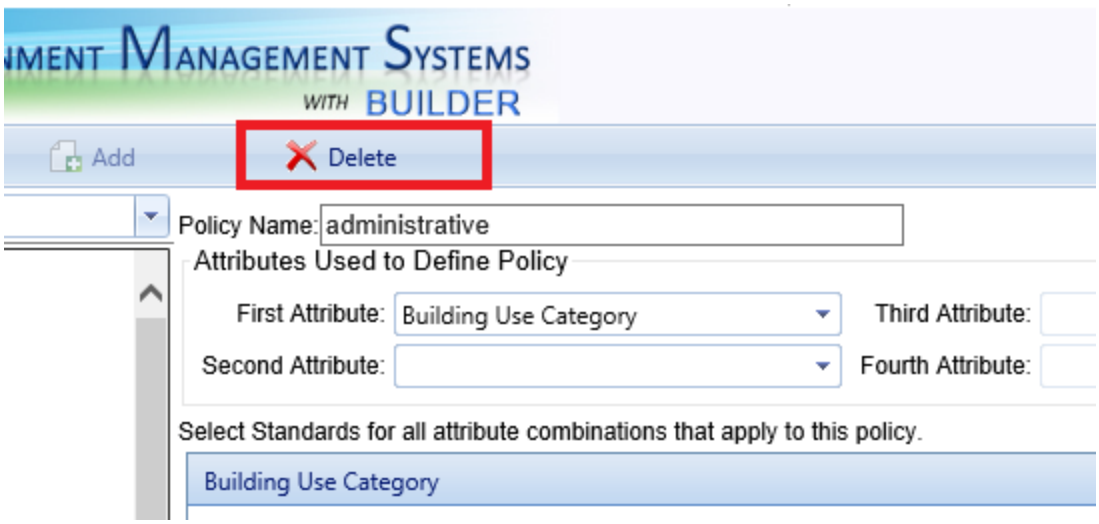
Instructions for combining condition policy attributes can be found at Policy Using Multiple Attributes in the topic Add a Functionality Policy.

Delete a Functionality Policy

Permissions Note: This action requires Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. or AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. permission for the relevant asset.

In the Content Pane

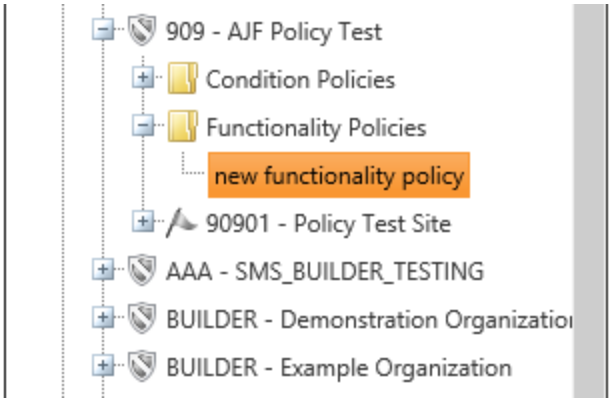
If the policy you wish to delete is currently showing in the content pane, simply activate the Delete button on the toolbar. You will be presented with a confirmation popup before the policy is deleted.



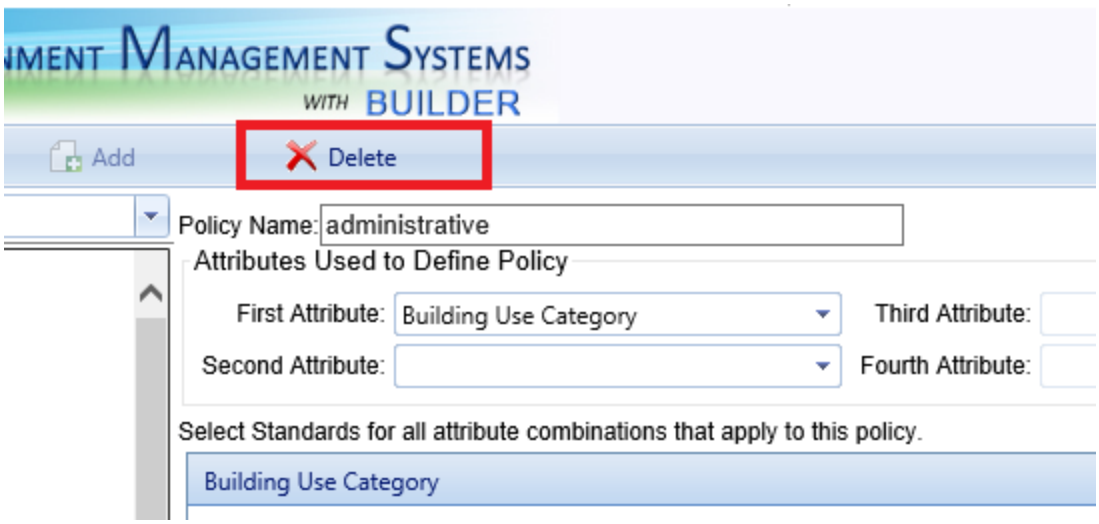
Starting in the Navigation Tree

If the policy is not showing in the content screen, navigate to the policy and then delete it, as described here:

- Select Work Configuration > Policies from the main menu, if you are not already in the Policies tree.
- Navigate the Policies tree in the navigation pane until you reach the desired policy, and select it.

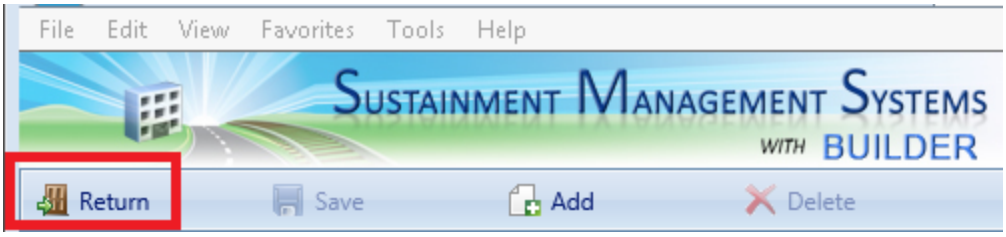


- When the policy appears in the content pane, activate the Delete Delete button on the toolbar. You will be presented with a confirmation popup before the policy is deleted.



Exit Policies (Optional)

If you wish to exit the Policies area and return to your previous location, activate the Return button on the tool-bar:



Related Links

- Add a Functionality Policy
- Edit a Functionality Policy
- About Functionality Policy Attributes
- Work Configuration Overview

Policy Sequences

About Policy Sequences

The third step in work configuration, after defining policies, is to define one or more policy sequences. A policy sequence performs two essential functions: (1) It defines a default standard to be used when there is no active policy that designates a standard for a given Component-Section. (2) It specifies the order in which policies will be applied; this prevents conflicts between policies.

What do Policy Sequences Do?

After work configuration standards and policies have been defined, one or more policy sequences will determine the priority order in which the policies are applied by BUILDER.

Another essential function of a policy sequence is that it identifies a default condition standard and a default functionality standard to be used in cases where a Component-Section is not explicitly "covered" by a policy.

Define Default Standards (Required)

In a policy sequence, specification of a default condition standard and a default functionality standard is mandatory. The selection dropdown lists for these defaults have no blank space. If you do not select a standard, the first one in the list will be used as the default.

Best Practice Recommendation: It is typically best to create a policy sequence at the top level of your policy sequence tree, and there define a catch-all default condition standard, as well as functionality standard, to be used. More applicable defaults can be set at lower locations in the tree, if appropriate. It is optional to select policies in this top-level policy sequence; setting the defaults is what is most important at this location.

With respect to policy sequences, and thereby the default standards that will be used when BUILDER finds no applicable policy in the "Selected Policies" list for a given inventory item, inheritance rules will dictate which policy sequence rules. That is, a default standard specified in a policy sequence lower in any given branch of the policy sequence tree will override defaults defined above it in the tree.

Determine Which Policies Are Available To Be Applied

If a policy is not included in any policy sequence, BUILDER will not apply it to anything in the inventory. Because of this, policy sequences not only govern the priority order in which policies are applied, they also govern which policies (if any) are not available to be applied at all.

A policy that does not appear in any policy sequence is still present in BUILDER but not active.

Note: A policy that is listed in a policy sequence might still never be applied to any Component-Section simply because the conditions (values of the inventory property attributes compared to settings defined in the standards, as well as its priority order in the list of policies) do not trigger its use.

Determine the Priority Order of Policies (Optional)

This section addresses the ordering of policies within a policy sequence, and which will apply at run time.

Each policy sequence can define a priority ordering of one or more selected policies in a list. Both condition and functionality policies may be included in the same list.

A policy lower in the list has lower priority with respect to its application than a policy above it in the list. BUILDER will apply the first policy in the list that applies to the inventory item being evaluated.

Note: It is possible for a policy sequence to exist just to define default standards for condition and functionality, in which case the Selected Policies area is left blank.

If no policies are present in the Selected Policies area then the default standards, which are also set in the policy sequence, will be used if the policy sequence is activated.

Policy sequence activation depends both on inheritance rules and on which policy sequence has been selected at the General Information tab for the Organization or Site (1) containing the given inventory item and (2) closest in the inventory tree to it. If no policy sequence has been assigned to the closest Site or Organization, then which inventory level, of those which have a policy sequence assigned, takes precedence will be decided according to inheritance rules.

Which Policy Sequence Ultimately Applies

Inheritance rules will dictate which policy sequence has priority. That is, a policy sequence located lower in any given branch of the policy sequence tree will, at run time, override the ones above it in the tree.

About Creating Policy Sequences

You may create multiple policy sequences. The application of a specific policy sequence could potentially result in a work plan that differs from one generated using a different policy sequence, even one listing the same policies, because each may assign different standards for the Component-Sections, Functional Areas, and Buildings in your inventory.

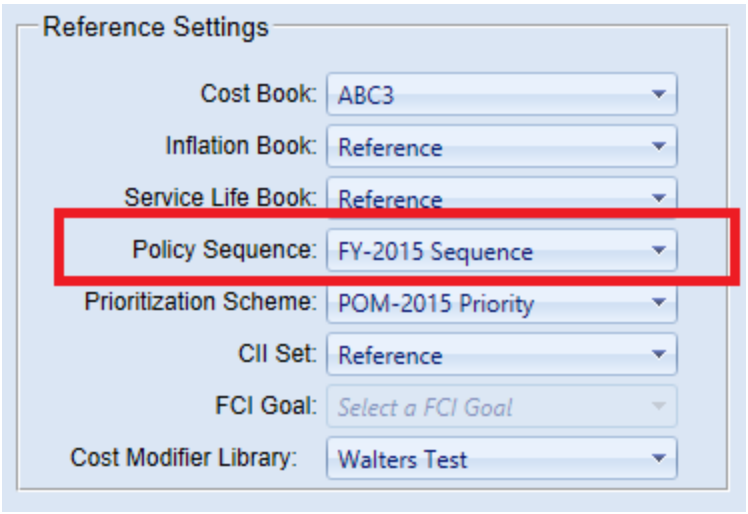
Any policy that has been defined at a particular Organization in the policies tree will be available for selection in any policy sequence throughout that Organization's scope. When defining a policy sequence, you have available to you not just policies (if any) that are defined at the location where you are defining the policy sequence, but also any and all policies that have been defined at one or more parent Organizations above your location. All available policies will show in the Available Policies column.

How To Assign a Policy Sequence to an Organization or Site

Multiple policy sequences may be defined, but a maximum of one policy sequence can be assigned to any given Organization or Site at its General Information tab.

Note: Any policy sequence that is not selected at any Organization or Site in the inventory is automatically inactive.

Assigning a policy sequence to an Organization or a Site is not done in the policy sequences tree; it is done at the General Information tab for that Organization or Site, in the Reference Settings area of the screen:



If no policy sequence is currently selected, "Select a policy sequence" will appear in the dropdown box, and the next closest policy sequence higher in the tree will apply, following the rules of inheritance.

Next Step....

Standards, policies, and policy sequences together allow you to generate candidate work items for one or more years into the future. However, if the combined dollar amount estimated for all of these work items

exceeds the budget available, you will also want to (1) define prioritization schemes and (2) list funding streams.

Task Links

Add a Policy Sequence
Edit a Policy Sequence
Delete a Policy Sequence

Instructional Link

Work Configuration Overview

Add a Policy Sequence

A policy created for any given Organization node in the asset tree is available to all Organizations and Sites below that node. Using a policy sequence, you can manage the potentially large number of policies available.

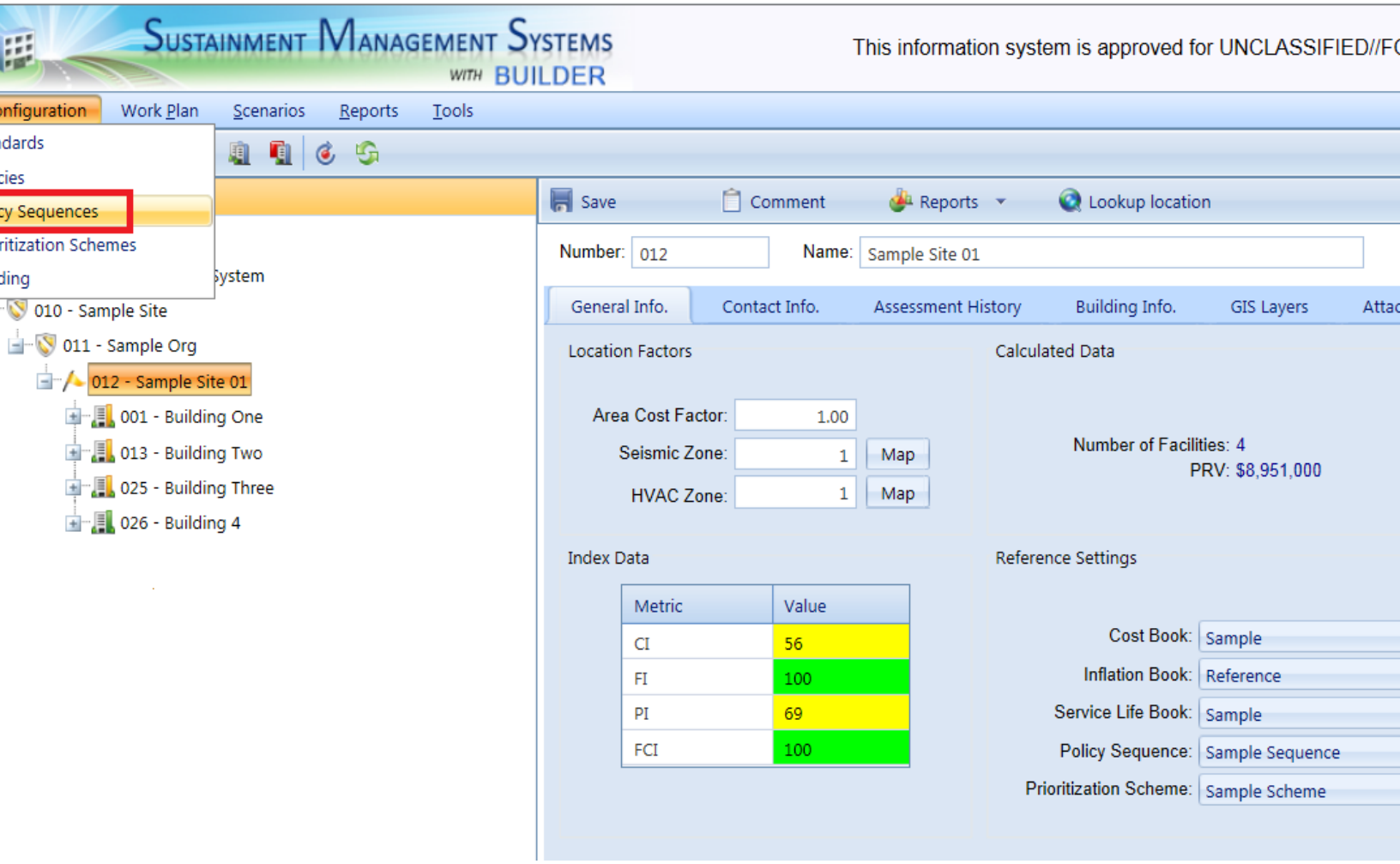
Adding a policy sequence gives you two capabilities:

- To select which available policies to apply at the current location in the inventory tree.
- To dictate the order in which the selected policies are applied.

If no policies are applied, then the default condition standard or default functionality standard will be applied.

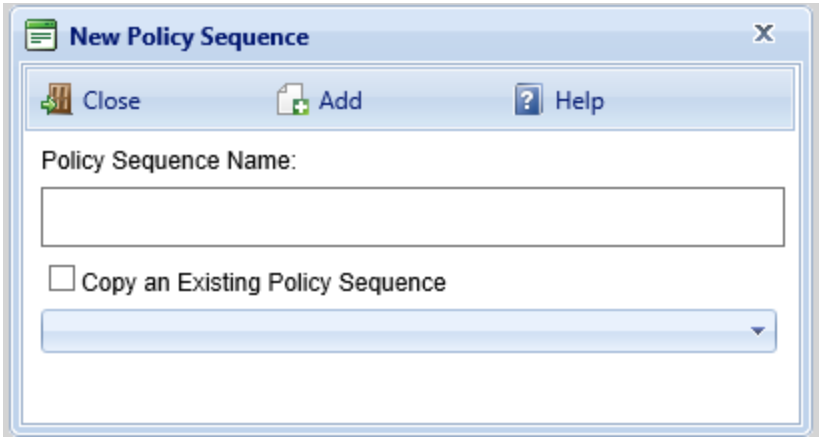
To add a policy sequence,

- Activate Work Configuration > Policy Sequences at the main menu. You will be brought to the Policy Sequences window, with the Policy Sequences navigation tree at the left, showing only the top level Organization.

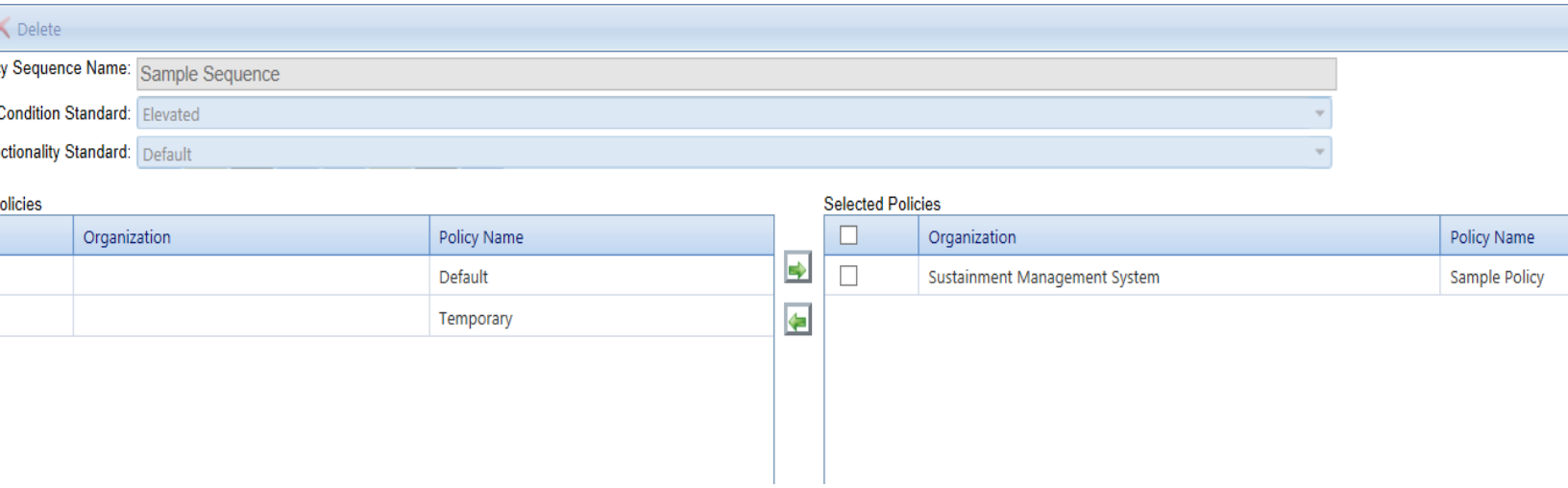


- Navigate anywhere in the Policy Sequences tree up to the topmost Organization containing the policies you wish to put in order. (Do not navigate to an Organization that does not contain the desired policies.)
- Select an Organization or Site.

- Activate the Add button on the toolbar. The "New Policy Sequence" popup window should appear.



- Enter a name for the policy sequence in the Policy Sequence Name text box. The name must be unique and is limited to 50 alphanumeric characters.
- If you want to copy data from an existing policy sequence to the new one, mark the Copy an Existing Policy checkbox and select from the dropdown list an existing policy sequence to copy.
- Activate the Add button on the popup window toolbar. The policy sequence window will open as shown below.



- Enter data for the policy, as described in Required Policy Sequence Information below.

Policy Sequences Toolbar Options

- Return. Closes the Policy Sequences window.
- Save. Saves changes made to the policy sequences.
- Add. Initiates adding a new policy sequence.
- Delete. Deletes the selected policy sequence.

Required Policy Sequence Information

When you add a new policy sequence you must enter the following data:

- Name. The name of the policy sequence name must be unique and is limited to 50 alphanumeric characters.

  Note: You may wish to keep the name much shorter than the allowed 50 characters in order to minimize wraparound in the name when it's displayed in the tree.

- Default Condition Standard. From among the standards you have previously created, select a condition standard to be the default. Because the application of the policy sequence must be able to determine a standard for every Building and Functional Area in your inventory, if none of the policies in this policy sequence apply to a given Section then the default standard is used.
- Default Functionality Standard. From among the standards you have previously created, select a functionality standard to be the default. Because the application of the policy sequence must be able to determine a standard for every Building and Functional Area in your inventory, if none of the policies in this policy sequence apply to a given Section then the default standard is used.
- Selected Policies. Select the policies in the "Available Policies" list that you wish to add to the policy sequence, and use the green right arrow button move them to the "Selected Policies" list. To remove a policy from the "Selected Policies" list, use the green left arrow to move it back into the "Available Policies" list. You may choose to have no selected policies at all, in which case all inventory will use the default standard.

  IMPORTANT: If there are no Selected Policies in your policy sequence, all inventory will use the default standards identified in the policy sequence.

- Order of Application. To change the order of application of policies in the "Selected Policies" list, select a policy and use the green up and down arrow buttons to move it in the list. Arrange the list so that each succeeding policy in the list overrides earlier policies in the list. That is, the last policy in the Selected Policy list governs the applicable Component-Sections, Functional Areas, and Buildings. "Applicable" Component sections are those that have a standard defined for them in that policy.

Note that you may create multiple policy sequences. The application of a specific policy sequence could potentially result in a work plan that differs from another policy sequence because each may assign different standards for the Component-Sections, Functional Areas, and Buildings in your inventory.

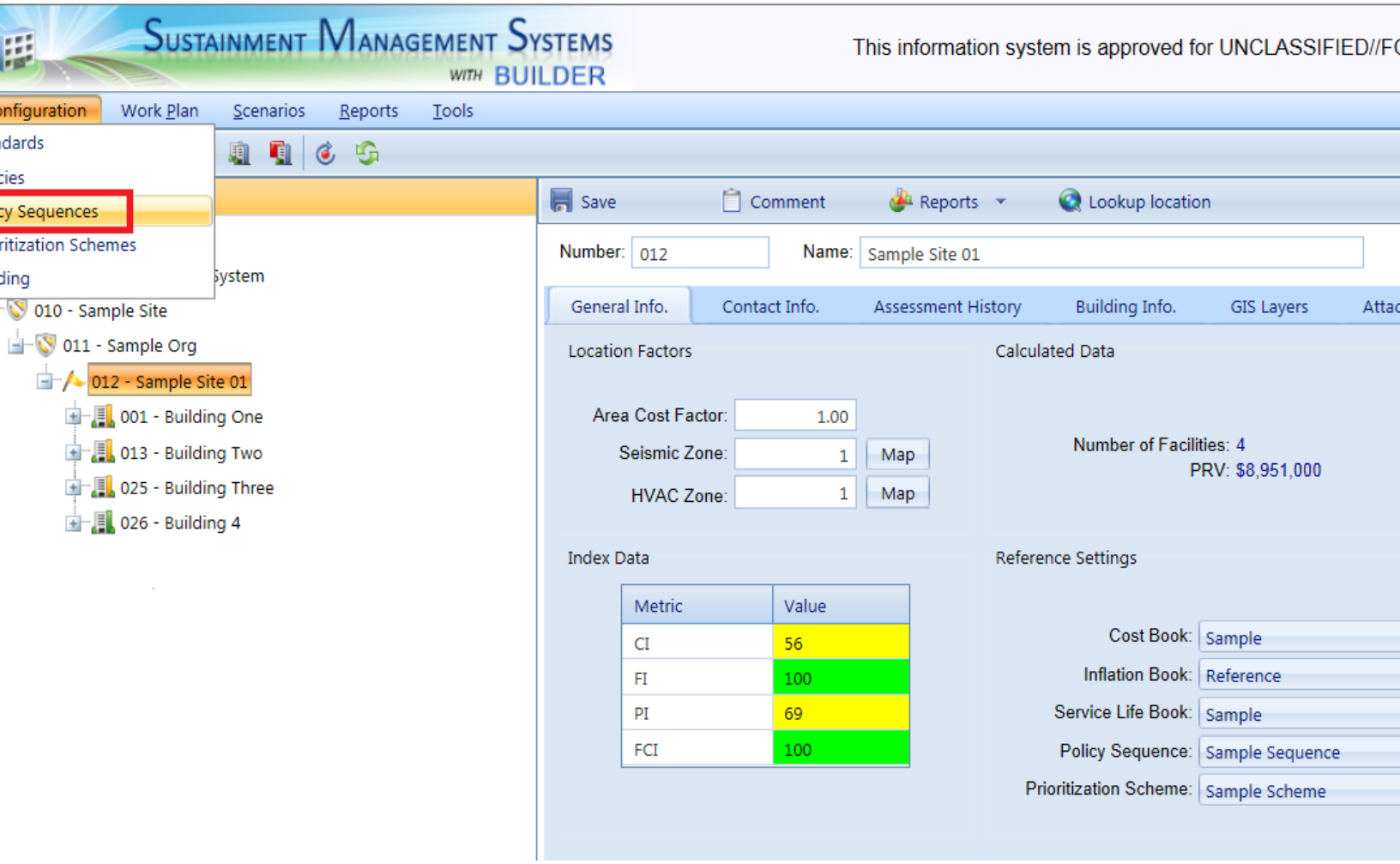
Related Links

Edit a Policy Sequence
Delete a Policy Sequence
Work Configuration Overview

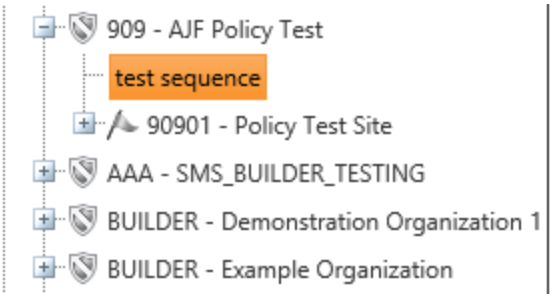
Edit a Policy Sequence

To edit a policy sequence,

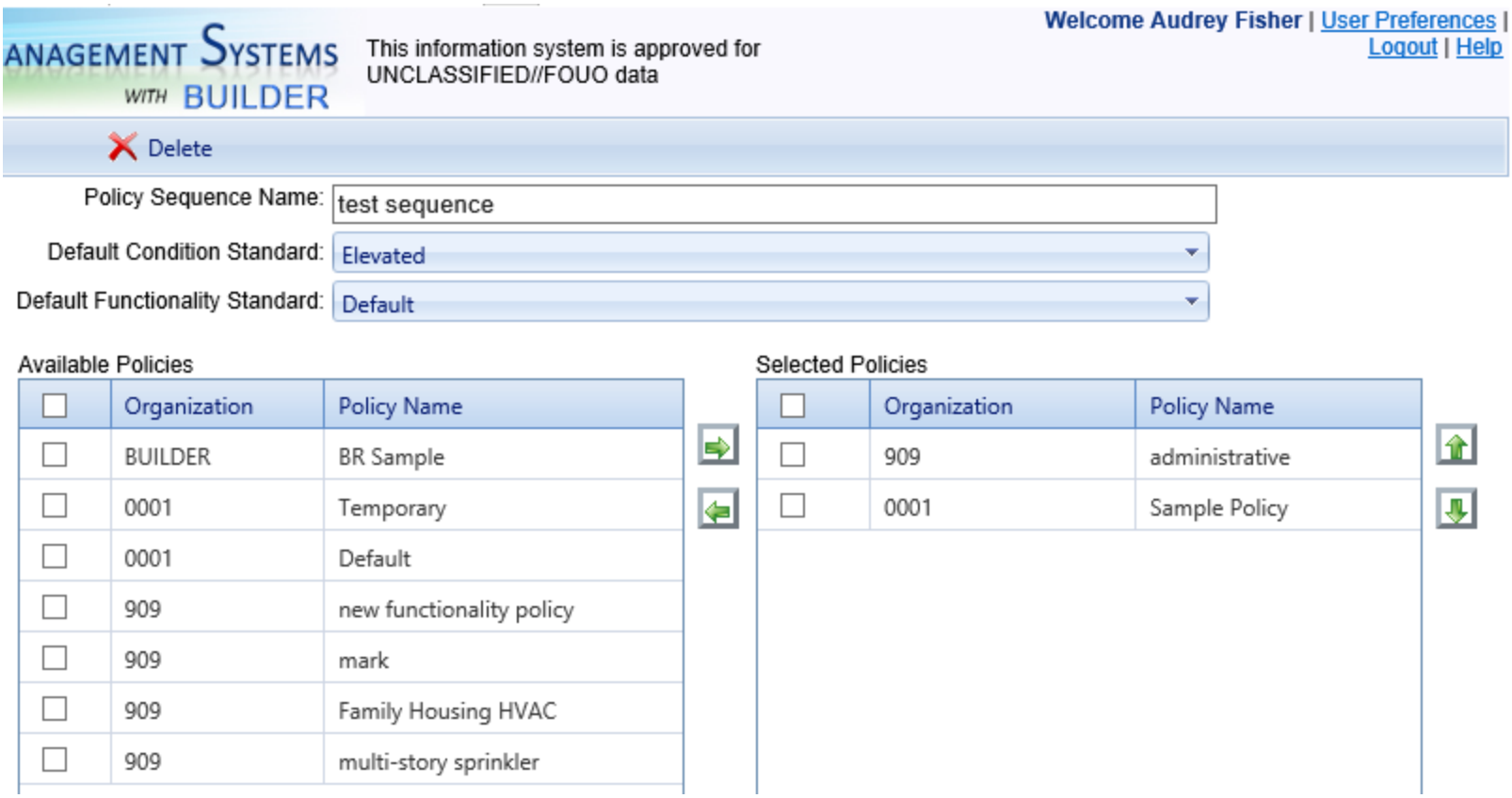
- Select Work Configuration > Policy Sequences at the main menu. You will be brought to the Policy Sequences window, with the Policy Sequences navigation tree at the left, showing only the top level Organization.



- Navigate to the desired policy sequence in the tree, and select it.



The Policy Sequence window will appear.



- Using the left and right arrows, you can add policies to the "Selected Policies" table, or remove policies from the "Selected Policies" table.
- Using the up and down arrows, you can change the order of policy application. Note that a policy lower in the list will override the policies farther up in the list with respect to all items that have a standard defined for them in that policy.
- You can also change the default condition standard and/or the default functionality standard listed for the policy sequence.

Toolbar Options

- Return. Closes the Policy Sequences window.
- Save. Saves changes made to the policy sequence(s).
- Add. Initiates adding a new policy sequence.
- Delete. Deletes the selected policy sequence.

Edit Policy Sequence Data

Any of the following data in a policy sequence may be edited:

- Name. The policy sequence name must be unique and is limited to 50 alphanumeric characters.
- Default Condition Standard. Select a condition standard from among the standards you have previously created to be the default. The application of the policy sequence must be able to determine a standard for every Component-Section in your inventory. If none of the policies in this policy sequence apply to a given Section, then the default standard is used.
- Default Functionality Standard. Select a functionality standard from among the standards you have previously created to be the default. The application of the policy sequence must be able to determine a standard for every Building and Functional Area in your inventory. If none of the policies in this policy sequence apply to a given Section, then the default standard is used.
- Selected Policies. Select the policies in the "Available Policies" list that you wish to add to the policy sequence, and use the green right arrow button to move them to the "Selected Policies" list. To remove a policy from the "Selected Policies" list, use the green left arrow to move it back into the "Available Policies" list. You may choose to have no selected policies at all, in which case all inventory will use the default standard.

  IMPORTANT: If there are no Selected Policies in your policy sequence, all inventory will use the default standards identified in the policy sequence.

- Order of Application. To change the order of application of a policy in the "Selected Policies" list, select the policy and use the green up and down arrow buttons to move it in the list. Arrange the list so that each succeeding policy in the list overrides earlier policies in the list. That is, the last policy in the Selected Policy list governs the applicable Component-Sections, Functional Areas, and Buildings. "Applicable" Component sections are those that have a standard defined for them in that policy.

Related Links

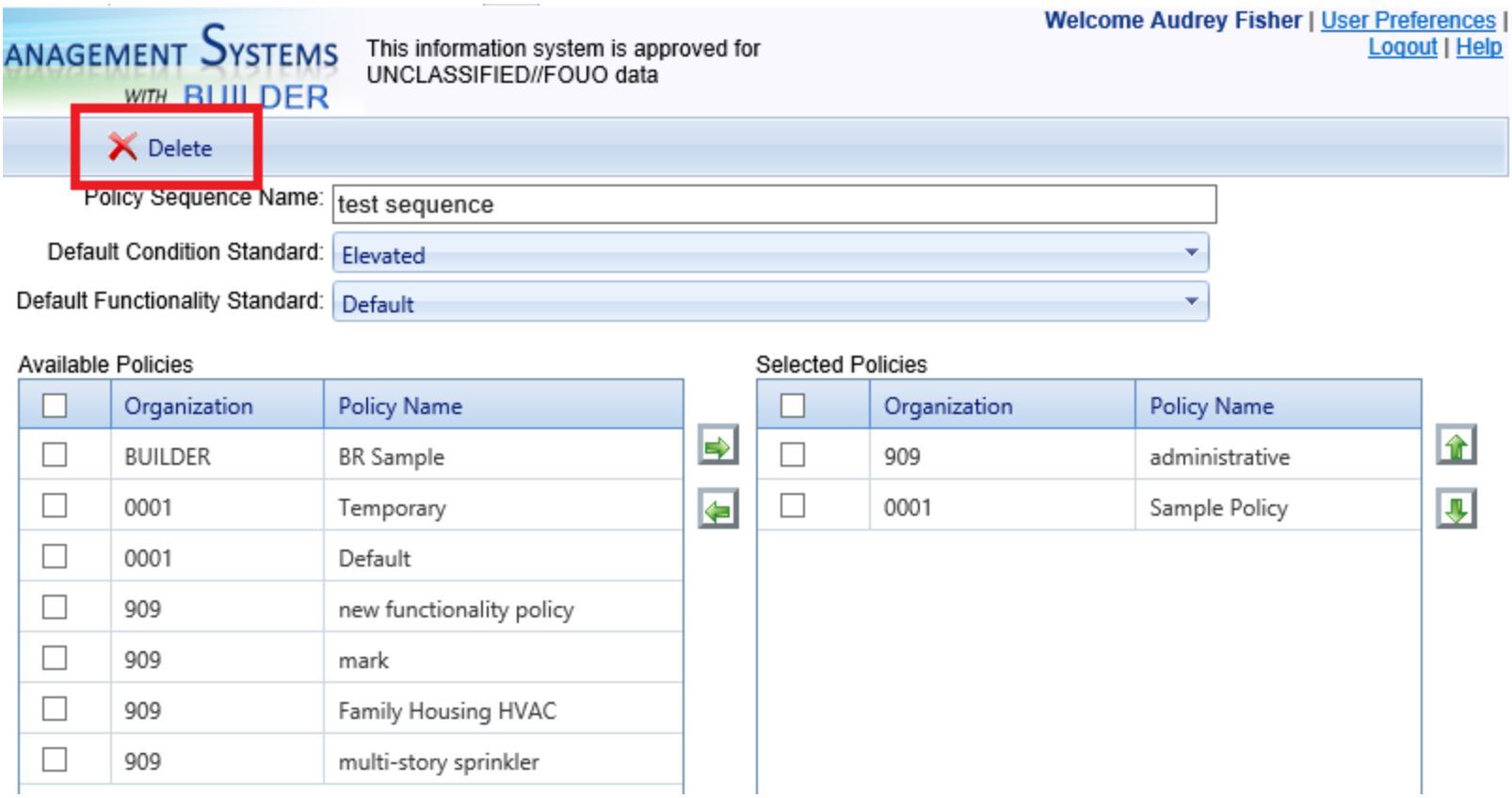
Add a Policy Sequence
Delete a Policy Sequence
Work Configuration Overview

Delete a Policy Sequence

Permissions Note: This action requires Master Planner or Administrator permission for the relevant asset.

Option A: Delete in the Content Pane

If the policy sequence you wish to delete is currently showing in the content pane, simply activate the Delete button on the toolbar. You will be presented with a confirmation popup before the policy sequence is deleted.

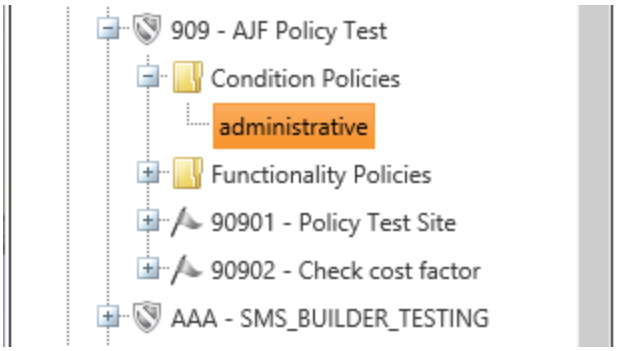


Option B: Delete Starting in the Navigation Tree

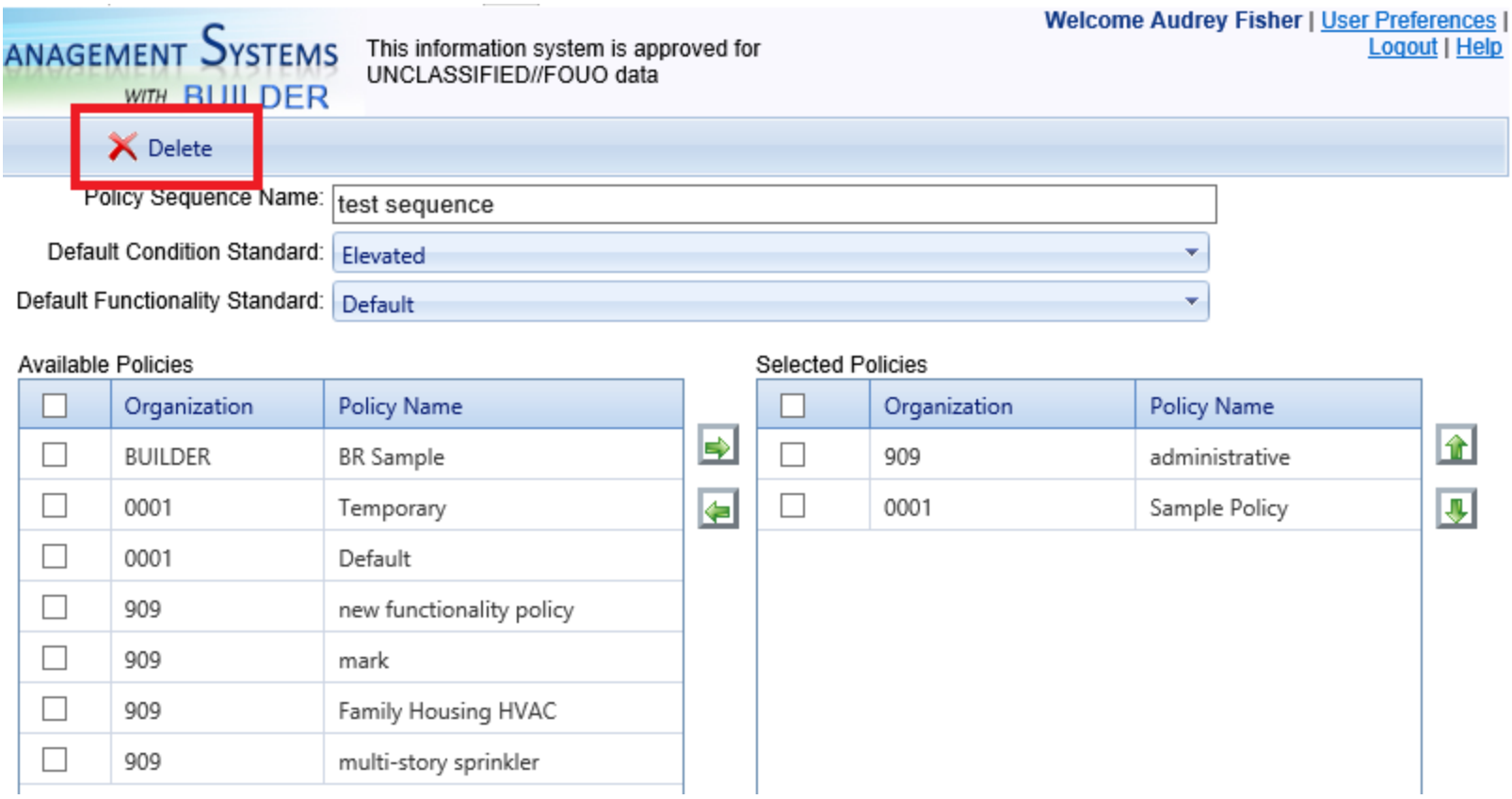
If the policy sequence is not showing in the content screen, navigate to the policy sequence in the tree and then delete it, as described here:

- Select Work Configuration > Policy Sequences from the main menu, if you are not already in the Policy Sequences tree.

- Navigate the tree in the navigation pane until you reach the desired policy sequence, and select it.

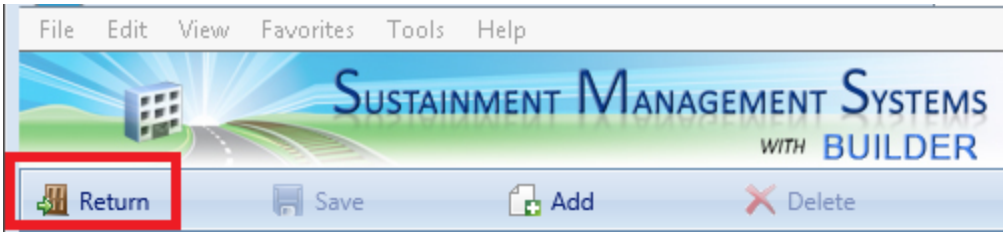


- When the policy sequence appears in the content pane, activate the Delete Delete button on the tool-bar. You will be presented with a confirmation popup before the policy sequence is deleted.



Exit Policy Sequences (Optional)

If you wish to exit the Policy Sequences area and return to your previous location, activate the Return button on the toolbar:



Related Links

[Add a Policy Sequence]
[Edit a Policy Sequence]
[Work Configuration Overview]

FCI Policies

About FCI Policies

The fourth step in work configuration is to define FCI[1] policies as desired that can then be used when running a work plan.

What do FCI Policies Do?

FCI[2] policies allow you to apply Facility Condition Index (FCI[3]) standards to specific inventory items.

Example

For example, you might want administrative Buildings to be maintained to a higher minimum FCI[4] than would be required for warehouses. You would create an FCI[5] policy that links the respective minimum FCI[6] with the appropriate Buildings.

Next Step....

After defining FCI[7] policies, the next step in work configuration will be to define at least one prioritization scheme that will prioritize work items during the work planning phase. See About Prioritization Schemes.)

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[1]Facility Condition Index.
[2]Facility Condition Index.
[3]Facility Condition Index.
[4]Facility Condition Index.
[5]Facility Condition Index.
[6]Facility Condition Index.
[7]Facility Condition Index.

Instructional Links

Work Configuration Overview

Prioritization Schemes

About Prioritization Schemes

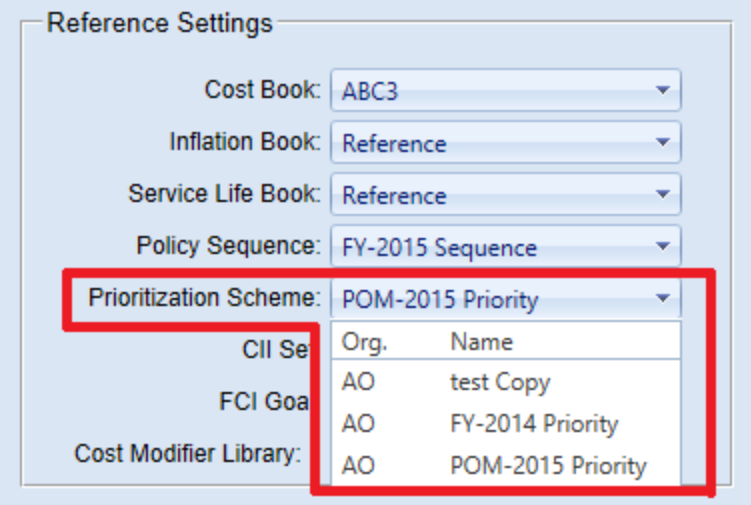
The fifth step in work configuration is to create one or more prioritization schemes that will prioritize work items during the work planning phase. Prioritization schemes use objectives and measures to define the relative importance of various properties pertaining to the work candidates so that your work planning and funding allocations can be directed to the most important items.

After you have identified work candidates using standards, policies, and policy sequences, the next step is to create at least one prioritization scheme so that your work planning and funding allocations can be directed to the most important items, reflecting your priorities.

If you have constructed a work plan for a given year, you will need to prioritize it so that your planning efforts and funding allocations can be directed to the most important items. BUILDER allows you to do this using a work prioritization scheme. This prioritization scheme will be created as part of the work configuration process, then implemented during work planning.

The BUILDER work prioritization method uses a simple additive utility function to calculate a score for each work item and to rank the work items from highest score (most important) to lowest (least important). It does this by allowing you to outline and weight your objectives and to identify specific properties of the work item that can be used as measures of how well a work item meets a particular objective.

After a work prioritization scheme has been created, the user can select it in BUILDER in the Reference Settings area at the General Information tab:



Reference settings are available both at the Organization and at the Site level.

With a work prioritization scheme that you have tested and calibrated, you will be able to prioritize and rank your work plan using a quick, objective, repeatable, and representative method with the touch of a button.

Task Links

Add a Work Prioritization Scheme
Edit a Work Prioritization Scheme
Delete a Prioritization Scheme or Objective

Instructional Link

Work Configuration Overview

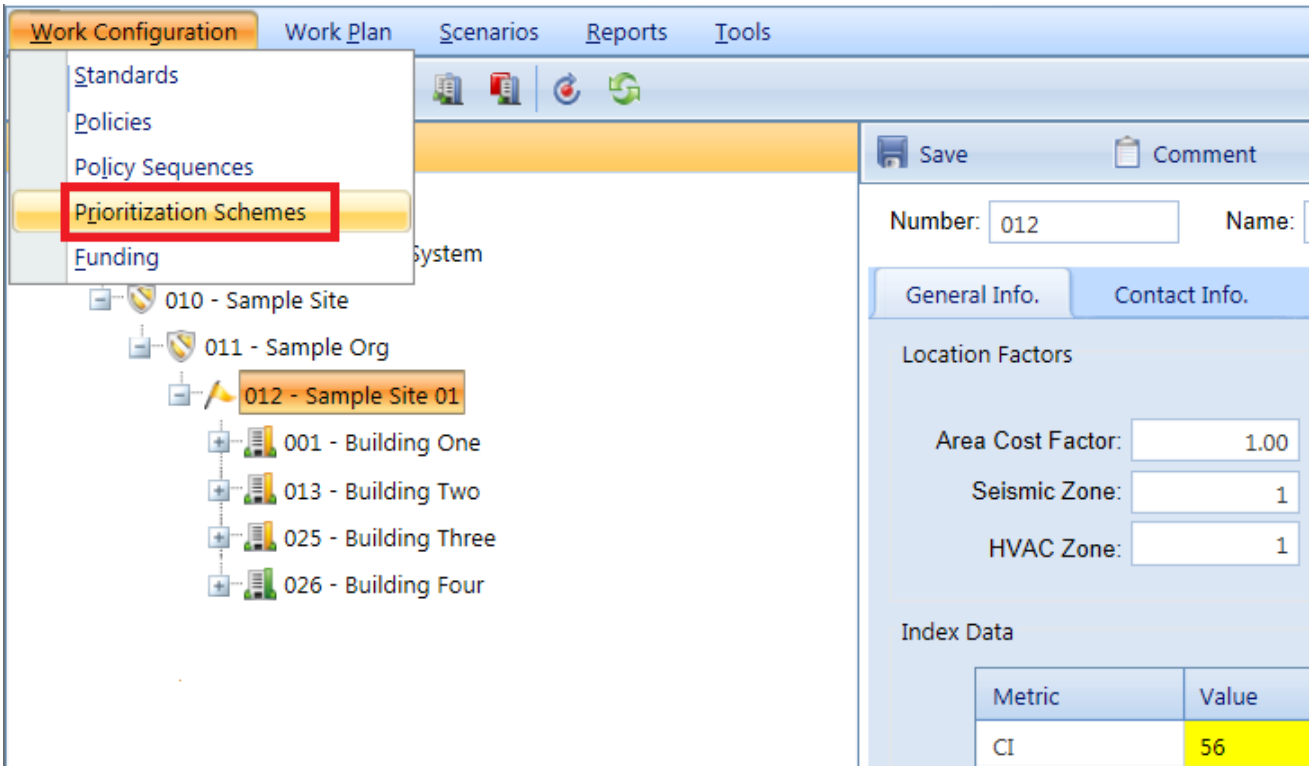
Add a Work Prioritization Scheme

This topic shows how to create a work prioritization scheme that allows work items to be prioritized according to properties specified and weighted in the scheme.

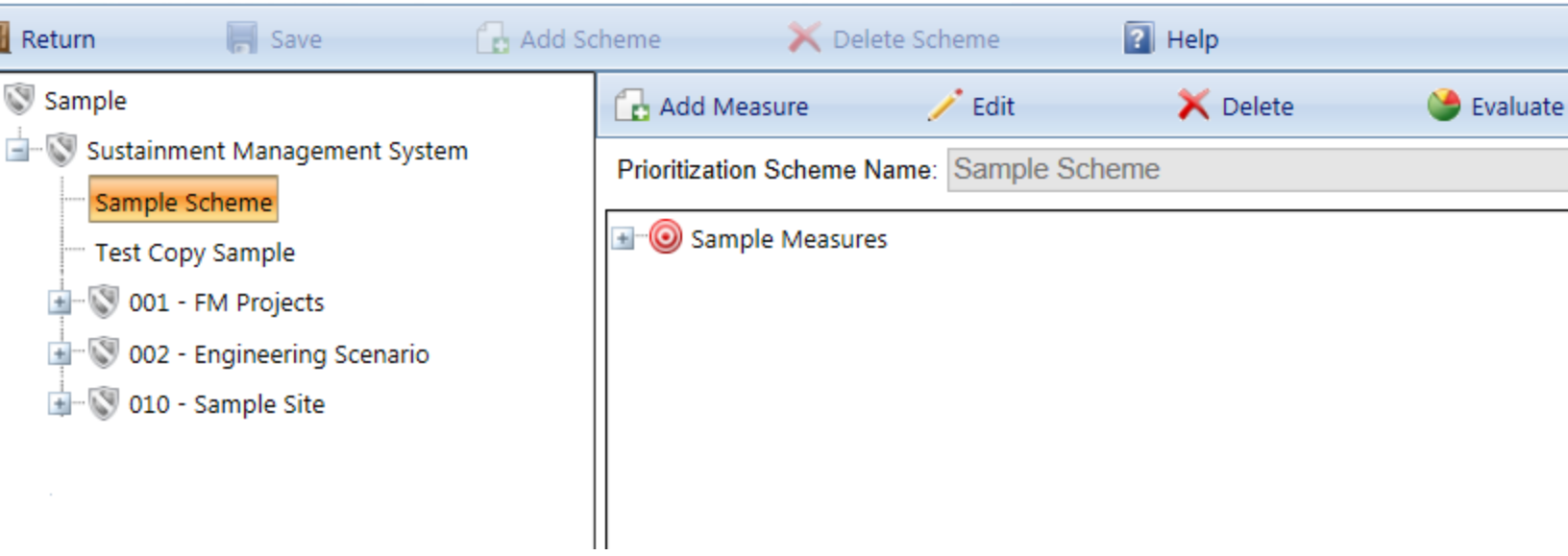
Note: In addition to setting work priorities using one or more prioritization schemes, there is another option available that can be used in addition to prioritization schemes. Namely, in the work plan table at the Work Plan tab, you can mark the checkbox in the Must Do column. This forces the corresponding work activity to be funded before all other competing work items that are not marked as "must do."

Navigate to Prioritization Schemes

To navigate to the window where you can add a prioritization scheme, select Work Configuration > Prioritization Schemes from the main menu.



The Prioritization Schemes screen will appear.



For a description of the prioritization scheme shown above, see the Prioritization Example. The prioritization example also includes an example scoring of a work item using the example shown.

Prioritization Schemes Toolbar Options

- Return. Closes the Prioritization Scheme window.
- Save. Saves changes made to the prioritization schemes.
- Add Scheme. Initiates adding a new prioritization scheme.
- Delete Scheme. Deletes the selected prioritization scheme.
- Help. This button is not currently connected.

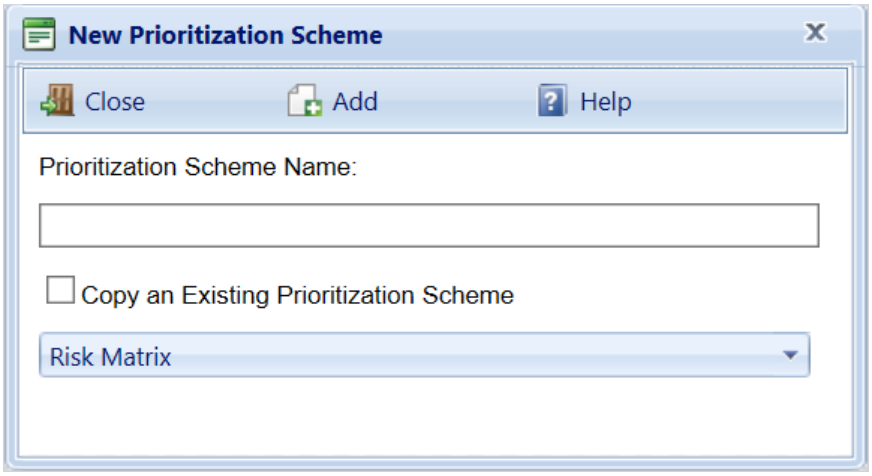
Add a Prioritization Scheme

You can create as many prioritization schemes as you like. When you are ready to prioritize a work plan, you will simply select, in the Reference Settings area at the Site or Organization's General Information tab, the prioritization scheme you wish to use. You may, in fact, wish to try out several different schemes and then compare the resulting prioritized lists.

To create a new prioritization scheme,

- Activate the Add Scheme button on the window toolbar.

  The "New Prioritization Scheme" popup window will appear.



- In the Prioritization Scheme Name field, enter a unique name for the new scheme, which is limited to 50 alphanumeric characters.

Note: You may wish to keep the name much shorter than the allowed 50 characters in order to minimize wraparound in the name when it's displayed in the tree.

- Activate the Add button in the popup window toolbar.

Name the Main Objective

Initially after creating a prioritization scheme, only the Main Objective will appear in the scheme. The main objective can be reworded (see Edit an Objective), and subobjectives can be added to it (See Add a Subobjective)

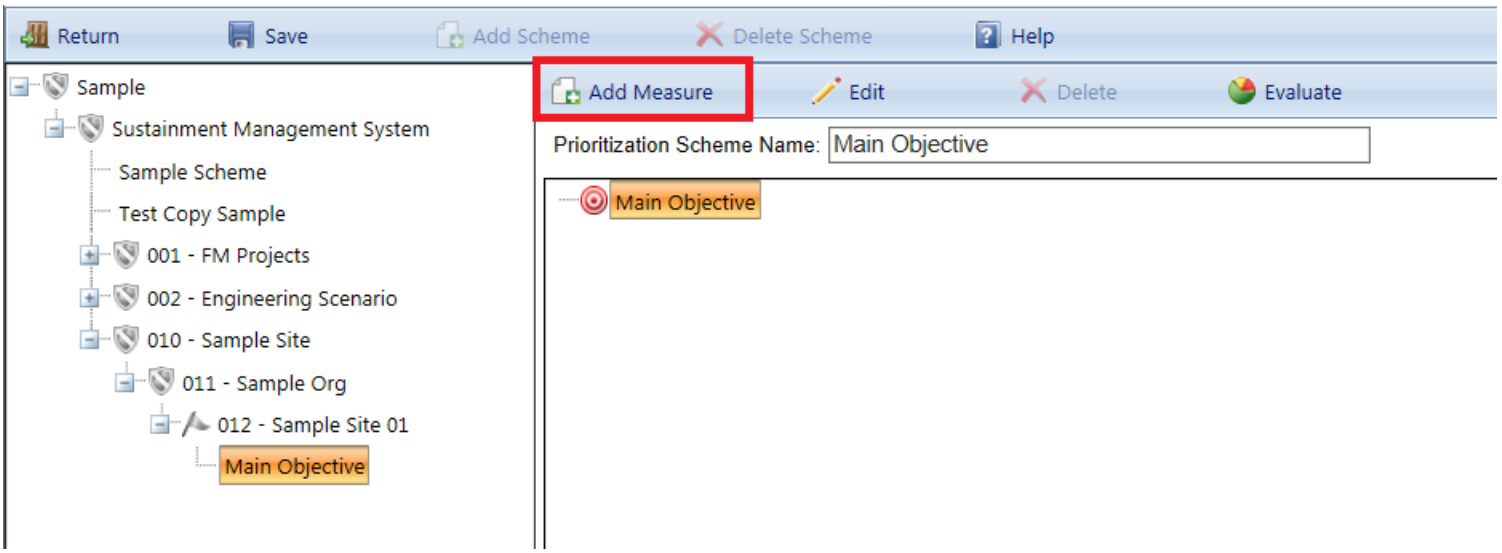
Note that when you are creating a new prioritization scheme you have the option to copy an existing scheme. If you have a prioritization scheme that you have fine tuned and accept as the standard scheme to use, then the ability to copy it can be very useful. If you want to experiment with recalibration of the weights and measures, you can do so with a copy and not destroy your original values. To copy an existing scheme, mark the Copy an Existing Prioritization Scheme checkbox, select the scheme to copy from the dropdown list, and activate the Add button on the toolbar.

Additionally, there is no way to cancel changes for prioritization schemes. Changes are saved to the database when they are made, and the changes overwrite previous data. A safe way to experiment with a particular prioritization scheme is to copy it by creating an entirely new scheme and then edit with the copy and leave the original alone.

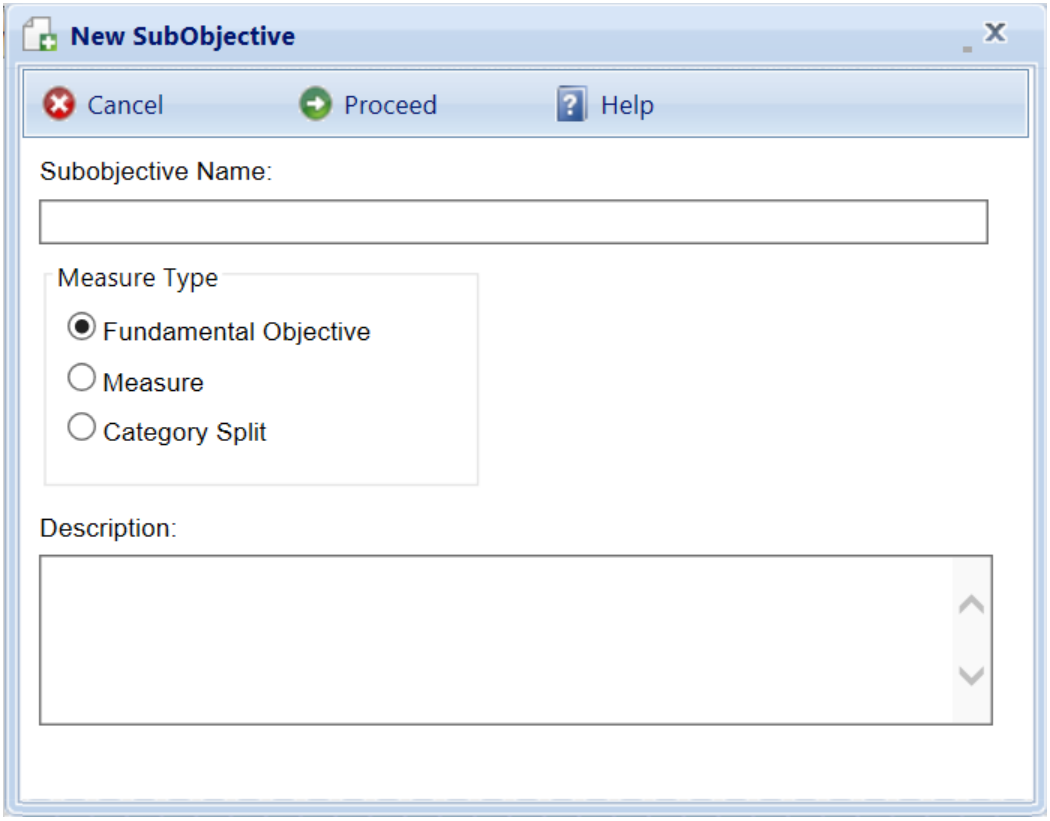
Add a Subobjective

To add a subobjective to an objective on the tree,

- Select the objective.
- Activate the Add Measure button on the content screen toolbar.



The "New SubObjective" popup window will appear:



Enter Required Data

To create the subobjective, the following data must be recorded:

- Node name. Enter the name of the objective that will appear in the tree.
- Measure Type. Select the type of objective to be created from the three available types:
  - Fundamental Objective. This is a statement of one of the things you are trying to accomplish with the work plan. It is primarily used to help you outline your thoughts so that you eventually are able to identify properties (measures) in your inventory that you will consider when prioritizing the individual work items.
  - Measure. A measure is a property of the work item or of the inventory hierarchy of the work item's Component-Section. A work item's overall score in the prioritization scheme is fundamentally determined by the values of the work item's properties that are used as measures in the scheme, the point values assigned to those particular values, and the relative weights of the objectives.
  - Category Split. See Using Category Splits below for a further description of category splits.

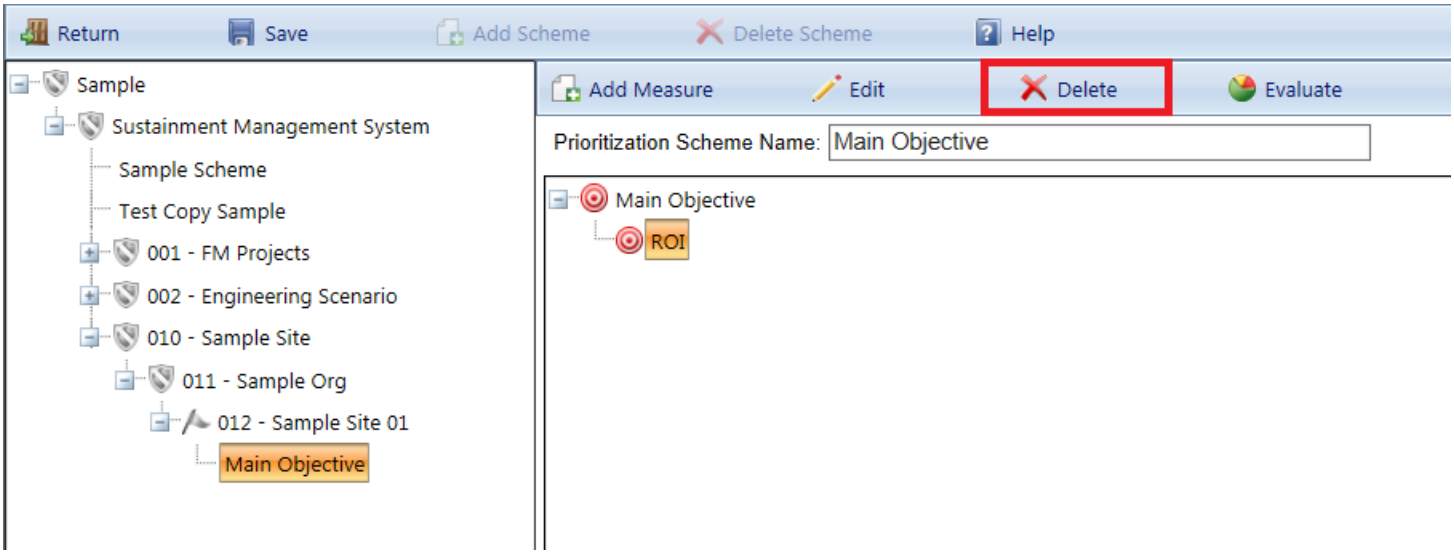
- Measure/Split Category. If you select "Measure" or "Category Split" as the type of objective, select the category to associate with the measure or split, either Building or General. If a fundamental objective is selected as the measure type, this field will not appear.
- Available Measures. If you select "Measure" or "Category Split" as the type for this objective, then you will also have to select the measure to associate the measure or split. The available measures in the dropdown list depends on the Category Split or Measure category chosen. If a fundamental objective is selected as the measure type, this field will not appear.

In addition to this required data, you have the option to add a Description of the new objective, which is limited to 255 alphanumeric characters. When all of the information has been entered, activate the Proceed button to create the objective. If you do not wish to create the objective, activate the Cancel button.

Delete an Objective

To delete an objective from the tree:

- Select the objective on the tree.
- Activate the Delete button in the content area toolbar.

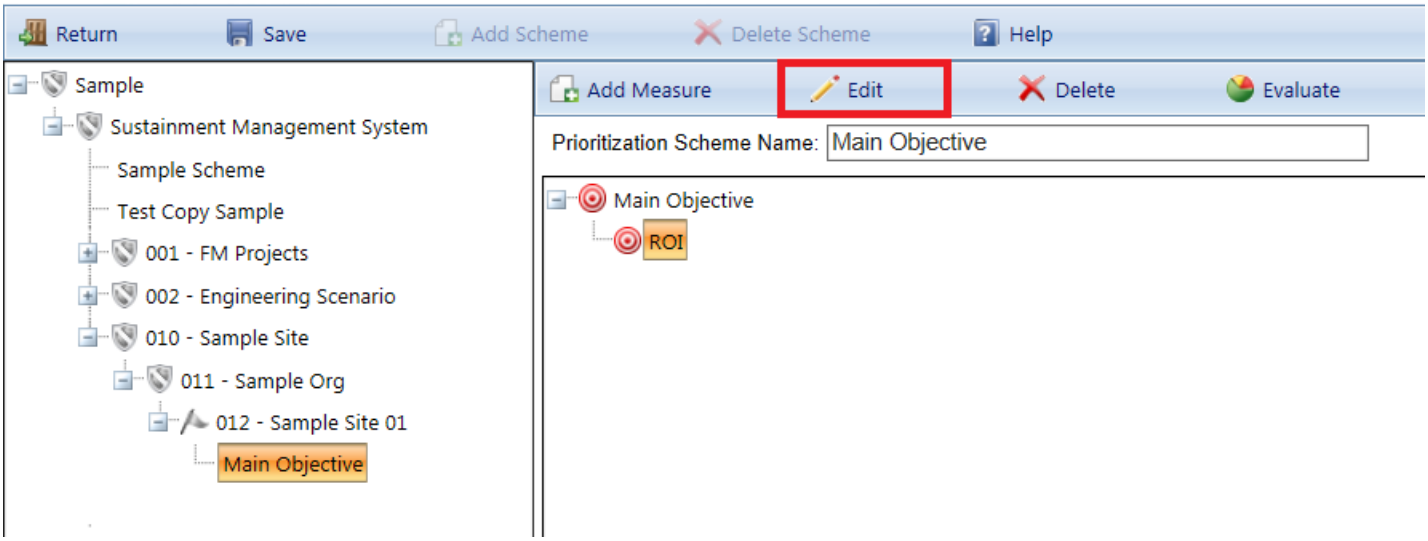


It is important to note that if you delete an objective, the entire subtree under the objective will be deleted as well.

Edit an Objective

To edit the name or description of an objective:

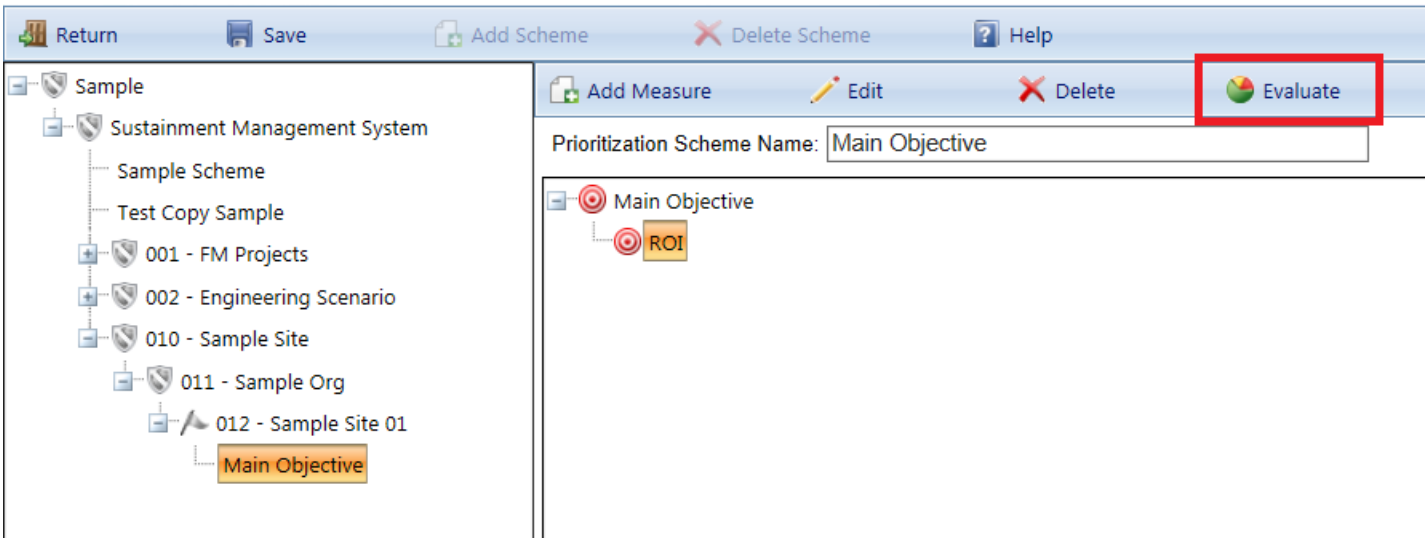
- Select the objective on the tree.
- Activate the Edit button.



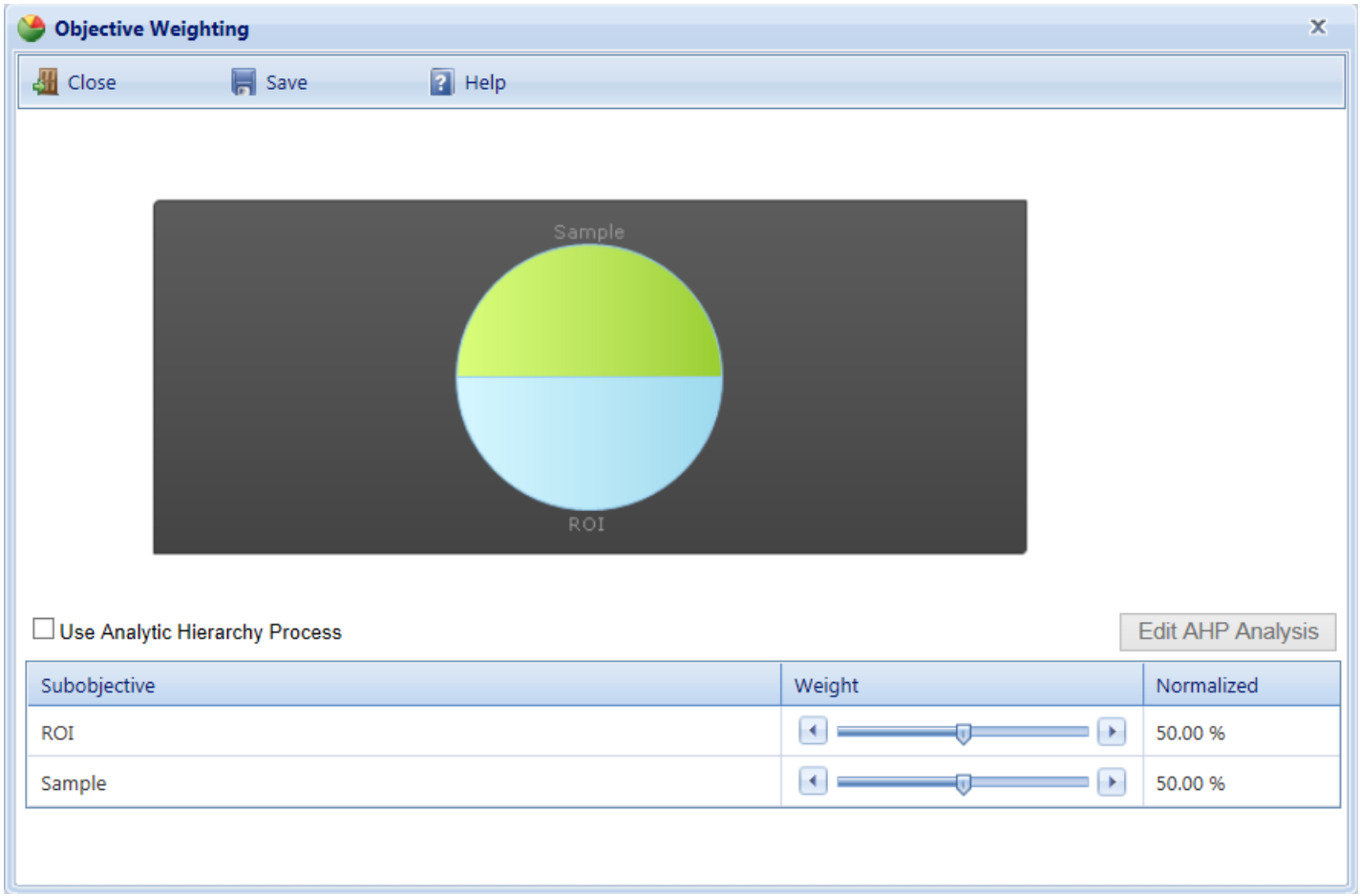
It is important to note that once an objective is created, you may not change the measure type, category, or measure itself, but you can change the node name.

Evaluate a Fundamental Objective

To record the relative weights of the children of an fundamental objective, select the fundamental objective, select it, and activate the Evaluate button.



The Objective window will appear:



The children of the fundamental objective will be listed in a grid along with their weight. The default setting for the Weight is 100 for all children. That is, all children are equally important to the parent. You may adjust the weights by doing one of the following:

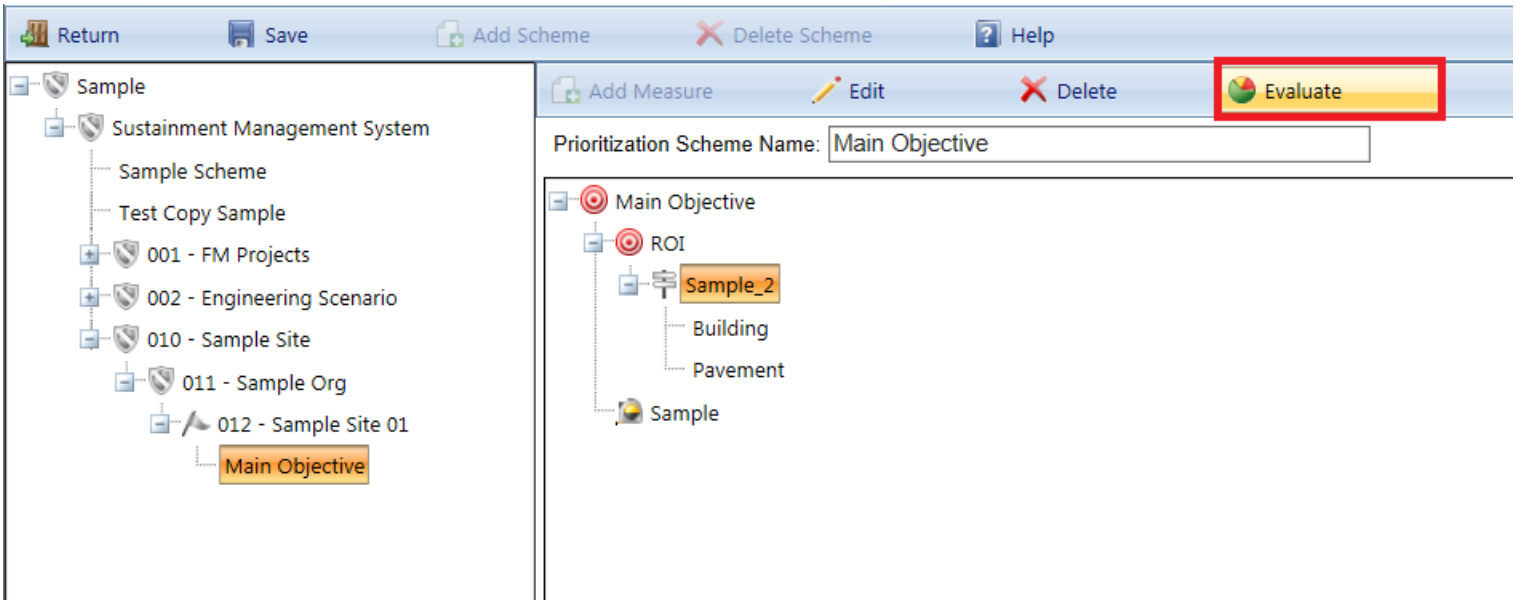
a. Enter a number between 0 and 100 in the Weight column.
b. Or, mark the Use Analytic Hierarchy Process checkbox, then activate the Edit AHP Analysis button. The AHP process allows you to establish the weights by doing a binary comparison of the field values. See Using the Analytic Hierarchy Process for a description of this method.

Make sure to activate the Save button to save changes.

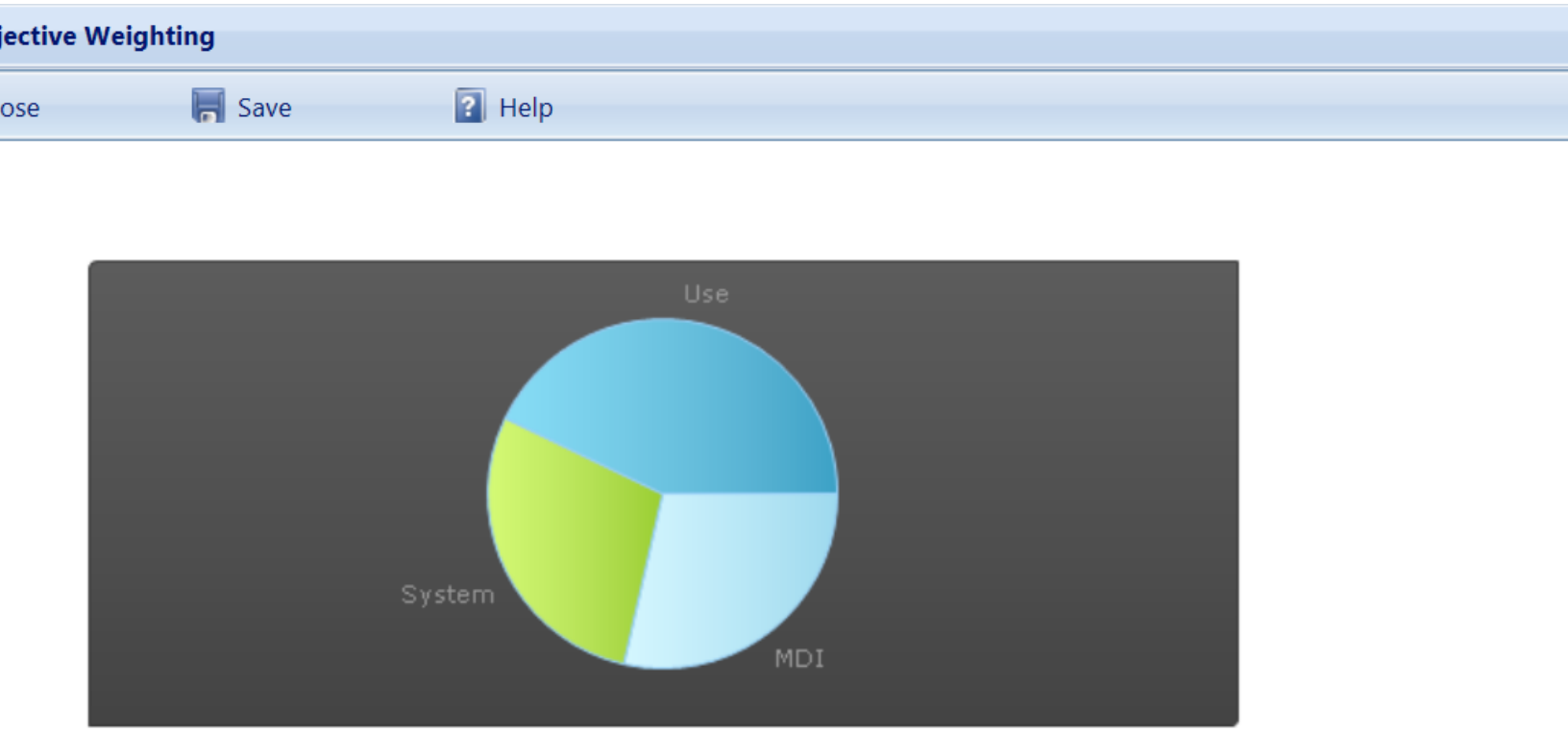
Note: Each of these methods results in a normalized weight (which cannot be edited) that is calculated so that the sum of the weights is 100%. This is done by dividing each of the individual weights by the sum of all of the weights.

Evaluate a Measure

To assign points to the various values of a measure, select the measure, and then activate the Evaluate button.



The Measure Evaluation window will appear:



The possible field values for the measure will be listed in a grid, along with their assigned Point Value. The default point value is 100 for all field values. That is, initially they are equally important. You can edit the point value to adjust the weights by doing one of the following:

a. Enter a number between 0 and 100 in the Weight column.
b. Alternatively, mark the Use Analytic Hierarchy Process checkbox, then activate the Edit AHP Analysis button. The AHP process allows you to establish the weights by doing a binary comparison of the field values. See Using the Analytic Hierarchy Process for a description of this method.

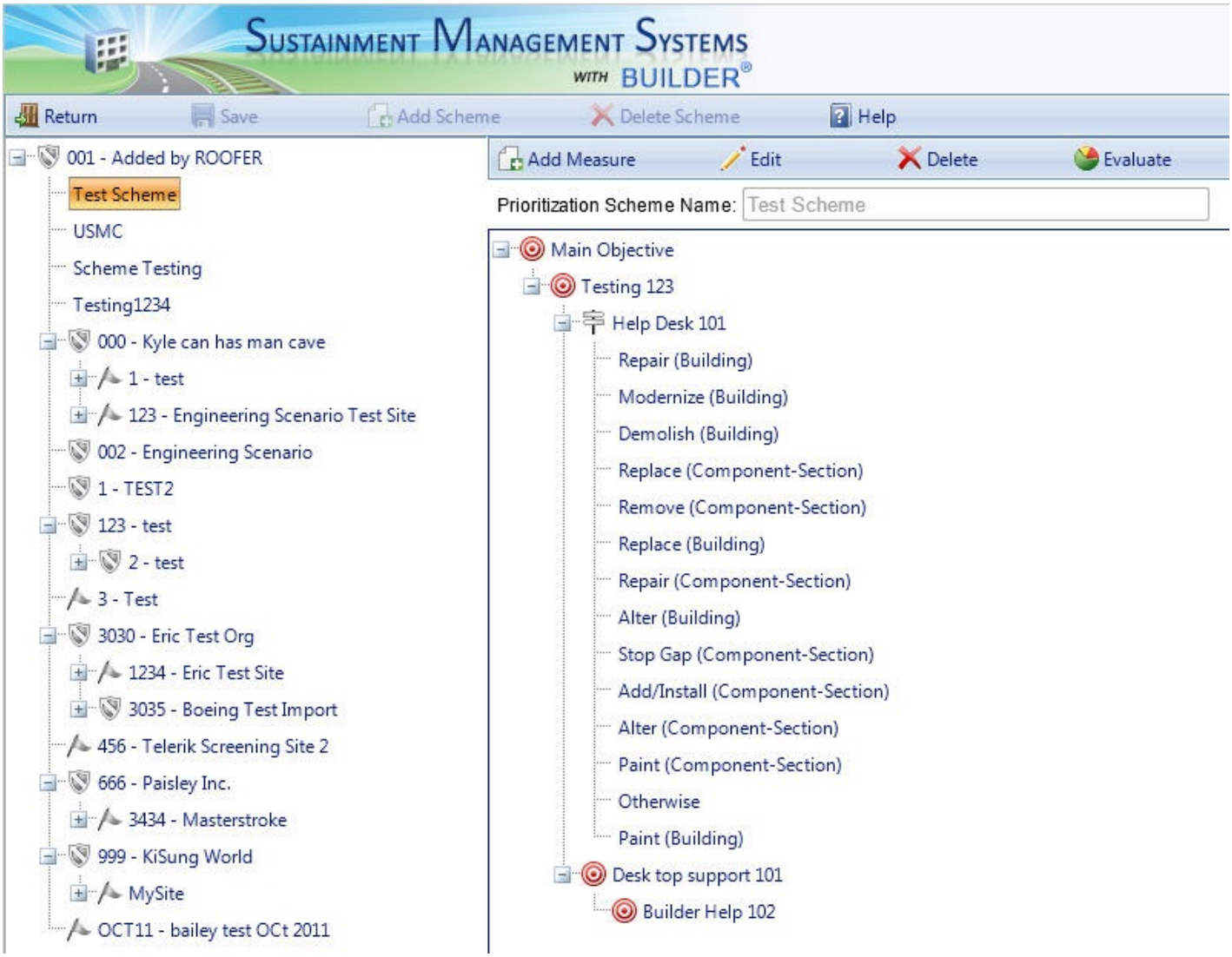
Use the Save button to save changes or the Cancel button to return to the previously saved weights.

Note: Each of these methods results in a normalized weight (which cannot be edited) that is calculated so that the sum of the weights is 100%. This is done by dividing each of the individual weights by the sum of all of the weights.

About Using Category Splits

A category split, denoted by the icon in the Objectives Tree, is associated with a field property in the work item hierarchy and is used when you want to vary how the priority score is computed based on the work item's value for this field property. The subobjectives of a split can only be the various values of the field property.

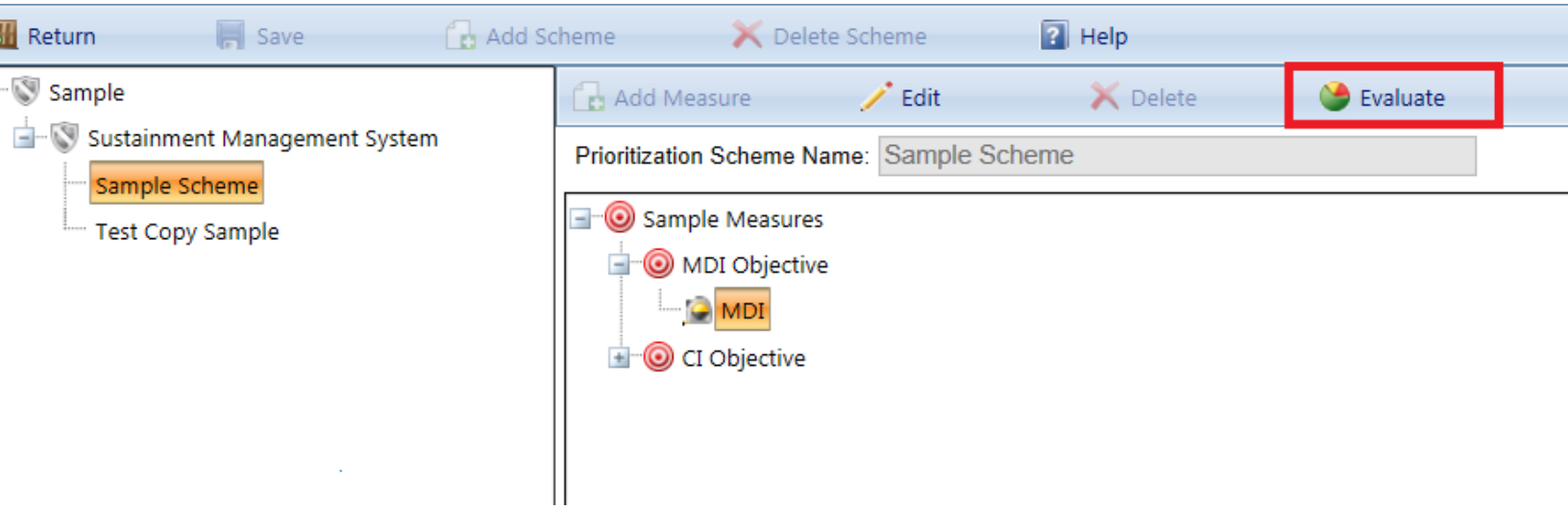
The subobjectives of a split are called categories. The categories identify which subtree will be used based on the associated field's property value. When the algorithm that calculates the score comes to a split, only the single branch of the tree under the split corresponding to the work item's property value as a category will be used. The screen below shows an example of a split in a prioritization scheme:



The category split in this example is Type of Work. The associated field is work activity, which has 6 possible values: "Repair," "Replace," "Paint," "Remove," "Add/Install," and "Alter." A category split generally has an added category named "Otherwise," which is the branch of the tree used if the value of the field differs from all of the other listed values. In this case, "Remove," "Add/Install," and "Alter" will use the "Otherwise" category. When you first create a split, all of the possible values of the field are listed as categories under it. If you delete a category, then items with that field property value will use the "Otherwise" category.

In the example above, the work item's **CI**[1]Condition Index and **RSL**[2]Remaining Service Life are used as the measures for both "Repair" and "Replace." However, the point values assigned to the fields varies by type of work. To replace a Component-Section, the most cost-effective time would be indicated by a very low **CI**[3]Condition Index and little or no remaining service life. To repair a Component-Section, the most cost-effective time would be indicated by a mid-range **CI**[4]Condition Index and a long remaining service life. The Type of Work split allows the computation of the score to proceed selectively. Since only one of the categories will be used, the relative weights of the categories under a split are calculated differently from other types of objectives.

To assign points to the various values of a split, navigate to the split on the tree, select it, and activate the Evaluate button.



The "Measure Scores" popup window will appear:

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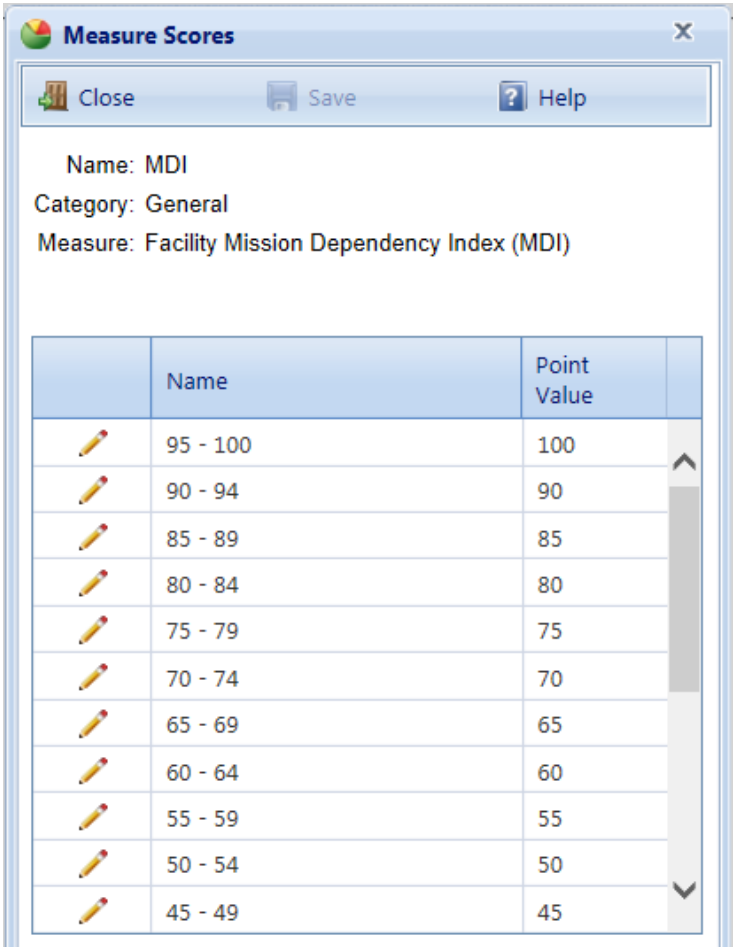
[1]Condition Index
[2]Remaining service life.
[3]Condition Index
[4]Condition Index



The possible field values for the measure will be listed in a grid, along with their assigned Point Value. The default point value is 50 for all field values. That is, initially they are equally important. You can edit the point value to adjust the weights by doing one of the following:

a. Enter a number between 0 and 100 in the Weight column.
b. Alternatively, if the number of field values is less than 25, mark the Use Analytic Hierarchy Process checkbox, then activate the Edit AHP Analysis button. The AHP process allows you to establish the weights by doing a binary comparison of the field values. See Using the Analytic Hierarchy Process for a description of this method.

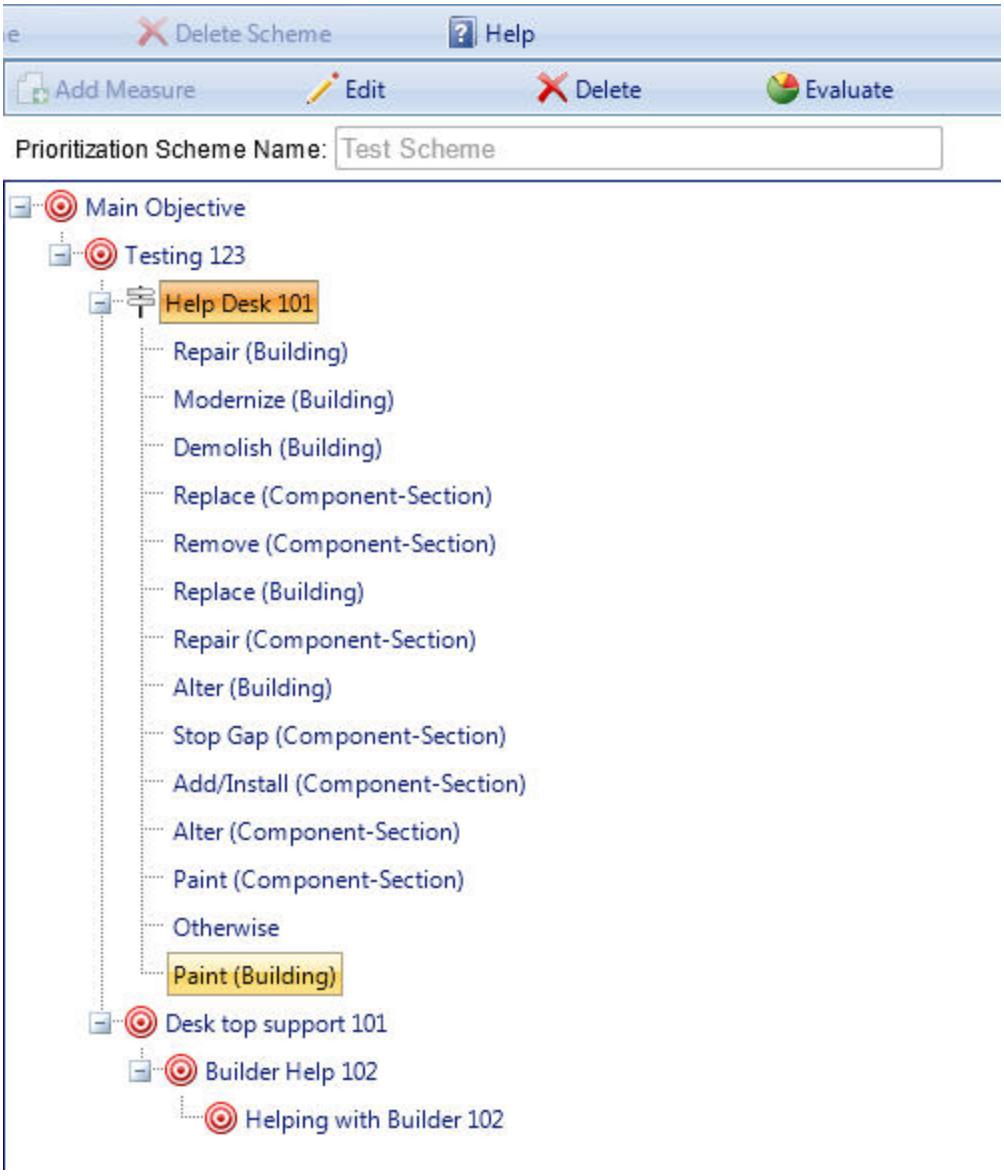
Use the Save button to save changes or the Cancel button to return to the previously saved weights.

Note: Each of these methods results in a normalized weight (which cannot be edited) that is calculated so that the sum of the weights is 100%. This is done by dividing each of the individual weights by the sum of all of the weights.

Related Links

[Edit a Work Prioritization Scheme](#)
[Delete a Prioritization Scheme or Objective](#)
[About Prioritization Schemes](#)

Prioritization Example



In the example prioritization scheme shown above, the outline of objectives begins with the Main Objective, in this case a simply worded "Do the right work at the right time." The Main Objective is the starting point of the

prioritization scheme. It cannot be deleted, but you can edit its wording by right-clicking it in the tree and selecting "Edit." The Main Objective is divided into two subobjectives:

- "Work on the most important items first."
- "Do the work at the most cost-effective time."

Each of these three items in the tree is a fundamental objective, represented by the icon. A fundamental objective is a simple statement of one of the things you are trying to accomplish. Fundamental objectives are used in the tree to help you outline your thoughts about what is important and how it should be measured. Each fundamental objective can be further refined by subobjectives. In the example, the two objectives for each fundamental objectives are:

- System and Use for "Work on the most important items first."
- **CI**[1]Condition Index and **RSL**[2]Remaining Service Life for "Do the work at the most cost-effective time."

These items are a different type of objective called a measure, represented by the icon. A measure is an objective associated with a field property in the work item's hierarchy (Site, Complex, Building, System, Component, Section, work item). Certain values of the field property are more desirable than others. In the example, the importance of a work item can be measured by considering what Building System is involved and what the Building's Use Type is. For example, repairing an air-handling unit in an administrative Building might generally be ranked higher than repairing an interior wall in a warehouse. Similarly, the work item's Section **CI**[3]Condition Index and **RSL**[4]Remaining Service Life will provide measures for how well a work item meets the objective of doing the work at the most cost-effective time.

At each level of the tree, you assign weights to the fundamental objectives and points to the measures so that an algorithmic approach can be used to calculate a score for each work item. Here is a description of how the scoring is done for the previous example:

- The measures are what really count in the scoring. Each of the measures can accumulate from 0 to 100 points for each work item. The points for each measure are determined by the work item's field value for that measure and a point system you specify for that measure.
- The fundamental objectives are used to establish the relative importance of the measures in the overall scheme. Each time an objective is subdivided into new subobjectives, you must make a decision as to the relative weights of the new items under the objective. For example, the objective "Work on the most important items first" has two children, System and Use. You may decide that System and Use are of equal value to consider for the parent objective, in which case their weights will both be 0.5. On the other hand, you may decide that how you use the Building is twice as important as the

---

[1]Condition Index

[2]Remaining service life.

[3]Condition Index

[4]Remaining service life.

particular System involved, in which case Use has relative weight 0.667 and System has weight 0.333. Note that the sum of the relative weights of the children of an objective must equal 1.0.

- To calculate a score for a given work item, calculate the relative weight of each measure by taking the product of its weight and the weights of all its predecessors in the tree. Assign the points for each measure by looking at the corresponding field value for the work item. The overall score is then computed as the sum of the products of relative weight times point value of the measures. The overall score of a work item will be in the 0-100 range. The sum of the overall relative weights of the measures will be 1.0.

An Example of the Scoring

Here is an example of how the scoring is computed using the prioritization scheme shown below, which includes a split, for a work item where:

- Type of Work = Repair
- Use = Administrative (corresponding to 90 points)
- System = HVAC (corresponding to 70 points)
- Section **CI**[1]Condition Index = 68 (corresponding to 100 points)
- **RSL**[2]Remaining Service Life = 7 (corresponding to 100 points)

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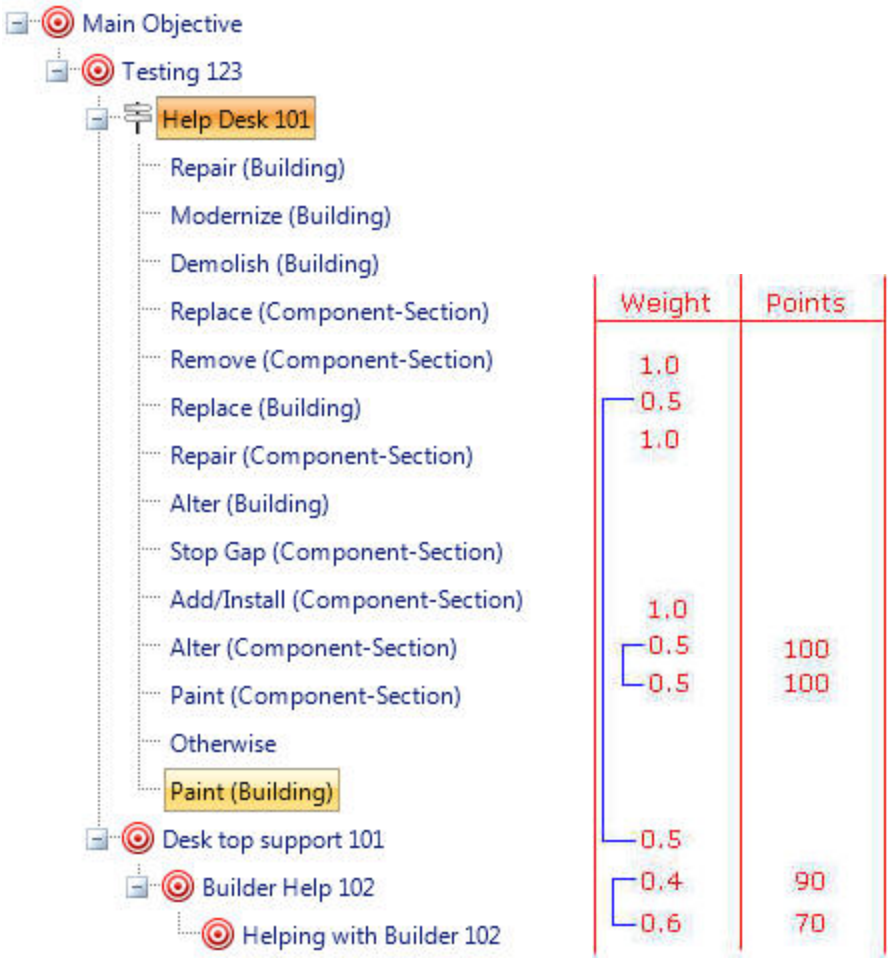
[1]Condition Index

[2]Remaining service life.



Note that the weights connected by blue lines must each sum to 1.0 since they are at the same level. The Main Objective always has weight 1.0. Type of Work has weight 1.0 because it is the only child of its parent. The relative weights of the four measures used in this computation (subtrees for Replace, Otherwise, Paint are ignored since this is a repair item) are:

Weight of Repair **RSL**[1]Remaining Service Life = 1.0 * 0.5 * 1.0 * 1.0 * 0.5 = 0.25

Weight of Repair **CI**[2]Condition Index = 1.0 * 0.5 * 1.0 * 1.0 * 0.5 = 0.25

Weight of System = 1.0 * 0.5 * 0.4 = 0.2

Weight of Use = 1.0 * 0.5 * 0.6 = 0.3

Note that the sum of the relative weights 0.25 + 0.25 + 0.2 + 0.3 = 1.0. The work item's priority score, using W for the corresponding relative weight and P for points, is calculated as:

---

[1]Remaining service life.

[2]Condition Index

Score = (WRepair **RSL**[1]Remaining Service Life * PRepair **RSL**[2]Remaining Service Life) + (WRepair **CI**[3]Condition Index * PRepair **CI**[4]Condition Index) + (WSystem * PSystem) + (WUse * PUse)

Score = (0.25 * 100) + (0.25 * 100) + (0.2 * 70) + (0.3 * 90) = 91.0

Funding Streams

About Funding Streams

The sixth and last step in work configuration is to enter information about funding streams that can then be used when running a work plan. How you configure the funding, along with prioritization, will determine which work items will receive funding in a given year.

After you have identified work candidates using standards, policies, and policy sequences, then created a prioritization scheme so that your work planning and funding allocations can be directed to the most important items, the next and last step is to define, at the Site level, funding streams that can be applied to work items.

A funding stream consists of a funding source plus specification of funding levels for up to ten years into the future.

Funding streams can be set up at Work Configuration > Funding from BUILDER's main menu. More limited options to edit funding streams are also available within Scenarios.

Task Links

- Add a Funding Stream
- Edit a Funding Stream
- Delete a Funding Stream
- Enter or Edit Anticipated Funding Levels

Add a Funding Stream

This topic describes the steps needed to add a funding stream that can be used to fund work items; how to associate it with a Site; how to establish restrictions on what the funding stream can be used for; and how to set funding precedence for situations where a work item satisfies the restrictions (selection criteria) of more than one funding source.

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[1]Remaining service life.

[2]Remaining service life.

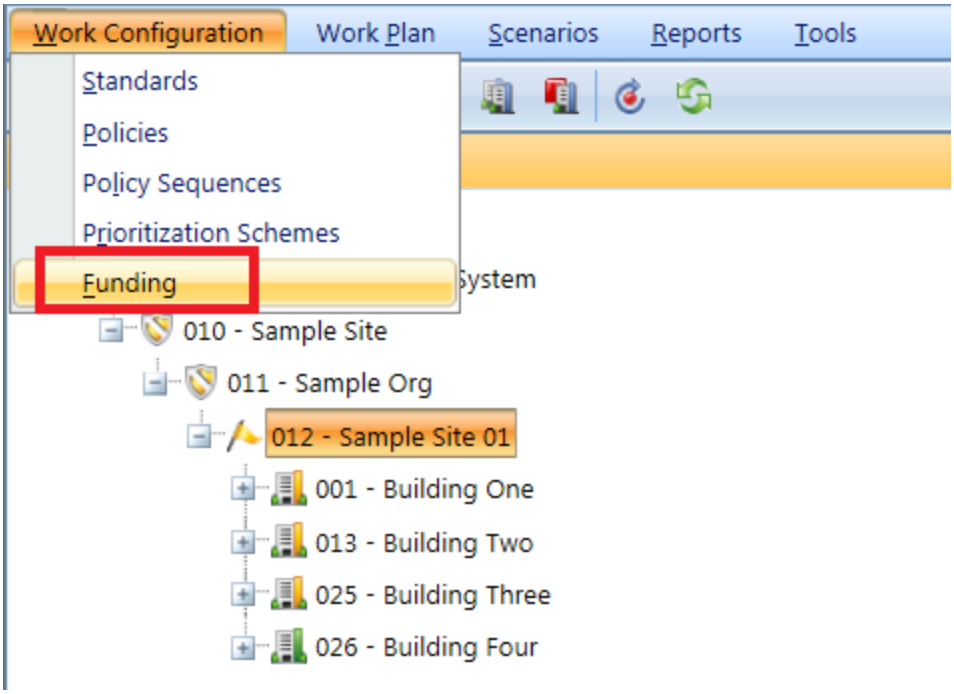
[3]Condition Index

[4]Condition Index

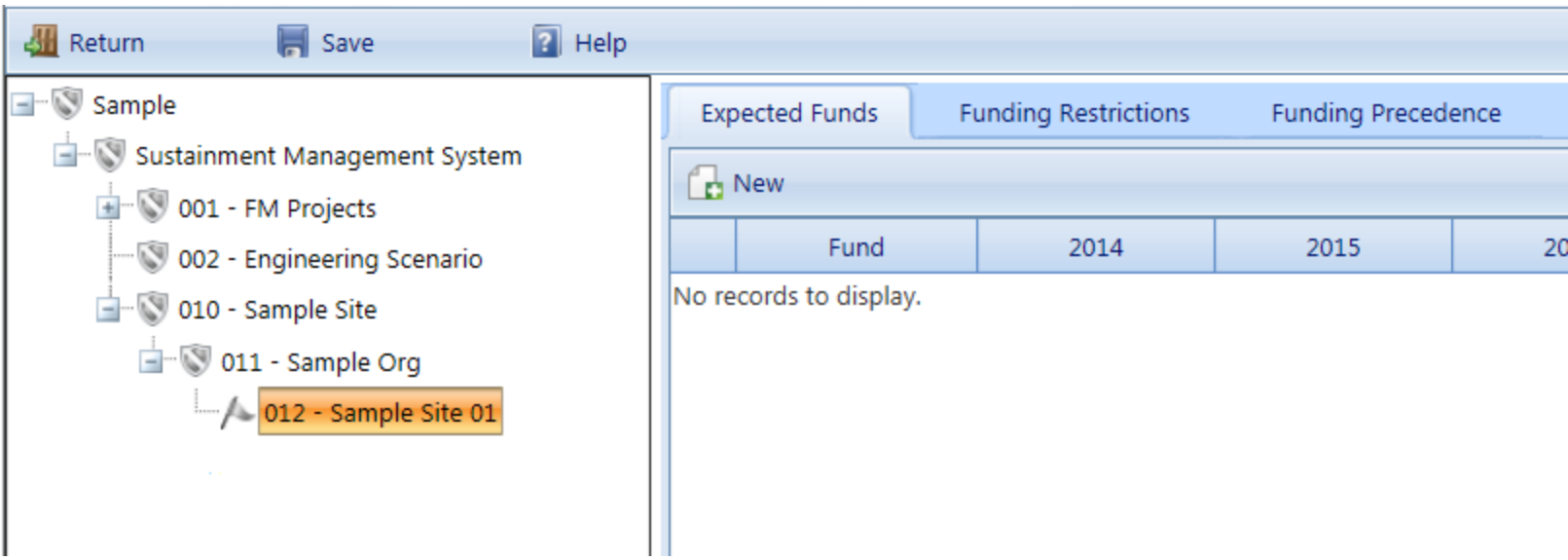
Select a Site

Before adding a funding stream, first select the Site to apply the funding stream to, as follows:

- Select Work Configuration > Funding from the main menu.



The Funding window will appear.



- Navigate the tree at the left of the screen and select the Site you wish to add the funding stream to.

Enter Funding Information

After selecting the Site in the tree, you can use the tabs in the content area to set

- the funding levels (at the Expected Funds tab),
- funding restrictions (at the Funding Restrictions tab), and
- funding precedence (at the Funding Precedence tab)

Further description of each tab is provided below.

Note: If you plan to use Scenarios in SMS BUILDER, the funding sources and amounts you enter here will be used as initial defaults for each scenario you create. You may, as an alternative, edit the amounts in the scenario itself, but if you do so, you will not be able to add new funding sources, change their restrictions, or change their precedence order in a scenario. For more information refer to Scenarios.

Expected Funds Tab

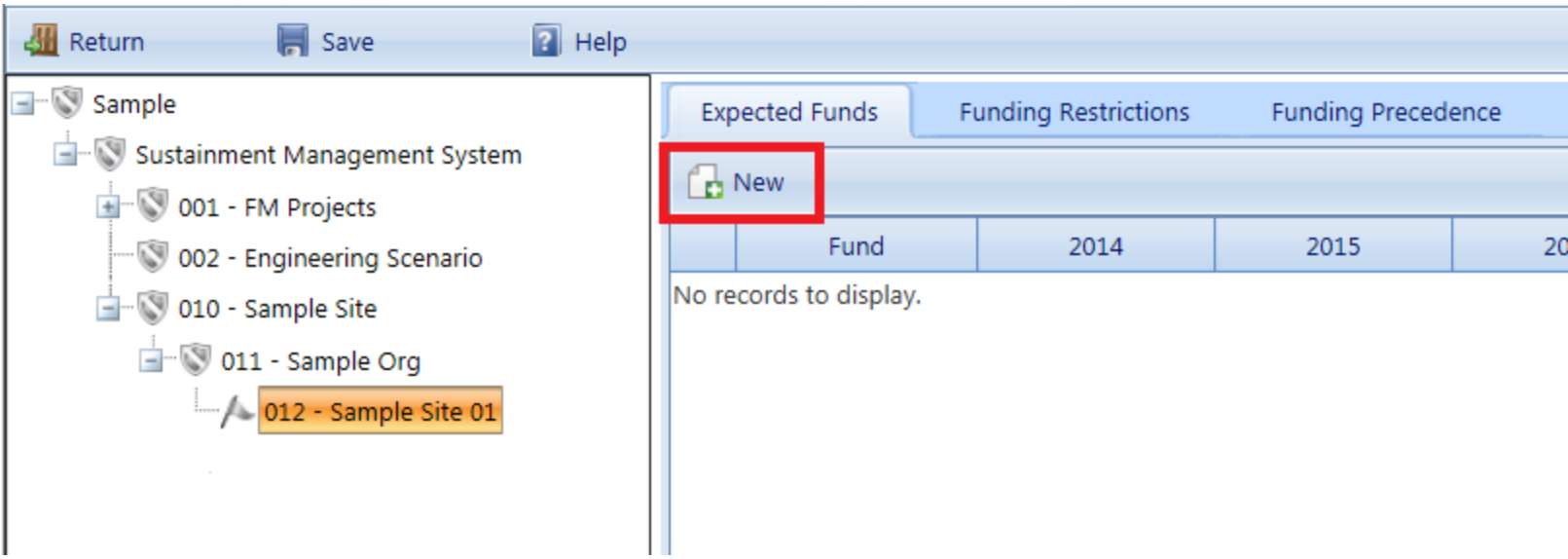
If no funds have yet been associated with the selected Site, there will be no entries in the Expected Funds table, just the message "no records to display."

The instructions below assume that you have already navigated to the Funding window and to the desired Site in the Funding tree, as described at the Select a Site heading above. The default tab, Expected Funds, should be active.

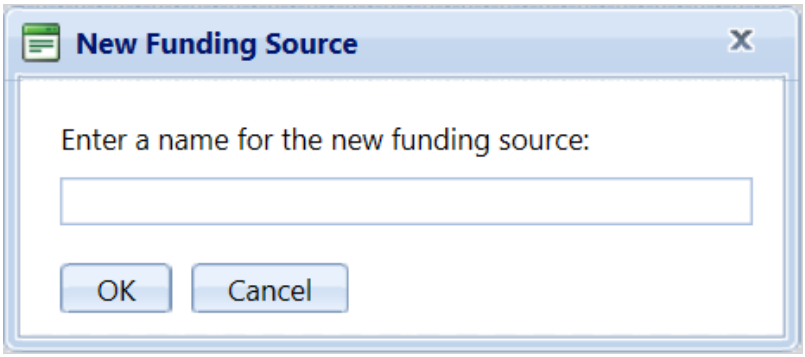
Add a Funding Stream

To add a funding stream that can be applied to work items during the work planning phase,

- Activate New on the content area toolbar.



The "New Funding Source" popup window will appear.

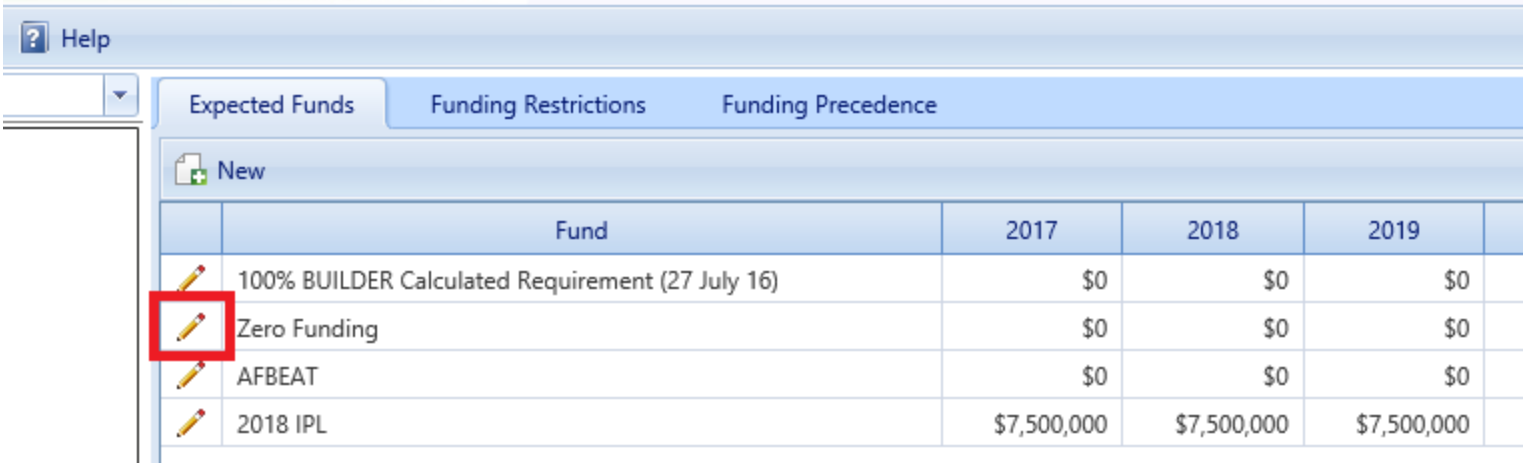


- Enter the name of the funding source you wish to add. The name is limited to 50 alphanumeric characters and must be unique.
- Confirm or cancel: Activate the OK button in the popup window. This will add the new funding source to the table of funding streams. Alternatively, if you wish to cancel the operation, activate the Cancel button in the popup window.
- After you confirm the new funding source, you will be brought back to the Expected Funds tab. Your newly created funding stream should appear in the Expected Funds table as a new record (row).

Enter Funding Amounts

To enter monetary amounts of funding,

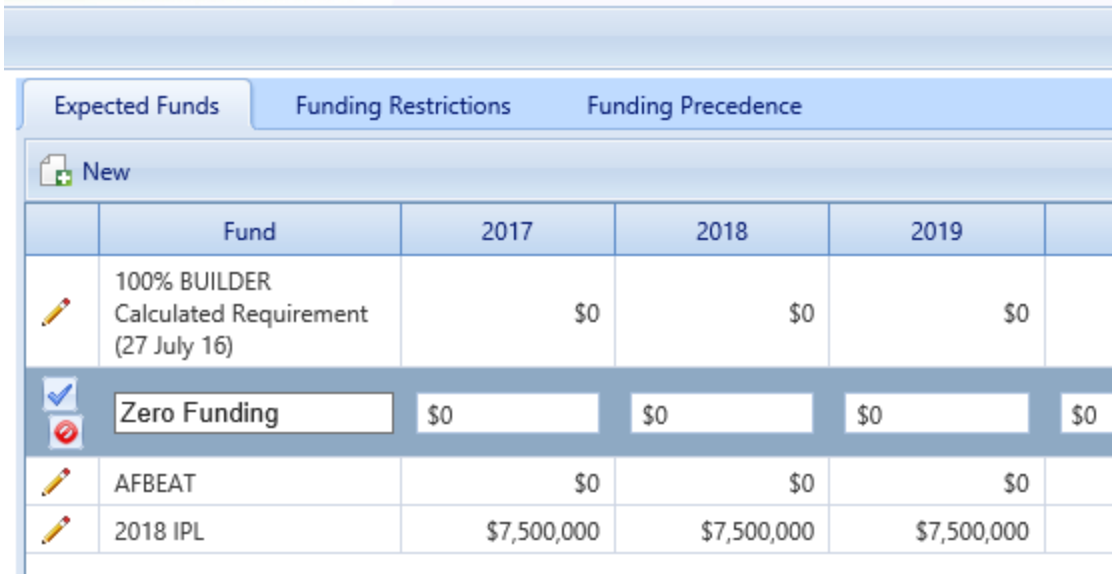
- In the row containing the funding stream you just added, activate the pencil icon in the left column of the Expected Funds table.



  The Expected Funds table will remain on the screen, but its appearance will change.

- Enter funding levels for all years desired.

  Note: You can also change the name of the funding stream here.



- IMPORTANT: After completing your funding level entries, be sure to activate the Update button (blue checkmark icon) at the left, to accept the entries. Alternatively, to cancel, activate the red Cancel button (looks like a "do not enter" sign). You will be returned to the view that shows only the pencil icon(s) in the first column of the table.
- Finally, activate Save on the main toolbar.

Funding Restrictions Tab

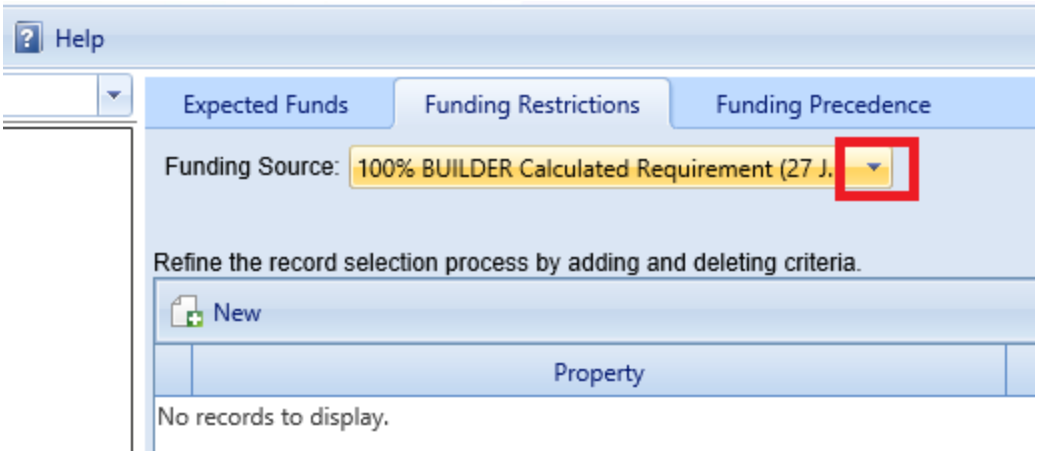
The Funding Restrictions tab allows you to establish selection criteria that determine whether or not a given funding source can be used for a particular work item. This tab allows you to identify properties that a work item must have in order to use the selected funding source.

The instructions below assume that you have already navigated to the Funding window and to the desired Site in the Funding tree, as described at the Select a Site heading above.

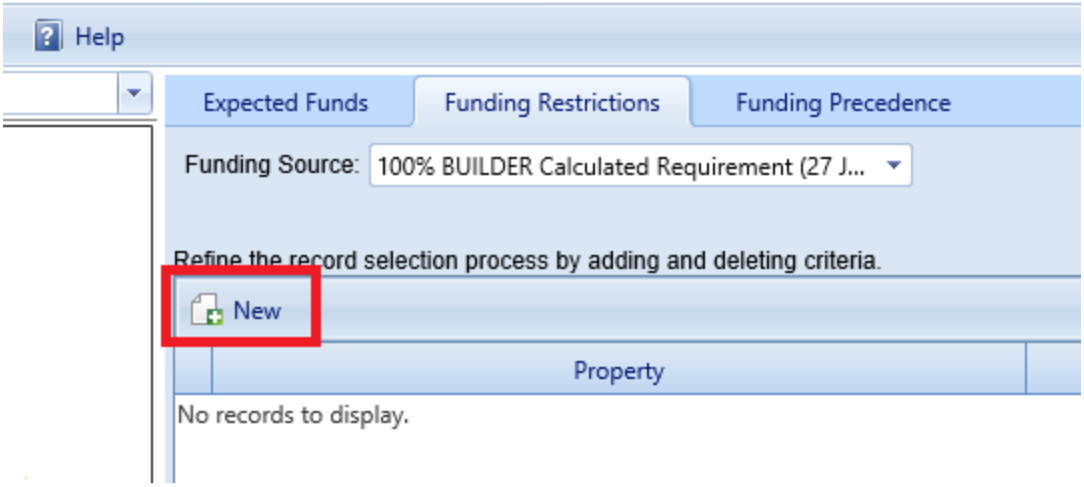
Enter a Funding Restriction Selection Criterion

To add a funding restriction selection criterion,

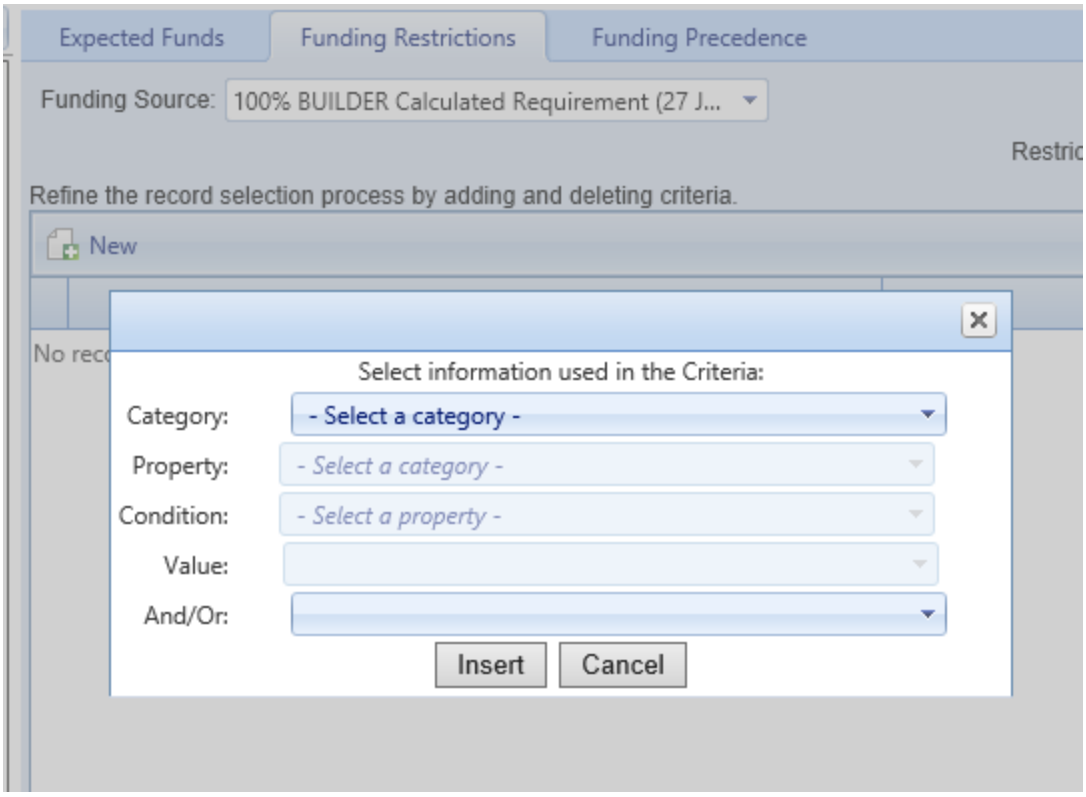
- Activate the Funding Restrictions tab.
- Select the funding source from the dropdown list.



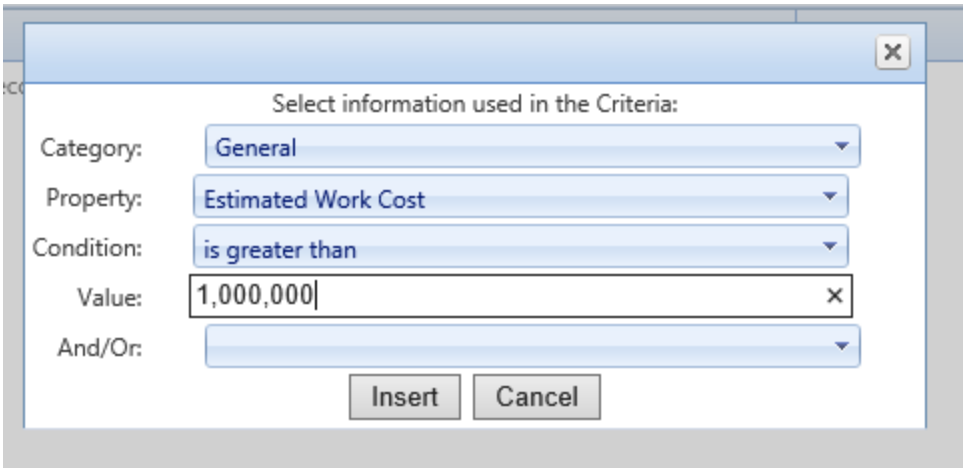
- Activate the New button.



A popup window will appear that contains multiple dropdown lists.

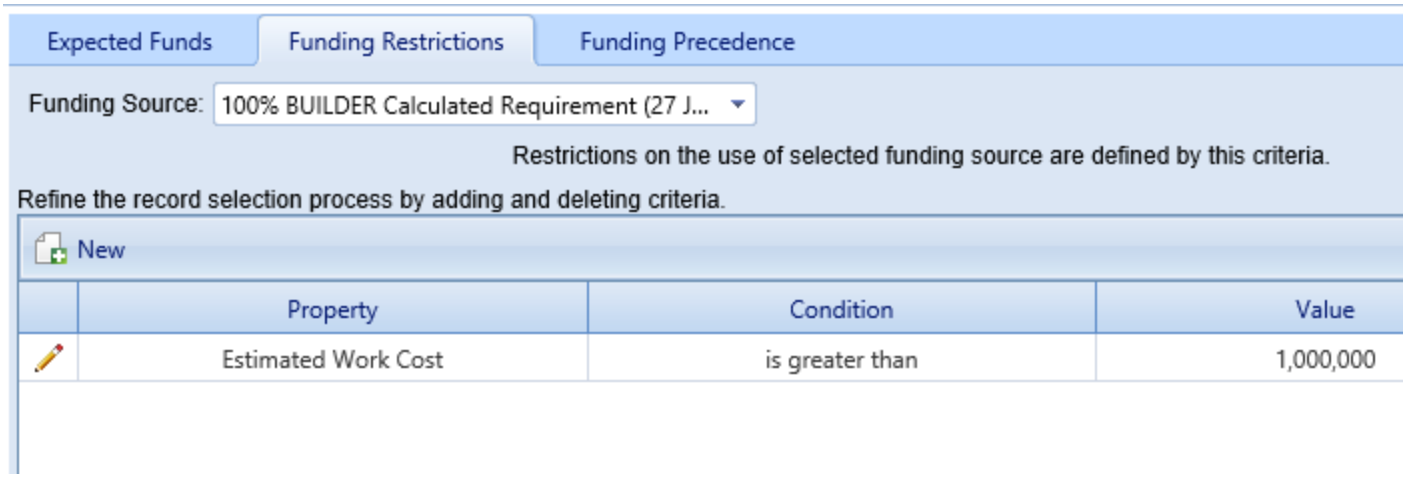


- Make selections from the dropdown lists to define a selection criterion. For example:



- If you will be adding another selection criterion, choose And or Or from the dropdown list in the last field. If you will not be adding another selection criterion, this field may be left blank.
- Confirm or cancel: Activate the Insert button at the bottom of the popup window to activate the criterion you have just defined. See Combining Funding Restrictions Criteria. Alternatively, if you instead wish to cancel it, activate the Cancel button.

- Once you have activated Insert, the criterion you defined will appear as a record (row) in the Funding Restrictions table.



- IMPORTANT: Before navigating away from the Funding Restrictions tab, be sure to activate Save on the main toolbar to retain your additions to the Funding Restrictions table.

Combining Funding Restrictions Criteria

The last dropdown list in the popup window where you define each funding restrictions criterion is the selection between And and Or, labeled And/Or. Your selection will determine how the criterion will combine with the next criterion that follows it.

The last criterion that you list in the Funding Restrictions table does not need to have a selection made between And and Or.

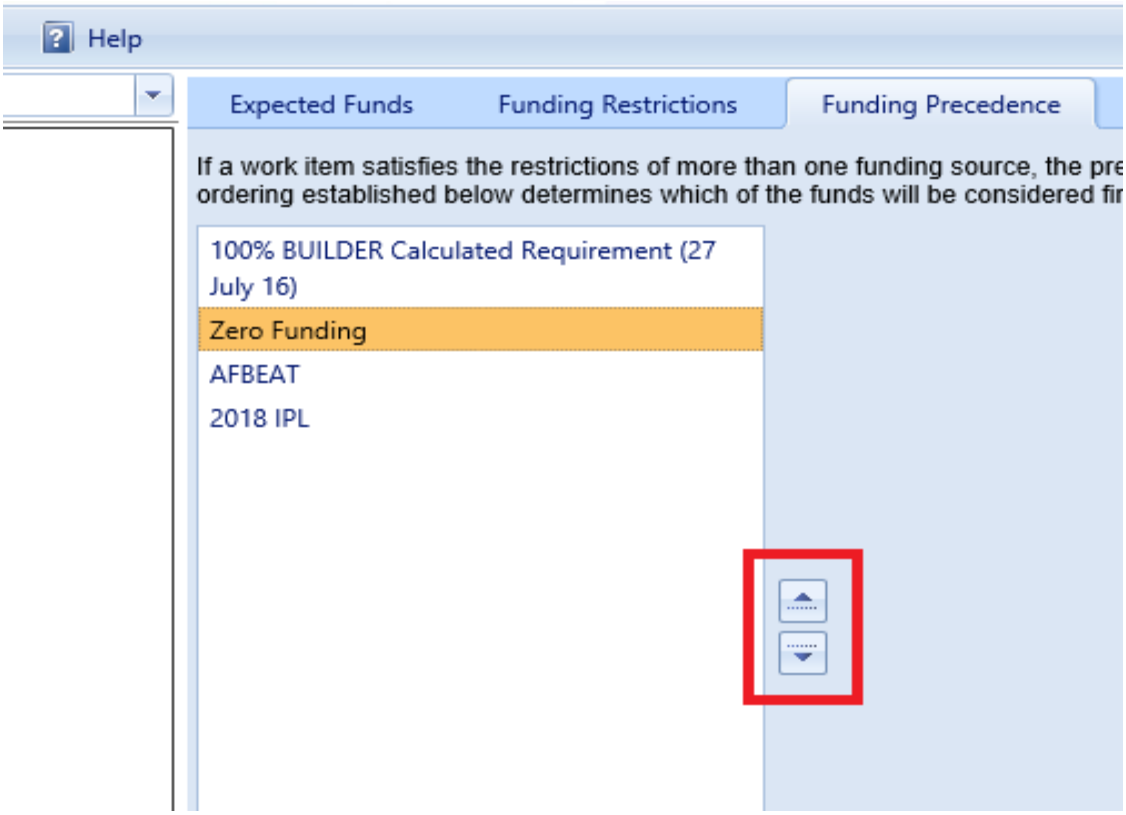
Funding Precedence Tab

After the funding sources, the amounts, and the criteria for using sources are set, the only remaining step in configuring funding is to specify how the automated process will determine which funding source to use if a work item satisfies the restrictions (selection criteria) of more than one funding source.

When funds are allocated during the work planning phase, the first funding source listed at the Expected Funds tab will be checked first, then the second, and so on until funding is found or the list is exhausted. The Funding Precedence tab provides a means of establishing the order of precedence among the funding sources available to a work item.

To change the order of the funding sources,

- Select a funding source from the list at the Funding Precedence tab.
- Use the up and down arrows to move it in the list.



- When satisfied with the order of the funding sources, activate Save on the main toolbar.

After saving, if you return to the Expected Funds tab, you will see that it reflects the new precedence order that you created.

Related Links

Edit a Funding Stream
Delete a Funding Stream
Enter or Edit Anticipated Funding Levels
About Funding Streams

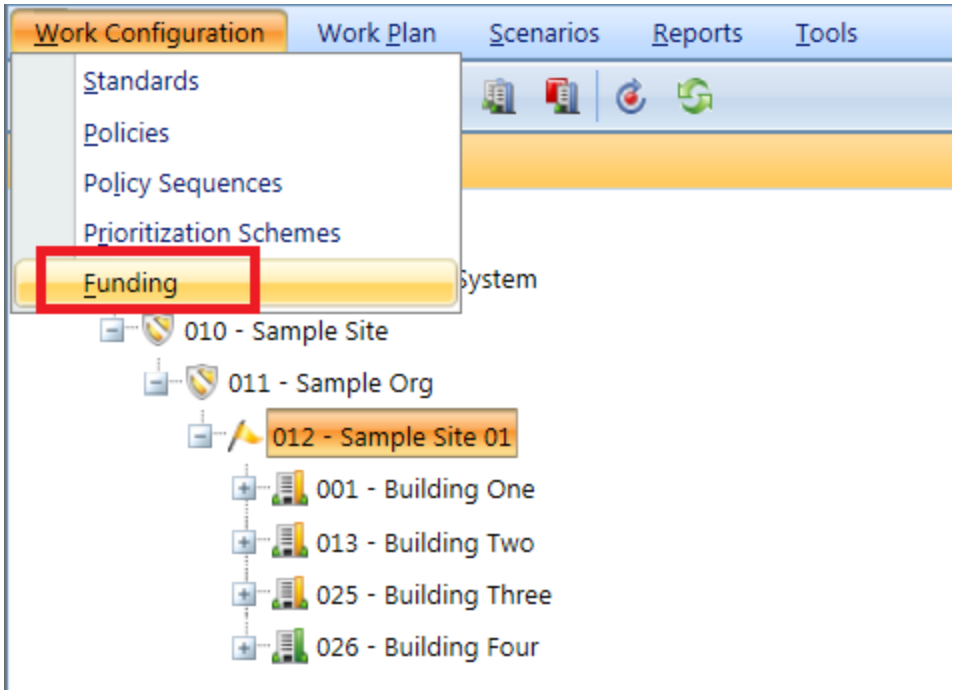
Edit a Funding Stream

This topic describes how to edit an existing funding stream by changing funding levels, changing or deleting funding restrictions, or re-ordering the funding precedence that determines funding precedence in situations where a work item satisfies the selection criteria(set at the Funding Restrictions tab) of more than one funding source.

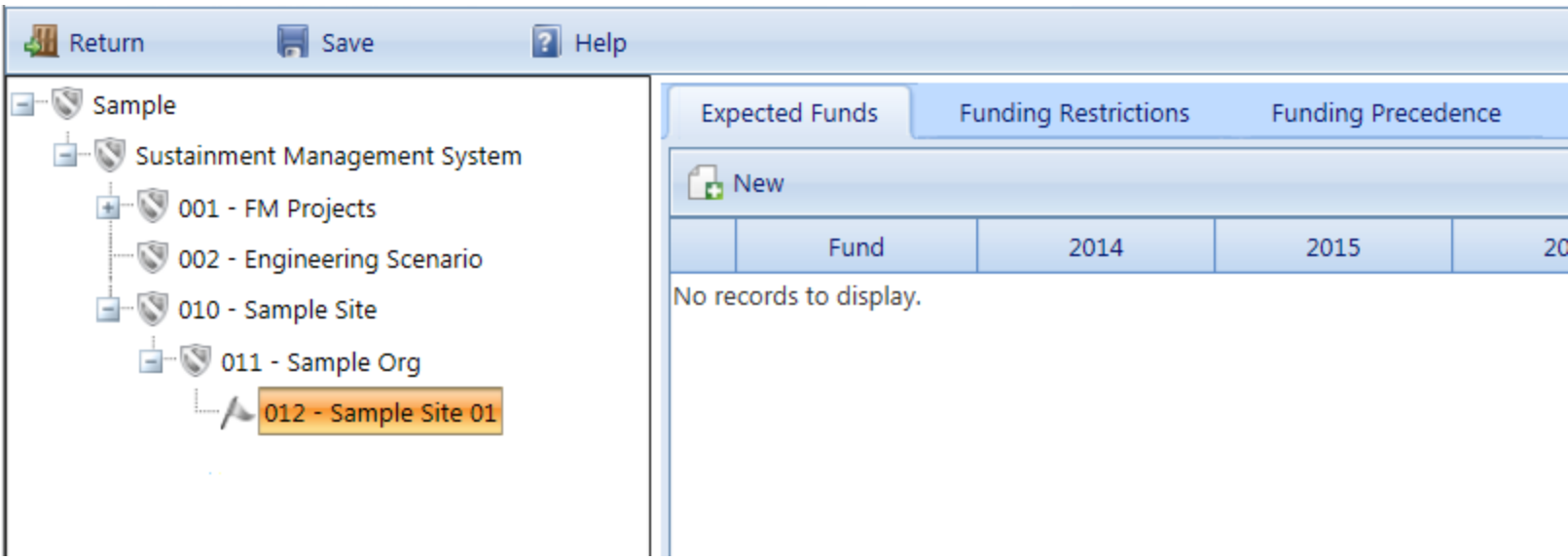
Select a Site

Before editing a funding stream, first select the appropriate Site, as follows:

- Select Work Configuration > Funding from the main menu.



The Funding window will appear.



- Navigate the tree on the left of the screen and select the Site for which you wish to change or delete a funding stream. After selecting, you can use the tabs in the content area to do any of the following:
    - edit funding levels (at the Expected Funds tab),
    - delete a funding stream (at the Expected Funds tab),
    - edit funding restrictions (at the Funding Restrictions tab), and
    - change funding precedence. (at the Funding Precedence tab)

    Further description is provided below.

    Deleting an entire funding stream is also described in Delete a Funding Stream.

Expected Funds Tab

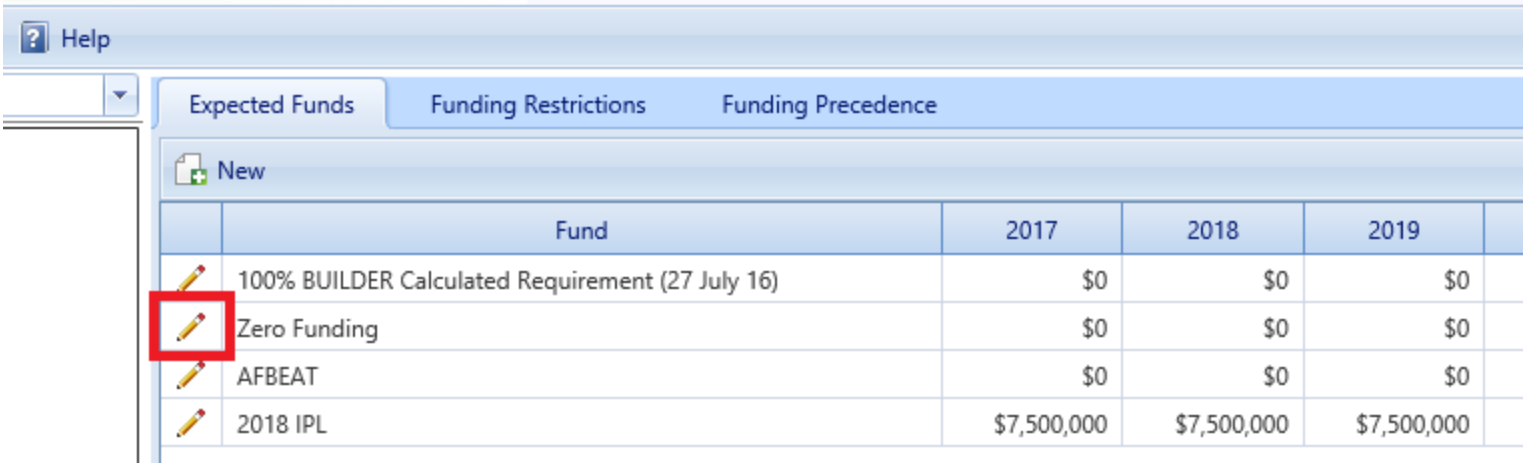
The Expected Funds tab provides an editable list of funding sources and amounts for the next ten years. At this tab, you can edit the funding levels expected for each year for any given funding source.

The editing instructions below assume that you have already navigated to the Funding window and to the desired Site in the Funding tree, as described above in Select a Site. The default tab, Expected Funds, should be active.

Edit Funding Levels

To edit funding levels,

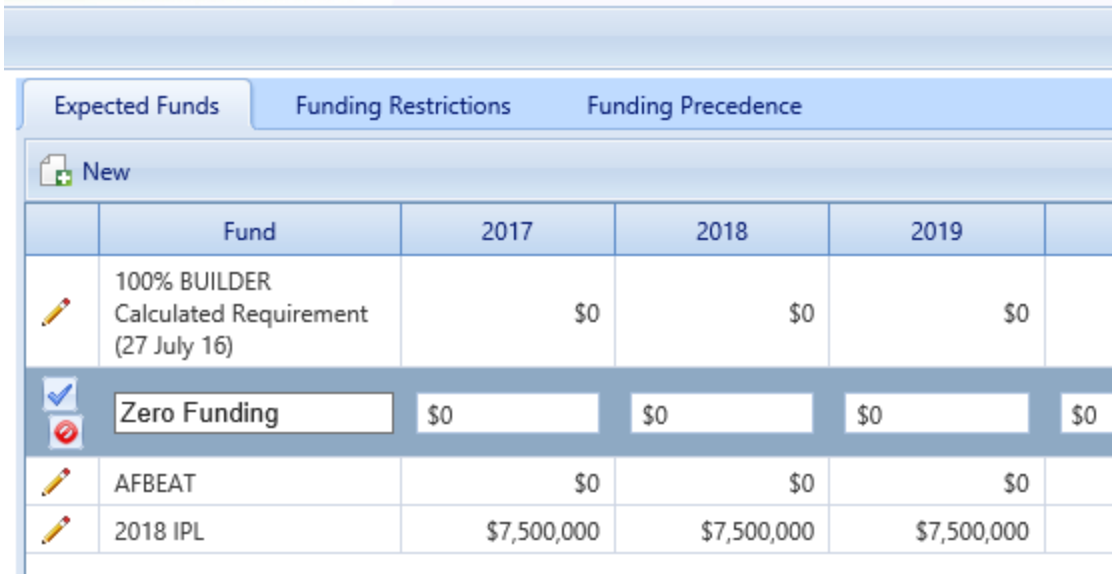
- Activate the pencil icon in the left column of the Expected Funds table.



    The Expected Funds table will remain on the screen, but its appearance will change.

- Edit funding levels for all years desired in the table.

    Note: You can also change the name of the funding stream here.



- Confirm or cancel: After completing your changes to the funding source, be sure to activate the blue checkmark icon ("Update") at the left to accept the changes made. Alternatively, to cancel, activate the red "do not enter" icon ("Cancel"). You will be returned to the view that shows only the pencil icons in the first column of the table.
- When you are finished editing the funding levels for all desired funding sources listed, or simply wish to save, activate Save on the main toolbar.

Delete a Funding Stream

To delete an entire funding stream at the Expected Funds tab,

- Locate that funding source's row in the Expected Funds table.
- Activate the red "X" in the rightmost column, just after the column showing the last year of funding listed.

You will be presented with a confirmation popup before the deletion is made.

Edit Funding Restrictions

The instructions below assume that you have already navigated to the Funding window and to the desired Site in the Funding tree, as described above in Select a Site.

Edit a Funding Restriction Criterion

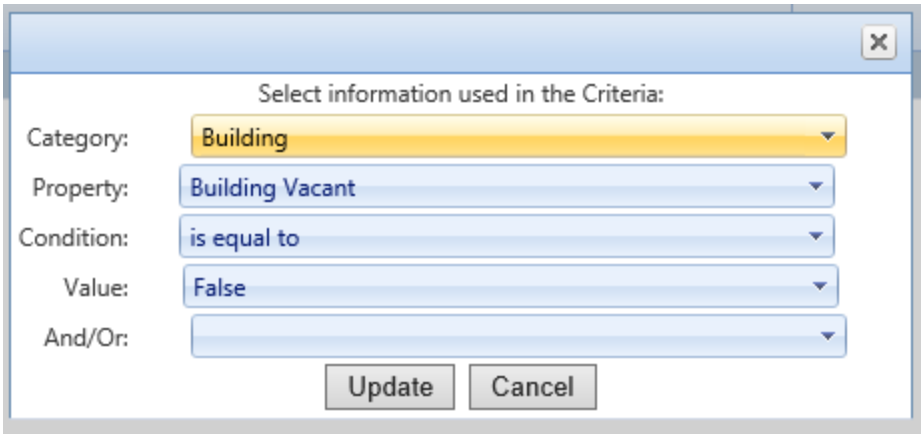
To edit an existing funding restriction criterion,

- At the Funding Restrictions tab, activate the pencil icon for the funding restriction you wish to edit.

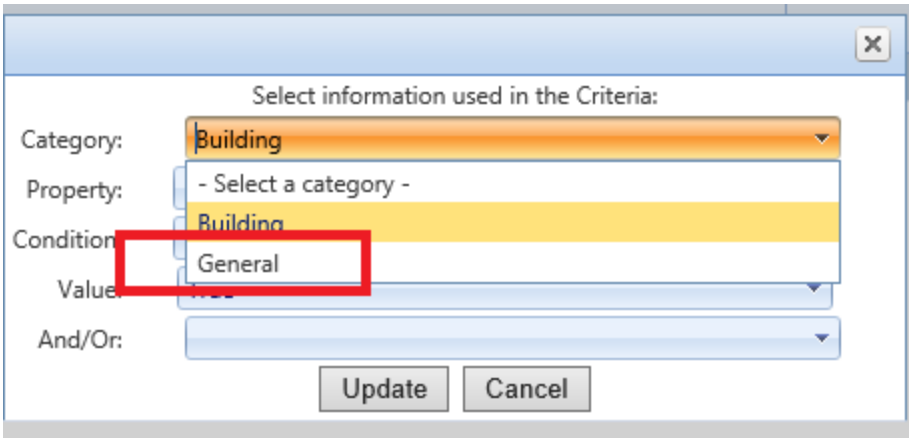
  A popup window will appear that contains multiple dropdown lists.

- Edit selections from the dropdown lists as desired.

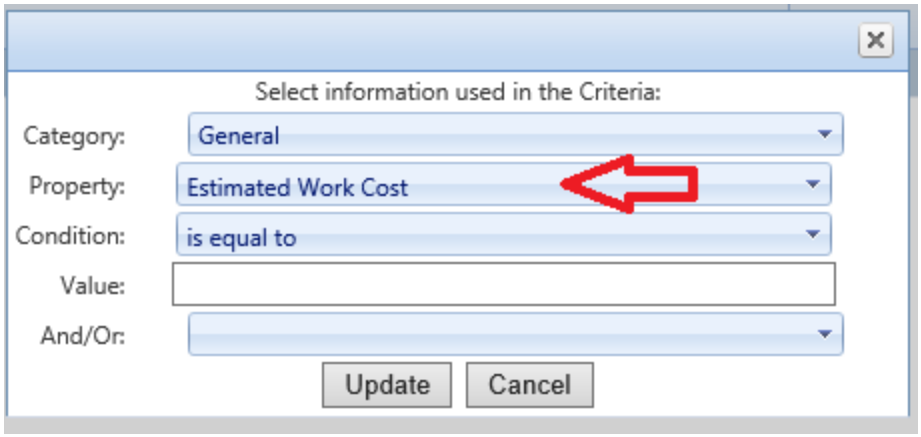
  - For example, start with the following restriction definition:



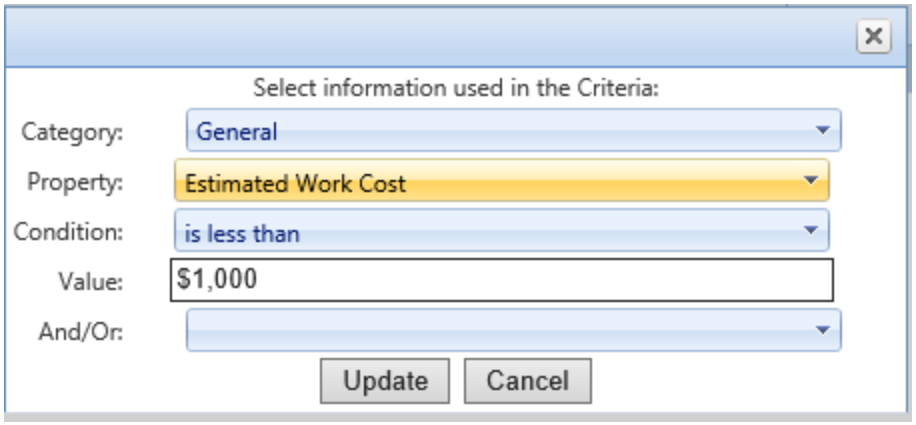
  - Activate the dropdown list for Building, and select General instead:



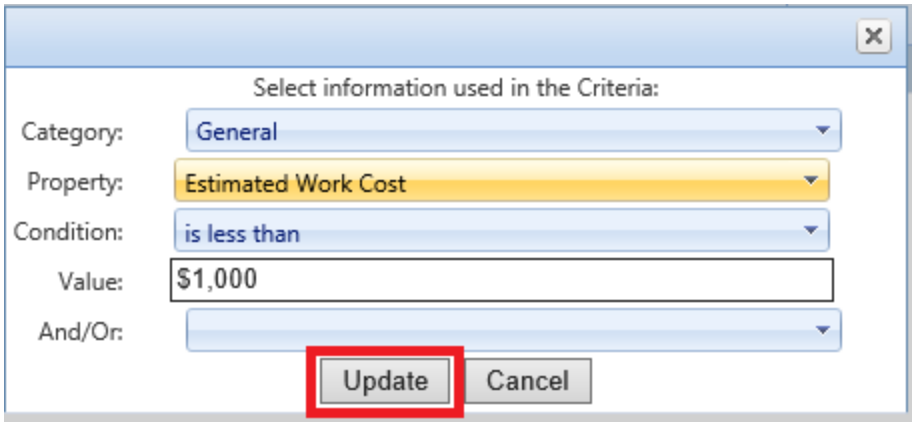
  - Note that the Property field has changed (to the first property in the property dropdown list for the General category) :



- Make changes:



- Confirm or cancel: When satisfied with the changes made, activate the Update button at the bottom of the popup window to accept the changes. Alternatively, if you instead wish to cancel the changes, activate the Cancel button.



- Before navigating away from the Funding Restrictions tab, be sure to activate Save on the main toolbar to retain your changes to the Funding Restrictions table.

Combining Funding Restrictions Criteria

The last dropdown list in the popup window where you define each funding restrictions criterion is the selection between And and Or, labeled And/Or. Your selection will determine how the criterion will combine with the next criterion that follows it.

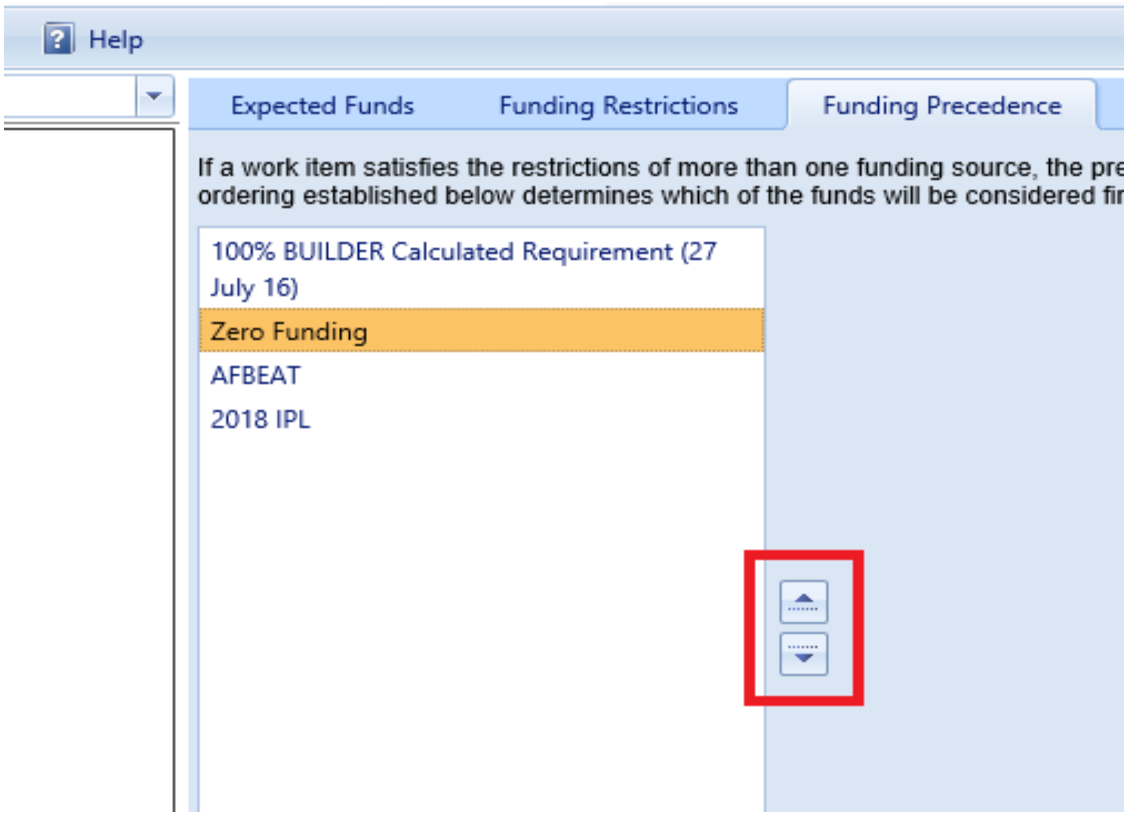
The last criterion listed in the Funding Restrictions table does not need to have a selection made between And and Or.

Edit Funding Precedence

When funds are allocated during the work planning phase, the first funding source listed at the Expected Funds tab will be checked first, then the second, and so on until funding is found or the list is exhausted. The Funding Precedence tab provides a means of changing the order of precedence among the funding sources available to a work item.

To change the order of the funding sources,

- Select a source, as shown in the screenshot.
- Use the up and down arrows to move it in the list (see the red box in the screenshot).



- When satisfied with the order of the funding sources, activate Save on the main toolbar.

After saving, if you return to the Expected Funds tab, you will see that it reflects the new precedence order that you created.

Related Links

Add a Funding Stream
Delete a Funding Stream
Enter or Edit Anticipated Funding Levels
About Funding Streams

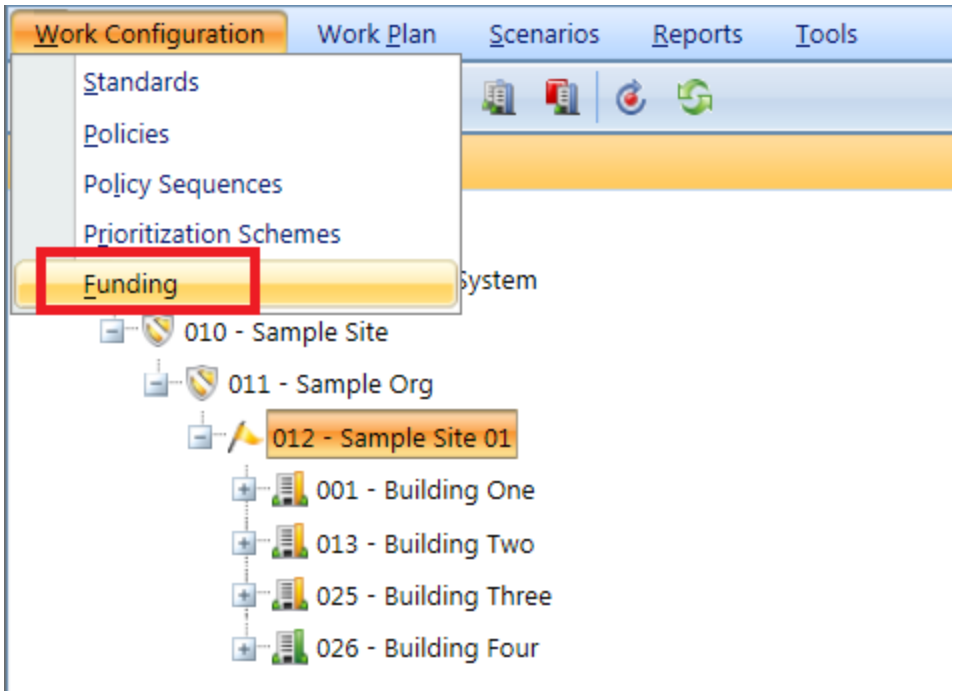
Delete a Funding Stream

This topic describes how to delete an existing funding stream.

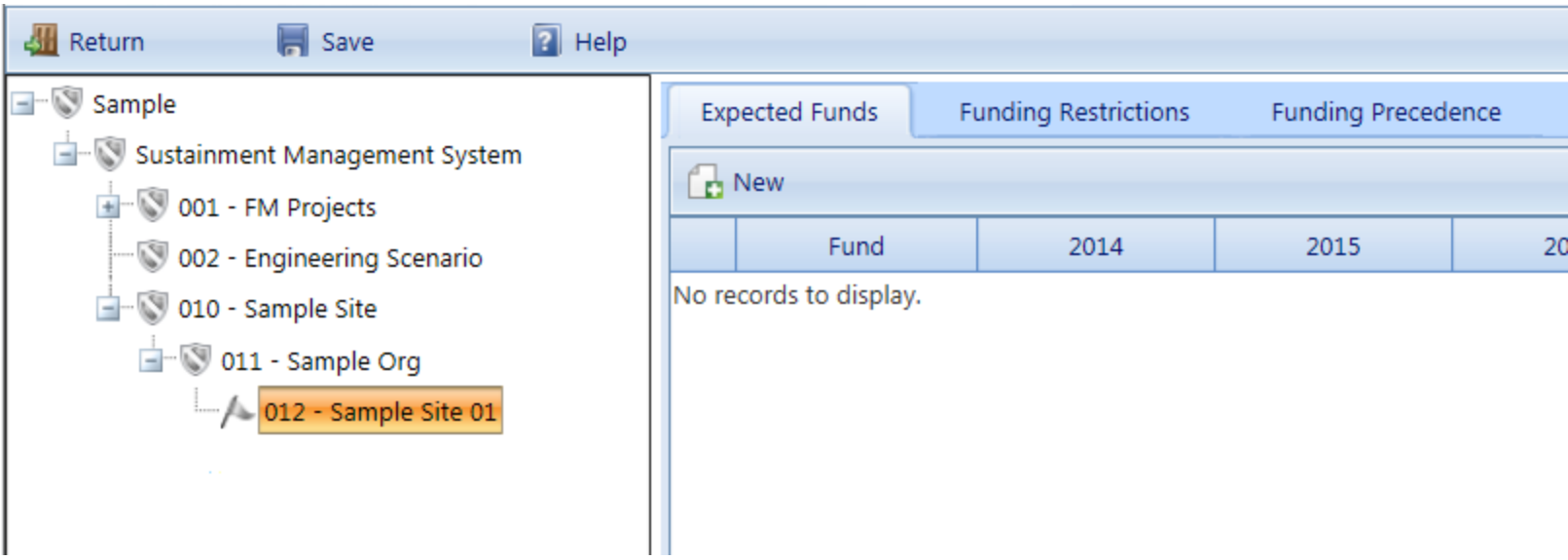
Select a Site

To delete a funding stream, first select the Site that the funding stream is applied to, as follows:

- Select Work Configuration > Funding from the main menu.



The Funding window will appear.



- Navigate the tree on the left of the screen and select the Site in which you wish to delete a funding stream.

Delete a Funding Stream at the Expected Funds Tab

To delete an entire funding stream at the Expected Funds tab,

- Locate that funding source's row in the Expected Funds table.
- Activate the red "X" in the rightmost column, just after the column showing the last year of funding listed.

You will be presented with a confirmation popup before the deletion is made.

Related Links

Add a Funding Stream
Edit a Funding Stream
Enter or Edit Anticipated Funding Levels
About Funding Streams

Work Items

About Work Items

A work item describes work that needs to be performed either on a Component-Section (Section work item) or on a Building (Building work item). Information stored with the work item shows

- what was done or is to be done
- when it is to be done or was done
- its cost or expected cost
- its funding source
- its importance relative to other work items competing for the same resources at the same time

An additional work item type, described below, is the project.

Work Item Types

Building Work Item

Building-level work item types are

- Demolish
- Modernize
- Replace

Section Work Item

Section-level work item types are

- Repair
- Replace

Best Practice Tip: Graphs generated by the work item cost analysis feature can be used to compare costs and length of extended service life for repair, stop gap repair, and replacement of a Section. For details, see the topic About Work Item Cost Analysis.

Project

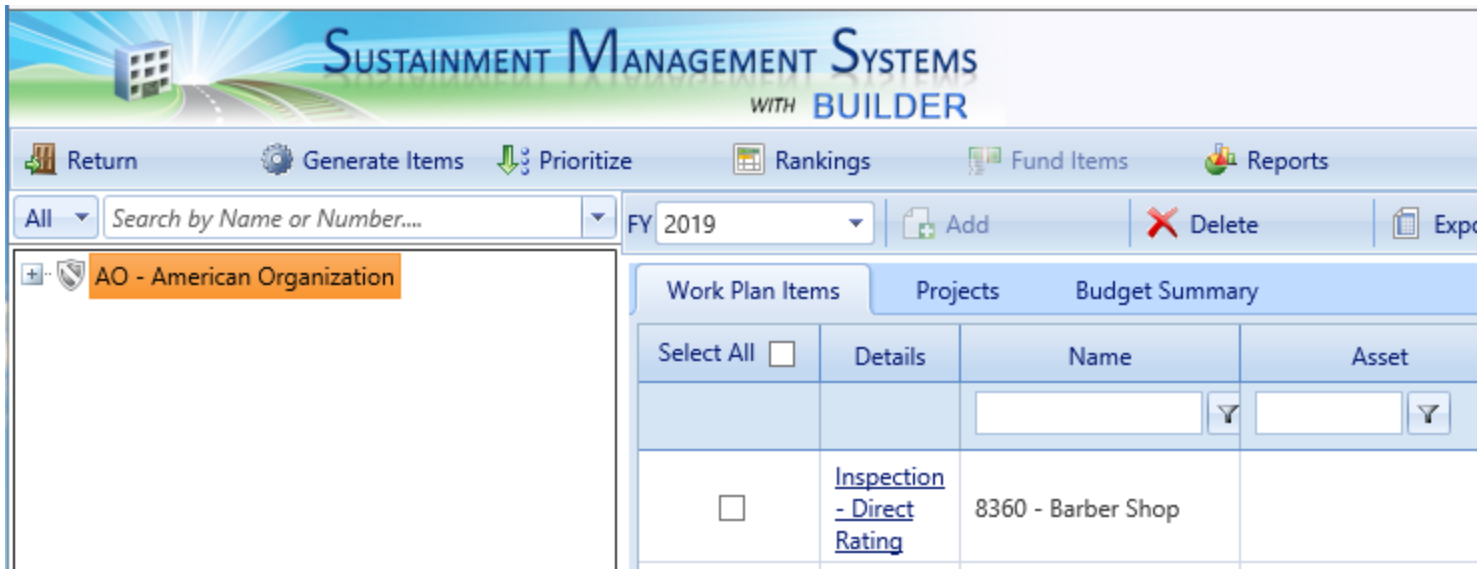
Optionally, you can group selected Section and/or Building work items into one or more projects. Project is the third type of work item available. Once grouped into a work project, the work to be performed is treated as one unit for funding. For more information about projects, start with About Work Projects.

Work Item Groupings

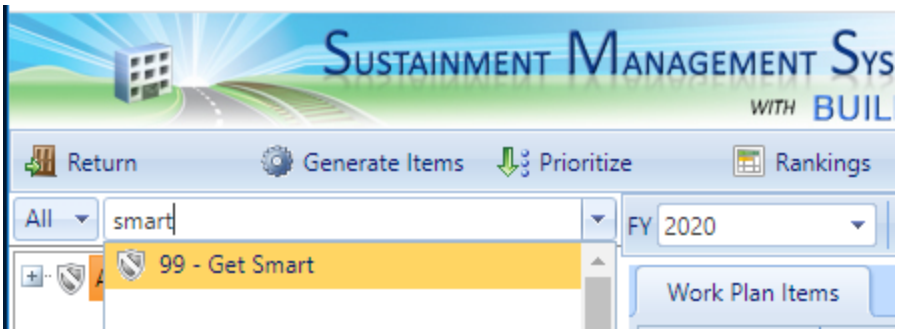
Fiscal Year (Work Plan)

Work items are automatically grouped by fiscal year into work plans. Work plans can be viewed in the work plan screen. To access a work plan,

- Select Work Plan from the BUILDER main menu. The work items window will appear, initially showing just the top level Organization.



- In the work items window select the inventory item whose work plan you want to view, add, or edit, using one of two methods: (a) expansion plus navigation, or (b) search:
  a. Expansion plus navigation - In the navigation tree (left pane), expand the tree as needed to navigate to the desired location and select it.
  b. Search - Alternatively, you can use the search function by typing the number, name, or part of the name of the desired inventory item into the search field just above the navigation tree (this field will be labeled "*Search by Name or Number*" until you click in it). Then select the inventory item's name in the list of results, as shown below.



Note the fiscal year (FY) field on the lower toolbar, where you can select the fiscal year from the dropdown.

Work Project

Another type of grouping you can use, which is optional, is the work project, briefly described above in Project.

Related Links

To learn about grouping work items into projects, start with the topic About Work Projects. Or, for information about work plans, start with the topic About Work Plans.

Work Item Tasks

View a Work Item
Add a Work Item
Edit a Work Item
Section-Level Work Item Data
Building-Level Work Item Data
Fund Work Items
Prioritize Work Items in a Work Plan
View Work Item Rankings
Export Work Items
Delete a Work Item

Instructional Links

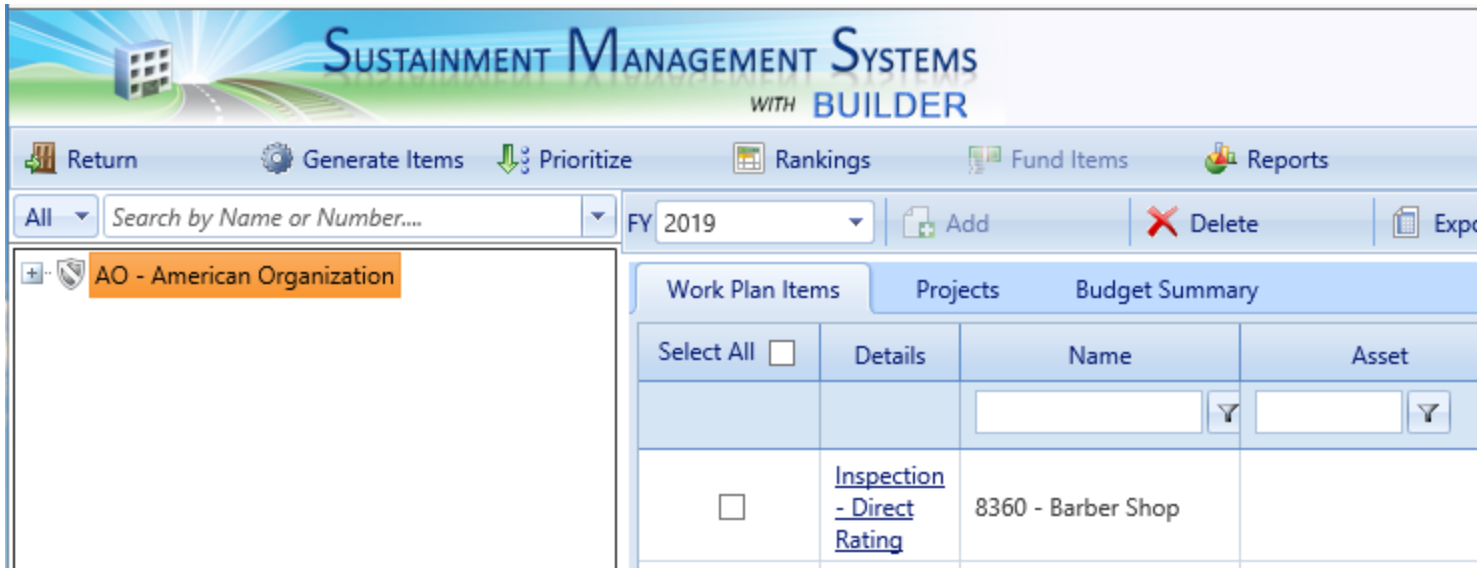
About Work Item Cost Analysis
Work Planning Overview

View a Work Item

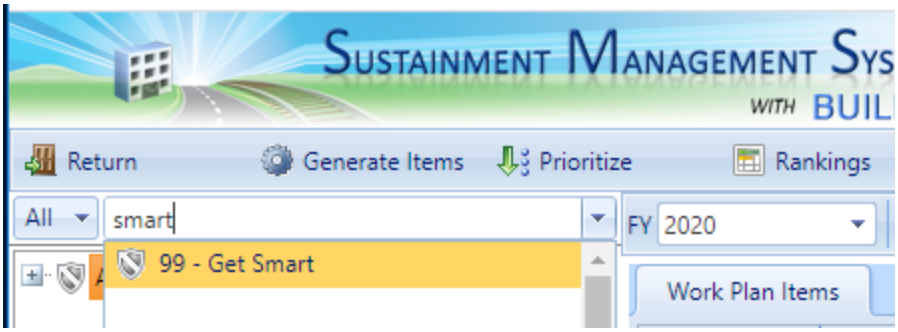
Navigate to Work Plan

To view a work item, you must first navigate to the work plan it is contained in. To navigate to a work plan,

- Select Work Plan from the BUILDER main menu. The work items window will appear, initially showing just the top level Organization.



- In the work items window select the inventory item whose work plan you want to view, add, or edit, using one of two methods: (a) expansion plus navigation, or (b) search:
  a. Expansion plus navigation - In the navigation tree (left pane), expand the tree as needed to navigate to the desired location and select it.
  b. Search - Alternatively, you can use the search function by typing the number, name, or part of the name of the desired inventory item into the search field just above the navigation tree (this field will be labeled "*Search by Name or Number*" until you click in it). Then select the inventory item's name in the list of results, as shown below.

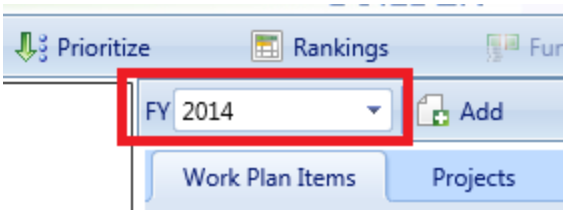


Customize View of Work Items (Optional)

As also described in View a Work Plan under the heading "Change/Refine Work Plan View," you can customize what work items appear on screen, and the order that they appear in, as described immediately below.

Select Fiscal Year

To view the work plan for past or future fiscal years, select the desired fiscal year from the dropdown list at the top of the window:



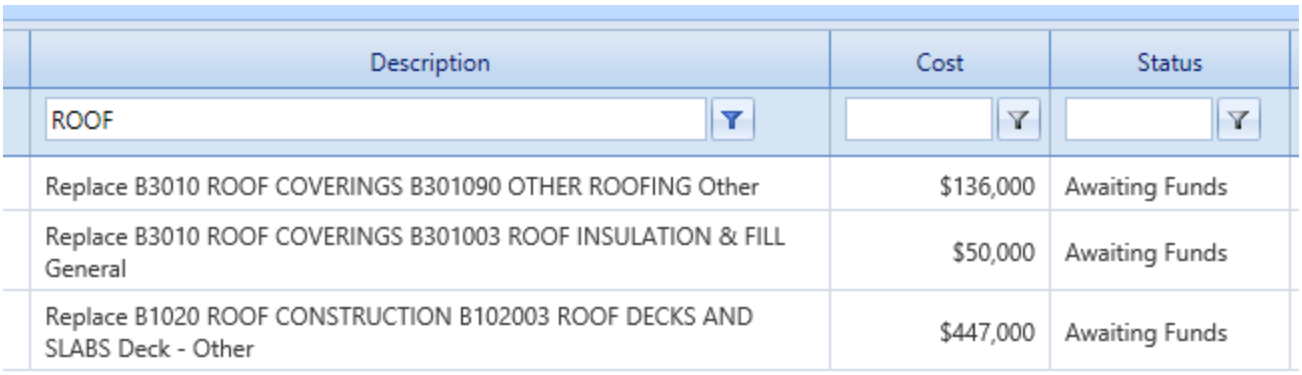
Note: The selected fiscal year will remain active if you change your location in the navigation tree.

Filter

You can filter by any column or by multiple columns having a blank field for entry and a filter icon below the column header.

To filter,

- Enter a search term in the blank field.
- Next, activate the filter icon and select from the dropdown a condition such as "Contains" or "StartsWith" or "EqualTo". This should activate the filter. When the filter finishes, only entries that meet the filter criterion will remain. Example:



Description	Cost	Status
ROOF		
Replace B3010 ROOF COVERINGS B301090 OTHER ROOFING Other	$136,000	Awaiting Funds
Replace B3010 ROOF COVERINGS B301003 ROOF INSULATION & FILL General	$50,000	Awaiting Funds
Replace B1020 ROOF CONSTRUCTION B102003 ROOF DECKS AND SLABS Deck - Other	$447,000	Awaiting Funds

Note: If you change your location in the navigation tree, the selected filter will remain active and still apply.

To clear the filter, re-activate the filter button and select the first option, which is "NoFilter."

Sort

Primary Sort

Once the desired work plan year is shown, and ideally any desired filtering has already been done (because filtering an unsorted list should be faster than filtering a sorted list), choose an ascending or descending primary sort by tapping/clicking or double-tapping/double-clicking the desired column. The column header will stay highlighted to indicate that a sort has been performed.

Secondary Sort

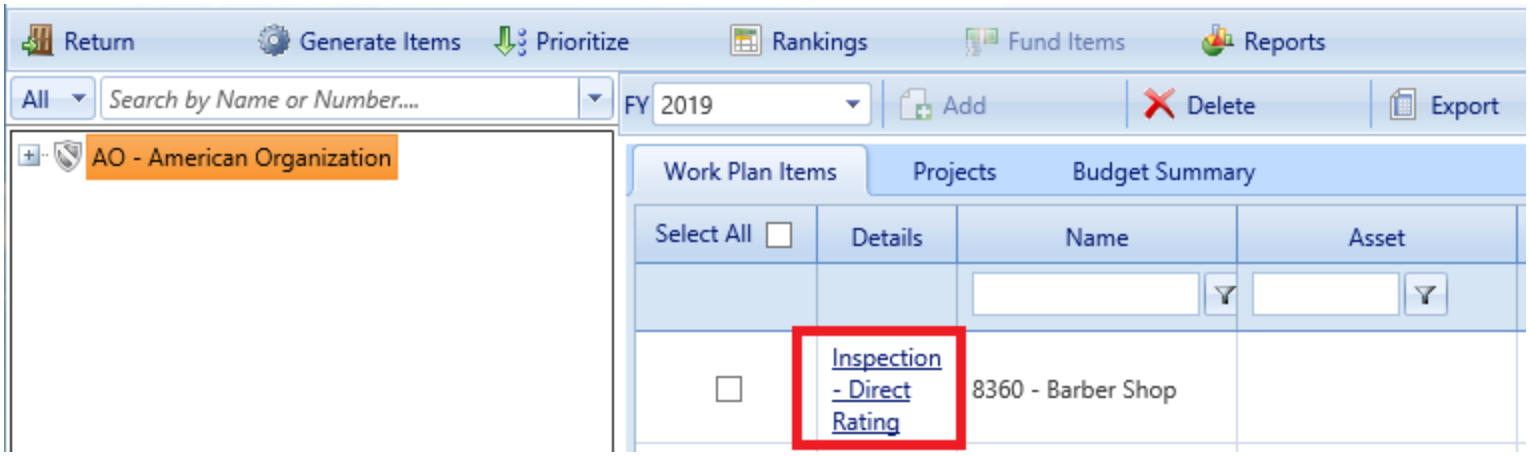
If a column header is already highlighted (indicating that a primary sort has been performed) and you then click or double-click on a second column, that will perform a secondary sort within each of the distinctive entries in the primary sort column. The screenshot below shows a primary sort on the Name column followed by a secondary sort on the Cost column.

Work Plan Items | Projects | Budget Summary

Select All	Details	Name	Asset	Description	Cost
☐	Replace	0002 - Direct rating building		Replace C2010 STAIR CONSTRUCTION distress-tester C201001 INTERIOR AND EXTERIOR STAIRS Interior Stairs - Concrete (24 Riser Flight)	$314,000
☐	Replace	314 - Eng Test Bug 314		Replace D3050 TERMINAL & PACKAGE UNITS D305006 PACKAGE UNITS A/C Unit, Split Systems w/ Air Cooled Condenser	$9,100
☐	Replace	314 - Eng Test Bug 314		Replace D2010 PLUMBING FIXTURES D201006 DRINKING FOUNTAINS AND COOLERS Drinking Fountain	$10,000
☐	Replace	314 - Eng Test Bug 314		Replace B1010 FLOOR CONSTRUCTION B101090 OTHER FLOOR CONSTRUCTION Other	$10,500
☐	Replace	314 - Eng Test Bug 314		Replace D2010 PLUMBING FIXTURES D201002 URINALS General	$19,500
☐	Replace	314 - Eng Test Bug 314		Replace D5030 COMMUNICATIONS & SECURITY D503090 OTHER COMMUNICATIONS & ALARM SYSTEMS Other	$23,000
☐	Replace	314 - Eng Test Bug 314		Replace D5020 LIGHTING & BRANCH WIRING D502090 OTHER LIGHTING AND BRANCH WIRING Other	$25,500
☐	Replace	314 - Eng Test Bug 314		Replace D2010 PLUMBING FIXTURES D201001 WATERCLOSETS General	$27,500

Open Work Item

To view details of an individual work item, activate its hyperlink in the Details column.



The "Details" popup that will appear will differ in format depending on what kind of work item you have selected. Connect to one of the topics below for details about the data shown:

- If the work item is a Building-level work item, see Building-Level Work Item Data .
- If the work item is a Section-level work item or an inspection, see Section-Level Work Item Data.

Related Links

To learn about grouping work items into projects, start with the topic About Work Projects. Or, for information about work plans, start with the topic About Work Plans.

Work Item Tasks

Add a Work Item
Edit a Work Item
Section-Level Work Item Data
Building-Level Work Item Data
Fund Work Items
Prioritize Work Items in a Work Plan
View Work Item Rankings
Export Work Items
Delete a Work Item

Instructional Links

About Work Items
About Work Item Cost Analysis
Work Planning Overview

Add a Work Item

A BUILDER work item may be added in any one of the following ways:

- generate a work plan (this will likely add more than one work item)
- manually add the work item to an already generated work plan and fill in appropriate details
- copy a work item or multiple work items from scenario results (not available for Building-level modernization work)

This topic will explain each of these ways, referring to other topics for more detail as needed.

Adding a work item can be done in any of the following ways:

- by generating a work plan
  –see Add Work Items by Generating a Work Plan
- manually
  –see Add a Work Item Manually
- by copying the work item from a scenario
  –see Copy Work Item from Scenario

Add Work Items by Generating a Work Plan

Generating a work plan automatically with BUILDER will create a work plan composed of one or more individual work items. Re-generating a work plan may change how many work items are in the plan, and what they are.

For how to generate a work plan, see Add a Work Plan. Alternatively, for more in-depth information, you can start at either Work Planning Overview or About Work Plans.

For how to re-generate a work plan, see Edit a Work Plan.

Add a Work Item Manually

The manual method of entering work items is especially useful for recording past work efforts. It gives you an opportunity to capture institutional memory regarding what work you have done and when it was accomplished. In addition to basic details such as when the work was completed, its actual cost, and its funding source, the work item description allows you to add multiple notes about that particular work effort.

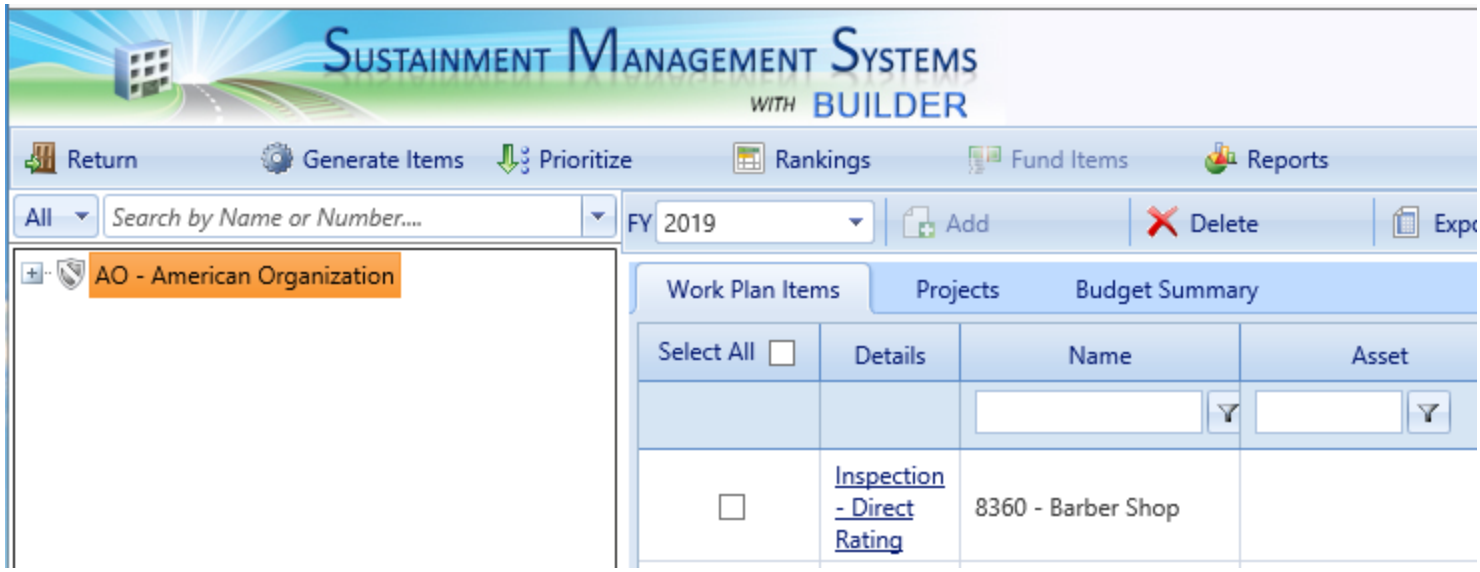
Note: A work plan must already be generated by BUILDER before you can add a work item to it. See the section Add Work Items by Generating a Work Plan (above) for a brief description and/or for links to more detailed information.

Note: Manually added or edited work items will be preserved intact when a work plan is regenerated.

Navigate to Work Plan

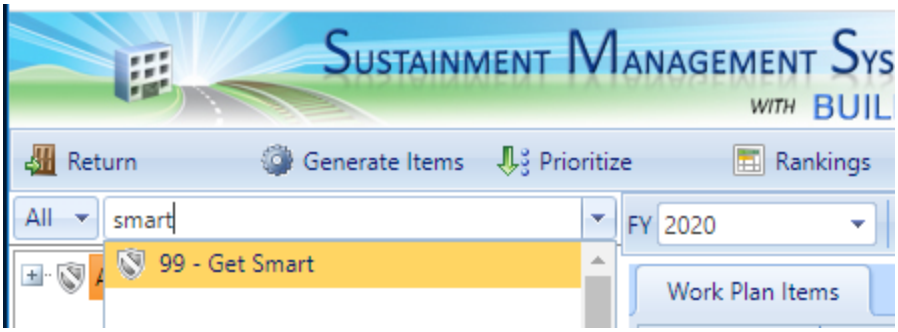
First, navigate to the appropriate work plan (that you want to add the work item to) as follows:

- Select Work Plan from the BUILDER main menu. The work items window will appear, initially showing just the top level Organization.



- In the work items window select the inventory item whose work plan you want to view, add, or edit, using one of two methods: (a) expansion plus navigation, or (b) search:
  a. Expansion plus navigation - In the navigation tree (left pane), expand the tree as needed to navigate to the desired location and select it.

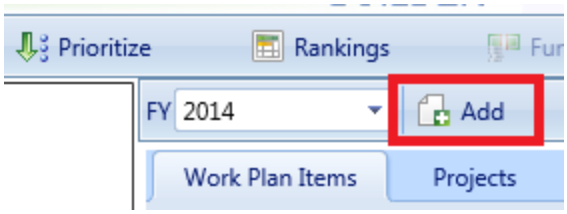
b. Search - Alternatively, you can use the search function by typing the number, name, or part of the name of the desired inventory item into the search field just above the navigation tree (this field will be labeled "*Search by Name or Number*" until you click in it). Then select the inventory item's name in the list of results, as shown below.



Add Work Item

After you have navigated to the desired work plan,

- Make sure that the Add button on the secondary toolbar is not grayed out. If it is grayed out, you may need to click on your node in the tree in the left pane in order to make the Add button visible. This is especially the case if you are working at the default, top-level node of the tree.
- Activate the Add button while the Work Plan Items tab is selected.



The "New Work Item" popup will appear.

- In the popup, select the work item type: Project, Building Work Item, or Section Work Item.
- Activate Proceed on the popup toolbar.
- Enter as much data as is needed in the "Details" popup window. See the next three steps to determine what documentation topic to refer to for helpful information.
- If the new work item is a Building-level work item, refer to Building-Level Work Item Data.
- If the work item is a project, refer to Work Project Data.
- If the work item is a Section-level work item, refer to Section-Level Work Item Data.

Save

After entering the data for the work item, activate Save on the popup toolbar to save the information.

(Alternatively, if you do not wish to save the changes made to the work item, activate Cancel on the toolbar.)

Reasons for Manual Entry

You might choose to enter work items manually as a basic business practice. The following steps describe a procedure you could follow:

- Review BUILDER reports regarding remaining service life, condition index (**CI**[1]) trends, functionality index (**FI**[2]) trends, and performance index (**PI**[3]) trends to identify possible work requirements.
- Verify possible work requirements by re-inspecting, especially if you have recorded no recent condition/functionality assessment data for the items. At the same time, collect the more detailed data needed for the work item specifications (exact quantities, manufacturer, scheduling restrictions, etc.).
- Compile a list for approval by your chain of command.
- Enter each work item as it clears the process.

Another reason for manual entry is that manually entered work items will never be deleted in the work plan regeneration process.

Copy Work Item from Scenario

Note: Modernization work, whether at the Building or Functional Area level, is not generated in Scenarios because FIs are step functions over time, unlike the smooth, continuous functions seen in the condition indexes. Because the FIs are not smooth, continuous functions, future FIs cannot be predicted and modernization work cannot be planned. The only way to determine when and by how much the functionality changes and the associated modernization work is to physically perform functionality assessments in the Building.

For how to copy work items from a scenario, see the topic Copy Work Items from a Scenario.

Using Scenarios to Create Out-Year Work Plans

BUILDER offers the use of Scenarios, a simulation model integrated with BUILDER's business rules and databases, to create condition-related work items for your inventory.

Scenarios uses your inventory database and a set of initial scenario parameters to simulate how your inventory will evolve over the next 5 to 10 years. The simulation works by stepping through each future year generating work items using the standards and policies, prioritizing the work items based on the prioritization scheme established in Work Configuration, and funding work items by priority ranking until all funding levels have been exhausted.

---

[1]Condition Index

[2]Functionality Index.

[3]Performance Index. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. If no functional assessment has been performed, the FI is assigned a value of 100.

When a scenario is completed, the Scenarios database contains a record of annual work plans constrained by budget. These work plans can be used as the foundation for your out-year plans.

Copying Work Items from a Scenario to a Work Plan

If you have run a scenario, you may copy its results to the work plan by right-clicking on that scenario in the Scenarios module. This will create a work plan for the current year as well as future years. See the topic Copy Work Items from a Scenario for more information on using this tool.

Related Links

To learn about grouping work items into projects, start with the topic About Work Projects. Or, for information about work plans, start with the topic About Work Plans.

Work Item Tasks

View a Work Item
Edit a Work Item
Section-Level Work Item Data
Building-Level Work Item Data
Fund Work Items
Prioritize Work Items in a Work Plan
View Work Item Rankings
Export Work Items
Delete a Work Item

Instructional Links

About Work Items
About Work Item Cost Analysis
Work Planning Overview

Edit a Work Item

This topic explains how to manually edit an existing work item. To change work items by regenerating a work plan, see Edit a Work Plan.

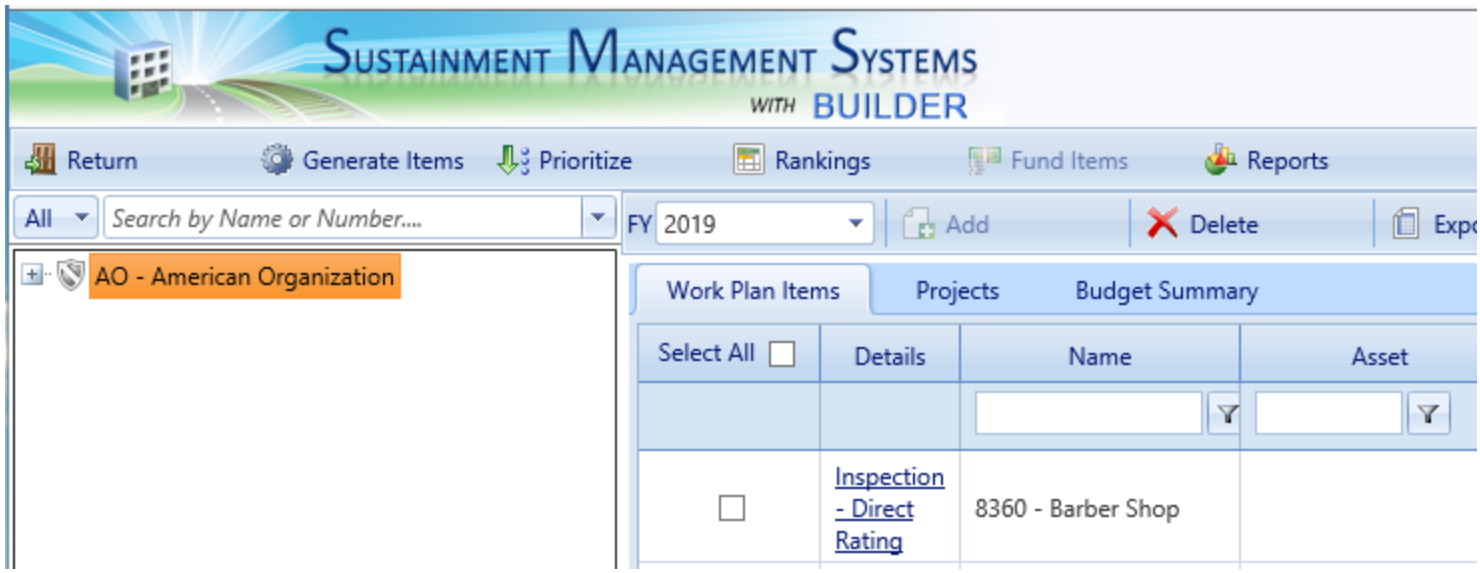
Tip: Because manually added or edited work items will be preserved intact when a work plan is regenerated, manually editing a work item is a way to ensure that the work item will not disappear when the work plan is regenerated. (Marking the item "Must Do" is another way to accomplish this.)

Note: To change a work project, see Edit a Work Project.

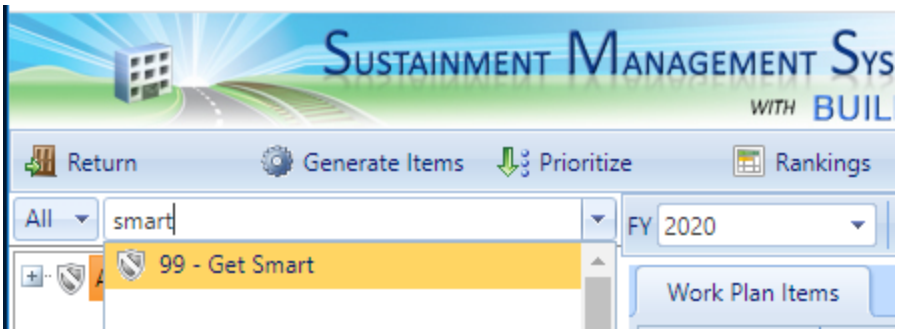
Navigate to Work Plan

First, navigate to the appropriate work plan (where the work item is that you want to edit) as follows:

- Select Work Plan from the BUILDER main menu. The work items window will appear, initially showing just the top level Organization.



- In the work items window select the inventory item whose work plan you want to view, add, or edit, using one of two methods: (a) expansion plus navigation, or (b) search:
  a. Expansion plus navigation - In the navigation tree (left pane), expand the tree as needed to navigate to the desired location and select it.
  b. Search - Alternatively, you can use the search function by typing the number, name, or part of the name of the desired inventory item into the search field just above the navigation tree (this field will be labeled "*Search by Name or Number*" until you click in it). Then select the inventory item's name in the list of results, as shown below.



Edit Work Item

After you have navigated to the desired work plan,

- If needed, use filters and/or sorting to locate the desired work item. Refer to the Change/Refine Work Plan View section in View a Work Plan for details.
- At the Work Plan Items tab, in the Details column, activate the link to the work item's details. The "Details" popup will appear.
- Refer to Building-Level Work Item Data or Section-Level Work Item Data for information about the data that can be edited in the "Details" popup.
- Edit fields as desired.

Note: To change a work project, see Edit a Work Project.

Save

After editing the data for the work item, activate Save on the popup toolbar to save the changes to the work item.

(Alternatively, if you do not wish to save the changes made to the work item, activate Cancel on the toolbar.)

Related Links

To learn about grouping work items into projects, start with the topic About Work Projects. Or, for information about work plans, start with the topic About Work Plans.

Work Item Tasks

View a Work Item
Add a Work Item
Section-Level Work Item Data
Building-Level Work Item Data
Fund Work Items
Prioritize Work Items in a Work Plan
View Work Item Rankings
Export Work Items
Delete a Work Item

Instructional Links

About Work Items
About Work Item Cost Analysis
Work Planning Overview

Section-Level Work Item Data

This topic explains the data fields for a Section-level work item. This will help with understanding both the "Component-Section Work Item" popup when adding a Section-level work item, or the "Details" popup that appears when viewing or editing a Section-level work item.

A Section-level work item is an individual record of repair or replacement needed for an item in your BUILDER inventory. The information stored with the work item shows

- what was or is to be done
- when it was or is to be done
- its cost
- its funding source (at the Budget Summary tab)
- its importance relative to the other work items competing for the same resources at the same time (in the Score field)

In the "Component-Section Work Item" popup or "Details" popup, the following data for the Section-level work item is or can be recorded:

Below the menu bar and above the tabs, the Section Description (of the Component-Section the work item pertains to) and Quantity (the inventory quantity for the Component-Section) will be listed. Then, at the Details tab, the following data for the work item is displayed. Some of the data is read-only, and some can be entered or edited.

- Projected **CI**[1] (Read-Only) - Displays the projected condition index (**CI**[2]) for the Section in the funding FY. If the funding FY changes, BUILDER will recalculate the projected **CI**[3] for the new funding FY.
- Projected **RSL**[4] (Read-Only) - Displays the projected remaining service life (**RSL**[5]) for the Section in the funding FY. If the funding FY changes, BUILDER will recalculate the projected **RSL**[6] for the new funding FY.
- Current Type (Read-Only) - Displays the material/equipment type and component subtype of the Component-Section.
- New Type (For "Replace" only) - For a Replace work activity (where the link in the Details column of the work plan table is Replace), the default is to replace in kind. with the same type. However, you do have the option to replace the current Component-Section type with a different type. To do so, select a different type and material/equipment type from the dropdown list of available options.
- Description - Description of the work item. Limit: 255 alphanumeric characters.
- Work Request ID. If applicable, your agency's work request number for the project. Limit: 50 alphanumeric characters.

  Note:Work Request ID is not used by BUILDER in any analyses. The field is available for customer use.

---

[1]Condition Index

[2]Condition Index

[3]Condition Index

[4]Remaining service life.

[5]Remaining service life.

[6]Remaining service life.

- Status. Current status of the work item, selected from the dropdown. The status will change over time as the work item moves from planning to completion. The values Status can take are:
    - Awaiting Contract Award
    - Awaiting Funds
    - Awaiting Funds (Special Project)
    - Budgeted
    - Canceled
    - Completed
    - Deferred
    - Funded
    - Funded (Service Call)
    - Funded (Special Project)
    - In Design
    - In Progress
    - On hold
- Funding FY - The four-digit fiscal year that the work item was or will be funded.
- Must Complete as Planned (Checkbox) - Mark this box if the work item falls into the "must do" category. Marking it will force the work item to be funded in a Scenarios projection before all other competing work items that are not marked as "Must Complete as Planned" (also called "Must Do" in the work plan column heading).
- Work FY - This is the year in which the Section falls below the standard and when the work should start.
- Funding Source - The funding source to be used for this work item, selected from the dropdown.
- Date Completed - The date the work item was completed. This field will appear only if Status is "Completed."
- Estimated Cost - The estimated cost of performing the work item. If you activate Calculate in the popup toolbar, BUILDER will estimate the initial cost once you have entries or appropriate selections in the Funding FY, Work Activity, Cost Book, and Quantity fields. Alternatively, if you have sufficient permissions, you can mark the Override automatic cost estimate checkbox and enter a different cost.

  Note: The cost module is unable to estimate the cost of activities to Add/Install and Alter, so the Calculate button is grayed out for those work activities.

- Score (Read-Only) - If you have prioritized the work items, then this work item's score will be displayed here. The default value is 0, indicating that the work items have not been prioritized.
- Override Automatic Cost Estimate - Mark this checkbox if you wish to override the cost estimated using the Calculate button and enter your own estimated cost of the work item instead.
- Work Code - Work code of the work item, selected from the dropdown. The available work codes are:
    - Demolition
    - New Footprint
    - Modernization
    - Sustainment

- Efficiency Savings (Optional) - When used, this number is entered by the user. If replacing an asset with a higher efficiency model will generate operational cost savings due to efficiency (such as energy or water savings), then enter here the amount you would expect to save each year by the replacement. This will then be factored into the ROI calculation at the Cost Analysis tab.
- Work Activity - The work activity associated with this work item, selected from the dropdown. The work activities are:
    - Inspection - Direct Rating
    - Inspection - Distress Survey
    - Inspection - Distress Survey with Quantity
    - Remove
    - Repair
    - Replace
    - Stop Gap
- Actual Cost - The actual cost of the work item after completion. Before the work item is completed, the contents of this field will mirror the contents in the Estimated Cost field.
- Quantity - The quantity of Section applicable to the work item. The value listed in Quantity near the top of the popup is the actual Component-Section quantity, but the quantity applicable to the work item may be different. For example, you might replace only 5 of the 10 doors in a Component-Section.
- Cost Book - The cost book to be used in estimating the cost of the work item, selected from the dropdown.
- ROI Information (Read-Only) - Displays the Return and ROI (return on investment), which summarize the calculations on the Cost Analysis tab.

Related Links

To learn about grouping work items into projects, start with the topic About Work Projects. Or, for information about work plans, start with the topic About Work Plans.

Work Item Tasks

View a Work Item
Building-Level Work Item Data
Add a Work Item
Edit a Work Item
Fund Work Items
Prioritize Work Items in a Work Plan
View Work Item Rankings
Export Work Items
Delete a Work Item

Instructional Links

About Work Items
About Work Item Cost Analysis

Work Planning Overview

Add or Edit a Section-Level Work Item

A Section-level work item is an individual record of maintenance, repair, or revitalization work on a roof section in your BUILDER inventory. The information stored with the work item shows the following information:

- What was or is to be done.
- When it was or is to be done.
- Its cost.
- Its funding source (at the Budget Summary tab).
- Its importance relative to the other work items competing for the same resources at the same time.

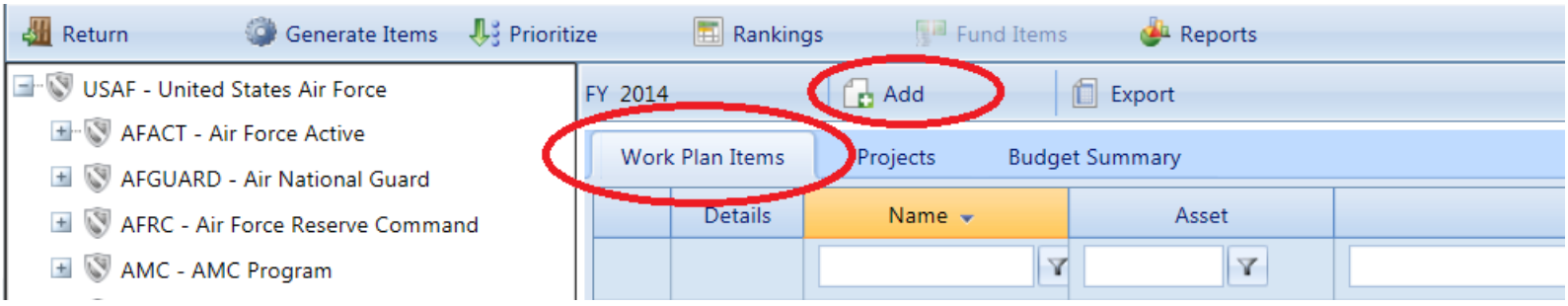
Section-level work items can be created more than one way, each of which is discussed in detail further below.

- Manual Input - Allows you to create individual work items manually from the Work Items window.
- Generated Work Items - Allows you to use the automated work generation feature in BUILDER to create an entire work plan if you have defined standards, policies, and policy sequences.
- Scenario Generated Work Items (BUILDER only) - Allows you to copy the results of a scenario and create a multi-year work plan.

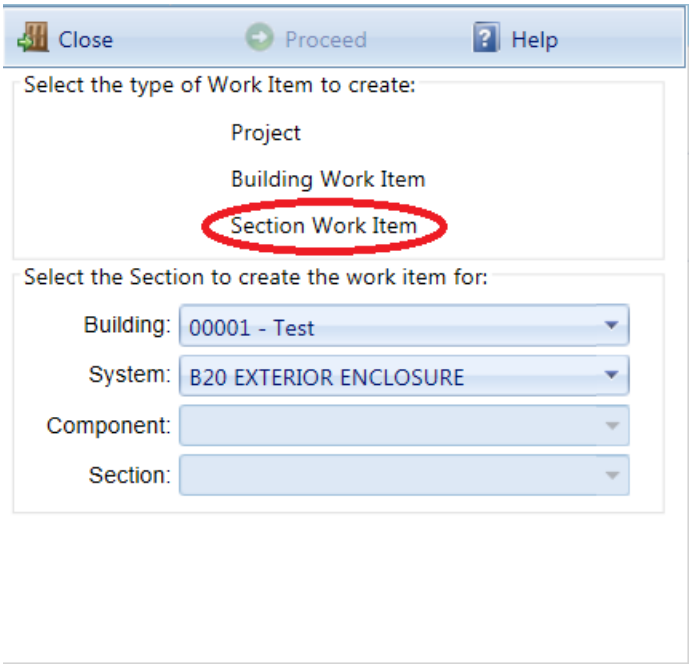
Add a Work Item

Create a Work Item Manually

To create a Section-level work item manually, make sure that the Work Plan Items tab is selected, then activate the Add button.



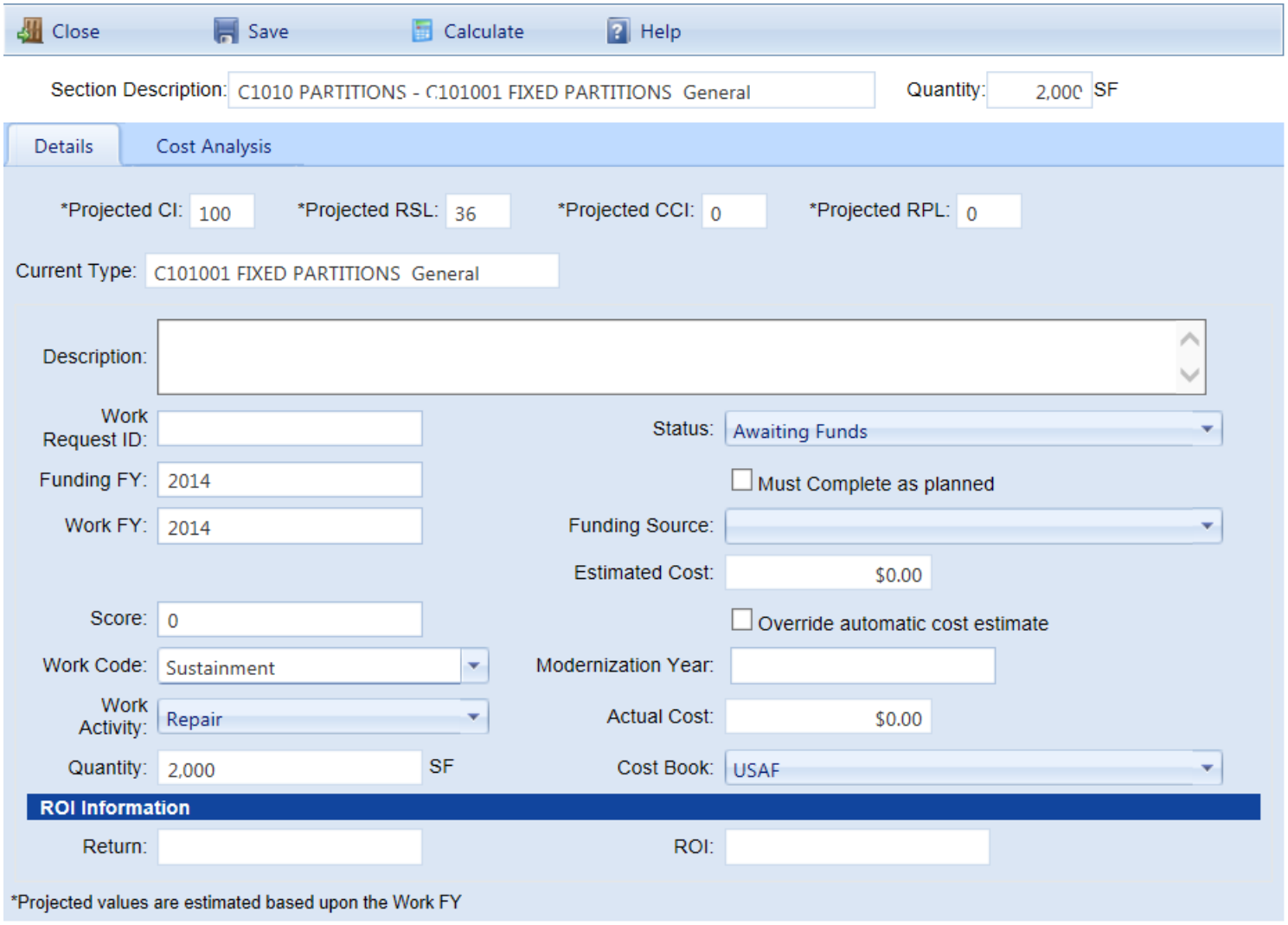
The "New Work Item" popup window will appear.



In the popup,

- Select the Section Work Item radio button option.
- From the dropdown lists, select the Building, System, Component, and Section associated with the work item.
- Activate Proceed on the toolbar.

The Component-Section Work Items window will appear.



On this screen, the Section Description (of the Component-Section the work item pertains to) and Quantity (the inventory quantity for the Component-Section) will be listed below the menu bar. Then, at the Details tab, the following data for the work item is displayed. Some of the data is read-only, and some can be entered or edited.

- Projected **CI**[1] (Read-Only) - Displays the projected condition index (**CI**[2]) for the Section in the funding FY. If the funding FY changes, BUILDER will recalculate the projected **CI**[3] for the new funding FY.

---

[1]Condition Index

[2]Condition Index

[3]Condition Index

- Projected **RSL**[1] (Read-Only) - Displays the projected remaining service life (**RSL**[2]) for the Section in the funding FY. If the funding FY changes, BUILDER will recalculate the projected **RSL**[3] for the new funding FY.
- Current Type (Read-Only) - Displays the material/equipment type and component subtype of the Component-Section.
- New Type (For "Replace" only) - For a Replace work activity (where the link in the Details column of the work plan table is Replace), the default is to replace in kind. with the same type. However, you do have the option to replace the current Component-Section type with a different type. To do so, select a different type and material/equipment type from the dropdown list of available options.
- Description - Description of the work item. Limit: 255 alphanumeric characters.
- Work Request ID. If applicable, your agency's work request number for the project. Limit: 50 alphanumeric characters.

  Note:Work Request ID is not used by BUILDER in any analyses. The field is available for customer use.

- Status. Current status of the work item, selected from the dropdown. The status will change over time as the work item moves from planning to completion. The values Status can take are:
  - Awaiting Contract Award
  - Awaiting Funds
  - Awaiting Funds (Special Project)
  - Budgeted
  - Canceled
  - Completed
  - Deferred
  - Funded
  - Funded (Service Call)
  - Funded (Special Project)
  - In Design
  - In Progress
  - On hold
- Funding FY - The four-digit fiscal year that the work item was or will be funded.
- Must Complete as Planned (Checkbox) - Mark this box if the work item falls into the "must do" category. Marking it will force the work item to be funded in a Scenarios projection before all other competing work items that are not marked as "Must Complete as Planned" (also called "Must Do" in the work plan column heading).
- Work FY - This is the year in which the Section falls below the standard and when the work should start.

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[1]Remaining service life.

[2]Remaining service life.

[3]Remaining service life.

- Funding Source - The funding source to be used for this work item, selected from the dropdown.
- Date Completed - The date the work item was completed. This field will appear only if Status is "Completed."
- Estimated Cost - The estimated cost of performing the work item. If you activate Calculate in the popup toolbar, BUILDER will estimate the initial cost once you have entries or appropriate selections in the Funding FY, Work Activity, Cost Book, and Quantity fields. Alternatively, if you have sufficient permissions, you can mark the Override automatic cost estimate checkbox and enter a different cost.

  Note: The cost module is unable to estimate the cost of activities to Add/Install and Alter, so the Calculate button is grayed out for those work activities.

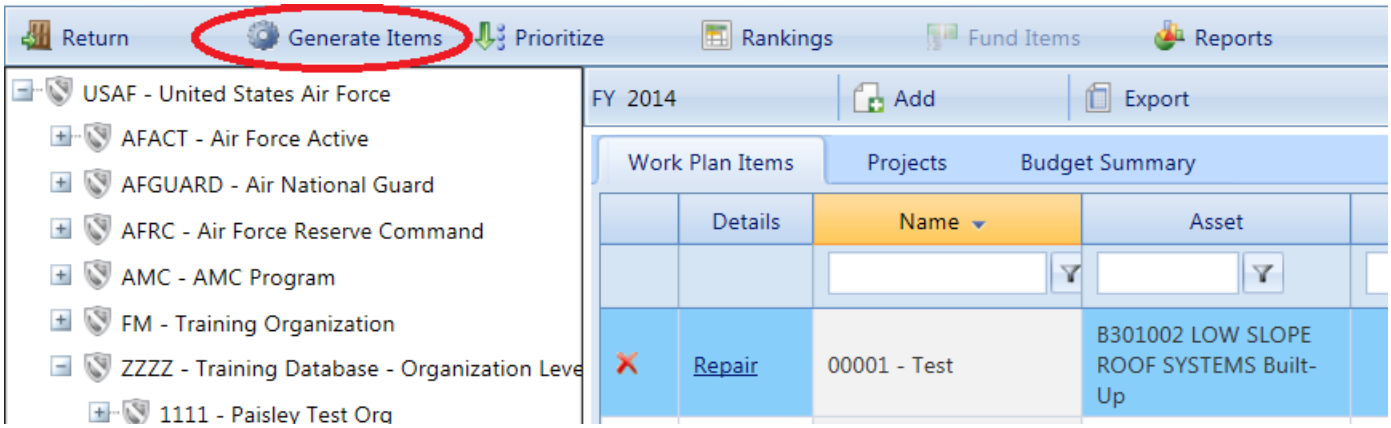
- Score (Read-Only) - If you have prioritized the work items, then this work item's score will be displayed here. The default value is 0, indicating that the work items have not been prioritized.
- Override Automatic Cost Estimate - Mark this checkbox if you wish to override the cost estimated using the Calculate button and enter your own estimated cost of the work item instead.
- Work Code - Work code of the work item, selected from the dropdown. The available work codes are:
  - Demolition
  - New Footprint
  - Modernization
  - Sustainment
- Efficiency Savings (Optional) - When used, this number is entered by the user. If replacing an asset with a higher efficiency model will generate operational cost savings due to efficiency (such as energy or water savings), then enter here the amount you would expect to save each year by the replacement. This will then be factored into the ROI calculation at the Cost Analysis tab.
- Work Activity - The work activity associated with this work item, selected from the dropdown. The work activities are:
  - Inspection - Direct Rating
  - Inspection - Distress Survey
  - Inspection - Distress Survey with Quantity
  - Remove
  - Repair
  - Replace
  - Stop Gap

- Actual Cost - The actual cost of the work item after completion. Before the work item is completed, the contents of this field will mirror the contents in the Estimated Cost field.
- Quantity - The quantity of Section applicable to the work item. The value listed in Quantity near the top of the popup is the actual Component-Section quantity, but the quantity applicable to the work item may be different. For example, you might replace only 5 of the 10 doors in a Component-Section.
- Cost Book - The cost book to be used in estimating the cost of the work item, selected from the dropdown.
- ROI Information (Read-Only) - Displays the Return and ROI (return on investment), which summarize the calculations on the Cost Analysis tab.

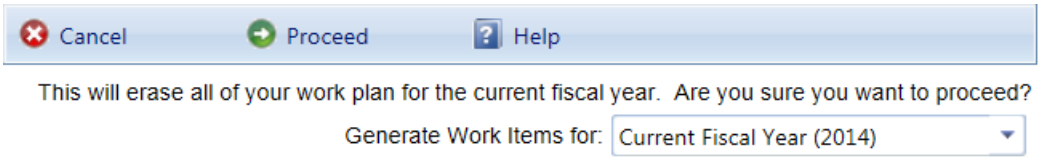
After entering the data for the work item, activate Save on the toolbar to save the changes to the work item. Alternatively, if you do not wish to save the changes made to the work item, activate Close on the popup tool-bar without saving.

Generate Work Items in BUILDER Automatically

If you have created condition and functionality standards and policies, along with a policy sequence, you may use the Generate Items button to create a work plan for the current year.



After you activate the Generate Items button, the "Generate Work Items" popup window will appear:



Activate the Proceed button to generate the work items.

WARNING: When you activate Proceed, all of the work items in the work plan for the current fiscal year will be deleted.

BUILDER will use the policy sequence defined in the Site data and compare the value for each applicable Component-Section, Functional Area, and/ or Building property with the threshold value set in the standards, to determine where and what type of work should be performed. Additionally, the estimated cost of each work item is computed using the Cost Book assigned to the Site in the Site General Information tab.. When the process is complete, the work plan will appear in the Work Items window, displaying all of the newly generated work items. All of the newly generated work items will have the status "Awaiting Funds." You may then refine the work item list as you wish.

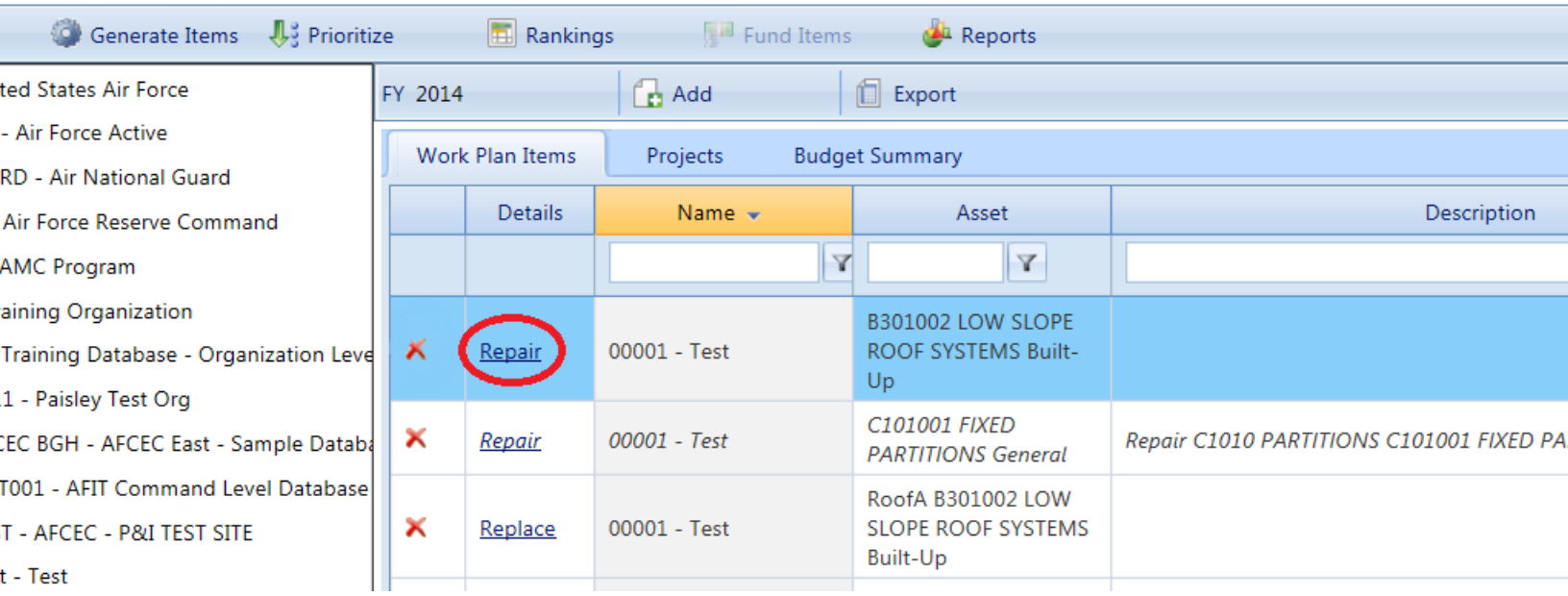
IMPORTANT: BUILDER's work generation algorithms are still primitive in the sense that they are unable to detect work conflicts and precedences. For example, they may generate a need to repair a roof deck without a concurrent effort to repair the roof surface. Your own manual processing of the work item list must address such problems.

Create Work Items Using Scenarios

If you have run a scenario, you may copy its results to the work plan by right-clicking on that scenario in the Scenarios module. This will create a work plan for the current year as well as future years. See Creating a Work Plan from a Scenario for more information on using this tool.

Edit a Section-Level Work Item

To edit a Section-level work item, activate the "Repair" or "Replace" hyperlink in the Details column of the desired Section-level work item on the Work Items screen.



The Component-Section Work Item screen will re-appear, titled "Details," and all of the data described above can be edited as desired.

Related Links

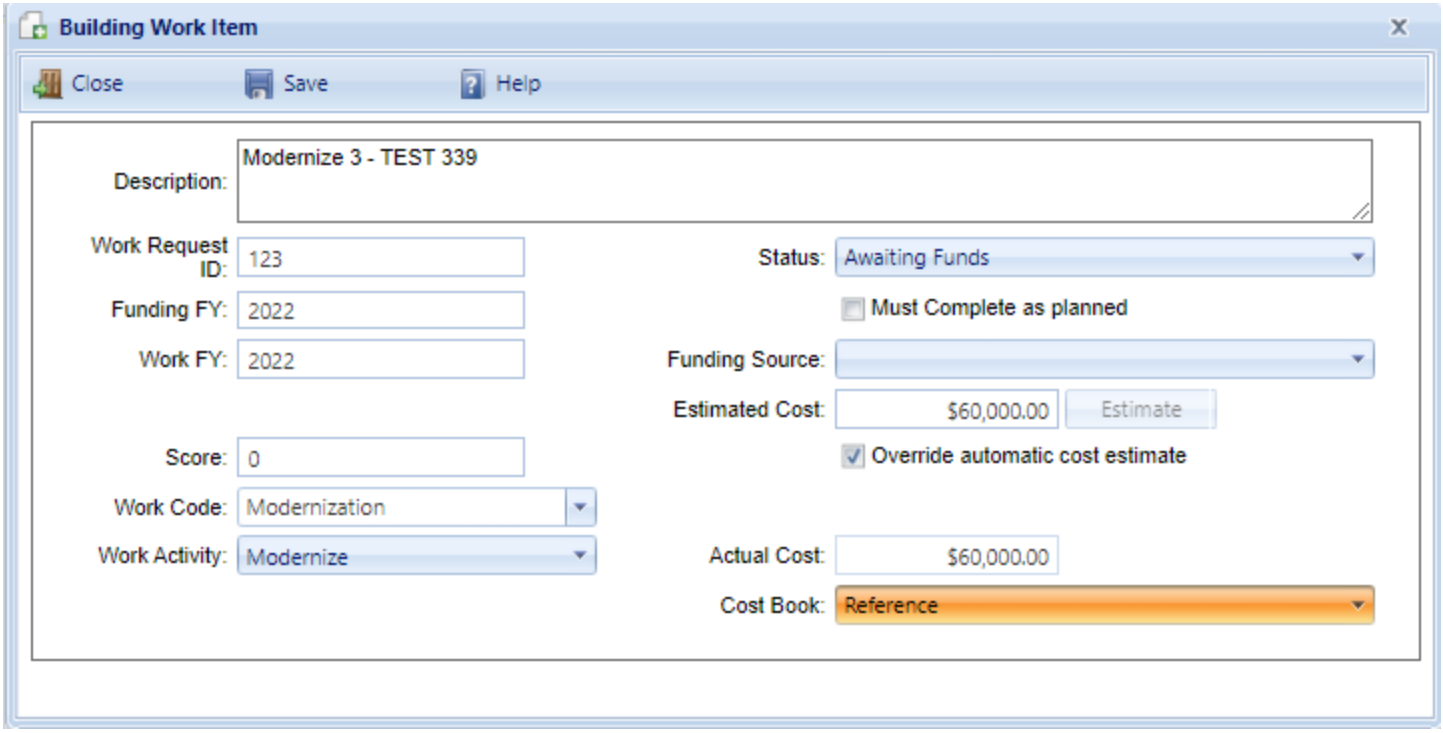
View a Work Plan or Work Item
Add a Work Item
Add or Edit a Building-Level Work Item
Prioritize Work Items in a Work Plan
View Work Item Rankings
Export Work Items
Delete a Work Item

[About Work Item Cost Analysis]
[About Work Items]
[Work Planning Overview]

Building-Level Work Item Data

This topic explains the data fields for a Building-level work item. This will help with understanding both the "Building Work Item" popup when adding a Building-level work item, or the "Details" popup that appears when viewing or editing a Building-level work item.

When you add a work item, and choose the "Building Work Item" option, you will see the following popup.



In the "Building Work Item" popup or "Details" popup, the following data for the Building-level work item is or can be recorded:

- Description - Description of the work item. Limit: 255 alphanumeric characters.
- Work Request ID. If applicable, your agency's work request number for the project. Limit: 50 alpha-numeric characters.

  Note:Work Request ID is not used by BUILDER in any analyses. The field is available for customer use.

- Status. Current status of the project, selected from the dropdown. The status will change over time as the project moves from planning to completion. The values Status can take are:
    - Awaiting Contract Award
    - Awaiting Funds
    - Awaiting Funds (Special Project)
    - Budgeted
    - Canceled
    - Completed
    - Deferred
    - Funded
    - Funded (Service Call)
    - Funded (Special Project)
    - In Design
    - In Progress
    - On hold

- Funding FY - The four-digit fiscal year that the work item was or will be funded.
- Must Complete as Planned (Checkbox) (aka "Must Do") - Mark this checkbox if the work item falls into the "must do" category. Marking it will force the work item to be funded in a Scenarios projection before all other competing work items that are not marked as "Must Complete as Planned" (also called "Must Do" in the work plan column heading).
- Work FY - The four-digit fiscal year in which the work should be performed.
- Funding Source - The funding source to be used for this work item, selected from the dropdown.
- Date Completed - The date the work item was completed. This field will appear only if Status is "Completed."
- Estimated Cost -This field is for the estimated cost of the work item. BUILDER may be able to estimate the cost if you have (1) chosen a cost book in the Cost Book field and (2) the cost book contains information relevant to the work to be done. To have BUILDER make the estimate, activate the Estimate button next to the Estimated Cost field, if the button is active (not grayed out). Alternatively, you can mark the Override Automatic Cost Estimate checkbox to enter your own estimated cost for the work to be done.
- Score - Work prioritization score.

  Note: Work items to demolish Buildings are not scored by prioritization schemes in BUILDER, so the score is defaulted to 0. Despite the score of zero, however, you can take special steps to ensure that the work item is completed. See Must Complete as Planned above, in this list of fields.

- Override Automatic Cost Estimate (Checkbox) - If you wish to override the cost that has been estimated using the Calculate button, mark this checkbox and enter your own estimated cost for the work to be done.
- Work Code - Select the work code of the work item. The available work codes are:
    - Demolition
    - New Footprint

    - Modernization
    - Sustainment

- Work Activity - Select the activity of the work item from the dropdown list. The available activities are Demolish, Modernize, and Replace.
- Actual Cost. The actual cost of the work item after completion. Before completion, this with equal the Estimated Cost field.
- Cost Book - The cost book to be used in estimating the cost of the work item, selected from the drop-down.

Related Links

To learn about grouping work items into projects, start with the topic About Work Projects. Or, for information about work plans, start with the topic About Work Plans.

Work Item Tasks

View a Work Item
Section-Level Work Item Data
Add a Work Item
Edit a Work Item
Fund Work Items
Prioritize Work Items in a Work Plan*
View Work Item Rankings
Export Work Items
Delete a Work Item

Instructional Links

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*Note: Prioritize Work Items in a Work Plan does not apply to Building-level work items; the score for Building-level work items will be 0.000. To have a Building-level work item completed in Scenarios, mark the work item as "Must do as planned" and provide a fund source with a criteria the work item can satisfy.

Prioritize Work Items in a Work Plan

This topic shows how to prioritize Section-level work items, and suggests when to prioritize. It also explains how prioritizing can be used to calibrate a prioritization scheme.

After you prioritize, you can View Work Item Rankings.

Note: Prioritizing work items in your wok plan can only be done if a prioritization scheme that applies to the area of the tree you are working in has been established as part of work configuration.

If a prioritization scheme has been created for the area of the tree you are working in, you can prioritize the work items in your work plan using the **Prioritize** button on the toolbar of the work plan screen. This will generate a **priority score** for each work item or work project in the plan, with the exception of Building-level work items.

Building-Level Work Items

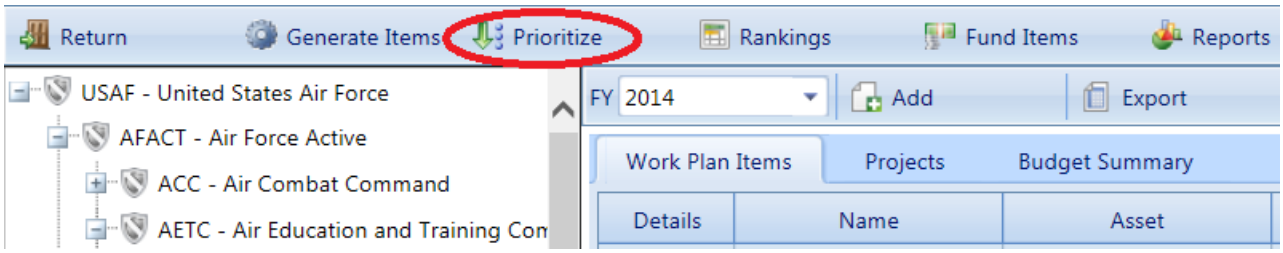
Building-level work items, such as a Building-level Modernization, do not participate in prioritization; their scores will remain at zero. However, you can cause a Building-level work item to be completed in Scenarios by marking it "Must do as planned" and providing a fund source with a criteria the work item can satisfy.

Note: Scenarios capability is provided with the **BUILDER** module only.

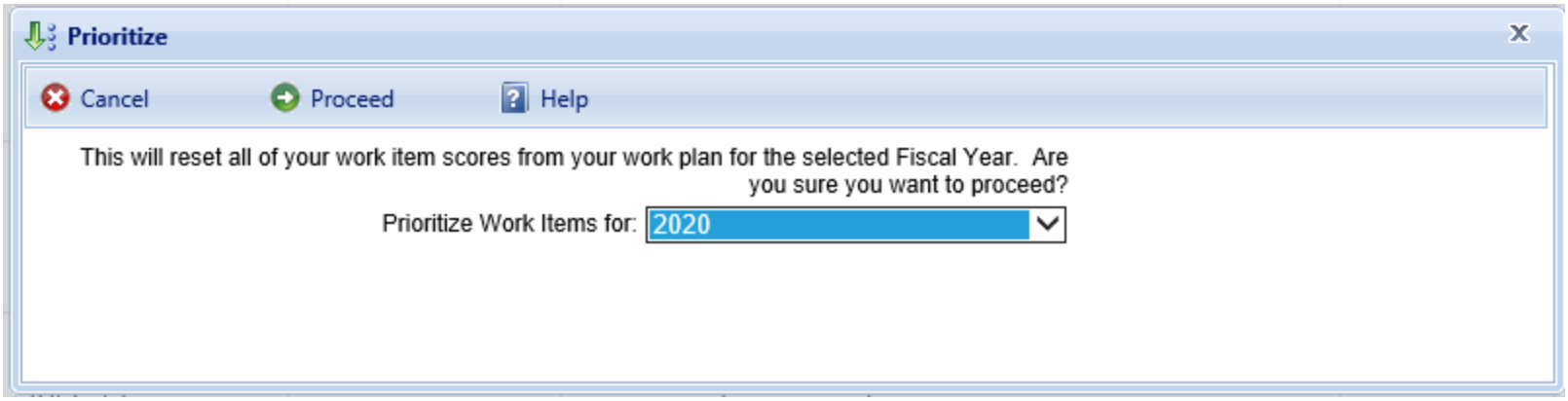
Section-Level work Items

To prioritize Section-level work items,

- With the Work Plan tab selected, activate Prioritize on the toolbar.



A popup warning box will appear, stating that all current work item scores from your work plan for the selected fiscal year will be reset if you continue.



- **IMPORTANT:** Select the desired fiscal year in the "Prioritize Work Items for" field (see screenshot above).
- Activate **Proceed** on the popup toolbar if you still wish to delete the current scores for the for Section-level work items and recompute new prioritization scores. The prioritization scores will be computed using the prioritization scheme selected in the Reference Settings area at the Site or Organization's **General Information** tab. (Alternatively, activate the **Cancel** button if you do not wish to perform these actions; you will be returned to the work plan.)

Result:

After a priority score has been computed for each work item, all work items will be shown in the work plan ranked from highest score to lowest. Project priority scores are computed by averaging the priority scores of the work items in the project, weighted by cost.

Projects

Project priority scores are computed by averaging the priority scores of the work items in the project, weighted by cost.

When to Prioritize

You can prioritize the work plan as often as you wish. Listed below are situations where prioritizing is recommended.

When Adding New Work Items

If you add new work items, you should re-prioritize to include the new items.

To Calibrate a Prioritization Scheme

You may also want to evaluate a prioritized work plan in order to calibrate the weights and points you have assigned in a particular prioritization scheme. To calibrate,

- Prioritize the work plan.
- Consider the order in which work items have been ranked, and their scores.

- When you see ordering discrepancies or score differences from your expert judgment, this might allow you to identify measures that should carry more relative weight, or measure values that warrant higher points such that the order of the work items will come out correct.
- Adjust measures and re-prioritize so that the order of the work items is acceptable.

The goal of a prioritization scheme, which is established as part of Work Configuration, is to rank work items by algorithmic calculation into the same order that expert facility managers at your agency would rank them by following sound engineering principles.

Related Links

To learn about grouping work items into projects, start with the topic About Work Projects. Or, for information about work plans, start with the topic About Work Plans.

Work Item Tasks

View a Work Item
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Edit a Work Item
Section-Level Work Item Data
Building-Level Work Item Data
Fund Work Items
View Work Item Rankings
Export Work Items
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View Work Item Rankings

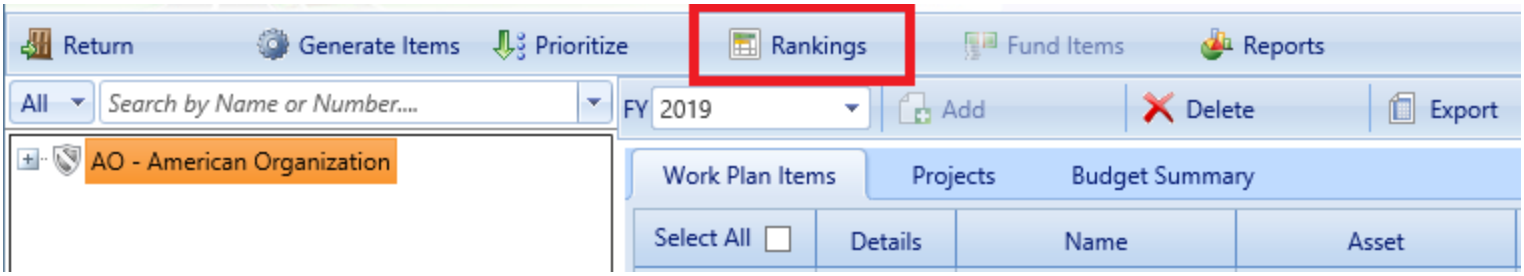
If you have created a prioritized work plan, you can view the rankings of the work items in your work plan, broken down into the constituent scores for each measure used in the prioritization scheme. This topic shows the steps for viewing the rankings and briefly explains the results.

Note: This can only be done if a prioritization scheme that applies to the area of the tree you are working in has been established as part of work configuration.

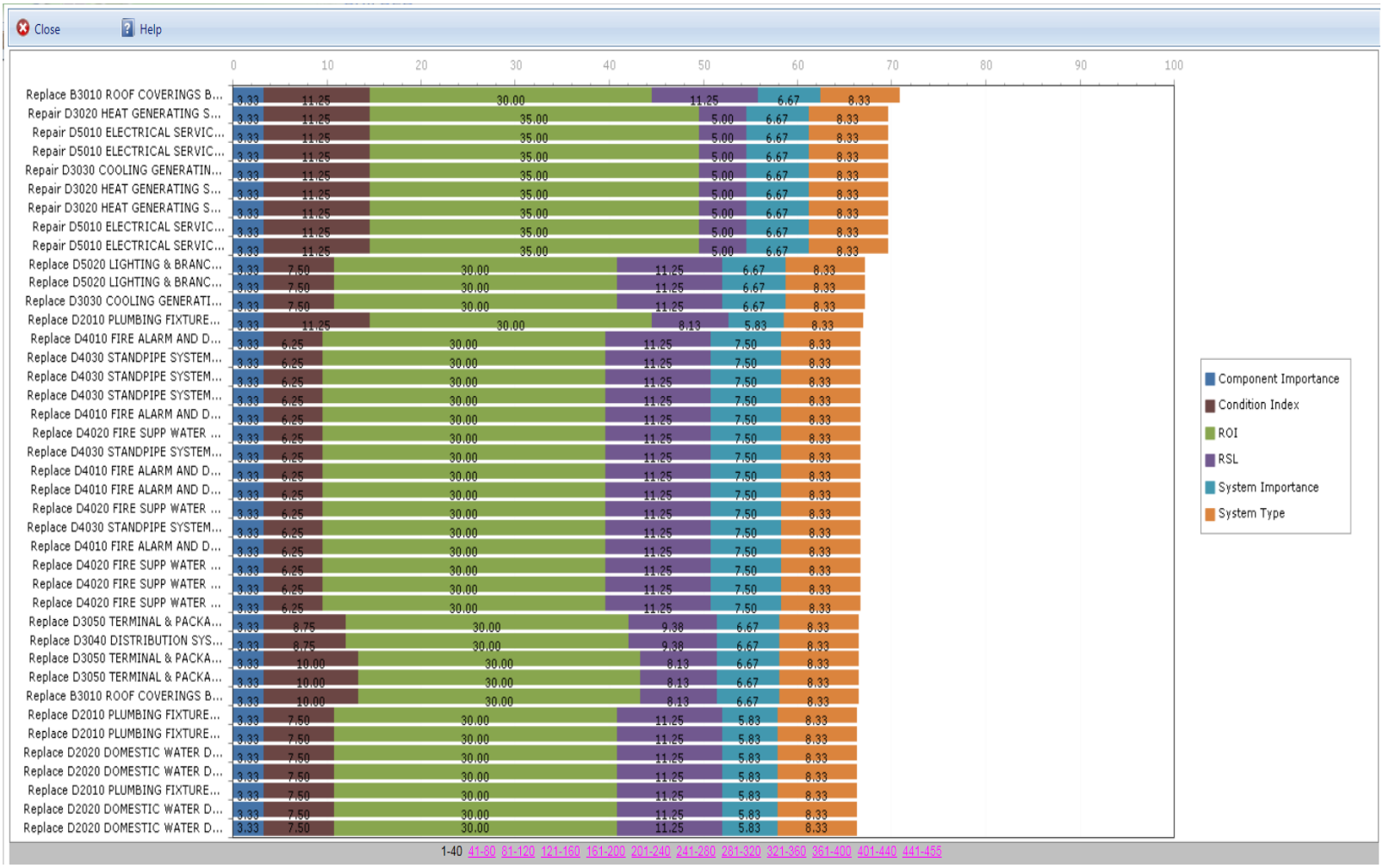
To rank work items,

- At the work plan screen, navigate to or search-select the desired Organization or Site. This sets the scope for the ranking.

- Activate **Rankings** on the toolbar.



The Rankings window will appear.



Result:

The rankings of each Section-level work item will be shown from highest priority score to lowest. The score for each work item will be broken down into the constituent scores for each measure used in the **prioritization**

scheme established in Work Configuration. A legend will be displayed, correlating the colors to their respective measures.

Related Links

To learn about grouping work items into projects, start with the topic About Work Projects. Or, for information about work plans, start with the topic About Work Plans.

Work Item Tasks

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Export Work Items

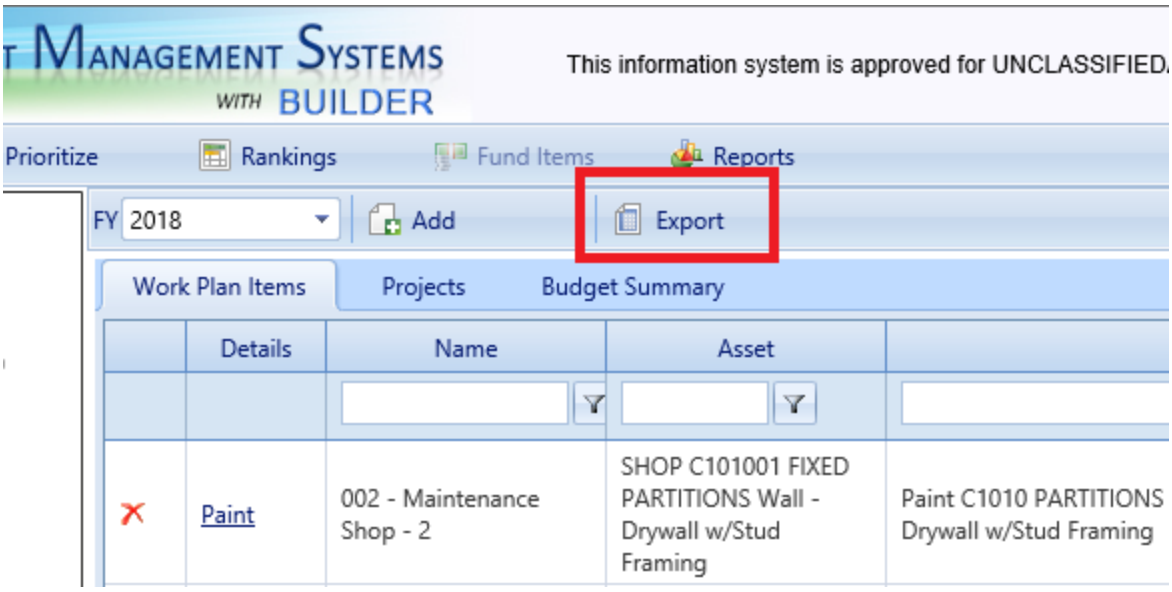
This topic explains multiple ways to export work items. Work items can be exported to a Microsoft Excel spreadsheet, either from the work plan or from the Scenario Visualization / Scenario Analysis screen.

Export Work Items from the Work Plan

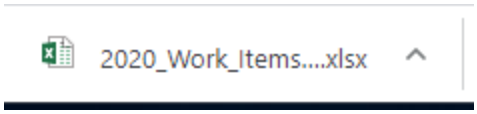
To export a work plan to an Excel spreadsheet from the Work Plan Items tab on the work plan screen,

- On the **BUILDER** main menu, activate Work Plan.
- At the work plan screen, select the desired location in the navigation tree at the left. This will determine the scope of the work plan, which will contain all work items for that location and below it in the tree.

- On the secondary toolbar, activate **Export**.



- When the Excel work plan shows as downloaded in the lower left corner of the window (see illustration immediately below), double-click on it to open. Alternatively, you can activate the up arrow to be able to select between opening the file and showing it in its Downloads folder location.



- If you want to save the opened spreadsheet, you need to activate the **File** tab in the spreadsheet, then specify the location, and re-name as desired (the spreadsheet will have been assigned a default file name).

Export Work Project Work Items

You can choose to export just those work items contained in a particular work project. To do so,

- At the work plan screen, open the **Projects** tab. *All projects pertaining to the current tree location on down will be listed in the content area.*

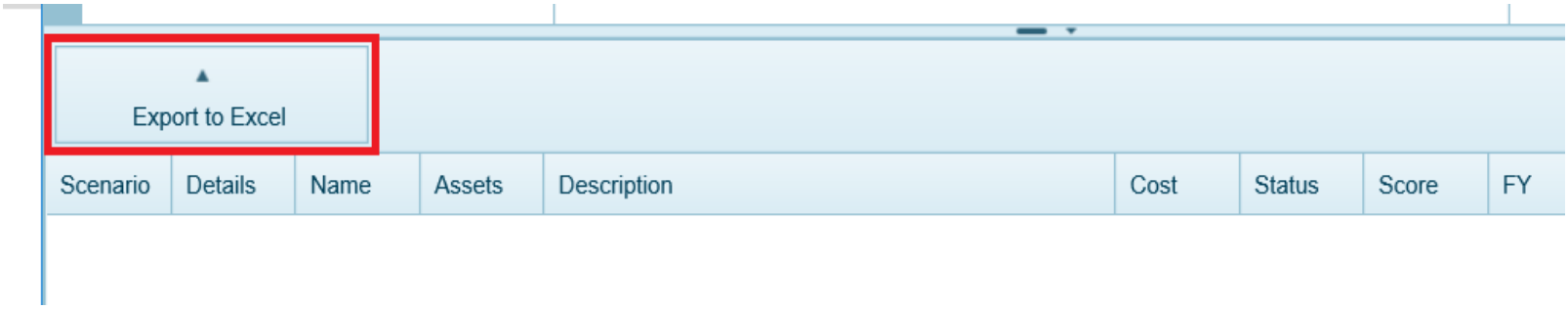
  Tip: If you are at the head of the navigation tree and too many projects are listed, you can choose to navigate farther down in the tree towards or to the work plan containing the project.

- Open the "Details" popup for the desired project by activating its **Details** link in the first column of the desired work project.
- In the popup, open the **Work Items** tab.
- If the **Only Show Selected Project Work Items** checkbox is not marked, mark it to restrict the view to just those work items that are in the project.

- Activate the **Export** button on the popup toolbar.
- When the Excel tab with the project name on it appears at the lower left of the screen, activate it to open the Excel file containing the project work items.
- Save the exported file if desired (you can also rename it).

Export Work Items from Scenario Analysis

At **Scenarios > Analysis** (aka Scenario Visualization), an **Export** button has been added above the grid of work items at the bottom of the Scenarios analysis screen. This button will export to Microsoft Excel any work items listed in the grid:



Note: The tiny arrow at the bottom of the Scenarios analysis screen is what opens or closes the drawer containing the grid of work items (if there are work items for the selected Component-Section).

Related Links

To learn about grouping work items into projects, start with the topic About Work Projects. Or, for information about work plans, start with the topic About Work Plans.

Work Item Tasks

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Building-Level Work Item Data
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Delete a Work Item

This topic shows how to delete work items at the work plan screen accessed via Work Plan on the main menu.

Productivity Tip: If you are using a version of BUILDER (3.3.13 and later) that allows selecting multiple work items at one time, and if some or all of the work items you wish to delete are all of the work items contained in a particular node of the tree in the left pane, then it will save time to navigate to that node and delete all of its work items with one Select All checkbox selection, even if those work items are not all of the ones you wish to delete. You can then continue to delete work items from other locations in the tree if necessary.

Navigate to Work Plan

If you are not already looking at the work item(s) you wish to delete, do the following:

- Activate Work Plan in the main menu. You should now be viewing the work plan screen, which has a Return button at the upper left.
- Navigate in the tree to the lowest inventory node containing the work item(s) you wish to delete. You should be viewing the work items at the Work Plan Items tab.

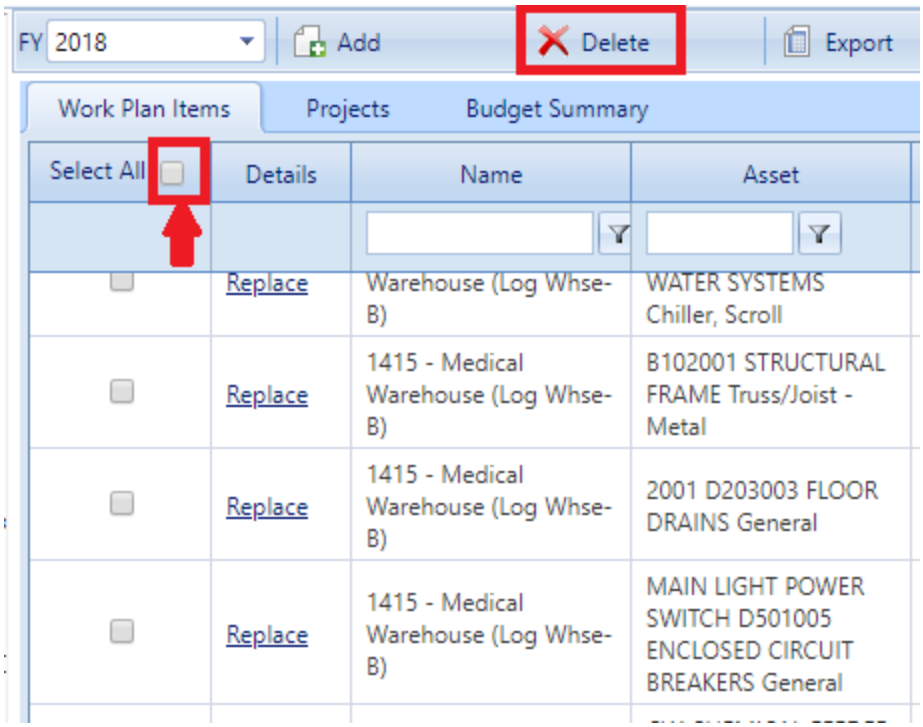
Bulk Delete Work Items Where Possible

In BUILDER Version 3.3.13 or later, you can easily delete all work items at the current node of the work item tree. This requires careful selection of your starting point.

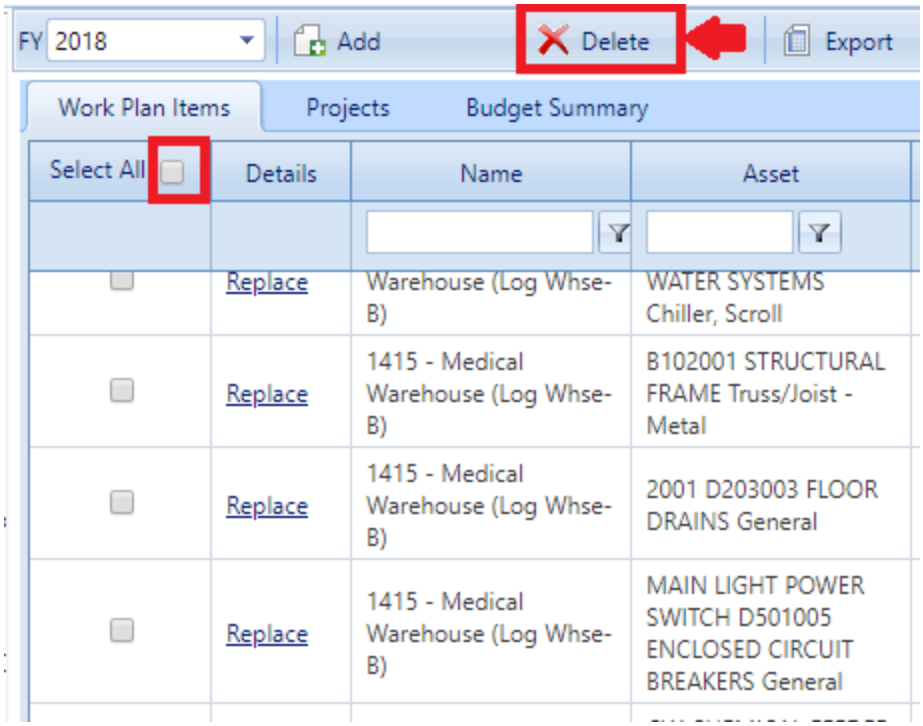
To delete work items in bulk,

- In the left pane, navigate in the tree to the lowest node in which you want to delete all of the work items. Don't worry if this is not all of the work items you want to delete; you can continue to (a) repeat these steps to bulk delete at other locations in the tree and/or (b) delete individually selected work items as shown in Delete Selected Work Item(s).
- Make sure you are at the Work Plan Items tab in the content pane.

- Mark the Select All checkbox at the top of the first column.



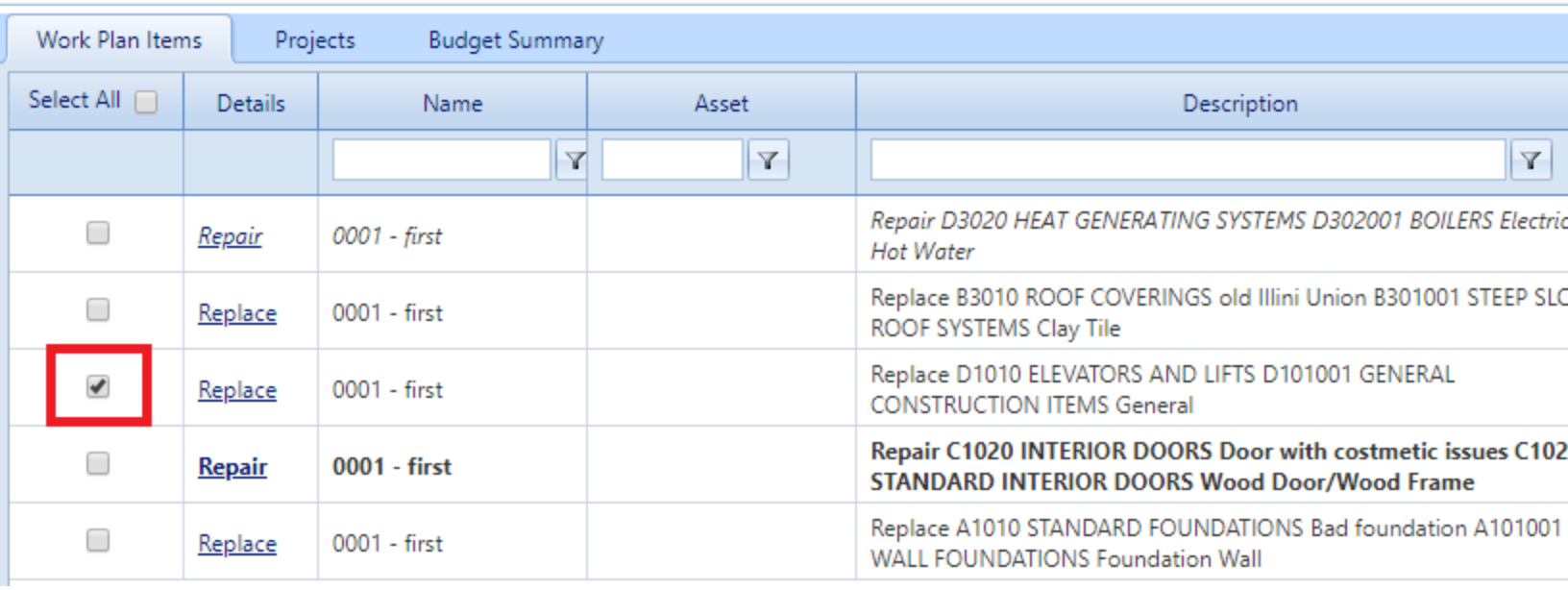
- Finally, activate ✕ Delete on the toolbar above the work items table.



Delete Selected Work Item(s)

To delete one or more individually selected work items from the current work plan,

- Select one or more item(s) you wish to delete by marking the corresponding checkbox(es) in the first column of the work item table.



- Activate ✕ Delete on the toolbar above the work items table.

Related Links

To learn about grouping work items into projects, start with the topic About Work Projects. Or, for information about work plans, start with the topic About Work Plans.

Work Item Tasks

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Building-Level Work Item Data
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Export Work Items

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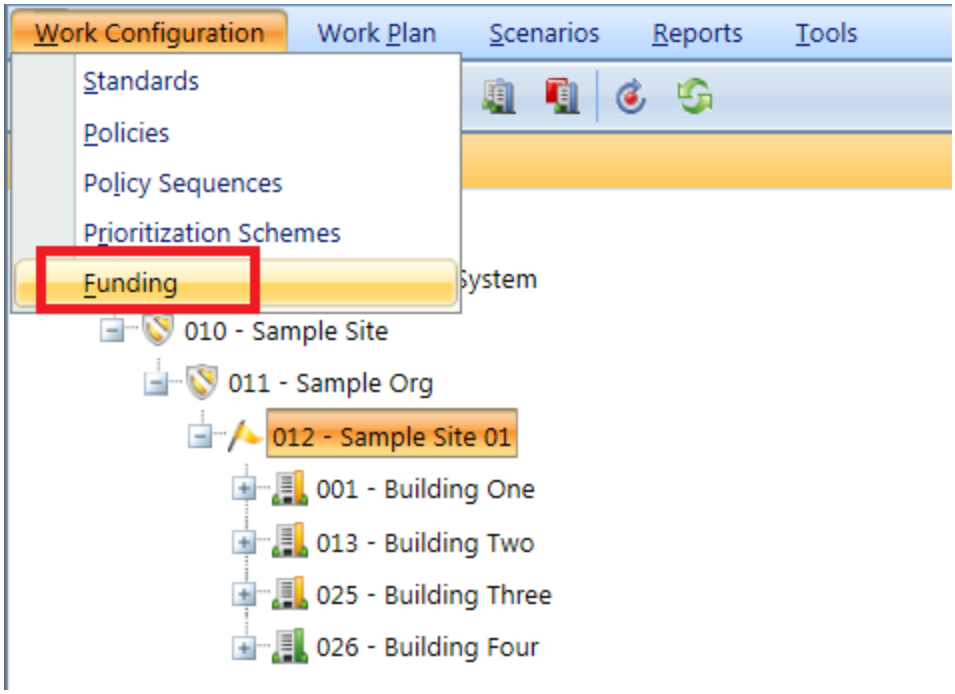
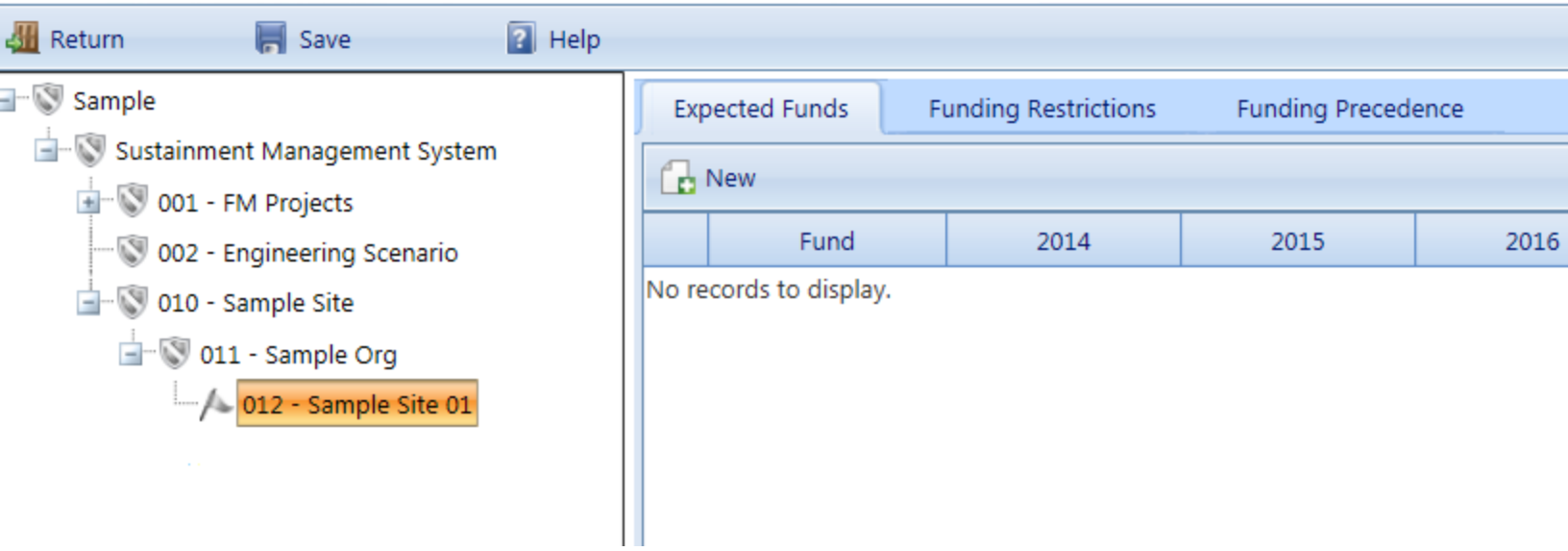
Funding Work Items

Enter or Edit Anticipated Funding Levels

To add, enter, or edit funding levels, select **Work Configuration > Funding** starting at the main menu.



The Funding window will appear.

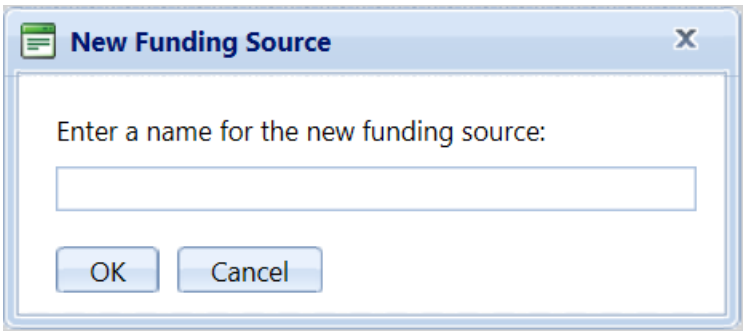


Navigate the tree on the left of the screen to the Site you wish to edit the funding options for. Once a Site has been chosen in the tree, the funding levels, funding restrictions, and funding precedence can be set from the different tabs. Further descriptions of each tab is provided below.

Note: Anticipated funding levels only need to be input if you are planning to use Scenarios for multi-year work planning constrained by budget. The funding sources and amounts you enter here will be used as the initial defaults for each scenario you create. You may, of course, edit the amounts in the scenario itself, but you will not be able to add new funding sources, change their restrictions, or change their precedence order in a scenario. For more information about Scenarios, begin with About Scenarios.

Toolbar Options

- **Return**. Closes the Funding window.
- **Save**. Saves changes made to the funding levels, restrictions, or precedence.
- **New**. This button is at the Expected Funds tab rather than on the main toolbar. Use this button to create a new funding source. *When **New** is activated, the "New Funding Source" popup window will appear*.

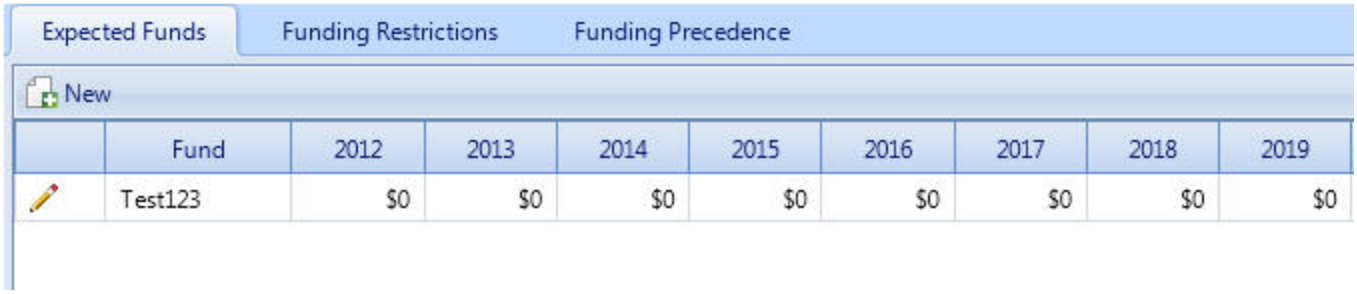


Enter the name of the funding source you wish to add. The name is limited to 50 alphanumeric characters and must be unique.

- **Delete**. Deletes the selected funding source. Note that a funding source can only be deleted from the **Expected Funds** tab. The selected funding source is identified in this tab by the arrow in the left column of the grid.
- **Help**. Launches the help topic associated with funding.

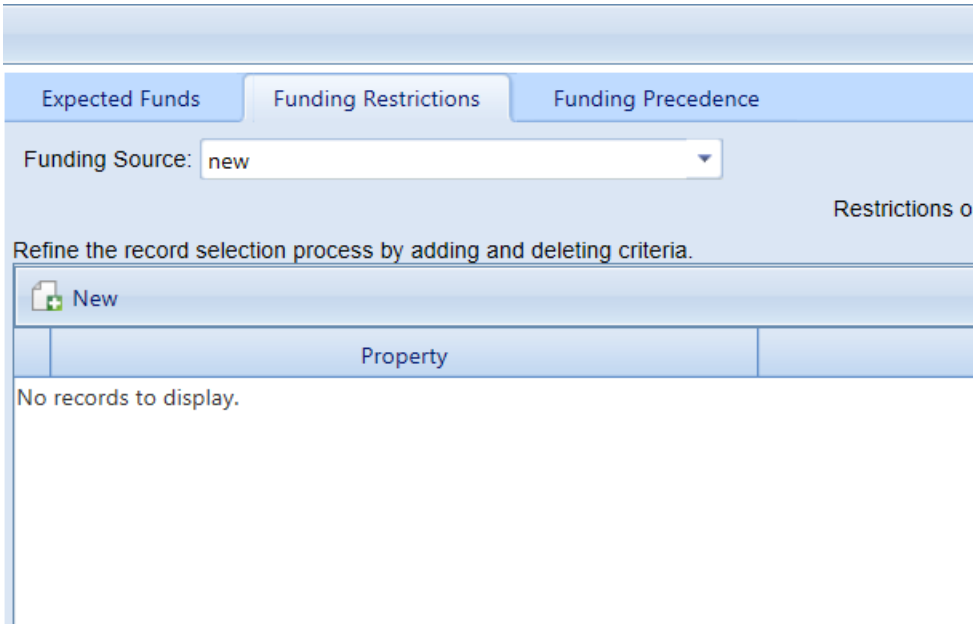
Expected Funds Tab

The **Expected Funds** tab provides an editable list of funding sources and amounts for the next ten years. To edit a funding source level for a particular year, activate the pencil icon on the left side of the grid and enter the expected funds for the next 10 years. After completing the funds, activate the checkmark icon to accept the changes made.



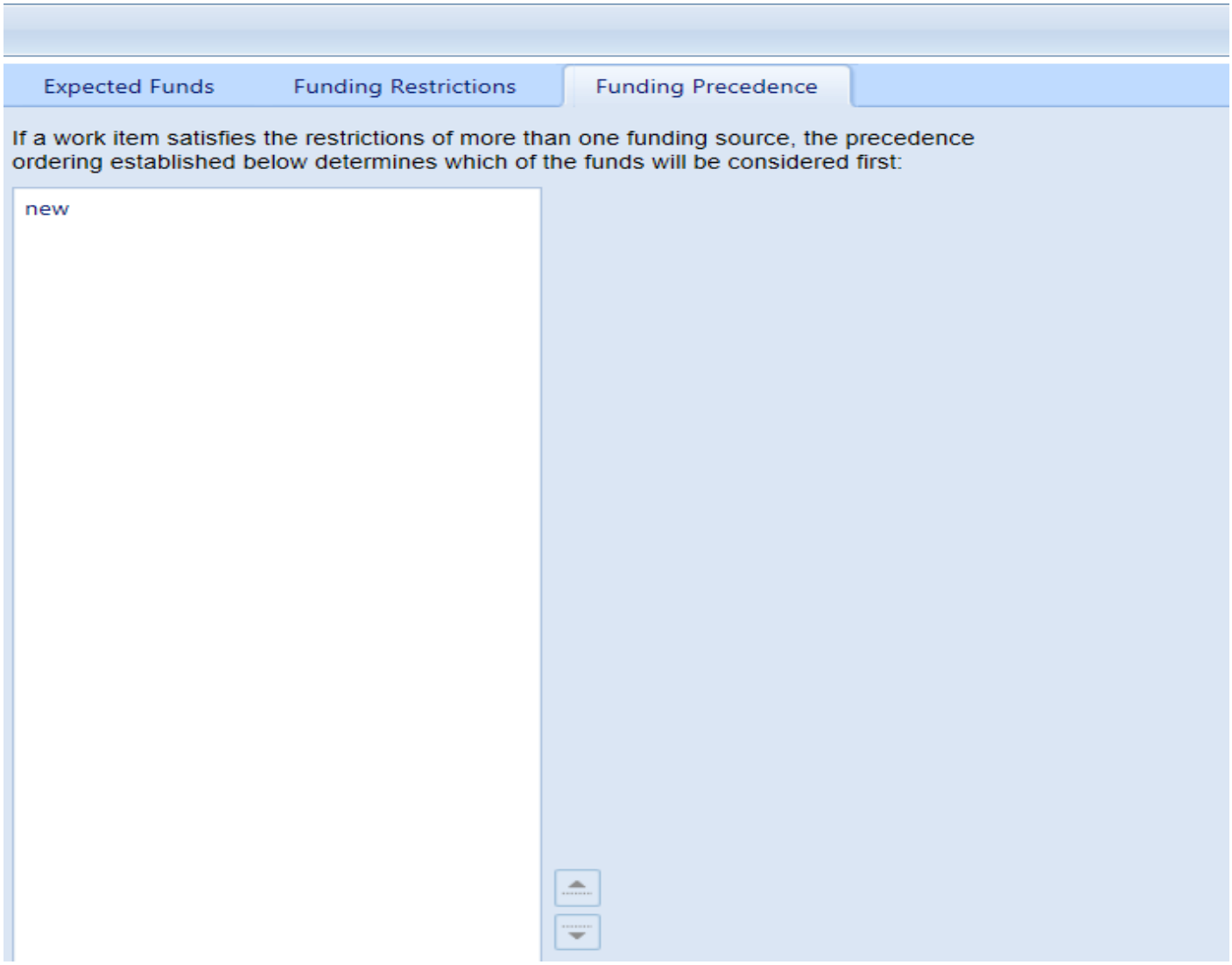
Funding Restrictions Tab

The **Funding Restrictions** tab provides a means of establishing selection criteria that determines whether or not a particular funding source can be used for a particular work item. This tab allows you to identify properties that a work item must have in order to use the selected funding source. To add a funding restriction, select the funding source from the drop down list, activate the **Add** button, and the enter the data regarding the restriction (selection criteria) in the grid.



Funding Precedence Tab

BUILDER allocates funds algorithmically when it is processing a prioritized list of work items. After the funding sources, the amounts, and the criteria for using sources are set, the only further requirement is to specify how the automated process will determine which funding source to use if a work item satisfies the restrictions (selection criteria) of more than one funding source. The **Funding Precedence** tab provides a means of establishing an order of precedence among the funding sources for a work item. To change the order of the funding sources, select a source and use the up and down arrows to move it in the list. When funds are allocated, the first funding source listed will be checked first, then the second, and so on until funding is found or the list is exhausted.



Related Links

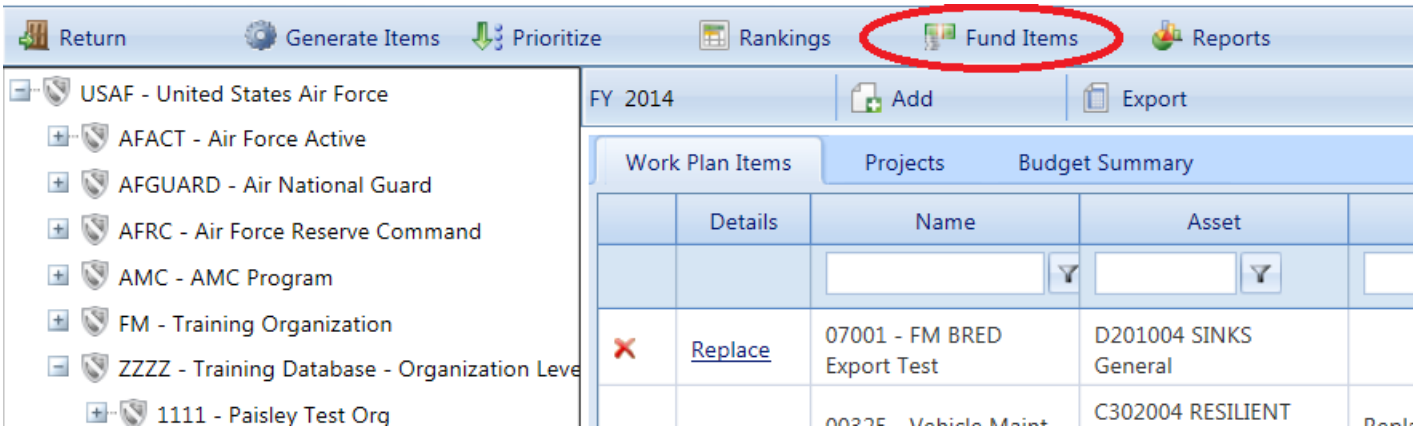
[Add a Funding Stream]
[Edit a Funding Stream]
[Delete a Funding Stream]
[About Funding Streams]

Fund Work Items

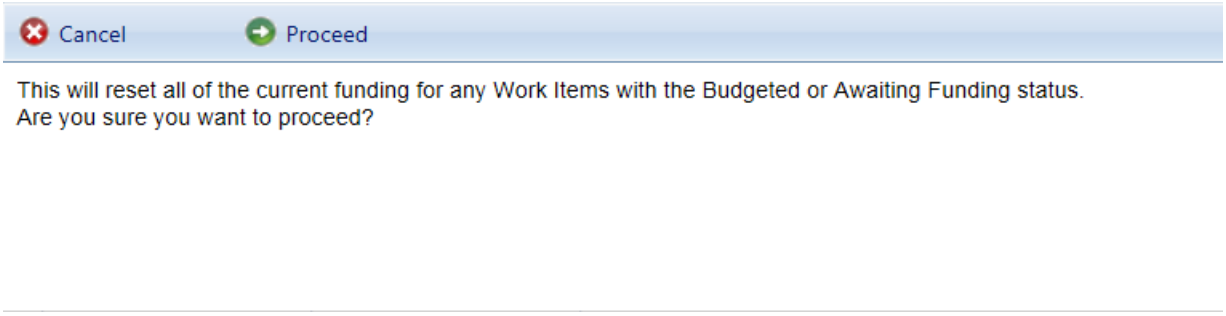
BUILDER can automatically fund work items based on their priority scores and the available fund sources. If you choose to use this tool, the work items with the highest priority scores will have their status changed to "budgeted" until all of the funds are exhausted. All remaining work items that are not budgeted will have their

status changed to "Awaiting Funding." It is important to note that the funding sources are subject to all the restrictions and precedences that are set in the funding screen during work configuration.

To fund the work items in a work plan, activate Fund Items on the work plan toolbar.



The Fund Work Items screen will appear.



From this window, you have the option of funding the work items for the current or next fiscal year.

Select the year you wish to fund the work items in and activate the Proceed button. After completion,

- The work items with the highest priority scores will be marked as "Budgeted" until all applicable sources are allocated.
- Remaining work items will be marked as "Awaiting Funds."

If you do not wish to fund the work items, simply activate the Cancel button in the window to be returned to the Work Items window.

Related Links

To learn about grouping work items into projects, start with the topic About Work Projects. Or, for information about work plans, start with the topic About Work Plans.

Work Item Tasks

- View a Work Item
- Add a Work Item
- Edit a Work Item
- Section-Level Work Item Data
- Building-Level Work Item Data
- Prioritize Work Items in a Work Plan
- View Work Item Rankings
- Export Work Items
- Delete a Work Item

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Work Item Cost Analysis

About Work Item Cost Analysis

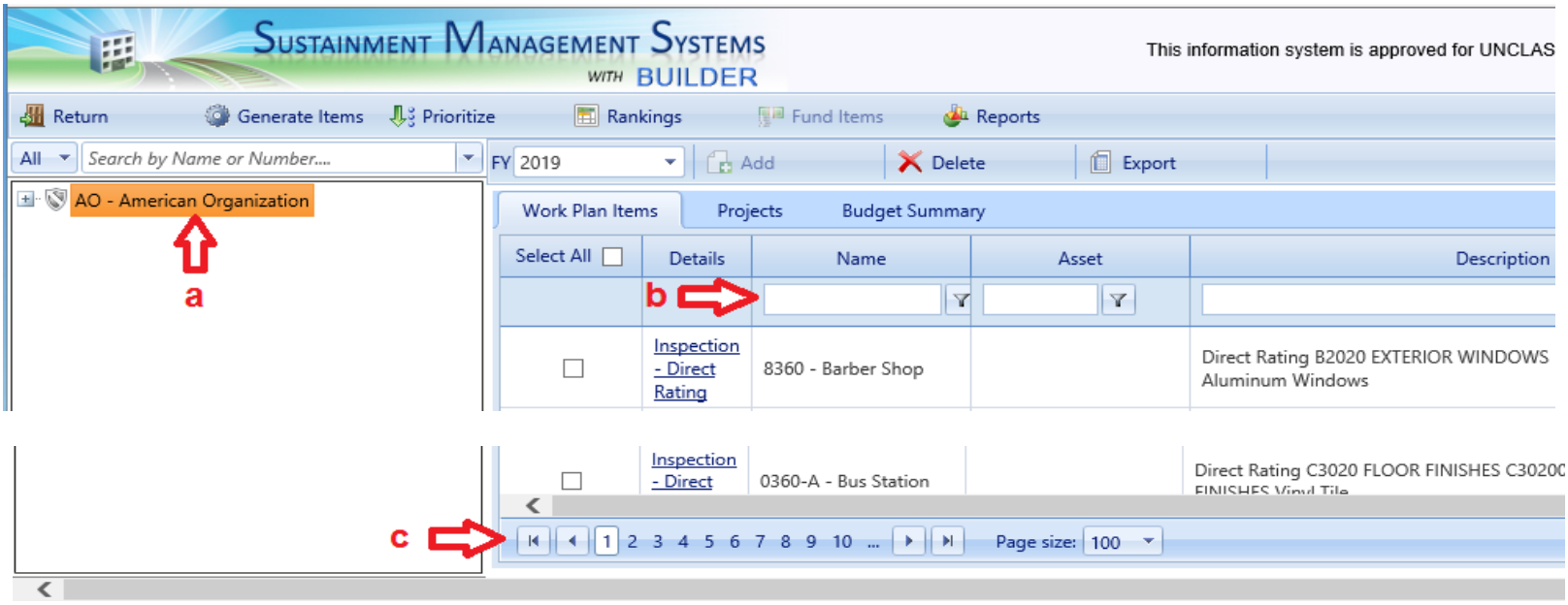
Work Item cost analysis is a feature available at the Cost Analysis tab on a work item's "Details" popup window. This feature provides additional data regarding the work items in your inventory to ensure that the most cost-effective work activity can be chosen and performed. It displays the possible work activities for the Section, showing for each the return on investment (typically this is the most important information needed) and other cost data, to aid in choosing the best work activity to perform.

To view a work item's cost analysis,

Select Work Plan at the main menu.

The navigation tree will change to showing the topmost Organization (or Site), and the corresponding work plan items will be displayed in the content area

.



- To bring the desired work item record into view, use one or more of the following as needed (labeled in red on image above):
  a. tree navigation (left pane)
  b. filters (second row of the table at the Work Plan Items tab)
  c. page navigation (at the bottom of the content pane)
- When you have located the desired work item record, activate its Repair or Replace link in the Details

column. The "Details" popup will appear.

Note: Inspection links will not show cost analysis.

Component Information

Just under the popup toolbar, the following general information regarding the work item will be displayed:

- Section Description (Read-Only). Displays a description of the Section for the work item.
- Quantity (Read-Only). Displays the quantity inventory quantity of the Section.

Under Component Info at the Cost Analysis tab, the following information is displayed:

- Year Installed. Year Installed is taken from inventory information.
- Designed SL. Service life from the associated Service Life book.
- Modified SL. Service life as modified by the latest inspection results.
- Replace Cost. Replacement cost from the associated cost book.
- Repair Cost Factor.

Comparison Graph

Just below the general component information is a graph of the condition indices over time when different work activities are performed on the Section. There are four work activities for each Component-Section, each with data elements associated with them. Each of these is described under Action Alternatives below.

Action Alternatives

Do Nothing

This option displays the data for the Section if no work is performed on it:

- Will Fail In (Read-Only). Displays the year the Section will reach the terminal **CI**[1], based on the current **CI**[2] and deterioration rate.
- Current **CI**[3] (Read-Only). Displays the current **CI**[4] of the Section.
- **RSL**[5] (Read-Only). Displays the current remaining service life of the Section.

Stop Gap Repair

This option displays the data for the Section if a stop gap repair, where the **CI**[6]Condition Index is held constant for one year, is performed on the Section:

- In Year. Enter the year the stop gap repair will be performed on the Section. Initially this field is defaulted to the value of the Completed FY field at the Details tab.

---

[1]Condition Index

[2]Condition Index

[3]Condition Index

[4]Condition Index

[5]Remaining service life.

[6]Condition Index

- Hold **CI**[1] @ (Read-Only). Displays the **CI**[2] value the Section will be held at for one year. This value will be the current **CI**[3] if the work item is performed in the current year, other wise it will be computed based on the current **CI**[4] and deterioration rates.
- ASL (Read-Only). Displays the additional service life of the Section gained by performing the stop gap work activity.
- **RSL**[5] (Read-Only). Displays the remaining service life of the Section after performing the stop gap work activity. This value is computed by adding the ASL from this work activity and the **RSL**[6] from the Do Nothing work activity.
- $ Generated (Read-Only). Displays the money generated, or saved over time, by performing the stop gap work activity.
- Work Cost. Displays the BUILDER-estimated cost (using the default cost book and current **CI**[7]) of performing the stop gap work activity. This field can be manually edited if the Overwrite Estimate checkbox is marked.
- Return on Investment(Read-Only). Displays the return on investment for performing the stop gap on the Section. This value is calculated by dividing the $ Generated by the Work Cost and converting to a percentage.

Repair

This option displays the data for this Section if it is repaired:

- In Year. Enter the year the Section will be repaired. Initially this field is defaulted to the value in the Completed FY field at the Details tab.
- Repair To (Read-Only). Displays the **CI**[8] value the Section will be restored to after the repair is completed. The **CI**[9] will always be repaired to 95, unless the current **CI**[10] is greater than 95. If the **CI**[11] is greater than 95, the **CI**[12] will be restored to 100.
- ASL (Read-Only). Displays the additional service life of the Component-Section after repairing the Section.

---

[1]Condition Index
[2]Condition Index
[3]Condition Index
[4]Condition Index
[5]Remaining service life.
[6]Remaining service life.
[7]Condition Index
[8]Condition Index
[9]Condition Index
[10]Condition Index
[11]Condition Index
[12]Condition Index

- **RSL**[1] (Read-Only). Displays the remaining service life of the Section after repairing the Section. This value is computed by adding the ASL from this work activity and the **RSL**[2] from the Do Nothing work activity.
- Section will become inactivated or is part of a modernization project in. Enter the year the Section will become inactive or will be removed/replaced in a modernization project. If the Section becomes inactive or is replaced during modernization, the saving generated by repairing the Section after this year will not be included in the $ Generated field.
- $ Generated (Read-Only). Displays the money generated, or saved over time, by repairing the Section.
- Work Cost. Displays the BUILDER-estimated cost (using the default cost book and current **CI**[3]) of repairing the Section. This field can be manually edited if the Overwrite Estimate checkbox is marked. If this box is marked, enter the cost of the repair work activity.
- Return on Investment (Read-Only). Displays the return on investment for repairing the Section. This value is calculated by dividing the $ Generated by the Work Cost and converting to a percentage.

Replace

This option displays the data for the Section if it is replaced:

- In Year. Enter the year the Section will be replaced. Initially this field is defaulted to the value in the Completed FY field on the Details tab.
- ASL (Read-Only). Displays the additional service life of the Section after replacement.
- **RSL**[4] (Read-Only). Displays the remaining service life of the Section after replacement. This value is computed by adding the ASL from this work activity and the **RSL**[5]Remaining Service Life from the Do Nothing work activity.
- Replacing Component will lower annual Operational/Maintenance cost by. Enter the annual amount saved on operation and/or maintenance due to the replacement of the Section. This amount multiplied by the number of years will be added to the $ Generated field.
- $ Generated (Read-Only). Displays the money generated, or saved over time by performing the replacement.
- Work Cost. Displays the BUILDER-estimated cost (using the default cost book) of performing the replacement. This field can be manually edited if the Overwrite Estimate checkbox is marked. If this checkbox is marked, enter the cost of the replacement.
- Return on Investment (Read-Only). Displays the return on investment for performing the replacement. This value is calculated by dividing the $ Generated by the Work Cost and converting to a percentage.

---

[1]Remaining service life.

[2]Remaining service life.

[3]Condition Index

[4]Remaining service life.

[5]Remaining service life.

Selecting the Work Activity to Perform

After all of the applicable data has been entered and edited for each work activity, the Calculate button can be used to compute the return on investment (ROI) for each work activity. The work activity with the highest ROI should be selected for the Section. To select a work activity, activate the Select button next to the ROI of the preferred work activity. Activating the Select button will update the following fields on details tab for the work item based on the data entered for the work activity:

- Description of Work Item
- Completion FY
- Estimated Cost
- Activity
- ROI Information (Return and ROI).

Related Links

To learn about grouping work items into projects, start with the topic About Work Projects. Or, for information about work plans, start with the topic About Work Plans.

Work Item Tasks

View a Work Item
Add a Work Item
Edit a Work Item
Section-Level Work Item Data
Building-Level Work Item Data
Fund Work Items
Prioritize Work Items in a Work Plan
View Work Item Rankings
Export Work Items
Delete a Work Item

Instructional Links

About Work Items
Work Planning Overview

Work Projects

About Work Projects

This topic answers common questions about work projects and provides links to work project tasks.

- **What is a work project?**

  A Maintenance and Rehabilitation (M&R) *work project* allows you to group work items together to manage them as a single work effort that is prioritized and funded as a whole. The work items in a project may span different Systems in a single Building, as in a renovation effort. A project may also span multiple Buildings.

  In general, a project is a collection of any work items grouped together in an "all or nothing" work unit with a single funding source and a single work year.

- **What is the benefit of using work projects?**

  Constructing logical groupings of work items can help simplify and reduce the workload of tracking work items.

- **What can I put in a work project?**

  A work project can contain Section work items and/or Building work items. It can *not* contain another project.

Related Links

For more about the work items contained in a work project, start with the topic About Work Items.

Work Project Tasks

View a Work Project
Work Project Data
Add a Work Project
Organize Work Items into a Project
Edit a Work Project
Export a Work Project
Delete a Work Project

Instructional Link

About Work Projects
Work Planning Overview

View a Work Project

If one or more work projects have been created in a work plan, you can view project information starting at the work plan's Projects tab. You can view information displayed in the projects table at the Projects tab (this provides a smaller amount of detail), or by navigating to the project's "Details" popup. Both ways are described in this topic.

Projects Table Information

The columns displayed at the Projects tab of a work plan are a subset of those shown at the Work Plan Items tab. For additional details about the work project, you can

- (Details) - Activating a link-formatted entry in the first column will trigger a popup showing details for that work project.
- Name - Name of the project.
- Description - Description of the project.
- Cost - The aggregated cost of the estimates for performing the work items in the project.
- Status - Current status of the project.
- Score - If work items in the project have been prioritized, the score will be displayed here. The default value is 0, indicating that the work items have not been prioritized.
- Date Completed - Date the project was completed, if it has been completed.
- Must Do (Checkbox) - If the Must Do checkbox is marked, then in Scenarios the project will be the project to be funded in a Scenarios projection before all other competing work items that are not marked as "must do."

"Details" Popup Information

For a greater level of detail, activate the project's Details link in the first column of the projects table. This will bring up the "Details" popup where you can view the following information:

- Project Name - Name of the project. Limit: 30 alphanumeric characters. The project name will be used for selecting, tracking and reporting.
- Description - Description of the work project. Limit: 255 alphanumeric characters.
- Work Request ID. If applicable, your agency's work request number for the project. Limit: 50 alphanumeric characters.

  Note:Work Request ID is not used by BUILDER in any analyses. The field is available for customer use.

- Status - Current status of the project, selected from the dropdown. The status will change over time as the project moves from planning to completion. The values Status can take are:
  - Awaiting Contract Award
  - Awaiting Funds
  - Awaiting Funds (Special Project)
  - Budgeted
  - Canceled
  - Completed
  - Deferred
  - Funded
  - Funded (Service Call)
  - Funded (Special Project)
  - In Design

    - In Progress
    - On hold

- Funding FY - The four-digit fiscal year that the project was or will be funded.
- Must Complete as Planned - Mark this box if the project falls into the "must do" category. Marking it will force the project to be funded in a Scenarios projection before all other competing work items that are designated "Must Do."
- Work FY - The four-digit fiscal year in which the work is expected to be performed.
- Funding Source - The funding source to be used for this project, selected from the dropdown.
- Completion FY - Enter the four-digit fiscal year that the project was or will be completed.
- Date Completed - The date the project was completed. This field will appear only if Status is "Completed."
- Estimated Cost - The estimated cost of the project, as a total of the costs of the work items contained in the project.
- Score - If you have prioritized the work items, then this project's score will be displayed here. The score for a project is computed as the average of its work items' scores weighted by their estimated cost. The default value is 0.000, which indicates that the work items in the project have not been prioritized.
- Override automatic cost estimate - Mark this box if you wish to override the cost estimate provided by BUILDER and enter your own estimated cost of the project instead.
- Work Code - The work code for the project. The available work codes are:
    - Demolition
    - New Footprint
    - Modernization
    - Sustainment
- Actual Cost. The actual cost of the project after completion. Before completion, this with equal the Estimated Cost.

Related Links

Task Links

Work Project Data
Add a Work Project
Organize Work Items into a Project
Edit a Work Project
Export a Work Project
Delete a Work Project

Instructional Link

View a Work Project
Work Planning Overview

Add a Work Project

Project Location

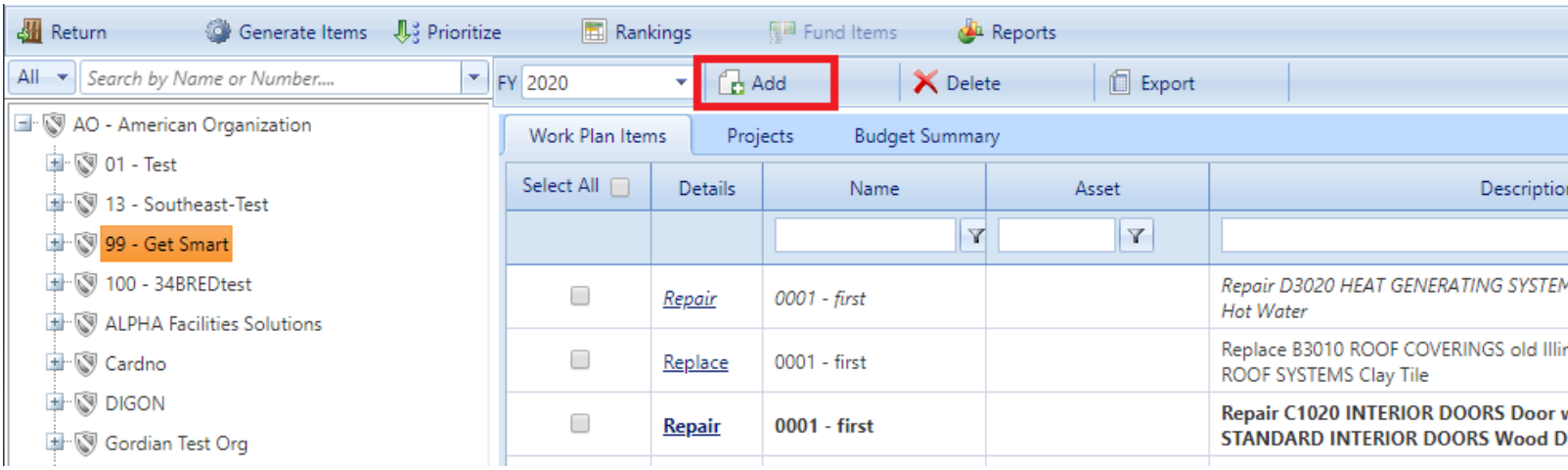
Before adding a work project, you should give thought as to its best position in the navigation tree. For example, if the project entails re-roofing at multiple Sites, then you should add the project at an Organization level that is above all of those Sites. Ideally, a project should be placed low enough in the tree that you don't have a lot of unnecessary work items to wade through, but high enough in the tree to accommodate all of the work items to be included in the project.

Steps to Add Work Project

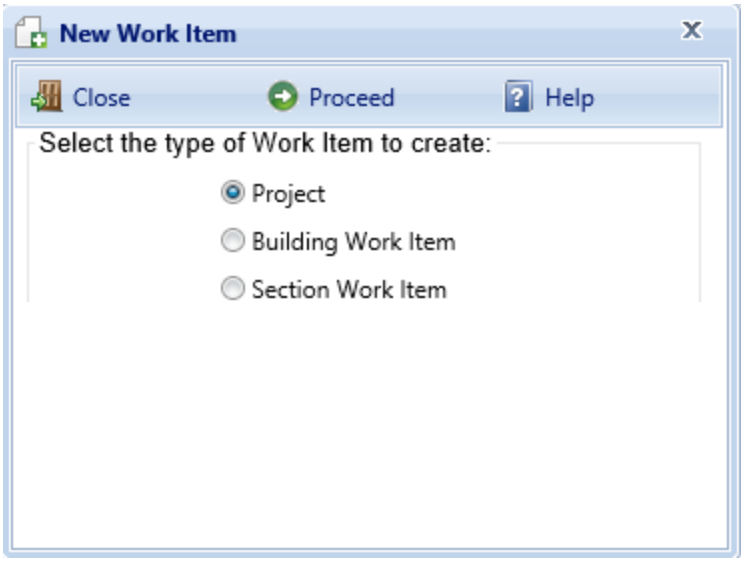
To add a work project,

- At the work plan screen, navigate to the appropriate location where the project should reside (see commentary at Project Location above).
- Activate Add on the secondary toolbar on the work plan screen.

  Troubleshooting Tip: If the Add button is grayed out, click again on the desired location in the navigation tree; this should refresh the button.

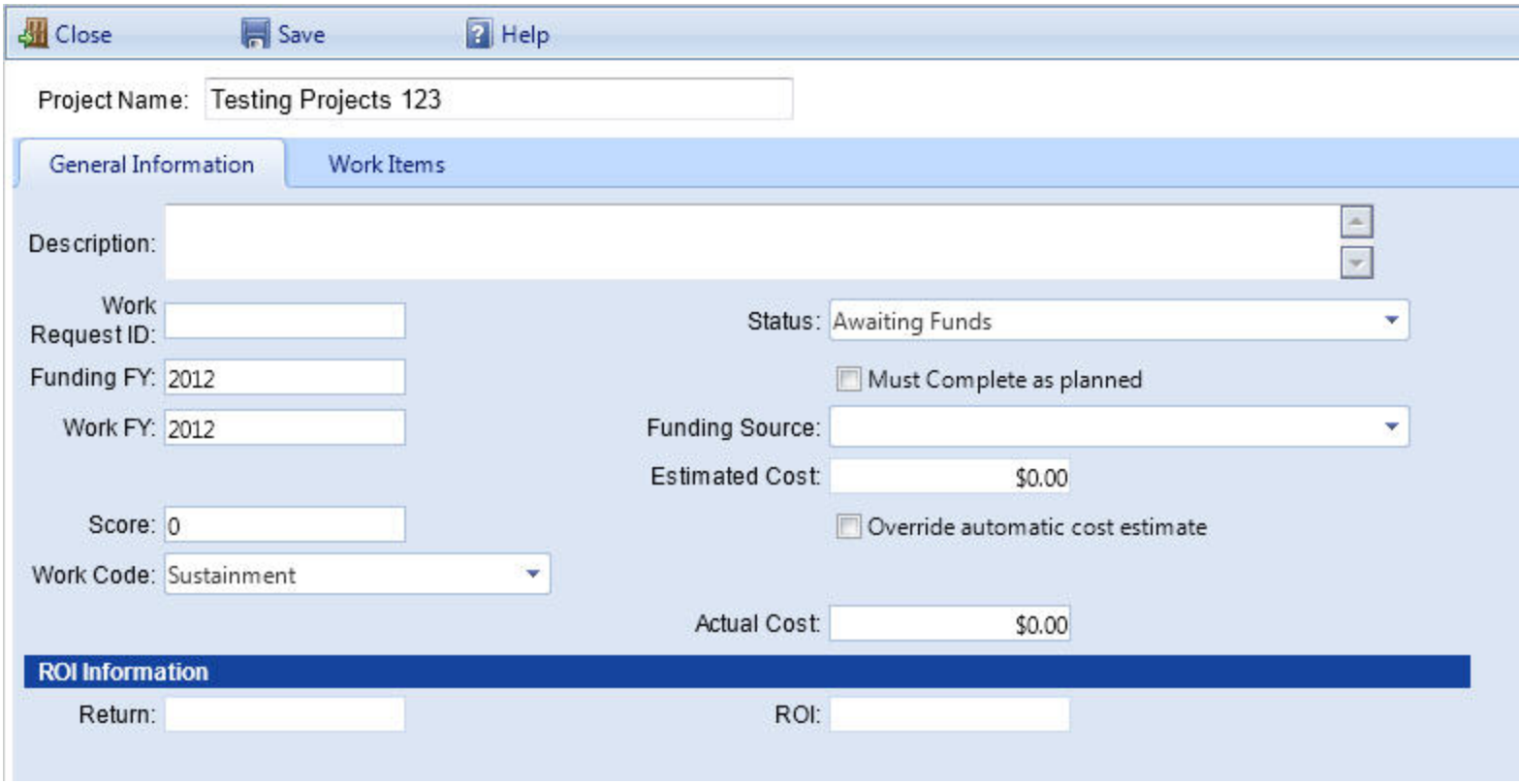


The "New Work Item" window will appear:



- In the popup window, select the Project radio button option.
- Next, activate Proceed on the toolbar.

The "Project" popup window will appear, opened to the General Information tab.



- In the "Project" popup, fill in the following data as needed at the General Information tab:
  - Project Name - Name of the project. Limit: 30 alphanumeric characters. The project name will be used for selecting, tracking and reporting.
  - Description - Description of the work project. Limit: 255 alphanumeric characters.
  - Work Request ID. If applicable, your agency's work request number for the project. Limit: 50 alphanumeric characters.

    Note:Work Request ID is not used by BUILDER in any analyses. The field is available for customer use.

  - Status - Current status of the project, selected from the dropdown. The status will change over time as the project moves from planning to completion. The values Status can take are:
    - Awaiting Contract Award
    - Awaiting Funds
    - Awaiting Funds (Special Project)
    - Budgeted
    - Canceled
    - Completed
    - Deferred
    - Funded
    - Funded (Service Call)
    - Funded (Special Project)
    - In Design
    - In Progress
    - On hold
  - Funding FY - The four-digit fiscal year that the project was or will be funded.
  - Must Complete as Planned - Mark this box if the project falls into the "must do" category. Marking it will force the project to be funded in a Scenarios projection before all other competing work items that are designated "Must Do."
  - Work FY - The four-digit fiscal year in which the work is expected to be performed.
  - Funding Source - The funding source to be used for this project, selected from the dropdown.
  - Completion FY - Enter the four-digit fiscal year that the project was or will be completed.
  - Date Completed - The date the project was completed. This field will appear only if Status is "Completed."
  - Estimated Cost - The estimated cost of the project, as a total of the costs of the work items contained in the project.
  - Score - If you have prioritized the work items, then this project's score will be displayed here. The score for a project is computed as the average of its work items' scores weighted by their estimated cost. The default value is 0.000, which indicates that the work items in the project have not been prioritized.
  - Override automatic cost estimate - Mark this box if you wish to override the cost estimate provided by BUILDER and enter your own estimated cost of the project instead.
  - Work Code - The work code for the project. The available work codes are:

        - Demolition
        - New Footprint
        - Modernization
        - Sustainment
    - Actual Cost. The actual cost of the project after completion. Before completion, this with equal the Estimated Cost.
- Activate Save on the popup toolbar.
- Activate Close on the popup toolbar.

Related Links

Task Links

View a Work Project
Work Project Data
Organize Work Items into a Project
Edit a Work Project
Export a Work Project
Delete a Work Project

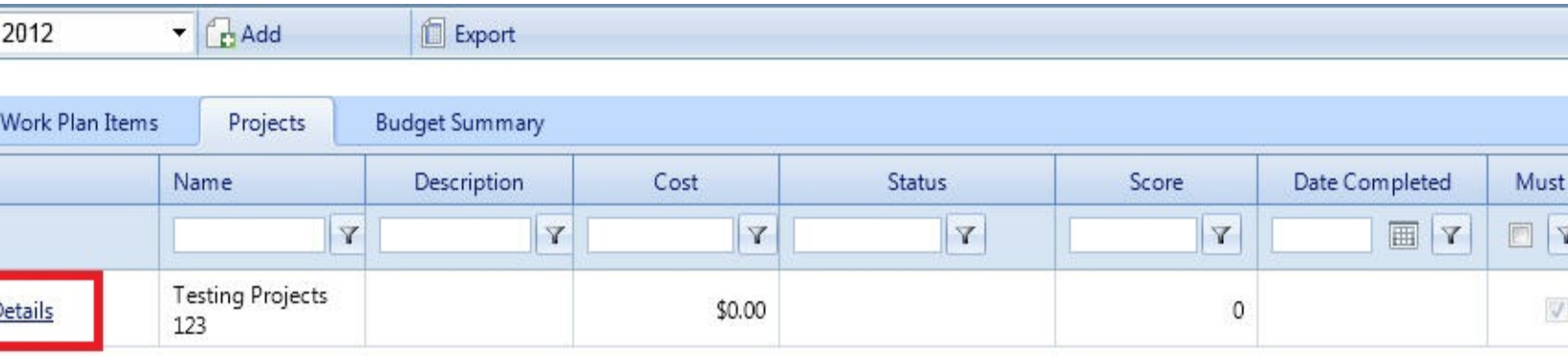
Instructional Links

Add a Work Project
Work Planning Overview

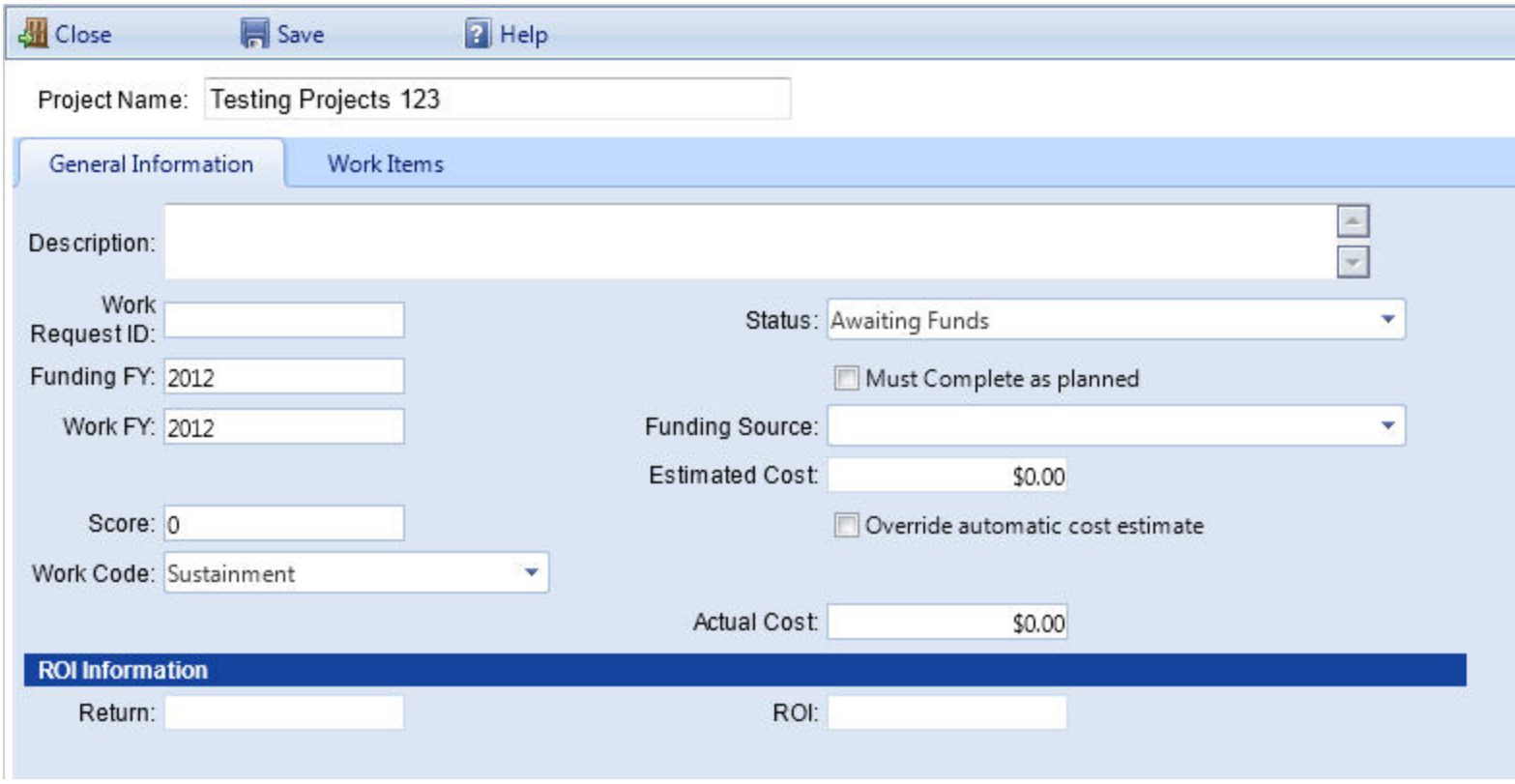
Edit a Work Project

To edit a work project,

- At the work plan screen, open the Projects tab (you do not have to be at the work project's location to do this; you can be anywhere above it in the navigation tree as well).
- In the first column of the work plan table, activate the Details link for the desired work project.



The project's Details popup window will appear, opened to the General Information tab.



- In the popup, edit the following data as needed at the General Information tab:
  - Project Name - Name of the project. Limit: 30 alphanumeric characters. The project name will be used for selecting, tracking and reporting.
  - Description - Description of the work project. Limit: 255 alphanumeric characters.
  - Work Request ID. If applicable, your agency's work request number for the project. Limit: 50 alphanumeric characters.

    Note:Work Request ID is not used by BUILDER in any analyses. The field is available for customer use.

  - Status - Current status of the project, selected from the dropdown. The status will change over time as the project moves from planning to completion. The values Status can take are:
    - Awaiting Contract Award
    - Awaiting Funds
    - Awaiting Funds (Special Project)
    - Budgeted
    - Canceled
    - Completed
    - Deferred

        - Funded
        - Funded (Service Call)
        - Funded (Special Project)
        - In Design
        - In Progress
        - On hold
    - Funding FY - The four-digit fiscal year that the project was or will be funded.
    - Must Complete as Planned - Mark this box if the project falls into the "must do" category. Marking it will force the project to be funded in a Scenarios projection before all other competing work items that are designated "Must Do."
    - Work FY - The four-digit fiscal year in which the work is expected to be performed.
    - Funding Source - The funding source to be used for this project, selected from the dropdown.
    - Completion FY - Enter the four-digit fiscal year that the project was or will be completed.
    - Date Completed - The date the project was completed. This field will appear only if Status is "Completed."
    - Estimated Cost - The estimated cost of the project, as a total of the costs of the work items contained in the project.
    - Score - If you have prioritized the work items, then this project's score will be displayed here. The score for a project is computed as the average of its work items' scores weighted by their estimated cost. The default value is 0.000, which indicates that the work items in the project have not been prioritized.
    - Override automatic cost estimate - Mark this box if you wish to override the cost estimate provided by BUILDER and enter your own estimated cost of the project instead.
    - Work Code - The work code for the project. The available work codes are:
        - Demolition
        - New Footprint
        - Modernization
        - Sustainment
    - Actual Cost. The actual cost of the project after completion. Before completion, this with equal the Estimated Cost.
- To change what work items are associated with the project, follow instructions in Organize Work Items into a Project.
- Activate Save on the popup toolbar. (Alternatively, if you do not wish to save the changes made to the project, activate Close on the toolbar without selecting Save first.)
- Activate Close on the popup toolbar.

Related Links

Task Links

View a Work Project
Work Project Data
Add a Work Project
Organize Work Items into a Project

Export a Work Project
Delete a Work Project

Instructional Link

Edit a Work Project
Work Planning Overview

Work Project Data

This topic explains the data fields for a work project. This will help with understanding both the "Project" popup when adding a work project, or the "Details" popup that appears when viewing or editing a work project at the Projects tab in the work plan table.

A Maintenance and Rehabilitation (M&R) work project allows you to group work items together to manage them as a single work effort that is prioritized and funded as a whole. The work items in a project may span different Systems in a single Building, as in a renovation effort. A project may also span multiple Buildings.

In general, a project is a collection of any work items grouped together in an "all or nothing" work unit with a single funding source and a single work year.

Below is a description of the data fields in a work project, to assist you when you view, add, or edit a work project.

General Information Tab

At the General Information tab, the following general data for the project is or can be recorded:

- Project Name. Name of the project. This field is located between the toolbar and the tabs. Limit: 30 alphanumeric characters. The project name will be used for selecting, tracking and reporting.
- Description. Description of the work item. Limit: 255 alphanumeric characters.
- Work Request ID. If applicable, your agency's work request number for the project. Limit: 50 alphanumeric characters.

  Note:Work Request ID is not used by BUILDER in any analyses. The field is available for customer use.

- Status. Current status of the project, selected from the dropdown. The status will change over time as the project moves from planning to completion. The values Status can take are:
  - Awaiting Contract Award
  - Awaiting Funds
  - Awaiting Funds (Special Project)
  - Budgeted
  - Canceled
  - Completed

    - Deferred
    - Funded
    - Funded (Service Call)
    - Funded (Special Project)
    - In Design
    - In Progress
    - On hold

- Funding FY - The four-digit fiscal year that the project was or will be funded.
- Must Complete as Planned (Checkbox) (aka "Must Do") - Mark this box if the project falls into the "must do" category. Marking it will force the work items in the project to be funded before all other competing work items that are not marked as "Must Complete as Planned" (also called "Must Do" in the work plan column heading).
- Work FY - The four-digit fiscal year in which the work item will be performed.
- Funding Source - The funding source to be used for the project, selected from the dropdown
- Date Completed - The date the work item was completed. This field will appear only if Status is "Completed."
- Estimated Cost - The estimated cost of the project. BUILDER provides a means of estimating the initial cost using the Calculate button next to this field once you have chosen the work items in the project under the Work Items tab.
- Score - If you have prioritized the work items, then this project's score will be displayed here. The score for a project is computed as the average of its work items' scores weighted by their estimated cost. The default value is 0.000, indicating that the work items in the project have not been prioritized.
- Override Automatic Cost Estimate - Mark this box if you wish to override the cost estimated using the Calculate button and enter your own estimated cost of the project instead.
- Work Code - The work code of the work item, selected from the dropdown. The available work codes are:
    - Sustainment
    - Modernization
    - Demolition
    - New Footprint
- Actual Cost - Enter the actual cost of the project after completion.
- ROI Information - Displays information pertaining to the work items in the project.

Work Items Tab

The Work Items tab is used to build the list of work items for a project. The top grid on this tab displays the list of work items in the project and the bottom grid lists the work items not currently assigned to a project that can be added to the project. Note that work items from all fiscal years are available for selection to the project. If a work item from a different fiscal year is selected, its fiscal year will be changed to the project's fiscal year before the project is saved.

To add a work item to the project, select the check box next to the work item. To remove a work item from the project, unmark the checkbox next to the work item. If you are returning to add more work items to the project, unmark the Only Show Selected Project Work Items checkbox to see all work items for the Site.

Help

ility	Description	Cost	Status

y Project:

o group by that column

ility	Description	Cost	Status
F	Replace Roof Section A	$111,160	Awaiting Fun
F	Replace Roof Section A	$52,202	Awaiting Fun
	Projected Replacement of Roof Section A	$14,146	Awaiting Fun
	Projected Replacement of Roof Section B	$2,417	Awaiting Fun
F	Replace Roof Section C	$30,439	Awaiting Fun
F	Replace Roof Section B	$216,245	Awaiting Fun
F	Replace Roof Section A	$216,245	Awaiting Fun
	Projected Replacement of Roof Section E	$1,949	Awaiting Fun
	Projected Replacement of Roof Section B	$278,025	Awaiting Fun
	Projected Replacement of Roof Section C	$82,855	Awaiting Fun
	Repair Roof Section A	$11,555	Awaiting Fun

After entering the data for the project on the General Information and Work Items tabs, activate Save on the toolbar to save the changes to the project.

Alternatively, if you do not wish to save the changes made to the project, activate Close on the toolbar.

Related Links

Task Links

View a Work Project
Add a Work Project
Organize Work Items into a Project
Edit a Work Project
Export a Work Project
Delete a Work Project

Instructional Link

Work Project Data
Work Planning Overview

Organize Work Items into a Project

The Work Items tab at a work project's "Details" popup is used to build and display the list of work items contained in a project. By use of the checkbox Only Show Selected Project Work Items, the list of all work items and the list of work items selected for the project are layered into the same space.

Prerequisite: Add Work Project

If the work project doesn't already exist that you want to organize work items into, see Add a Work Project.

Open Work Project

To open the work project that will contain the work items,

- Activate Work Plan at BUILDER's main menu.
- Activate the Projects tab. If you are at the head of the navigation tree, this should list all projects.
- Activate the Details link for the desired project. The "Details" popup will appear.

  Tip: If too many projects are listed, you can navigate in the tree to or closer to the work plan where the work project is located. The list of work projects will automatically adjust.

Designate Work Items

To designate work items to be included in the project,

- In the project's "Details" popup, open the Work Items tab.
- In the upper left corner, below the tabs, if the Only Show Selected Project Work Items checkbox is marked, unmark it to display all work items.
- In the first column, mark the checkbox for each work item you wish to include in the project.
- Optionally, if you see an error in a work item while you are selecting work items for the project, you can correct it immediately by following these substeps:
    a. Activate the work item's Details link.
    b. Correct any fields needed at the work item's "Details" popup.
    c. Activate Save on the work item's "Details" popup toolbar.
    d. Activate Close on the work item's "Details" popup toolbar (NOT the work project "Details" popup).
- When you have all of the desired work items selected, mark the Only Show Selected Project Work Items checkbox to restrict the view to just those work items that are in the project. The display will collapse to show just the highlighted, checkmarked work items.

Save

- IMPORTANT: Make sure to save your work item designations by activating Save on the popup toolbar.
- You can then activate Close to return to the work plan screen.

Related Links

Task Links

View a Work Project
Work Project Data
Add a Work Project
Edit a Work Project
Export a Work Project
Delete a Work Project

Instructional Links

Organize Work Items into a Project
Work Planning Overview

Export a Work Project

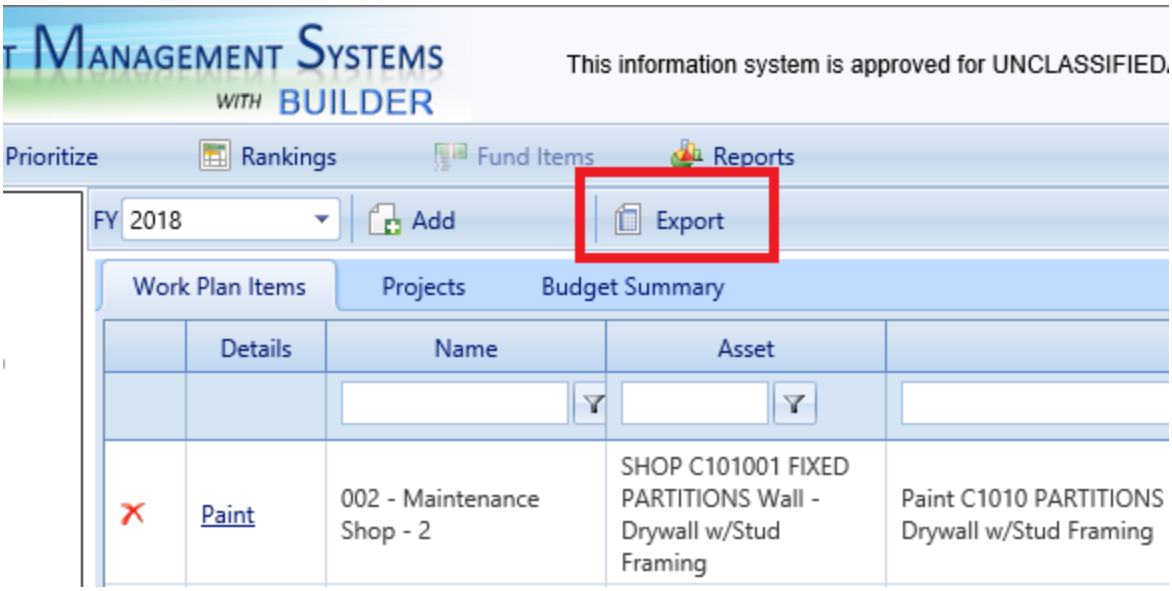
At the "Details" popup for a work project, you can choose to export just those work items pertaining to that project. Instructions are contained in this topic.

To export a work project, see "Export Work Project Work Items" in the export choices below. (All export methods have been clustered in this topic, to allow users to discover other methods that might be useful.)

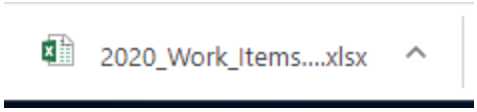
Export Work Items from the Work Plan

To export a work plan to an Excel spreadsheet from the Work Plan Items tab on the work plan screen,

- On the **BUILDER** main menu, activate Work Plan.
- At the work plan screen, select the desired location in the navigation tree at the left. This will determine the scope of the work plan, which will contain all work items for that location and below it in the tree.
- On the secondary toolbar, activate **Export**.



- When the Excel work plan shows as downloaded in the lower left corner of the window (see illustration immediately below), double-click on it to open. Alternatively, you can activate the up arrow to be able to select between opening the file and showing it in its Downloads folder location.



- If you want to save the opened spreadsheet, you need to activate the **File** tab in the spreadsheet, then specify the location, and re-name as desired (the spreadsheet will have been assigned a default file name).

Export Work Project Work Items

You can choose to export just those work items contained in a particular work project. To do so,

- At the work plan screen, open the **Projects** tab. *All projects pertaining to the current tree location on down will be listed in the content area.*

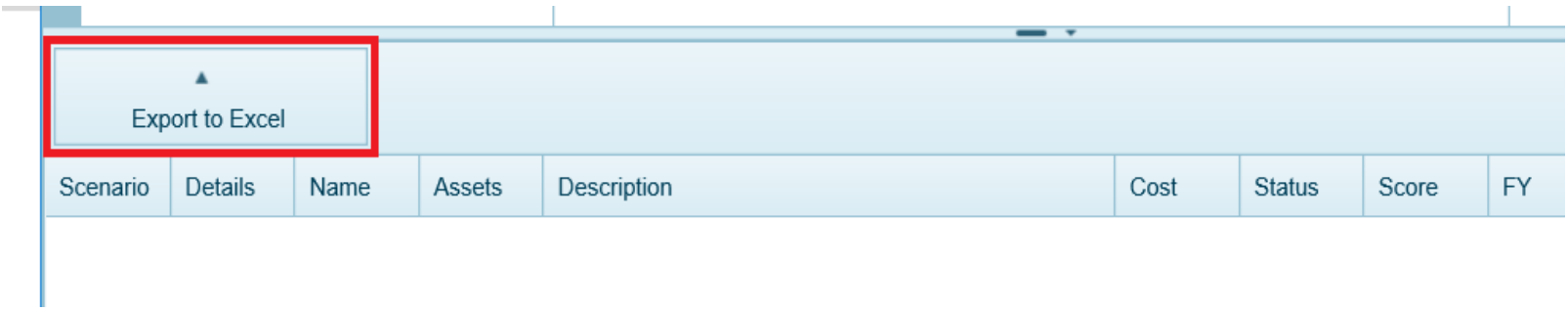
  Tip: If you are at the head of the navigation tree and too many projects are listed, you can choose to navigate farther down in the tree towards or to the work plan containing the project.

- Open the "Details" popup for the desired project by activating its **Details** link in the first column of the desired work project.

- In the popup, open the **Work Items** tab.
- If the **Only Show Selected Project Work Items** checkbox is not marked, mark it to restrict the view to just those work items that are in the project.
- Activate the **Export** button on the popup toolbar.
- When the Excel tab with the project name on it appears at the lower left of the screen, activate it to open the Excel file containing the project work items.
- Save the exported file if desired (you can also rename it).

Export Work Items from Scenario Analysis

At **Scenarios > Analysis** (aka Scenario Visualization), an **Export** button has been added above the grid of work items at the bottom of the Scenarios analysis screen. This button will export to Microsoft Excel any work items listed in the grid:



Note: The tiny arrow at the bottom of the Scenarios analysis screen is what opens or closes the drawer containing the grid of work items (if there are work items for the selected Component-Section).

Related Links

Task Links

View a Work Project
Work Project Data
Add a Work Project
Organize Work Items into a Project
Edit a Work Project
Delete a Work Project

Instructional Links

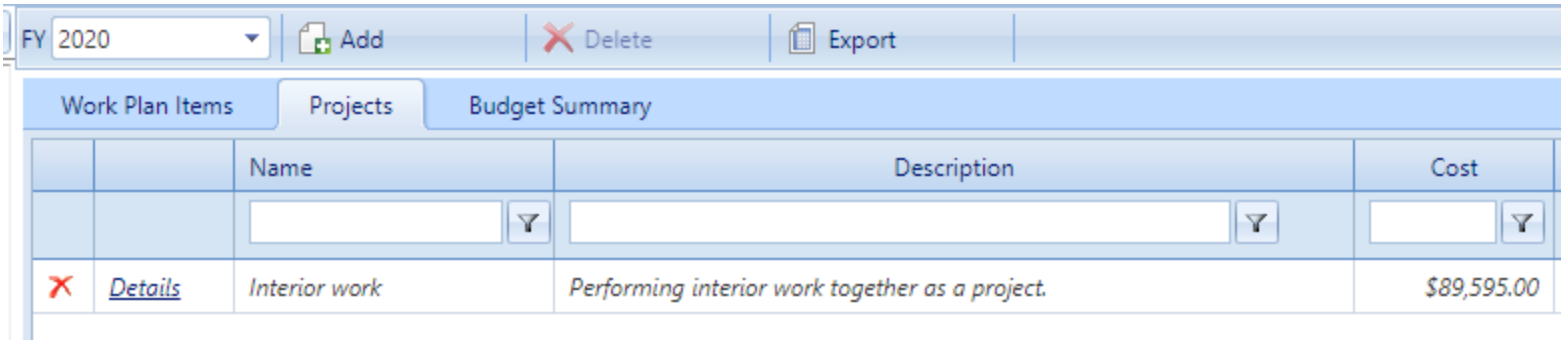
Export a Work Project
Work Planning Overview

Delete a Work Project

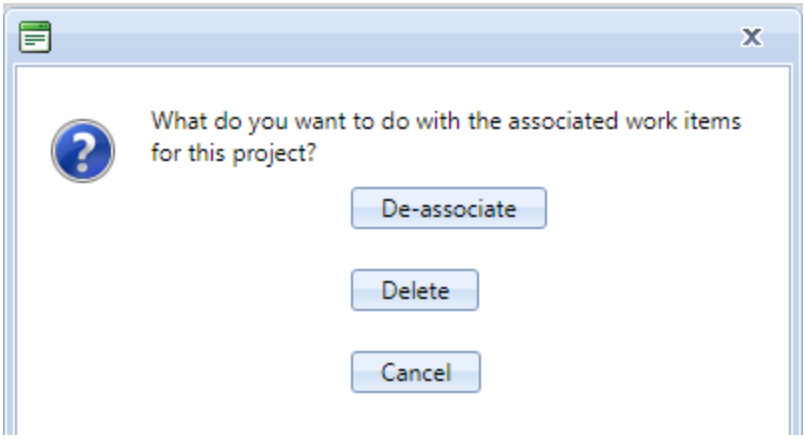
CAUTION: If a red X doesn't appear in the first column at the Projects tab, that might mean you don't have permission to delete the project, or it may just be an artifact of the method you used to navigate to the project listing.

To delete a work project,

- At the work plan screen, select the node in the tree where the work project is located. (Although you can select a project from a listing generated at the head of the tree, the delete indicator(s) might not display properly if you do so.)
- Open the Projects tab.
- Activate the red X in the first column of its row in the projects table.



- At this point, you will be presented with a choice to be made in a popup. Activate the button of your choice; the implications of each choice are described in the list below.



a. If you choose to de-associate the work items contained in the project, the project will be deleted, but the work items will remain in the work plan. If it is your only project at that location, "No records to display" should appear after a time at the Projects tab.

b. If you choose to delete the work items associated with the project, then both the project and the work items will be deleted. If it is your only project at that location, "No records to display" should appear after a time at the Projects tab.
c. The third option is to cancel the deletion; both the project and the work items will remain.

- If you return to the Work Plan Items tab on the work plans screen, you can check whether the work plan items have remained or been deleted as desired.

Related Links

Task Links

View a Work Project
Work Project Data
Add a Work Project
Organize Work Items into a Project
Edit a Work Project
Export a Work Project

Instructional Links

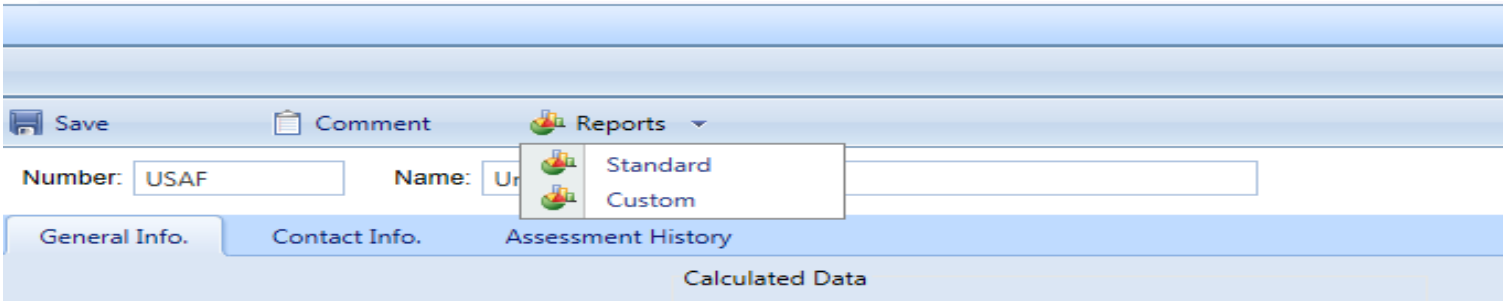
Delete a Work Project
Work Planning Overview

Reports

Select a Report

Note: This topic explains how to access reports from the toolbar at the top of the Content Area, not from the main toolbar.

BUILDER™ offers a number of standard reports that can be viewed, printed, or exported to electronic files of several formats. Reports can be viewed by activating the **Reports** button in the local toolbar. The Reports Selector window will appear.



To view a report:

- Activate either the **Standard** or **Custom** button, as applicable and available.
- Select the desired report from the dropdown list.

The selected report will launch in the Report Viewer window.

When you select the Reports button on a toolbar at a particular inventory level, the dropdown list includes only reports applicable to that level. Additionally, the report will only show data for the current mode you are in. For example, if the Reports button is clicked while in inspection mode, only inspection related reports will be displayed.

Tip: If the "Select a Report" field produces no dropdown list when you activate the down arrow, it could be because you are attempting to generate a report at too high a hierarchical level, such as at the Organization level in the inventory tree.

Generate a Report

BUILDER™ offers a number of standard reports. These reports can be viewed, printed, or exported to electronic files of several formats.

How To Generate and View a Report

Note: This topic explains how to access reports from the toolbar at the top of the Content Area, not from the main toolbar.

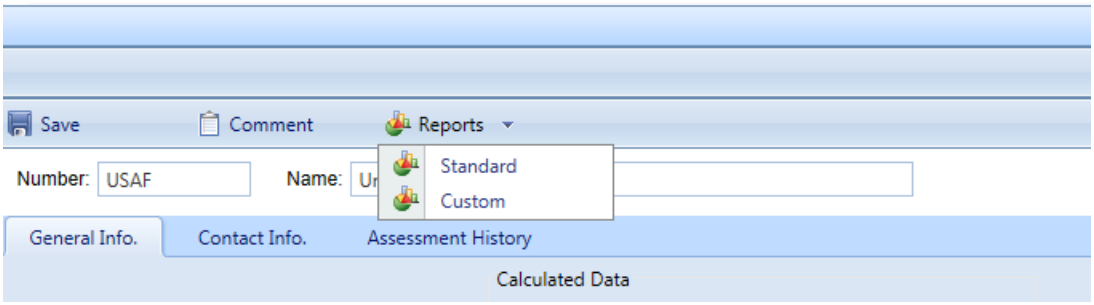
To view a report,

- In the navigation tree in the left window pane, navigate to and select the node for which you want to generate a report.
- Activate the Reports button in the local toolbar.

  Note: The Reports button is available if you are in the inventory tree or condition tree, but not when you are in the functionality navigation tree.

  Note: Selected Standard reports are also available from the Reports button on the main menu bar.

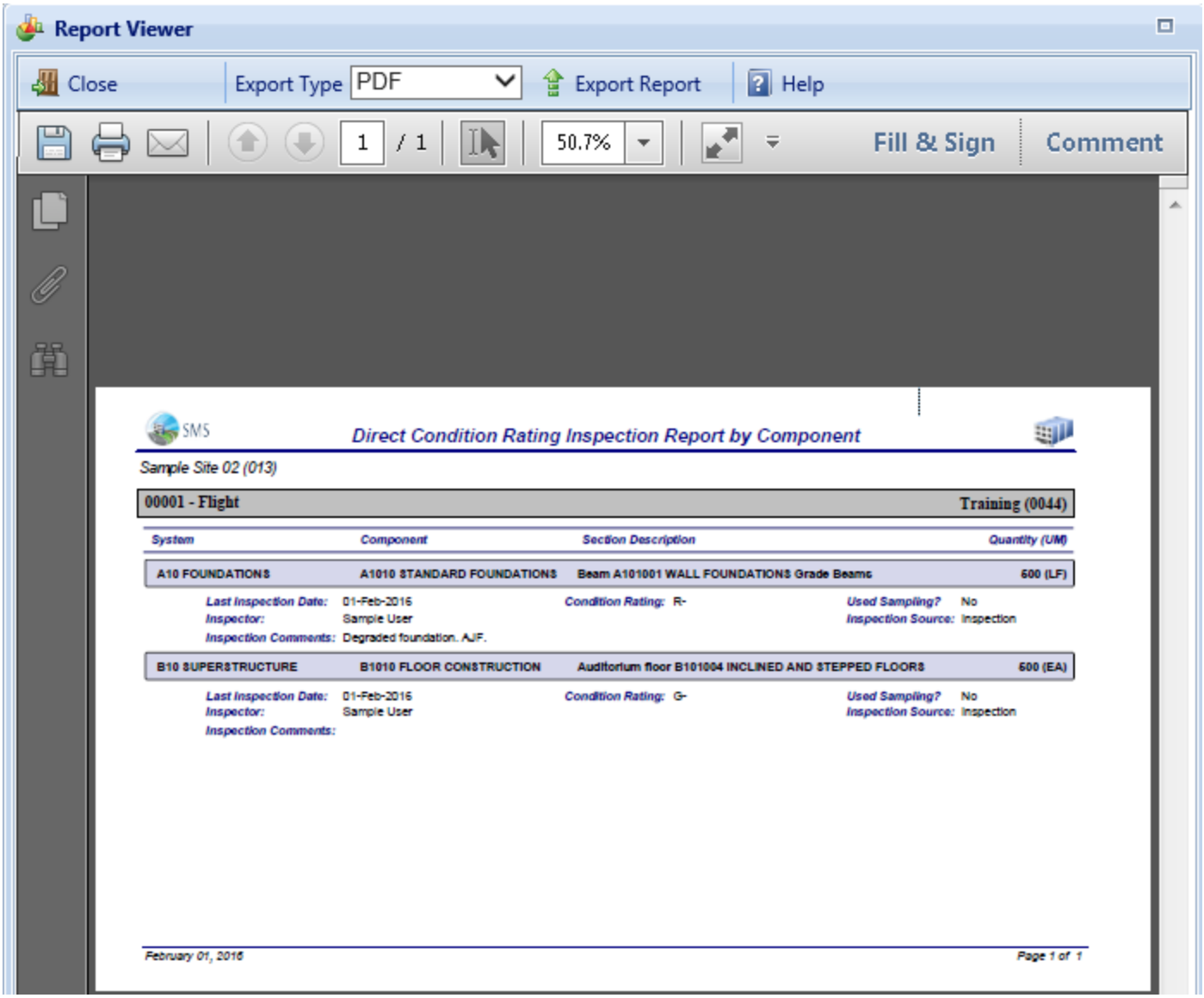
- For Inventory only: Select either Standard or Custom (where available) reports:



The "Reports," "Standard Reports," or "Custom Reports" window will appear. This window contains a drop-down list of reports, which includes only reports applicable to that level. Additionally, the report will only show data for the current mode you are in. For example, if you activate the Reports button while in inspection mode, only inspection related reports will be displayed.

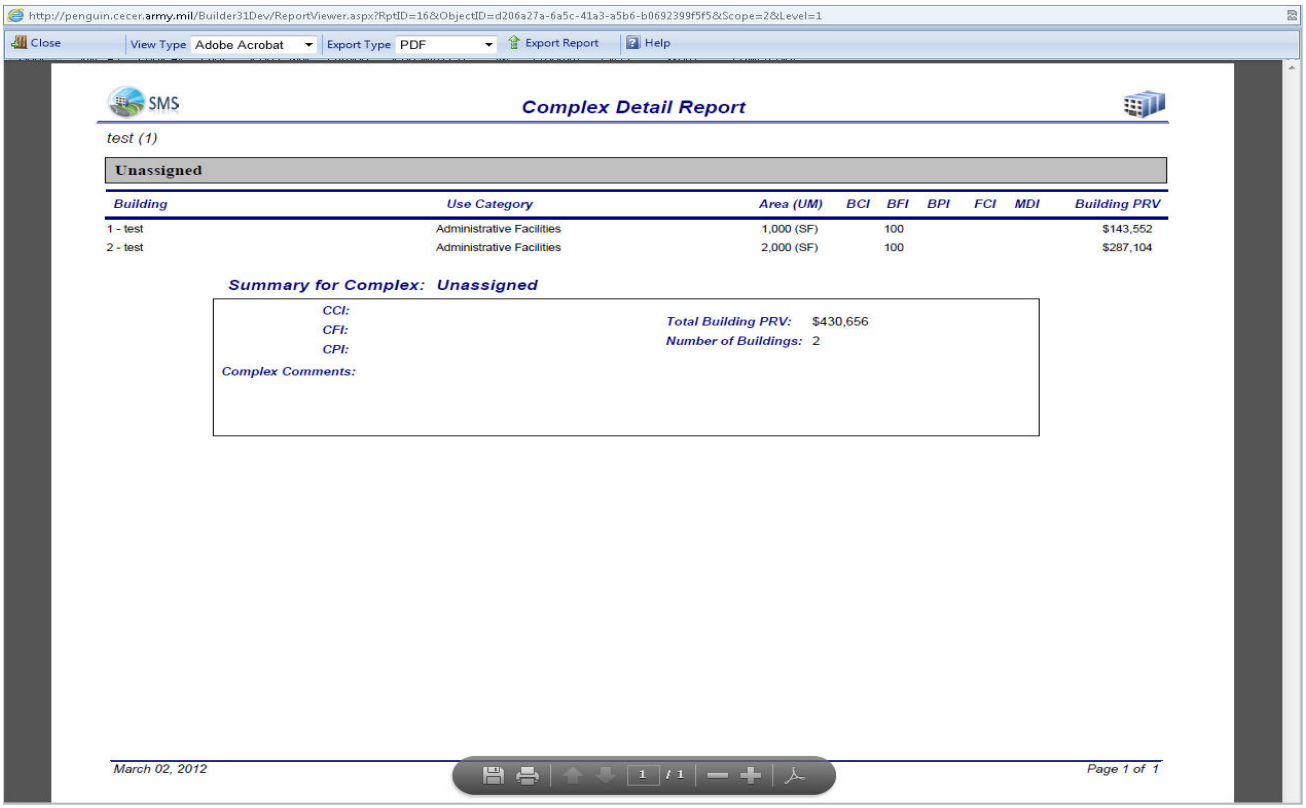
- Activate the dropdown arrow in the bar, and select the desired report from the dropdown list.
- After you have a report selected, activate the View Report button in the popup window toolbar; or, if you have selected a Custom Report, activate the Run Report button in the popup window toolbar.

The selected report will launch in the Report Viewer window or in the Custom Reports window. The image below shows a sample report in the Report Viewer:



How to Use the Report Viewer

The Report Viewer provided with the SMS offers a number of powerful capabilities for working with BUILDER and ROOFER's standard reports. It allows you to view reports in a variety of formats, to print the reports, and to export the reports to an electronic file. Shown below is the general appearance of the report viewer:



Toolbar Options

- **Close**. Closes the report viewer window.
- **Export Type**. Allows you to select the view type of the report from the dropdown list. You can view it in Adobe Acrobat (PDF), Excel, or Word (RTF)

Note: In BUILDER, one report, "Work Plan for Export to MS Excel," was designed specifically to be used with Microsoft Excel and not to be viewed and printed as it appears in the Report Viewer. By choosing to export this report to Excel, you can format, sort, eliminate columns, add your own columns, etc. as you wish to build your own work plan reports.

- **Export Report**. Initiates report export. See Export a Report for steps involved in exporting a report.
- **Help**. Launches the help topic associated with viewing reports.

Export a Report

Export a Standard Report

To export a standard report, first follow the steps in Generate a Report. Then

- In the Report Viewer toolbar, select the Export Type: PDF, Excel, or Word (RTF).

  CAUTION: Not all reports have been adapted to the Excel format.

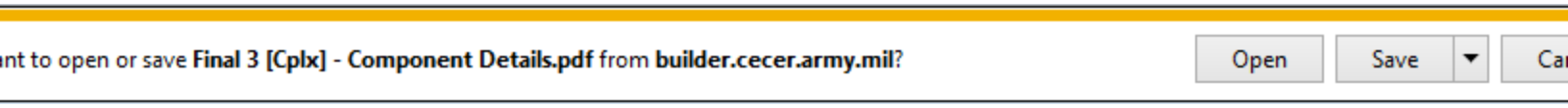
- In the Report Viewer toolbar, activate Export Report.
- At the bottom of the screen, you will be queried whether you want to save the report:

- Activate the down arrow to the right of the Save button.
- Select Save as.
- In the Save As popup window, browse to the desired location where you wish to save the report.
- Name the report in the File name: bar; then activate Save (lower right).
- After the download is complete, the bar at the bottom of the screen with give you the option to open the report you just saved, to open the folder, or view downloads. If none of these are needed, activate the "x" at the right side of the query bar.
- If you want to open the report to view it, select Open. When you close the viewing window, you will be back at the Report Viewer window.
- Activate Close to close the Report Viewer window.

Export a Custom Report

To export a custom report, first follow the steps in Generate a Report. Then

- With the desired report showing in the Custom Reports popup window, activate the Save icon.
- Select the desired export format from the options in the dropdown list.
- At the bottom of the screen, you will be queried whether you want to save the report:



- Activate the down arrow to the right of the Save button.
- Select Save as (or Save and open).
- In the Save As popup window, browse to the desired location where you wish to save the report.
- Activate the Save button.

Listing of Standard Reports

Building Condition Index (BCI) Summary

The Building Condition Index (BCIBuilding Condition Index - a condition rating for the overall Building. For each Building, the BCI is computed by taking the average of its Systems' CIs (SCIs), weighted by replacement cost.) Summary report shows

- number of Buildings in each BCIBuilding Condition Index - a condition rating for the overall Building. For each Building, the BCI is computed by taking the average of its Systems' CIs (SCIs), weighted by replacement cost. range shown
- total square footage in each BCIBuilding Condition Index - a condition rating for the overall Building. For each Building, the BCI is computed by taking the average of its Systems' CIs (SCIs), weighted by replacement cost. range shown

This information is shown in two different ways: first, in a horizontal bar chart; next, in a table.

Scope

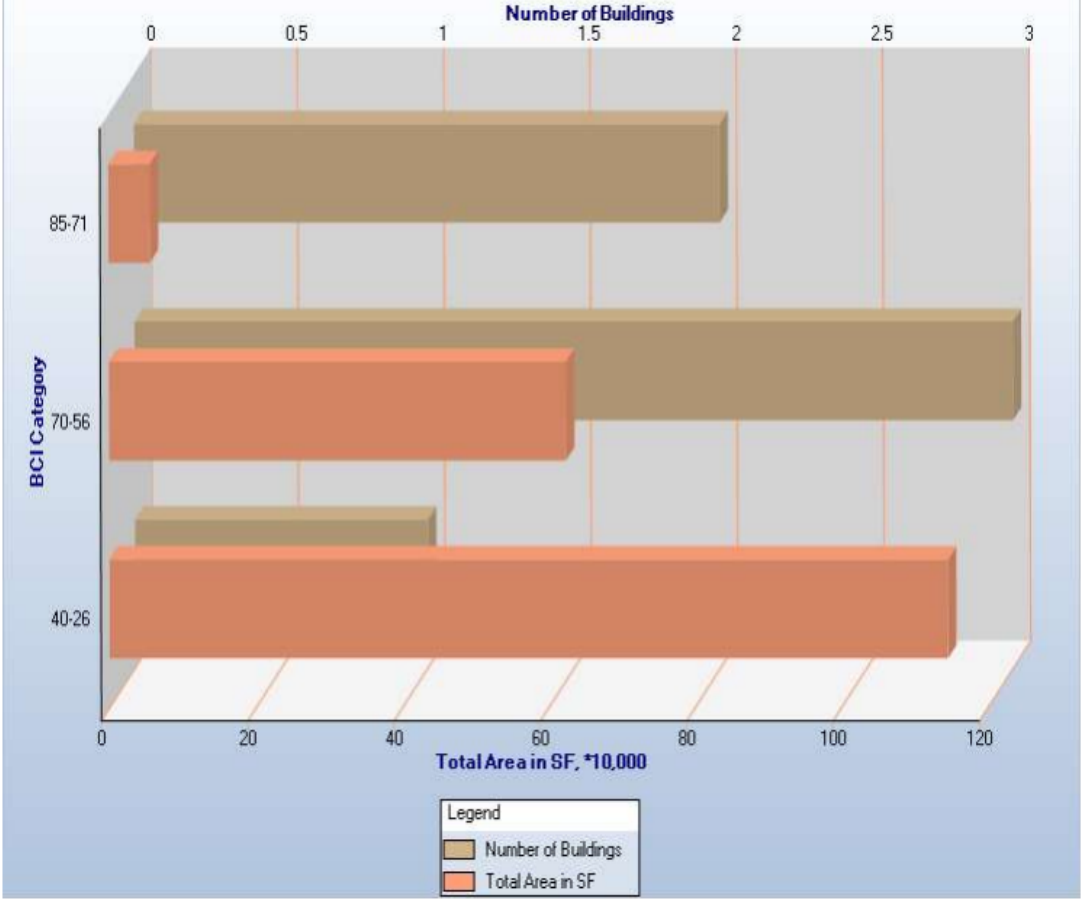
This report is available at the Site and Complex inventory levels.

Example Building Condition Index (BCI) Summary Report

SMS

Building Condition Index (BCI) Summary

Hennepin (R7475)



BCI Category	Number of Buildings	Buiding Area in SF
85-71	2	56,317
70-56	3	624,240
40-26	1	1,145,599

In the bar chart portion of this report, the scale listed across the top of the chart indicates number of buildings. The scale listed across the bottom of the chart is for the total area in square feet involved. The Site is listed at the upper left in the report.

Note: Make sure to note the multiplier being used for the square footage; this can change from instance to instance of the **BCI**[1]Building Condition Index - a condition rating for the overall Building. For each Building, the BCI is computed by taking the average of its Systems' CIs (SCIs), weighted by replacement cost. Summary reports that you generate. The multiplier is used only for the bar chart, not in the table.

Productivity Tip: The bar chart can give a quick sense in a glance of the quantity of inventory in each of the **BCI**[2]Building Condition Index - a condition rating for the overall Building. For each Building, the BCI is computed by taking the average of its Systems' CIs (SCIs), weighted by replacement cost. ranges listed.

The table portion of this report lists the exact numbers (number of Buildings, square footage) for each **BCI**[3]Building Condition Index - a condition rating for the overall Building. For each Building, the BCI is computed by taking the average of its Systems' CIs (SCIs), weighted by replacement cost. range.

Building Functionality Assessment Detail

For each Building in the selected scope, this report shows

- number and name of the Building (gray bar)
- a brief summary of some general information about the Building, including the functionality index for the Building as a whole (BFIBuilding Functionality Index - computed from the results of a functionality assessment.)
- a listing of functionality issues, with the Issue **FI**[4]Functionality Index for each.
- within each issue, a listing of sub-issues and the color rating for each.

Scope

This report is available at the Site, Complex, and Building inventory levels.

---

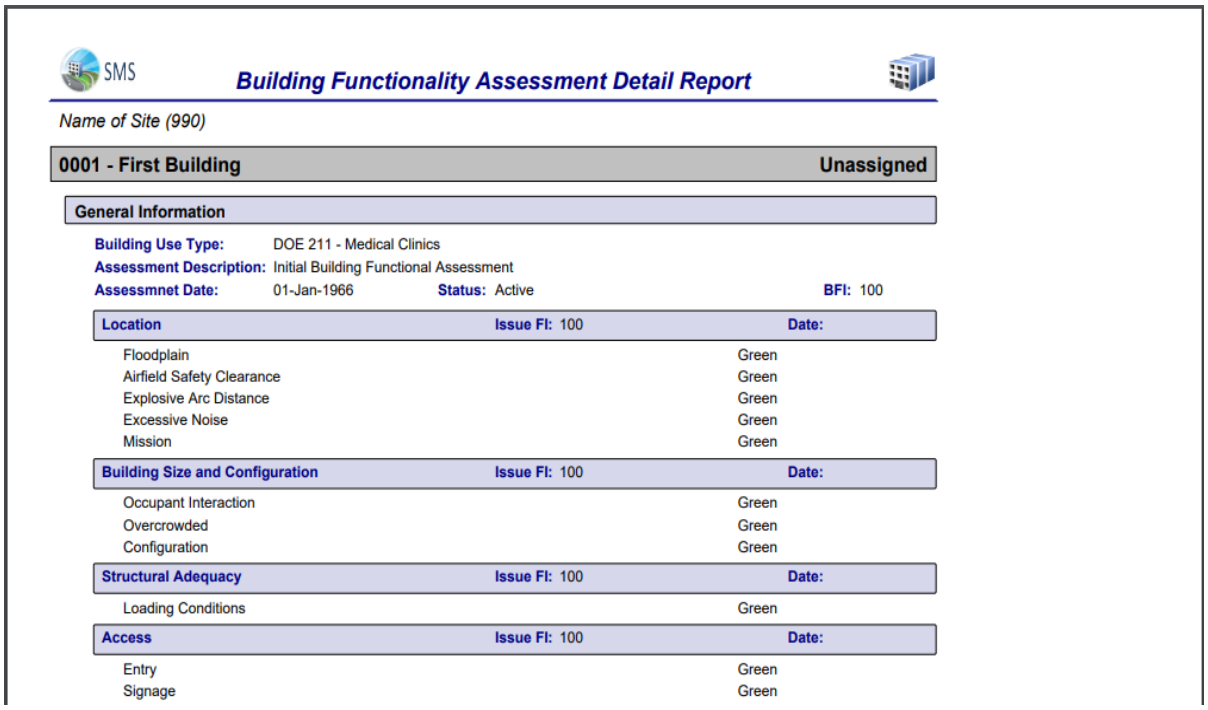
[1]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"

[2]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"

[3]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"

[4]Functionality Index.

Example Building Functionality Assessment Detail Report



SMS

Building Functionality Assessment Detail Report

Name of Site (990)

0001 - First Building — **Unassigned**

General Information

Building Use Type: DOE 211 - Medical Clinics
Assessment Description: Initial Building Functional Assessment
Assessmnet Date: 01-Jan-1966 **Status:** Active **BFI:** 100

Location	Issue FI: 100	Date:
Floodplain		Green
Airfield Safety Clearance		Green
Explosive Arc Distance		Green
Excessive Noise		Green
Mission		Green
Building Size and Configuration	**Issue FI: 100**	**Date:**
Occupant Interaction		Green
Overcrowded		Green
Configuration		Green
Structural Adequacy	**Issue FI: 100**	**Date:**
Loading Conditions		Green
Access	**Issue FI: 100**	**Date:**
Entry		Green
Signage		Green

Building Metrics Summary

The metrics supplied in this report are the BCIBuilding Condition Index - a condition rating for the overall Building. For each Building, the BCI is computed by taking the average of its Systems' CIs (SCIs), weighted by replacement cost., **BFI**[1]Building Functionality Index - computed from the results of a functionality assessment., BPIBuilding Performance Index - a measure of a Building's overall performance, derived from a weighted combination of the BCI and BFI, where the lower of the two values is given two-thirds of the weight and the higher of the two values is given one-third of the weight. If no functional assessment has been performed, the BFI is assigned a value of 100., **FCI**[2], and **MDI**[3]Mission Dependency Index - measures the relative importance of a Building. If the report is run at the Site level, the information will be shown Complex by Complex. In the example presented below, "Unassigned" is the Complex name shown in the gray bar because none of the Buildings have been assigned to a Complex.

Note: The Complex name will be shown even if only one of the Buildings in the Complex is shown in the report due to the report being run at the Building level.

---

[1]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"

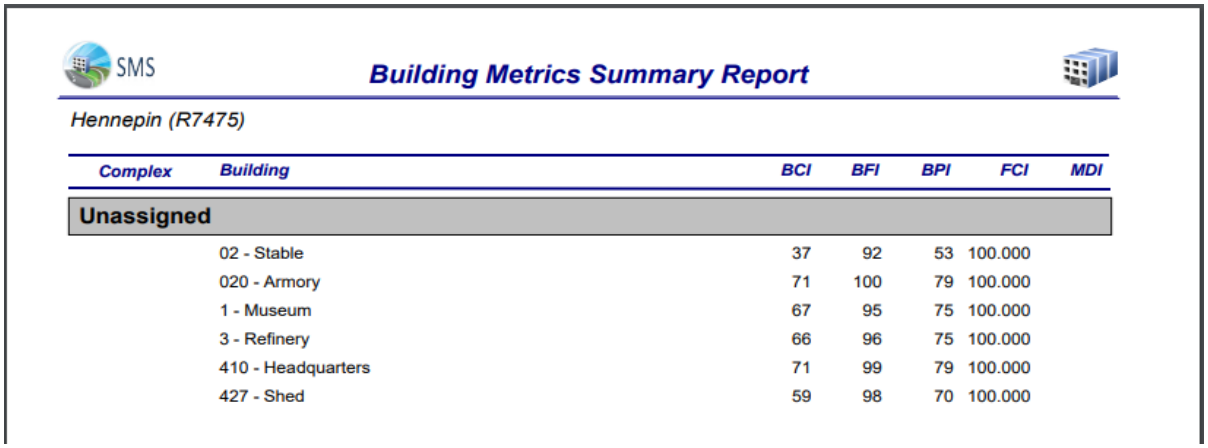
[2]Facility Condition Index.

[3]Mission Dependency Index

Scope

This report is available at the Site, Complex, and Building inventory levels.

Example Building Metrics Summary Report



SMS

Building Metrics Summary Report

Hennepin (R7475)

Complex	Building	BCI	BFI	BPI	FCI	MDI
Unassigned						
	02 - Stable	37	92	53	100.000	
	020 - Armory	71	100	79	100.000	
	1 - Museum	67	95	75	100.000	
	3 - Refinery	66	96	75	100.000	
	410 - Headquarters	71	99	79	100.000	
	427 - Shed	59	98	70	100.000	

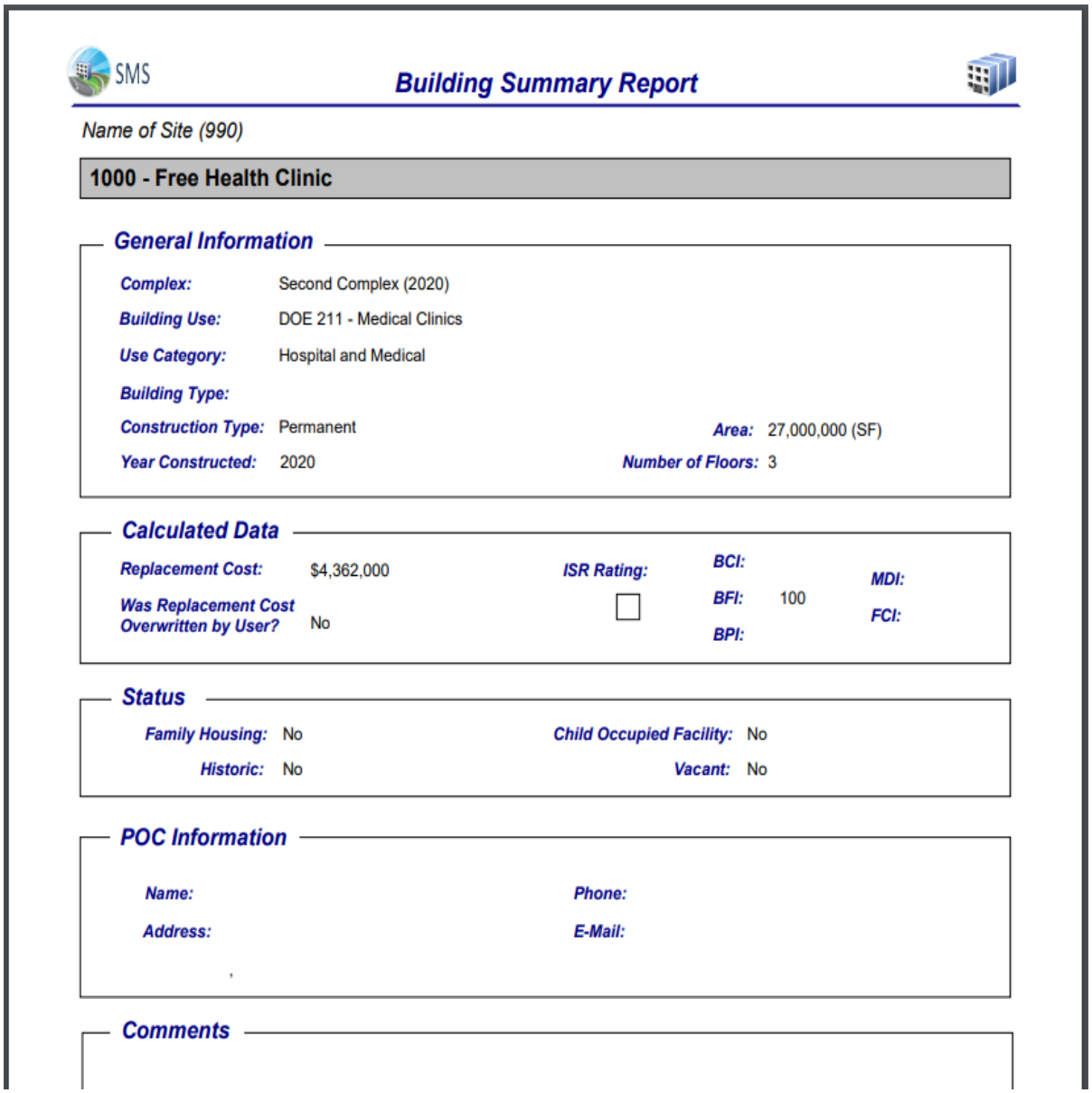
Building Summary

Detailed Building information is presented in the Building Summary report, which can be run at the Site, Complex, or Building level.

Scope

This report is available at the Site, Complex, and Building inventory levels.

Example



SMS

Building Summary Report

Name of Site (990)

1000 - Free Health Clinic

General Information

Complex:	Second Complex (2020)		
Building Use:	DOE 211 - Medical Clinics		
Use Category:	Hospital and Medical		
Building Type:			
Construction Type:	Permanent	**Area:**	27,000,000 (SF)
Year Constructed:	2020	**Number of Floors:**	3

Calculated Data

Replacement Cost:	$4,362,000	**ISR Rating:**	**BCI:**		**MDI:**
Was Replacement Cost Overwritten by User?	No	☐	**BFI:**	100	**FCI:**
			BPI:		

Status

Family Housing:	No	**Child Occupied Facility:**	No
Historic:	No	**Vacant:**	No

POC Information

Name:	**Phone:**
Address:	**E-Mail:**

Comments

Building SCI By System

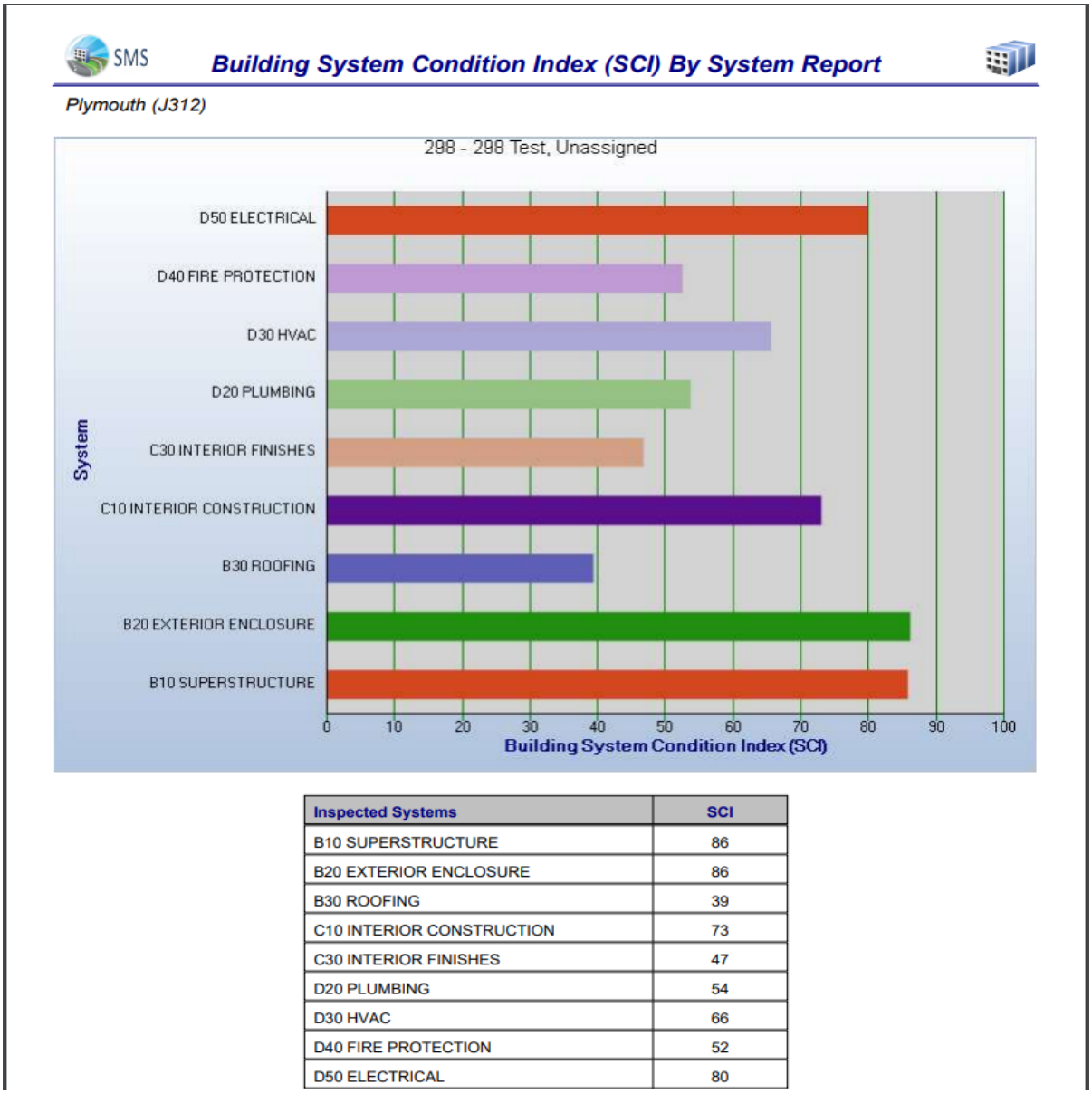
For each Building in the selected scope, this report shows the System Condition Index for each System in the Building.

This information is shown in two different ways: first, in a horizontal bar chart; next, in a table. The Building name, followed by the Complex it is in, is centered above the bar chart.

Scope

This report is available at the Site, Complex, and Building inventory levels.

Example Building System Condition Index (SCI) By System Report



Inspected Systems	SCI
B10 SUPERSTRUCTURE	86
B20 EXTERIOR ENCLOSURE	86
B30 ROOFING	39
C10 INTERIOR CONSTRUCTION	73
C30 INTERIOR FINISHES	47
D20 PLUMBING	54
D30 HVAC	66
D40 FIRE PROTECTION	52
D50 ELECTRICAL	80

Building Use Category Summary

For Building Use categories represented by one or more Buildings in the target asset, the Building Use Category Summary report shows

- Number of Buildings in each Building Use category shown
- Total square footage in each Building Use category shown

This information is shown in two different ways: first, in a horizontal bar chart; next, in a table.

Scope

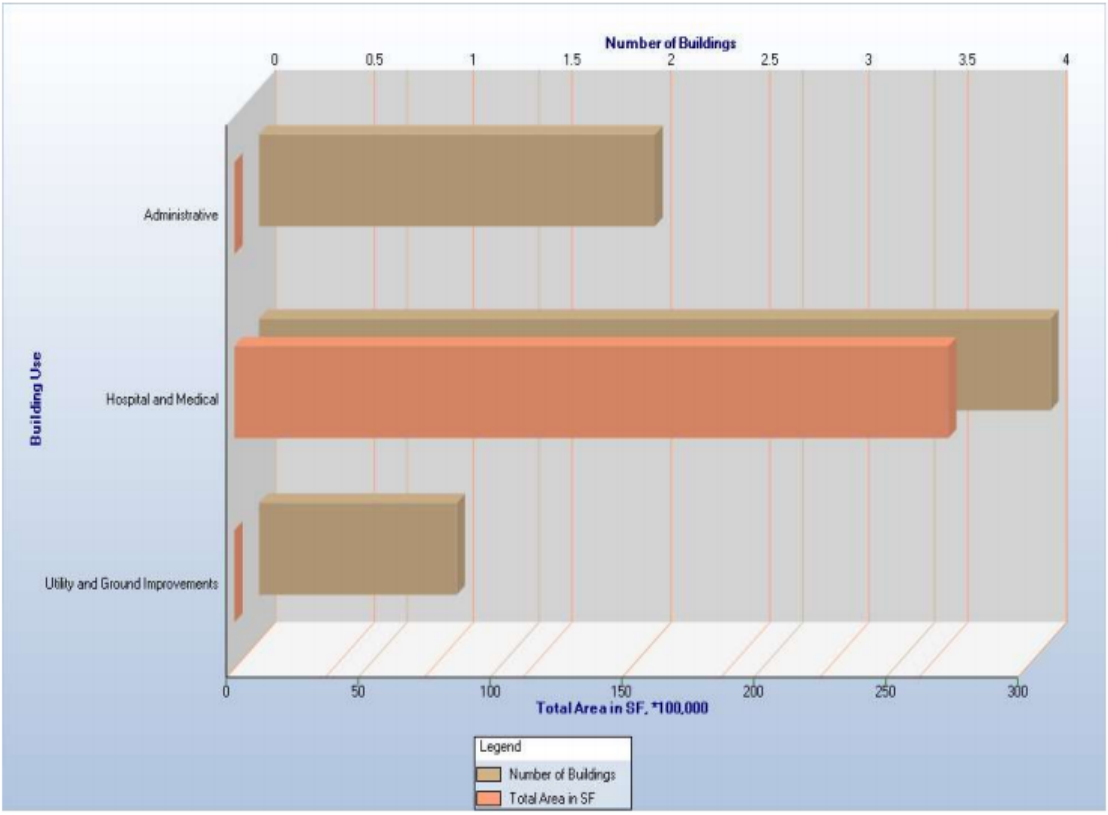
This report is available at the Site and Complex inventory levels.

Example Building Use Category Summary Report

SMS

Building Use Category Summary Report

Name of Site (990)



SMS

Building Use Category Summary Report

Name of Site (990)

Use Category	Number of Buildings	Buiding Area in SF
Administrative	2	4,198
Hospital and Medical	4	27,060,000
Utility and Ground Improvements	1	205
	7	**27,064,402**

Building Use Detail

In contrast to the Building Use Category Summary report, which shows information at a broad, aggregated level, the Building Use Detail report lists Use Category, Building Use, and area individually for every Building.

Scope

This report is available at the Site, Complex, and Building inventory levels.

Example

SMS

Building Use Detail Report

Name of Site (990)

Complex Name / Building	Use Category	Building Use	Area (UM)
Unassigned			
0003 - Building-level work	Utility and Ground Improvements	DOE 220 - Prison (Owned Only)	200 (SF)
Example Complex (01)			
0001 - First Building	Hospital and Medical	DOE 211 - Medical Clinics	8,000 (SF)
0002 - Second Building	Hospital and Medical	DOE 211 - Medical Clinics	8,000 (SF)
Name of Complex (01)			
2008 - Blackberry	Administrative	DOE 101 - Office	1,400 (SF)
2016 - Twitter	Administrative	DOE 101 - Office	2,800 (SF)
Second Complex (2020)			
0 - Casino Health	Hospital and Medical	DOE 210 - Hospital	44,000 (SF)
1000 - Free Health Clinic	Hospital and Medical	DOE 211 - Medical Clinics	27,000,000 (SF)

Condition Index Performance

This report shows, first in a graph and then in a table, the Condition Index performance over time. The title within the shaded box identifies the subject asset; the Site name is listed upper left. Two samples are shown below: one for the lowest asset level (Component) and one for the highest asset level (Site) available.

Scope

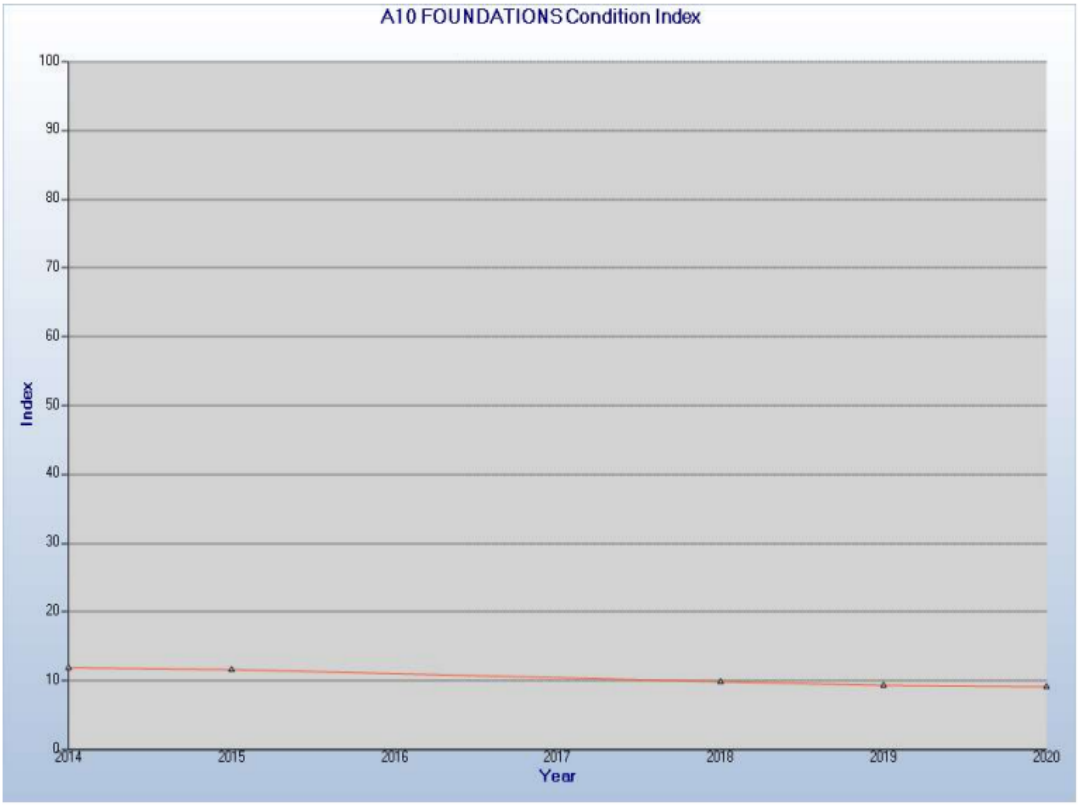
This report is available at the Site through Component inventory levels.

Example

SMS

Condition Index Performance Over Time

Hennepin (R7475)



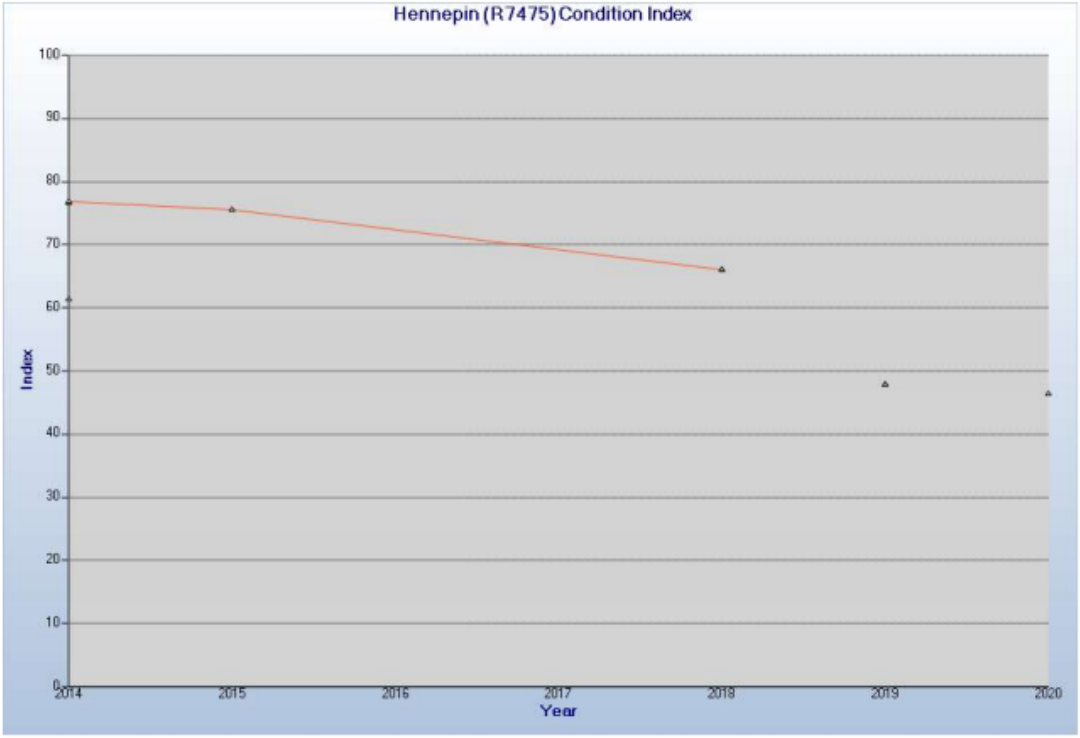
SMS

Condition Index Performance Over Time

Hennepin (R7475)

	CI
2014	12
2015	12
2018	10
2019	9
2020	9

Hennepin (R7475)



SMS

Condition Index Performance Over Time

Hennepin (R7475)

	CI
2014	61
2014	77
2014	77
2015	76
2018	66
2018	66
2019	
2019	48
2019	48
2020	
2020	46

Complex Condition Index Summary

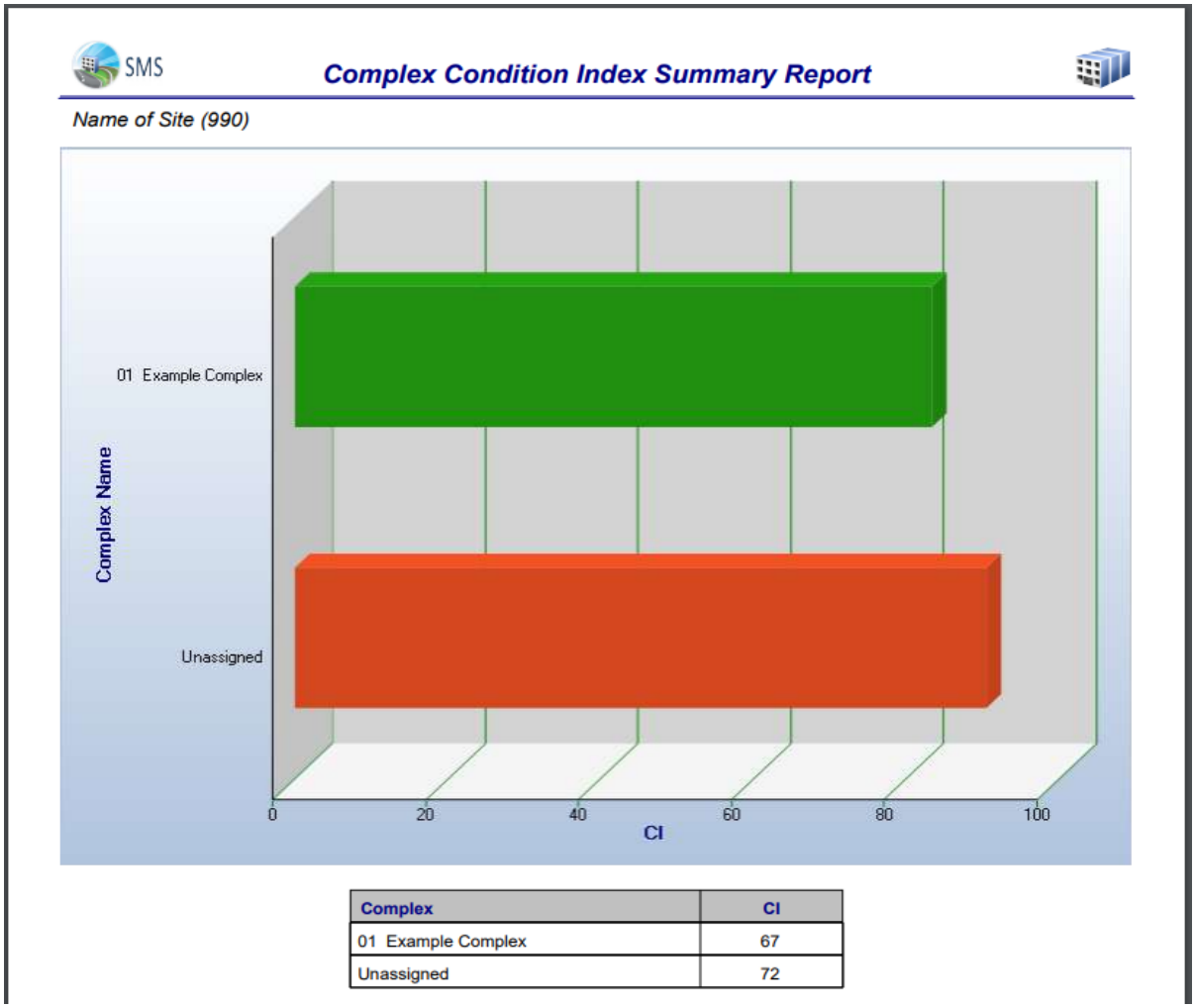
This report shows, first in a horizontal bar chart and next in a table, the condition index for each complex in the selected scope.

To see the change in the condition index over time, use the Condition Index Performance report.

Scope

This report is available at the Site and Complex inventory levels.

Example



Complex	CI
01 Example Complex	67
Unassigned	72

Complex Detail

For each Complex in the selected scope, this report presents

- each Building's Use Category
- each Building's metrics (area, BCIBuilding Condition Index - a condition rating for the overall Building. For each Building, the BCI is computed by taking the average of its Systems' CIs (SCIs), weighted by replacement cost., BFIBuilding Functionality Index - computed from the results of a functionality assessment., BPIBuilding Performance Index - a measure of a Building's overall performance, derived from a weighted combination of the BCI and BFI, where the lower of the two values is given two-thirds of the weight and the higher of the two values is given one-third of the weight. If no functional assessment has been performed, the BFI is assigned a value of 100., **FCI**[1], **MDI**[2]Mission Dependency Index - measures the relative importance of a Building)
- for the Complex, the summary metrics CCICoating Condition Index, CFI, and CPI
- the total **PRV**[3]Plant Replacement Value. For an inventory item above the Building level, this number will be the aggregate of the PRV of all Buildings included in that item. of the Buildings in the Complex
- the number of Buildings in the Complex.

Scope

This report is available at the Site and Complex inventory levels.

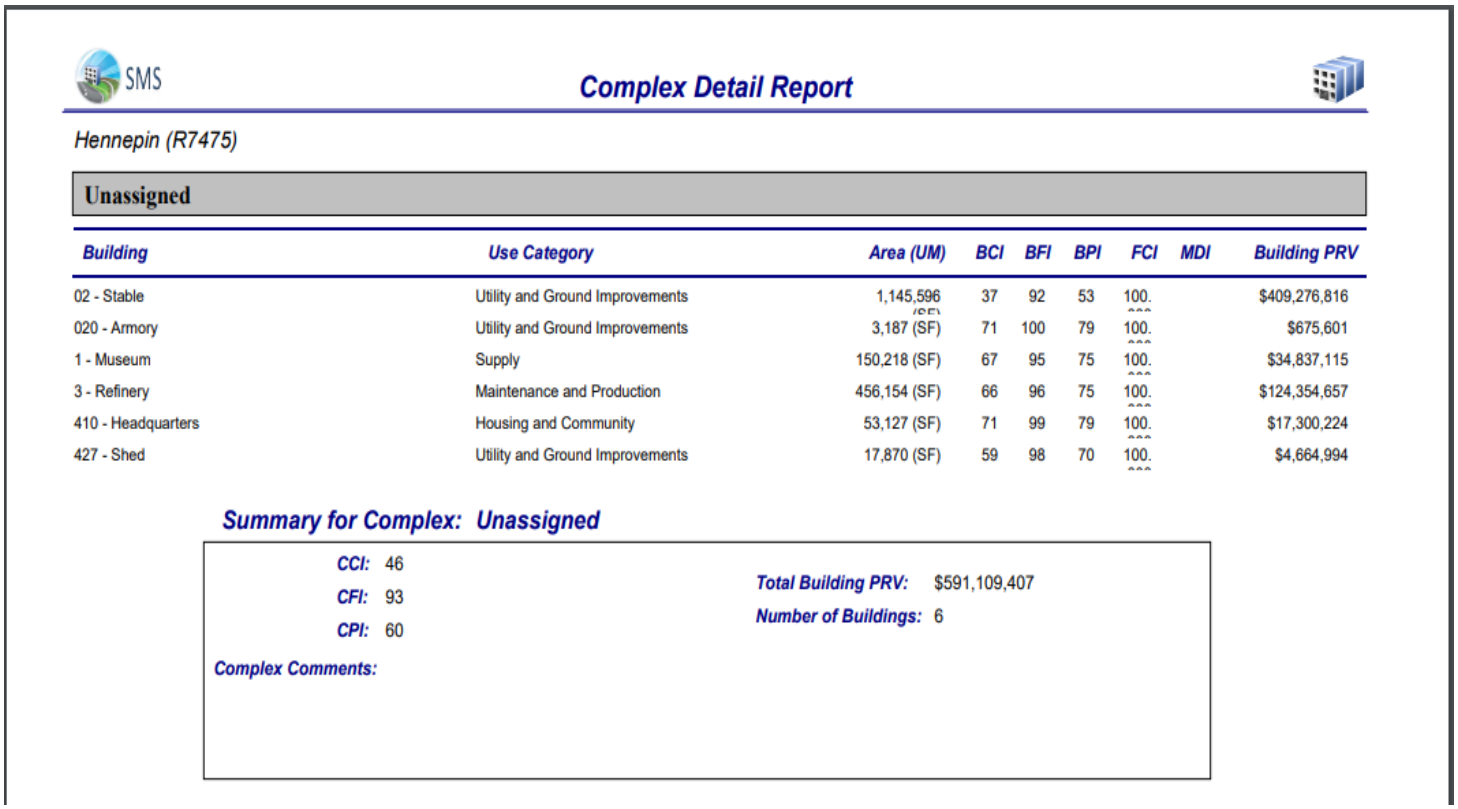
---

[1]Facility Condition Index.

[2]Mission Dependency Index

[3]Plant Replacement Value. This number will be the aggregate of the PRV of all inventory items contained within the current inventory item.

Example



SMS

Complex Detail Report

Hennepin (R7475)

Unassigned

Building	Use Category	Area (UM)	BCI	BFI	BPI	FCI	MDI	Building PRV
02 - Stable	Utility and Ground Improvements	1,145,596 (SF)	37	92	53	100.		$409,276,816
020 - Armory	Utility and Ground Improvements	3,187 (SF)	71	100	79	100.		$675,601
1 - Museum	Supply	150,218 (SF)	67	95	75	100.		$34,837,115
3 - Refinery	Maintenance and Production	456,154 (SF)	66	96	75	100.		$124,354,657
410 - Headquarters	Housing and Community	53,127 (SF)	71	99	79	100.		$17,300,224
427 - Shed	Utility and Ground Improvements	17,870 (SF)	59	98	70	100.		$4,664,994

Summary for Complex: Unassigned

CCI: 46
CFI: 93
CPI: 60

Total Building PRV: $591,109,407
Number of Buildings: 6

Complex Comments:

Condition Index Detail

For each Component-Section included in the scope of the report, this report shows the last inspection date (rightmost column), and the **CI**[1]Condition Index not only for the Component-Section but also for the Component, System, and Building it is contained in.

Regardless of the level at which the report is generated (Site, Complex, etc.), the name and number of the Site is listed in the upper left of the report, and the name in the gray bar is the Building.

Troubleshooting Tip: If you export this report, then select a different scope to regenerate the report on a different asset, the previously exported report might appear in the "Report Viewer" popup instead of the new report. If this happens, close the report popup and generate the desired report again.

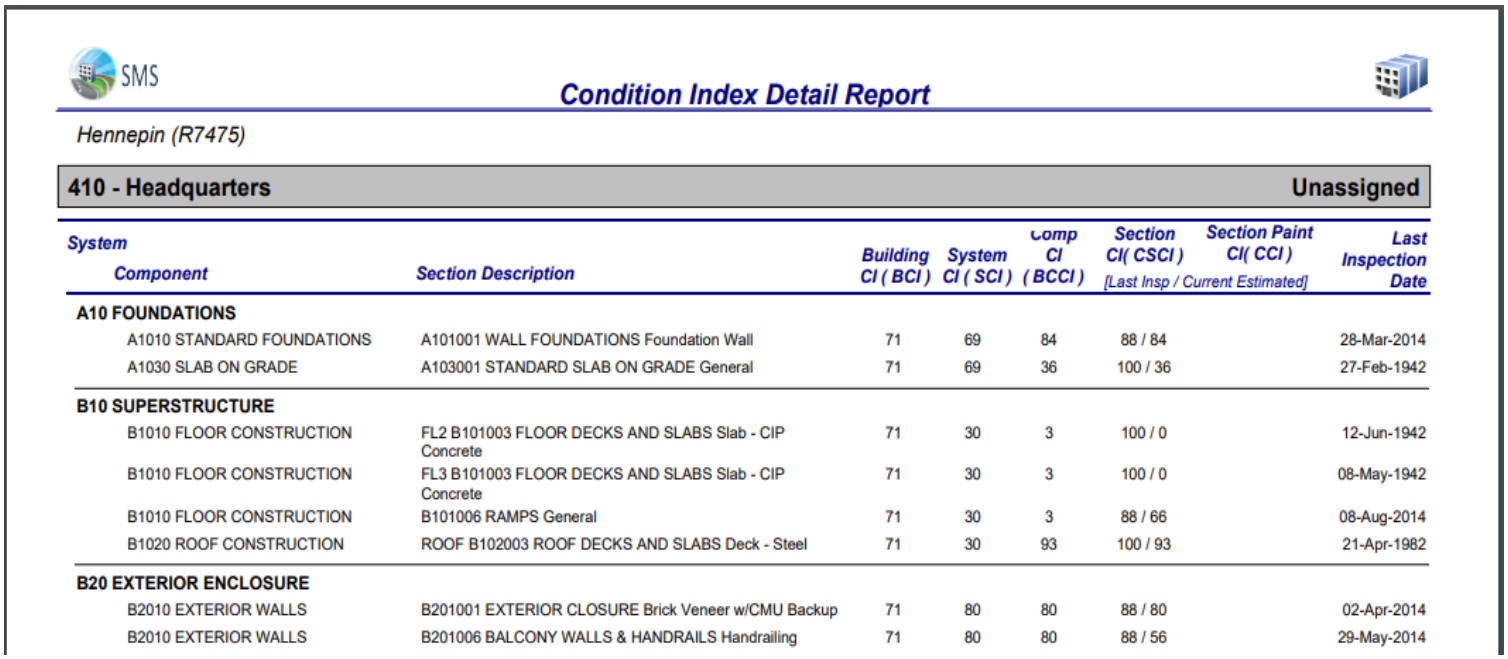
Scope

This report is available at the Site through Component inventory levels.

---

[1]Condition Index

Example



SMS

Condition Index Detail Report

Hennepin (R7475)

410 - Headquarters **Unassigned**

System / Component	Section Description	Building CI (BCI)	System CI (SCI)	Comp CI (BCCI)	Section CI(CSCI) [Last Insp / Current Estimated]	Section Paint CI(CCI)	Last Inspection Date
A10 FOUNDATIONS							
A1010 STANDARD FOUNDATIONS	A101001 WALL FOUNDATIONS Foundation Wall	71	69	84	88 / 84		28-Mar-2014
A1030 SLAB ON GRADE	A103001 STANDARD SLAB ON GRADE General	71	69	36	100 / 36		27-Feb-1942
B10 SUPERSTRUCTURE							
B1010 FLOOR CONSTRUCTION	FL2 B101003 FLOOR DECKS AND SLABS Slab - CIP Concrete	71	30	3	100 / 0		12-Jun-1942
B1010 FLOOR CONSTRUCTION	FL3 B101003 FLOOR DECKS AND SLABS Slab - CIP Concrete	71	30	3	100 / 0		08-May-1942
B1010 FLOOR CONSTRUCTION	B101006 RAMPS General	71	30	3	88 / 66		08-Aug-2014
B1020 ROOF CONSTRUCTION	ROOF B102003 ROOF DECKS AND SLABS Deck - Steel	71	30	93	100 / 93		21-Apr-1982
B20 EXTERIOR ENCLOSURE							
B2010 EXTERIOR WALLS	B201001 EXTERIOR CLOSURE Brick Veneer w/CMU Backup	71	80	80	88 / 80		02-Apr-2014
B2010 EXTERIOR WALLS	B201006 BALCONY WALLS & HANDRAILS Handrailing	71	80	80	88 / 56		29-May-2014

Data Libraries

About Reference Data Configuration

This topic introduces (1) the reference books contained in BUILDER and (2) the concept of reference data configuration.

A collection of reference books in the BUILDER library enables BUILDER to calculate current and future replacement values, estimate remaining service life, and apply higher or lower importance to selected Component-Sections. The reference books are

- Cost Book. Specifies replacement costs for Component-Sections and/or Buildings.
- Inflation Book. Specifies yearly inflation rates into the future. BUILDER uses these to calculate future replacement costs.
- Service Life Book. Specifies expected service life for Component-Sections. This reference data, along with data from inspections, is used to calculate remaining service life and to produce deterioration curves.
- Component Importance Index (CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance.) Book. Specifies the importance level for individual Component-Sections.

Each of these reference books has a default version named Reference, which is associated with the asset tree at the top level and can not be deleted or modified. Custom versions of the reference books can be developed and then selected to be used instead of Reference, either in the entire asset tree or in only part of it. Users with sufficient permission can customize the reference data by creating a new reference book of the desired type and then modifying the data contained in it, in a process called reference data configuration.

Permissions Note: Depending on the operation (e.g., adding vs. deleting a book), configuring reference data requires either Work Planner or Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. permission for the Organization or Site that the reference book applies to. The ability to assign a custom reference book to an Organization or Site depends on your permissions for that Organization or Site.

To see configuration steps for a reference type, start at one of the links below:

- About Cost Books
- About Inflation Books
- About Service Life Books
- About CII Books

Cost Books

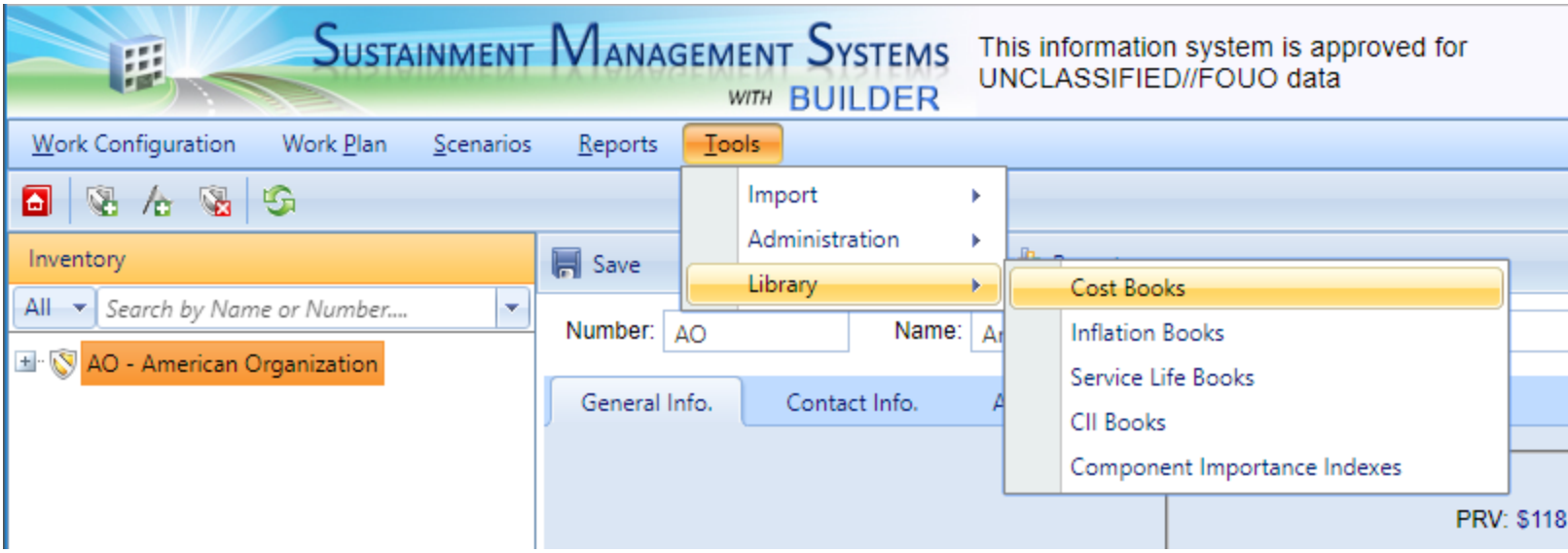
View a Cost Book

This topic covers how to view the default cost book (Reference) or a custom cost book. The topic Edit Cost Book Data explains how to add or edit data in a cost book.

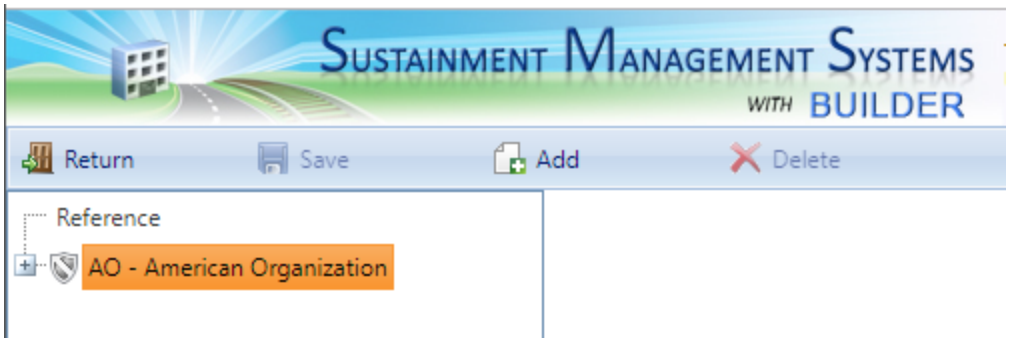
Permissions Note: Depending on the operation (e.g., adding vs. deleting a book), configuring reference data requires either Work Planner or Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. permission for the Organization or Site that the reference book applies to. The ability to assign a custom reference book to an Organization or Site depends on your permissions for that Organization or Site.

To view a cost book,

- Starting at the main menu, select Tools > Library > Cost Books.



The Cost Management window will open, showing just the top level of the asset tree.

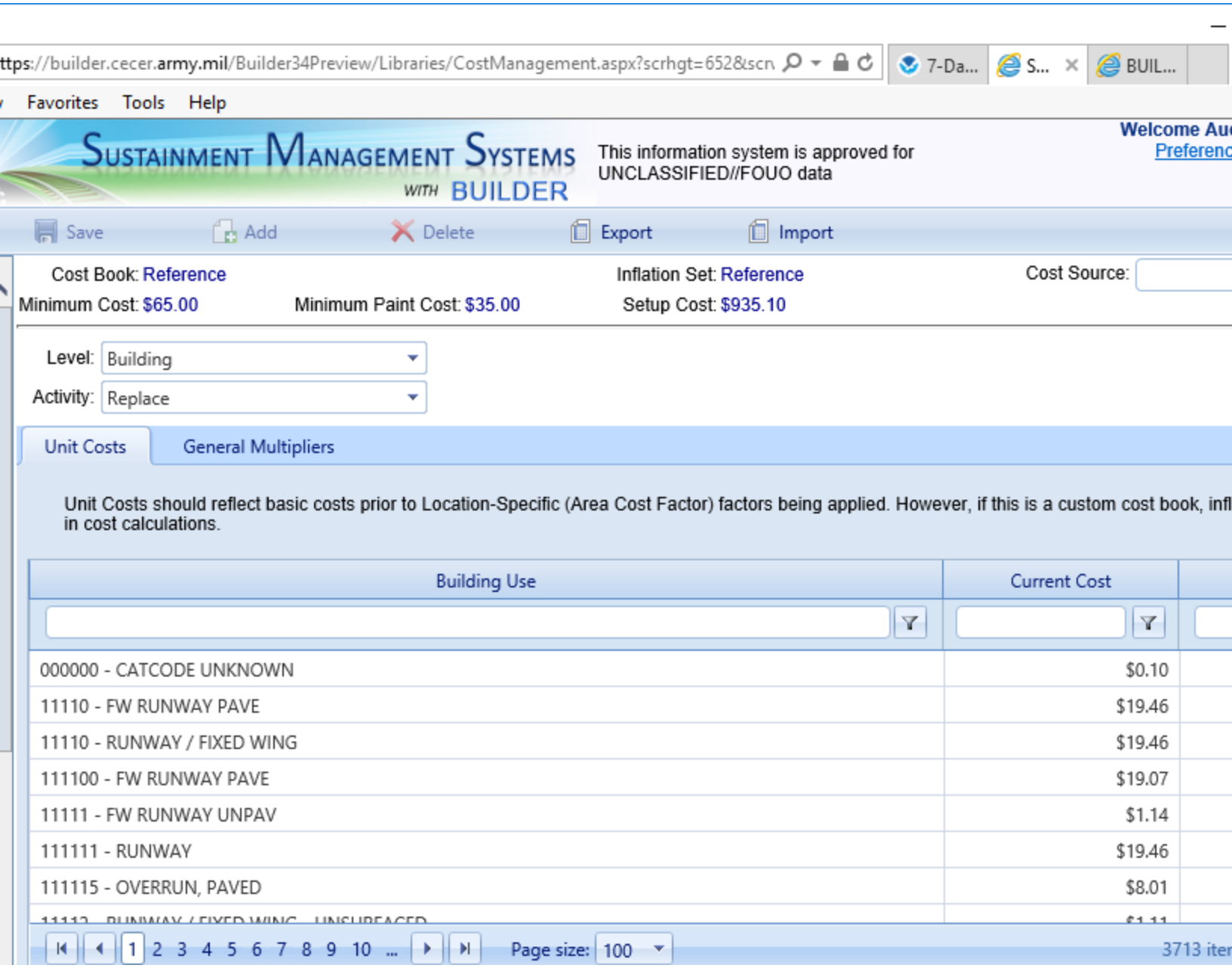


- To view the Reference cost book, activate "Reference" above the name of the topmost Organization (see screenshot above). The contents of the Reference cost book will appear in the content area.

  Note: The Reference cost book can be viewed, but not deleted or edited.

- To view a different cost book, expand the navigation tree and select the cost book you wish to view. The contents of the cost book will appear in the content area.

As an example, the screenshot below shows a Reference cost book.



High-Level Data

The following data is shown in the high-level fields appearing in the header above the Unit Costs tab:

- Cost Book. Shows which cost book is shown in the content pane.
- Inflation Set (Read-Only). Identifies which inflation book is being used in connection with the cost book. Which inflation book is being used is set in the Inventory tree, in the Reference Settings section of an Organization or Site's General Info tab. If no custom inflation book has been created, then the Reference inflation book will be used.

Note: The Unit Costs tab declares that "if this is a custom cost book, inflation is included in cost calculations."

- Cost Source. Cost data publisher name.
- Minimum Cost.
- Minimum Paint Cost.
- Setup Cost.
- Level. Indicates Building vs. Component-Section.
- Activity. Indicates Replace vs. Demolish (for Building), or the applicable Component-Section activity option.
- System. This appears only when the selected Level is Component-Section, and shows the System the Component-Section is in.

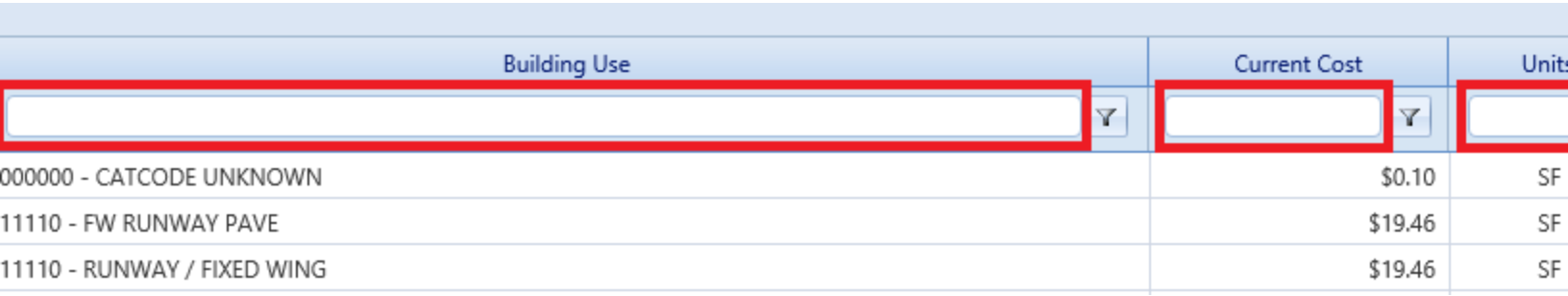
Unit Costs Tab

The Unit Costs table shows current cost and unit of measure for each Building Use type. If the Component-Section level is being displayed, there will be additional columns such as Material or Equipment Type and Component Type.

Filters

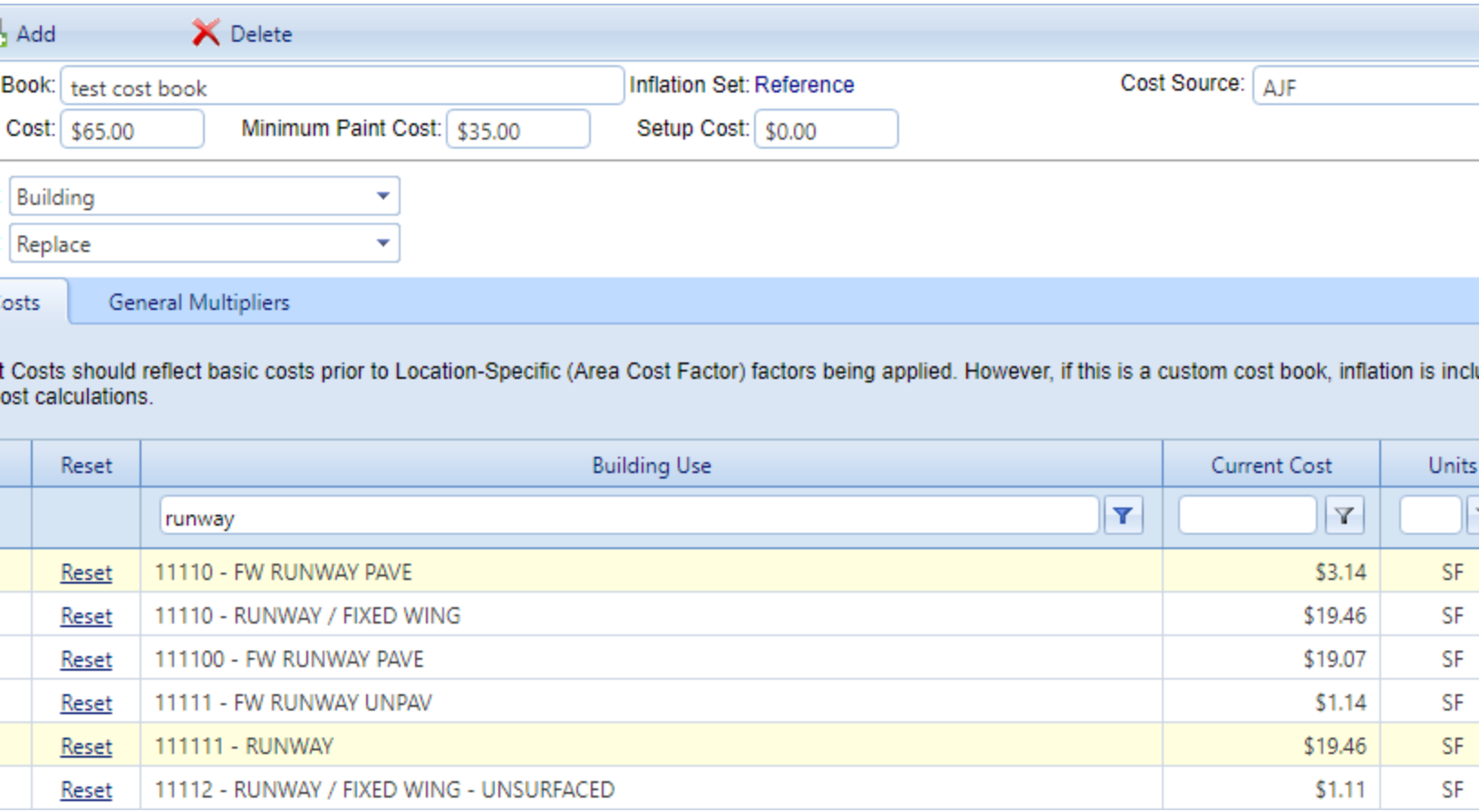
To use filters to reduce the view of the data,

- Enter a search term or number in one of the fields at the top of the data table, under Building Use, Current Cost, or Units.



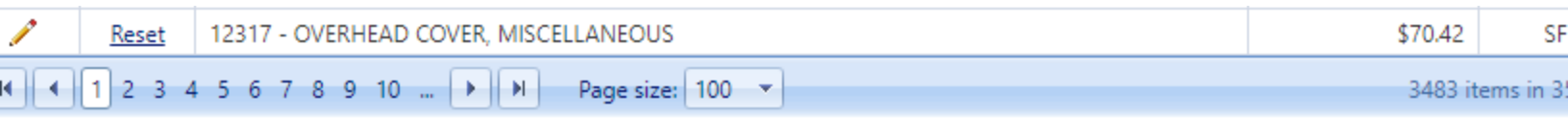
- Activate the corresponding filter button to the right of the field containing the search term / number.
- Select an option from the dropdown list. As soon as you activate it, the filter operation will be performed.

For example, here are the results of entering "runway" into the filter field and selecting the Contains filter option:



Page Navigation

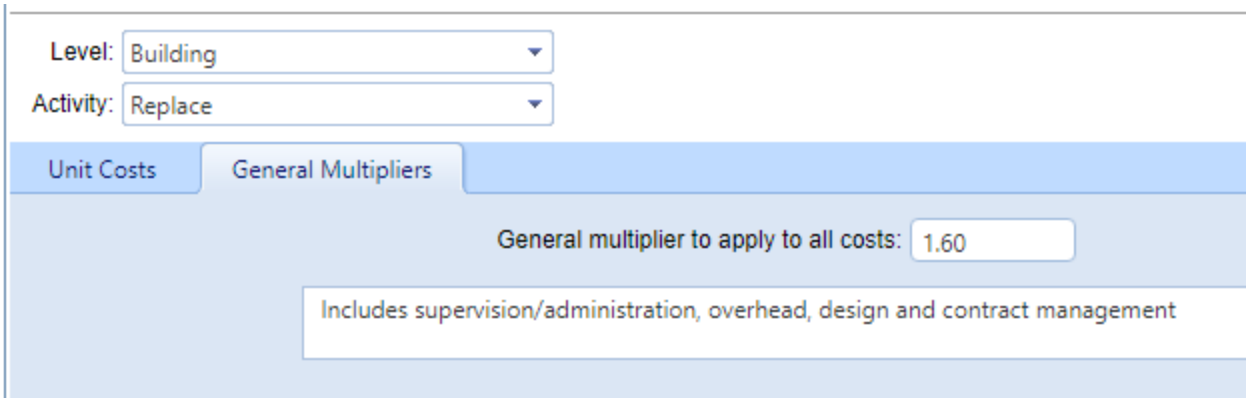
At the bottom of each page of data is page navigation, and the option to select the page size (in number of records) to view at one time. Additionally, at the right you can see how many items are in the cost book–or in the filtered set if one or more filters have been applied to the data–and the total number of pages spanned by that data.



Multiplier Tabs

General Multipliers

The General Multipliers tab shows the general multiplier to be applied to all costs. This is to cover costs including but not limited to supervision/administration, overhead, design, and contract management.



Specific Multipliers

Note: Specific multipliers do not apply at the Building level.

Specific multipliers account for the extra cost involved to replace, remove, paint, or inspect a Component-Section in a Building that is historic, high security, housing, or has additional access constraints or difficulties. Any given Component-Section can be assigned as many simultaneous specific multipliers as apply; however, they can be viewed only one multiplier category at a time, shown in the rightmost column of the data table at the Specific Multipliers tab.

Related Links

- About Cost Books
- Add a Cost Book
- Edit Cost Book Data (unit costs, general multiplier, or specific multipliers)
- Delete a Cost Book
- Assign a Cost Book to an Organization or Site
- About Replacement Cost Calculation

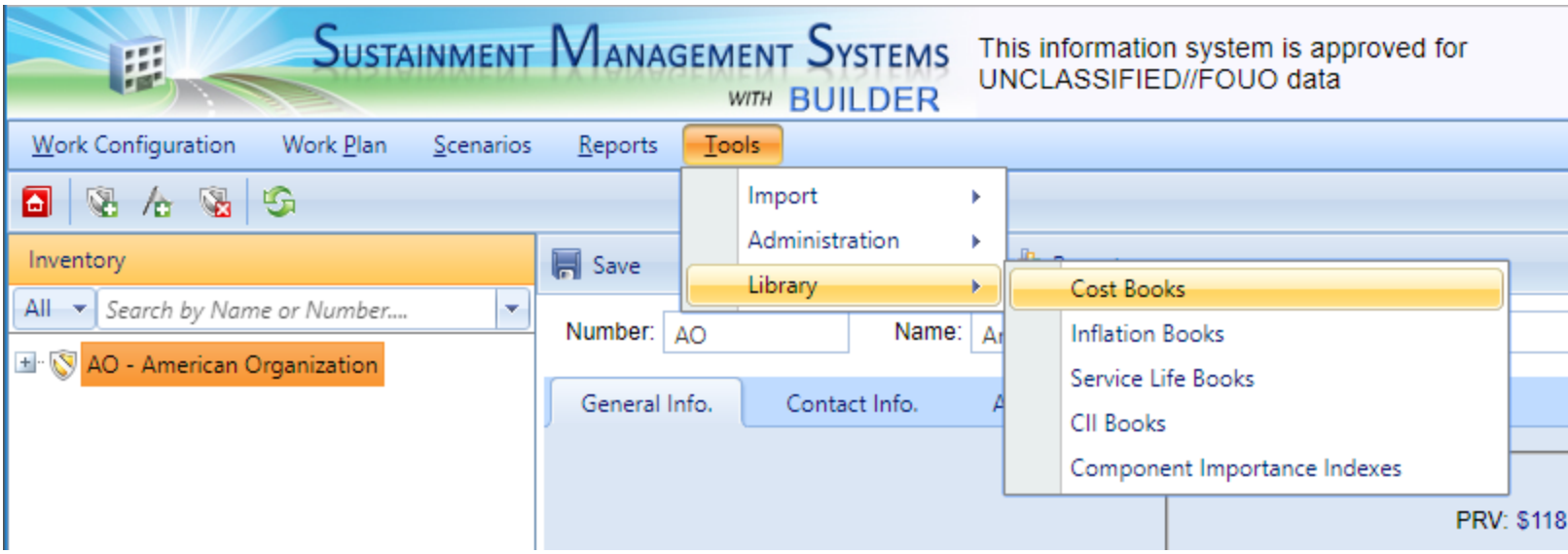
Add a Custom Cost Book

This topic covers how to add a custom cost book. The topic Edit Cost Book Data explains how to add or edit data in a cost book.

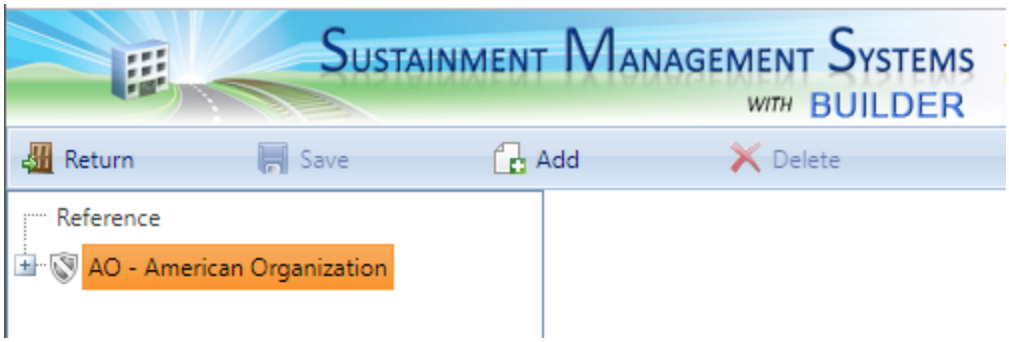
Permissions Note: Adding a custom cost book requires Work Planner permission level or above at the target Organization or Site.

To add a cost book,

- At the main menu, select Tools > Library > Cost Books.

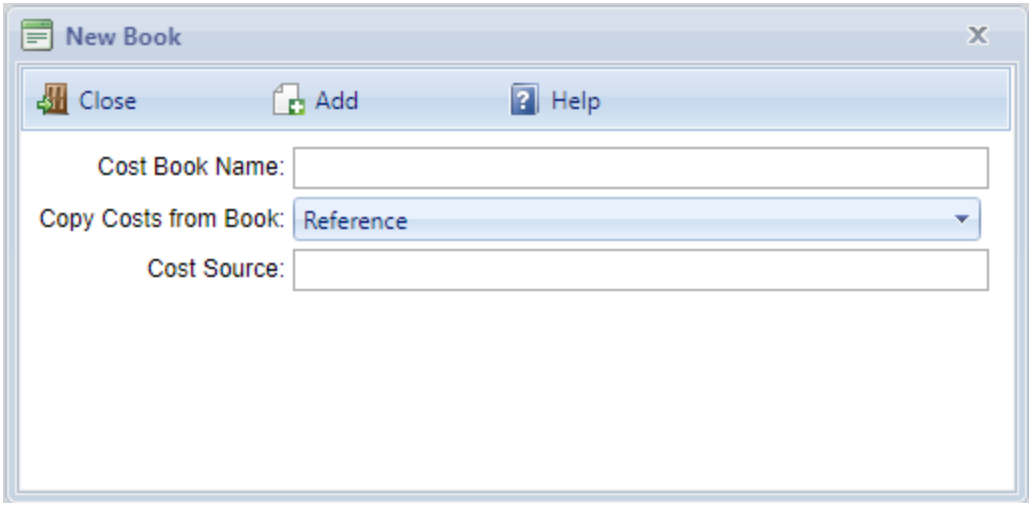


The display will change to the Cost Management page, showing just the top level of the asset tree.

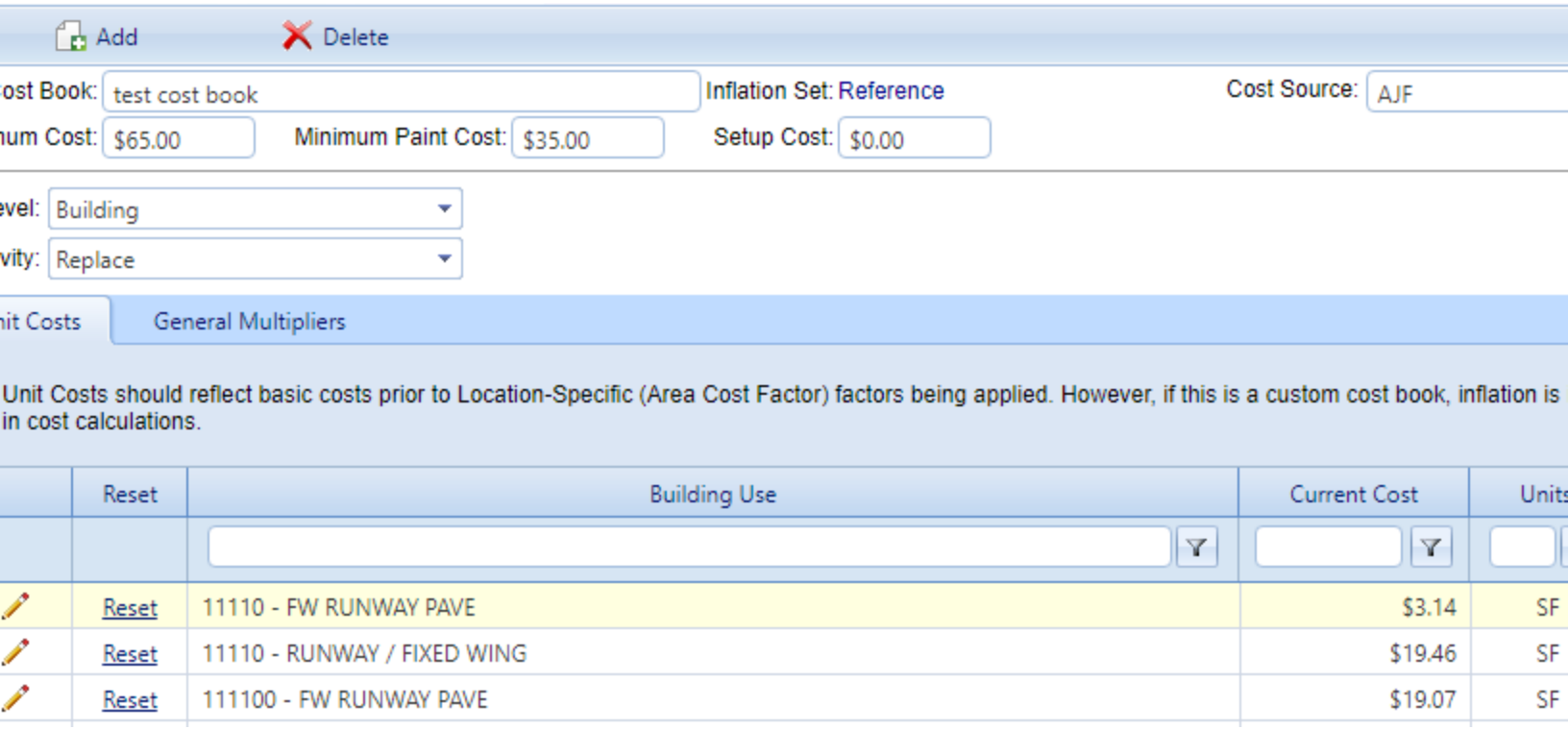


- You can expand the tree in the left portion of the window to reveal what (if any) cost books are available in the database. Initially, only one cost book, Reference, is available. The Reference cost book cannot be deleted or edited. It is the ultimate foundation of all other cost books you create.
- Navigate to and select the Organization or Site where the new cost book should be applicable. This will dictate the scope of the new cost book.

- Activate the Add button on the toolbar above the navigation tree. The "New Book" popup will appear.



- Enter the name of the new cost book in the first field.
- In the second field, activate the dropdown and select the cost book to copy costs from.
- In the "Cost Source" field, enter the name of the cost data publisher.
- Activate Add on the popup toolbar. The new cost book, which initially mirrors the cost book it was copied from, will appear in the content pane.



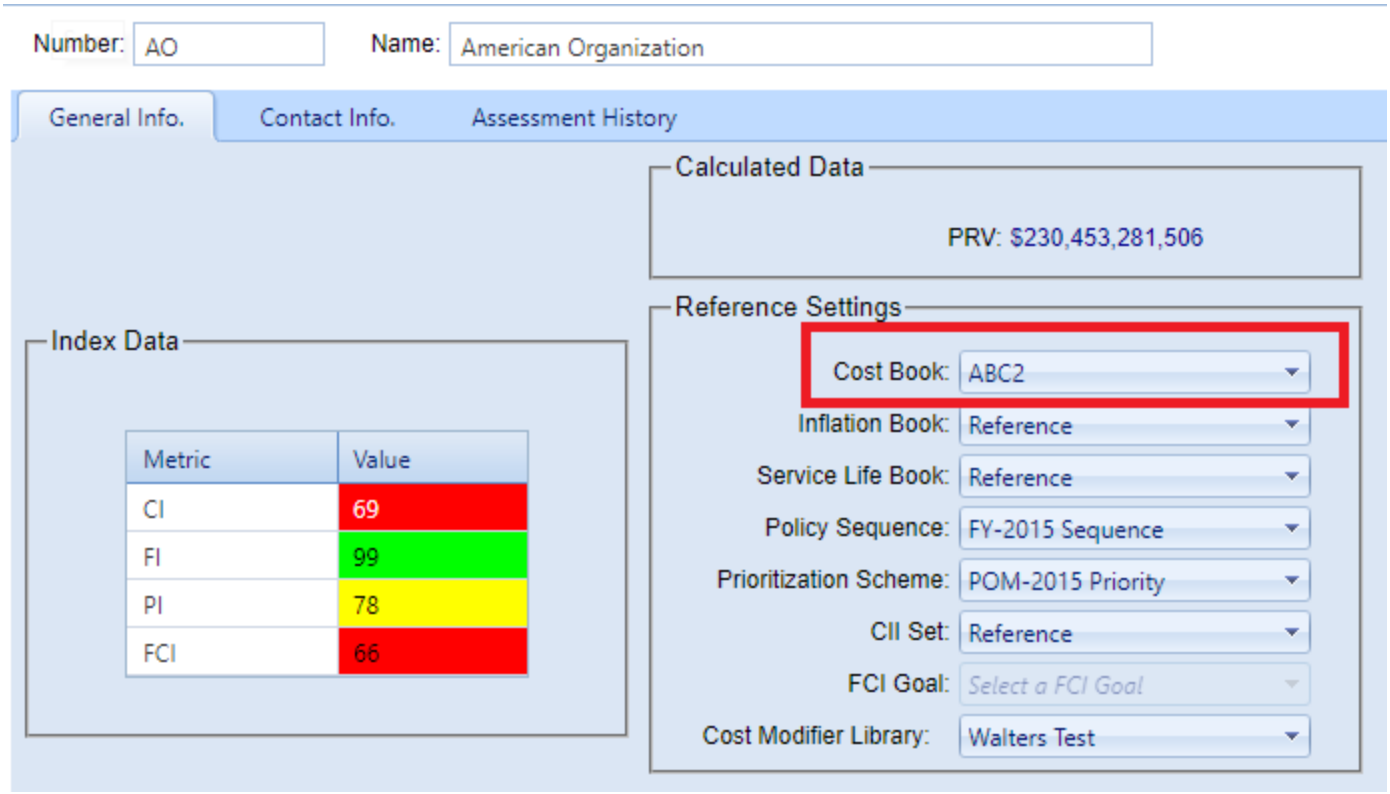
- For how to add and edit cost book information, see Edit Cost Book Data.

To assign the new custom cost book to an Organization or Site, see Assign a Cost Book to an Organization or Site below.

Assign a Cost Book to an Organization or Site

You can create multiple cost books, and assign a separate book to any Organization or Site within your permissions scope, as desired. This is done as follows:

- In Inventory mode, navigate to and select the Organization or Site to assign the cost book to.
- At the General Information tab, select the cost book from the dropdown menu in the Reference Settings section (requires elevated permissions).



- Activate Save on the content area toolbar.

Related Links

About Cost Books
View a Cost Book
Edit Cost Book Data (unit costs, general multiplier, or specific multipliers)
Delete a Cost Book
Assign a Cost Book to an Organization or Site
About Replacement Cost Calculation

Edit Cost Book Data

This topic covers how to add or edit data in a custom cost book. If the custom book still needs to be created, the topic Add a Custom Cost Book explains how.

Permissions Note: Editing a custom cost book requires Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. permission level or above at the target Organization or Site.

Objective: Edit cost book data

Tasks:

A. Open a custom cost book
B. Navigate data fields
C. Edit data
D. Save changes

Steps for each of the tasks are listed below.

Task: Open a Custom Cost Book

To open a custom cost book,

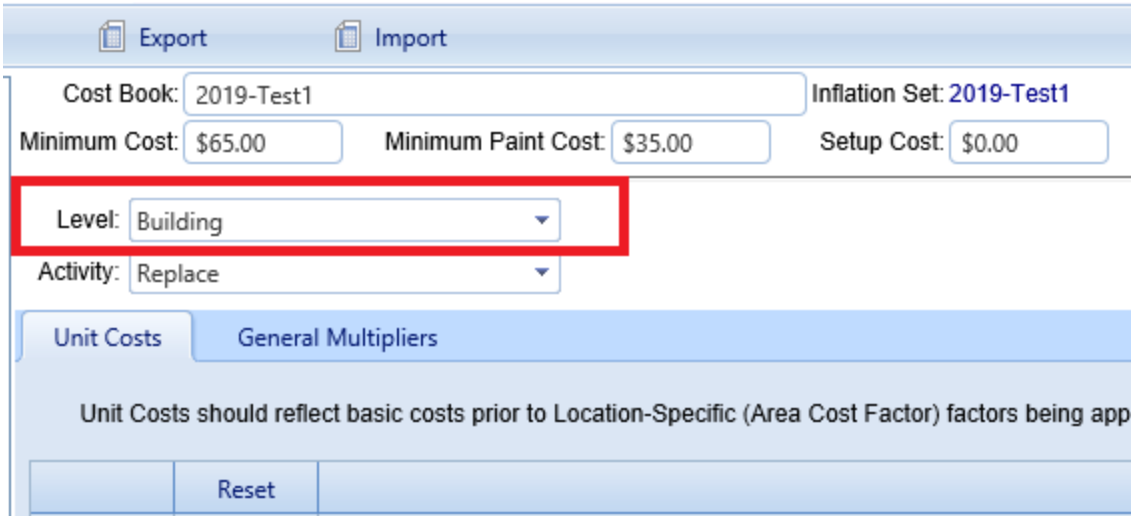
- Starting at the main menu, select Tools > Library > Cost Books.
- Expand the navigation tree and select the cost book whose data you wish to edit.

Task: Navigate Data Fields

You can use one or a combination of the navigation options described below to bring desired cost book records into view: Level, Activity, filters, and/or page navigation.

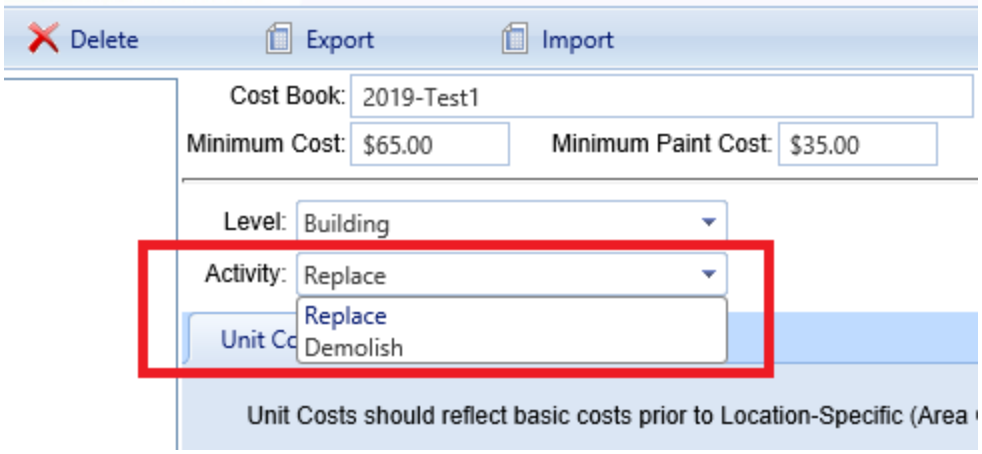
Level

The Level field as a dropdown list select the inventory hierarchy level to be displayed in the table (Building or Component-Section).



Activity

Below the Level field is Activity, with a dropdown list to select the activity to be displayed (Replace or Demolish).



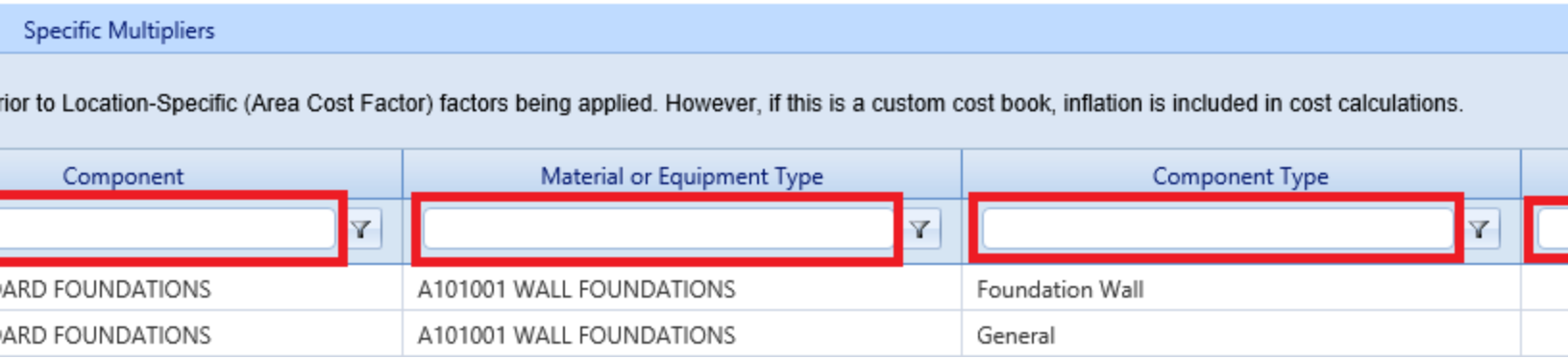
Filters

You can apply a filter in as many or as few of the filterable columns as you wish. A message at the lower right corner of the table will show how many records matching the selected filter(s) were found.

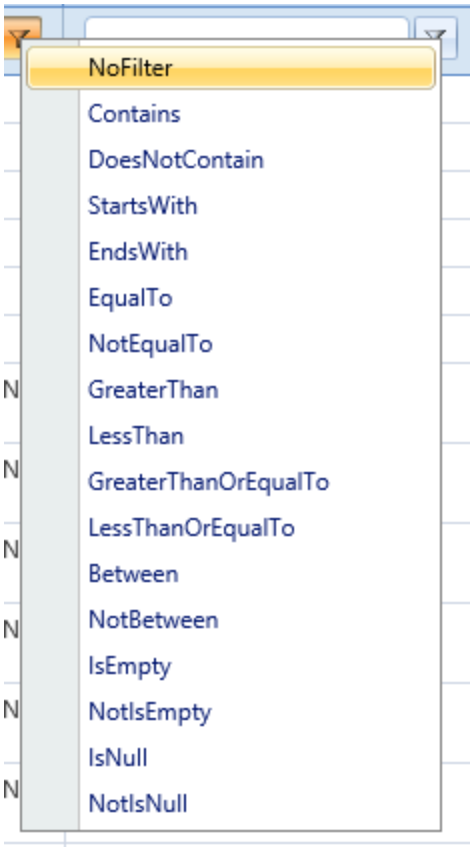
Note: Which columns are displayed depends on the Level and Activity selected.

To use filters to reduce the view of the data,

- Enter a search term or number in one of the fields at the top of the data table. (Example is for Level = Component-Section, Activity = Replace.)



- Activate the corresponding filter button to the right of the field containing the search term / number.
- Select an option from the dropdown list. As soon as you activate an option, that filter operation will be performed.



- To further restrict the view using filters, you can type a search term or number into the filter field of any one of the remaining empty filterable columns, repeating this list of steps.

Page Navigation

At the bottom of the table, the Page size field allows you to select how many records to see on one page (from pre-set options). Page navigation allows you to select a page number, or to step forward or backwards through the pages of records.

Task: Edit Data

Current Cost

In the Unit Costs table at the Unit Costs tab, only the values in the Current Cost column can be edited. The cost book name may also be edited.

To change the current cost,

- Locate its record in the Unit Costs data table.
- Activate the pencil icon in the first column of that record.
- Change the decimal value in the Current Cost column.
- Activate the blue checkmark icon in the first column. (Alternatively, activate the red Do Not Enter icon to cancel.)

Note: Activating Reset in the second column will reset the Current Cost in that record to its Reference value.

General Multiplier

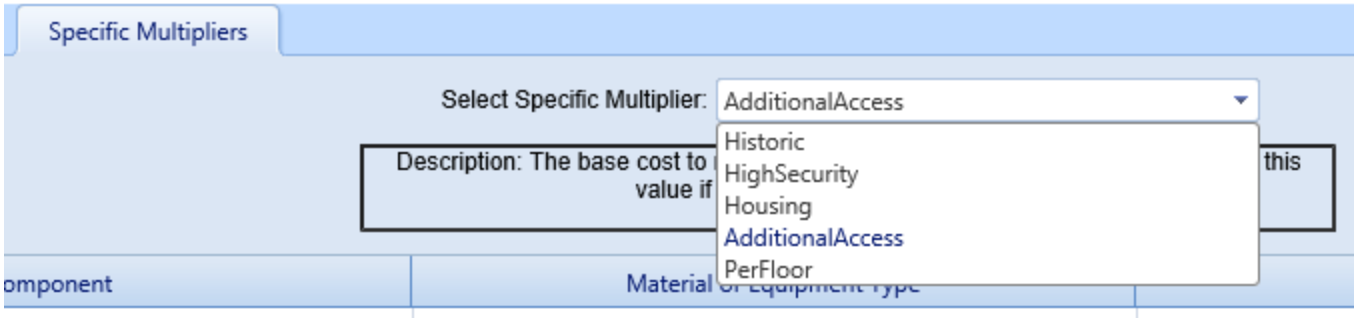
At the General Multipliers tab, change the decimal value in the field labeled General multiplier to apply to all costs.

Specific Multipliers

Note: Specific multipliers are available for Component-Sections only, not for Buildings.

To change a specific multiplier,

- At the Specific Multipliers tab, select a multiplier type from the dropdown list. The rightmost column header in the Specific Multipliers data table will change to match.



- Locate the desired record in the Specific Multipliers data table. Each record represents a Component-Section type.
- Activate the pencil icon in the first column of that record.
- Change the value of the multiplier in the rightmost column. The cost of repair or replacement (depending on the selected Activity) performed on a Component-Section of that type will be multiplied by the multiplier value that you enter and save, in addition to being multiplied by the General Multiplier.
- Activate the blue checkmark icon in the first column. (Alternatively, activate the red Do Not Enter icon to cancel.)

Name of Cost Book

To change the name of the cost book itself, edit the name in he Cost Book field just below the main toolbar.

Task: Save Changes

Activate Save on the main toolbar as desired to save as you go along.

When finished making changes,

- Activate Save on the main toolbar.
- Activate Return on the main toolbar. You should be returned to the location in the inventory, condition, or functionality ribbon you came from.

Related Links

About Cost Books
View a Cost Book
Add a Cost Book
Delete a Cost Book
Assign a Cost Book to an Organization or Site
About Replacement Cost Calculation

About Replacement Cost Calculation

Replacement Cost Level: Building vs. Component-Section

Only two levels of replacement costs are editable: the costs for Buildings, and the costs for Component-Sections. In the remainder of the asset tree, a Component's cost is determined by totaling the costs of the Component-Sections belonging to it. Similarly, a System's cost is determined by totaling the costs of the Components belonging to it.

Replacement Cost Formula

Generally the cost to replace, remove, or paint a Component-Section is determined by the following formula:

Total Cost = (Quantity) x (Unit Cost) x (Area Cost Factor) x (General Multiplier) x (Aggregate Specific Multiplier) x (Inflation Factor)

where the Aggregate Specific Multiplier is the product of the applicable individual specific multipliers and the Area Cost Factor is taken from the Site data. See Explanation of Factors and Multipliers for more about contributing factors and multipliers.

The cost to demolish a Building uses the same formula, with the Aggregate Specific Multiplier = 1.0.

Replacement Cost Data Source

BUILDER uses building replacement cost data from the Tri-Service Military Construction Program in the Reference cost book, and the method described above is essentially the same as the method described in Technical Manual 5-800-4,Programming Cost Estimates for Military Construction, to estimate the replacement cost of each Building. See https://www.wbdg.org/ffc/army-coe/technical-manuals-tm/tm-5-800-4 for the text of this technical manual.

Explanation of Factors and Multipliers

Area Cost Factor

Costs relative to a specific geographic location are determined by applying a multiplier called the Area Cost FactorA multiplier that adjusts national average labor/material/equipment costs to better reflect local costs. For example, in a remote area with high shipping costs and a tight labor market, the Area Cost Factor might be 1.3. The Area Cost Factor is generally a number between 0.8 and 1.2 for continental U.S. locations, but it can be even greater than 2.0 in high-cost geographic locations. to a base construction cost. The BUILDER database of Area Cost Factors is the same database used in the Tri-Service Automated Cost Engineering System (TRACES) and is set in the Site data.

The Area Cost Factor accounts for the following geographic differences in costs:

- local costs of construction labor, equipment, and materials
- weather, climate, and seismic requirements
- labor availability

The Area Cost factor is set at the Site inventory page (requires elevated permissions level).

General Multipliers

Each general multiplier, applied to all costs of a given level and activity type, is to cover costs including but not limited to supervision/administration, overhead, design, and contract management.

Specific Multipliers

Specific multipliers account for the extra cost involved to replace, remove, paint, or inspect a Component-Section in a Building that is historic, high security, housing, or has additional access constraints or difficulties. Any given Component-Section can be assigned as many simultaneous specific multipliers as apply.

Inflation Factor

The inflation factor is computed based on the base year of the cost data and the inflation rates given in the default inflation book. If the cost data corresponds to the data in the Reference cost book, then the cost module uses a fixed year for the base year. If you add your own cost book and enter a unit cost different from the Reference set, then the cost module saves the year in which you input that data as the base year for inflation computations.

Repair Costs

Repair costs are handled differently from replacement costs. The cost module calculates repair costs for Component-Sections as a function of current condition index and the replacement cost computed as above using an algorithm derived through ERDC-CERLU.S. Army Engineer Research and Development Center, Construction Engineering Research Laboratory's research.

Related Links

About Cost Books
View a Cost Book
Add a Cost Book
Edit Cost Book Data (unit costs, general multiplier, or specific multipliers)
Delete a Cost Book
Assign a Cost Book to an Organization or Site

Delete a Cost Book

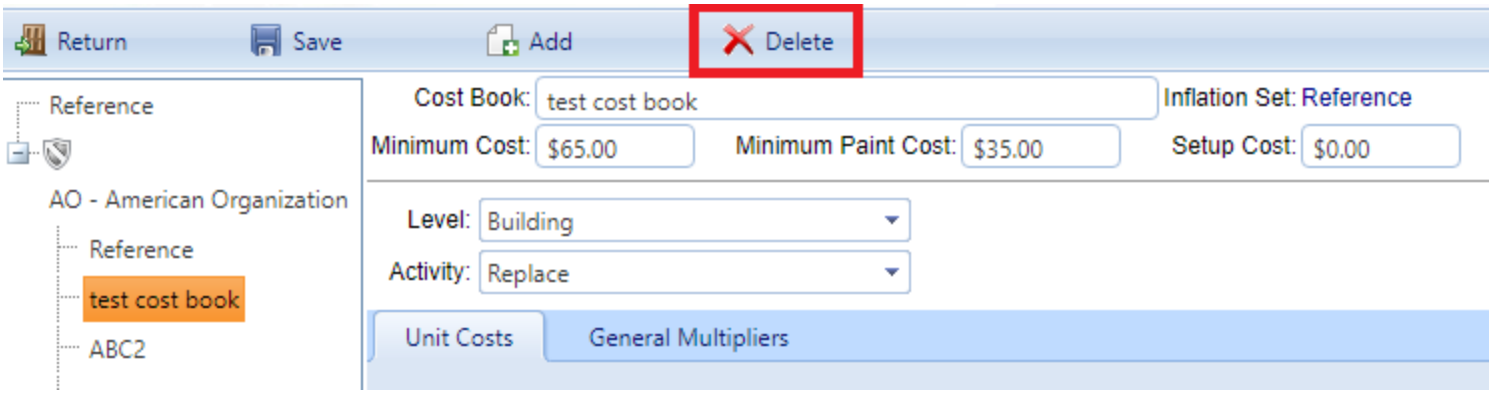
This topic explains how to delete a custom cost book. The original Reference cost book can not be deleted.

Permissions Note: Deleting a cost book requires Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. permission for the Organization or Site that the cost book applies to.

To delete a cost book,

- At the main menu, select Tools > Library > Cost Books.
- Expand the tree in the navigation until you find the cost book to be deleted.
- Select the cost book.

- Activate the Delete button on the toolbar above the navigation tree.



- In the "Delete Cost Book" confirmation popup, activate the OK button. (Alternatively, activate the Cancel button to cancel the operation.)
- To exit the cost book window, activate Return on the main toolbar.

Related Links

About Cost Books
View a Cost Book
Add a Cost Book
Edit Cost Book Data (unit costs, general multiplier, or specific multipliers)
Assign a Cost Book to an Organization or Site
About Replacement Cost Calculation

Cost Modifiers

About Cost Modifiers

Cost modifiers are multipliers or adders that can be applied at multiple BUILDER hierarchy levels in order to adjust Section replacement costs. Modified costs will roll up through the hierarchy and also affect **CI**[1] Condition Index roll-up weights, work plan item costs, and costs output by Scenarios simulations.

The ability to apply cost multipliers and adders from the Site level down to the individual Section level provides great flexibility and control in accounting for factors that affect costs. Common factors that change costs include security requirements, health and safety requirements, and containment requirements.

Cost modifiers are created and managed in cost modifier libraries. These cost modifier libraries can be created at the Organization or Site level. The modifiers in a library can then be assigned on the Cost Modifiers tab of Sites, Complexes, Buildings, Systems, Components, or Sections.

When a cost modifier is assigned to a Site, Complex, Building, System, or Component, that modifier is "inherited" down the BUILDER hierarchy and calculated for all child Sections below the parent level at which the modifier was assigned. A modifier can also be assigned at the Section level, in which case it only applies to that individual Component-Section. A Section can inherit one or more cost modifiers from a parent as well as have its own modifier applied. For example, if the Building multiplier is 2, the System multiplier is 2, and the Section multiplier is 2, the Section cost will be multiplied by a factor of 8 (2x2x2).

Cost Modifier Types

The cost modifier types listed below are applied in addition to Area Cost FactorA multiplier that adjusts national average labor/material/equipment costs to better reflect local costs. For example, in a remote area with high shipping costs and a tight labor market, the Area Cost Factor might be 1.3. The Area Cost Factor is generally a number between 0.8 and 1.2 for continental U.S. locations, but it can be even greater than 2.0 in high-cost geographic locations., the General Multiplier for the cost book, and any specific multipliers for the cost book.

The cost multiplier is a multiplying factor applied to all child Sections. For example, if a Building has a 1.5 cost multiplier, then the 1.5 multiplier will be applied to all Sections below the Building in the hierarchy.

Cost Adder

The cost adder is a fixed cost applied to all child Sections. For example, if a Building has a $2700 cost adder, then all Sections within that Building will be assigned a $2700 cost adder.

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[1] Condition Index

Assigning Cost Modifiers

You have the option to create and name multiple cost modifier libraries (this requires elevated permissions). In the Inventory navigation tree, you can assign separate cost modifier libraries as desired to different Organizations and Sites.

Once an active cost modifier library has been selected for an Organization or Site, the modifiers in the library can be assigned to BUILDER inventory.

Cost Modifier Tasks

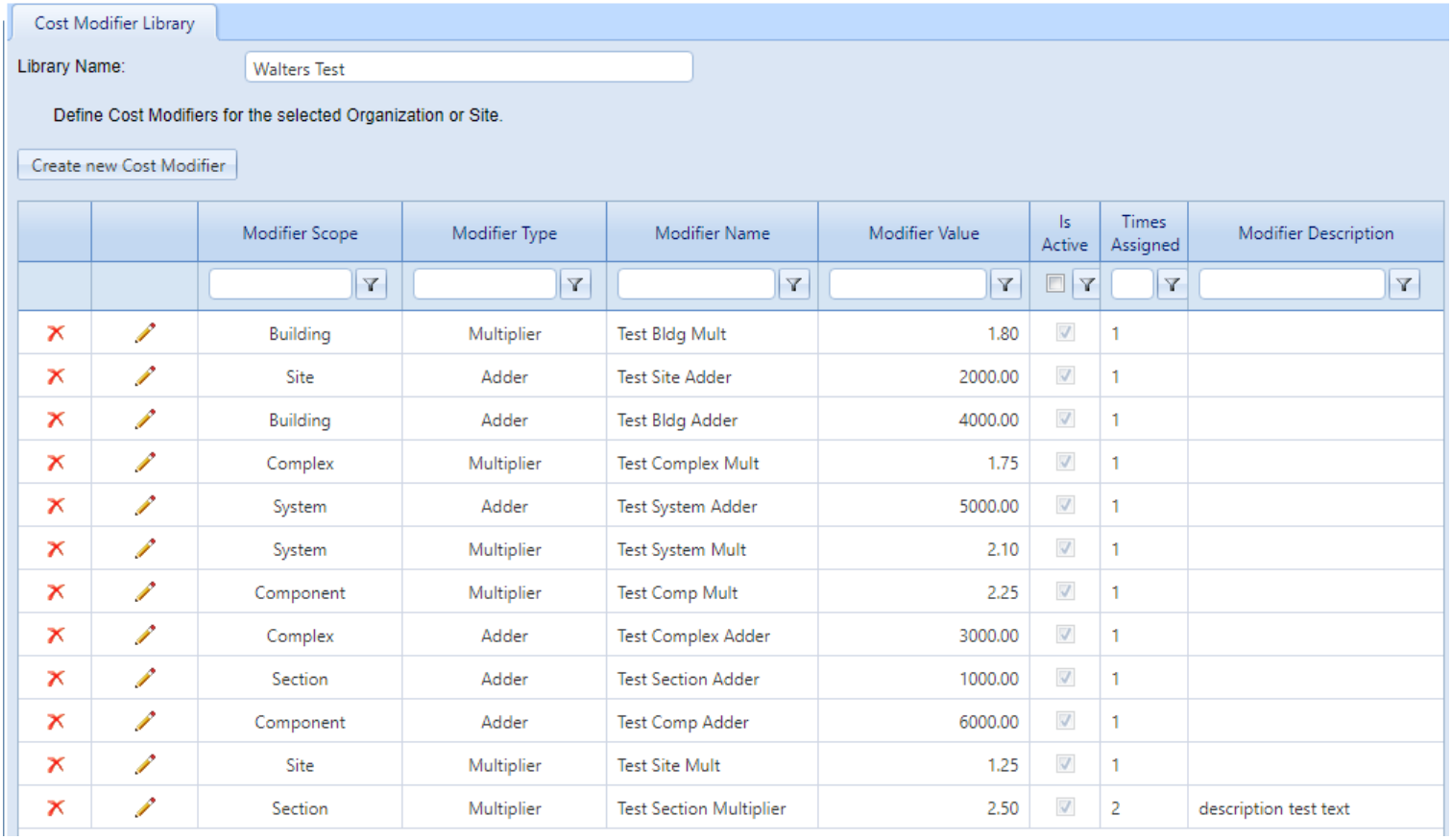
View a Cost Modifier Library
Add a Cost Modifier Library
Edit a Cost Modifier Library
Delete a Cost Modifier Library
Add, Edit, or Delete a Cost Modifier

View a Cost Modifier Library

To view a cost modifier library,

- Select Tools > Library > Cost Modifiers from the main menu.
- Expand the navigation tree at the left to show existing cost modifier libraries.

- Activate an existing library. The Cost Modifier Library tab will be displayed in the content area.



		Modifier Scope	Modifier Type	Modifier Name	Modifier Value	Is Active	Times Assigned	Modifier Description
✕	✎	Building	Multiplier	Test Bldg Mult	1.80	☑	1	
✕	✎	Site	Adder	Test Site Adder	2000.00	☑	1	
✕	✎	Building	Adder	Test Bldg Adder	4000.00	☑	1	
✕	✎	Complex	Multiplier	Test Complex Mult	1.75	☑	1	
✕	✎	System	Adder	Test System Adder	5000.00	☑	1	
✕	✎	System	Multiplier	Test System Mult	2.10	☑	1	
✕	✎	Component	Multiplier	Test Comp Mult	2.25	☑	1	
✕	✎	Complex	Adder	Test Complex Adder	3000.00	☑	1	
✕	✎	Section	Adder	Test Section Adder	1000.00	☑	1	
✕	✎	Component	Adder	Test Comp Adder	6000.00	☑	1	
✕	✎	Site	Multiplier	Test Site Mult	1.25	☑	1	
✕	✎	Section	Multiplier	Test Section Multiplier	2.50	☑	2	description test text

The table of cost modifiers has following columns:

- Delete. If the ✕ icon in this column is activated, it will delete the cost modifier (row).
- Edit. Activating the pencil icon allows users with sufficient permissions to edit the cost modifier.
- Modifier Scope. Shows the scope (BUILDER hierarchy level) where the cost modifier applies.
- Modifier Type. Multiplier vs. adder.
- Modifier Name. Identifying name assigned to the modifier.
- Modifier Value. For an adder, the value represents a dollar amount. For a multiplier, it is what the cost should be multiplied by.
- Is Active. Boolean (true/false) value indicating whether the modifier is "turned on." If a modifier is changed to inactive (unchecked), any existing cost modifier assignments of this type will remain in place but will not be displayed in the New Modifier Assignment window and will not be used in calculations. Also, the modifier will no longer be available for selection in the New Modifier Assignment window. You can use active/inactive to test how different modifiers affect replacement costs without having to unassign and reassign the modifiers each time.
- Times Assigned.
- Modifier Description. This field is provided for descriptive text.

Each of the columns except for the delete and edit columns allows you to apply a filter on any or all of the columns to potentially reduce the number of cost modifier records displayed on the screen.

Related Links

- About Cost Modifiers
- Add a Cost Modifier Library
- Edit a Cost Modifier Library
- Delete a Cost Modifier Library
- Add, Edit, or Delete a Cost Modifier

Add a Cost Modifier Library

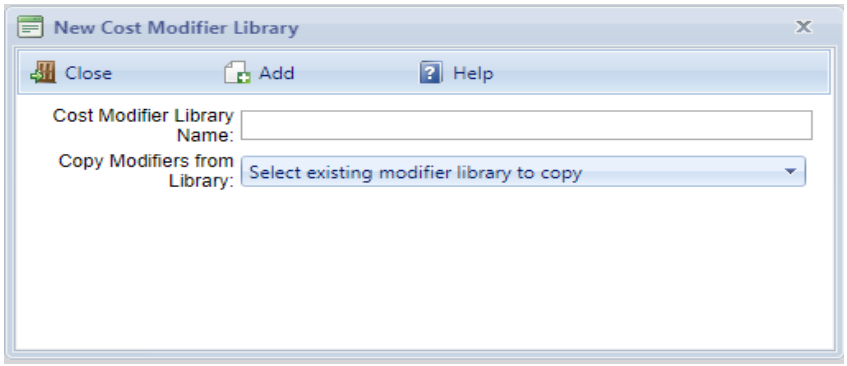
A cost modifier library can be created for any Organization or Site in the BUILDER hierarchy.

To add a cost modifier library,

- Select Tools > Library > Cost Modifiers from the main menu.
- Expand the navigation tree and select the Organization or Site where the library is to apply.

  Note: the library will only be available at the at the BUILDER hierarchy level at which it is created, as well as at any child Organizations or Sites.

- Activate Add in the toolbar. The "New Cost Modifier Library" popup will display.



- Enter the name of the new library in the first field.
- If you want to copy modifiers from an existing library, select that library from the dropdown list in the second field. If instead you want to start with an empty library and not copy modifiers from another library, leave the default option selected ("Select existing modifier library to copy") in the second field.
- Activate Add on the popup toolbar.

The Cost Modifiers window will display, with the name of the library at the top. You can now edit the library name, create new cost modifiers to include in the library, or edit existing modifiers.

The columns of the cost modifier library are described in View a Cost Modifier Library.

To add, edit, or delete a cost modifier record, see Add, Edit, or Delete a Cost Modifier.

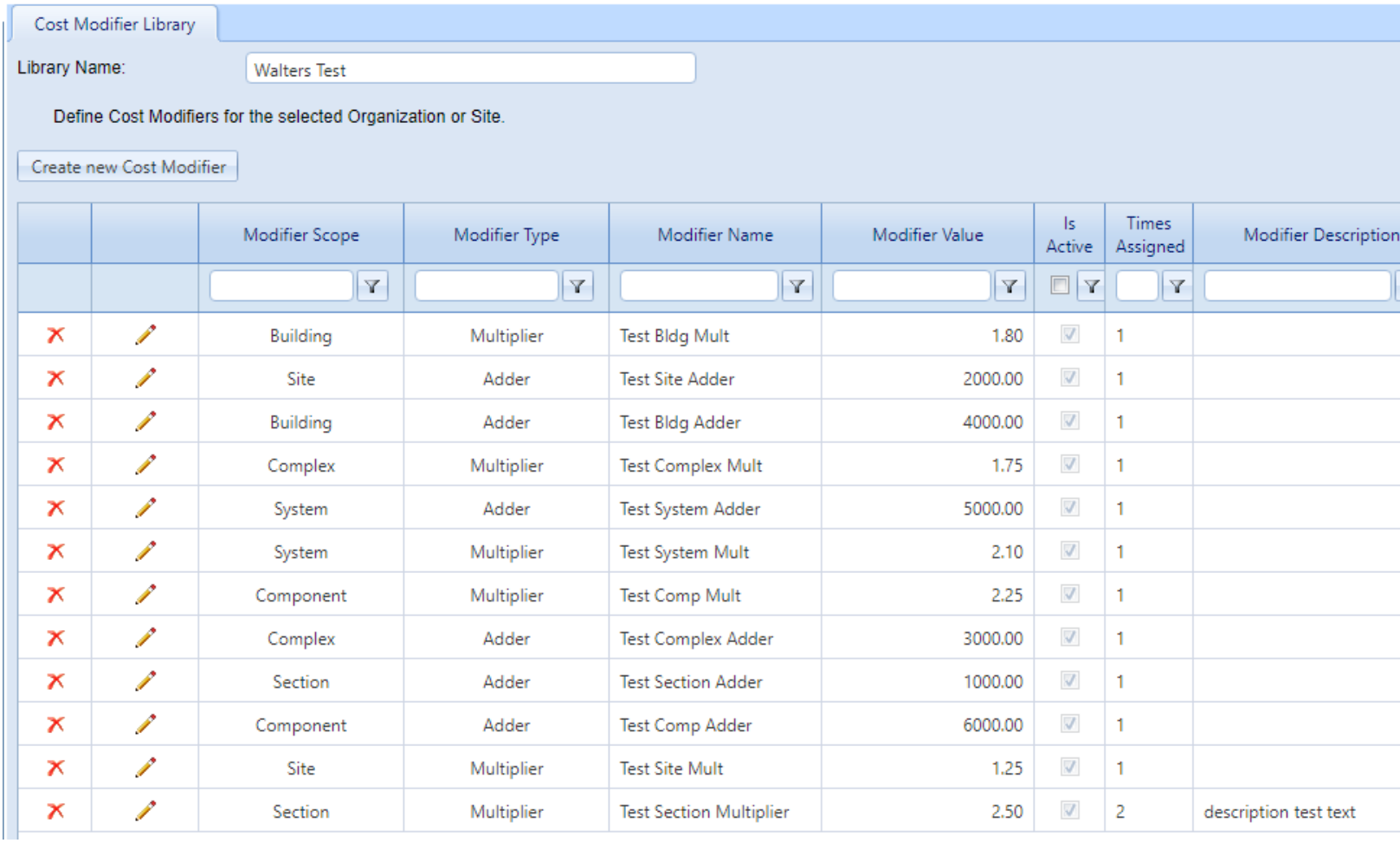
Related Links

- About Cost Modifiers
- View a Cost Modifier Library
- Edit a Cost Modifier Library
- Delete a Cost Modifier Library
- Add, Edit, or Delete a Cost Modifier

Edit a Cost Modifier Library

To edit a cost modifier library,

- Select Tools > Library > Cost Modifiers from the main menu.
- Expand the navigation tree at the left to show existing cost modifier libraries.
- Select the library you wish to edit. The Cost Modifier Library tab will be displayed in the content area.



		Modifier Scope	Modifier Type	Modifier Name	Modifier Value	Is Active	Times Assigned	Modifier Description
		Building	Multiplier	Test Bldg Mult	1.80	☑	1	
		Site	Adder	Test Site Adder	2000.00	☑	1	
		Building	Adder	Test Bldg Adder	4000.00	☑	1	
		Complex	Multiplier	Test Complex Mult	1.75	☑	1	
		System	Adder	Test System Adder	5000.00	☑	1	
		System	Multiplier	Test System Mult	2.10	☑	1	
		Component	Multiplier	Test Comp Mult	2.25	☑	1	
		Complex	Adder	Test Complex Adder	3000.00	☑	1	
		Section	Adder	Test Section Adder	1000.00	☑	1	
		Component	Adder	Test Comp Adder	6000.00	☑	1	
		Site	Multiplier	Test Site Mult	1.25	☑	1	
		Section	Multiplier	Test Section Multiplier	2.50	☑	2	description test text

The Cost Modifiers window will display, with the name of the library at the top. You can now edit the library name, create new cost modifiers to include in the library, or edit existing modifiers.

The columns of the cost modifier library are described in View a Cost Modifier Library.

To add, edit, or delete a cost modifier record, see Add, Edit, or Delete a Cost Modifier.

Related Links

About Cost Modifiers
View a Cost Modifier Library
Add a Cost Modifier Library
Delete a Cost Modifier Library
Add, Edit, or Delete a Cost Modifier

Delete a Cost Modifier Library

To delete a cost modifier library,

- Select Tools > Library > Cost Modifiers from the main menu.
- Expand the navigation tree at the left to show existing cost modifier libraries.
- Select the library you wish to delete. The Cost Modifier Library tab will be displayed in the content area.
- Activate the ✕ Delete button on the toolbar.
- In the confirmation popup window, activate the OK button. (Alternatively, activate Cancel to abandon the deletion.)

Related Links

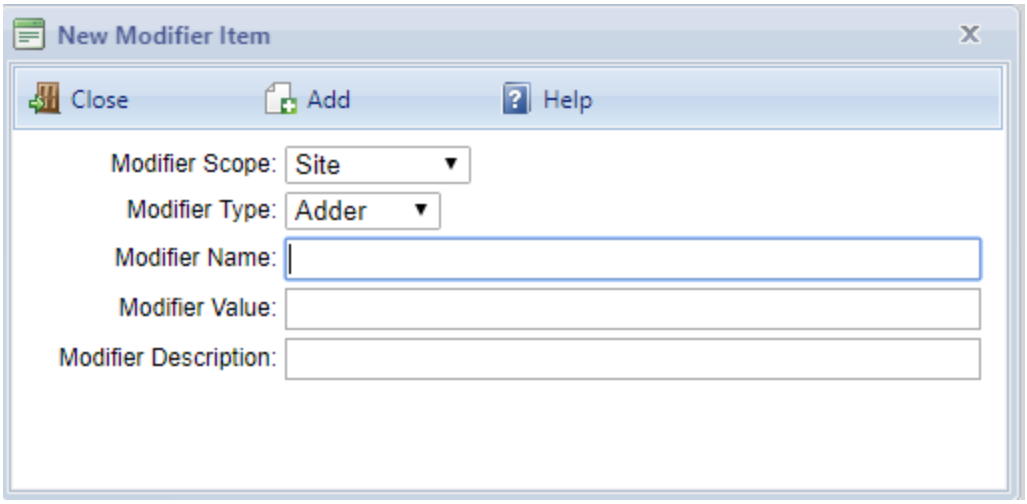
About Cost Modifiers
View a Cost Modifier Library
Add a Cost Modifier Library
Edit a Cost Modifier Library
Add, Edit, or Delete a Cost Modifier

Add, Edit, or Delete a Cost Modifier

Add a Cost Modifier

To add a cost modifier,

- In the Cost Modifier window, activate Create New Cost Modifier. The "New Modifier Item" popup will appear.



- Enter the following information:
  - Modifier Scope. The level in the BUILDER hierarchy at which the modifier can be assigned. For example, if you select System, the modifier can only be assigned to a System.
  - Modifier Type. The modifier can either be a multiplying factor (Multiplier) or a fixed cost (Adder) that will be applied to all child Sections below the parent level at which the modifier is assigned.
  - Modifier Name. Any alphanumeric value. For example, “Site Security Multiplier”. Single quotes (') are not allowed.
  - Modifier Value. Must only be a numeric value; decimal values are allowed. Examples of valid Multiplier values: .5, 2, 3.25, 5.02. Examples of valid Adder values: 100, 198.88, 2500.00.
  - Modifier Description. Optional; any alphanumeric value.
  - Optional Checkbox. A customized checkbox may also appear, if enabled in BUILDER’s Application Settings. More information about this checkbox is available in the Builder AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. documentation in the description about Cost Modifier Configuration in the Advanced tab of Application Settings.
- Activate Add on the popup toolbar. The new modifier is added to the list of modifiers in the Cost Modifiers window, and two additional columns are displayed for the modifier:
  - Is Active. Indicates whether a modifier is active; default is active (checked). If a modifier is changed to inactive (unchecked), any existing cost modifier assignments of this type will remain in place but will not be displayed in the New Modifier Assignment window and will not be used in calculations. Also, the modifier will no longer be available for selection in the "New Modifier Assignment "popup. You can use active/inactive to test how different modifiers affect replacement costs without having to unassign and reassign the modifiers each time. For example, if a modifier is assigned to a Building and you want to see what the costs would be without the modifier, you can uncheck “Is Active” in the Cost Modifiers Library window. The modifier will no longer appear in the list of modifiers assigned to the Building and will not be included in cost calculations. To once again display the modifier and include it in calculations, return to the Cost

Modifier Library window and check “Is Active.”
- Times Assigned. The number of times the modifier has been assigned.

Edit a Cost Modifier

To edit a cost modifier,

- In the Cost Modifier window, select the modifier you wish to edit.
- Activate the pencil icon to the left of the row. The appearance of the row will change.
- Edit Modifier Name, Modifier Value, Is Active, and/or Modifier Description.
- Activate the blue checkmark icon to save your changes.

Delete a Cost Modifier

- In the Cost Modifier window, select the modifier you wish to delete.
- Activate the delete (✕) icon to the left of the row. The "Confirm Action" popup window will appear.

  Note: Deleting a modifier will also remove all assignments of that modifier in the BUILDER hierarchy.

- Activate OK to confirm the deletion.

Related Links

About Cost Modifiers
View a Cost Modifier Library
Add a Cost Modifier Library
Edit a Cost Modifier Library
Delete a Cost Modifier Library

Inflation Books

Service Life Books

About Service Life Books

Data regarding the service life expectancy, in years, of all types of Building Component-Sections is built into BUILDER. The data BUILDER uses is contained in one or more service life books.

A default service life book is provided for the asset tree as a whole and is all that is required. Optionally, a customized service life book can be used in place of the default, or multiple customized service life books can be created in association with different Organizations or Sites in the tree. This topic explains how to do this.

Permissions Note: Depending on the operation (e.g., adding vs. deleting a book), configuring reference data requires either Work Planner or Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other

users of the program. Master Planner is the highest level of user privileges. permission for the Organization or Site that the reference book applies to. The ability to assign a custom reference book to an Organization or Site depends on your permissions for that Organization or Site.

BUILDER comes with its own data regarding the service life expectancy, in years, of all types of Building Component-Sections. It uses the expected service life data to

- estimate the remaining service life of a Component-Section on the basis of its life expectancy and condition
- estimate the rate of deterioration in the condition index of a Component-Section when no more than one inspection has been recorded

With respect to the latter point, the service life expectancy data is useful in calculating a current **CI**[1]Condition Index when only one inspection is available. Where multiple inspections have been recorded, BUILDER can compute a **CI**[2]Condition Index trajectory based on the past inspections.

Service Life Data

The service life data used by BUILDER is contained in one or more service life books. Multiple service life books can be associated with different Organizations or Sites in the tree, as desired.

Default Service Life Book

The default service life book provided with BUILDER is named "Reference." It cannot be edited, and it is associated with the top level of the asset tree. The scope of its data, therefore, is the entire asset tree.

You can choose to depend exclusively on the data in Reference, or you can create one or more custom service life books.

Custom Service Life Book(s)

To create custom service life data, you can either

a. Edit an existing service life book (except for Reference), or
b. Create one or more new service life books. You can use Reference, or another existing service life book, as the starting point for the new service life book.

By assigning a custom service life book to an Organization or Site, you can control the scope of that service life book, applying custom values to either all or part of the asset tree.

---

[1]Condition Index

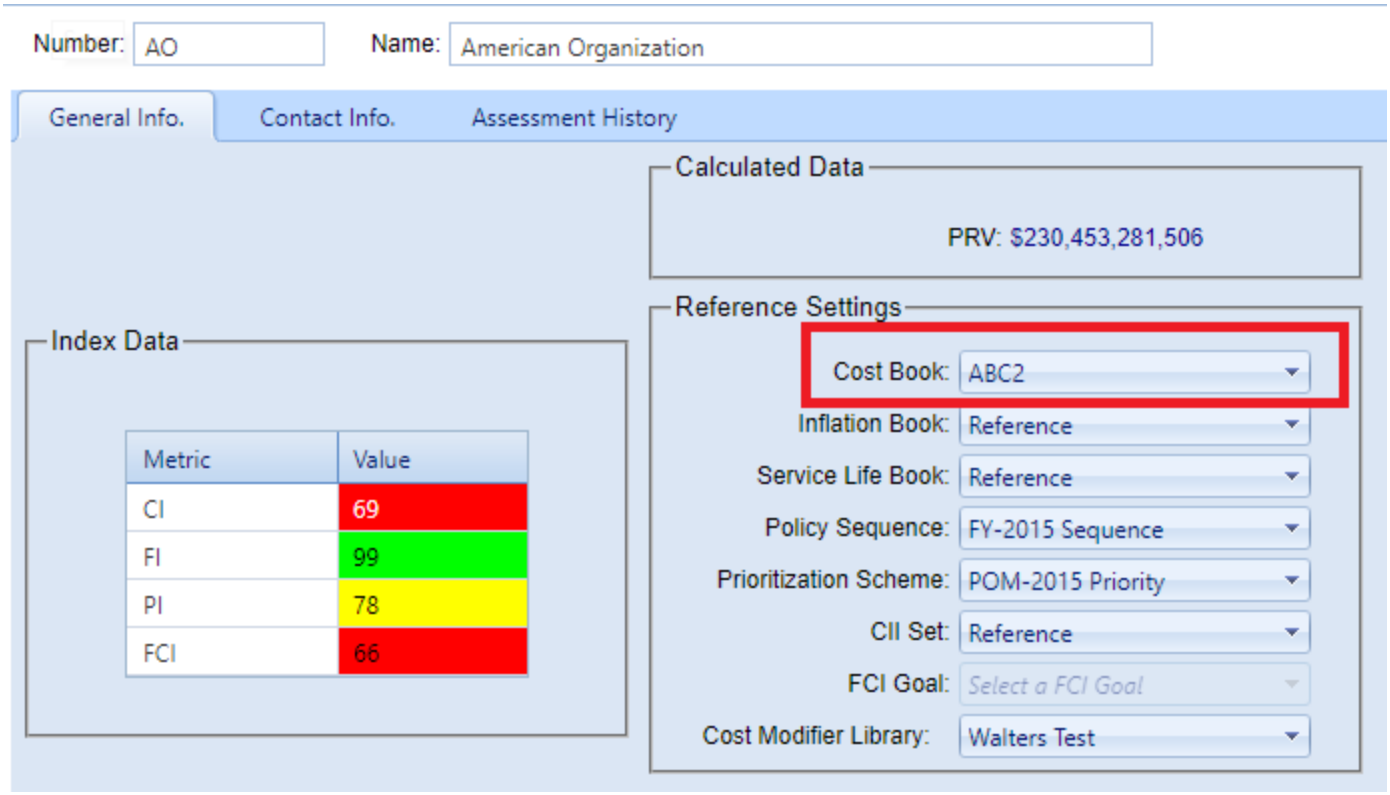
[2]Condition Index

Note: The only data that you can change in the service life book is the service life and paint life for each Component-Section desired.

Assign a Service Life Book to an Organization or Site

You can create multiple service life books, and assign a separate book to any Organization or Site within your permissions scope, as desired. This is done as follows:

- In Inventory mode, navigate to and select the Organization or Site to assign the service life book to.
- At the General Information tab, select the service life book from the dropdown menu in the Reference Settings section (requires elevated permissions).

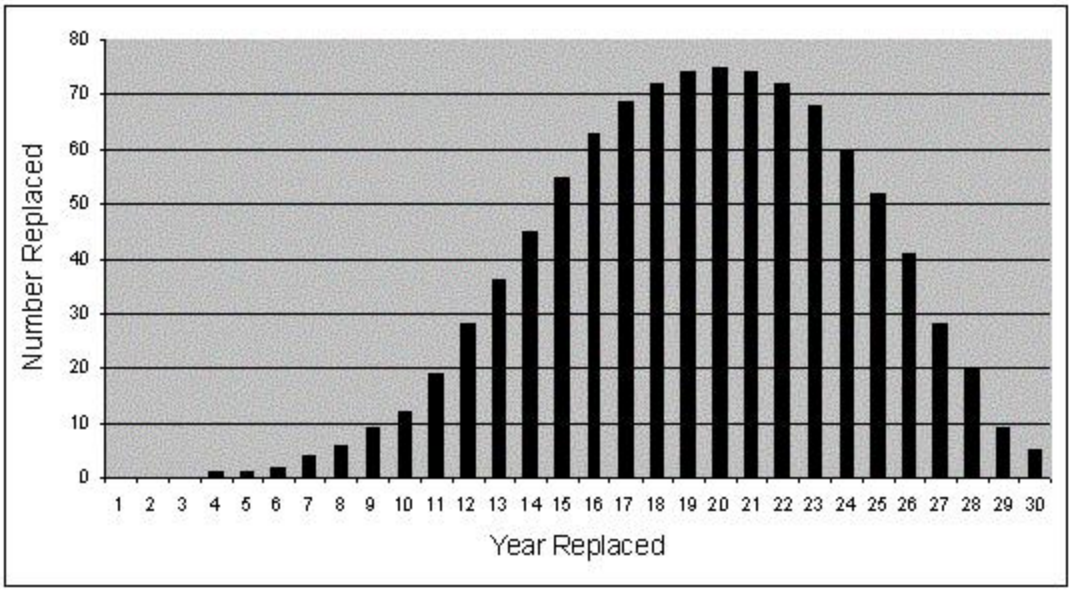


- Activate Save on the content area toolbar.

Example

An example of how service life data is gathered and used may be helpful. Suppose the BUILDER service life data indicates that a heavy grade carpet under moderate traffic levels has a life expectancy of 20 years. The 20 years is obviously an average of some sort, and you should know that the average is determined more by the experiences and judgment of multiple facility managers than by statistically accurate field data. Gathering statistically valid data is virtually impossible, even for the manufacturer of a specific carpet type, but especially for the BUILDER database which must match service life with a very generic Component-Section type. If you

installed a heavy grade carpet into 1000 Buildings where the traffic level would be classified as moderate and you tracked how many years each carpet remained in the Building before it was replaced, the graph of your data might look something like shown below (keep in mind that this is simply a conceptual picture and does not represent actual data.).



You can see from this simple graph that by year 20, the majority of the carpet in the 1000 Buildings has been replaced. You can also see that all along the way, some of the carpet is being replaced sooner than 20 years and some later than 20 years. What makes the difference? Many factors may affect how long a particular carpet may be in use: level of daily and periodic cleaning, climate, actual quality of the carpet and of its installation, mission requirements of the tenant, etc. For those factors which affect the condition of the carpet, BUILDER attempts to relate an estimated remaining service life for a specific carpet Component-Section with the condition index of that Section. The **CI**[1]Condition Index of the carpet at any given age gives a good indication of whether the carpet will last less than or more than the average life span. When you perform the process of rolling up CIs for your inventory, one of the computations in the series is to recompute the remaining service life of the Component-Section based on its current **CI**[2]Condition Index, its rate of deterioration during the time between its last two condition assessments, and the expected service life of the item.

As you can see, the expected service life is a key component in determining two important measures of how well a particular Component-Section is doing. The two are its current condition index and its remaining service life. Service life is used to determine an expected deterioration rate in estimating current condition in the absence of sequential condition assessment data. It is also used in the models that compute remaining service life on the basis of current **CI**[3]Condition Index and rate of deterioration.

---

[1]Condition Index

[2]Condition Index

[3]Condition Index

Source of Service Life Data

The service life data in BUILDER's Reference set was derived from data collected during many years of research at ERDC-CERLU.S. Army Engineer Research and Development Center, Construction Engineering Research Laboratory, both during the BUILDER project and by an earlier study that resulted in the Maintenance Resource Prediction Model (MRPM), which has served as the foundation for a number of facility maintenance models. Your experience, however, may be different in terms of how long items last in your Buildings. For example, your Buildings may be in a very wet, windy climate and the roof surfaces may need to be replaced more often, paint may need to be applied more often, wood windows may need to be replaced sooner than the data indicates. BUILDER allows you to edit the service life data to reflect your knowledge and experience with the various Building Components you manage.

Service Life Book Tasks

Tasks you can perform are to

Add a Service Life Book
Edit Service Life Data
Delete a Service Life Book
Assign a Service Life Book to an Organization or Site

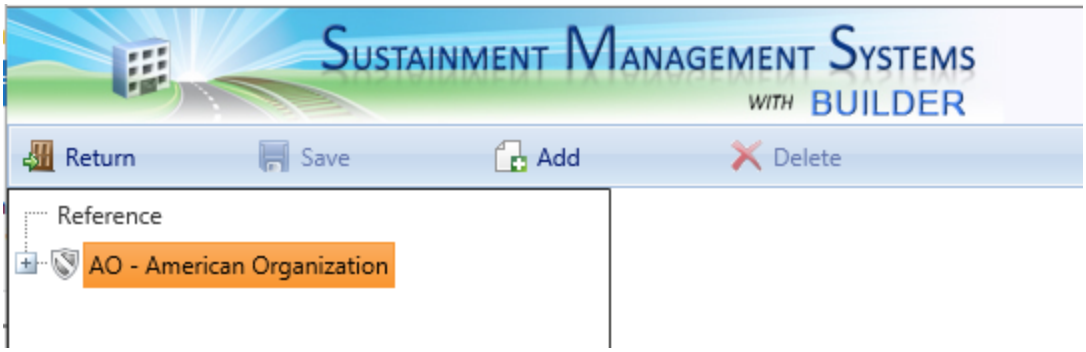
Add a Service Life Book

This topic explains how to create a custom service life book. The topic Edit Service Life Data explains how to add or edit data in a custom service life book.

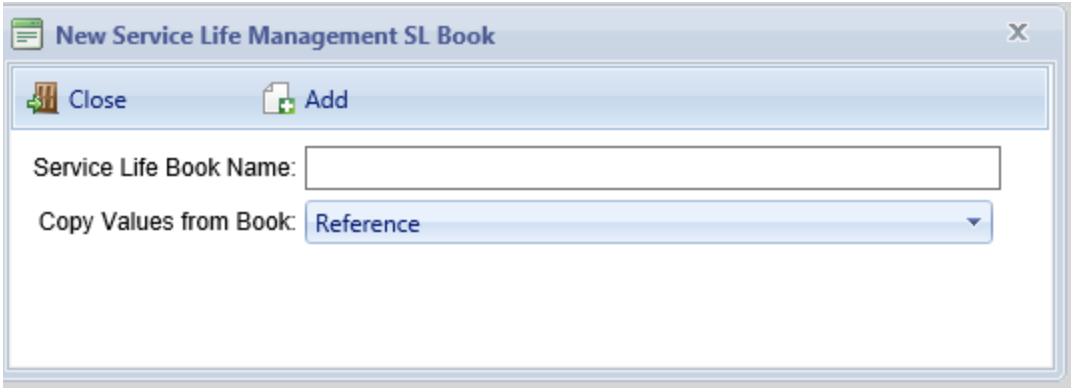
Permissions Note: Adding a custom service life book requires Work Planner permission level or above at the target Organization or Site.

To add a custom service life book,

- At the main menu, select Library > Service Life Books. The display will change to the service life book page:

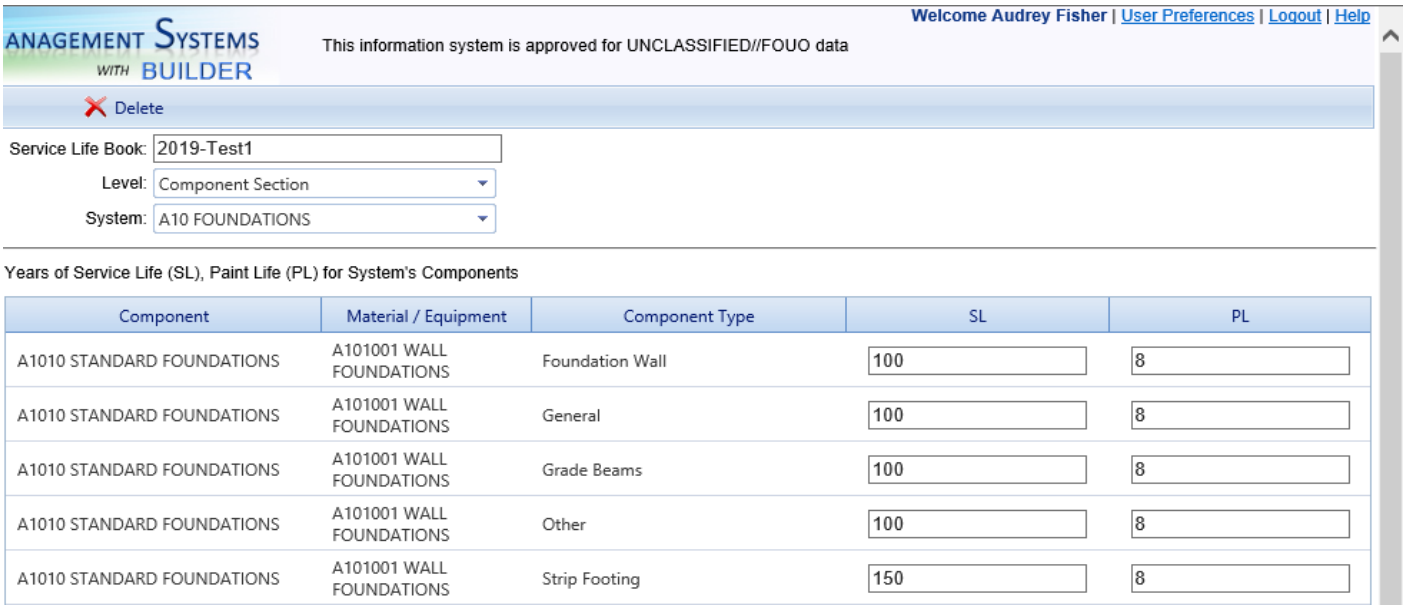


- Expand the navigation tree and navigate to the Organization or Site you wish to attach the custom service life book to.
- Activate Add on the main toolbar. The "New Service Life Management SL Book" popup will appear.
- In the Service Life Book Name field, enter a name for the new book.



- At the Copy Values from Book field, select from the dropdown list another service life book to copy from.

- Activate Add on the popup toolbar. A table of service life data will appear in the content pane.



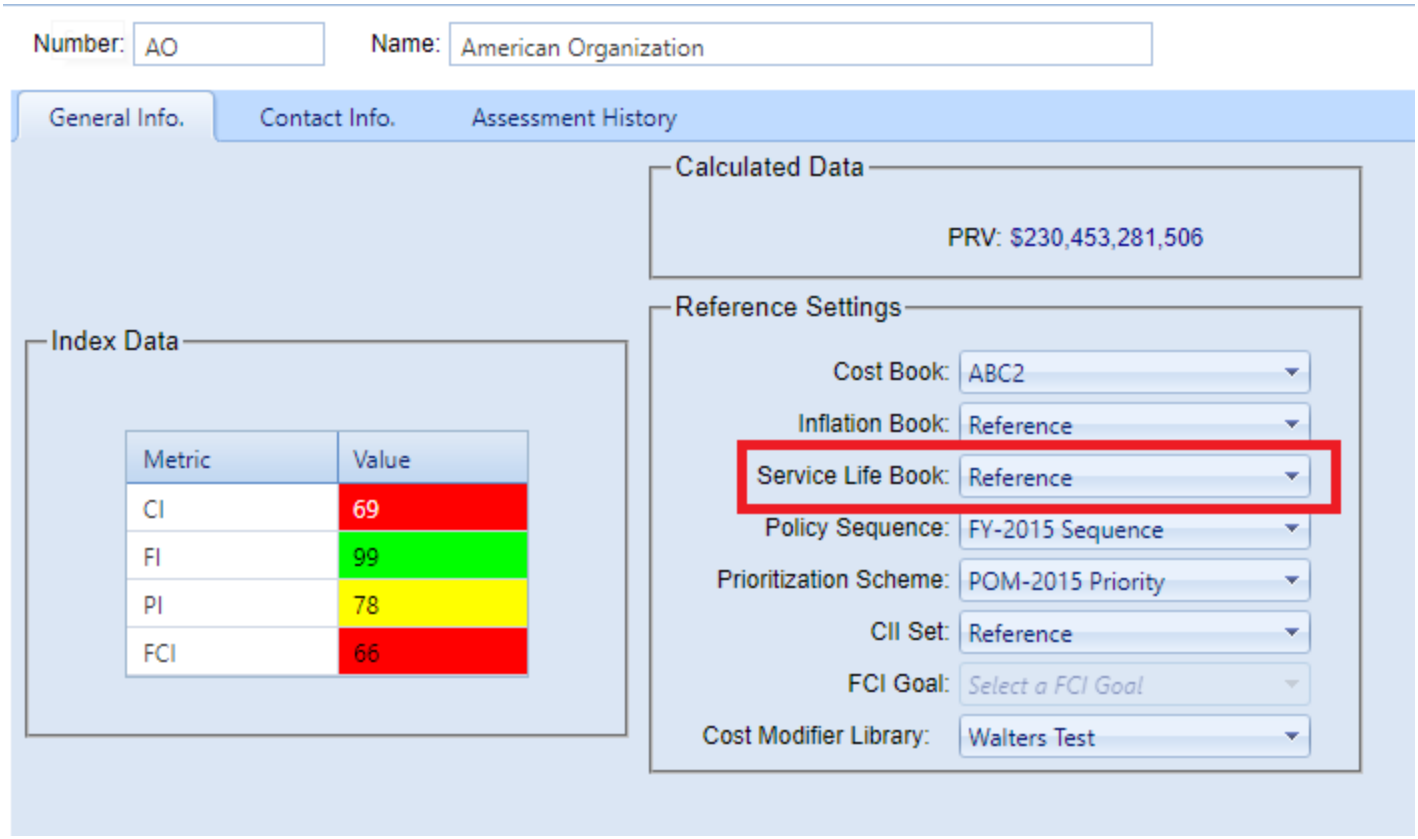
- To change service life: Edit fields in the SL column as desired. For more detail about bringing desired fields into view, see the "Navigate Data Fields" section in Edit Service Life Data.
- To change paint life: Edit fields in the PL column as desired.
- When finished, activate Save on the main toolbar.
- Activate Return on the main toolbar. You should be returned to the location in the inventory, condition, or functionality ribbon you came from.

To assign the new custom service life book to an Organization or Site, see Assign a Service Life Book to an Organization or Site below.

Assign a Service Life Book to an Organization or Site

You can create multiple service life books, and assign a separate book to any Organization or Site within your permissions scope, as desired. This is done as follows:

- In Inventory mode, navigate to and select the Organization or Site to assign the service life book to.
- At the General Information tab, select the service life book from the dropdown menu in the Reference Settings section (requires elevated permissions).



- Activate Save on the content area toolbar.

Related Links

[About Service Life Books]
[Edit Service Life Data]
[Delete a Service Life Book]
[Assign a Service Life Book to an Organization or Site]

Edit Service Life Data

This topic covers how to add or edit data in a custom service life book. If the custom book still needs to be created, the topic Add a Service Life Book explains how.

Permissions Note: Editing a custom service life book requires Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. permission level or above at the target Organization or Site.

Objective: Edit service life data

Tasks:

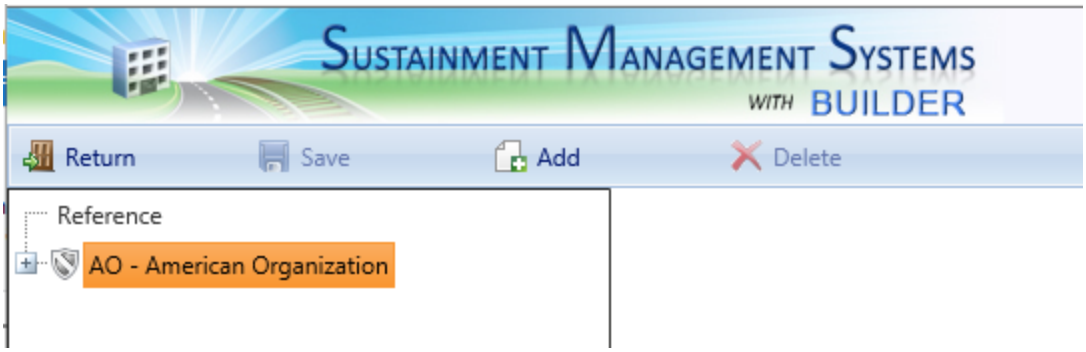
A. Open custom service life book
B. Navigate data fields
C. Edit data
D. Save changes

Steps for each of the tasks are listed below.

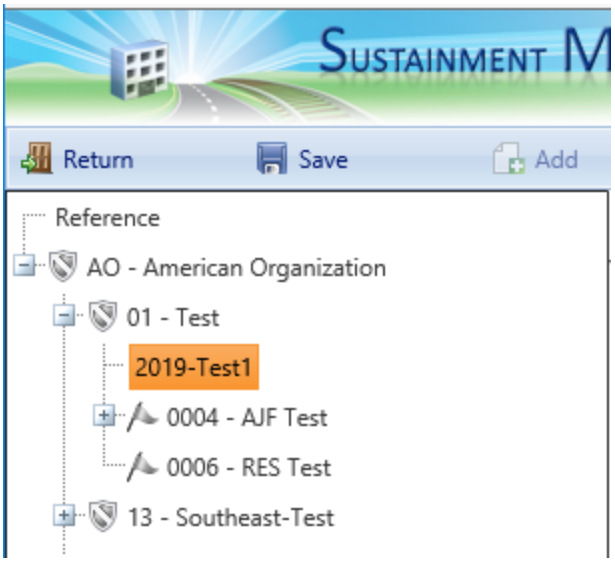
Task: Open a Custom Service Life Book

To open a custom service life book,

- At the main menu, select Tools > Library > Service Life Books. The display will change to the service life books page:



- Expand the navigation tree, then navigate to and select the service life book you wish to edit, as shown directly below. A table of service life and paint life will appear in the content pane.



MENT SYSTEMS WITH BUILDER

Welcome Audrey Fisher | User Preferences

This information system is approved for UNCLASSIFIED//FOUO data

Delete

e Book: 2019-Test1

Level: Component Section

System: A10 FOUNDATIONS

ervice Life (SL), Paint Life (PL) for System's Components

Component	Material / Equipment	Component Type	SL	PL
ANDARD FOUNDATIONS	A101001 WALL FOUNDATIONS	Foundation Wall	100	8
ANDARD FOUNDATIONS	A101001 WALL FOUNDATIONS	General	100	8
ANDARD FOUNDATIONS	A101001 WALL FOUNDATIONS	Grade Beams	100	8
ANDARD FOUNDATIONS	A101001 WALL FOUNDATIONS	Other	100	8
ANDARD FOUNDATIONS	A101001 WALL FOUNDATIONS	Strip Footing	150	8

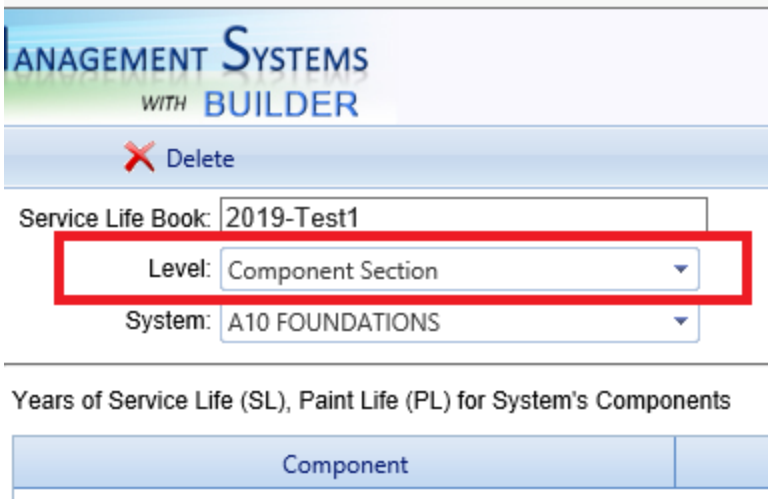
Task: Navigate Data Fields

You can use one or a combination of the navigation options described below to bring desired service life records into view Level, System, and/or page navigation.

Level

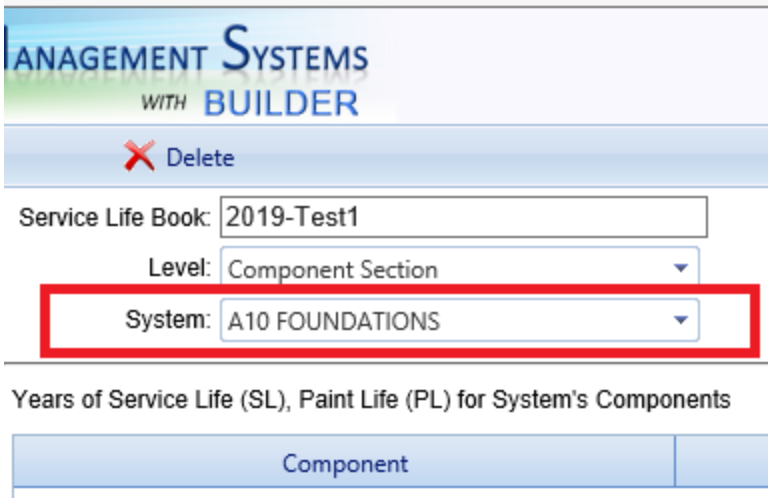
Just below the name of the service life book is the Level field with a dropdown list select the inventory hierarchy level to be displayed in the table.

Note: Currently the only level available is Component-Section.



System

Below the Level field is System, with a dropdown list to select the system to be displayed.



Page Navigation

At the bottom of the table, the Page size field allows you to select how many records to see on one page (from pre-set options). Page navigation allows you to select a page number, or to step forward or backwards through the pages of records.

Task: Edit Data

In the service life table, only the values in the SL and PL columns can be edited. The service life book name may also be edited.

- To change service life: Edit fields in the SL column as desired.
- To change paint life: Edit fields in the PL column as desired.
- To change the name of the service life book: Edit the name in the Service Life Book field just below the main toolbar.

Task: Save Changes

Activate Save on the main toolbar as desired to save as you go along.

When finished making changes,

- Activate Save on the main toolbar.
- Activate Return on the main toolbar. You should be returned to the location in the inventory, condition, or functionality ribbon you came from.

Related Links

[About Service Life Books]
[Add a Service Life Book]
[Delete a Service Life Book]
[Assign a Service Life Book to an Organization or Site]

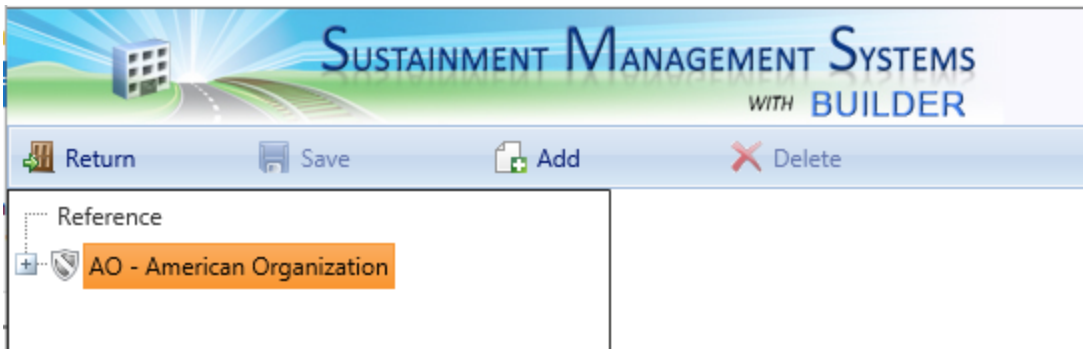
Delete a Service Life Book

This topic explains how to delete a custom service life book. The original Reference service life book cannot be deleted.

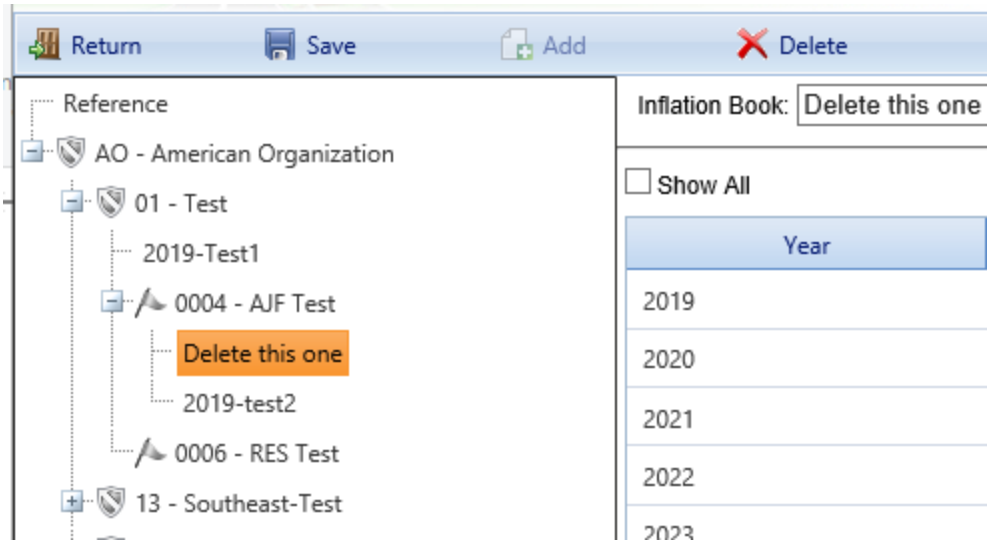
Permissions Note: Deleting a service life book requires Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. permission level or above at the target Organization or Site.

To delete a service life book,

- At the main menu, select Tools > Library > Service Life Books. The display will change to the service life books page:



- Expand the navigation tree, then navigate to and select the service life book you wish to delete, as shown directly below.



- Activate ❌ Delete on the main toolbar.
- In the confirmation popup, activate the OK button. (Alternatively, activate the Cancel button to cancel the operation.)
- Activate Return on the main toolbar. You should be returned to the location in the inventory, condition, or functionality ribbon you came from.

Related Links

[About Service Life Books]
[Add a Service Life Book]
[Edit Service Life Data]
[Assign a Service Life Book to an Organization or Site]

About Inflation Books

BUILDER has an embedded inflation module that is used in tandem with the cost module for work planning cost estimates and for inventory. The data used by the inflation module is contained in one or more inflation books.

A default inflation book is provided for the asset tree as a whole and is all that is required. Optionally, a customized inflation book can be used in place of the default, or multiple customized inflation books can be created in association with different Organizations or Sites in the tree. This topic explains how to do this.

Permissions Note: Depending on the operation (e.g., adding vs. deleting a book), configuring reference data requires either Work Planner or Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. permission for the Organization or Site that the reference book applies to. The ability to assign a custom reference book to an Organization or Site depends on your permissions for that Organization or Site.

Inflation Data

The inflation data used by the inflation module is contained in one or more inflation books. Multiple custom inflation books can be associated with different Organizations or Sites in the tree, as desired.

Default Inflation Book

The default inflation book provided with BUILDER is named "Reference." It cannot be edited, and it is associated with the top level of the asset tree. The scope of its data, therefore, is the entire asset tree.

You can choose to depend exclusively on the data in Reference, or you can create one or more custom inflation books.

Custom Inflation Book(s)

To create custom inflation data, you can either

a. Edit an existing inflation book (except for Reference), or
b. Create one or more new inflation books. You can use Reference, or another existing inflation book, as the starting point for the new inflation book.

By assigning a custom inflation book to an Organization or Site, you can control the scope of that inflation book, applying custom values to either all or part of the asset tree.

Note: The only data that you can change in the inflation book is the inflation rate for each year, from the present forward.

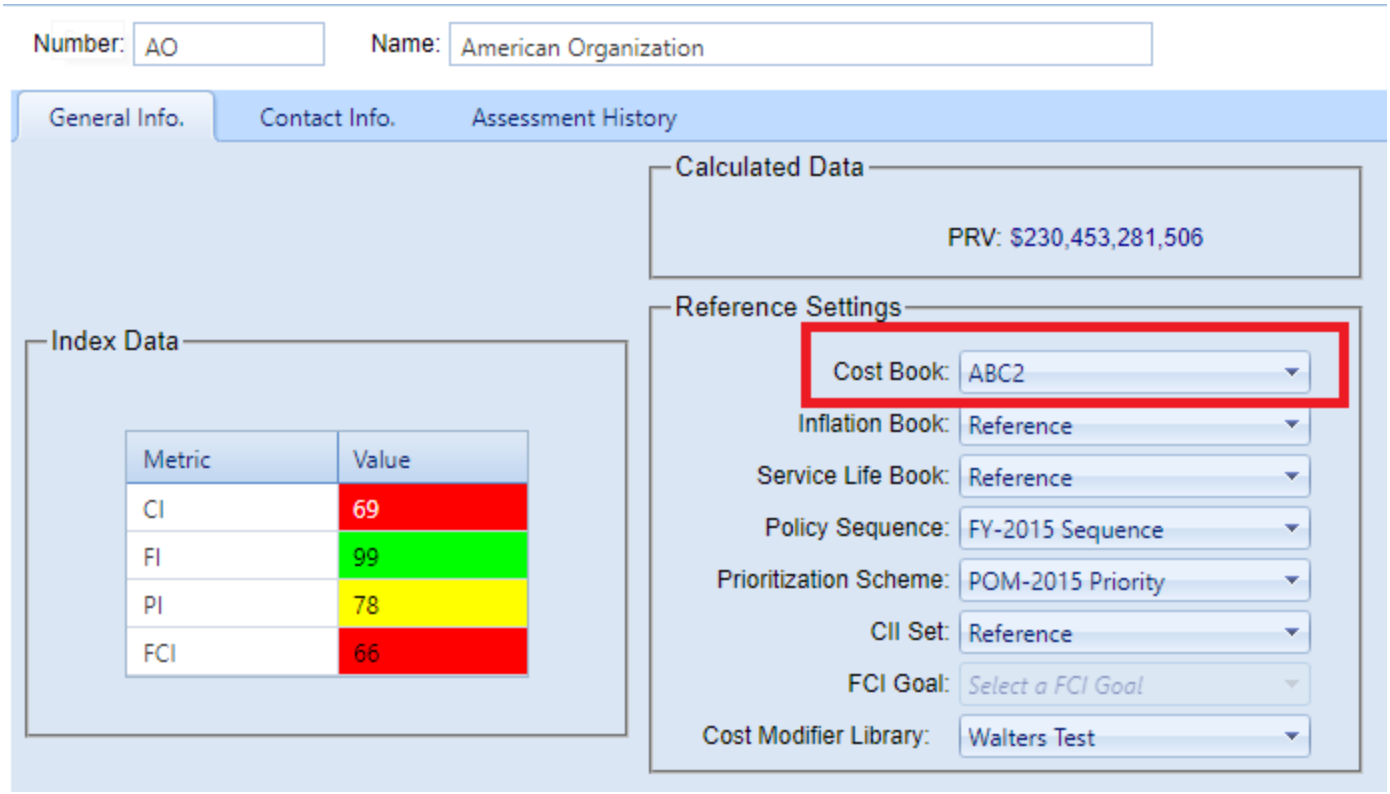
Inflation Factor Used in Cost Books

The inflation factor used in cost books is computed based on the base year of the cost data and the inflation rates given in the default Reference inflation book. If the cost data corresponds to the data in the Reference cost book, then the cost module uses a fixed year for the base year. If you add your own cost book and enter a unit cost different from the Reference set, then the cost module saves the year in which you input that data as the base year for inflation computations.

Assign an Inflation Book to an Organization or Site

You can create multiple inflation books, and assign a separate book to any Organization or Site within your permissions scope, as desired. This is done as follows:

- In Inventory mode, navigate to and select the Organization or Site to assign the inflation book to.
- At the General Information tab, select the inflation book from the dropdown menu in the Reference Settings section (requires elevated permissions).



- Activate Save on the content area toolbar.

Inflation Book Tasks

Tasks you can perform are to

[Add an Inflation Book](#)
[Edit Inflation Data](#)
[Delete an Inflation Book](#)
[Assign an Inflation Book to an Organization or Site](#)

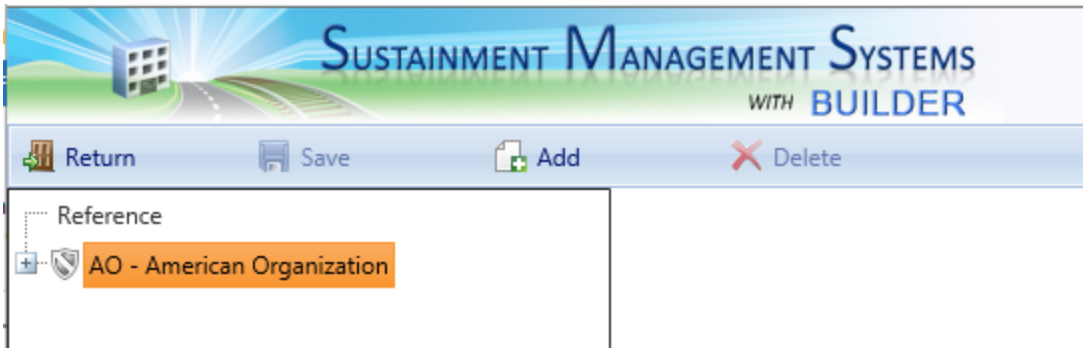
Add a Custom Inflation Book

A custom inflation book is relatively easy to create; it contains much less information than a cost book, for example. The default display shows the current year plus ten more, but you can project farther out if you wish by marking the Show All checkbox. This topic explains how to create a custom inflation book and change inflation rate data.

Permissions Note: Adding a custom inflation book requires Work Planner permission level or above at the target Organization or Site.

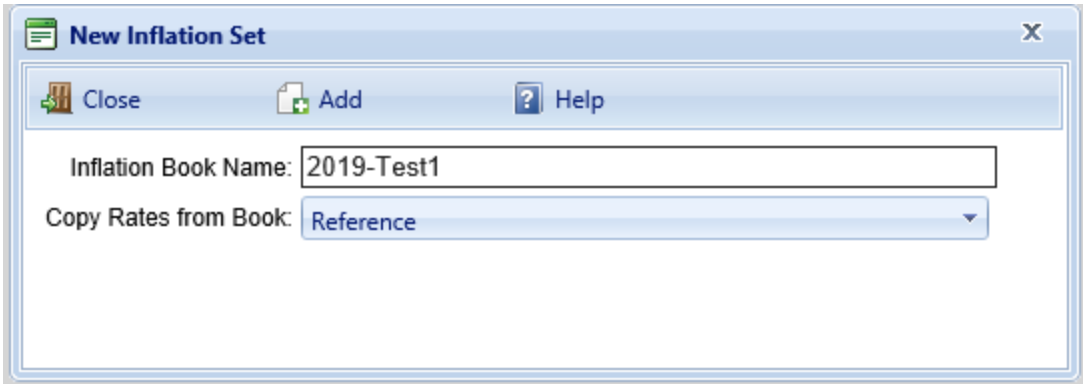
To add a custom inflation book,

- At the main menu, select Tools > Library > Inflation Books. The display will change to the inflation book page:

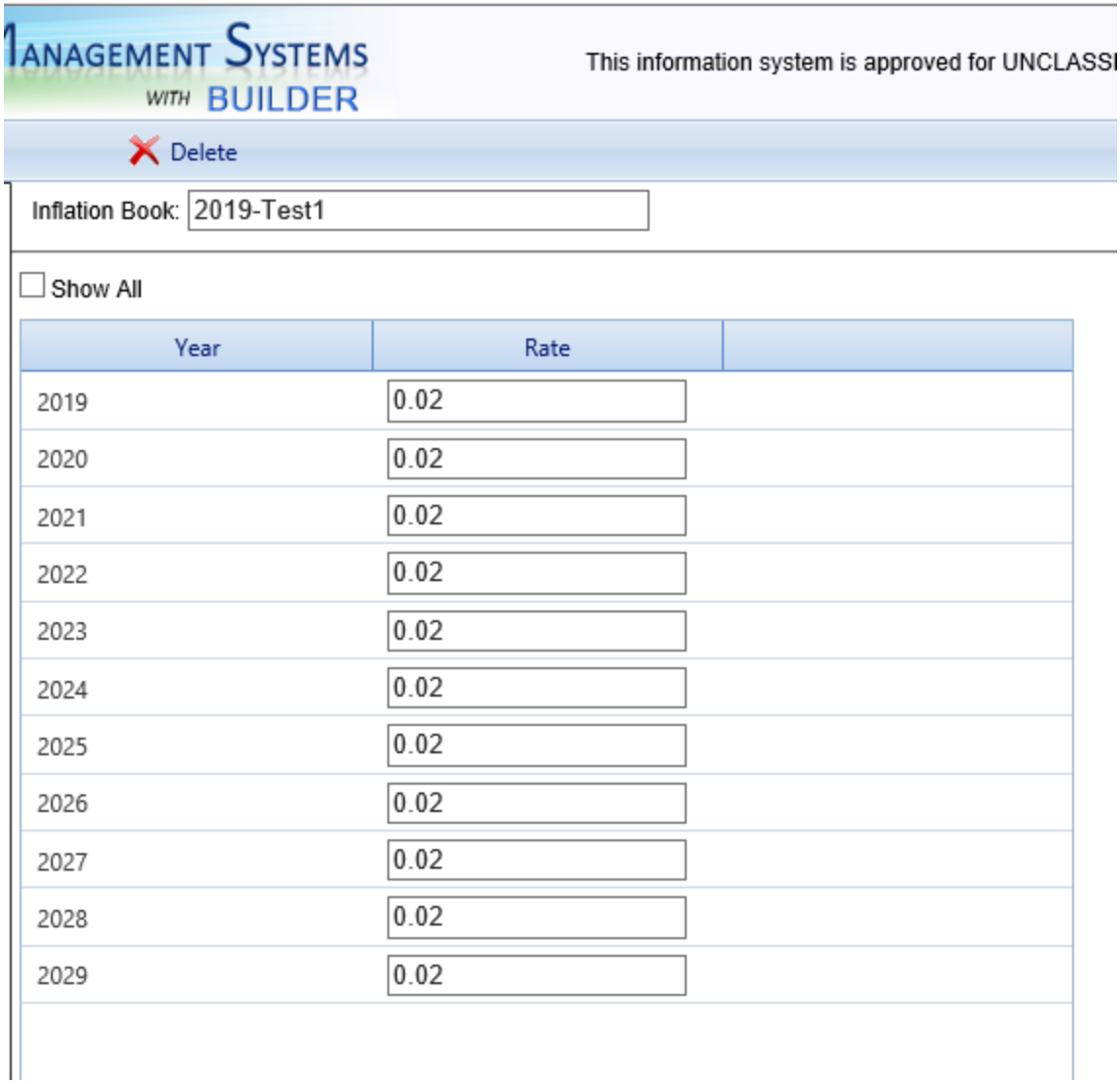


- Expand the navigation tree and navigate to the Organization or Site you wish to attach the custom inflation book to.
- Activate Add on the main toolbar. The "New Inflation Set" popup will appear.

- In the Inflation Book Name field, enter a name for the new book.



- At the Copy Rates from Book field, select from the dropdown list another inflation book to copy from.
- Activate Add on the popup toolbar. A table of inflation rates for the current year forward will appear in the content pane.



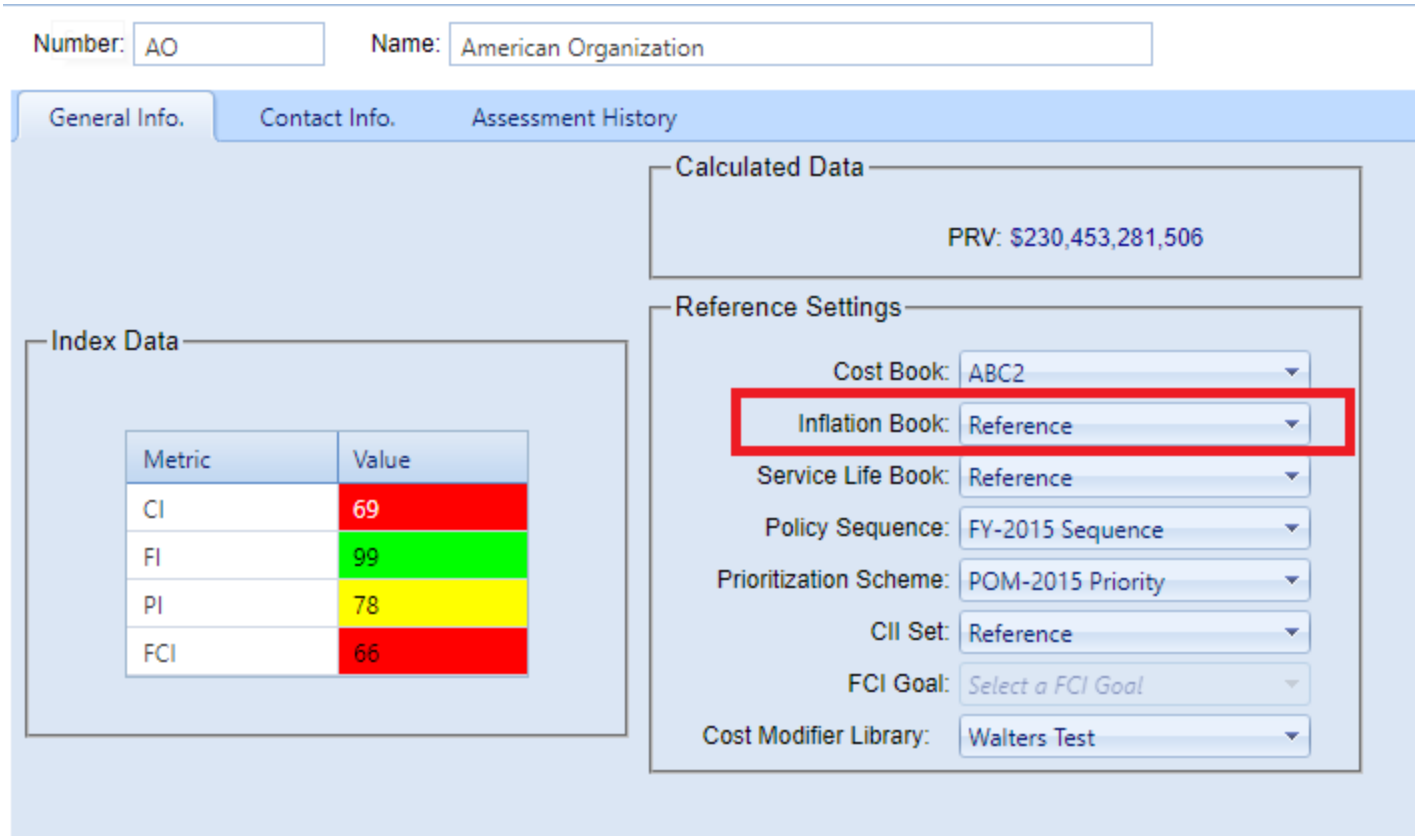
- Edit fields in the Rate column as desired.
- When finished, activate Save on the main toolbar.
- Activate Return on the main toolbar. You should be returned to the location in the inventory, condition, or functionality ribbon you came from.

To assign the new custom inflation book to an Organization or Site, see Assign an Inflation Book to an Organization or Site below.

Assign an Inflation Book to an Organization or Site

You can create multiple inflation books, and assign a separate book to any Organization or Site within your permissions scope, as desired. This is done as follows:

- In Inventory mode, navigate to and select the Organization or Site to assign the inflation book to.
- At the General Information tab, select the inflation book from the dropdown menu in the Reference Settings section (requires elevated permissions).



- Activate Save on the content area toolbar.

Related Links

[About Inflation Books]
[Edit Inflation Data]
[Delete an Inflation Book]
[Assign an Inflation Book to an Organization or Site]

Edit Inflation Data

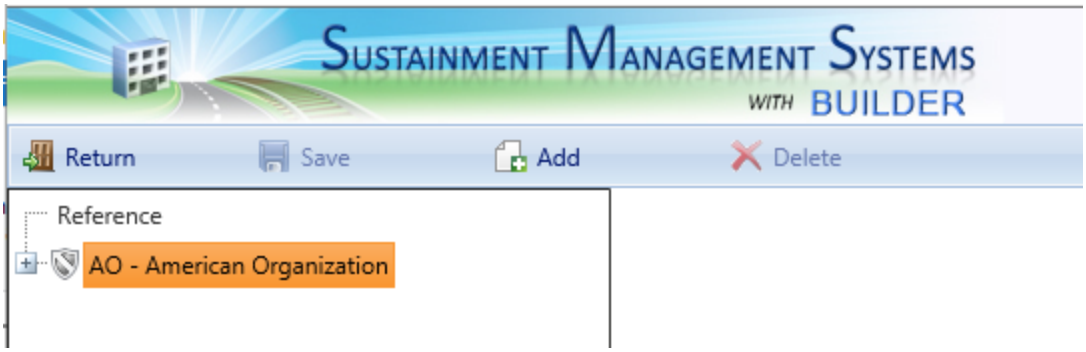
This topic explains how to edit a custom inflation book. The original Reference book cannot be edited.

Permissions Note: Editing a custom inflation book requires Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and

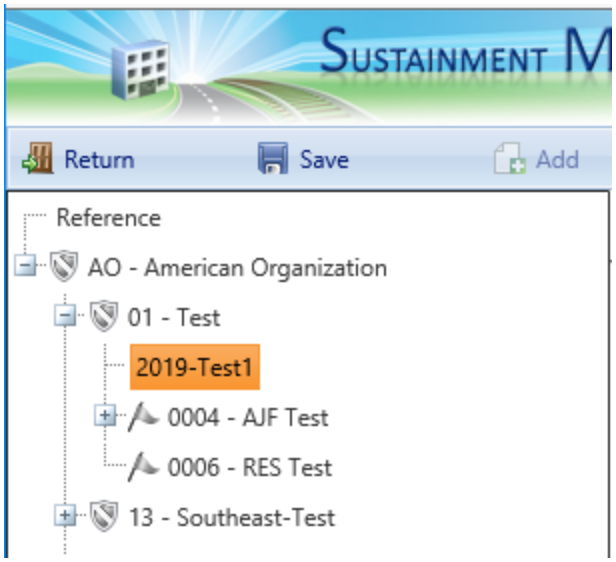
all data saved by other users of the program. Master Planner is the highest level of user privileges. permission level or above at the target Organization or Site.

To edit a custom inflation book,

- At the main menu, select Tools > Library > Inflation Books. The display will change to the inflation books page:

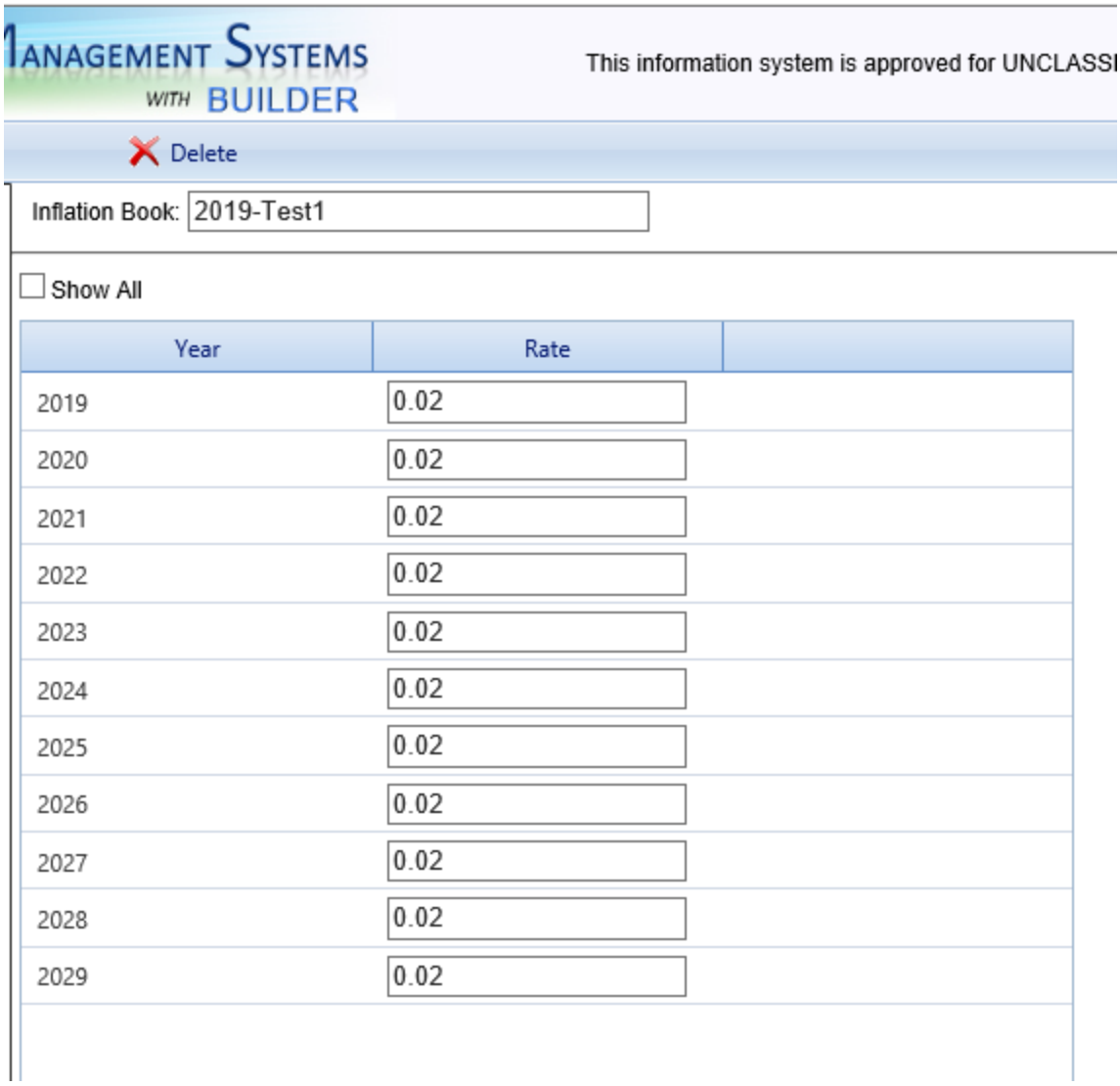


- Expand the navigation tree, then navigate to and select the inflation book you wish to edit, as shown directly below. A table of inflation rates for the current year forward will appear in the content pane.



- To see additional years of data, mark the Show All checkbox above the table.

- To change inflation rates: Edit fields in the Rate column as desired.



- To change the name of the inflation book: Edit the name in the Inflation Book field above the inflation data table (just below the main toolbar).
- When finished, activate Save on the main toolbar.
- Activate Return on the main toolbar. You should be returned to the location in the inventory, condition, or functionality ribbon you came from.

Related Links

About Inflation Books
Add an Inflation Book
Delete an Inflation Book
Assign an Inflation Book to an Organization or Site

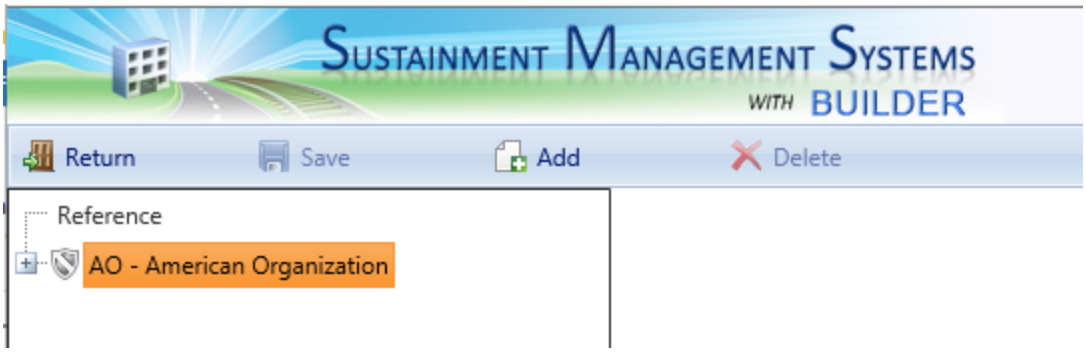
Delete an Inflation Book

This topic explains how to delete a custom inflation book. The original Reference inflation book cannot be deleted.

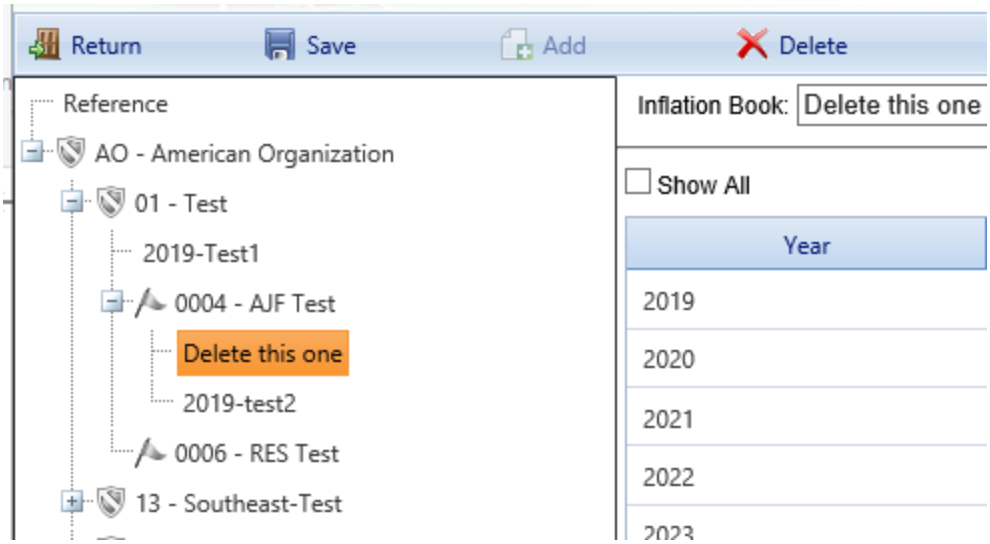
Permissions Note: Deleting an inflation book requires Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. permission level or above at the target Organization or Site.

To delete an inflation book,

- At the main menu, select Tools > Library > Inflation Books. The display will change to the inflation books page:



- Expand the navigation tree, then navigate to and select the inflation book you wish to delete, as shown directly below.



- Activate ❌ Delete on the main toolbar.
- In the confirmation popup, activate the OK button. (Alternatively, activate the Cancel button to cancel the operation.)
- Activate Return on the main toolbar. You should be returned to the location in the inventory, condition, or functionality ribbon you came from.

Related Links

About Inflation Books
Add an Inflation Book
Edit Inflation Data
Assign an Inflation Book to an Organization or Site

CII Books

About Component Importance Index (CII) Books

The component importance index can be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance.

Beginning in BUILDER Version 3.5, users with sufficient permission can use one or more custom CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. books to set the component importance index for Component-Sections. This task is optional, because a default CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An

example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. book is provided for the asset tree as a whole and is all that is required. This topic explains how to create one or more custom CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. books and assign them to selected Organizations and/or Sites.

Permissions Note: Depending on the operation (e.g., adding vs. deleting a book), configuring reference data requires either Work Planner or Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. permission for the Organization or Site that the reference book applies to. The ability to assign a custom reference book to an Organization or Site depends on your permissions for that Organization or Site.

CII Data

The component importance index data used by the CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. module is contained in one or more CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. books. Multiple custom CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. books can be associated with different Organizations or Sites in the tree, as desired.

Default CII Book

The default CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. book provided with BUILDER is named "Reference," and it sets all items to a CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. of 0.50. Reference cannot be edited, and it is associated with the top level of the asset tree. The scope of its data, therefore, is the entire asset tree.

You can choose to depend exclusively on the data in Reference, or you can create one or more custom CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. books.

Custom CII Book(s)

To create custom CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. data, you can either

a. Edit an existing CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. book (except for Reference), or
b. Create one or more new CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. books. You can use Reference, or another existing CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. book, as the starting point for the new CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. book.

By assigning a custom CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. book to an Organization or Site, you can control the scope of that **CII**[1]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. book, applying custom values to either all or part of the asset tree.

Assign a CII Book to an Organization or Site

You can create multiple CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. books, and assign a separate book to any Organization or Site within your permissions scope, as desired. This is done as follows:

- In Inventory mode, navigate to and select the Organization or Site to assign the CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different

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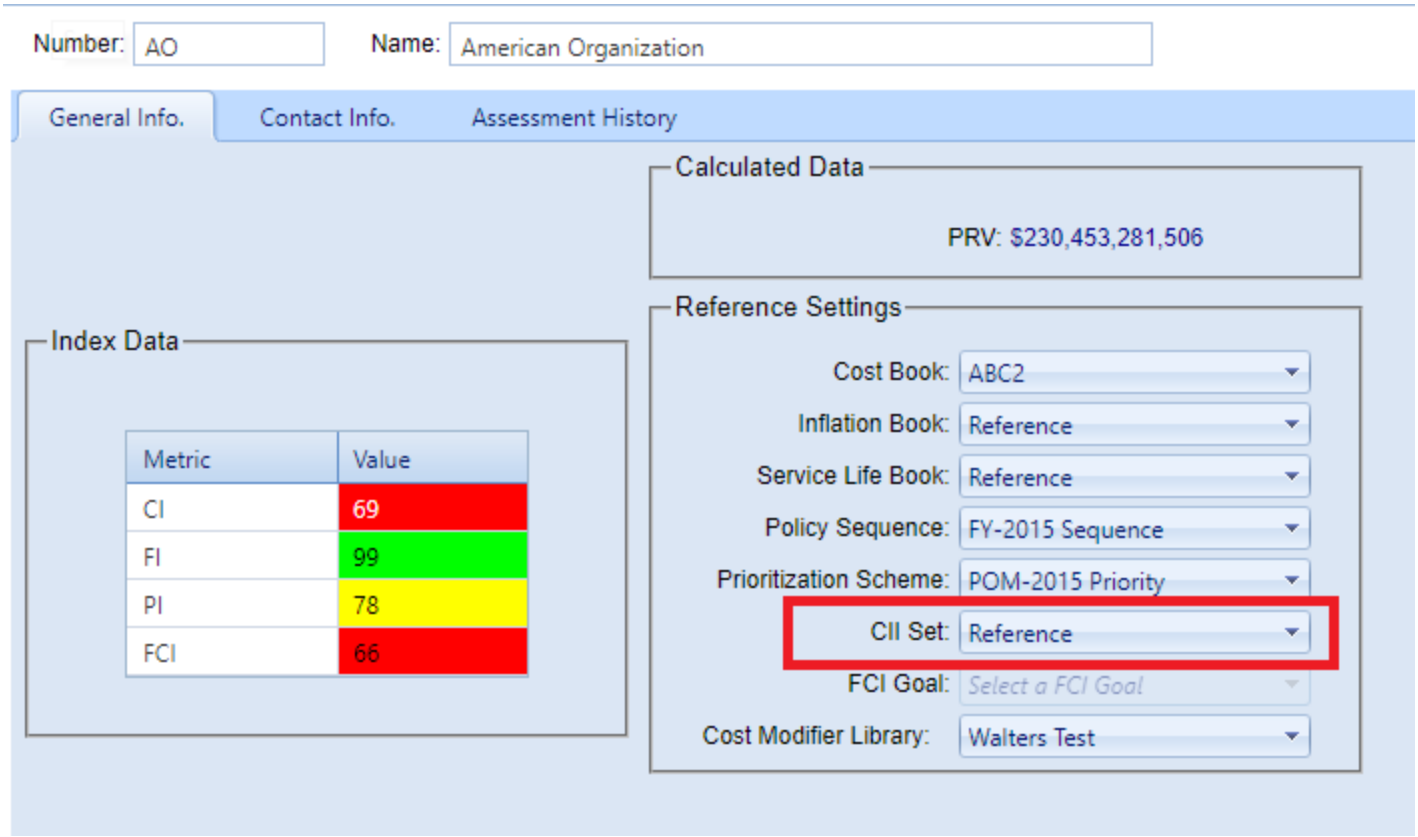
[1]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"

thresholds, or to prioritize them differently based on relative importance. book to.

- At the General Information tab, select the CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. book from the dropdown menu in the Reference Settings section (requires elevated permissions).



- Activate Save on the content area toolbar.

CII Book Tasks

Tasks you can perform are to

[Add a Custom CII Book]
[Edit CII Data]
[Delete a CII Book]
[Assign a CII Book to an Organization or Site]

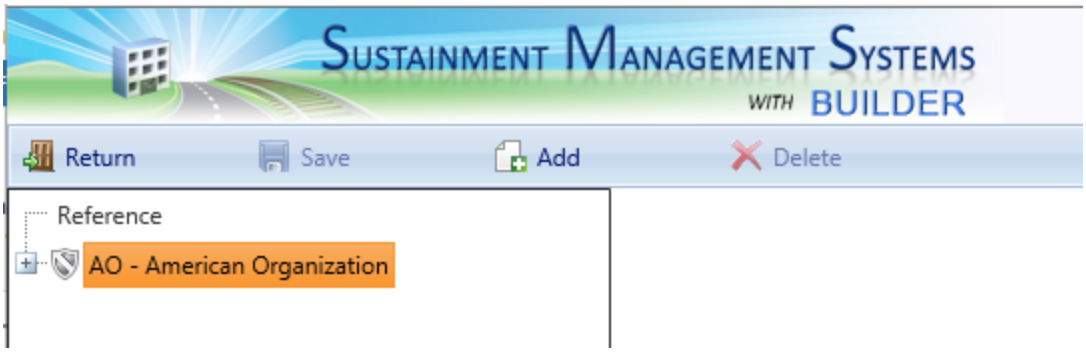
Add a Custom CII Book

This topic explains how to create a custom component importance index (CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance.) book.

Permissions Note: Adding a custom CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. book requires Work Planner permission level or above at the target Organization or Site.

To add a custom CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. book,

- At the main menu, select Library > CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. Books. The display will change to the CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. book page:



- Expand the navigation tree and navigate to the Organization or Site you wish to attach the custom **CII**[1]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. book to.
- Activate Add on the main toolbar. The "New **CII**[2]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in

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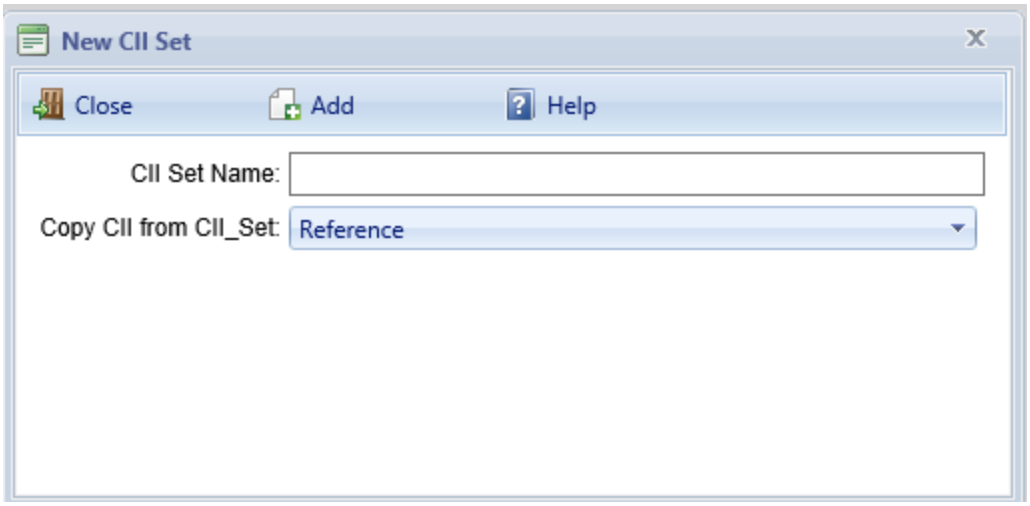
[1]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"

[2]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"

Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. Set" popup will appear.

- In the **CII**[1]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. Set Name field, enter a name for the new book.



- At the Copy **CII**[2]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. from **CII**[3]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. Set field, select from the dropdown list the **CII**[4]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. set (book) to copy from.
- Activate Add on the popup toolbar. A table of **CII**[5]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. data will appear in the content pane.

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[1]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"
[2]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"
[3]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"
[4]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"
[5]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"

Delete

CII Set: Test CII Set

Level: Component-Section

ystem: A10 FOUNDATIONS

	Reset	Component	Material	C Type	CII
	Reset	A1010 STANDARD FOUNDATIONS	A101001 WALL FOUNDATIONS	Foundation Wall	0.50
	Reset	A1010 STANDARD FOUNDATIONS	A101001 WALL FOUNDATIONS	General	0.50
	Reset	A1010 STANDARD FOUNDATIONS	A101001 WALL FOUNDATIONS	Grade Beams	0.50
	Reset	A1010 STANDARD FOUNDATIONS	A101001 WALL FOUNDATIONS	Other	0.50
	Reset	A1010 STANDARD FOUNDATIONS	A101001 WALL FOUNDATIONS	Strip Footing	0.50
	Reset	A1010 STANDARD FOUNDATIONS	A101001 WALL FOUNDATIONS	Unknown	0.50
	Reset	A1010 STANDARD FOUNDATIONS	A101002 COLUMN FOUNDATIONS & PILE CAPS	Column Pier	0.50
	Reset	A1010 STANDARD FOUNDATIONS	A101002 COLUMN FOUNDATIONS & PILE CAPS	Column Pier - Concrete	0.50
	Reset	A1010 STANDARD FOUNDATIONS	A101002 COLUMN FOUNDATIONS & PILE CAPS	Column Pier - Steel	0.50
	Reset	A1010 STANDARD FOUNDATIONS	A101002 COLUMN FOUNDATIONS & PILE CAPS	Column Pier - Wood	0.50
	Reset	A1010 STANDARD FOUNDATIONS	A101002 COLUMN FOUNDATIONS & PILE CAPS	General	0.50
	Reset	A1010 STANDARD FOUNDATIONS	A101002 COLUMN FOUNDATIONS & PILE CAPS	Other	0.50
	Reset	A1010 STANDARD FOUNDATIONS	A101002 COLUMN FOUNDATIONS & PILE CAPS	Pile Cap	0.50
	Reset	A1010 STANDARD FOUNDATIONS	A101002 COLUMN FOUNDATIONS & PILE CAPS	Spread Footing	0.50
	Reset	A1010 STANDARD FOUNDATIONS	A101002 COLUMN FOUNDATIONS & PILE CAPS	Unknown	0.50

1 2 Page size: 50 65 items i

- Change data in the CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. column as desired. For how to narrow the selection of data fields and how to edit the **CII**[1]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. column, see Edit CII Data.
- When finished, activate Save on the main toolbar.
- Activate Return on the main toolbar. You should be returned to the location in the inventory, condition, or functionality ribbon you came from.

Assign a CII Book to an Organization or Site

You can create multiple **CII**[2]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. books, and assign a separate book to any Organization or Site within your permissions scope, as desired. This is done as follows:

- In Inventory mode, navigate to and select the Organization or Site to assign the **CII**[3]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. book to.
- At the General Information tab, select the **CII**[4]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. book from the dropdown menu in the Reference Settings section (requires elevated permissions).

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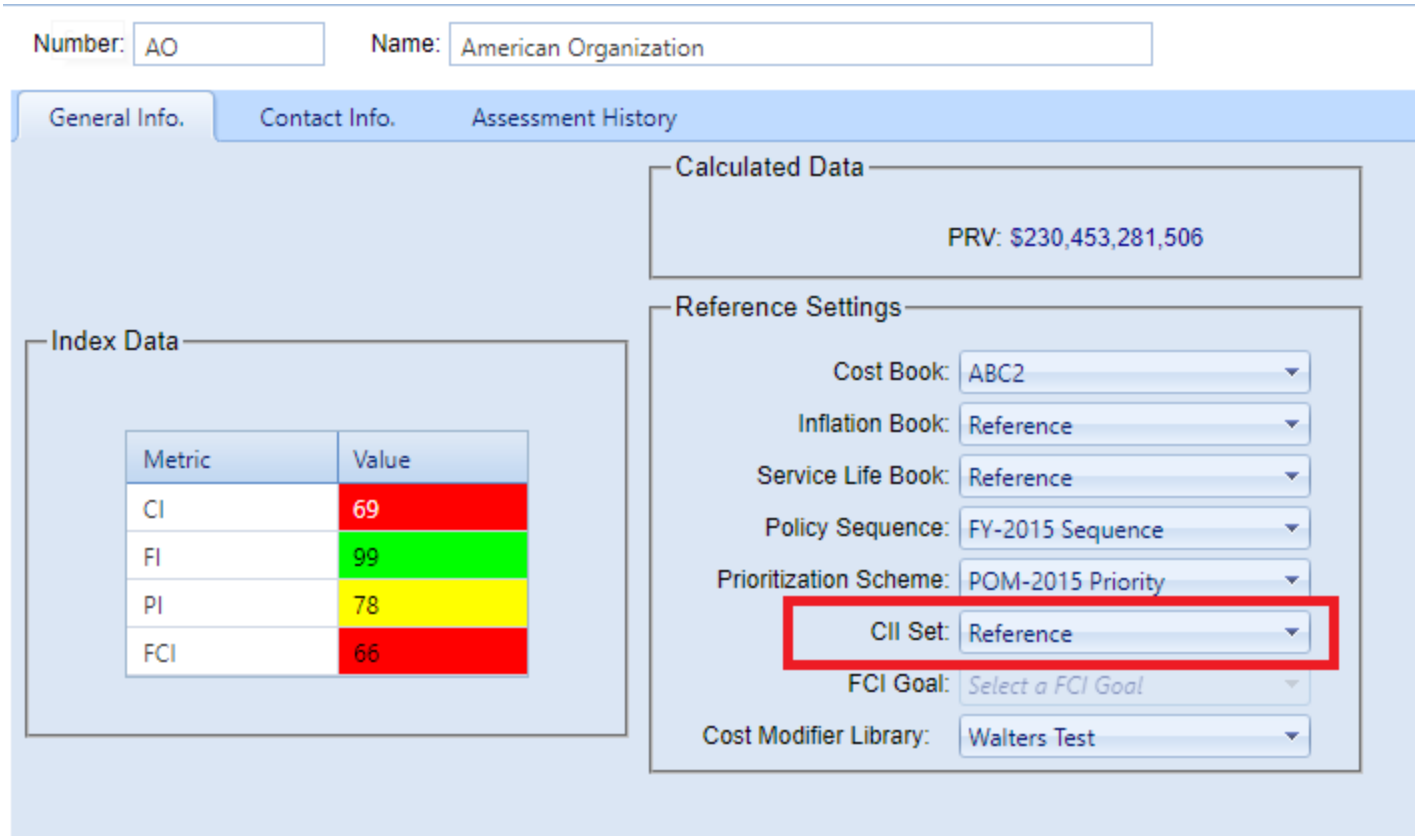
[1]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"

[2]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"

[3]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"

[4]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"



- Activate Save on the content area toolbar.

Related Links

[About CII Books](#)
[Edit CII Data](#)
[Delete a CII Book](#)
[Assign a CII Book to an Organization or Site](#)

Edit CII Data

This topic covers how to add or edit information in a custom component importance index (**CII**[1] Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance.) book. If the custom book has not been created yet, see the topic Add a Custom CII Book.

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[1] The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"

Note: A **CII**[1]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. book is also called a "**CII**[2]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. set" (for example, at an Organization or Site's Reference Settings).

Permissions Note: Editing a custom **CII**[3]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. book requires **Master Planner**[4]A user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. permission level or above at the target Organization or Site.

Objective: Edit **CII**[5]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. data

Tasks:

A. Open a custom CII book
B. Navigate data fields
C. Edit table data
D. Save changes

Steps for each of the tasks are listed below.

Task: Open a Custom CII Book

To open a custom **CII**[6]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. book,

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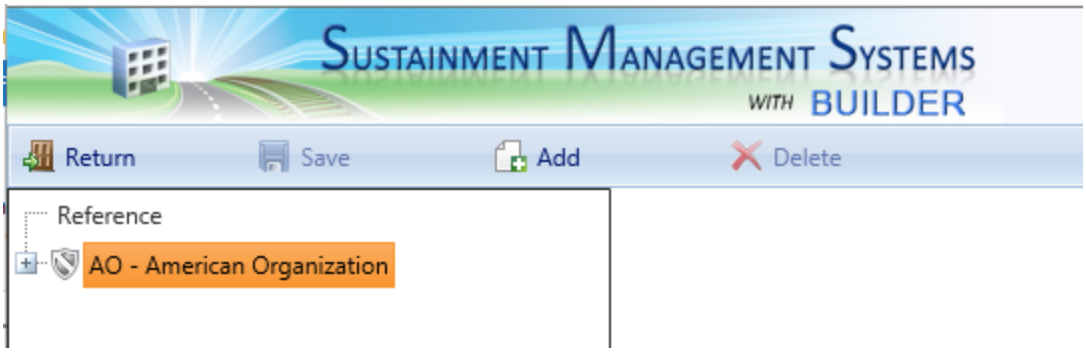
[1]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"
[2]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"
[3]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"
[4]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"
[5]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"
[6]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"

- At the main menu, select Tools > Library > **CII**[1]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. Books. The display will change to the **CII**[2]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. books page:



- Expand the navigation tree, then navigate to and select the **CII**[3]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. set you wish to edit, as shown below. A table of **CII**[4]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. data will appear in the content pane.

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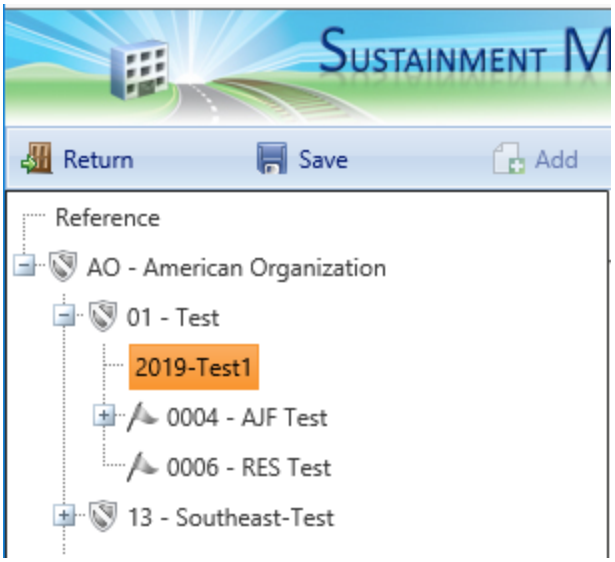
[1]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"
[2]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"
[3]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"
[4]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"



Task: Navigate Data Fields

You can use one or a combination of the navigation options described below to bring desired **CII**[1]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. records into view: Level, System, filters, and/or page navigation.

Level

Just below the name of the **CII**[2]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. book is the Level field with a dropdown list select the inventory hierarchy level to be displayed in the table.

Note: Currently the only level available is Component-Section.

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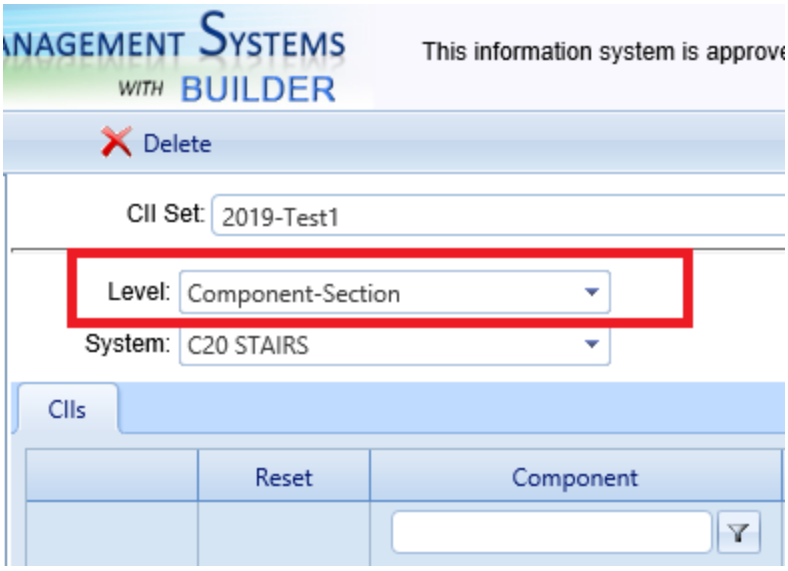
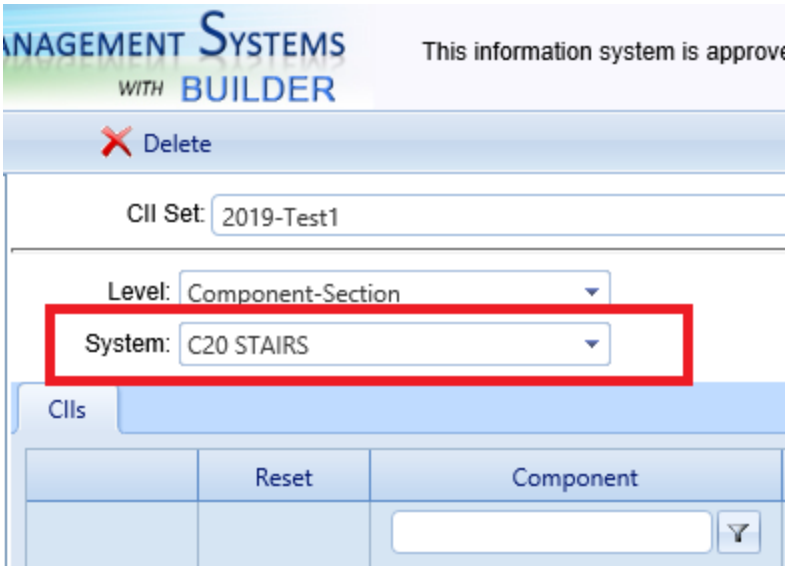
[1]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"

[2]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"



System

Below the Level field is System, with a dropdown list to select the System to be displayed.

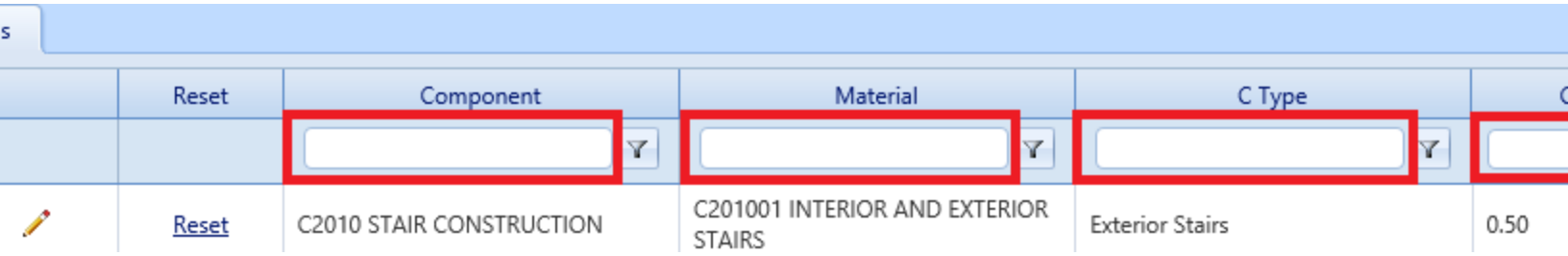


Filters

You can apply a filter in as many or as few of the filterable columns as you wish. A message at the lower right corner of the table will show how many records matching the selected filter(s) were found.

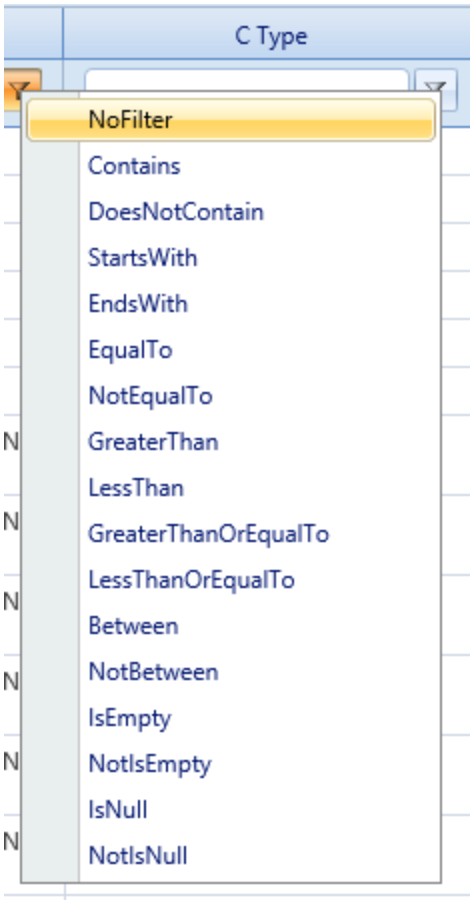
To use filters to reduce the view of the data,

- Enter a search term or number in one of the fields at the top of the data table, under Component, Material, CType, or **CII**[1]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance..



- Activate the corresponding filter button to the right of the field containing the search term / number.
- Select an option from the dropdown list. As soon as you activate an option, that filter operation will be performed.

[1]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"



- To further restrict the view using filters, you can type a search term or number into the filter field of any one of the remaining empty filterable columns, repeating this list of steps.

Page Navigation

At the bottom of the table, the Page size field allows you to select how many records to see on one page (from pre-set options). Page navigation allows you to select a page number, or to step forward or backwards through the pages of records.

Task: Edit Data

In the **CII**[1]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. table, only the values in the **CII**[2]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-

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[1]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"

[2]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"

Sections to different thresholds, or to prioritize them differently based on relative importance. column can be edited. The **CII**[1]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. book name may also be edited.

To change the value of a Component of a given material and type,

- Locate its record in the **CII**[2]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. data table.
- Activate the pencil icon in the first column.
- Change the decimal value in the **CII**[3]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. column.
- Activate the blue checkmark icon in the first column. (Alternatively, activate the red Do Not Enter icon to cancel.)

Note: Activating Reset in the second column will reset the **CII**[4]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. in that record to its Reference value.

To change the name of the **CII**[5]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. book itself, edit the name in he **CII**[6]Component Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. Set field just below the main toolbar.

Task: Save Changes

Activate Save on the main toolbar as desired to save as you go along.

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[1]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"
[2]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"
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[4]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"
[5]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"
[6]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"

When finished making changes,

- Activate Save on the main toolbar.
- Activate Return on the main toolbar. You should be returned to the location in the inventory, condition, or functionality ribbon you came from.

Related Links

About CII Books
Add a Custom CII Book
Delete a CII Book
Assign a CII Book to an Organization or Site

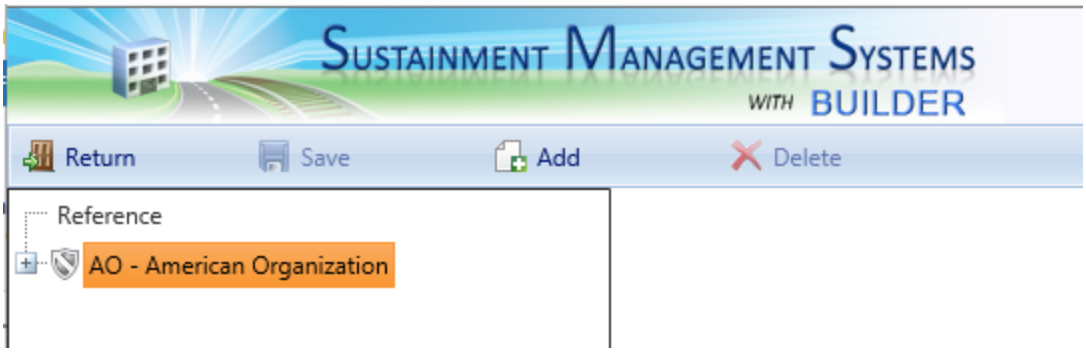
Delete a CII Book

This topic explains how to delete a custom component importance index (CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance.) book. The original Reference CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. book cannot be deleted.

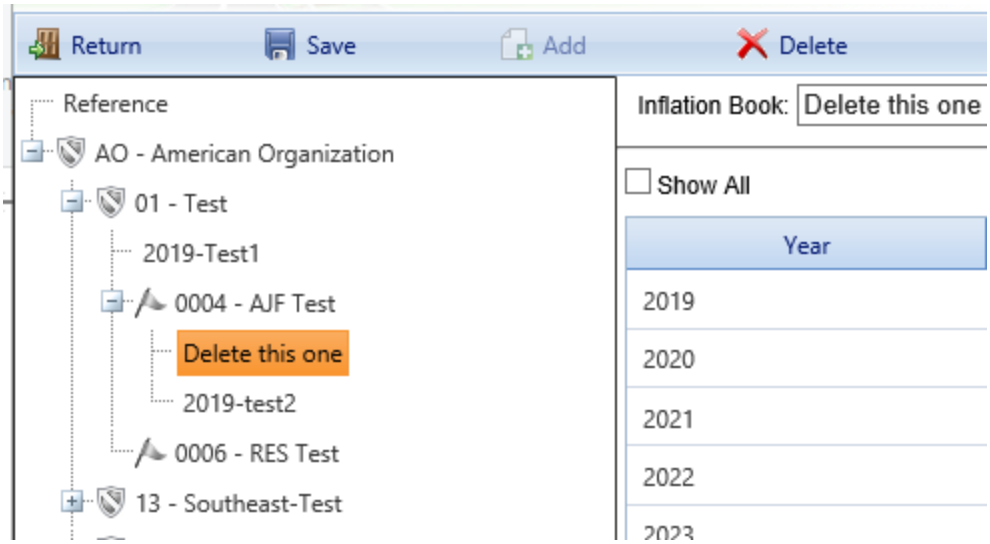
Permissions Note: Deleting a CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. book requires Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. permission level or above at the target Organization or Site.

To delete a CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. book,

- At the main menu, select Tools > Library > CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. Books. The display will change to the CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. books page:



- Expand the navigation tree, then navigate to and select the CIIComponent Importance Index. This index may be used to rank the relative importance of components against one another. An example of its use is in Work Configuration to hold different Component-Sections to different thresholds, or to prioritize them differently based on relative importance. book you wish to delete, as shown directly below.



Activate ✕ Delete on the main toolbar.

- In the confirmation popup, activate the OK button. (Alternatively, activate the Cancel button to cancel the operation.)
- Activate Return on the main toolbar. You should be returned to the location in the inventory, condition, or functionality ribbon you came from.

Related Links

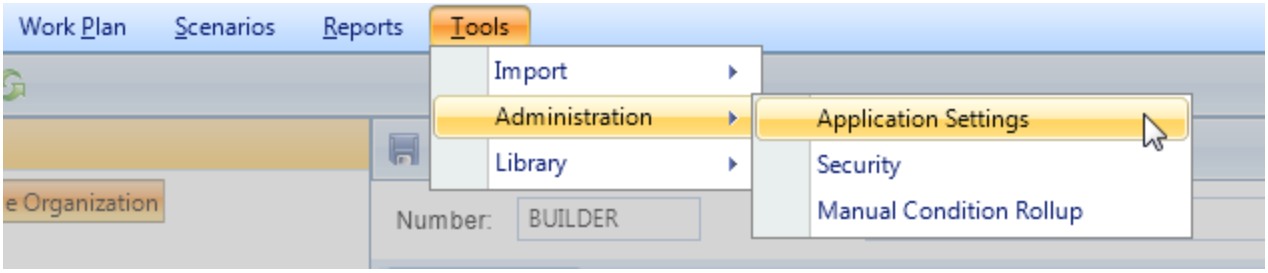
[About CII Books]
[Add a Custom CII Book]
[Edit CII Data]
[Assign a CII Book to an Organization or Site]

BUILDER Administration

Manage BUILDER Application Settings

Permissions Note: Only a user with Administrator privileges can change the application settings.

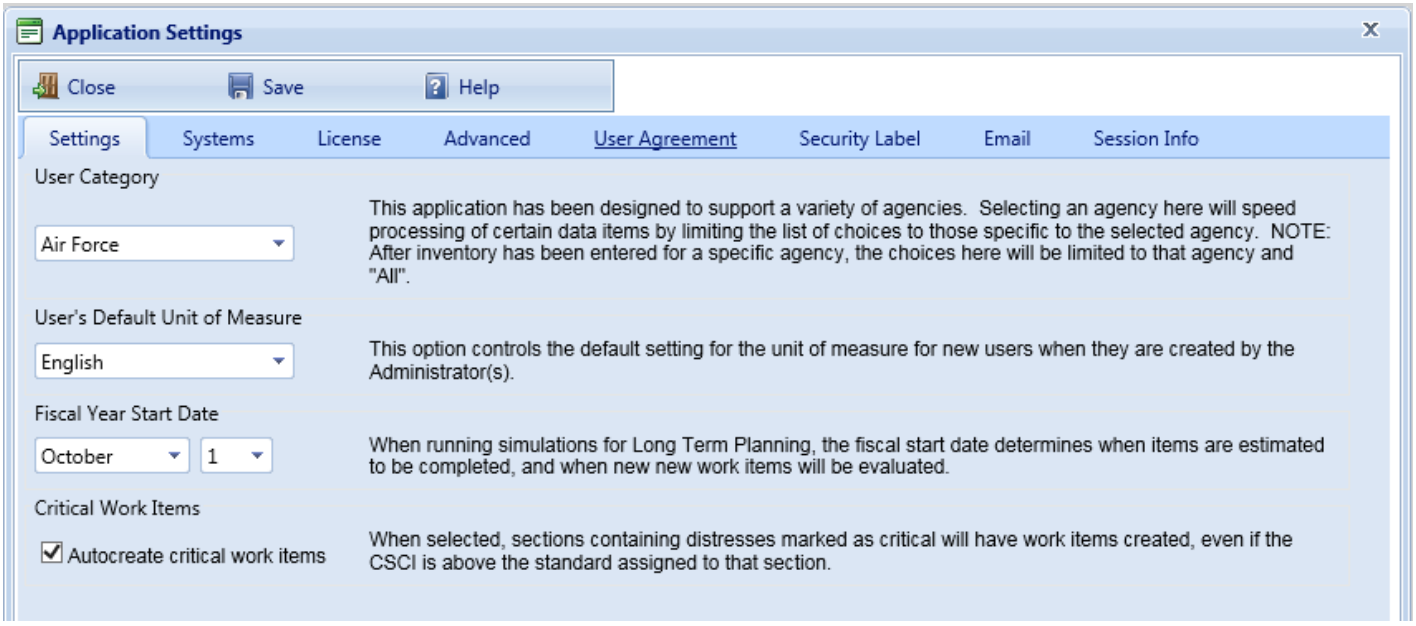
When you create a new inventory database, you should set the preferences in the Application Settings window before proceeding with any additions to inventory. To edit the application settings, select Tools > Administration > Application Settings starting at the main menu.



The "Application Settings" popup window will appear. Subsequent sections explain the following tabs in the Application Settings window:

- Settings
- Systems
- License
- Advanced
- User Agreement
- Security Label
- Email
- Session Info
- Building Templates

Settings Tab



Tip: If you do not see a screen similar to the one above, try selecting a different tab and then coming back to the Settings tab.

At the Settings tab, you can set the following preferences for the database:

- User Category
- User's Default Unit of Measure
- Fiscal Year Start Date
- Critical Work Item Autocreation

User Category

After you designate a user category, BUILDER will present an agency-specific list of Building Use types when inventory is being added. The available user categories in BUILDER are:

- Army
- Navy
- Air Force
- Civilian
- Department of Energy
- All

Choosing the All category allows you to enter Building Use types across multiple categories.

Note: Once your inventory contains Buildings from more than one category, the only choice here is All.

After changing user category, activate Save on the toolbar. If finished with application settings, then activate Close.

User's Default Unit of Measure

Here is where you select the default unit of measure (English or Metric) to be used for the inventory for all users. This is the unit of measure that will initially be shown for all users, but each user can change his or her units of measure at any time with the User Preferences tool when they are logged in.

After changing the default unit of measure, activate Save on the toolbar. If finished with application settings, then activate Close.

Fiscal Year Start Date

At this tab, enter the fiscal year start date. When running simulations using Scenarios, the fiscal start date determines (1) when items are estimated to be completed, and (2) when new work items will be evaluated.

After entering or changing the date, activate Save on the toolbar. If finished with application settings, then activate Close.

Autocreate Critical Work Items

Mark the Autocreate critical work items checkbox if you want any Section with a current distress that is check-marked as Critical to automatically generate a work item for it. If you mark this checkbox, Sections containing distresses checkmarked as Critical will have work items created for them even if the threshold **CSCI**[1] is above the standard assigned to that Section.

After changing the marking of this checkbox, activate Save on the toolbar. If finished with application settings, then activate Close.

Systems Tab

At the Systems tab, you can specify which Systems will be available to be added and edited in BUILDER.

After changing any of the checkmarks, activate Save on the toolbar. If finished with application settings, then activate Close.

License Tab

The License Tab provides a location where you can copy and paste your security key.

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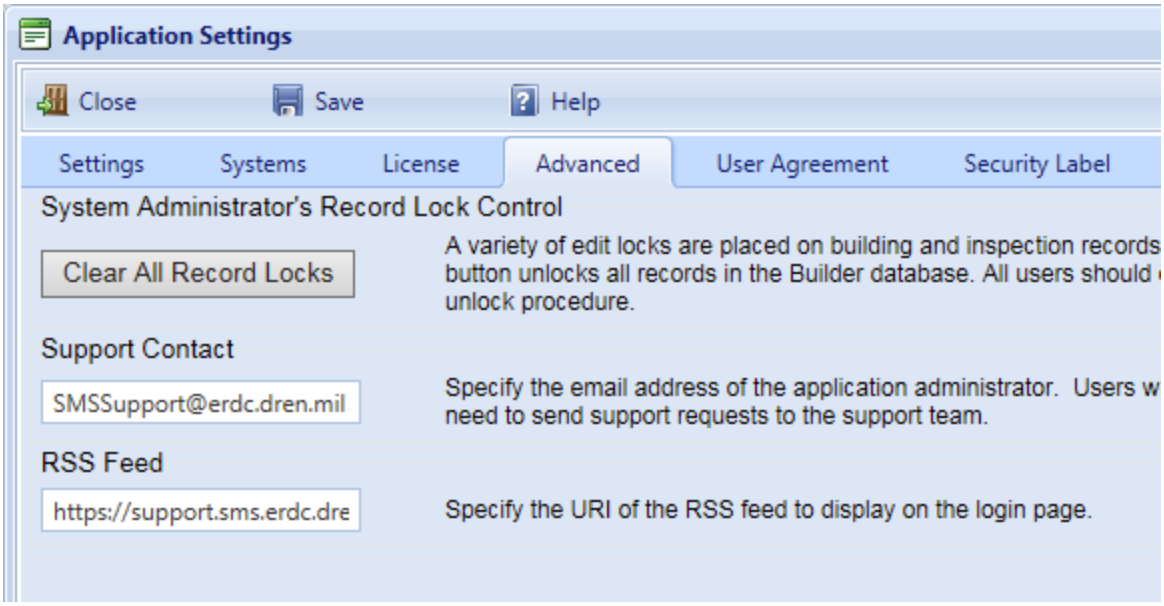
[1]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"

Advanced Tab



At the Advanced tab you can

- Clear All Record Locks
- Specify Support Contact
- Specify Admin Audit Email
- Specify Server Display Name
- Specify RSS Feed
- Configure Cost Modifiers

Clear All Record Locks

After reading the warning note below, activate the Clear All Record Locks button to clear all the locks placed on Building and inspection records by individual users and BuilderRED (BRED). Whereas the Clear Locks button in the User Preferences window only clears locks on records locked by that user, the Clear All Record Locks button on this administrative screen unlocks all locked records, regardless of how they were locked.

WARNING: To protect data accuracy, be sure that the following two steps are implemented BEFORE the record locks are cleared!

- All users should exit from the BUILDER program.
- All BRED files should be imported.

Record locking is used to protect data from inadvertent overwrites by multiple users. BUILDER also locks records when Buildings are exported to BuilderRED, to prevent data from being changed in the BUILDER program while inspection is in progress. To protect data accuracy, all users should exit from the BUILDER program and all BRED files should be imported before the record locks are cleared.

Support Contact

Here is where you enter the email address of the BUILDER or ROOFER Administrator. This is the email address users will see if they activate Help and then choose Contact Help on the login page.

If you have your own instance of the program that you market to customers, enter the email address of your support department.

If you are a military installation using centralized BUILDER support, enter the email address shown in the screen shot above.

After entering the email address, activate Save on the toolbar. When finished with application settings, activate Close.

Admin Audit Email

Here is where you enter the email address that audit notification emails will be sent to.

After entering the email address, activate Save on the toolbar. When finished with application settings, activate Close.

Server Display Name

For administrative audit emails, the server display name will be embedded in the subject line. This allows admins who receive the audit emails to distinguish which servers the emails are coming from.

After entering the server display name, activate Save on the toolbar. When finished with application settings, activate Close.

RSS Feed

Here is where you enter the URI of the RSS feed to display on the login page. After entering the URI, activate Save on the toolbar. When finished with application settings, activate Close.

Configure Cost Modifiers

Custom Flag Option

The Enable Custom Flag checkbox allows you to toggle on/off a customized true/false column displayed for cost modifiers. If the Enable Custom Flag checkbox is marked, an additional column will be displayed in both the Cost Modifier Library window and at the Cost Modifiers tab of Sites, Complexes, Buildings, Systems, Components, or Sections. The column heading will be the label text entered in the Custom Flag Label field.

Marking the checkbox and entering a label does not affect cost modifier calculations; it is simply a way to record a Boolean value (true/false) that organizations can use as a flag of their choosing. For example, if an organization wants to track whether a cost modifier has received management approval, they might enable a custom flag with a label of "Approved."

Tip: You can retain the label in the Custom Flag Label field even if the Enable Custom Flag checkbox is not marked. The customized column will not appear for cost modifiers, but if you want to reinstate the column, the label is ready.

After making any changes to the checkbox or label field, activate Save on the toolbar. When finished with application settings, activate Close.

Disable Cost Modifier Features Checkbox

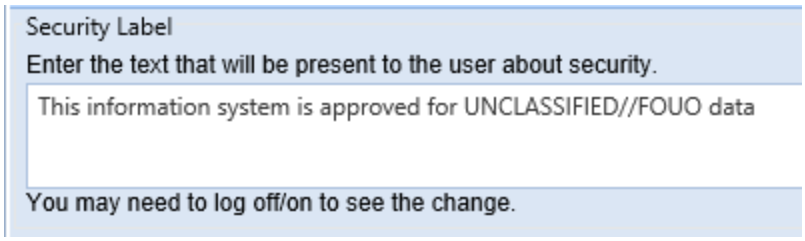
Marking this checkbox will disable cost modifier features. After marking or unmarking, activate Save on the toolbar. When finished with application settings, activate Close.

User Agreement Tab

At the User Agreement tab is the text of the User Agreement that will be displayed to the user at login.

Security Label Tab

At the Security Label tab is the text about security level designation that is displayed on the user's login screen. For example,



Email Tab

At the Email tab are options that configure automated response to users who have difficulty logging in and activate the request to change their password or to have their account unlocked.

The large text box is the location where you input the text to be sent in automated email to the user. Variables that can be used in the text are as follows:

- <%ApplicationName%> = name of the application (BUILDER or ROOFER)
- <%Url%> = link for the user to follow to complete the password action
- <%SupportEmail%> = email address of the application support representative

If you edit the automated response message, activate Save on the toolbar. When finished with application settings, activate Close.

Session Information Tab

The Session Information tab (abbreviated Session Info) shows session information such as number of users logged in.

Building Templates Tab

At this tab you can configure the percentage difference allowed between the square footage of a Building template and the square footage of the Building it will be applied to.

After changing the percentage, activate Save on the toolbar. When finished with application settings, activate Close.

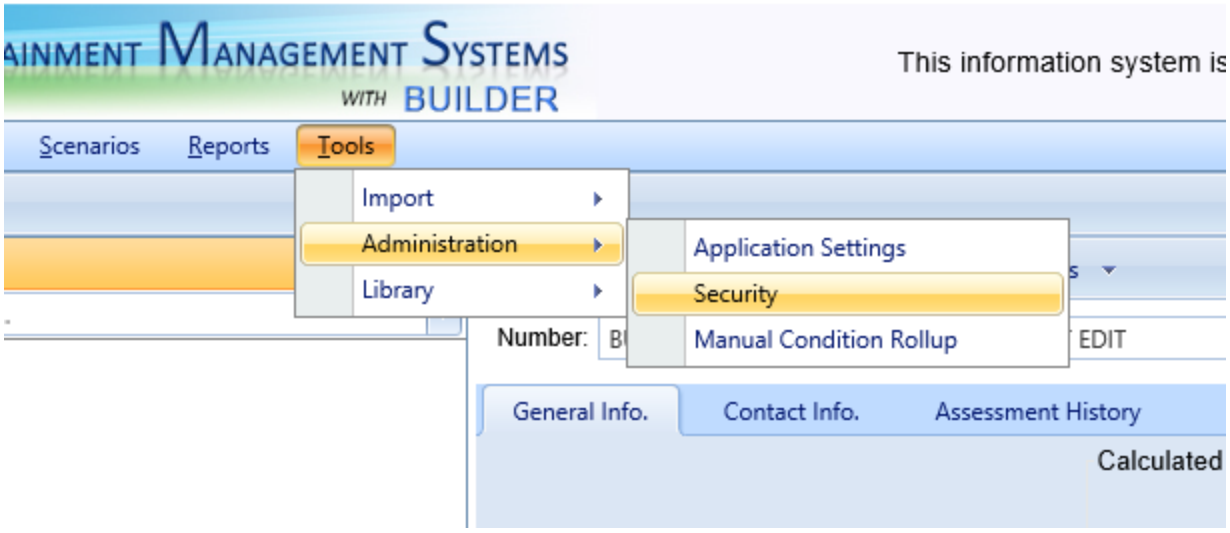
Manage BUILDER Security Features

The Security window allows the AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. to:

- Set password parameters
- Administer users and Roles.

You must be logged in as an AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. to access this screen.

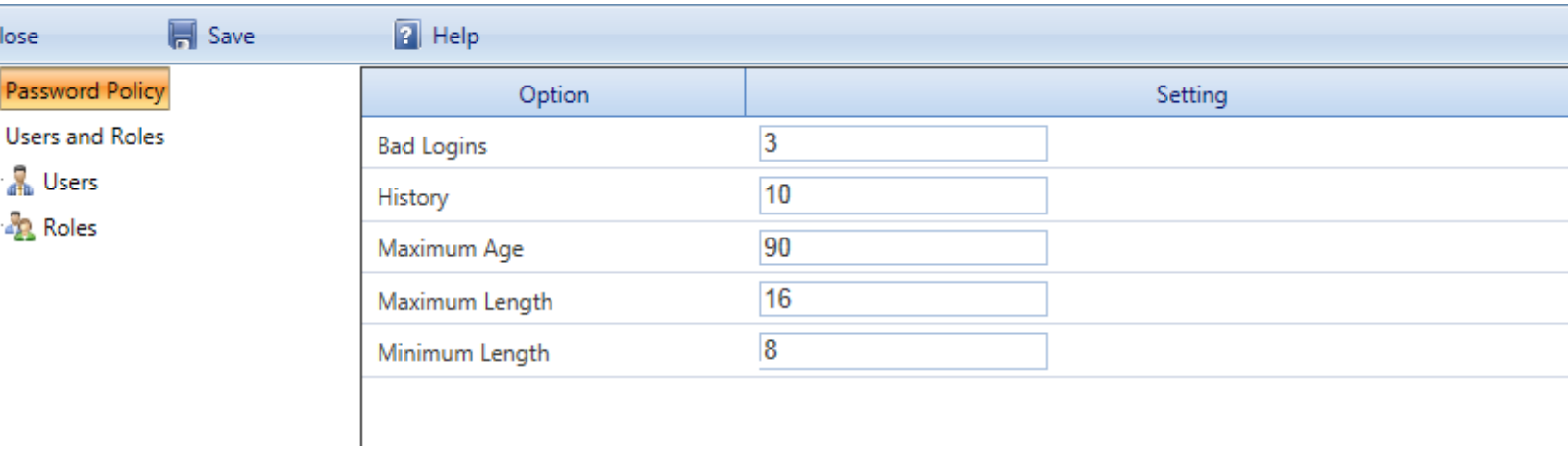
To edit BUILDER's security features, select Tools > Administration > Security starting at the main menu.



The "Security" popup window will appear as seen below under Password Policy, because Password Policy is selected by default.

Password Policy

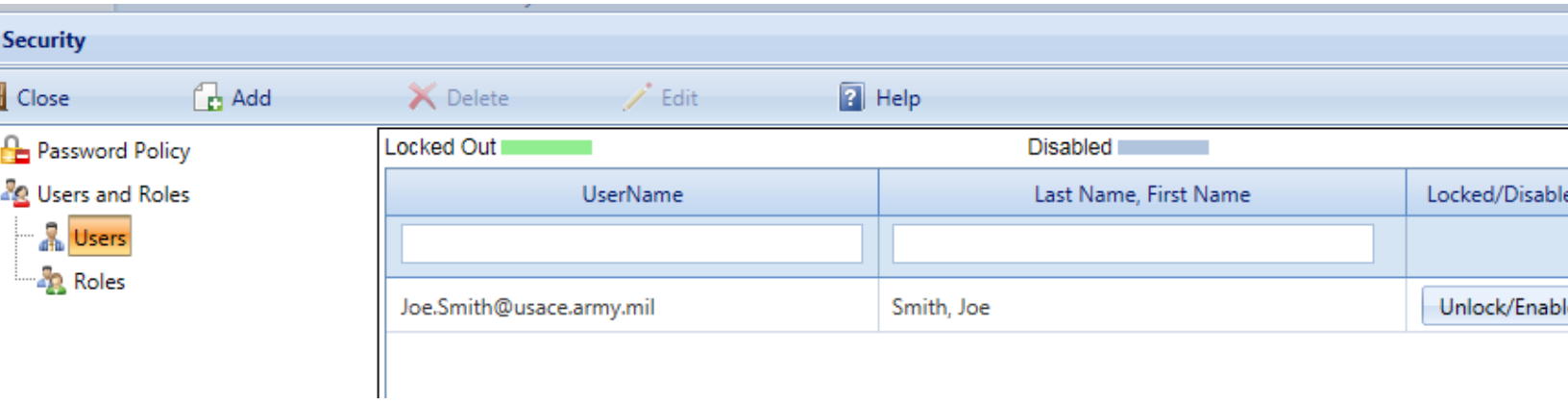
The Password Policy view in the Security window lists settings relating to user login to BUILDER; for example, number of bad logins allowed, maximum password length, etc. The Password Policy options allow the administrator to set password parameters for users.



Administering Users

Under Users and Roles, the Users option lists the available users who have or can be given a login to BUILDER. This allows each system user to log into their own account, which has associated rights and privileges based on the Role they are assigned to.

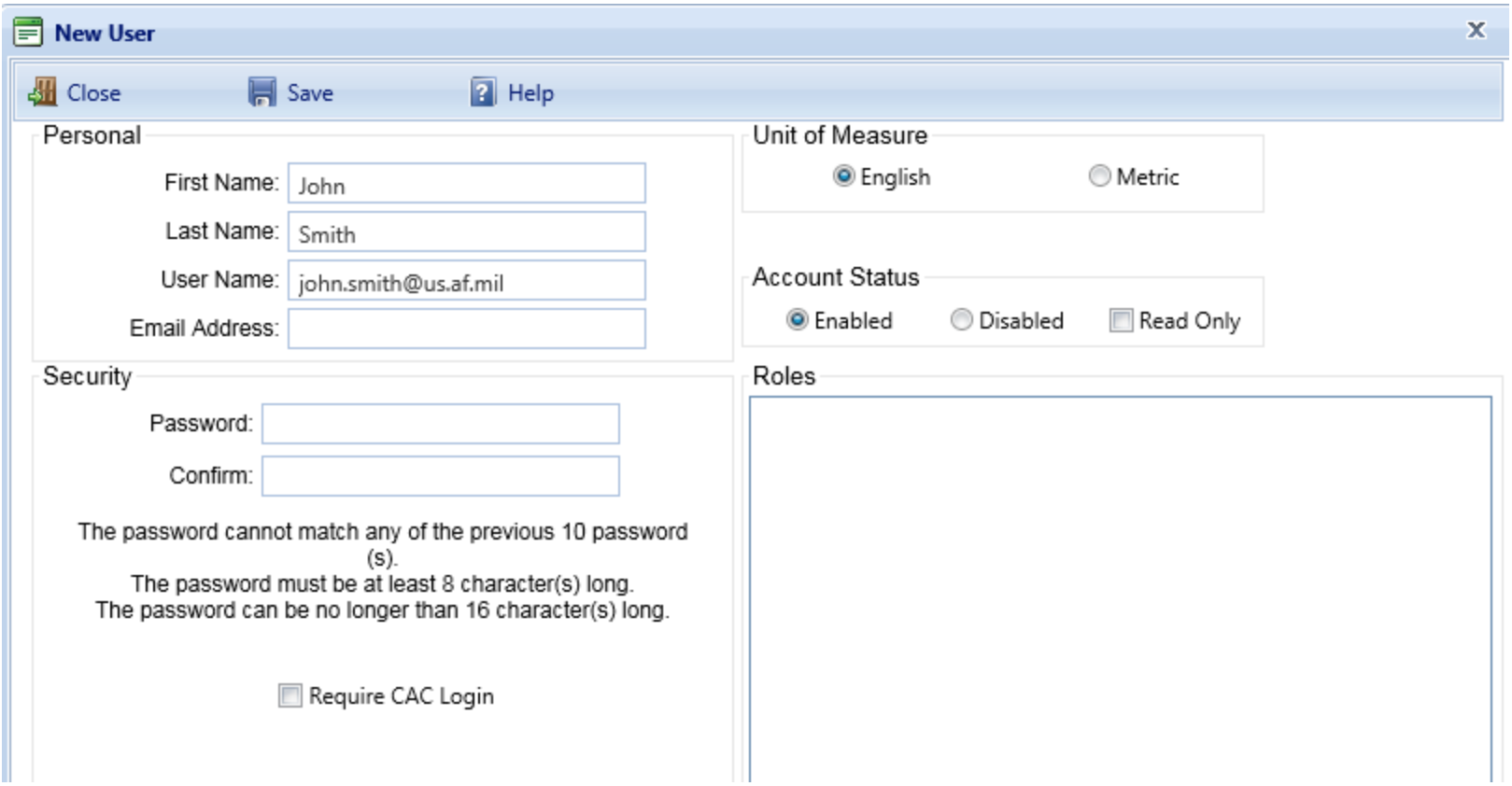
Select Users in the tree at the left to see the user screen, similar to the one shown below:



Add a User

To add a new user record:

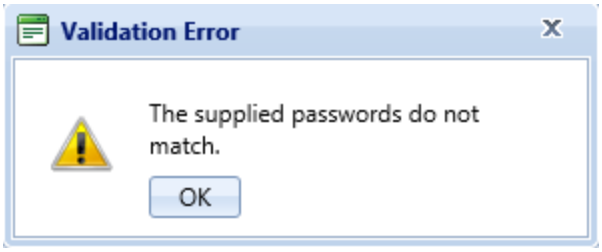
- Activate Add on the toolbar. (The "New User" popup window will appear.)
- Complete the information for First Name, Last Name, User Name, and Email Address in the "Personal" area.
- To set the initial password, type it into the "Password" and "Confirm" fields in the "Security" area.



- If applicable, mark the Require CAC Login checkbox.
- If desired, change the Unit of Measure.
- If desired. mark the Read Only checkbox in the "Account Status" area.
- Activate Save on the toolbar.

  Note: After a successful Save, the password boxes will be cleared and a button that reads Change Password will appear below them. This is normal. It is also normal for the password rules to remain on the screen.

- If you make an error in password entry, you will receive a popup message such as the one shown below. Redo password entry if necessary.



- Activate Close on the toolbar to return to the list of users.

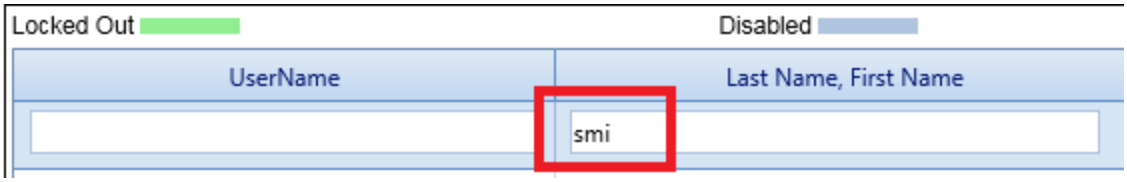
Edit User Properties

To edit user properties:

- Select the name from the list of users.

  Note: If the list is long, you can narrow down the number of entries by using a filter as follows:

  a. Fill in either (1) all or part of the User Name in the blank field directly under UserName, or (2) all or part of the user's First Name or Last Name in the blank field directly under Last Name, First Name.
  b. Press the Enter key on your keyboard.
  c. If multiple names still appear in the list, click once on the desired user name.
- Activate the Edit button on the toolbar. (The "Edit User" popup window will appear. If it does not, check to make sure that you have a user name selected.)
- Change the desired properties.
- Activate Save on the toolbar.
- Activate Close on the toolbar. To see the full list of users, you might need to delete text that remains in the filter fields (see illustration below), then press the Enter key on your keyboard.



Disable a User

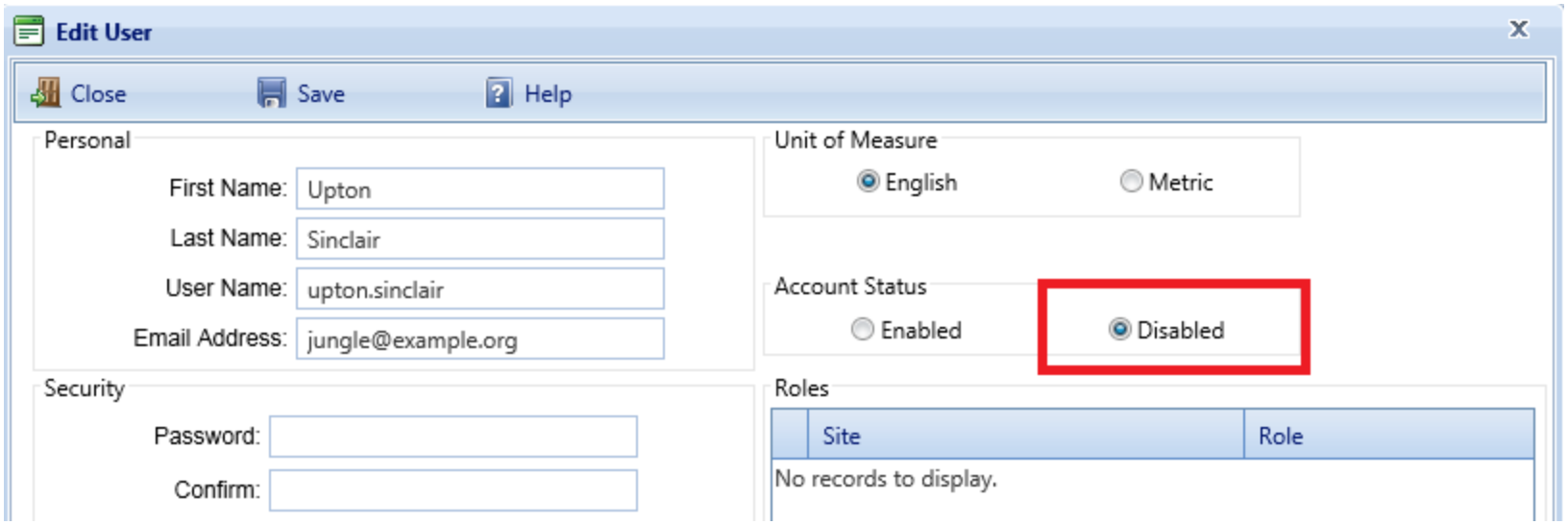
Disabling a user takes place at the "Edit User" screen. To disable a user:

- Select the name from the list of users.

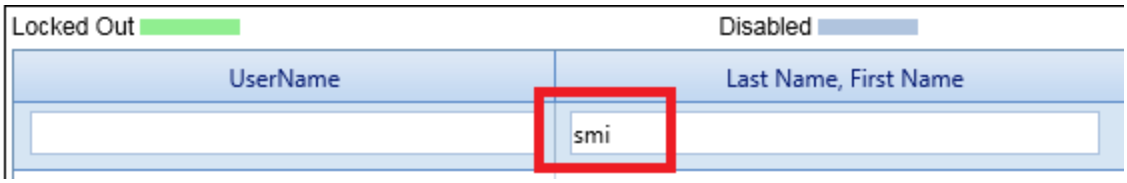
  Note: If the list is long, you can narrow down the number of entries by using a filter as follows:

  a. Fill in either (1) all or part of the User Name in the blank field directly under UserName, or (2) all or part of the user's First Name or Last Name in the blank field directly under Last Name, First Name.
  b. Press the Enter key on your keyboard.
  c. If multiple names still appear in the list, click once on the desired user name.

- Activate the Edit button on the toolbar. (The "Edit User" popup window will appear. If it does not, check to make sure that you have a user name selected.)
- Select the Disabled radio button in the "Account Status" area, as shown.



- Activate Save on the toolbar.
- Activate Close on the toolbar. To see the full list of users, you might need to delete text that remains in the filter fields (see illustration below), then press the Enter key on your keyboard.



- When finished, you should see that the horizontal bar containing the username and name of the disabled user has been colored in to indicate that this user has been disabled.

Delete a User

WARNING: If there any inspections that were performed by the user you wish to delete, those inspections will become inaccessible if the user is deleted!
Best Practice Recommendation: A better option in this case is to disable, rather than delete, this user. (See Disable a User, above.)

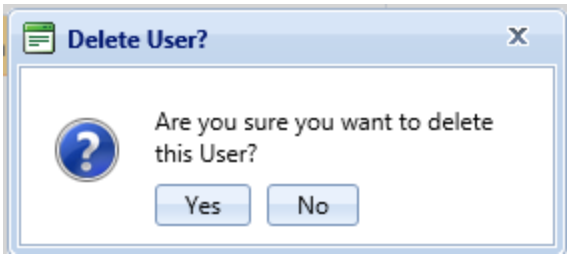
If you choose to delete, follow these steps:

- Select the name from the list of users.

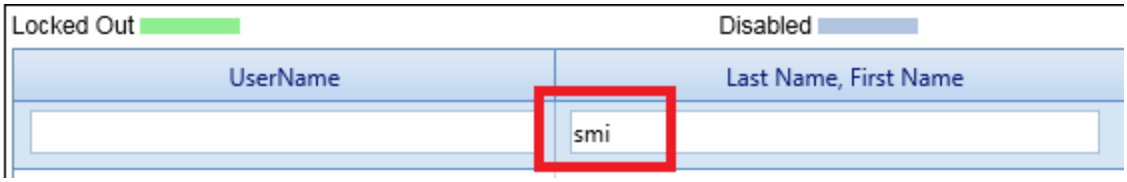
  Note: If the list is long, you can narrow down the number of entries by using a filter as follows:

a. Fill in either (1) all or part of the User Name in the blank field directly under UserName, or (2) all or part of the user's First Name or Last Name in the blank field directly under Last Name, First Name.
b. Press the Enter key on your keyboard.
c. If multiple names still appear in the list, click once on the desired user name.

- Activate the ✕ Delete button on the toolbar. You will be asked for confirmation:



- Select Yes.
- Activate Close on the toolbar. To see the full list of users, you might need to delete text that remains in the filter fields (see illustration below), then press the Enter key on your keyboard.



Brief List of Roles

Once users have been created, you can assign them to Roles. The Roles are allowed varying degrees of program access rights under the system. The different Roles in BUILDER include:

- Administrators - can administer users, assign users to Roles, and change BUILDER application settings.
- Inventoriors - can input and edit inventory information from the Inventory screen
- Inspectors - have all the rights of Inventoriors, and can input and edit inspection information from the Condition Assessment screen
- Inspection Supervisors - have all the rights of Inspectors, and can also import or export data to and from BuilderRED and create inspection schedules
- Work Planners - have all the rights of Inspection Supervisors, and can also create and edit work plans, standards, policies, prioritization schemes, and **RSL**[1] and cost books.
- Master Planners - have all the rights of Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges.

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[1]Remaining service life.

For more detail about the privileges associated with each user Role, see About BUILDER Permissions Roles.

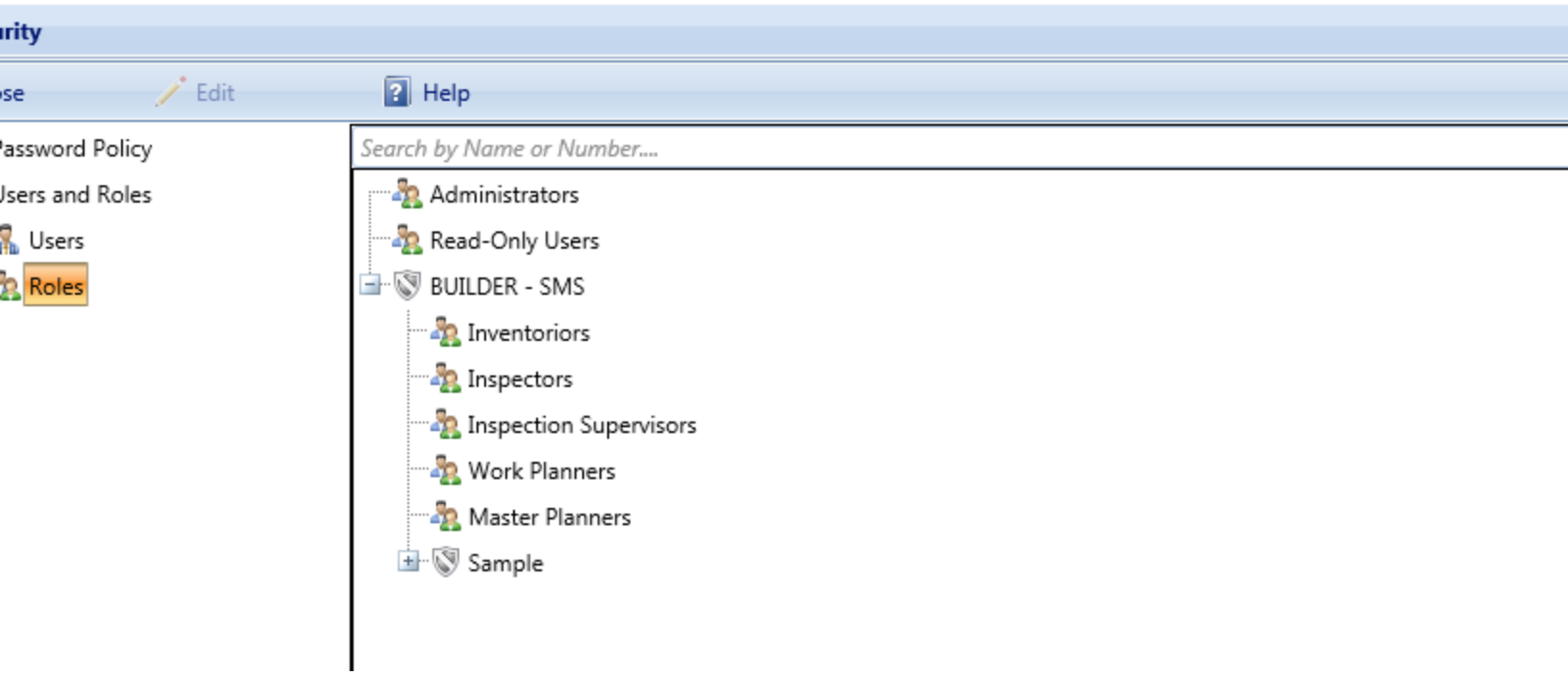
Scope of Role Assignment

In BUILDER, you can assign and restrict each user's Role privileges to the appropriate hierarchical level (Organization, Site, Building, etc.). For example, a user can be assigned as a Work Planner either to the entire database globally, or, alternatively, to one or more Sites or Organizations only.

Note: Users are typically assigned their permissions Role at the Site level.

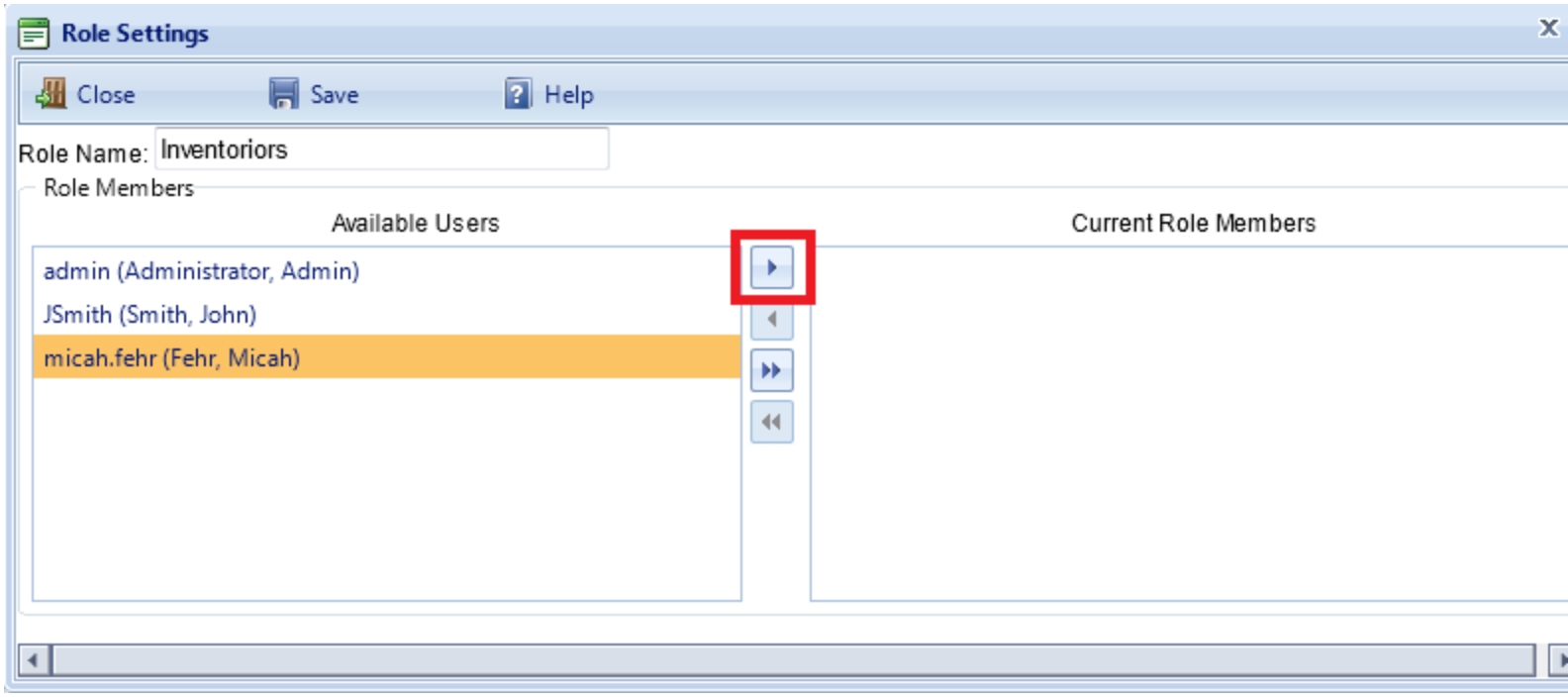
Assigning Roles to Users

The screen below shows the list of Roles available.



To assign a user to a given Role and level,

- In the navigation tree shown above, navigate to the desired node (such as "Sample") to which the permissions will be applied.
- Activate the "+" to make the list of Roles appear below the node.
- Select the permissions level desired, under the node.
- Activate the Edit button on the toolbar. The following screen will appear:



- Select the user from the "Available Users" list on the left.
- Activate the single right arrow button to move that user over to the "Current Role Members" list.

Manage Custom Inventory Attributes

Custom asset attributes can be added at each inventory level, from Organization down through Section, in two different ways: by using "active attributes" or by using "Admin managed attributes."

This topic covers the actions concerning Admin managed attributes that are reserved for BUILDER administrators and users with the Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. Role. These actions are not performed from the Tools menu, but at the appropriate asset's data screen, accessed using the inventory tree.

What are Admin Managed Attributes?

Admin managed attributes are a collection of pre-named asset attributes that have been determined by the BUILDER instance's owner (for example, a corporation, or the Air Force, or the Army). They are templated or common attributes that are seen as likely to be used often. Some or all of these attributes are made available from the outset after installing BUILDER. If more are needed, only a BUILDER administrator or a user with Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. Role can add to the list of Admin managed attributes.

Note: Before an admin managed attribute can be used to help describe an asset, either a BUILDER AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. or a user needs to "assign" the attribute to the asset.

With respect to creating reports, Admin managed attributes will be easier to report on in a consistent fashion, because they are managed by a BUILDER AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. (or a user with Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. Role). Also, Admin managed attributes are available to all assets at the same inventory level. Active attributes, on the other hand, would be prone to being named inconsistently and make reporting more difficult.

Add an Admin Managed Attribute

Under Admin Managed Attributes at the bottom half of the Attributes screen, you can add, edit, or delete custom Admin managed attributes for this level of inventory. Also, in the Unassigned Admin Managed Attributes column, you can choose to assign an existing but unassigned Admin managed attribute to the asset whose data screen you have open.

When you add an Admin managed attribute, it will automatically be assigned to the asset where you are adding it. For all other assets at the same inventory level, the new attribute will be available in the Unassigned Admin Managed Attributes column.

To add an Admin managed attribute,

- Directly under the Admin Managed Attributes header at the lower right of the Attributes screen, activate Create New Managed Attribute. This will generate a new row in the Admin Managed Attributes table.
- Enter an Attribute Name and Value for your attribute into the table.
- If you want to apply an architect name, press the Enter key at this point . The popup "Add Architect" will appear. Enter the name of the architect, then select OK.
- When finished with the entry, activate the blue checkmark icon at the left side of the row to save the entry. Alternatively, to cancel and delete the entry before saving, activate the red circle with a slash icon (located to the right of the blue checkmark).

  CAUTION: Your new attribute will not be saved if you (a) exit without activating the blue checkmark or (b) initiate adding a new custom inventory attribute (by activating the Add New Attribute button) before saving with the blue checkmark.

Edit an Admin Managed Attribute

To edit an attribute,

- Activate the pencil icon in the attribute's table row, and wait for the row to change appearance.
- Make the desired changes.

- Finally, activate the blue checkmark icon at the left to save the changes (or the red Cancel icon to cancel the change).

Delete an Admin Managed Attribute

When you "delete" an Admin managed attribute it is removed from the Admin Managed Attributes table for the asset, and moved to Unassigned Admin Managed Attributes.

To delete an attribute,

- In the table of Admin managed attributes, locate the row containing the attribute you wish to delete.
- To the right of the Value field, activate the Delete icon (red X). A confirmation popup will appear, asking "Delete record?"
- Select OK to delete, or Cancel to stop the process.

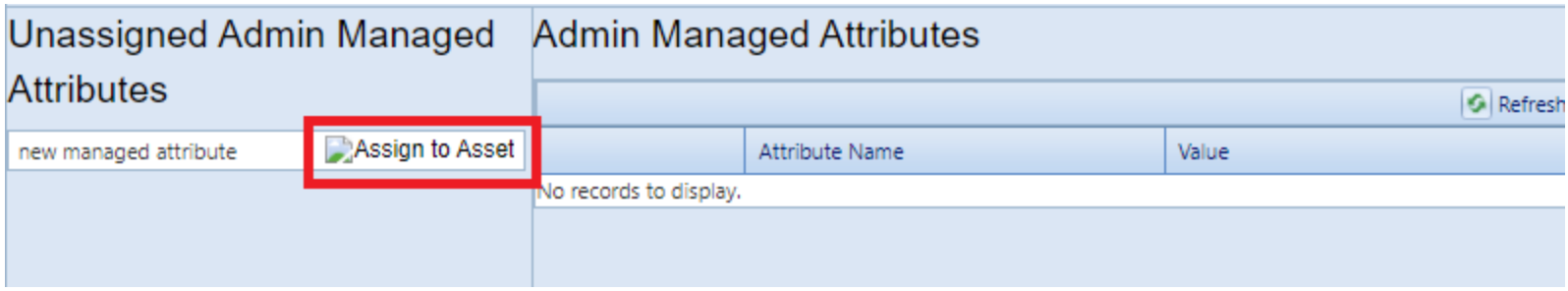
After deletion, the attribute will be transferred to the Unassigned column for that asset.

Assign an Unassigned Attribute to Admin Management

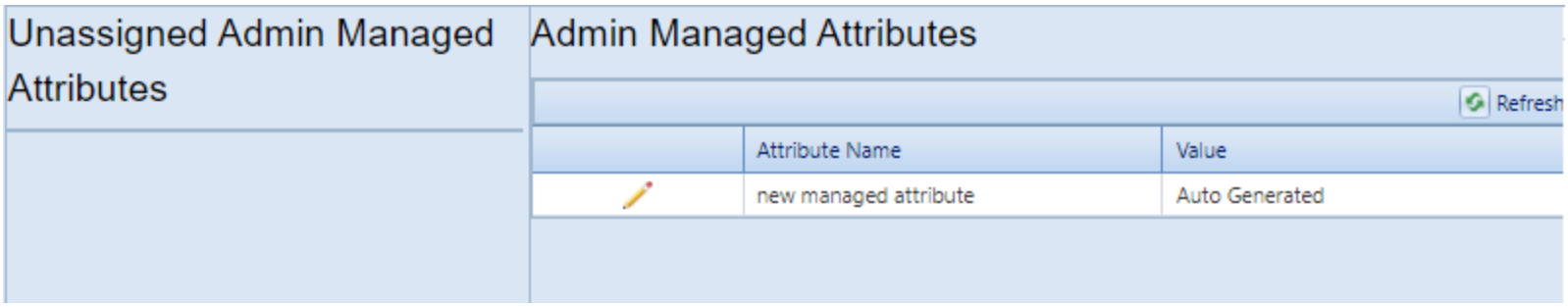
You may see one or more items listed under the header Unassigned Admin Managed Attributes at the lower left of the Attributes screen. If so, these are available to be applied to the selected asset.

To assign an asset to Admin management,

In the Unassigned Admin Managed Attributes column, activate Assign to Asset.



This will immediately populate the attribute to the Admin Managed Attributes table instead.



The assignment action is reversible by deleting that attribute from the Admin Managed Attributes table. See Delete an Admin Managed Attribute for instructions.

Perform Manual Condition Rollup

This topic explains how to perform a global manual condition rollup that updates all condition index values for the entire inventory. A global rollup may only be performed by a BUILDER administrator.

When an inventory item is "rolled up," BUILDER calculates current **CI**[1] values for all inventory contained in that asset, from the Component-Section level on up. (For a description of this process, see the Condition Assessment Overview topic.)

A global manual condition rollup, covering all inventory in the tree, may only be performed by a BUILDER administrator. As an administrator you should perform this rollup calculation frequently, but especially when:

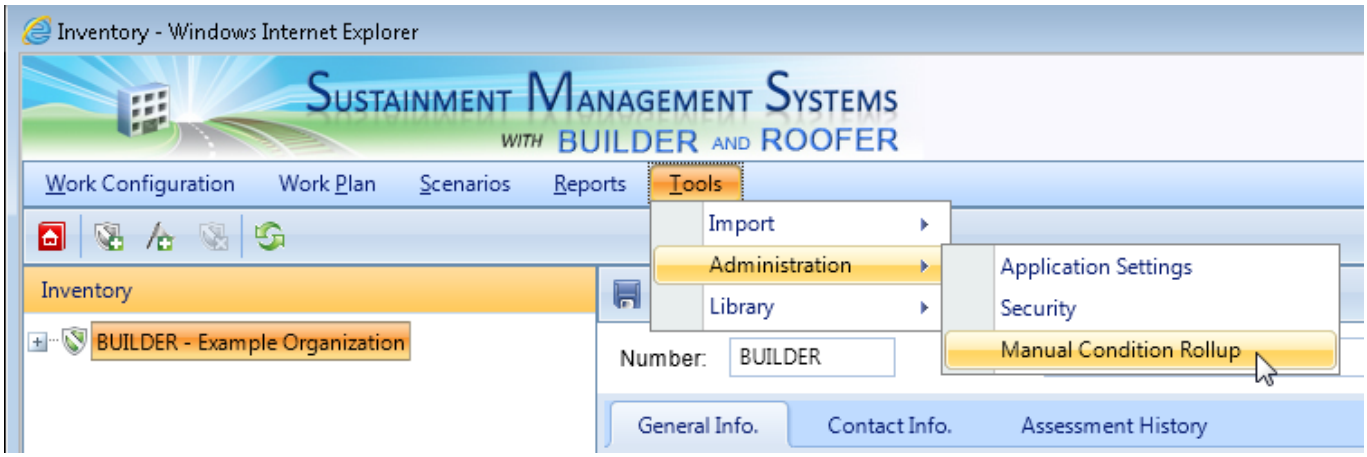
- You have not performed the rollup within the last 6 months
- You have entered a large number of new condition assessments
- You need the most current condition index measures to develop a new work plan.

Steps

CAUTION: Depending on the quantity of inventory, this process can take many hours.

To perform the global manual rollup process,

- Select Tools > Administration > Manual Condition Rollup from the main menu.



- When presented with the confirmation popup, select OK. (Confirmation popup is new starting in

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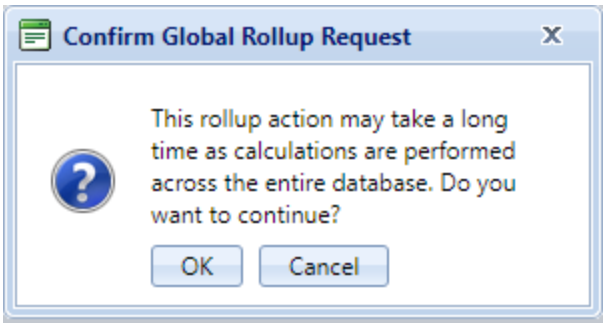
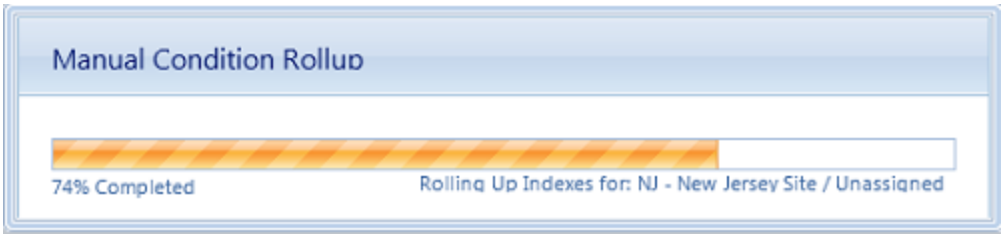
[1] Condition Index

BUILDER Version 3.6.1.)



Results

The rollup process will begin for all inventory in the database, and the progress popup will appear.



After the rollup process completes, the progress popup will close and you will be returned to the main BUILDER screen. Building inventory displays will show recalculated current condition indices for all elements.

What Does a Global Rollup Do?

The following processes will occur during the rollup:

- Retrieve the latest condition assessment records and estimate a current **CI**[1] for all Component-Sections.
- Estimate the current remaining service life (**RSL**[2]) for all Component-Sections. The **RSL**[3] is adjusted by the rate of deterioration in the CIs.
- Estimate the current **CI**[4] for all Components by calculating the average of their Component-Sections' CIs, weighted by replacement cost.
- Estimate the current **CI**[5] for all Systems by calculating the average of their Components' CIs, weighted by replacement cost.

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[1]Condition Index
[2]Remaining service life.
[3]Remaining service life.
[4]Condition Index
[5]Condition Index

- Estimate the current **CI**[1] for all Buildings by calculating the average of their Systems' CIs, weighted by replacement cost.
- Estimate the current **CI**[2] for all Complexes, Sites, and Organizations by calculating the average of their Buildings' CIs, weighted by replacement cost.
- Retrieve the latest functionality assessment records and determine Building **FI**[3]s and Functional Area FIs based on the results of the assessments.
- Estimate the current **FI**[4] for all Complexes, Sites, and Organizations by calculating the average of their Buildings' FIs, weighted by replacement cost.
- Estimate the current **PI**[5] See also: BPI. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. for all Buildings using a weighted combination of each Building's **CI**[6] and **FI**[7].
- Estimate the current **PI**[8]See also: BPI. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. for all Complexes, Sites, and Organizations by calculating the average of their Buildings' **PI**[9]s, weighted by replacement cost.
- Estimate the Facility Condition Index (**FCI**[10]) for all Buildings using the formula FCI = (1- $repair needs/$**PRV**[11]) x 100, obtaining the dollar amount of repair needs from BUILDER work items.

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[1]Condition Index

[2]Condition Index

[3]Functionality Index.

[4]Functionality Index.

[5]Performance Index. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. If no functional assessment has been performed, the FI is assigned a value of 100.

[6]Condition Index

[7]Functionality Index.

[8]Performance Index. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. If no functional assessment has been performed, the FI is assigned a value of 100.

[9]Performance Index. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. If no functional assessment has been performed, the FI is assigned a value of 100.

[10]Facility Condition Index.

[11]Plant Replacement Value. This number will be the aggregate of the PRV of all inventory items contained within the current inventory item.

- Estimate the current **FCI**[1] for all Complexes, Sites, and Organizations using the formula FCI = (1- $repair needs/$**PRV**[2]) x 100, obtaining the dollar amount of repair needs from BUILDER work items for the Complex, Site, or Organization.

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[1]Facility Condition Index.

[2]Plant Replacement Value. This number will be the aggregate of the PRV of all inventory items contained within the current inventory item.

Appendixes

Appendix_A: Distress Survey Definitions

APPENDIX A – Distress Survey Definitions

General Notes

- These distresses are intended to apply generically to all subcomponents that collectively form building component-sections.
- Structural component-sections and subcomponents must be viewed from a loss of structural integrity perspective. A severity level of High must be recorded should the presence of any distress type compromise the structural integrity of the Component-Section or subcomponent.
- High severity must be recorded for any distress type, regardless of density, that is resulting in an unacceptable health, life/safety, or security risk.
- There are two general rules. One, if a certain distress type is a special case of another distress type, only record the special case. Two, if a certain distress type results from the existence of another distress, record both. Pay particular attention to the notes provided for each distress definition. They often address the application of these rules.
- Where multiple severity levels are present for a given distress type on a given subcomponent, record each separately with the appropriate amount or density, unless stated otherwise for a given distress type. The total amount or density for all severity levels cannot exceed 100%.
- Distress quantities or distress density may be recorded. If distress quantities are recorded, density ranges will be computed in BUILDER/BuilderRED. If distress densities are recorded, distress quantities will be blank in BUILDER/BuilderRED.
- Some of the distress definitions described herein make note of a “replacement unit.” Certain component-sections are a collection of units. Examples of this are tiles (ceiling, floor, etc.). If the logical work action for these units is to replace some or all of them (e.g. a cracked ceiling tile will be replaced), then the distress quantity and/or density should reflect the area, length, or quantity of the distressed units rather than the distress itself.
- If during the course of the inspection additional occurrences are found of distress-severity combinations for a given Component-Section subcomponent or subcomponent sample (if sampling), adjust the distress quantity or distress density as necessary.
- Density ranges, when recorded instead of distress quantities, can be estimated as described in Table A1.
- Some subcomponents have a unit of measure of “Each.” Distress densities may apply to the entire unit or a unit portion as indicated in the definitions below. Density must first be applied to an entire unit and then applied across multiple units, if present. For example, if a fan belt has been chewed by a rodent, the distress density for that unit would be 100% regardless of how much of the belt has been chewed because the belt as a whole is adversely affected. But if there are three belts present and the other two are free of that same distress, the density will drop to 33%.

- Distresses for built-up, single-ply, and asphalt shingle roofing (membrane, flashing, etc.) shall follow the ROOFER™ SMSSustainment Management System definitions provided in Appendixes B through D. Densities may be estimated or distress quantities may be recorded.

Table A1. Distress Density Estimation Visual Clues

Density (%)	Visual Cue (when applicable)
>0-0.1%	Difficult to notice even by careful observation, especially if spotty. (up to about 1" x 12" in a 8' x 10' area; 1/8" in 10' length; or 1 in 1000)
>0.1-1%	Somewhat noticeable, but easily missed by casual observation, especially if spotty; Careful observation usually needed, if spotty. (up to about 10" x 12" in a 8' x 10' area; 1-1/4" in 10' length; or 1 in 100)
>1-5%	Noticeable, even by casual observation, but still only a mere fraction. (up to about 1' x 4' in a 8' x 10' area; 6" in 10' length; or 1 in 20)
>5-10%	Easily noticeable even if spotty; more than a mere fraction. (up to about 1' x 8' in a 8' x 10' area; 1' in 10' length; or 1 in 10)
>10-25%	Readily noticeable, but less than 1/4 of area, length, or amount.
>25-50%	Very noticeable, but less than 1/2 of area, length, or amount.
>50-<100%	Overwhelmingly noticeable; greater than 1/2 of area, length, or amount.
100%	Entire area, length, or amount.

Distress Summary Listing

- Animal/Insect Damaged
- Blistered
- Broken
- Capability/Capacity Deficient
- Clogged
- Corroded
- Cracked
- Damaged
- Deteriorated
- Displaced
- Efflorescence
- Electrical Ground Inadequate or Unintentional
- Holes
- Leaks
- Loose
- Missing
- Moisture/Debris Contaminated
- Noise/Vibration Excessive
- Operationally Impaired
- Overheated
- Patched
- Rotten
- Stained

General Distresses: Animal/Insect Damaged

Definition:

Subcomponent has been gnawed, chewed, scratched, bitten, or otherwise damaged by animals, birds, and/or insects. Evidence includes holes, droppings, nests, sawdust, shavings, and particle matter indicating the presence of animals, birds, and/or insects.

Notes:

- Nests may not indicate animal/insect damage, but indicate the past or a current presence of animals, birds, or insects. Nests should be recorded under “Moisture/Debris/Mold Contaminated”.
- Damage may be internal. Therefore, if clues indicate animal, bird, or insect damage, the subcomponent should be sounded with a hammer or mallet. A hollow sound may indicate internal damage.
- If damage includes staining, record “Stained” in addition to “Animal/Insect Damaged.” If the only damage is staining, only record “Stained” and do not record “Animal/Insect Damaged.”
- If the subcomponent is a tank, pipe, container, trough, pressure vessel, or sealant and as a result of the animal/insect damage a leak has also occurred, record the severity level as High and the distress type “Leaks,” as well.
- If the animals, birds, or insects causing the damage are still present, record as High severity.
- If the subcomponent unit-of-measure is “Each,” estimate the density if the subcomponent is repairable or 100% if it must be replaced. (See General Notes).
- If the subcomponent unit-of-measure is square feet (square meters) or linear feet (meters) and animal/insect damage has occurred to subcomponents where the logical repair would be the replacement of a unit (e.g. wood deck member, fan belt) the measurement quantity will be that entire unit even though the animal/insect damage may only encompass portion of that unit. If the subcomponent can be patched, the measurement quantity will only encompass the area to be potentially patched.
- Assign only one severity level to a given logical replacement area, length, or quantity measured as described in 7) above.

Severity Levels:

Low - Distress exists, but damage is superficial.

Medium - Distress exists, but not superficial, nor raised to the level of High.

High - Any of the following exists:

- Health, life/safety, security, or structural integrity problems.
- Other subcomponents, component-sections, equipment, furnishings, material, or other building contents may be damaged from the entry of rain, snow, wind, groundwater, etc.
- A leak has resulted in a tank, pipe, container, trough, pressure vessel, or sealant.
- The passage of animals, birds, or insects is possible and/or likely, but prevention is required.

- The operation of another subcomponent, the parent Component-Section, or another Component-Section is adversely affected.
- The subcomponent is unusable.

Measurement:

Affected Area, Length, or Quantity, as appropriate

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area, Length, or Quantity

B = Total Area, Length, or Quantity of Subcomponent

Distress Examples:

- Termite damage
- Pet scratches
- Rodent holes
- Fecal contamination
- Carpenter bee holes
- Animal pathways in insulation
- Screen in roof ventilator displaced and holed by animal in order to gain access to attic
- Bent roof ventilator blade caused by animal gaining access to attic
- Animal hole under security fence

General Distresses: Blistered

Definition:

Round or elongated raised areas of the subcomponent surface that are generally filled with air.

Notes:

“Blistered” is a special case of deterioration. When present, record “Blistered” instead of “Deteriorated.”

Severity Levels:

Low - The raised areas are noticeable by vision or touch

Medium - Blistered area has begun to show deterioration

High - Blisters are broken or worn through

Measurement:

Affected Area, Length, or Quantity, as appropriate

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area, Length, or Quantity

B = Total Area, Length, or Quantity of Subcomponent

Distress Examples:

- Floor covering with raised area that is “soft” when walked on
- Wall covering (wallpaper) with air pocket

General Distresses: Broken

Definition:

Subcomponent has been fractured, shattered, or otherwise separated into two or more pieces and one or more of those pieces are missing or if the pieces are all present the separation is resulting in the loss of operability to this or other subcomponents.

Notes:

- Care must be taken to differentiate between “Broken,” “Cracked,” "Damaged,” “Operationally Impaired,” and “Missing.” The differentiation between “Broken” and “Cracked” are the missing pieces or loss of operability associated with “Broken.” “Broken” provides greater problem specificity and should be used instead of “Damaged,” when applicable. “Operationally Impaired” should be recorded instead of “Broken” if operability is lost, but there is no true separation of pieces or if a separation is unknown. Missing pieces as a result of fracturing denotes “Broken,” whereas missing parts without fracturing denotes “Missing.”
- If the subcomponent is a tank, pipe, container, trough, pressure vessel, or sealant and as a result of the fracturing a leak has occurred, record the severity level as High and the distress type “Leaks,” as well.
- If the subcomponent unit-of-measure is “Each” estimate the density if the subcomponent is repairable or 100% if it must be replaced. (See General Notes #10).
- If the subcomponent unit-of-measure is square feet (square meters) or linear feet (meters) and the logical repair would be the replacement of a unit (e.g. ceiling tile, window pane, etc.) the measurement quantity will be that entire unit even though the actual broken quantity may only encompass a portion of that unit. If the subcomponent can be patched, the measurement quantity will only encompass the area to be potentially patched. Assign only one severity level to a given logical repair or replacement area, length, or quantity measured as described in 4) above.

Severity Levels:

Medium - Distress exists

High - Any of the following exists:

- Health, life/safety, security, or structural integrity problems.
- Other subcomponents, component-sections, equipment, furnishings, material, or other building contents may be damaged from the entry of rain, snow, wind, groundwater, etc.
- A leak has resulted in a tank, pipe, container, trough, pressure vessel, or sealant.
- The undesired passage of animals, birds, or insects is occurring.
- The operation of another subcomponent, the parent Component-Section, or another Component-Section is adversely affected.
- The subcomponent is unusable.

Measurement:

Affected Area, Length, or Quantity, as appropriate

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area, Length, or Quantity

B = Total Area, Length, or Quantity of Subcomponent

Distress Examples:

- Shattered window pane
- Wire separated from connector preventing lights from working
- Ceiling tile separated into two pieces with the one piece missing

General Distresses: Capability/Capacity Deficient

Definition:

Component serviceability is lacking due to insufficient capacity, technical obsolescence, or lack of compliance to applicable codes. This can be due to poor original design, alterations, changes in component demand, and/or changes in building use.

Notes:

- Capability/Capacity Deficient" is defined at the component level, but sometimes it is apparent at the system level (e.g. HVAC) or in a building functional area (e.g. kitchen). However, since inspection is performed on component-sections at the subcomponent level, "Capability/Capacity Deficient" should be applied to all applicable subcomponents in their parent component-sections. Building functional areas may need to be identified and used as basis for creating component-sections to get the proper assignment of this distress.

- Consider “Capability/Capacity Deficient” in a broad context (e.g. meeting Americans with Disabilities Act (ADA) requirements, building use demands, etc.)
- Only rate Component-Sections actually present in the building, not those that may be required but never installed or constructed.
- Check for problems with other components/subcomponents to ensure that other, more appropriate, distress types are not the true cause of the perceived deficiency.
- Component-Section functionality metrics are under development and when completed this distress will be superseded by those in a functionality assessment procedure.

Severity Levels:

Low - Distress exists, but superficial. Mission or quality-of-life rarely affected.

Medium - Distress exists, but not superficial, nor raised to the level of High.

High - Any of the following exists:

- Health, life/safety, security, or structural integrity problems.
- Violation of law.
- Adversely affects mission or quality-of-life for an extended period of time.

Measurement:

Affected Area, Length, or Quantity

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area, Length, or Quantity

B = Total Area, Length, or Quantity of Subcomponent

Distress Examples:

- HVAC ductwork does not extend into an office
- HVAC unit size too small for cooling demand
- Furnace cannot adequately heat office in winter
- Pipe size too small for proper water flow
- Wheelchair ramp too steep
- Poor room lighting
- Door undersized for a wheelchair

General Distresses: Clogged

Definition:

Obstruction within a subcomponent that is disrupting the intended flow of air, other gasses, or liquids.

Notes:

- “Clogged” applies to such items as pipes, drains, valves, ducts, troughs, gutters, filters, screens, heating/cooling coils, and other “enclosed (totally or partially)” subcomponents used to channel liquids and/or gasses.
- The measurement amount and density are based on the subcomponent length, area, or quantity, not on the degree of blockage for that amount. The degree of blockage is used to determine severity level.
- Sometimes, the extent of a clogged item is unknown (e.g. how much of a length of pipe is clogged?). If unknown, estimate a reasonable amount or density of the subcomponent length or area.
- If blockage is due to corrosion, debris or vegetation, or dirt, record the distress type “Corroded,” “Moisture/Debris/Mold/Contaminated, ” or “Stained/Dirty,” respectively, in addition to “Clogged.” If those distresses are present, but the flow is unaffected, do not record, “Clogged.”

Severity Levels:

Low - Distress exists, but blockage is superficial.

Medium - Distress exists, but not superficial, nor raised to the level of High.

High - Any of the following exists:

- Health, life/safety, or security problems.
- Flow is severely restricted.
- The operation of another subcomponent, the parent Component-Section, or another Component-Section is adversely affected.
- The subcomponent is unusable.

Measurement:

Affected Area, Length, or Quantity, as appropriate.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area, Length, or Quantity

B = Total Area, Length, or Quantity of Subcomponent

Distress Examples:

- Waste water pipe that will not drain or drains slowly
- Downspout with little flow and water spilling over gutter
- Low water flow from faucet (not due to low water pressure)
- Reduced air flow from duct due to presence of foreign matter

General Distresses: Corroded

Definition:

Subcomponent is wearing away, disintegrating, flaking, lensing, and/or scaling due to the effects of chemical, electrochemical, or electrolytic attack.

Notes:

- “Corroded” is a special case of deterioration. When present, record “Corroded” instead of “Deteriorated.”
- Any staining of the surrounding area (e.g. rust streaks) will also be recorded as “Stained.”
- If the subcomponent is a tank, pipe, container, trough, pressure vessel, or sealant and as a result of the corroding a leak has also occurred, record the severity level as High and the distress type “Leaks,” as well.
- Record “Clogged,” in addition if corrosion is causing clogging.
- Paints and coatings that are failing to provide a protective coating, but NOT inventoried with the subcomponent, are included in the “Corroded” distress type at Low severity. Paints and coatings, inventoried with the subcomponent, that are failing to protect the subcomponent shall be given a separate paint/coating rating.
- Do not record Low severity levels for paint or coatings and higher severity levels for the subcomponent at the same locations.
- If the unit-of-measure of the subcomponent is “Each,” estimate the density if the subcomponent is repairable or 100% if it must be replaced. (See General Notes #10).
- If the subcomponent unit-of-measure is square feet (square meters) or linear feet (meters) and corrosion has occurred to subcomponents where the logical repair would be the replacement of a unit (e.g. metal panel) the measurement quantity will be that entire unit even though the corrosion may only encompass portion of that unit. If the subcomponent can be patched, the measurement quantity will only encompass the area to be potentially patched.
- Assign only one severity level to a given logical replacement area, length, or quantity measured as described above (#7).
- If the corrosion is desirable (e.g. patina on copper), “Corroded” will not be recorded.

Severity Levels:

Low - Any of the following exists:

- Corrosion exists, but can usually be brushed off.
- Deterioration superficial.
- Paint or protective coating (e.g. PVC) has failed and corrosion has begun (only when paint is not rated separately).

Medium - Flaking, lensing, and/or scaling exist, but not raised to the level of High.

High - Any of the following exists:

- Health, life/safety, security, or structural integrity problems.
- Other subcomponents, component-sections, equipment, furnishings, material, or other building contents may be damaged from the entry of rain, snow, wind, groundwater, etc.
- A leak has resulted in a tank, pipe, container, trough, pressure vessel, or sealant.
- The undesired passage of animals, birds, or insects is occurring.
- The operation of another subcomponent, the parent Component-Section, or another Component-Section is adversely affected.
- The subcomponent is unusable.

Measurement:

Affected Area, Length, or Quantity, as appropriate

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area, Length, or Quantity

B = Total Area, Length, or Quantity of Subcomponent

Distress Examples:

- Spotty brown rust on metal roofs
- Brown water from internal pipe corrosion
- Rusty pipe supports
- Failure of the galvanized coating on a corrugated steel sheet wall

General Distresses: Cracked

Definition:

Subcomponent has been fractured. Separation into two or more pieces may or may not have occurred. Crack width may be variable and faulting may be present. There is no loss of operational ability to the subcomponent or Component-Section.

Notes:

- A hairline crack is defined as having a width so small as to be very tight.
- Care must be taken to differentiate between “Cracked,” “Broken,” “Damaged,” and “Deteriorated.” “Cracked” implies that the fractured pieces are intact, whereas “Broken” implies that some of the resulting cracked pieces are missing or a loss of operational ability. Fracturing may possibly be caused by a specific event which suggests the distress type “Damaged.” However, record as “Cracked.” Likewise, fracturing can occur as a consequence of weathering, humidity change, and sustained or repeated loading over long periods suggesting “Deteriorated.” However, record “Cracked.”

- “Cracked” and the distress types “Broken” and/or “Damaged” can occur together in the same subcomponent-Section, but only independently at different locations (e.g. different ceiling tiles in the same Component-Section).
- If the fractured pieces are faulted, record the distress type “Displaced” also.
- If the subcomponent is a tank, pipe, container, trough, pressure vessel, or sealant and as a result of the crack a leak has occurred, record the severity level as High and the distress type “Leaks,” also.
- Density is determined from dividing total crack length by the subcomponent surface area or length, as appropriate.
- If the subcomponent unit-of-measure is “Each” estimate the density if the subcomponent is repairable or 100% if it must be replaced. (See General Notes #10). If multiple cracks exist at different severity levels, record at the highest level.
- If the subcomponent unit-of-measure is square feet (square meters) or linear feet (meters) and cracking has occurred in subcomponents where the logical repair would be the replacement of a unit (e.g. ceiling tile, window pane, pipe section, etc.) the measurement quantity will be that entire unit even though the actual crack may only encompass portion of that unit. If the subcomponent can be patched, the measurement quantity will only encompass the area to be potentially patched.
- Assign only one severity level to a given logical replacement area, length, or quantity measured as described above (#8).

Severity Levels:

Low - Hairline cracks which may or may not divide the subcomponent into pieces. If distinct pieces exist, they are held tightly together.

Medium - Crack width greater than hairline and the subcomponent has been divided into pieces with clear separation, but not raised to the level of High.

High - Any of the following exists:

- Health, life/safety, security, or structural integrity problems.
- Other subcomponents, component-sections, equipment, furnishings, material, or other building contents may be damaged from the entry of rain, snow, wind, groundwater, etc.
- A leak has resulted in a tank, pipe, container, trough, pressure vessel, or sealant.
- The undesired passage of animals, birds, or insects is occurring.
- The operation of another subcomponent, the parent Component-Section, or another Component-Section is adversely affected.
- The subcomponent is unusable.

Measurement:

Affected Area, Length, or Quantity, as appropriate.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area, Length, or Quantity

B = Total Area, Length, or Quantity of Subcomponent

Distress Examples:

- Fractured sidewalk, masonry wall, window, or ceiling tile with all pieces present
- Fractured pipe from frozen water

General Distresses: Damaged

Definition:

Dents, chips, gouges, tears, rips, distortion, rupture, etc. resulting from impact (e.g. vehicles), fire, flood, or other means associated with specific events.

Notes:

- Care must be taken to differentiate between “Damaged,” “Animal/Insect Damage,” “Broken,” “Cracked,” and “Moisture/Debris/Mold/Contaminated.” Those other distress types imply a greater specificity and should be recorded, if applicable, instead of “Damaged.”
- “Damaged,” “Animal/Insect Damage,” “Broken,” “Cracked,” and/or “Moisture/Debris/Mold/Contaminated” can occur within the same subcomponent, but only independently at different locations (e.g. different locations on the same wall.)
- If displacement has occurred along with the damage, record the distress type “Displaced” also. If the damage event has only resulted in a displacement, record “Displaced” instead of “Damaged.”
- If the subcomponent is a tank, pipe, container, trough, pressure vessel, or sealant and as a result of the specific damage event a leak has occurred, record the severity level as High and the distress type “Leaks,” also.
- If the subcomponent unit-of-measure is “Each” estimate the density if the subcomponent is repairable or 100% if it must be replaced. (See General Notes #10).
- If the subcomponent unit-of-measure is square feet (square meters) or linear feet (meters) and damage has occurred to subcomponents where the logical repair would be the replacement of a unit (e.g. ceiling tile, window pane, pipe section, etc.) the measurement quantity will be that entire unit even though the actual damage may only encompass portion of that unit. If the subcomponent can be patched, the measurement quantity will only encompass the area to be potentially patched.
- Assign only one severity level to a given logical replacement area, length, or quantity measured as described in 6) above.
- If the damage is the result of liquids other than water (e.g. oil), record “Damaged” and clarify with a comment.
- Tiny isolated dents, chips and gouges at extremely low density (difficult to see or even find) should not be recorded.

Severity Levels:

Low - Distress exists, but superficial.

Medium - Distress exists, but not superficial, nor raised to the level of High.

High - Any of the following exists:

- Health, life/safety, security, or structural integrity problems.
- Other subcomponents, component-sections, equipment, furnishings, material, or other building contents may be damaged from the entry of rain, snow, wind, groundwater, etc.
- A leak has resulted in a tank, pipe, container, trough, pressure vessel, or sealant.
- The undesired passage of animals, birds, or insects is occurring.
- The operation of another subcomponent, the parent Component-Section, or another Component-Section is adversely affected.
- The subcomponent is unusable.

Measurement:

Affected Area, Length, or Quantity, as appropriate.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area, Length, or Quantity

B = Total Area, Length, or Quantity of Subcomponent

Distress Examples:

- Dent in metal column from collision with forklift
- Dent and hole in metal wall from impact of a forklift tine
- Scratches and chips in masonry wall from vehicle impact
- Dents in gutters from ladders
- Gouges in walls from abuse
- Deformation of roof from flying debris or hail
- Scratched, chipped, frayed, and/or holed ceiling tile from poor handling
- Hole in wall from hammer
- Carpeted wall torn from snag with passing sharp or pointed object
- Wall corner gouged or distorted from collision with a heavy object
- Charred wood column from fire

General Distresses: Deteriorated

Definition:

The natural degradation of the subcomponent through normal usage and/or environmental exposure. This may involve disintegration, erosion, delamination, weathering, checks, warps, bumps, raveling, flaking,

pitting, spalling, wear, etc. and/or a change in properties (e.g. brittle). Included are a wearing away and/or thinning of coatings (e.g. paint, varnish, polyvinyl (PVC), etc.)

Notes:

- “Corroded” and “Rotted” are special cases of “Deteriorated.” When they are present, they should be recorded instead of “Deteriorated.” Sometimes, “Cracked” and “Moisture/Debris/Mold /Contaminated” may be a special case of “Deteriorated.” Record the distress type “Cracked” or “Moisture/Debris/Mold /Contaminated” instead of the distress type “Deteriorated” when cracks or contamination are present, respectively.
- If displacement is occurring along with the natural degradation, record the distress type “Displaced,” as well.
- If the subcomponent is a tank, pipe, container, trough, pressure vessel, or sealant and as a result of the degradation a leak has occurred, record the severity level as High and the distress type “Leaks,” also.
- Paints and coatings that are degraded, but NOT inventoried with the subcomponent, are included in the “Deteriorated” distress type at Low severity. Paints and coatings, inventoried with the subcomponent, that are degraded shall be given a separate paint/coating rating.
- Do not record Low severity levels for paint or coatings and higher severity levels for the subcomponent at the same locations.
- If the subcomponent unit-of-measure is “Each” estimate the density if the subcomponent is repairable or 100% if it must be replaced. (See General Notes #10).
- If the subcomponent unit-of-measure is square feet (square meters) or linear feet (meters) and deterioration has occurred to subcomponents where the logical repair would be the replacement of a unit (e.g. ceiling tile, door, wood cladding sheet, etc.) the measurement quantity will be that entire unit even though the actual deterioration may only encompass a portion of that unit. If the subcomponent can be patched, the measurement quantity will only encompass the area to be potentially patched.
- Assign only one severity level to a given logical replacement area, length, or quantity measured as described in 7) above.

Severity Levels:

Low - Either of the following exists:

- Distress exists, but superficial.
- Painted or coated surface worn, chipped, blistered, etc. (only when the paint is not being rated separately)

Medium - Distress exists, but not superficial, nor raised to the level of High.

High - Any of the following exists:

- Health, life/safety, security, or structural integrity problems.
- Other subcomponents, component-sections, equipment, furnishings, material, or other building contents may be damaged from the entry of rain, snow, wind, groundwater, etc.

- A leak has resulted in a tank, pipe, container, trough, pressure vessel, or sealant.
- The undesired passage of animals or birds (and possibly insects) is possible and/or likely.
- The operation of another subcomponent, the parent Component-Section, or another Component-Section is adversely affected.
- The subcomponent is unusable.

Measurement:

Affected Area, Length, or Quantity, as appropriate.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area, Length, or Quantity

B = Total Area, Length, or Quantity of Subcomponent

Distress Examples:

- Delamination of brick faces
- Splits in wood members
- Brittle and cracked caulking
- Worn or raveled carpeting
- Warped flooring
- Peeling wallpaper
- Spalled concrete
- Weathered wood deck

General Distresses: Displaced

Definition:

Subcomponent has been moved, deflected, shifted, bulged, rotated, faulted, or settled from its intended position. This may be due to a specific event (e.g. earthquake, collision, failure of another subcomponent, etc.), plastic deformation, or consolidation over time.

Notes:

- “Displaced” is a special case of either “Damaged” or “Deteriorated.” It can be used together or separately from them. This should be used together with “Damaged” only when the subcomponent has been shifted from its normal position and the subcomponent is otherwise damaged. Distortion of the subcomponent either through being damaged or deteriorated does not, in itself, constitute being displaced. If the specific event causing the movement resulted in no other damage, record “Displaced” not “Damaged.”

- “Displaced” should be used together with “Deteriorated” if one or more subcomponent parts have moved and the distress type “Deteriorated,” is apparent also.
- If the subcomponent is a tank, pipe, container, trough, pressure vessel, or sealant and as a result of the displacement a leak has occurred, record the severity level as High and the distress type “Leaks,” also.
- Where displacement has resulted in cracking or vice versa, record the distress type “Cracked,” as well.
- A loose subcomponent may sag due to its weight. In these cases, record “Loose” instead of “Displaced.”
- “Displaced” may possibly occur to an entire Component-Section or to a subcomponent with other subcomponents attached to it. If so, record first to the primary subcomponent. Then, only record for other subcomponents if they have moved relative to the primary subcomponent.

Severity Levels:

Low - Distress exists, but magnitude of movement is slight.

Medium - Distress exists, but not slight, nor raised to the level of High.

High - Any of the following exists:

- Health, life/safety, security, or structural integrity problems.
- Other subcomponents, component-sections, equipment, furnishings, material, or other building contents may be damaged from the entry of rain, snow, wind, groundwater, etc.
- A leak has resulted in a tank, pipe, container, trough, pressure vessel, or sealant.
- The undesired passage of animals, birds, or insects is occurring.
- The operation of another subcomponent, the parent Component-Section, or another Component-Section is adversely affected.
- The subcomponent is unusable.

Measurement:

Affected Area, Length, or Quantity, as appropriate.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area, Length, or Quantity

B = Total Area, Length, or Quantity of Subcomponent

Distress Examples:

- Leaning chimney or flue
- Uneven sidewalk

- Parapet movement
- Steps separated from building
- Sagging roof truss
- Dislodged door frame
- Open seams or joints in ductwork or gutters
- Light pole leaning after hit by truck
- Bulge in masonry wall resulting from brick unit expansion from moisture
- Floor with excessive deflection
- Sagging ceiling tiles
- Column out-of-plumb

General Distresses: Efflorescence

Definition:

Soluble salts encrusted on the surface of masonry, concrete, or plaster subcomponents caused by moisture leaching free alkalies from mortar or concrete. Efflorescence is typically seen as a white powdery coating.

Severity Levels:

Low - Coating is noticeable and easily brushed off, but the surface is visible.

Medium - Either of the following exists:

- Coating is not easily brushed off.
- Surface is obscured.

Measurement:

Affected Area, Length, or Quantity

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area, Length, or Quantity

B = Total Area, Length, or Quantity of Subcomponent

Distress Examples:

- White powder on brick or concrete masonry

General Distresses: Electrical Ground Inadequate or Unintentional

Definition:

Unintentional connection of very low resistance causing a short circuit or a high resistance connection resulting in inadequate grounding.

Notes:

- “Electrical Ground Inadequate or Unintentional” is a special case of impaired operations. When present, record “Electrical Ground Inadequate or Unintentional” instead of “Operationally Impaired.”
- Record additional distress types, if known, should they be contributing to this distress. These may include “Corroded,” “Loose,” “Damaged,” etc.

Severity Levels:

High - Distress exists.

Measurement:

Total Sub-Component Area, Length, or Quantity

Density:

100% (automatic)

Distress Examples:

- Lightning arrestor disconnected or broken
- Connector insulated by paint
- Open or no ground at outlet for interior wiring

General Distresses: Holes

Definition:

Drilling, punching or penetration of a subcomponent for an intended purpose. Penetration depth may be partial or complete.

Notes:

- Do not record “Holes” along with the distress types “Animal/Insect Damaged,” “Broken,” “Corroded,” “Damaged,” “Deteriorated,” “Missing,” or “Rotten.” The presence of holes determines the severity levels for those distress types.
- Do not record if holes are not in plain view or do not degrade the subcomponent.
- If the subcomponent is a tank, pipe, container, trough, pressure vessel, or sealant and as a result of the penetration a leak has occurred, record the severity level as High and the distress type “Leaks,” as well.
- Holes resulting from missing fasteners shall not be recorded if the fastener should be replaced. Record “Missing” for the fasteners instead.
- Do not count pinholes, unless density is sufficient to be noticeable or a leak has occurred.

- Clusters of Low severity holes within one (1) square foot (0.1 square meter) shall count as one (1) Medium severity hole.
- Weep holes shall not be recorded.

Severity Levels:

Low - Partial depth penetration.

Medium - Either of the following:

- Clusters of Low severity holes.
- Distress exists, but not raised to the level of High.

High - Any of the following exists:

- Health, life/safety, security, or structural integrity problems.
- Other subcomponents, component-sections, equipment, furnishings, material, or other building contents may be damaged from the entry of rain, snow, wind, groundwater, etc.
- A leak has resulted in a tank, pipe, container, trough, pressure vessel, or sealant.
- The undesired passage of animals, birds, or insects is occurring.
- The penetration is adversely affecting the operation of another subcomponent, the parent Component-Section, or another Component-Section.
- The subcomponent is unusable.

Measurement:

Number of Holes

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Number of Holes

B = Total Area, Length, or Quantity of Subcomponent

Distress Examples:

- Pipe penetration that is not sealed
- Former anchor holes for signs since removed
- Permanently secured door with door lock removed, but hole for lock remains

General Distresses: Leaks

Definition:

The unwanted entry, passage, or escape of gas or liquid.

Notes:

- If the leaking gas or liquid is a biological (e.g. herbicide, pesticide, etc.), chemical (e.g. volatile, flammable, explosive, corrosive, etc.), or radioactive hazard, High severity shall be recorded. Also, notify for immediate corrective action.
- “Leaks” may be recorded without any other distresses.
- Do not record “Leaks” in conjunction with “Animal/Insect Damaged,” “Broken,” “Corroded,” “Cracked,” “Damaged,” “Deteriorated,” “Displaced,” “Holes,” “Loose,” “Missing,” or “Rotten” unless the subcomponent is a tank, pipe, container, trough, pressure vessel or sealant. The loss of liquids or gas (or the gain from a vacuum loss) from those subcomponents as a result of those distresses is the trigger for “Leaks.”
- Leaks from cracks, joints, etc. should be measured as the crack or joint length, etc.

Severity Levels:

Low - Distress exists, but superficial.

Medium - Distress exists, but not raised to the level of High.

High - Any of the following exists:

- Health, life/safety, or security problems.
- Steady rate of flow and loss of air, gas, water, or other liquid of significant concern.
- Pressure or vacuum loss apparent and adversely affecting usage.
- Other subcomponents, component-sections, equipment, furnishings, material, or other building contents may be damaged from the leakage.
- The operation of another subcomponent, the parent Component-Section, or another Component-Section is adversely affected.
- Overall Component-Section, component, or system usage is adversely affected by liquid or gas loss.
- The subcomponent is unusable.

Measurement:

Affected Area, Length, or Quantity, as appropriate

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area, Length, or Quantity

B = Total Area, Length, or Quantity of Subcomponent

Distress Examples:

- Water dripping from hot water heater or pipe connection
- Air escaping from compressed air line
- Boiler tubes dripping water into firebox
- Water dripping from rain gutter
- Leaky faucet
- Loss of seal in a thermopane window causing the window to fog
- Water entering during a storm through failed sealant joint between window and wall

General Distresses: Loose

Definition:

Subcomponent or subcomponent parts are not secured tightly to one or more other subcomponents. Also, one or more fasteners (i.e. bolts, screws, pins, nails and/or rivets) are not tight (torqued to a proper tension).

Notes:

- If subcomponent is loose due to being “Broken” or “Damaged” do not report “Loose.”
- Fasteners are not considered subcomponents. If any fasteners are loose, record the subcomponent being fastened as “Loose” at Low severity. Estimate density based on the number of similar fasteners needed.
- If the entire subcomponent is loose, record with a density of 100% at either Medium or High severity, as applicable. Any missing fasteners should be recorded as “Missing.”
- If the subcomponent is a tank, pipe, container, trough, pressure vessel, or sealant and as a result of being loose a leak has occurred, record the severity level as High and the distress type “Leaks,” as well.
- Subcomponents firmly attached to a loose subcomponent are not loose.

Severity Levels:

Low - Fasteners are loose, but subcomponent is tight.

Medium - Subcomponent is loose, but not raised to the level of High.

High - Any of the following exists:

- Health, life/safety, security, or structural integrity problems.
- Other subcomponents, component-sections, equipment, furnishings, material, or other building contents may be damaged from the entry of rain, snow, wind, groundwater, etc.
- A leak has resulted in a tank, pipe, container, trough, pressure vessel, or sealant.
- The undesired passage of animals, birds, or insects is occurring.
- The operation of another subcomponent, the parent Component-Section, or another Component-Section is adversely affected.
- The subcomponent is unusable.

Measurement:

Affected Area, Length, or Quantity, as appropriate.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area, Length, or Quantity

B = Total Area, Length, or Quantity of Subcomponent

Distress Examples:

- Loose bolts holding light fixture to wall
- Roof or wall panels flapping in wind
- Non-secured stair railing
- Slackened guy wire
- Squeaky floor or stair when walked or stepped on
- Nail or screws popping out of drywall panel
- Raised nails or screws in a deck or flooring

General Distresses: Missing

Definition:

Subcomponent and/or subcomponent parts including fasteners (i.e. bolts, screws, pins, nails and/or rivets) are required, but absent due to removal, dislodgement, or deterioration.

Notes:

- If a subcomponent or subcomponent parts are missing resulting in a hole, record “Missing.” Do not record “Holes” for this subcomponent. The distress type “Holes” may be valid for the subcomponent to which this subcomponent was attached. See “Holes” definition.
- If the entire subcomponent is missing and needed, record “Missing” with a density of 100% at either Medium or High severity, as applicable.
- Fasteners are not considered subcomponents. If any fasteners are missing, record the subcomponent being fastened as “Missing” at Low severity. Estimate density based on the number of similar fasteners needed.
- If the subcomponent is a tank, pipe, container, trough, pressure vessel, or sealant and as a result of the missing subcomponent a leak has occurred, record the severity level as High and the distress type “Leaks,” as well.

Severity Levels:

Low - Fasteners are missing.

Medium - Portion of or entire subcomponent absent, but not raised to the level of High.

High - Any of the following exists:

- Health, life/safety, security, or structural integrity problems.
- Other subcomponents, component-sections, equipment, furnishings, material, or other building contents may be damaged from the entry of rain, snow, wind, groundwater, etc.
- A leak has resulted in a tank, pipe, container, trough, pressure vessel, or sealant.
- The undesired passage of animals, birds, or insects is occurring.
- The operation of another subcomponent, the parent Component-Section, or another Component-Section is adversely affected.
- The subcomponent is unusable.

Measurement:

Affected Area, Length, or Quantity, as appropriate.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area, Length, or Quantity

B = Total Area, Length, or Quantity of Subcomponent

Distress Examples:

- Holes where fasteners are currently required
- Ceiling tiles removed and never replaced
- Exhaust fan removed, but still needed
- Missing pin in a hinge
- Missing pop rivet from sheet metal panel
- Handrail removed and never replaced
- Ladder rung was loose and fell out

General Distresses: Moisture/Debris Contaminated

Definition:

The unintended presence of foreign material, vegetation, mold, mildew, water and/or other liquid.

Notes:

- The presence of moisture, debris, sand, etc. does not necessarily constitute “Moisture/Debris/Mold/Contaminated.” The presence must exceed the amount normally expected through typical usage. Cleaning efforts would need to exceed those normally expected from routine housekeeping.

- “Moisture/Debris/Mold/Contaminated” is a special case of either “Damaged” or “Deteriorated.” When present, use “Moisture/Debris/Mold Contaminated” instead of either “Damaged” or “Deteriorated.”
- After debris, mold, mildew, etc. removal or cleaning, record “Stained/Dirty” instead of “Moisture/Debris/Mold/Contaminated,” if staining remains.
- If the foreign material is dirt, record “Stained/Dirty” instead of “Moisture/Debris/Mold/Contaminated.”
- The distress type “Clogged” should be used in addition to “Moisture/Debris/Mold/Contaminated” if the presence of leaves, etc. in drains, gutters, downspouts, troughs, screens, etc. is affecting water or air flow.
- If the unit-of-measure of the subcomponent is “Each,” estimate the density if the subcomponent is repairable or 100% if it must be replaced. (See General Notes #10).
- If the subcomponent unit-of-measure is square feet (square meters) or linear feet (meters) and moisture/debris contamination has occurred to subcomponents where the logical repair would be the replacement of a unit (e.g. room carpeting) the measurement quantity will be that entire unit even though the actual contamination may only encompass portion of that unit. If the subcomponent can be patched, the measurement quantity will only encompass the area to be potentially patched.
- Assign only one severity level to a given logical repair or replacement area, length, or quantity measured as described in 6) above.

Severity Levels:

Low - Distress exists.

Medium - Subcomponent is wet or contaminated, but not raised to the level of High.

High - Any of the following exists:

- Health, life/safety, security, or structural integrity problems.
- Cannot be cleaned, dried, or made useable.
- Other subcomponents may be damaged.

Measurement:

Affected Area, Length, or Quantity, as appropriate.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area, Length, or Quantity

B = Total Area, Length, or Quantity of Subcomponent

Distress Examples:

- Gutters filled with leaves
- Trash on roof

- The presence of leaves in air handling unit coils
- Leaves present on insect screen to air intake vent
- Wet insulation
- Flood or water damage
- Bird, animal, or insect nest
- Grass growing in cracks in sidewalk
- Moss growing on side of building
- Unintended vines growing up downspout
- Mold or mildew growing on wall

General Distresses: Noise/Vibration Excessive

Definition:

Equipment noise and/or vibration in excess of normal or acceptable levels.

Severity Levels:

Medium - Noise or vibration can be corrected through adjustment.

High - Noise or vibration can only be corrected through replacement of one or more parts.

Measurement:

Affected quantity

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Quantity

B = Total Quantity of Subcomponent

Distress Examples:

- Wobbly or squeaky ceiling fan
- HVAC compressor motor with unusual whine
- Transformer with noisy “hum.”

General Distresses: Operationally Impaired

Definition:

Subcomponent does not operate properly or at all due to improper installation or construction, misalignment, binding, over tightening, malfunctioning, part failure, or repair/maintenance practices.

Notes:

- “Operationally Impaired” only applies to subcomponents of components normally associated with “operating." These include, but are not limited to, equipment, doors, windows, light fixtures, etc.
- If impairment is caused by “Damage,” “Corroded,” “Animal/Insect Damage,” “Rotted,” or other distress types, record those distress types at the appropriate severity levels in addition to “Operationally Impaired.” “Operationally Impaired” shall not be used with the distress type “Broken.” “Operationally Impaired” is recorded used instead of “Broken” if operability is lost, but there is no true separation of pieces or if a separation is unknown.
- Often, it may appear that the Component-Section as a whole (e.g. air handling unit) or a Component-Section unit (e.g. one door out of two) is operationally impaired. Care must be taken to assign “Operationally Impaired” to the appropriate subcomponent(s).
- If the Component-Section is a unit that would normally be replaced if it did not operate properly (e.g. residential hot water heater, sump pump, etc.), record “Operationally Impaired” for all of the subcomponents at the appropriate severity level.

Severity Levels:

Low - Subcomponent does not operate ideally.

Medium - Impairment is significant, but not raised to the level of High.

High - Either of the following exists:

- Health, life/safety or security problem.
- No operation of the Component-Section or a Component-Section unit

Measurement:

Affected Area, Length, or Quantity, as appropriate

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area, Length, or Quantity

B = Total Area, Length, or Quantity of Subcomponent

Distress Examples:

- Door difficult to close due to high humidity or improperly hung
- Door rattles in breeze
- Window cannot be opened due to over painting
- Window will not stay open
- Bumper installed in incorrect location
- Failed AC compressor
- Improper bend (too sharp) in lightning down conductor

- Sump pump does not work
- No hot water from hot water heater
- Exhaust fan blowing air in wrong direction

General Distresses: Overheated

Definition:

Temperature exceeds normal or acceptable levels.

Notes:

- If excessive heat has resulted in fire or other damage, the distress type, “Damaged” shall also be recorded at the applicable severity level.
- If excessive heat has resulted in discoloration, the distress type "Stained/Dirty" shall also be recorded.
- If evidence exists of overheating, but the subcomponent is not overheated at the time of the condition survey, ensure the problem that caused the overheating has been corrected. If uncertain, record “Overheated” at the appropriate severity level.
- If evidence (e.g. damage or stains) exists of past overheating, but the overheating no longer exists, do not record “Overheated.”

Severity Levels:

Medium - Excessively warm, but otherwise poses no health, life/safety, or operating problem.

High - Excessively warm or hot and poses a health, life/safety, or operating problem.

Measurement:

Affected Area, Length, or Quantity, as appropriate

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area, Length, or Quantity

B = Total Area, Length, or Quantity of Subcomponent

Distress Examples:

- Excessively warm electrical circuit breaker
- Evidence of heat damage around heater
- Discolored flue

General Distresses: Patched

Definition:

An obvious localized repair to the subcomponent.

Notes:

- “Patched” at Medium and High severities is a special case of deterioration. When present, record “Patched” instead of “Deteriorated.”
- The patch must be obvious. Patches that exist, but are virtually invisible will not be recorded.
- Patched areas may also experience other distresses unrelated to the performance of the patch itself. Record “Animal/Insect Damaged,” “Cracked,” “Damaged,” or “Stained,” as applicable and if present, as well.
- If a temporary patch has been placed to rectify any other distress type, record that distress type at one severity level lower than it would be without the temporary patch. Record in addition to “Patched.”
- If a patch is recorded as High severity, also record the underlying distress type and severity level for the subcomponent.

Severity Levels:

Low - Permanent patch exists and there is no deterioration.

Medium - Any of the following exists:

- Permanent patch is deteriorated.
- A material mismatch was used to make the patch.
- A temporary patch exists.

High - Patch has failed.

Measurement:

Affected Area, Length, or Quantity, as appropriate

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area, Length, or Quantity

B = Total Area, Length, or Quantity of Subcomponent

Distress Examples:

- Plaster repair of wall with poor workmanship
- Mastic to repair roof leak
- Pipe collar intended to repair pipe crack or hole
- Substitute prefabricated wall panel
- Color mismatch to replacement parts (when subcomponents are in plain sight)
- Isolated ceiling tile replacement of a different material

- Plywood covering over door or window
- Spackled area or holes in wall, but not painted over

General Distresses: Rotten

Definition:

Fungal or bacterial decay or decomposition resulting in softness, sponginess, disintegration, loss of strength, and/or distortion of the subcomponent.

Notes:

- “Rotten” is a special case of deterioration. When present, record “Rotten” instead of “Deteriorated.”
- Subcomponent may or may not be accompanied by a musty odor depending on the moisture state at the time of the condition survey.
- If the unit-of-measure of the subcomponent is “Each,” estimate the density if the subcomponent is repairable or 100% if it must be replaced. (See General Notes #10).
- If the subcomponent unit-of-measure is square feet (square meters) or linear feet (meters) and rotting has occurred to subcomponents where the logical repair would be the replacement of a unit (e.g. window sill, wood cladding, etc.) the measurement quantity will be that entire unit even though the actual rotting may only encompass a portion of that unit. If the subcomponent can be patched, the measurement quantity will only encompass the area to be potentially patched.
- Assign only one severity level to a given logical repair or replacement area, length, or quantity measured as described in 4) above.
- If the subcomponent is a tank, pipe, container, trough, pressure vessel, or sealant and as a result of the rot a leak has occurred, record the severity level as High and the distress type “Leaks,” as well.

Severity Levels:

Medium - Distress exists.

High - Any of the following exists:

- Health, life/safety, security, or structural integrity problems.
- Other subcomponents, component-sections, equipment, furnishings, material, or other building contents may be damaged from the entry of rain, snow, wind, groundwater, etc.
- A leak has resulted in a tank, pipe, container, trough, pressure vessel, or sealant.
- The undesired passage of animals, birds, or insects is occurring.
- The operation of another subcomponent, the parent Component-Section, or another Component-Section is adversely affected.
- The subcomponent is unusable.

Measurement:

Affected Area, Length, or Quantity, as appropriate

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area, Length, or Quantity

B = Total Area, Length, or Quantity of Subcomponent

Distress Examples:

- Spongy roof deck
- Decayed soffit and fascia
- Wood column end loss of due to water emersion

General Distresses: Stained/Dirty

Definition:

Subcomponent discoloration resulting from liquids, graffiti, smudges, mildew, mold, moss, algae, soot, dirt, animal waste, or other sources.

Notes:

- “Stained/Dirty” will not be recorded if normal housekeeping will rectify the problem. Normal housekeeping includes regular or routine vacuuming, dusting, mopping, wiping, etc.
- “Stained/Dirty” will be recorded if “special” cleaning is needed, including filter cleaning or replacement.
- If discoloration is due to excessive heat, record “Stained/Dirty” and also record "Overheated,” if applicable.
- If discoloration is due to efflorescence, the record the distress type “Efflorescence” instead of “Stained/Dirty.”
- If mildew, mold, moss, or algae exist, record “Moisture/Debris/Mold/Contaminated” instead of “Stained/Dirty.” Only record “Stained/Dirty” if these contaminates have been removed, but a stain remains.
- If the foreign material is other than dirt (e.g. leaves, vegetation, etc., record “Moisture/Debris/Mold/Contaminated” instead of “Stained/Dirty.”
- The distress type “Clogged” should be used in addition to “Stained/Dirty” if the presence of dirt in screens, filters, coils, etc. is affecting air flow.
- If discoloration is due to corrosion, the actual corroded area will be recorded as “Corroded” at the appropriate severity level, but the remaining area will be recorded as “Stained/Dirty.”
- Stains caused by animals, birds, or insects will be recorded as “Stained/Dirty” and not “Animal/Insect Damage.”
- If color mismatch exists due to a subcomponent part replacement, record “Patched” instead of “Stained/Dirty.”
- If surface is stained or dirty and painted (with paint inventoried as such), do not record “Stained/Dirty” for the Section itself, but rate the paint according the definitions in Appendix F.

- If the unit-of-measure of the subcomponent is “Each,” estimate the density if the subcomponent is repairable or 100% if it must be replaced. (See General Notes #10).
- If the subcomponent unit-of-measure is square feet (square meters) or linear feet (meters) and staining has occurred to subcomponents where the logical repair is the replacement of a unit (e.g. a ceiling tile), the measurement area will be that entire unit even though the actual stain may only encompass a portion of that unit.

Severity Levels:

Low - Distress exists.

Measurement:

Affected Area, Length, or Quantity, as appropriate

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area, Length, or Quantity

B = Total Area, Length, or Quantity of Subcomponent

Distress Examples:

- Graffiti spray painted on wall
- Bird droppings
- Rust streaks
- Smudges on wall
- Localized ceiling tile discoloration due to past roof leak
- Widespread ceiling tile discoloration due to smoke, fumes, etc.
- Greasy/oily film on walls in a garage
- Excessively dirty floors in building that has been vacant for years
- Dirty filter reducing air flow
- Dirty cooling coils reducing air flow in an air handling unit

General Notes

- These distresses are intended to apply generically to all subcomponents that collectively form building component-sections.
- Structural component-sections and subcomponents must be viewed from a loss of structural integrity perspective. A severity level of High must be recorded should the presence of any distress type compromise the structural integrity of the Component-Section or subcomponent.

- High severity must be recorded for any distress type, regardless of density, that is resulting in an unacceptable health, life/safety, or security risk.
- There are two general rules. One, if a certain distress type is a special case of another distress type, only record the special case. Two, if a certain distress type results from the existence of another distress, record both. Pay particular attention to the notes provided for each distress definition. They often address the application of these rules.
- Where multiple severity levels are present for a given distress type on a given subcomponent, record each separately with the appropriate amount or density, unless stated otherwise for a given distress type. The total amount or density for all severity levels cannot exceed 100%.
- Distress quantities or distress density may be recorded. If distress quantities are recorded, density ranges will be computed in BUILDER/BuilderRED. If distress densities are recorded, distress quantities will be blank in BUILDER/BuilderRED.
- Some of the distress definitions described herein make note of a “replacement unit.” Certain component-sections are a collection of units. Examples of this are tiles (ceiling, floor, etc.). If the logical work action for these units is to replace some or all of them (e.g. a cracked ceiling tile will be replaced), then the distress quantity and/or density should reflect the area, length, or quantity of the distressed units rather than the distress itself.
- If during the course of the inspection additional occurrences are found of distress-severity combinations for a given Component-Section subcomponent or subcomponent sample (if sampling), adjust the distress quantity or distress density as necessary.
- Density ranges, when recorded instead of distress quantities, can be estimated as described in Table A1.
- Some subcomponents have a unit of measure of “Each.” Distress densities may apply to the entire unit or a unit portion as indicated in the definitions below. Density must first be applied to an entire unit and then applied across multiple units, if present. For example, if a fan belt has been chewed by a rodent, the distress density for that unit would be 100% regardless of how much of the belt has been chewed because the belt as a whole is adversely affected. But if there are three belts present and the other two are free of that same distress, the density will drop to 33%.
- Distresses for built-up, single-ply, and asphalt shingle roofing (membrane, flashing, etc.) shall follow the ROOFER™ SMSSustainment Management System definitions provided in Appendixes B through D. Densities may be estimated or distress quantities may be recorded.

Table A1. Distress Density Estimation Visual Clues

Density (%)	Visual Cue (when applicable)
>0-0.1%	Difficult to notice even by careful observation, especially if spotty. (up to about 1" x 12" in a 8' x 10' area; 1/8" in 10' length; or 1 in 1000)
>0.1-1%	Somewhat noticeable, but easily missed by casual observation, especially if spotty; Careful observation usually needed, if spotty. (up to about 10" x 12" in a 8' x 10' area; 1-1/4" in 10' length; or 1 in 100)
>1-5%	Noticeable, even by casual observation, but still only a mere fraction. (up to about 1' x 4' in a 8' x 10' area; 6" in 10' length; or 1 in 20)
>5-10%	Easily noticeable even if spotty; more than a mere fraction. (up to about 1' x 8' in a 8' x 10'

	area; 1' in 10' length; or 1 in 10)
>10-25%	Readily noticeable, but less than 1/4 of area, length, or amount.
>25-50%	Very noticeable, but less than 1/2 of area, length, or amount.
>50-<100%	Overwhelmingly noticeable; greater than 1/2 of area, length, or amount.
100%	Entire area, length, or amount.

Distress Summary Listing

- Animal/Insect Damaged
- Blistered
- Broken
- Capability/Capacity Deficient
- Clogged
- Corroded
- Cracked
- Damaged
- Deteriorated
- Displaced
- Efflorescence
- Electrical Ground Inadequate or Unintentional
- Holes
- Leaks
- Loose
- Missing
- Moisture/Debris Contaminated
- Noise/Vibration Excessive
- Operationally Impaired
- Overheated
- Patched
- Rotten
- Stained

Appendix_B: Built-Up Roofing Distress Survey Definitions

APPENDIX B – Built-Up Roofing (BUR) Distress Survey Definitions

General Notes

- These definitions are applicable to built-up roofing (BURBuilt-up Roofing) surfaces and flashing components.
- Where multiple severity levels are present for a given distress, record each separately.
- Distress quantities or distress density may be recorded. If distress quantities are recorded, density ranges will be computed in BUILDER/BREDBUILDER Remote Entry Database (BuilderRED). If

distress densities are recorded, distress quantities will be blank in BUILDER/**BRED**[1]BUILDER Remote Entry Database (BuilderRED).

- If during the course of the inspection additional occurrences are found of distress-severity combinations, adjust the quantity or density as necessary.
- To estimate density when distress quantities are not recorded, follow the density definitions for the individual distresses. However, for use in BUILDER, density may be estimated since density ranges are used, not the precise density value. Generalized visual cues are offered below in Table B-1, but they may not be applicable for certain distresses.
- The distress definitions that follow are from Membrane and Flashing Condition Indexes for BuiltUp Roofs, Volume II: Inspection and Distress Manual (Shahin, Bailey, and Brotherson 1987), USACERL Technical Report M-87/13, downloadable at https://support.sms.erdc.dren.mil/downloads/erdc-cerl-technical-publications.

Table B-1. Built-up Roofing Distress Density Estimation Visual Cues
(Shahin, Bailey, and Brotherson 1987)

Density (%)	Visual Cue (when applicable)
>0-0.1%	Difficult to notice, even by careful observation; especially if spotty. (up to about 1" x 12" in a 8' x 10' area; ⅛" in a 10' length)
>0.1-1%	Somewhat noticeable, but easily missed by casual observation, especially if spotty. Careful observation usually needed, if spotty. (up to about 10" x 12" in a 8' x 10' area; 1¼" in a 10' length)
>1-5%	Noticeable, even by casual observation, but still only a mere fraction. (up to about 1' x 4' in a 8' x 10' area; 6" in 10' length)
>5-10%	Easily noticeable even if spotty, more than a mere fraction. (up to about 1' x 8' in a 8' x 10' area; 1' in a 10' length)
>10-25%	Readily noticeable, but less than ¼ of area or length.
>25-50%	Very noticeable, but less than ½ of area or length.
>50-<100%	Overwhelmingly noticeable; greater than ½ of area or length.
100%	Entire area or length.

Built-up Roofing (BUR) Distress Summary Listing

- (BUR) Base Flashing
- (BUR) Metal Cap Flashing
- (BUR) Embedded Edge Metal
- (BUR) Flashed Penetrations
- (BUR) Pitch Pans
- (BUR) Interior Drains and Roof Level Scuppers
- (BUR) Blisters

[1]The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"

- (BUR) Ridges
- (BUR) Splits
- (BUR) Holes
- (BUR) Surface Deterioration
- (BUR) Slippage
- (BUR) Patching
- (BUR) Debris and Vegetation
- (BUR) Improper Equipment Supports
- (BUR) Ponding

Built-Up Roofing: Base Flashing

Definition:

Base flashing is one or more piles of material extend from the roof surface up onto vertical or inclined surface providing a watertight termination of the membrane.

Severity Levels:

Low - Any of the following conditions:

- Loss of surfacing on mineral-surfaced sheets or other poor appearance (including patching) but no apparent deterioration of felts.
- Top of base flashing is less than 6 in above the roof surface.
- Flashing has permanent repairs.

Medium - Any of the following conditions:

- Slippage, wrinkling, blistering, or pulling of base flashing material.
- Loss of surfacing with some deterioration of felts but no holes, splits, or tears.
- Grease, solvent, or oil drippings on the base flashing but no deterioration of felts.
- Flashing has temporary repairs.

High - Any of the following conditions:

- Holes, split tears in flashing caused by deterioration or physical damage.
- Exposed gaps at the top of the base flashing which are not covered by counter-flashing or open side laps in the flashing which allow water to channel behind them.
- Grease, solvent, or oil drippings on the base flashing with deterioration of the felts.

Measurement:

Measure lineal feet of base flashing having the above conditions. Holes, open side laps, and seams count as 1 ft each. If an area of the base flashing is at medium severity and holes are closer than 6 in., count that entire length of distressed base flashing as high severity.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of base flashing defects (ft)

B = total length of flashed perimeter of roof section being rated including flashings for penthouses, courtyards, and curbed projections (ft)

Built-Up Roofing: Blisters

Definition:

Blisters are round or elongated raised areas of the membrane which are filled with air.

Notes: Blisters and ridges are difficult to differentiate at the low and medium severity levels. The rating error will be insignificant because of the similarity in the deduct curves. At high severity, however, it is important to distinguish between the two distresses due to their different leak potentials.

Severity Levels:

Low - The raised areas are noticeable by vision or feel. The surfacing is still in place and the felts are not exposed.

Medium - The felts are exposed or show deterioration.

High - The blisters are broken.

Measurement:

Measure the length and width of the blister in lineal feet and calculate the area (length times width). If the distance between individual blisters is less than 5 ft., measure the entire affected area in sq ft.

Note: When large quantities of this problem are present (especially on large roofs,), the representative sampling technique can be used.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total area of membrane blisters (sq ft)

B = total area of roof section being rated (sq ft)

Built-Up Roofing: Debris and Vegetation

Definition:

Foreign objects on the roof which could damage or puncture the membrane, the growth of vegetation on the roof, and/or the accumulation of solvent and oil drippings on the roof.

Severity Levels:

Medium - Any of the following conditions:

- The collection of foreign objects which are not removed from the roof during the inspection.
- Grease, solvent, or oil drippings on the roof which is causing degradation of the roof membrane.
- Evidence of vegetation, but not penetrating the felts.

High - Any of the following conditions:

- Grease, solvent, or oil drippings on the roof which is causing degradation to the roofing system.
- Vegetation roots that have penetrated the felts.

Measurement:

Measure square feet of affected area. Each isolated case of debris and vegetation of less than 1 sq ft in area should be counted as 1 sq ft.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total area of debris and vegetation (sq ft)

B = total area of roof section being rated (sq ft)

Built-Up Roofing: Embedded Edge Metal

Definition:

Formed strip of metal at the roof edge which continues down the vertical part of the wall to form a fascia or drip. This stripped-in flashing provides a finished termination for the roofing membrane. A formed vertical projection (gravel stop) may be incorporated to prevent loose aggregate from rolling or washing off the roof. Exterior and interior gutter in a built-in trough of metal or other material which collects water from the roof and carries it to a downspout.

Notes: A raised roof edge which is not stripped in, is rated as metal cap flashing and not embedded edge metal.

Severity Levels:

Low -The entire length of embedded edge metal flashings is rated low severity as a minimum due to the maintenance problems associated with it.

Medium - Any of the following conditions:

- The joints in embedded edge metal flashings are rated medium severity as minimum due to the maintenance problems associated with them.
- Nails under the stripping felts are backing out.
- Corrosion of the metal.
- Loose or lifted metal flange without deterioration of the stripping felts.
- The entire length of interior gutter is rated medium severity as a minimum due to the maintenance problems and high potential for leak damage associated with its presence.

High - Any of the following conditions:

- Stripping felts are missing or loose.
- Splits in the stripping felts above the metal joints.
- Holes have occurred through the metal.
- Loose or lifted metal flange with deterioration of the stripping felts.
- Holes or joint movement is present in the interior gutter.

Measurement:

Measure lineal feet of embedded edge metal flashing having the above conditions. Each split above a joint is counted as one foot. As a method of sampling the joints, determine to total number of joints by dividing the total length of embedded edge metal flashing by the length of edge metal sections (normally 10 ft). Every fourth joint should be inspected for splits in the stripping felts. Count the number of inspected joints that are high severity and multiply by 4 to determine the total lineal feet of high severity joints. All other joints are rated medium severity. Multiply the number of inspected joints not rated high severity by 4 to determine the total lineal feet of medium severity joints.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of embedded edge metal flashing defects (ft)

B = total length of flashed perimeter of roof section being rated (including flashings for penthouses, courtyards and curbed projections (ft)

Built-Up Roofing: Flashed Penetrations

Definition:

Open pipes, plumbing vent stacks, flues, ducts, continuous pipes, guy wires, drain sumps, and other penetrations through the roof membrane (excluding pitch pans but including metal curbing for hatches and ventilators, where the flange is stripped into the membrane).

Severity Levels:

Low - Any of the following conditions:

- Flashing sleeve is deformed.
- Opening in the penetration or flashing is less than 6 in. above the roof surface.

Medium - Any of the following conditions:

- Edge of stripping felts is exposed but there is no apparent felt deterioration.
- Top of flashing sleeve is not sealed or has not been rolled down into an existing plumbing vent stack.
- The sleeve or umbrella is open or no umbrella is present (where required).
- Metal is corroded.

High - Any of the following conditions:

- Flashing sleeve or metal curb has been installed with no stripping felts
- Flashing sleeve or metal curb is cracked, broken, or corroded through.
- No flashing sleeve is present.
- Penetration is not sealed at the membrane level.

Measurement:

Count each distressed flashed penetration as one linear ft at the highest severity level which exists. For metal curbs and ducts with greater than 1 ft of perimeter, count the actual length (in feet) of distressed perimeter.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = lineal feet of distressed flashed penetrations

B = total length of flashed perimeter of roof section being rated (including flashings for penthouses, court-yards and curbed projections)

Built-Up Roofing: Holes

Description:

A membrane hole is any visible opening which extends through all membrane layers. Holes can be of various sizes and shapes, and can be located anywhere on the roof surface.

Severity Levels:

High - All holes in the membrane are considered high severity due to their high leak potential.

Measurement:

Count the total number of holes in the membrane. If the distance between two holes is less than 1 ft., count them as one hole.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = number of membrane holes

B = total area of roof section being rated (sq ft)

Built-Up Roofing: Improper Equipment Supports

Definition:

Improper equipment supports or pipes, conduits, and mechanical equipment supports (wood sleepers, channels, etc) that are placed directly on the membrane below the equipment. Repairing this distress may require replacing the surrounding insulation and membrane.

Severity Levels:

Low -All improper equipment supports are rated low severity as a minimum due to the maintenance problems associated with them.

Medium - Any of the following defects:

- Movement of the support has displaced the membrane, but has not cut or punctured it.
- Equipment is bolted through the membrane but the membrane is sealed and watertight.

High - Any of the following defects:

- Movement of the support has cut or punctured the roof membrane.
- The equipment is bolted through the membrane and the membrane is not sealed, allowing water to penetrate.

Measurement:

Measure square feet of each improper equipment support. The minimum dimensions for the length and width of a support shall be 1 ft.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total area of improper equipment supports (sq ft)

B = total area of roof section being rated (sq ft)

Built-Up Roofing: Interior Drains and Roof Level Scuppers

Definition:

A drain is a penetration at the roof membrane which allows water to flow from the roof surface into a piped drainage system. The drain fixture at the roof has a flange and/or clamping arrangement to which the roofing membrane is attached. A roof level scupper is a channel through a parapet or raised roof edge which is designed for peripheral drainage of the roof.

Notes: Stripping felts around scuppers should be carefully inspected for holes at corners.

Severity Levels:

Low - Bitumen has flowed into the drain leader but the drain is not clogged.

Medium - Any of the following conditions:

- Stripping felts are exposed but there is no apparent deterioration of felts.
- Strainer is broken or missing.
- Scupper shows loss of paint or protective coating or start of metal corrosion.

High - Any of the following conditions:

- Stripping felts have holes or are deteriorated.
- Clamping ring is loose or missing from drain body or bolts are missing.
- Drain is clogged.
- Scupper metal is broken or holes have occurred through the metal.

Measurement:

Each distressed drain and scupper should be counted once at the highest severity level which exists.

Density:

$\frac{A}{B}$ x 100= Problem Density

A = number of distressed interior drains and roof level scuppers

B = total length of flashed perimeter of roof section being rated (including flashings for penthouses, courtyards and curbed projections)

Built-Up Roofing: Metal Cap Flashing

Definition:

Metal cap flashing includes counterflashing and any sheet metal coping cap which serves as part of the counterflashing or the cover over a detail such as a roof area divider, equipment curb, raised roof edge, or an expansion joint (including the rubber bellows of an expansion joint).

Notes: Counterflashing is the material, usually sheet metal, which protects the top termination of base flashing and sheds water away from it. Counterflashing should be free to expand and contract.

Severity Levels:

Low - Any of the following conditions:

- Loss of paint or protective coating or start of metal corrosion.
- Metal coping cap is deformed and allows water to pond on the top.
- Counterflashing is deformed but still performing its function.
- Counterflashing has been sealed to the base flashing.

Medium - Any of the following conditions:

- Corrosion holes have occurred through the metal on a vertical Surface.
- Metal coping cap has loose fasteners, failure of soldered or sealed joints, open joints, or loss of attachment.
- Sealant at reglet or top of counterflashing is missing or no longer functioning, allowing water to channel behind counterflashing.
- Counterflashing is loose at the top, allowing water to channel behind it.
- Counterflashing does not extend over top of base flashing.

High - Any of the following conditions:

- Metal coping cap or counterflashing is missing or displaced from its original position.
- Corrosion holes have occurred through the metal on a horizontal surface.
- Metal coping cap has mission joint covers where joint covers were originally installed.

Measurement:

Measure lineal feet of metal cap flashing having the above conditions. For individual defects (i.e., joints, holes) count as one foot minimum.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of metal cap flashing defects (ft)

B = total length of flashed perimeter of roof section being rated (including flashings for penthouses, courtyards, and curbed projections)

Built-Up Roofing: Patching

Description:

Patching is a localized temporary or permanent repair of the membrane using dissimilar materials. Repairs made with similar materials are not counted as patches; distresses associated with these repairs should be recorded in the appropriate category and not as patching distresses.

Severity Levels:

Low - All patches that are not made with similar materials as that of the original construction are rated as low severity as a minimum.

Medium - All patches made with temporary materials (i.e., duct tape, caulking, and sealants) are rated medium severity as a minimum.

High - Other distresses of high severity are present within the patched area (count as patching distress only).

Measurement:

- Measure square feet of each patch having the above conditions.
- When large quantities of this problem are present, the representative sampling technique may be used.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total area of patching (sq ft)

B = total area of roof section being rated (sq ft)

Built-Up Roofing: Pitch Pans

Definition:

A pitch pan is a flanged metal sleeve placed around a roof-penetrating element and filled with a sealer.

Severity Levels

Low - Pitch pans are rated low severity as a minimum due to the maintenance problems associated with them.

High - Any of the following conditions:

- Metal corrosion.
- Sealing material is below metal rim.
- Stripping felts are exposed or deteriorated.
- Sealing material has cracked or separated from pan or penetration.

Measurement:

Each distressed pitch pan should be counted once at the highest severity level which exists.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = number of distressed pitch pans

B = total length of flashed perimeter of roof section being rated (including flashings for penthouses, courtyards, and curbed projections)

Built-Up Roofing: Ponding

Definition:

Standing water is present or there is evidence of ponding by the presence of staining. Water which remains after 48 hr is considered ponded water.

Severity Levels:

Low - Ponding is rated low severity due to the maintenance problems associated with it.

Measurement:

Measure square feet of affected area.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total area of ponding (sq ft)

B = total area of roof section being rated (sq ft)

Built-Up Roofing: Ridges

Definition:

Ridges are long, narrow (usually less than 3 in.), raised portions of the roof membrane. Their maximum height is about 2 in. Usually ridges occur directly above the insulation board joints and run perpendicular or parallel to the felts. They include all the plies and therefore are generally stiffer than blisters.

Notes: Blisters and ridges are difficult to differentiate at the low and medium severity. The rating error will be insignificant because of the similarity in the deduct curves. However at the high severity, it is important to distinguish between the two distresses due to their different leak potentials.

Severity Levels:

Low - The ridges are noticeable but the felts are not exposed.

Medium - The ridges are raised and clearly visible. The surfacing on the ridge is gone and the top felt is exposed.

High - Either of the following conditions:

- Open breaks have developed in the ridge.
- Felt deterioration has progressed through the top ply. exposing underlying plies.

Measurement:

Measure lineal feet of ridges running in all directions.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total length of membrane ridges (ft)

B = total area of roof section being rated (sq ft)

Built-Up Roofing: Slippage

Description:

Slippage is a downslope lateral movement of felt plies. Slippage usually occurs on roofs with slopes greater than ¼ in/ft.

Severity Levels:

Low - Less than 2 in. of slippage has occurred, evidenced by the presence of narrow bare strips perpendicular to the slope.

Note: Low severity slippage requires inspection at 6 month intervals.

High - More than 2 in. of slippage has occurred. There is evidence of humping and wrinkling.

Measurement:

Measure square feet of affected roof area. The affected area extends from the high point on the slope where bare felts are noticeable, down to the low point of the slope or the area where humping and wrinkling are noticeable.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total affected area of roof (sq ft)

B = total area of roof section being rated (sq ft)

Built-Up Roofing: Splits

Definition:

Splits are tears that extend through all membrane felts. They vary in length from a few feet to the length of the roof and in width from a hair-line crack to more than 1 in Splits generally occur directly above the joints between the long sides of insulation boards and run in the direction the felts were installed.

Severity Levels:

High - An unrepaired split or a repaired split which has started to re-open.

Measurement:

Measure lineal feet of split.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total length of membrane splits (ft)

B = total area of roof section being rated (sq ft)

Built-Up Roofing: Surface Deterioration

Description:

A built-up roofing membrane will generally have one of the following types of surfacing: Aggregate surface, mineral surface-cap or smooth surface-coated. The membrane surface may show any of the following distressed condition:

- Lack of top surface or coating.
- Alligator cracking (interconnected hairline cracks that resemble alligator hide).
- Lack of adhesion between the membrane plies.

Notes: Walkways are treated as part of the membrane surfacing.

Severity Levels:

Low - Any of the following conditions:

- On aggregate surfaced roofs, the aggregate is not embedded or is poorly embedded but the felts remain covered with aggregate.
- Open edge laps or fishmouths.

- On smooth surfaced roofs, there is evidence of crazing of top surface with hairline cracks (alligator-ing).
- Walkways shows loss of surfacing, loss of adhesion, cracks, blistering or cracked coating.

Medium - Any of the following conditions:

- On aggregate surfaced roofs, the aggregate is displaced and the top coat of bitumen is exposed.
- On mineral surfaced-cap sheet roofs, the mineral granules have come off the cap sheet, exposing the underlying felt.
- On smooth surfaced roofs, no surface coating exists or there is a loss of surface coating.
- On smooth surfaced roofs, alligator cracks extend down through the bitumen to the top felt.

High - Any of the following conditions:

- On aggregate surfaced roofs, the aggregate cover has been displaced and the bitumen pour coat is deteriorated, leaving the underlying felts exposed. The felts may be deteriorated.
- On mineral surfaced-cap sheet roofs, the cap sheet felt is deteriorated.
- On smooth surfaced roofs, alligator cracks extend down through one or more plies.
- Shrinking of the walkway has torn the membrane below it.

Measurement:

Measure square feet of each affected area and rate at highest severity level which exists.

Note: When large quantities of this problem are present (especially on large roofs), the representative sampling technique can be used.

Density:

$\frac{A}{B}$ x 100 = Problem Density

Where: A = total area of surface deterioration (sq ft)

B = total area of roof section being rated (sq ft)

Appendix_C: Single Ply Roofing Distress Survey Definitions

APPENDIX C: Single Ply Roofing Distress Survey Definitions

General Notes

- These definitions apply to single-ply (SPSingle Ply) roofing surfaces and flashing components.
- Where multiple severity levels are present for a given distress, record each separately.
- Distress quantities or distress density may be recorded. If distress quantities are recorded, density ranges will be computed in BUILDER/BuilderRED. If distress densities are recorded, distress quantities will be blank in BUILDER/BuilderRED.
- If during the course of the inspection additional occurrences are found of distress-severity combinations, adjust the quantity or density as necessary.
- To estimate density when distress quantities are not recorded, follow the density definitions for the individual distresses. However, for use in BUILDER, density may be estimated since density ranges are used, not the precise density value. Generalized visual cues are offered below in Table C-1, but they may not be applicable for certain distresses.
- The distress definitions that follow are from ROOFER: Membrane and Flashing Condition Indexes for Single-Ply Membrane Roofs—Inspection and Distress Manual (Bailey et al. 1993), USACERL Technical Report FM-93/11, published at https://apps.dtic.mil/dtic/tr/fulltext/u2/a272573.pdf. This report can also be downloaded from the ROOFER section of the SMSSustainment Management System support site at https://support.sms.erdc.dren.mil/downloads/erdc-cerl-technical-publications.

Table C-1. Single-Ply Roofing Distress Density Estimation from Visual Clues
(Bailey et al. 1993)

Density (%)	Visual Cue (when applicable)
>0 - 0.1%	Difficult to notice even by careful observation, especially if spotty. (up to about 1" x 12" in a 8' x 10' area; 1/8" in 10' length)
>0.1 - 1%	Somewhat noticeable, but easily missed by casual observation, especially if spotty; Careful observation usually needed, if spotty. (up to about 10" x 12" in a 8' x 10' area; 1-1/4" in 10' length)
>1 - 5%	Noticeable, even by casual observation, but still only a mere fraction. (up to about 1' x 4' in a 8' x 10' area; 6" in 10' length)
>5 - 10%	Easily noticeable even if spotty; more than a mere fraction. (up to about 1' x 8' in a 8' x 10' area; 1' in 10' length)
>10 - 25%	Readily noticeable, but less than 1/4 of area or length.
>25 - 50%	Very noticeable, but less than 1/2 of area or length.
>50 - <100%	Overwhelmingly noticeable; greater than 1/2 of area or length.
100%	Entire area or length.

Single Ply (SP) Roofing Distress Summary Listing

- (SP) Base Flashing-Membrane Material
- (SP) Base Flashing-Coated Metal
- (SP) Metal Cap Flashing
- (SP) Embedded Edge Metal
- (SP) Flashed Penetrations
- (SP) Pitch Pans
- (SP) Interior Drains and Roof Level Scuppers
- (SP) Splits
- (SP) Ridges
- (SP) Holes, Cuts, and Abrasions
- (SP) Defective Seams
- (SP) Surface Coating Deterioration
- (SP) Membrane Deterioration
- (SP) System Securement Deficiencies
- (SP) Membrane Support Deficiencies
- (SP) Patching
- (SP) Debris and Vegetation
- (SP) Improper Equipment Supports
- (SP) Ponding

Single-Ply Roofing: Base Flashing-Coated Metal

Base flashing material is composed of membrane-coated metal. The metal extends from the roof surface upwards above the plane of the membrane providing a watertight termination of the membrane.

Severity Levels:

Low - Any of the following defects:

- Loss of protective coating or light corrosion.
- Distortion of joint covers.
- Top of flashing is less than 6 in above the roof surface.
- Exposed fasteners.

Medium - Any of the following defects:

- Joint cover is unbonded to metal base flashing, but does not allow water to penetrate.
- Coated metal base flashing fasteners are loose.
- Coated metal base flashing has pulled away from the wall or curb or has lifted up but top termination is watertight.
- Crazing or eroding of the joint cover material that has not worn through and does not allow water to

penetrate.
- Coated metal base flashing has repairs made with dissimilar materials.

High - Any of the following conditions:

- Holes in metal base flashing.
- Hole in joint cover or unbonding of joint cover from metal base flashing, allowing water to penetrate.
- Exposed gaps at top termination of the base flashing.
- Coated metal base flashing has pulled away from the wall or curb or has lifted up, allowing water to penetrate (rate full section of metal, normally a 10 ft length).

Measurement:

Measure length (ft) of base flashing having the above conditions. Holes, open side laps, and seams count as 1 ft each. Each joint cover having a hole is counted as 1 ft. As a method of sampling the joint covers for ballasted systems, determine the total number of existing joints by dividing the total length of coated metal base flashing by the length of metal sections (usually 10 ft). Every fourth joint should be inspected for defects in the cover strip. Count the number of inspected joints having a specific defect and multiply by 4 to determine the total length of the defect.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of base flashing defects (ft)

B = total length of flashed perimeter of roof section being rated (including perimeter flashings and flashings for penthouses, courtyards, and curbed projections)

Single-Ply Roofing: Base Flashing-Membrane Material

Definition:

Base flashing is composed of membrane material or other flexible material. The base flashing extends from the roof surface upward above the plane of the membrane to provide a watertight termination of the membrane.

Severity Levels:

Low - Any of the following defects:

- Light crazing or eroding of the base flashing.
- Top of the base flashing is less than 6 in. above the membrane
- Nailing strip or flashing batten with exposed fasteners is less than 6 in above the roof surface.
- Seam or side lap is open less than ½ in.
- Flashing has repairs with compatible materials.

Medium - Any of the following defects:

- Crazing or eroding of the base flashing that has worn through to a reinforcement or scrim sheet or down to another layer of different color, or has resulted in obvious loss of sheet thickness.
- Slippage, wrinkling, blistering, pulling, unbonding, or bridging of base flashing material that does not allow water to penetrate.
- The presence of solvents, oil, or other chemicals with deterioration of the base flashing but does not allow water to penetrate.
- Flashing has repairs made with dissimilar materials.
- Seam or side lap is open more than ½ in. but does not allow water to penetrate the flashing.
- Loose or missing termination bar where no counterflashing is used.
- Loose or missing nailing strip.

High - Any of the following defects:

- Crazing or eroding of the base flashing that has worn through the flashing allowing water to penetrate.
- Holes, splits, or tears in base flashing, allowing water to penetrate.
- Exposed gaps at top of the base flashing.
- Seam or side lap is open through its entire width, allowing water to penetrate the flashing.
- Holes through the base flashing caused by solvent, oil, or other chemicals.

Measurement:

Measure length (ft) or base flashing having the above conditions. Holes, open side laps, and seams count as 1 ft each.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of base flashing defects (ft)

B = total length of flashed perimeter of roof section being rated (including perimeter flashings and flashings for penthouses, courtyards, and curbed projections)

Single-Ply Roofing: Debris and Vegetation

Description:

Debris and vegetation includes the presence of foreign objects, vegetation, fungal growth, solvents, oils, or other chemicals that could damage, puncture, or degrade the membrane.

Notes:

- Accumulation of oils and grease can present a significant fire hazard and should be reported immediately.
- Do not rip out vegetation that is growing into the waterproofing systems, as that may allow water to penetrate.

Severity Levels:

Medium - Any of the following defects:

- Vegetation that has not penetrated the membrane.
- Degradation of the membrane caused by solvents, oil, or other chemicals.
- Foreign materials that are not removed from the roof during the inspection.

High - Any of the following defects:

- Vegetation that has penetrated the membrane.
- Degradation of the membrane caused by solvent, oils, or other chemicals allowing water to penetrate.

Measurement:

Measure square feet of debris and vegetation having the above conditions.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total area of debris and vegetation (sq ft)

B = total area of roof section being rated (sq ft)

Single-Ply Roofing: Defective Seams

Definition:

Defective seams include incomplete, damaged, or weak seams that join two sheets of a membrane.

Notes: For EDPM and polyvinyl chloride (PVC) membranes, all field seams should have lap sealant at the edges. All other membranes should have lap sealant at cut edges of seams that have exposed reinforcement material.

Severity Levels:

Low - Any of the following defects:

- Missing lap sealant at field seam (EPDM and PVC membranes only).
- Missing lap sealant at field seam which has exposed reinforcement material at seam edge (usually at end laps and field-cut edges of sheets).
- Seam is open less than ½ in.

- Wrinkling at seam that is watertight.
- Seam intersections (e.g., T-joints) on EPDM that do not have a patch covering them.
- Blisters within the seam.

Medium - Any of the following defects:

- Seam is open ½ in. or more, but does not allow water to penetrate the membrane.
- Pinch wrinkle at seam.

High - Any of the following conditions:

- Seam is open through entire depth, allowing water to penetrate.
- Fishmouths, wrinkles, or bunches at the seam that allow water to penetrate.

Measurement:

For exposed membranes (no overlying ballast), inspect all seams visually.

For ballasted roofs, check field seams at five different locations on the roof section. Clear ballast from 5 ft of the seam at each location that clean the exposed seam with a whisk broom. If all checked seams are without defects, assume the remaining field seams are satisfactory. If any defects are found, use the following sampling technique.

- For roof sections with sheet widths of 10 ft or less, inspect 2 percent of the total length of field seams (2 ft every 100 ft of seam). For roof sections having sheet widths greater than 10 ft, inspect 4 percent of the total length of field seams (2 ft every 50 ft of seam). Measure length of each specific seam defect found.
- Extrapolate to determine the total length of seam defects for the entire roof section from the total length of defect found. When 2 percent of the seams are inspected, multiply the actual defect length by 50 to compute total length of defect. When 4 percent of the seams are inspected, multiply actual defect length by 25 to compute total length of defect.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total length of defective seams (ft)

B = total area of roof section being rated (sq ft).

Single-Ply Roofing: Embedded Edge Metal

Definition:

Embedded edge metal is a formed strip of metal at the edge of the roof that continues down the vertical part of the wall to form a fascia or drip edge. This stripped-in flashing provides a finished termination for the roofing

membrane. On all but coated-metal flashing systems, the metal is placed on top of the membrane, and fastened to the deck through it. To make the area watertight, the metal is covered with membrane or flashing material (i.e., it is stripped in). Coated metal systems have their edge metal placed before the membrane. The membrane is adhered to the top of the coated metal, thereby eliminating the need to have it stripped in. A formed vertical projection (gravel stop) may be incorporated to prevent ballast from rolling or washing off the roof. Exterior and interior gutters, which are embedded in the membrane, are considered embedded edge metal. (An interior gutter is a built-in trough of metal or other material that collects water from the roof and carries it to a drain or downspout.)

Severity Levels:

Low - Any of the following defects:

- Loss of protective coating or light corrosion.
- Termination battens have exposed fasteners.
- Stripping material is open less than ½ in.
- Distortion of joint covers.
- For coated metal edge flashings that are not stripped in, membrane is open less than ½ in.

Medium - Any of the following defects:

- Joint cover is unbonded to embedded edge metal, but does not allow water to penetrate.
- Nails under stripping material are backing out.
- Stripping material is crazing, checked, or cracked.
- Stripping material is open more than ½ in., but edge metal fasteners are not exposed.
- Loose or lifted metal with deterioration of the stripping material.
- Embrittled joint stripping material.
- The entire length of interior gutter is rated medium as a minimum due to the potential for leak damage.
- For coated metal edge flashing that is not stripped in, membrane is open more that ½ in. but does not allow water to penetrate.

High - Any of the following conditions:

- The stripping material is missing or open and edge metal fasteners are exposed, or stripping material has holes, cuts or tears, allowing water to penetrate.
- Hole in joint cover or unbonding of joint cover from embedded edge metal, allowing water to penetrate.
- Holes through the metal.
- Holes associated with loose or lifted embedded edge metal.
- Holes in interior gutter.
- For coated metal edge flashing that are not stripped in, membrane is open allowing water to penetrate.

Measurement:

Each split above a joint is counted as 1 ft. As a method of sampling the embedded edge metal joints for ballasted systems, determine the number of joints by dividing the total length of embedded edge metal flashing by the length of the edge metal sections (often 10 ft). Gravel should be moved at every fourth joint and the stripping material inspected for splits. Count the number of inspected joints having a specific defect and multiply by four to determine the total length of the defect.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of embedded edge metal flashing defects (ft)

B = total length of flashing on roof section being rated (including perimeter flashings and flashings for penthouses, courtyards, and curbed projections)

Single-Ply Roofing: Flashed Penetrations

Definition:

This category includes pipes, plumbing vent stacks, flues, ducts, conduits, guy wires, drain sumps, and other penetrations through the roof membrane (excluding pitch pans but including metal curbing for hatches and ventilators, where the metal flange is stripped into the membrane or, in the case of some coated metal flashing systems, the membrane is adhered to the top of the coated metal flange, thereby eliminating the need to have it stripped in).

Severity Levels:

Low - Any of the following defects:

- Flashing sleeve is deformed.
- Stripping material, boot, or membrane (for coated metal flashing sleeves) is open less than ½ in.
- Top of flashing is less than 6 in. above the membrane.

Medium - Any of the following defects:

- Stripping material is crazing, checked, or cracked.
- Stripping material, boot, or membrane (for coated metal flashing sleeves) is open more than ½ in. but does not allow water to penetrate the flashing.
- Top of flashing sleeve or boot is not sealed or is not rolled down into the existing plumbing vent stack.
- Clamping band is loose or missing (where required).
- Umbrella is open or no umbrella is present (where required).
- Corrosion of metal or delimitation of coating.

High - Any of the following conditions:

- Stripping material has holes, cuts, or tears.
- Stripping material, boot, or membrane (for coated metal flashing sleeves) is open, allowing water to penetrate.
- Holes, cuts, or tears in flashing sleeve or metal curb.
- No flashing sleeve present.
- Incompatible flashing material has been used.

Measurement:

Count each small distressed flashed penetration as 1 ft at the highest severity level present. For metal curbs and ducts with more than 1 ft of perimeter, measure the length (in ft) of the distressed perimeter.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of distressed flashed penetration (ft)

B = total length of flashed perimeter of roof section being rated (including perimeter flashings and flashings for penthouses, courtyards, and curbed projections)

Single-Ply Roofing: Holes, Cuts, and Abrasions

Definition:

Holes and cuts are membrane distresses caused by physical abuse from tools, traffic, debris, gravel, wind, etc., or manufacturing defects such as pinholes. Holes and cuts can be of various shapes and sizes. Abrasion is physical damage that has roughened or worn the membrane surface.

Severity Levels:

Low - Surface scratches or abrasions with no significant loss of membrane thickness.

Medium - Cuts, gouges, or abrasions with loss of membrane thickness but not fully penetrating the membrane.

High - Any of the following defects:

- Holes, cuts, gouges, or abrasions that penetrate the membrane.
- Holes, through the membrane caused by underlying mechanical fasteners.

Measurement:

- Count the total number of scratches, gouges, holes, and cuts in the membrane. If the distance between distresses is less than 1 ft, count the distresses as one. If the distress is longer than 1 ft, measure the length. Measure area of abrasion in square feet.

- When large quantities of this problem are present, the representative sampling technique may be used.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total number and/or length of membrane scratches, gouges, holes, and cuts (ft) or total area of abrasion (sq ft).

B = total area or roof section being rated (sq ft).

Single-Ply Roofing: Improper Equipment Supports

Definition:

Improper equipment supports or pipes, conduits, and mechanical equipment supports (wood sleepers, channels, etc) that are placed directly on the membrane below the equipment. Repairing this distress may require replacing the surrounding insulation and membrane.

Severity Levels:

Low - All improper equipment supports are rated low severity as a minimum due to the maintenance problems associated with them.

Medium - Any of the following defects:

- Movement of the support has displaced the membrane, but has not cut or punctured it.
- Equipment is bolted through the membrane but the membrane is sealed and watertight.

High - Any of the following defects:

- Movement of the support has cut or punctured the roof membrane.
- The equipment is bolted through the membrane and the membrane is not sealed, allowing water to penetrate.

Measurement:

Measure square feet of each improper equipment support. The minimum dimensions for the length and width of a support shall be 1 ft.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total area of improper equipment supports (sq ft)

B = total area of roof section being rated (sq ft)

Single-Ply Roofing: Interior Drains and Roof Level Scuppers

Definition:

A drain is a penetration of the roof membrane that allows water to flow into a piped drainage system. The drain fixture at the roof has a flange and/or clamping arrangement to which the roofing membrane is attached. A scupper is a channel through a parapet or raised roof edge that is designed to drain the roof. Roof-level scuppers are for primary drainage. Elevated (overflow) scuppers are for emergency drainage.

Note:

Most single-ply roofing systems do not require stripping material around the drain.

Severity Levels:

Low - Any of the following defects:

- Field seam within 1 ft of a drain or roof-level scupper.
- Stripping material or membrane is open less than ½ in.

Medium - Any of the following defects:

- Crazing material is crazing, checked, or cracked.
- Stripping material or membrane is open ½ in. or more, but does not allow water to penetrate.
- Strainer is broken or missing
- Scupper shows loss of protective coating or start of metal corrosion.
- Drain has a field seam in the clamming ring.

High - Any of the following conditions:

- Stripping material has holes, cuts or tears, allowing water to penetrate.
- Stripping material or membrane is open, allowing water to penetrate.
- Clamping ring is loose or missing from drain or bolts are missing.
- Drain is clogged.
- Scupper is broken or contains holes.
- Holes, cuts, tears, or abrasions through the membrane within 2 ft of the drain or scupper.

Measurement:

Each distressed drain and scupper should be counted once at the highest severity level present.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = number of distressed interior drains and scuppers (ft)

B = total length of flashing on roof section being rated (including perimeter flashings and flashings for penthouses, courtyards, and curbed projections)

Single-Ply Roofing: Membrane Deterioration

Definition:

This category includes erosion or crazing or the membrane. Erosion is the wearing away of the membrane surface creating a rough texture. Crazing is hairline cracking of the membrane.

Severity Levels:

Low - Light crazing of the membrane surface.

Medium - Crazing or eroding of the membrane surface that has worn through to a reinforcement or scrim sheet or down to another layer of different color, or has resulted in obvious loss of sheet thickness.

High - Crazing or eroding of the membrane surface that has worn through the membrane allowing water to penetrate.

Measurement:

- Measure the square feet of each affected area and rate at the highest severity level present.
- When large quantities of this problem are present, the representative sampling technique may be used.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total area of membrane deterioration (ft)

B = total area of roof section being rated.

Single-Ply Roofing: Membrane Support Deficiencies

Definition:

The surface on which the membrane rests may not be smooth and continuous. For fully adhered membranes, partially adhered membranes, partially adhered membranes, and mechanically attached membranes, this category includes warping, bowing, or shrinking of insulation boards. For ballasted membranes, it includes displaced insulation boards. Localized absence of membrane support may be due to missing components below.

Notes: Mechanical fasteners and loose insulation boards are rated as System Securement Deficiencies.

Severity Levels:

Low - Any of the following defects:

- Membrane tension caused by warping or bowing of substrate.
- Uneven joints or gaps more than ½ in. wide, but less than 2 in. between insulation boards.

Medium - Any of the following defects:

- Uneven joints or gaps more than 2 in. wide between insulation boards or absence of substrate support for width of 2 in. or more.
- For ballasted systems, insulation boards have been displaced.
- Lumps indicating presence of foreign material between membrane and substrate.

Measurement:

- Measure square feet of membrane having the above conditions.
- When many of these deficiencies are present, the representative sampling technique may be used.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total area of membrane support distress (ft)

B = total area of roof section being rated (sq ft).

Single-Ply Roofing: Metal Cap Flashing

Definition:

Metal cap flashing includes any sheet metal that serves to counterflash or cover a detail such as a parapet, firewall, roof area divider, equipment curb, raised roof edge, or an expansion joint, protecting the top termination of the base flashing and shedding water away from it. The metal cap flashing should be free to expand and contract.

Notes: Note all single plys are installed with counterflashing to protect the top of the base flashing

Severity Levels:

Low - Any of the following defects:

- Loss of protective coating or corrosion without holes.
- Top of counterflashing or metal coping is deformed and allows water to pond on the top.
- Metal cap flashing is deformed but still performing its function.
- Metal cap flashing has been sealed to base flashing.

Medium - Any of the following defects:

- Corrosion has caused holes in the metal on a sloping or vertical surface.
- Metal cap flashing has loose fasteners, failure or soldered or sealed joints, or loss of attachment.
- Metal cap flashing has rough edges that are in contact with the base flashing.

High - Any of the following conditions:

- Metal cap flashing is missing or displaced from its original position.
- Corrosion has caused holes in the metal on a horizontal surface.
- Metal cap flashing has open joints or missing joint covers where covers were originally installed.
- Sealant at reglet or top of counterflashing is missing or no longer functional, allowing water to channel behind it.
- Counterflashing is loose at the top allowing water to channel behind it.
- Metal cap flashing does not extend over top of the base flashing.

Measurement:

Measure length (ft) or metal cap flashing having the above conditions. Individual defects (i.e., joints, holes) count as 1 ft minimum.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of metal cap flashing defects (ft)

B = total length of flashed perimeter of roof section being rated (including perimeter flashings and flashings for penthouses, courtyards, and curbed projections)

Single-Ply Roofing: Patching

Description:

Patching is a localized temporary or permanent repair of the membrane using dissimilar materials. Repairs made with similar materials are not counted as patches; distresses associated with these repairs should be recorded in the appropriate category and not as patching distresses.

Severity Levels:

Low - All patches that are not made with similar materials as that of the original construction are rated as low severity as a minimum.

Medium - All patches made with temporary materials (i.e., duct tape, caulking, and sealants) are rated medium severity as a minimum.

High - Other distresses of high severity are present within the patched area (count as patching distress only).

Measurement:

- Measure square feet of each patch having the above conditions.
- When large quantities of this problem are present, the representative sampling technique may be used.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total area of patching (sq ft)

B = total area of roof section being rated (sq ft)

Single-Ply Roofing: Pitch Pans

Definition:

A pitch pan is a flanged metal sleeve placed around a roof penetration element and filled with a sealer. For pitch pans on ethylene-propylene-diene monomer (EPDM) and Hypalon roofing systems, stripping materials should cover the sides of the metal pan and terminate within the pan below the sealer.

Severity Levels:

Low - All pitch pans are low severity at a minimum due to maintenance requirements.

Medium - Any of the following defects:

- Stripping material is crazing, checked, or cracked.
- Stripping material or membrane (on coated metal pitch pans) is open more than ½ in. but does not allow water to penetrate the flashing.
- Loss of protective coating or corrosion of metal.
- For EPDM and Hypalon, stripping material is not covering the top of the metal pan or does not terminate below the sealer.

High - Any of the following conditions:

- Stripping material has holes, cuts, or tears, allowing water to penetrate through.
- Edge of stripping material or membrane (on coated metal pitch pans) is open, allowing water to penetrate.
- Sealer is below the metal rim, allowing ponding in the pan.
- Sealer has cracked or separated from the pan or penetration.
- Corrosion through the metal pan.

Measurement:

Each distressed pitch pan should be counted once at the highest severity level present.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = number of distressed pitch pans (ft)

B = total length of flashing on roof section being rated (including perimeter flashings and flashings for pent-houses, courtyards, and curbed projections)

Single-Ply Roofing: Ponding

Definition:

Ponding includes standing water or evidence of standing water by the presence of staining or accumulation of debris. Water that remains longer than 48 hr is considered ponded water.

Severity Levels:

Low - General Ponding is rated low severity.

Medium - Any of the following defects:

- Ponding caused by wrinkles or folds in the membrane that blocks drainage.
- Ponding caused by warping or bowing of the substrate beneath the membrane.

Measurement:

Measure square feet of affected area.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total area of ponding (sq ft)

B = total area of roof section being rated (sq ft)

Single-Ply Roofing: Ridges

Definition:

Ridges are long, narrow (usually less than 3 in.), raised portions of the roof membrane. Usually ridges occur directly above the insulation board joints.

Severity Levels:

Low - All ridges are rated low severity as a minimum.

High - Open breaks have developed in the ridge allowing water to penetrate.

Measurement:

Measure length of ridges running in all directions. When many ridges are present, the representative sampling technique may be used.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total length of membrane ridges (ft).

B = total area or roof section being rated (sq ft).

Single-Ply Roofing: Splits

Definition:

Splits are cracks or tears that extend through the membrane. They vary in length from a few inches to the length of the roof and in width from hair-line to more than 1 in.

Severity Levels:

High - All splits in the membrane are considered high severity due to their leak potential.

Measurement:

Measure length of split.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total length of membrane splits (ft).

B = total area or roof section being rated (sq ft).

Single-Ply Roofing: Surface Coating Deterioration

Definition:

Surface coating deterioration includes wear, blistering, or peeling of any surface coating applied for fire protection (such as adhesive coating and sand on an EPDM membrane) or solar reflectivity, but not waterproofing.

Severity Levels:

Low - Color of underlying membrane can be seen through the coating or membrane has lost protection (for membrane with coating protection that does not have sand or mineral matter embedded).

Medium - Membrane area has lost the sand or mineral matter portion of the coating protection (for membrane with coating protection that has sand or mineral matter embedded).

Measurement:

- Measure the square feet of each affected area and rate at the highest severity level present.
- When large quantities of this problem are present, the representative sampling technique may be used.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total area of surface coating deterioration (ft)

B = total area of roof section being rated.

Single-Ply Roofing: System Securement Deficiencies

Definition:

For fully adhered membranes, system securement deficiencies include membrane areas (including blisters) that are unattached to the substrate. For mechanically attached membranes, this category includes failed mechanical fasteners. For partially adhered membranes, the category includes membrane that is not adhered at points of attachment. For ballasted membranes, the membrane has areas where ballast is missing or displaced.

Notes:

- Holes in the membrane caused by mechanical fasteners are rated as Holes.
- If ballast is redistributed by the inspector to cover bare areas, these areas should not be counted as defects.
- For defect definitions, “building perimeter” is area within 10 ft of a roof edge. These areas experience high wind uplift pressures.

Severity Levels:

Low - Any of the following defects:

- For fully adhered systems, an area of unattached membrane substrate of 2 sq ft or less.
- For ballasted systems, a bare area of 4 sq ft or less.

Medium - Any of the following defects:

- For fully adhered systems, an area of unattached membrane substrate of greater than 2 sq ft but less than 100 sq ft (less than 25 sq ft at building perimeter).
- For mechanically attached systems, an isolated mechanical fastener that has lost its attachment capability or backed out causing bridging of the membrane.
- For partially adhered systems, an isolated point of attachment that has lost adherence.
- For ballasted systems, a bare area of greater than 4 but less than 100 sq ft (less than 25 sq ft at building perimeter).

High - Any of the following conditions:

- For fully adhered systems, an area of unattached membrane or substrate 100 sq ft of greater (25 sq ft at building perimeter).
- For mechanically attached systems, adjacent mechanical fasteners that have lost their attachment capability or backed out causing bridging of the membrane.
- For partially adhered systems, adjacent points of attachment that have lost adherence.
- For ballasted systems, a bare area of 100 sq ft or greater (25 sq ft at building perimeter).

Measurement:

- Measure square feet of membrane having the above conditions. For mechanically fastened and partially adhered systems, count the effective area of unattached membrane.
- When large quantities of this problem are present, the representative sampling technique may be used.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total area of attachment defects (ft)

B = total area of roof section being rated (sq ft).

Appendix_D: Shingle Roofing (SR) Distress Survey Definitions

Appendix D: Shingle Roofing (SR) Distress Survey Definitions

General Notes

- These definitions apply to shingled roofing (SRShingle Roofing) surfaces and flashing components.
- Where multiple severity levels are present for a given distress, record each separately.
- Distress quantities or distress density may be recorded. If distress quantities are recorded, density ranges will be computed in BUILDER/BREDBUILDER Remote Entry Database (BuilderRED). If distress densities are recorded, distress quantities will be blank in BUILDER/BREDBUILDER Remote Entry Database (BuilderRED).

- If during the course of the inspection additional occurrences are found of distress-severity combinations, adjust the quantity or density as necessary.
- To estimate density when distress quantities are not recorded, follow the density definitions for the individual distresses. However, for use in BUILDER, density may be estimated since density ranges are used, not the precise density value. Generalized visual cues are offered below in Table D-1, but these cues may not be applicable for certain distresses.
- The distress definitions that follow are reproduced from ROOFER: Steep Roofing Inventory Procedures and Inspection and Distress Manual for Asphalt Shingle Roofs (Bailey 1999), CERL Technical Report 99/100. This report can be downloaded from the ROOFER section of the SMSSustainment Management System support site at https://support.sms.erdc.dren.mil/downloads/roofer.

Table D-1. Shingle Roofing (SRShingle Roofing) Distress Density Estimation Visual Clues

Density (%)	Visual Cue (when applicable)
>0-0.1%	Difficult to notice even by careful observation, especially if spotty. (up to about 1" x 12" in a 8' x 10' area; 1/8" in 10' length)
>0.1-1%	Somewhat noticeable, but easily missed by casual observation, especially if spotty; Careful observation usually needed, if spotty. (up to about 10" x 12" in a 8' x 10' area; 1-1/4" in 10' length)
>1-5%	Noticeable, even by casual observation, but still only a mere fraction. (up to about 1' x 4' in a 8' x 10' area; 6" in 10' length)
>5-10%	Easily noticeable even if spotty; more than a mere fraction. (up to about 1' x 8' in a 8' x 10' area; 1' in 10' length)
>10-25%	Readily noticeable, but less than 1/4 of area or length.
>25-50%	Very noticeable, but less than 1/2 of area or length.
>50-<100%	Overwhelmingly noticeable; greater than 1/2 of area or length.
100%	Entire area or length.

Distress Summary Listing

- (SR) Step Flashing
- (SR) Metal Cap Flashing
- (SR) Edge Metal
- (SR) Valley Flashing
- (SR) Ridge/Hip Shingles
- (SR) Metal Apron Flashing
- (SR) Flashed Penetrations
- (SR) Ridge/Hip Vents
- (SR) Pitch Pans
- (SR) Interior Gutters
- (SR) Age Deterioration
- (SR) Holes/Splits/Missing Shingles

- (SR) Unsealed/Unlocked Tabs
- (SR) Lumps/Ridges/Sags
- (SR) Exposed Fasteners
- (SR) Stains/Rust/Fungus/Mildew
- (SR) Debris and Vegetation
- (SR) Patching
- (SR) Improper Equipment Supports

Shingle Roofing: Debris and Vegetation

Definition:

This category includes any of the following items:

- Foreign objects on the roof that could cause damage or puncture the shingles or flashing.
- The growth of vegetation on the roof.
- Accumulation of solvent or oil drippings on the roof.

Severity Levels:

Medium - Any of the following defects:

- Collection of foreign objects or vegetation on the field of the roof.
- Grease, solvent, or oil drippings on the roof but no apparent degradation or the roofing system.
- Evidence of branches making contact with the roof shingles.

High - Any of the following defects:

- Grease, solvent, or oil drippings on the roof that have caused degradation of the roofing shingles.
- Vegetation roots that have penetrated the roof shingles.

Measurement:

Measure the exposed area (sq ft) of shingles having the above conditions.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total exposed area of shingles (sq ft) debris and vegetation defects.

B = total area of roof section being rated (sq ft).

Shingle Roofing: Age Deterioration

Definition:

Age deterioration includes clawing and curling of the shingles, and exposure of the shingle felt/mat due to excessive loss of granules, all of which indicate brittleness. Normally, these are not localized problems but are general conditions found on large areas of the roof, such as individual roof exposures, or the entire roof. The occurrence of these problems indicate aging and reduced service life. Clawing is the turning under of the tab corners of the shingle and curling is the turning up of the tab corners.

Severity Levels:

Low - Any of the following defects:

- Loss of granular surfacing on shingle, but the reinforcement felt or mat is not exposed.
- Erosion of material around the edge of the shingle, normally found less than 1/4 inch from the edge.

Medium - Any of the following defects:

- Corners of the shingle are turned under or up (that is, clawing or curling).
- Loss of granular surfacing on shingle that results in bare spots and exposes reinforcing felt or mat.
- Loss or delamination of foil on foil-surfaced shingle.

Measurement:

Measure the exposed area (sq ft) of shingles having the above conditions.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total exposed area of shingles (sq ft) having age deterioration defects.

B = total area of roof section being rated (sq ft).

Shingle Roofing: Edge Metal

Definition:

Formed edge of metal, often referred to as drip edge, placed along eaves and rakes and covered by shingles. The edge metal allows water to drip way from the vertical surfaces and protects underlying building components.

Notes:

In some cases edge metal may not have been installed. If no edge metal exists for the roof section and there is no evidence that the edge metal was originally installed, do not count its absences as a distress.

Severity Levels:

Medium - Missing or displaced section of edge metal (where originally installed).

Measurement:

Measure length (ft) of edge metal flashing having the conditions described above. Individual defects count as 1 ft minimum. If the distance between distresses is less than 1 ft, count the distresses as one.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of edge metal defects (ft)

B = total length of flashing on roof section being rated (including perimeter flashings such as flashing, edge metal, ridge and hip shingles, and valley flashings; and curb flashings around large penetrations such as dormers and skylights).

Shingle Roofing: Exposed Fasteners

Definition:

Shingle fasteners are visible in the field of the roof.

Notes:

If a shingle fastener has backed out, count it as a hole

Severity Levels:

Medium - A fastener is exposed but not backed out.

Measurement:

Measure the number of exposed fasteners. Individual exposed fasteners count as 1 sq ft minimum. If more than one exposed fastener is found in an area of 1 sq ft, count the distressed area as 1 sq ft.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total area of exposed fasteners (sq ft) having defects.

B = total area of roof section being rated (sq ft).

Shingle Roofing: Flashed Penetrations

Definition:

Flashing for open pipes, plumbing vent stacks, attic vents, flues, ducts, continuous pipes, guy wires, and other roof penetrations that require a deck flange integrated into the shingles.

Severity Levels:

Low - Any of the following defects:

- Loss of protective coating or corrosion
- Flashing sleeve is deformed.
- Top of flue is less than 5 in. above the roof surface on the upslope side.

Medium - Any of the following defects:

- Exposed fastener in flashing.
- The sleeve or umbrella is open or no umbrella is present (where required).

High - Any of the following defects:

- Edge of deck flange on upslope side of penetration is exposed or visible.
- Edge of deck flange on downslope side of penetration is not overlapping shingles or is sealed to underlying shingles.
- Top of flashing sleeve is not sealed or has not been rolled down into existing plumbing vent stack.
- Flashing sleeve is cracked, broken, or corroded through.
- No flashing sleeve is present.

Measurement:

Count each distressed flashed penetration as 1 ft at the highest severity level present.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of flashed penetrations defects (ft)

B = total length of flashing on roof section being rated (including perimeter flashings such as flashing, edge metal, ridge and hip shingles, and valley flashings; and curb flashings around large penetrations such as dormers and skylights).

Shingle Roofing: Holes/Splits/Missing Shingles

Definition:

This category of distresses is characterized by holes, splits, cracks, or visible tears in the shingle reinforcing felt or mat, or missing shingles or tabs.

Severity Levels:

Medium - Any of the following defects:

- Holes, splits, or cracks that do not extend down to the underlayment or substrate.
- Misaligned shingle resulting in partial loss of coverage but no exposed underlayment or substrate.
- Missing shingle, but no exposed underlayment or substrate.

High - Any of the following defects:

- Holes or splits that extend down to the underlayment or substrate.
- Misaligned shingle, resulting in exposed underlayment or substrate.
- Missing shingle, resulting in exposed underlayment or substrate.
- Exposed fastener that has backed out. (Note: if fastener has not backed out, count as exposed fastener distress, not a hole).

Measurement:

Measure the exposed area (sq ft) of shingles having the above conditions.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total exposed area of shingles (sq ft) having holes/splits/missing shingle defects.

B = total area of roof section being rated (sq ft).

Shingle Roofing: Improper Equipment Supports

Definition:

This distress category includes pipe, conduit, and mechanical equipment supports (wood sleepers, channels, etc.) that are placed directly on the roof surface with no protective pad or placed at an insufficient height to allow for maintaining the roofing system below the equipment. Repairing this type of distress may require replacing the surrounding roofing system.

Notes:

Termination for guy wires are to be rated as flashed penetration distresses.

Severity Levels:

Medium - The equipment is bolted through the shingles and the bolts appear to be sealed.

High - Any of the following defects:

- The support has caused movement or damage to the shingles.
- The equipment is bolted through the shingles and the bolts do not appear to be sealed.

Measurement:

Measure square feet of each improper equipment support. The minimum dimension for length and width of a support shall be 1 foot.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total area of improper equipment supports (sq ft).

B = total area of roof section being rated (sq ft).

Shingle Roofing: Interior Gutters

Definition:

An interior gutter is a built-in trough of metal or other material that collects water from the roof and carries it to a drain or downspout.

Severity Levels:

Low - Entire length of interior gutter is rated low severity, as a minimum, due to the maintenance problems and high potential for leak damage associated with its presence.

High - Any of the following defects:

- Clogged gutter or drain.
- Holes or open seams in interior gutter.

Measurement:

Measure entire length of gutter having the conditions described above. For clogged gutters, count lineal feet of clogging material. For clogged drain, count as 1 ft. Individual defects count as 1 ft minimum. If the distance between distresses is less than 1 ft, count the distresses as one.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of gutter defects (ft)

B = total length of flashing on roof section being rated (including perimeter flashings such as flashing, edge metal, ridge and hip shingles, and valley flashings; and curb flashings around large penetrations such as dormers and skylights).

Shingle Roofing: Lumps/Ridges/Sags

Definition:

Lumps, ridges, or sags are present on the surface of the roof.

Notes:

If other problems exist in the areas that exhibit lumping, sagging, or ridging, record them under the appropriate distresses.

Severity Levels:

Medium - Any of the following defects:

- Lumps or ridges that do not appear to be caused by unevenness in the supporting substrate or underlying flashing component (i.e., wrinkles in the underlying felt).
- Lumps, ridges, or sags caused by unevenness in the supporting substrate or underlying flashing component.

Measurement:

Measure the exposed area (sq ft) of shingles having the above conditions.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total exposed area of shingles (sq ft) having lumps/ridges/sags defects.

B = total area of roof section being rated (sq ft).

Shingle Roofing: Metal Apron Flashing

Definition:

Roof-to-wall sheet metal flashing used at the upslope and downslope sides of chimneys, dormers, curbs, and other projections. Apron flashing should be placed at the downslope side of the projection with the edge of the deck flange exposed. The metal apron at the upslope side of the projection should have the edge of the deck flange covered by overlaying shingles. A projection that is wider than 2 ft should have a saddle-shaped cricket that diverts water around the projection.

Severity Levels:

Low - Any of the following defects:

- Loss of protective coating or corrosion.
- Vertical height is less than 4 in high.

Medium - Any of the following defects:

- Absence of cricket on upslope side of penetration that is wider than 2 ft.
- Exposed fastener in flashing.

High - Any of the following defects:

- Edge of deck flange on upslope side of penetration is exposed or visible.
- Edge of deck flange on downslope side of penetration is not overlapping shingles or is sealed to underlying shingles.
- Holes, splits, or cracks in metal flashing.
- Metal flashing is open at vertical corner.
- No apron flashing exists.

Measurement:

Measure length (ft) of metal apron flashing having the conditions described above. Individual defects count as 1 ft minimum. If the distance between distresses is less than 1 ft, count the distresses as one.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of flashing defects (ft)

B = total length of flashing on roof section being rated (including perimeter flashings such as flashing, edge metal, ridge and hip shingles, and valley flashings; and curb flashings around large penetrations such as dormers and skylights).

Shingle Roofing: Metal Cap Flashing

Definition:

Metal cap flashing includes counterflashing and any sheet metal coping cap that serves as part of the counterflashing or cover over a detail such as roof area divider, equipment curb, expansion joint, step flashing, ridge, or hip. Metal cap flashing protects the top termination of the vertical flashing (step flashing or metal apron flashing) and sheds waters away from it. It should be free to expand and contract. Properly lapped exterior siding or cladding can perform the function of metal cap flashing.

Severity Levels:

Low - Any of the following defects:

- Loss of protective coating or corrosion.
- Metal coping cap is deformed, allowing water to pond on the top.
- Counterflashing is deformed but still functioning.
- Counterflashing has been sealed to the step flashing.
- Exposed fasteners on horizontal surfaces of metal cap flashing.

Medium - Any of the following defects:

- Corrosion holes are present in the metal on a vertical surface.
- Metal coping cap has loose fasteners, failure of soldered or sealed joints, open joints, or loss of attachment.

High - Any of the following defects:

- Metal coping cap or counter flashing was not installed, or is missing or displaced from its original position, allowing water to channel behind it.
- Corrosion holes are present in the metal on a horizontal surface.
- Metal coping cap has missing joint covers (where originally installed).
- Sealant at reglet or top of counterflashing is missing or no longer functioning, allowing water to channel behind counterflashing.
- Counterflashing, exterior siding, or cladding does not extend over the top of the step flashing or apron flashing.

Measurement:

Measure length (ft) of metal cap flashing having the conditions described above. Individual defects count as 1 ft minimum. If the distance between distresses is less than 1 ft, count the distresses as one.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of metal cap flashing defects (ft)

B = total length of flashing on roof section being rated (including perimeter flashings such as flashing, edge metal, ridge and hip shingles, and valley flashings; and curb flashings around large penetrations such as dormers and skylights).

Shingle Roofing: Patching

Definition:

Roof repairs were previously made using dissimilar materials such as mastics or shingles of a different color or design.

Severity Levels:

Low - Replacement shingle does not match appearance or composition of original adjacent shingles.

Medium - Shingle replacement patch is composed of dissimilar materials such as mastic, roofing felts, or coatings.

High - Shingle replacement patch composed of dissimilar materials, that have other high severity distresses (i.e., holes, splits, and cracks).

Measurement:

Measure the exposed area (sq ft) of shingles having the above conditions.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total exposed area of shingles (sq ft) having patching defects.

B = total area of roof section being rated (sq ft).

Shingle Roofing: Pitch Pans

Definition:

A pitch pan is a flanged sleeve with an open bottom that is placed around a roof penetration and filled with a bituminous, polymeric, or grout sealant to seal the area around the penetration.

Severity Levels:

Medium - Top rim of pitch pan is not level on all sides.

High - Any of the following defects:

- Holes, splits, or cracks in metal.
- Sealing material is below metal rim.
- Sealing material has cracked or separated from pan or penetration.
- Edge of deck flange on upslope side of penetration is exposed.
- Edge of deck flange on downslope side of penetration is not overlapping shingles or is sealed to underlying shingles.

Measurement:

Count each distressed pitch pan once at the highest severity level present.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = number of distressed pitch pans (ft)

B = total length of flashing on roof section being rated (including perimeter flashings such as flashing, edge metal, ridge and hip shingles, and valley flashings; and curb flashings around large penetrations such as dormers and skylights).

Shingle Roofing: Ridge/Hip Shingles

Definition:

Portions of shingles (usually one tab width) that are cut from a full 3-tab shingle and laid perpendicular to the hip or ridge, providing a finished water-shedding cap. Note: Ridge and Hip Shingles are treated as flashings because they provide protection of the roofing system at the termination of adjoining roof planes.

Severity Levels:

Medium - Any of the following defects:

- Holes, splits, or cracks not extending down to the underlayment or substrate.
- Misaligned shingle resulting in partial loss of coverage but no exposed underlayment or substrate.
- Missing shingle, but no exposed underlayment or substrate.
- Exposed fasteners that have not backed out.

High - Any of the following defects:

- Holes or splits that extend down to the underlayment or substrate.
- Misaligned shingle resulting in exposed underlayment or substrate.
- Missing shingle resulting in exposed underlayment or substrate.
- Exposed fastened that has backed out.

Measurement:

Measure lineal feet of exposure of ridge or hip shingle tabs having the conditions described above. Round total quantity to next higher whole foot. Individual defects count as 1 ft minimum. If the distance between distresses is less than 1 ft, count the distresses as one.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of ridge or hip shingles having defects (ft)

B = total length of flashing on roof section being rated (including perimeter flashings such as flashing, edge metal, ridge and hip shingles, and valley flashings; and curb flashings around large penetrations such as dormers and skylights).

Shingle Roofing: Ridge/Hip Vents

Definition:

Any device installed on and along the roof ridge or hip for the purpose of ventilating the underside of the roof deck.

Severity Levels:

Medium - Missing component of vent assembly (i.e., end caps, baffles, etc.).

High - Any of the following defects:

- Missing or loose section of ridge or hip vent.
- Holes, splits, or cracks in ridge or hip vent.
- Missing cap shingle on roof vent.

Measurement:

Measure length (ft) of ridge/hip vent flashing having the conditions described above. Individual defects count as 1 ft minimum. If the distance between distresses is less than 1 ft, count the distresses as one.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of ridge/hip vent flashing defects (ft)

B = total length of flashing on roof section being rated (including perimeter flashings such as flashing, edge metal, ridge and hip shingles, and valley flashings; and curb flashings around large penetrations such as dormers and skylights).

Shingle Roofing: Stains/Rust/Fungus/Mildew

Definition:

The shingle surface shows evidence of stains, rust, fungus, or mildew.

Notes:

If the appearance is unacceptable, corrective treatments can be applied, such as cleaning with trisodium hypochlorate or installing zine strips.

Severity Levels:

Low - Evidence of stains, rust, fungus, or mildew.

Measurement:

Measure the exposed area (sq ft) of shingles having the above conditions.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total exposed area of shingles (sq ft) having stains/rust/fungus/mildew defects.

B = total area of roof section being rated (sq ft).

Shingle Roofing: Step Flashing

Definition:

Individual pieces of metal flashing material used to flash vertical walls, chimneys, dormers, and other projections. The pieces range from 7 to 10 in. long and have a 90-degree bend with a horizontal and a vertical leg. The pieces are individually placed at the end of each course of shingles where the roof meets a vertical surface. They are overlapped and "stepped up" the slope, and are fastened through the horizontal surface to the deck. Step flashing should be used only to flash a vertical surface that runs up a slope, and not across the slope.

Severity Levels:

Low - Any of the following defects:

- Loss of protective coating or corrosion of step flashing.
- Overlay roof system shingles are not step flashed.
- Coverages of less than one step flashing unit per shingle course exists.

Medium - Any of the following defects:

- Vertical leg of step flashing is less than in. high.
- Bent, deformed, or wide gaps in vertical leg of step flashing.
- Loose or displaced step flashing
- Vertical joints between step flashing pieces have been sealed closed.
- Continuous “L” flashing exists instead of incremental step flashing.

High - Any of the following defects:

- Holes exists in the step flashing.
- No vertical flashing exists.
- Top edge of step flashing is exposed, allowing water to penetrate behind flashing.

Measurement:

Measure length (ft) of step flashing having the conditions described above. Individual defects count as 1 ft minimum. If the distance between distresses is less than 1 ft, count the distresses as one.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of step flashing defects (ft)

B = total length of flashing on roof section being rated (including perimeter flashings such as flashing, edge metal, ridge and hip shingles, and valley flashings; and curb flashings around large penetrations such as dormers and skylights).

Shingle Roofing: Unsealed/Unlocked Tab

Definition:

For a seal-down shingle, a lack of adhesion between the tab of a shingle and underlying shingles indicates an unsealed condition. Displacement or damage to a lock-down shingle that results in the loss of its interlocking mechanism indicates an unlocked condition.

Notes:

For seal-down shingles, use a trowel or fingers and gently try to lift tab. Any adherence of the shingle tab to underlying shingles should be judged as adequate. Test several adjacent shingles in three or four randomly selected areas of the roof. If any shingles are found to be unsealed, use the sampling method to determine the quantity of the affected area.

Severity Levels:

Medium - Any of the following defects:

- The tab of a shingle, which is designed to be sealed down, is unsealed.
- A lock-down shingle is not interlocked.

Measurement:

Measure the exposed area (sq ft) of shingles having the above conditions.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total exposed area of shingles (sq ft) unsealed/unlocked defects.

B = total area of roof section being rated (sq ft).

Shingle Roofing: Valley Flashing

Definition:

Roof valley flashings are formed when two sloping sections intersect to form a "V." Water from both sections of roof runs through the valley, making it especially vulnerable to deterioration and leakage. Valley flashings for asphalt shingles may be of three types: (1) open valleys lined with sheet metal or mineral-surfaced asphalt roll (composition) material, (2) closed cut valleys having shingles on one side of the valley cut on an angle parallel with the valley, and (3) woven valleys lined with interwoven asphalt shingles form the adjoining roof sections. All three types of valley flashings should have underlying asphalt roll material.

Severity Levels:

Low - Any of the following defects:

- Loss of protective coating or corrosion on metal open valley flashing.
- No fabricated “V” crimp (vertical ridge) in center of metal open valley flashing.

Medium - Any of the following defects:

- Loss of surfacing with exposure of felts in valley flashing.
- Unsealed laps in open composition valley flashing.
- Holes, splits, or cracks in valley flashing not extending down to the underlay.
- Loose or missing valley shingles with no underlay or substrate exposed.
- Edges of valley shingles are sealed (in open or closed valleys).
- Exposed fasteners within 12 in of centerline of closed or woven valley.

High - Any of the following defects:

- Holes or splits in valley flashing with underlay or substrate exposed.
- Loose or missing valley shingles with underlay or substrate exposed.
- Exposed fastener within 12 in of centerline of open valley.

Measurement:

Measure length (ft) of valley flashing having the conditions described above. Individual defects count as 1 ft minimum. If the distance between distresses is less than 1 ft, count the distresses as one.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of valley flashing defects (ft)

B = total length of flashing on roof section being rated (including perimeter flashings such as flashing, edge metal, ridge and hip shingles, and valley flashings; and curb flashings around large penetrations such as dormers and skylights).

Appendix_E: Direct Condition Rating Definitions

APPENDIX E – Direct Condition Rating Definitions

Table E-1. Direct Condition Rating Definitions

Rating	SRMSustainment, Restoration, and Modernization Needs	Rating Definition
Green (+)	Sustainment consisting of possible preventive maintenance (where applicable)	Entire Component-Section or Component-Section sample free of observable or known distress
Green	Sustainment consisting of possible preventive maintenance (where applicable) and minor repairs (corrective maintenance) to possibly few or some subcomponents.	No Component-Section or sample serviceability or reliability reduction. Some, but not all, minor (non-critical) subcomponents may suffer from slight degradation or few major (critical) subcomponents may suffer from slight degradation.
Green (-)		Slight or no serviceability or reliability reduction overall to the Component-Section or sample. Some, but not all, minor (non-critical) subcomponents may suffer from minor degradation or more than one major (critical) subcomponent may suffer from slight degradation.
Amber (+)	Sustainment or restoration to any of the following: Minor repairs to several subcomponents; or Significant repair, rehabilitation, or replacement of one or more subcomponents, but not enough to encompass the Component-Section as a whole; or Combinations thereof	Component-Section or sample serviceability or reliability is degraded, but adequate. A very few, major (critical) subcomponents may suffer from moderate deterioration with perhaps a few minor (non-critical) subcomponents suffering from severe deterioration.
Amber		Component-Section or sample serviceability or reliability is definitely impaired. Some, but not a majority, major (critical) subcomponents may suffer from moderate deterioration with perhaps many minor (non-critical) subcomponents suffering from severe deterioration.
Amber (-)		Component-Section or sample has significant serviceability or reliability loss. Most subcomponents may suffer from moderate degradation or a few major (critical) subcomponents may suffer from severe degradation.
Red (+)	Sustainment or restoration required consisting of major repair, rehabilitation, or replacement to the component- section as	Significant serviceability or reliability reduction in component–section or sample. A majority of subcomponents are severely degraded and others may have varying degrees of degradation.

Red	a whole.	Severe serviceability or reliability reduction to the Component-Section or sample such that it is barely able to perform. Most subcomponents are severely degraded.
Red (-)		Overall Component-Section degradation is total. Few, if any, subcomponents salvageable. Complete loss of Component-Section or sample serviceability.

Appendix_F: Paint Rating Definitions

APPENDIX F – Paint Rating Definitions

Table F-1. Paint/Coating Rating Definitions

Rating	% Deteriorated	Relative Amount Deteriorated
Green (+)	0.00-0.03	Up to about 1” x 4” in a 8' x 10’ area; 1/32” in a 10’ length; or 3 in 10,000
Green	0.03 – 0.10	Between about 1” x 4” and 1” x 12” in a 8’ x 10’ area; 1/32” and ⅛” in a 10’ length; or 3 and 10 in 10,000
Green (-)	0.10 – 0.30	Between 1” x 12” and 3” x 12” in a 8’ x 10’ area; ⅛” and ⅜” in a 10’ length, or 1 and 3 in 1000
Amber (+)	0.30 – 1.00	Between 3” x 12” and 10” x 12” in a 8’ x 10’ area; ⅜” and 1¼” in a 10’ length; or 3 and 10 in 1000
Amber	1.00 – 3.00	Between 10” x 12” and 18” x 18” in a 8’ x 10’ area; 1¼” and 3¾” in a 10’ length; or 1 and 3 in 100
Amber (-)	3.00 – 10.0	Between 1’ x 2½’ and 1’ x 8’ in a 8’ x 10’ area; 3¾” and 12” in a 10’ length; or 3 and 10 in 100
Red (+)	10.0 – 17.0	Between 1' x 8’ and 1¾' x 8’ in a 8’ x 10’ area; 1’ and 1¾’ in a 10’ length; or 10 and 17 in 100
Red	17.0 – 33.0	Between 1¾’ x 8’ and 3⅓’ x 8’ in a 8' x 10’ area; 1¾’ and 3⅓’ in a 10’ length; or 17 and 33 in 100
Red (-)	33.0 - 100	Greater than 1/3 of area, length, or amount

Assessments

Condition Assessment

Introduction to Condition Assessment

Condition Assessment Overview

This topic introduces the condition assessment process in **BUILDER**.

Notes: In the user documentation, the word "inspection" is sometimes used instead of "condition assessment." Also, "Component-Section" and "Section" are equivalent.

About Condition Assessment Types

After inventory of your real property has been entered into **BUILDER**, you can perform condition assessments/inspections. **BUILDER** accommodates multiple types of condition assessments.

Condition Assessment Types in BUILDER

Direct Rating	Distress Survey	PMPreventative Maintenance Inspection
A green/amber/red color coding system used by the inspector is translated into numeric condition ratings	Density and severity of deficiencies are logged; then **BUILDER** computes Component-Section condition scores that take all of the deficiencies into account.	This option allows each customer organization to develop and use their own customized list of inspection criteria for inspectors to follow

Beginning with **BUILDER** Version 3.4, you can also use the distress survey option to create a hybrid condition assessment containing distress survey of some components and direct rating of others. PMPreventative Maintenance inspections also offer this hybrid option.

About the Condition Index

CSCI

When a condition assessment is completed, **BUILDER** computes a condition index for the inspected Component-Section. This condition index is the CSCIComponent-Section Condition Index - a condition rating for the target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, then subtracting that deduct value from the maximum possible rating of 100. The deduct value computation differs for each condition assessment method., the Component-Section Condition Index. Details about how the CSCIComponent-Section Condition Index - a condition rating for the target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, then subtracting that

deduct value from the maximum possible rating of 100. The deduct value computation differs for each condition assessment method. is calculated and rolled up to higher levels of inventory are found in About CSCI Calculations and Rollup.

Condition / Functionality / Performance Index

The condition index is one of two indexes used to calculate another index called the *performance index* (the other contributing index is the functionality index). The performance index is what determines the color (green, amber, or red) shown for an inventory asset.

In a nutshell, **BUILDER** calculates the performance index by first collecting the condition index value and the functionality index value applicable to the target inventory asset. Next, the lower index value is multiplied by 60 percent and the higher index value is multiplied by 40 percent. Finally, the two numbers are added together to determine the performance index value for that inventory asset.

Note: Until a functionality assessment is performed on a Building, the functionality index for that Building is 100 percent by default.

Condition Assessment Reports

After a condition assessment is completed, the data entered into **BUILDER** can be used to generate a variety of inspection-related reports. These are described in the Reports section of the documentation.

Knowledge-Based Inspection Scheduling

An additional, optional task available to you after real property has been entered is to establish an inspection schedule using the Knowledge-Based Inspection scheduling tool in **BUILDER**. This tool is designed to select a subset of Component-Sections from your inventory that should be considered for inclusion in the next round of condition assessments.

Work Plans

Condition assessments are prerequisite to generating relevant work items and work plans, because the CSCIComponent-Section Condition Index - a condition rating for the target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, then subtracting that deduct value from the maximum possible rating of 100. The deduct value computation differs for each condition assessment method. is used in deciding at what point an inventory item is in need of repair or replacement.

Condition Assessment Tools and Reference

This topic provides an overview of tools and resources available for help with the condition assessment process in **BUILDER**.

Condition Assessment Tools

BUILDER provides specialized tools to assist with the condition assessment process. These are described briefly here, and in more depth at the following linked locations:

- Remote Inspection and Inventory Entry Using BuilderRED
- Rapid Inspection Method (Direct Rating)
- About Knowledge-Based Inspection Scheduling

BuilderRED

The BUILDER Remote Entry Database (BuilderRED, or BRED) is an optional, free, downloadable add-on to the SMSSustainment Management System. It is a portable application designed to run on a Windows® operating system, and can be used on a Windows tablet or laptop by inspectors at the inspection site.

Using BuilderRED, inspectors can quickly and easily enter condition assessment data into the application at the inspection site, then electronically import the data to **BUILDER** afterwards. This saves the effort of entering the data onto paper and then having to enter it again into the **BUILDER** Web interface.

Rapid Inspection Method

For assessments using the direct condition rating method, **BUILDER**'s Rapid Inspection method enables quick and easy input. In cases where entire Components, Systems, Buildings, or Complexes have a uniform or nearly uniform condition rating, you can input the condition rating at levels higher than Component-Section, then adjust the condition rating of individual Component-Sections as needed.

Note: There is no Rapid Inspection method for distress surveys or PMPreventative Maintenance inspections.

Knowledge-Based Inspection Scheduling

BUILDER also provides a Knowledge-Based Inspection scheduling tool. This tool is designed to select from your entire inventory a subset of Component-Sections that should be considered for inclusion in the next round of direct rating or distress survey condition assessments. Additionally, this feature is able to determine whether it is better to perform a distress survey or a direct rating.

Reference

Condition Assessment Reference Manual

A valuable resource to have on hand when performing condition assessment is the December 2018 ERDC/CERL SR-18-7, Knowledge-Based Condition Assessment Reference Manual for Building Component-Sections. This reference manual, written for **BUILDER** Version 3, is available by download from the SMS community user's group website at https://support.sms.erdc.dren.mil/downloads/erdc-cerl-technical-publications.

For distress surveys, Appendixes A through D of the Condition Assessment Reference Manual enumerate and define each of the available distresses. This information is also included in the **BUILDER** Online Help under the same Appendix numbers.

Note: the Condition Assessment Reference Manual does not include detailed information about **BUILDER**'s preventative maintenance (PMPreventative Maintenance) inspections, which were implemented starting with version 3.4.

Orientation to the Condition Tree

This topic

- Explains how to access the condition tree.
- Highlights the similarities and differences between navigating the condition tree and navigating the inventory tree.
- Explains how to exit the condition tree.

Access the Condition Tree

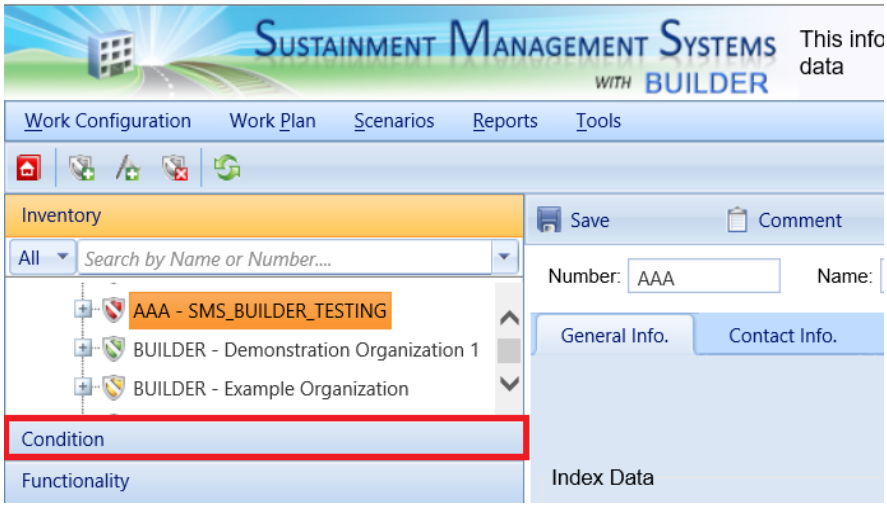
To record inspections or to work with Knowledge-Based Inspection Scheduling, you will need to work within the condition assessment navigation tree ("condition tree") in **BUILDER**.

Two alternate ways of accessing the condition tree are

a. switching to the condition tree from the inventory tree or functionality tree, or
b. making the condition tree your default view

Switch from the Inventory or Functionality Tree

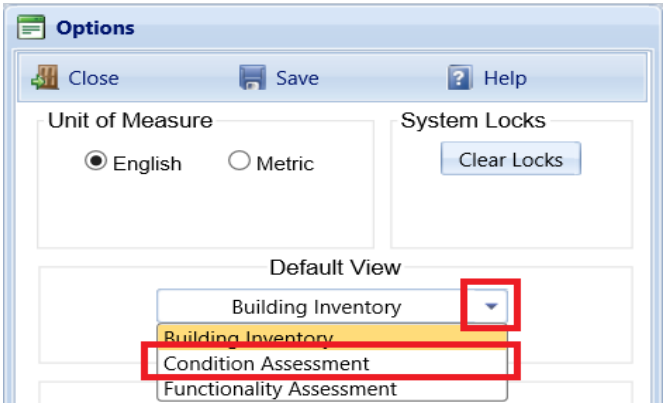
If your default location when opening **BUILDER** is the inventory tree or functionality tree, then you can switch to the condition tree by activating the **Condition** ribbon, which may be either above or below the tree currently being displayed.



Make the Condition Tree Your Default View

Alternatively, if you expect to be accessing the condition tree more often than the other navigation tree options, you have the option to configure your User Preferences to make the condition tree display by default when you open **BUILDER**. To do so, follow these steps:

- Activate the **User Preferences** link at the upper right of the main **BUILDER** screen.
- In the "Options" popup window, navigate to the **Default View** segment.
- Activate the dropdown arrow (see the first red box in the illustration below) to display the options for default view.
- Select **Condition Assessment** from the dropdown options.



- Activate **Save** on the popup window toolbar.
- Use the **Close** button to close the "Options" window .

The next time you log into **BUILDER**, the condition tree will display at the left.

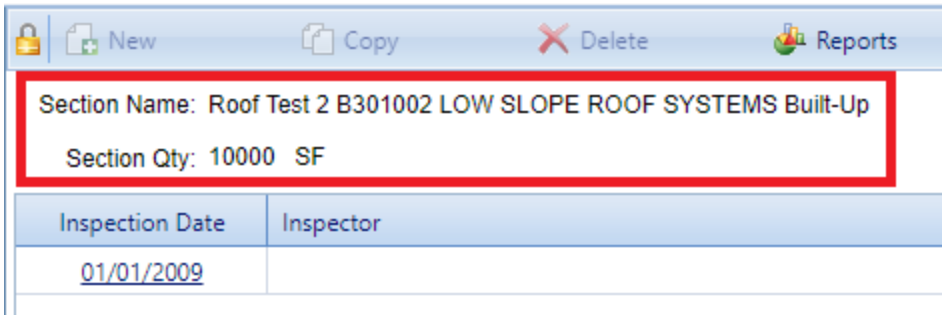
Navigating the Condition Tree

From the Organization (if applicable) or Site level, down through the Building level, navigating the condition tree works exactly the same way as navigating the inventory tree.

Once you activate "+" to expand a Building, however, the display changes. Two folders, named **By System** and **By Sample Location** will appear below the Building.

By System

Navigating the **By System** folder will feel similar to navigating the inventory tree, except that the content area of the screen will remain blank until you reach the Section level. At the Section level, the Section name, quantity, and unit of measurement will appear in the content area just under the content area toolbar.



Next appears a table with the columns **Inspection Date** and InspectorPerson who performs inspections to be input into BUILDER or ROOFER. As a permissions Role, Inspectors can input and edit inventory information in Inventory mode, and can input and edit inspection information from the Condition Assessment screen.. Activating the link for an inspection date will open the inspection.

Note: The oldest inspection date listed, at the bottom of the table, will have no InspectorPerson who performs inspections to be input into BUILDER or ROOFER. As a permissions Role, Inspectors can input and edit inventory information in Inventory mode, and can input and edit inspection information from the Condition Assessment screen. listed because it represents an inspection created automatically by **BUILDER** on the date the Component-Section was added to the **BUILDER** database. The CSCIComponent-Section Condition Index - a condition rating for the target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, then subtracting that deduct value from the maximum possible rating of 100. The deduct value computation differs for each condition assessment method. rating for this inspection is 100 because the Component-Section was presumably new at the time.

Further Information: For information about viewing individual inspections, see View a Direct Rating, and/or View a Distress Survey, and/or View a Preventative Maintenance Inspection.

By Sample Location

If sampling has been used for inspections, the sample locations used will be listed under the **By Sample Location** folder. Applicable Components and Sections will be listed under each sample location.

Exit the Condition Tree

To exit the condition tree, simply activate either the **Inventory** ribbon or the **Functionality** ribbon in the navigation tree.

About CSCI Calculations and Rollup

A condition assessment in **BUILDER** results in the computation of a Component-Section Condition Index (CSCIComponent-Section Condition Index - a condition rating for the target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, then subtracting that deduct value from the maximum possible rating of 100. The deduct value computation differs for each condition assessment method.). This informational topic details how the CSCIComponent-Section Condition Index - a condition rating for the target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, then subtracting that deduct value from the maximum possible rating of 100. The deduct value computation differs for each condition assessment method. is calculated for each of the condition assessment types. It also touches on how the CSCIComponent-Section Condition Index - a condition rating for the target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, then subtracting that deduct value from the maximum possible rating of 100. The deduct value computation differs for each condition assessment method. values are "rolled up" into condition indexes of progressively higher levels of **BUILDER** inventory.

CSCI Computation

The Component-Section Condition Index (CSCIComponent-Section Condition Index - a condition rating for the target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, then subtracting that deduct value from the maximum possible rating of 100. The deduct value computation differs for each condition assessment method.) is a condition rating for the Component-Section being inspected. For all condition assessment types, **BUILDER** computes the CSCIComponent-Section Condition Index - a condition rating for the target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, then subtracting that deduct value from the maximum possible rating of 100. The deduct value computation differs for each condition assessment method. by using the assessment data to calculate a deduct value, then subtracting that deduct value from the maximum possible rating of 100.

The deduct value computation differs depending on the type of condition assessment performed. The computational approach to obtaining a CSCIComponent-Section Condition Index - a condition rating for the target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, then subtracting that deduct value from the maximum possible rating of 100. The deduct value computation differs for each condition assessment method. is described below for each inspection type:

- direct rating
- distress survey
- PM inspection

Direct Rating CSCI Computation

For direct ratings, the selected color rating corresponds directly to a deduct value for the Component-Section. Using this deduct value, the CSCIComponent-Section Condition Index - a condition rating for the target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, then subtracting that deduct value from the maximum possible rating of 100. The deduct value computation differs for each condition assessment method. can be easily computed. If sampling is used for the Component-Section, a sample unit condition index will be computed at each sample location and aggregated into a CSCIComponent-Section Condition Index - a condition rating for the target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, then subtracting that deduct value from the maximum possible rating of 100. The deduct value computation differs for each condition assessment method. by computing the average of the representative samples weighted by size.

Distress Survey CSCI Computation

For distress surveys, the combination of distress type, severity level, and density of the subcomponents of the Section are used to determine the deduct value for the individual subcomponents. The deduct values for each combination of distress, severity, and density were determined during ERDC-CERLU.S. Army Engineer Research and Development Center, Construction Engineering Research Laboratory's research effort using rating values from a team of experts.

Note: If more than one distress exists for a given Component-Section, the sum of the deduct values for the distresses present must be corrected. This is because as additional distress types and/or severity levels occur on the subcomponent, the impact of a given distress on the condition rating becomes less. This correction correlates the expert panel's ratings and the computed indexes. The correction factor is a function of the summed total of the individual deduct values, a minimum individual deduct value, and the number of different distress types and severity level combinations found. The correction factor values were developed from the rating panel data and are applied directly to the deduct value to produce a corrected deduct value.

After all the subcomponent condition indexes are determined for a Component-Section, the CSCIComponent-Section Condition Index - a condition rating for the target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, then subtracting that deduct value from the maximum possible rating of 100. The deduct value computation differs for each condition assessment method. (or, if sampling is used, the Sample Unit Condition Index, SUCISample Unit Condition Index) is computed based on the individual subcomponent CIs and their weight factors. If sampling is used, the sample unit indexes for each Component-Section are aggregated into a CSCIComponent-Section Condition Index - a condition rating for the target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, then subtracting that deduct value from the maximum possible rating of 100. The deduct value computation differs for each condition assessment method. by computing the average of the representative samples weighted by size. All calculations are made at the time an inspection is entered.

PM Inspection CSCI Computation

In a PM inspectionPreventative maintenance inspection, ratings are done against the subcomponents to determine a subcomponent condition index (SCCISubcomponent condition index, produced when using direct rating in a preventative maintenance (PM) inspection) for each subcomponent, which is then aggregated to the overall Component-Section level to determine the Component-Section condition index (CSCIComponent-Section Condition Index - a condition rating for the target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, then subtracting that deduct value from the maximum possible rating of 100. The deduct value computation differs for each condition assessment method.).

Condition Index Rollups

The preceding documentation segments described how a condition index is computed for a Component-Section after an inspection. The inspection CIs form the basis for computing a current **CI**[1]Condition Index for all inventory items in the hierarchy. CSCIs are rolled up hierarchically to compute condition indexes for each component (BCCIBuilding Component Condition Index - a condition rating for the target Building Component. For each Component, the BCCI is computed by taking the average of its Sections' CIs, weighted by replacement cost), system (SCISystem Condition Index - a condition rating for a Building System. For each System, the SCI is computed by taking the average of its Components' CIs, weighted by replacement cost.), the Building as a whole (BCIBuilding Condition Index - a condition rating for the overall Building. For each Building, the BCI is computed by taking the average of its Systems' CIs (SCIs), weighted by replacement cost.), the Site, and the Organization. Collectively, trends can be monitored, and M&RMaintenance and Rehabilitation can be scheduled accordingly.

- **(Building) Component CI**[2]**Condition Index (**BCCI**Building Component Condition Index** - a condition rating for the target Building Component. For each Component, the BCCI is computed by taking the average of its Sections' CIs, weighted by replacement cost) - For each Component, the BCCIBuilding Component Condition Index - a condition rating for the target Building Component. For each Component, the BCCI is computed by taking the average of its Sections' CIs, weighted by replacement cost is computed by taking the average of its Sections' CIs, weighted by replacement cost.
- **System CI**[3]**Condition Index (**SCI**System Condition Index** - a condition rating for a Building System. For each System, the SCI is computed by taking the average of its Components' CIs, weighted by replacement cost.) - For each System, the SCISystem Condition Index - a condition rating for a Building System. For each System, the SCI is computed by taking the average of its Components' CIs, weighted by replacement cost. is computed by taking the average of its Component CIs, weighted by replacement cost.

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[1]Condition Index

[2]Condition Index

[3]Condition Index

- **Building CI**[1]**Condition Index (**BCI**Building Condition Index** - a condition rating for the overall Building. For each Building, the BCI is computed by taking the average of its Systems' CIs (SCIs), weighted by replacement cost.) - For each Building, the BCIBuilding Condition Index - a condition rating for the overall Building. For each Building, the BCI is computed by taking the average of its Systems' CIs (SCIs), weighted by replacement cost. is computed by taking the average of its System CIs, weighted by replacement cost.
- Complex CI**Complex Condition Index** - a condition rating for the target Complex. The Complex CI is computed by taking the average of the BCIs of each Building in the Complex, weighted by replacement cost. -The Complex CIComplex Condition Index - a condition rating for the target Complex. The Complex CI is computed by taking the average of the BCIs of each Building in the Complex, weighted by replacement cost. is computed by taking the average of the BCIs of each Building in the Complex, weighted by replacement cost.
- Site CI**Site Condition Index** - a condition rating for the target Site. The Site CI is computed by taking the average of the BCIs of each Building at the Site, weighted by replacement cost. - The Site CISite Condition Index - a condition rating for the target Site. The Site CI is computed by taking the average of the BCIs of each Building at the Site, weighted by replacement cost. is computed by taking the average of the BCIs of each Building at the Site, weighted by replacement cost.
- **Organization CI**[2]Condition Index - The Organization **CI**[3]Condition Index is computed by taking the average of the BCIs of each Building at the Organization, weighted by replacement cost.

For more information about rollups, see Appendix A: About Rollup.

Choose Assessment Type

Condition Assessment Types

This topic introduces the condition assessment (inspection) types available in **BUILDER**. Additional topics will go into further detail about direct ratings (including the Rapid Inspection method) and distress surveys *and preventative maintenance inspections* separately.

Further Information: More in-depth conceptual detail about direct ratings and distress surveys is available in the **Overview** chapter of ERDC/CERL SR-18-7, **Knowledge-Based Condition Assessment Reference Manual for Building Component-Sections**, available by download at https://support.sms.erdc.dren.mil/downloads/erdc-cerl-technical-publications.

BUILDER offers these condition assessment types:

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[1]Condition Index

[2]Condition Index

[3]Condition Index

- direct ratings
- distress surveys
- preventative maintenance (PM) inspections (starting with **BUILDER** version 3.4).

Each type is described briefly below, and more thoroughly at the links provided in the list above. All types allow for sampling. None of the types yield a detailed engineering assessment, but all are designed to satisfy facility management data requirements regarding inventory condition and expected work requirements. In keeping with other aspects of **BUILDER**'s design, every effort has been made to speed the process and ease the burden of performing condition assessments.

Direct Rating - Quick Introduction

When performing a direct condition rating, the inspector enters a color rating describing the Section's condition according to the diagram shown below.

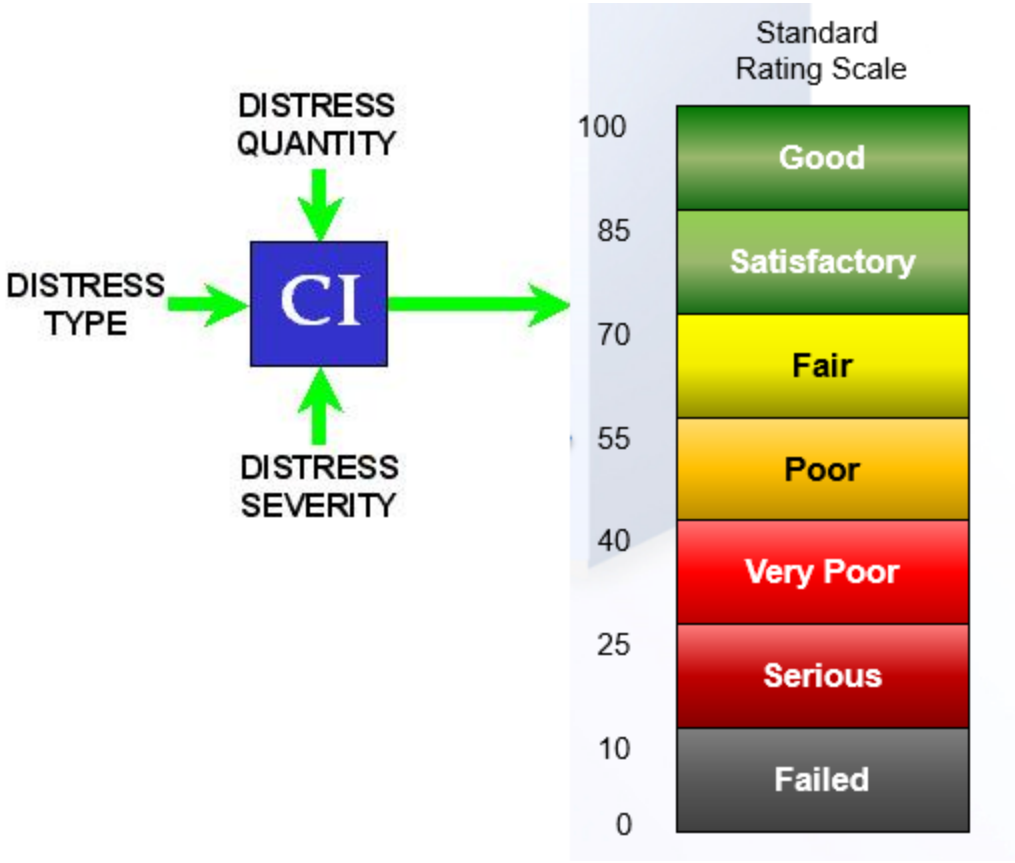
RATING	DETERIORATION	M&R NEEDS
Green + Green Green –	Minor Deterioration	Routine Maintenance or Minor Repair
Amber + Amber Amber –	Moderate Deterioration	Necessary Repair or Replacement
Red + Red Red-	Significant Deterioration	Major Rehabilitation or Replacement

The rating for the Component-Section is determined by first selecting one of the three color bands (green, amber, or red) that corresponds to the amount of deterioration observed and the maintenance and rehabilitation (M&RMaintenance and Rehabilitation) needs of the Component-Section. Then within that color band, one of three ratings is selected according to whether the observed condition falls at the top, middle, or bottom of the color band. Each color rating is specifically defined in Appendix E in the Condition Assessment Reference Manual or Online Help.

The color rating chosen produces a CSCIComponent-Section Condition Index - a condition rating for the target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, then subtracting that deduct value from the maximum possible rating of 100. The deduct value computation differs for each condition assessment method., which is calibrated to match the ratings that would result if a distress survey had been done.

Distress Survey - Quick Introduction

When performing a distress survey, inspectors record information about a Component-Section by recording the distresses on each subcomponent of the Component-Section. Each distress is given a severity rating (low, medium, or high) and density range (quantity) based on established criteria. **BUILDER** uses this inspection information to calculate the Component-Section Condition Index (CSCIComponent-Section Condition Index - a condition rating for the target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, then subtracting that deduct value from the maximum possible rating of 100. The deduct value computation differs for each condition assessment method.), which is then tied to M&RMaintenance and Rehabilitation costs to form the basis for maintenance and rehabilitation planning and budgeting. This process is illustrated by the diagram shown below.



Preventative Maintenance Inspection - Quick Introduction

In addition to the direct rating and distress survey inspection approaches, **BUILDER** now offers a third inspection type option called the preventative maintenance (PMPreventative Maintenance) inspection. The PM inspectionPreventative maintenance inspection approach is designed to align closely with routine preventive maintenance activities typically undertaken in an organization. This allows a technician performing regular PMPreventative Maintenance work to record observations about the condition and operation of the component while he or she is conducting the maintenance. Under most circumstances, this is the most

advantageous time to observe the true condition, when the component is being serviced and a more invasive survey can be done.

The objective of the PM inspectionPreventative maintenance inspection type is the same as that for the direct rating or distress survey: that is, to collect observations about issues adversely affecting the condition and operation of a component, then translate those observations into a quantitative condition index. The PMPreventative Maintenance assessment method, however, is a hybrid of the distress and direct rating methods. Similar to the distress survey, observations are recorded against each subcomponent, allowing the assessor to pinpoint the specific item directly affected by an issue. However, instead of recording distresses, an inspector will provide a Green/Amber/Red color rating similar to the direct rating, but at the subcomponent level. In addition, the PM inspectionPreventative maintenance inspection screen provides rating guidance criteria associated with each subcomponent, as well as a list of preventative maintenance tasks to be performed during the assessment.

BUILDER provides default criteria and PMPreventative Maintenance tasks for select component types.

About Choosing Condition Assessment Type

The **BUILDER** condition assessment process is designed to require the minimum of data needed to make good managerial decisions about where attention and resources need to be focused. When a Building is new, or when inspecting a relatively new Component-Section with a long expected remaining service life, using a direct condition rating on each Component-Section will probably be sufficient. However, as a Component-Section begins to deteriorate, it is beneficial to gather more data during the inspection using a distress survey.

Section 2.4 in ERDC/CERL SRShingle Roofing-18-7, Knowledge-Based Condition Assessment Reference Manual for Building Component-Sections, provides additional information on pairing inspection types (distress survey vs. direct rating) with inspection objectives. This document is available for download at the SMSSustainment Management System community user's group website at https://support.sms.erdc.dren.mil/downloads/erdc-cerl-technical-publications.

Direct Ratings

About Direct Ratings

Direct rating is the most commonly used type of condition assessment in **BUILDER**. A direct rating allows a seasoned inspector to judge the overall condition of a Component-Section and quickly assign a color code corresponding to a condition tier.

The Direct Ratings segment of the documentation describes direct ratings and provides links to direct rating tasks. It also alerts the user to the option of using the Rapid Inspection method.

Note: Starting with **BUILDER** Version 3.4, direct rating may be performed on individual subcomponents in a Component-Section while at the distress survey screen, or while using the PM (preventative maintenance) Inspection feature. In releases before Version 3.4, direct ratings can only be performed on Component-Sections as a whole.

What is a Direct Rating?

A direct rating is the most commonly used type of condition assessment in **BUILDER**. In contrast to a distress survey (which requires the inspector to catalog each deficiency found, including its density and severity), a direct rating allows a seasoned inspector to judge the overall condition of a Component-Section and quickly assign a corresponding color rating (Red, Amber, Green), by taking into account the same distress/severity/density factors of a distress survey but without the increased data input.

Using direct ratings is a quick and efficient way to assess the condition level of each Section, and after Sections have been inspected and assigned a condition rating, the condition of the Sections are rolled up to indicate overall condition of Components and Systems, and so on up the asset tree.

Beginning with **BUILDER** Version 3.4, direct rating can also be used on individual subcomponents, at the distress survey screen. This allows users to mix direct rating and distress survey within a Section.

When to Use a Direct Rating

Direct rating inspections, because they are faster and less complex than other options, can be ideal for inventory that is being brought into **BUILDER** in bulk for the first time.

Note: For an even quicker start, consider using the Rapid Inspection method, which can speed up the process of creating direct rating inspections. Rapid inspection is described in detail at Rapid Inspection Method (Direct Rating).

However, there are stages in the lifecycle of an asset where a more detailed condition assessment option, the distress survey, serves best to prolong the asset's useful life. To read engineering advice concerning the best timing for a distress survey, consult the **Overview** chapter of the manual referenced immediately below.

Resource: ERDC/CERL SR-18-7, Knowledge-Based Condition Assessment Reference Manual for Building Component-Sections, is available by download at https://support.sms.erdc.dren.mil/downloads/erdc-cerl-technical-publications.

Rapid Inspection Option

For assessments using the direct condition rating method, you can use **BUILDER**'s Rapid Inspection method for quick and easy input. In cases where entire Components, Systems, Buildings, or Complexes have a uniform or nearly uniform condition rating, you can input the condition rating at levels higher than Component-Section, then adjust the condition rating of individual Component-Sections as needed.

Note: There is no Rapid Inspection method for distress surveys or PMPreventative Maintenance inspections.

Additional Information

Chapter 5 of the December 2018 ERDC/CERL SR-18-7, Knowledge-Based Condition Assessment Reference Manual for Building Component-Sections discusses some of the concepts behind direct rating procedures. Written for BUILDER Version 3, the Condition Assessment Reference Manual is available by download at https://support.sms.erdc.dren.mil/downloads/erdc-cerl-technical-publications.

Direct Rating Tasks

Tasks that can be performed on a direct rating are:

View a Direct Rating
Add a Direct Rating
Edit a Direct Rating
Delete an Inspection

View a Direct Rating

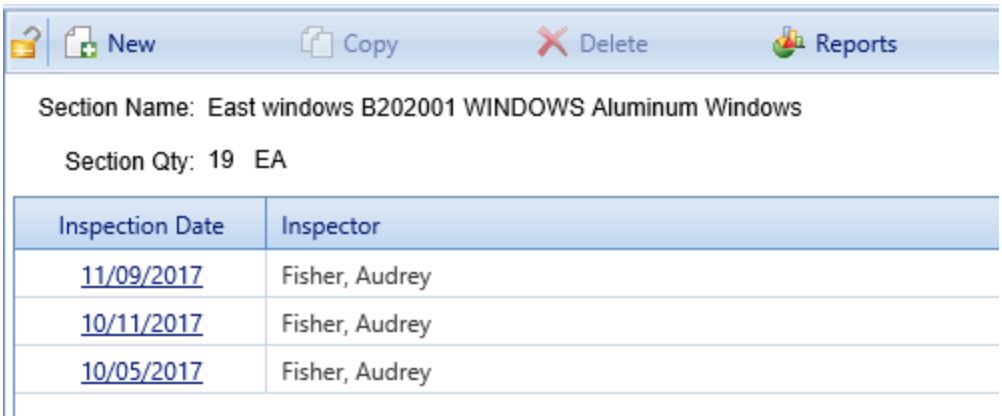
This topic covers how to open and view an existing direct rating that does not use sampling, and explains the information included there.

Open an Inspection

Note: An inspection may be viewed at any time. Editing, however, may only be performed within a specified number of days after the inspection date. The number of days is typically 30 by default in **BUILDER** as delivered to customers, but can be configured by a **BUILDER** Administrator.

To open an inspection for viewing or editing,

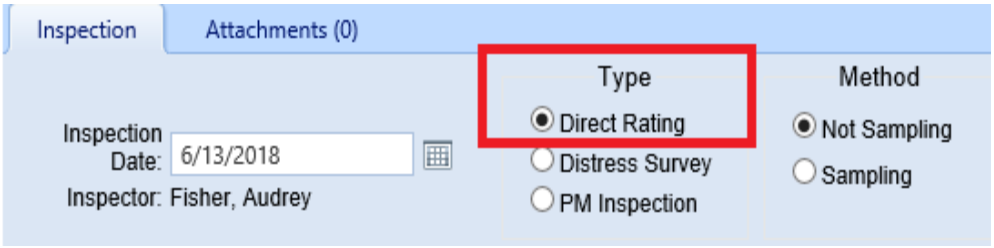
- If you are not already in the condition tree, activate the **Condition** ribbon.
- Navigate to the Building containing the desired inspection.
- Expand the Building's **By System** folder.
- Navigate to the desired Section and tap (if touch is enabled) or click on its name. *In the content area you should see a table listing at least one inspection.*



Note: The oldest inspection was automatically generated by **BUILDER** as a direct rating when the Section was added to the inventory. No inspector name will be listed for this inspection.

Because an inventory item is assumed to be new at installation, **BUILDER** assigns a Green+ rating to this automatically generated inspection.

- In the **Inspection Date** column, activate an inspection date link. *The inspection should open. The radio button under the Type heading indicates what type of inspection you are viewing or editing.*



View Direct Rating Inspection Data

The direct rating inspection screen has two tabs where you can view inspection data: **Inspection** and **Attachments**. Above the tabs is the toolbar.

Select a link below for how to view

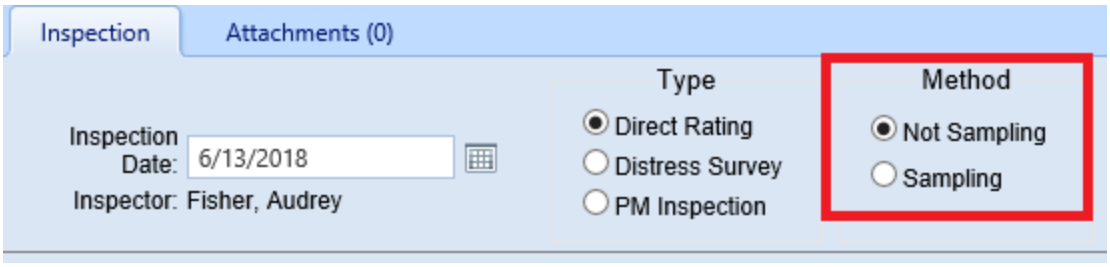
- Inspection Identification Data (date, inspector name, inspection type and method)
- Inspection Results
- Inspection Attachments
- Inspection Comments
- Inventory Information

Inspection Identification Data

- **Inspection Date.** The inspection date can be changed in this field. The oldest inspection is a direct rating that is automatically generated by **BUILDER** as of the date that the Component-Section was built,

installed, or renewed.

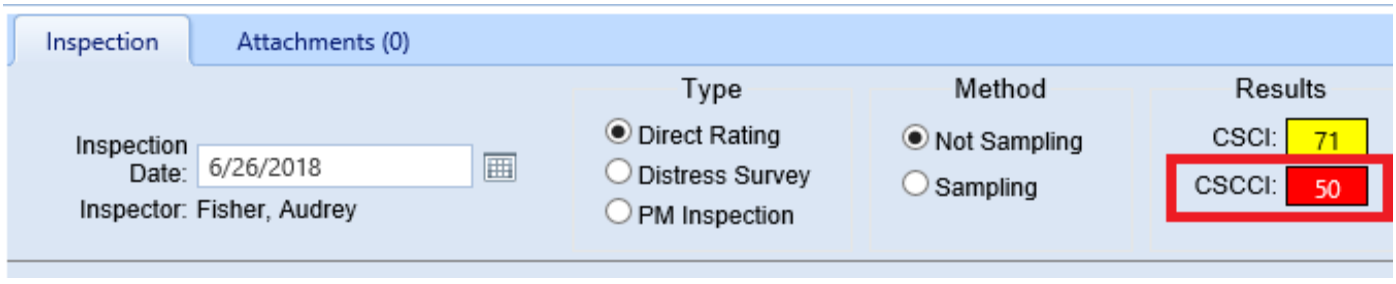
- Inspector (Read-Only). Inspector name, automatically filled in by **BUILDER** based on user login. This will not be present for the oldest inspection, which is automatically generated by BUILDER.
- **Type**. Inspection type. Available types are **Direct Rating**, **Distress Survey**, and PM inspectionPre-ventative maintenance inspection.
- **Method.** Inspection method. Available methods are **Not Sampling** and **Sampling**.



Inspection Results

All inspection results shown in the header section are read-only. They can not be directly changed in the **BUILDER** interface, only by changing the underlying assessment data or the selection on the corresponding Condition Rating Scale.

- CSCI (Read-Only). This is the Component-Section condition index corresponding to the color rating chosen by the inspector (see Inspector's rating judgment, later in this bullet list). In addition, the field's background color also matches the color rating. If the background color of the CSCI box is white, it means that data has not yet been entered to produce a result.
- CSCCI (Read-Only)(Painted or coated items only). If the Component-Section is painted or coated, the screen will display a separate condition index for the coating, as shown in the red box in this illustration:



- Inspector's rating judgment. The radio button selected under **Direct Condition Rating Scale** indicates the inspector's rating judgment for the Component-Section as a whole, and for the paint/coating if applicable:

Inspection Attachments

The number in parentheses shown on an inspection's **Attachments** tab indicates how many attachments are connected with the inspection. (This is something you can see even when you are at the Inspection tab.) If the number is zero, there are no attachments yet associated with the inspection.

To view one or more attachments,

- Navigate to and activate the **Attachments** tab. *If attachments are present, a table will display their type, title, and description*.
- Activate the link in the **Title** column. *The attachment will appear in the "Image Viewer" popup window.*
- When finished viewing, activate the **Close** button on the popup window toolbar. *You will be returned to the table of attachments.*
- Repeat the two steps immediately above for additional attachments as desired.

Inspection Comments

To view comments for the inspection, activate the **Comment** button on the toolbar above the inspection display. *The "Inspection Comments" popup window will appear.*

Note: If the **Comment** button icon does not show a white checkmark on a green background, no comments have been attached to the inspection.

To close the "Inspection Comments" popup without making any changes, either activate the **Cancel** button on the popup toolbar, or activate the **X** in the upper right corner of the popup window.

Inventory Information

Inventory information is not directly a part of the inspection; however, when viewing an inspection in the condition tree, you have the option to switch to **Inventory** view to see more detail about the Component-Section if desired, by following these steps:

- Without changing your location in the condition tree, activate the **Inventory** ribbon.
- Activate the tabs as desired to see inventory details stored for the Section.
- To return to the inspection, activate the **Condition** ribbon without changing your location in the inventory tree.

When you return to the condition tree, you will not be viewing the inspection itself, but rather the listing of inspections for that Component-Section. Simply re-select the date of the desired inspection to open it again.

Related Links

Add a Direct Rating
Edit a Direct Rating
Delete an Inspection

Add a Direct Rating

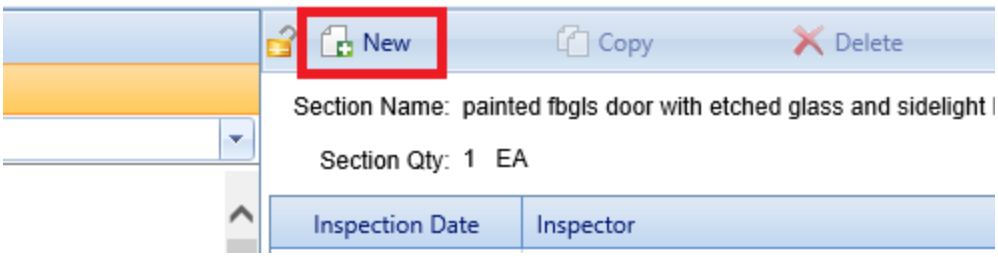
This topic covers how to create a new direct rating inspection that does not use sampling.

Note: An additional option for creating direct rating assessment records is **BUILDER**'s Rapid Inspection Method feature. For more information, see the topic Rapid Inspection Method (Direct Rating).

Initiate a New Inspection

To initiate a new inspection,

- Make sure you are in the condition tree by activating the **Condition** ribbon.
- Navigate to the Building containing the Section to be inspected.
- Expand the Building's **By System** folder.
- Navigate to the Section to be inspected and tap (if touch is enabled) or click on its name. *In the content area you should see a table listing at least one inspection.*
- In the content area toolbar, activate the **New** icon. *Result: In the Content area you should see a screen similar to the one illustrated in Navigating the Direct Rating Inspection Screen*.



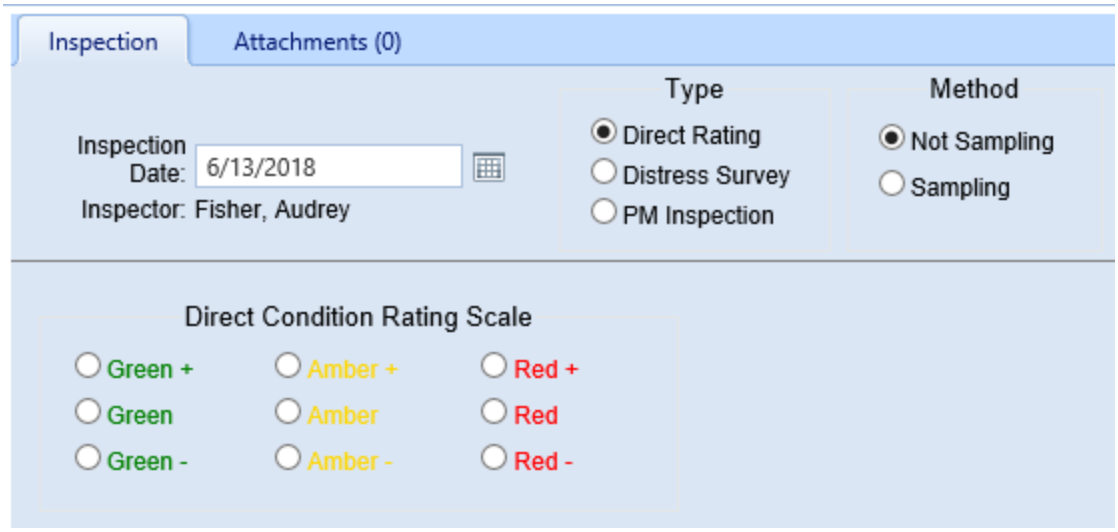
Troubleshooting tip: If the **New** icon is deactivated, this may be because an inspection has already been recently recorded for the Section. If the designated editing window (typically 30 days) has not elapsed, you can edit the existing inspection instead of creating a new inspection.

Select Inspection Type

At the default new inspection screen shown below, you have these choices in the **Type** column:

- Direct Rating
- Distress Survey

- PM inspection (new as of **BUILDER** Version 3.4)



Direct Rating is the default inspection Type when you create a new inspection, so if this is the type you wish to create, nothing needs to be done to select it. To create a distress survey instead, see Add a Distress Survey; or, to create a preventative maintenance inspection, see Add a Preventative Maintenance Inspection.

Enter Direct Rating Inspection Data

Permissions/Access Note: At the far left of the toolbar above the **Inspection** and **Attachments** tabs, a record lock indicator shows as open ( ) if the inspection is unlocked and can be edited if you have appropriate permissions. If the lock shows as closed ( ), the inspection is locked. For example, it may have been exported to BRED.

The direct rating inspection screen has two tabs where you can enter inspection data: **Inspection** and **Attachments**. Above the tabs is the toolbar.

Select a link below for how to add

- Inspection Identification Data
- Inspector's Condition Rating
- Inspection Attachments (this links to a separate topic)
- Inspection Comments (this links to a separate topic)

Inspection Identification Data

The following identifying information is contained in the header section at the **Inspection** tab:

- **Inspection Date.** Note that the oldest inspection is one that is automatically generated by **BUILDER**, as a direct rating, as of the date that the Component-Section was built, installed, or renewed.

- Inspector (Read-Only). Inspector name, automatically filled in by **BUILDER** based on user login. Inspector name will not be present for the oldest inspection, which is automatically generated by **BUILDER**.
- **Type.** Available inspection types are **Direct Rating**, **Distress Survey**, and **Preventative Maintenance**.
- **Method.** Available inspection methods are **Not Sampling** and **Sampling**.

After the inspection type has been selected, you should be finished with identification entries unless you wish to use sampling. (**Not Sampling** is the default method, and what is described in this topic.) Your name, as creator of the inspection, is applied to the inspection and is not modifiable.

For information about using sampling, see How To Prepare for Sampling.

Inspector's Condition Rating

Below the header section (and below any intervening detail about samples) is where you designate a color rating for the Section being inspected.

For a detailed description of each color rating, see Appendix E in the Condition Assessment Reference Manual or Online Help.

If the Section is painted or coated, consult Appendix F in the Condition Assessment Reference Manual or Online Help for detailed description of each paint color rating.

Resource: The Condition Assessment Reference Manual, ERDC/CERL SR-18-7, Knowledge-Based Condition Assessment Reference Manual for Building Component-Sections, is available by download at https://support.sms.erdc.dren.mil/downloads/erdc-cerl-technical-publications.

Direct Condition Rating

The radio button selected in the **Direct Condition Rating Scale** indicates the inspector's rating judgment for the Component-Section as a whole, not including paint or coating if the Paint/Coating Condition Rating grid appears to the right.

Paint/Coating Condition Rating

If the Component-Section is marked as painted in inventory, **BUILDER** will display the **Paint/Coating Condition Rating Scale**, and the appropriate color rating radio button should be selected.

Display of Inspection Results

The inspection result(s) are shown in the header section and are read-only. Each result is a numerical equivalent of the radio button selection made in the corresponding Condition Rating Scale. In addition, the background color of the CSCI display field should match the color rating selected.

- CSCI (Read-Only). In the header section, under the heading **Results**, is the Component-Section condition index corresponding to the rating chosen by the inspector.

- CSCCI (Painted or coated items only) (Read-Only). If the Component-Section is painted or coated, the screen will show a separate condition index for the coating at the upper right, below the CSCIComponent-Section Condition Index - a condition rating for the target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, then subtracting that deduct value from the maximum possible rating of 100. The deduct value computation differs for each condition assessment method..

Inspection Attachments

To associate one or more attachments with the inspection, see the topic Inspection Attachments.

The number in parentheses shown on the **Attachments** tab indicates how many attachments are connected with the inspection. If the number is zero, there are no attachments currently associated with the inspection.

Inspection Comments

To add, edit, or delete inspection comments, see the topic Inspection Comments.

Save Direct Rating

When finished with entering the desired direct rating information, activate **Save** on the content area toolbar.

Related Links

View a Direct Rating
Edit a Direct Rating
Delete an Inspection

Rapid Inspection Method (Direct Rating)

In an effort to speed the data input process, **BUILDER** offers a Rapid Inspection method feature for rapidly creating direct rating assessment records. This topic

- Outlines types of situations where the Rapid Inspection method can be used to advantage.
- Explains how to use the Rapid Inspection method.
- Lists the required information to be entered.

Example Situations

Some example situations where the Rapid Inspection feature might be used:

- You have just renovated a family housing complex, and multiple systems have been completely replaced in every house. You need to record these new conditions in your **BUILDER** database.
- You have just completed your **BUILDER** inventory, and although your resources for physical inspections are very limited, you have staff members who are intimately knowledgeable of conditions in most of your Buildings.
- You structured your **BUILDER** inventory so that every door, window, room wall/floor/ceiling, etc. is identified as a Component-Section (see the inventory for 1131 Administration Building in the Example database as an illustration of this). Now that you have to perform an assessment, you find that every door, window, room wall/floor/ceiling, etc. must have its own inspection record, but you want to do a quick walkthrough of the Building and record component ratings for everything.

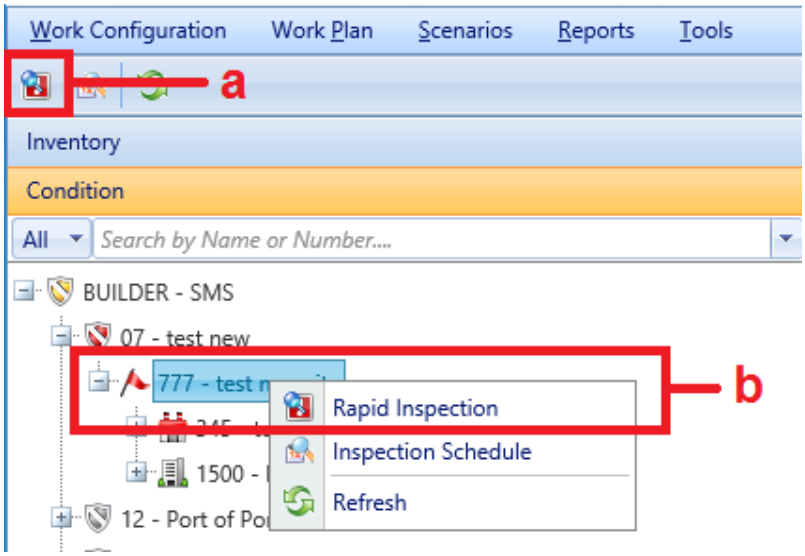
In all of these situations, you want to input condition ratings for Systems or Components for which you already know the rating. This is when Rapid Inspection can be very useful.

Note: After explaining how to implement a Rapid Inspection, this topic will outline an appropriate Rapid Inventory approach for each of the situations above, in the section Example Situations Revisited.

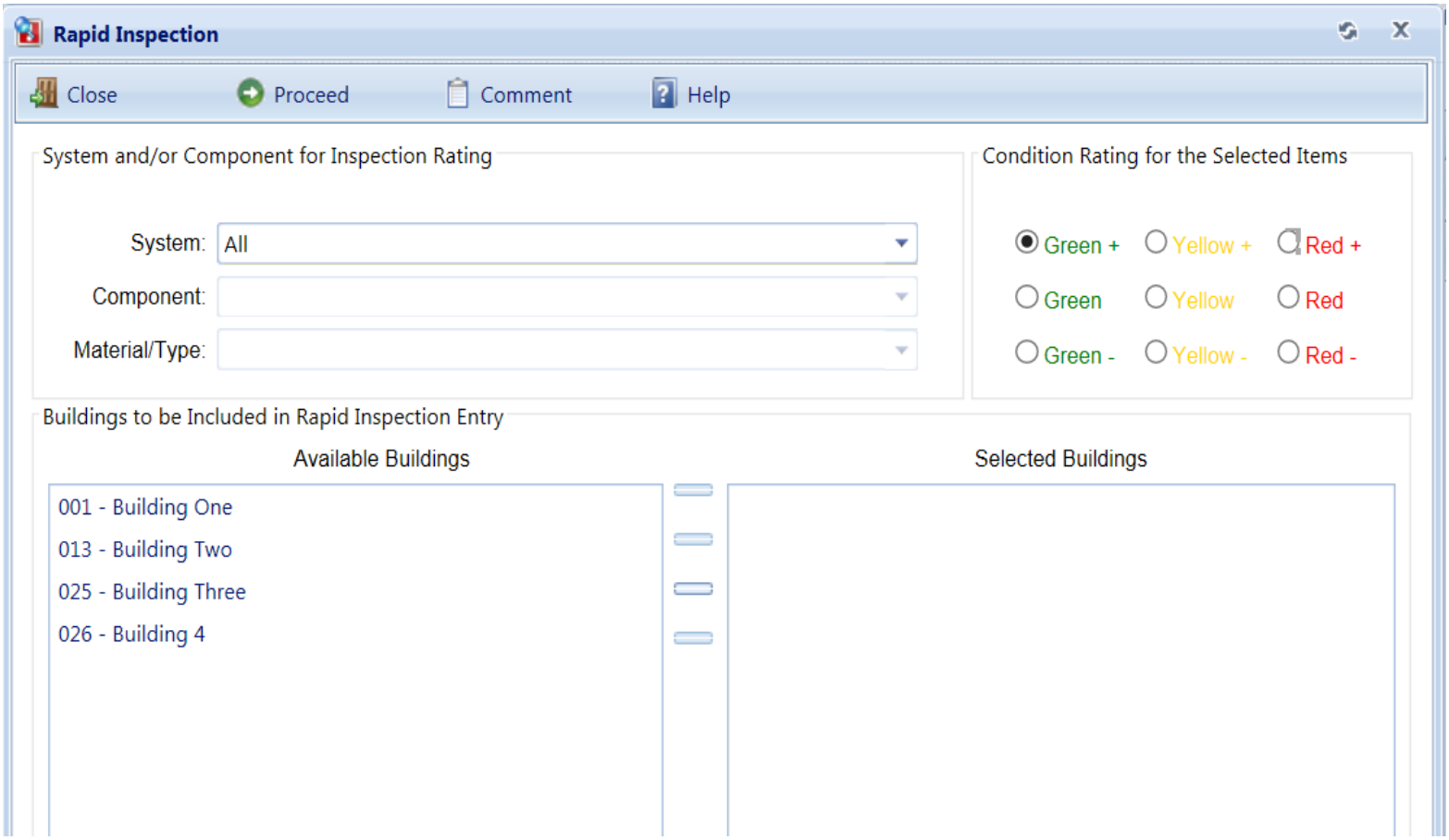
Initiate a Rapid Inspection

To launch the Rapid Inspection window:

- Highlight the smallest inventory item (Site, Complex, or Building) in the condition assessment tree that contains all of the Buildings that the rapid inspection will be used in.
- Either (a) activate the **Rapid Inspection** icon on the inspection toolbar menu, or (b) right-click the inventory item and select "Rapid Inspection."



The "Rapid Inspection" popup window will appear:



Enter Rapid Inspection Parameters

Required Data

The following data are required before you can proceed with the Rapid Inspection process:

- **System.** In the dropdown list, select the System for which inspections are to be created.
- **Component and/or Material/Type.** If you don't specify a Component, then every Component-Section belonging to the selected kind of System in a selected Building(s) will have an assessment created for it. However, if you specify a Component but not a Material/Type, then every Component-Section belonging only to that kind of component in a selected Building(s) will have an assessment created for it. Finally, if you specify a Material/Type, then every Component-Section of that material and type in the selected Building(s) will have an assessment created for it.
- **Condition Rating for the Selected Items** - Select a Condition Rating for all of the inspections to be created.
- **Buildings to be Included in Rapid Inspection Entry** - Select the Buildings for which condition assessments are to be created by using the arrow keys to build the list of **Selected Buildings** from the **Available Building** list.

Optional Data

If you want to enter a comment to be recorded with every inspection created, activate the **Comment** button in the toolbar.

Activate Rapid Inspection

When all data has been entered, activate the **Proceed** button to start the Rapid Inspection process. If you do not wish to perform the Rapid Inspection, activate the **Close** button.

Example Situations Revisited

For the examples discussed above, here is how this feature may have been used:

- You know that all of the roofs were rebuilt in the family housing complex. Select all of the houses, select Roofing as the System, and select G+ as the rating. Activating **Proceed** will create an inspection record with condition rating G+ for every Component-Section in the roofing system of every selected house.
- Have each staff member sit down sequentially with **BUILDER** to do the following process: Select sets of Buildings within his/her expertise that all have the same known condition for certain Systems or Components. Use the Rapid Inspection feature to create inspections as appropriate. If two staff members happen to input records for the same Component-Section, the later rating will overwrite the earlier rating if the ratings are done on the same day. (**BUILDER** allows only one inspection record per day per Component-Section.)
- You have scanned the interior doors in your walk-through of the Building, and they are all in good condition (rating G). Your inventory has 50 interior door Component-Sections, each door identified with the room it is in. Use Rapid Inspection by selecting the Building, selecting Interior Construction/Interior Doors, and selecting condition rating G. Activating **Proceed** will automatically create 50 inspection records, one for each interior door Component-Section.

Edit a Direct Rating

This topic covers how to edit an existing direct rating inspection that does not use sampling.

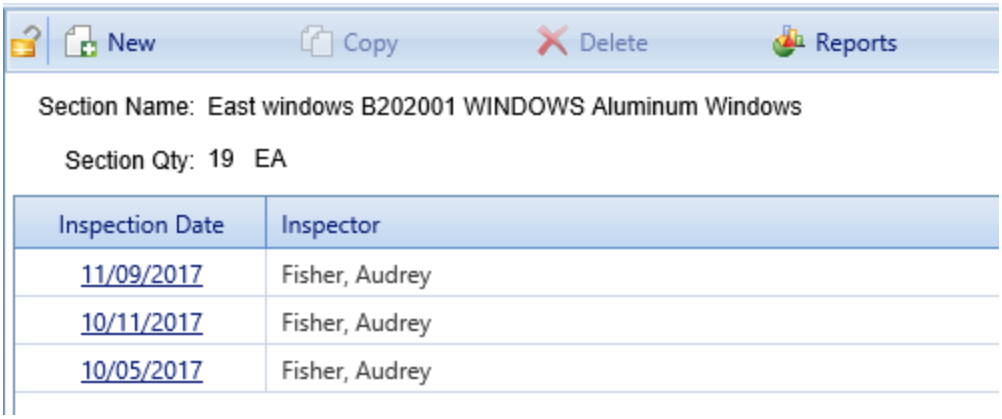
Open an Inspection

Note: An inspection may be viewed at any time. Editing, however, may only be performed within a specified number of days after the inspection date. The number of days is typically 30 by default in **BUILDER** as delivered to customers, but can be configured by a **BUILDER** AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings..

To open an inspection for viewing or editing,

- If you are not already in the condition tree, activate the **Condition** ribbon.
- Navigate to the Building containing the desired inspection.

- Expand the Building's **By System** folder.
- Navigate to the desired Section and tap (if touch is enabled) or click on its name. *In the content area you should see a table listing at least one inspection.*



Note: The oldest inspection was automatically generated by **BUILDER** as a direct rating when the Section was added to the inventory. No inspector name will be listed for this inspection.

Because an inventory item is assumed to be new at installation, **BUILDER** assigns a Green+ rating to this automatically generated inspection.

- In the **Inspection Date** column, activate an inspection date link. *The inspection should open. The radio button under the **Type** heading indicates what type of inspection you are viewing or editing.*

Edit Direct Rating Inspection Data

Permissions/Access Note: At the far left of the toolbar above the **Inspection** and **Attachments** tabs, a record lock indicator shows as open ( ) if the inspection is unlocked and can be edited if you have appropriate permissions. If the lock shows as closed ( ), the inspection is locked. For example, it may have been exported to BREDBUILDER Remote Entry Database (BuilderRED).

The direct rating inspection screen has two tabs where you can edit inspection data: **Inspection** and **Attachments**. Above the tabs is the toolbar.

Select a link below for how to edit

- Inspection Identification Data
- Inspector's Condition Rating
- Inspection Attachments (this links to a separate topic)
- Inspection Comments (this links to a separate topic)

Inspection Identification Data

- **Inspection Date.** The inspection date can be changed in this field. The oldest inspection is a direct rating that is automatically generated by **BUILDER** as of the date that the Component-Section was built,

installed, or renewed.

- InspectorPerson who performs inspections to be input into BUILDER or ROOFER. As a permissions Role, Inspectors can input and edit inventory information in Inventory mode, and can input and edit inspection information from the Condition Assessment screen. (Read-Only). InspectorPerson who performs inspections to be input into BUILDER or ROOFER. As a permissions Role, Inspectors can input and edit inventory information in Inventory mode, and can input and edit inspection information from the Condition Assessment screen. name, automatically filled in by **BUILDER** based on user login. This will not be present for the oldest inspection, which is automatically generated by **BUILDER**.
- **Type**. Inspection type. Available types are **Direct Rating**, **Distress Survey**, and PM inspectionPreventative maintenance inspection.
- **Method.** Inspection method. Available methods are **Not Sampling** and **Sampling**.

The inspection date can be changed, but this is not recommended. The designated InspectorPerson who performs inspections to be input into BUILDER or ROOFER. As a permissions Role, Inspectors can input and edit inventory information in Inventory mode, and can input and edit inspection information from the Condition Assessment screen. name can not be changed.

If you change the inspection type using the radio buttons under **Type**, all information entered for the inspection type you changed from will be ignored.

For information about using sampling, see How To Prepare for Sampling. The instructions in this current topic assume you are using **Not Sampling** as the inspection method.

Inspector's Condition Rating

Below the header section (and also below the intervening detail about samples, if sampling is used) is where the color rating is designated for the Section, and separately for its paint/coating, if applicable. You can change the rating(s) and activate **Save** on the content area toolbar.

For a detailed description of each color rating, see Appendix E in the Condition Assessment Reference Manual or Online Help.

If the Section is painted or coated, consult Appendix F in the Condition Assessment Reference Manual or Online Help for detailed description of each paint color rating.

Note: Both Component-Section and paint ratings allow you to enter a comment by activating the **Comment** button on the toolbar. See Inspection Comments for more information.

Resource: The Condition Assessment Reference Manual, ERDC/CERL SR-18-7, Knowledge-Based Condition Assessment Reference Manual for Building Component-Sections, is available by download at https://support.sms.erdc.dren.mil/downloads/erdc-cerl-technical-publications.

Direct Condition Rating

The radio button selected under **Direct Condition Rating Scale** indicates the inspector's rating judgment for the Component-Section as a whole, not including paint or coating if the **Paint/Coating Condition Rating**

Scale grid appears to the right.

Paint/Coating Condition Rating

If the Component-Section is marked as painted, the appropriate color rating radio button under **Paint/Coating Condition Rating Scale** should be selected.

Display of Inspection Results

The inspection result(s) are shown in the header section and are read-only. Each result is a numerical equivalent of the radio button selection made in the associated Condition Rating Scale. In addition, the background color of the CSCIComponent-Section Condition Index - a condition rating for the target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, then subtracting that deduct value from the maximum possible rating of 100. The deduct value computation differs for each condition assessment method. display field should match the color rating selected.

- CSCIComponent-Section Condition Index - a condition rating for the target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, then subtracting that deduct value from the maximum possible rating of 100. The deduct value computation differs for each condition assessment method. (Read-Only). In the header section, under the heading **Results**, is the Component-Section condition index corresponding to the rating chosen by the inspector.
- CSCCIComponent Section Coating Condition Index (Painted or coated items only) (Read-Only). If the Component-Section is painted or coated, the screen will show a separate condition index for the coating at the upper right, below the CSCIComponent-Section Condition Index - a condition rating for the target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, then subtracting that deduct value from the maximum possible rating of 100. The deduct value computation differs for each condition assessment method..

Inspection Attachments

Note: The only way to "edit" an attachment is to delete the attachment link from the list of attachments and link to an attachment that has been corrected as desired.

To associate one or more attachments with the inspection, see the topic Inspection Attachments.

Inspection Comments

To add, edit, or delete inspection comments, see the topic Inspection Comments.

Save Edited Direct Rating

After you have made your desired edits, be sure to activate **Save** on the content area toolbar.

Related Links

View a Direct Rating
Add a Direct Rating
Delete an Inspection

Delete an Inspection

This topic outlines the instructions and needed permissions for deleting an inspection (direct rating or distress survey or preventative maintenance inspection)

Who May Delete an Inspection

- A Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. or BUILDER administrator may delete any inspection.
- You may delete any of your own inspections within 30 days (or possibly less–see **CAUTION** below) of their creation.

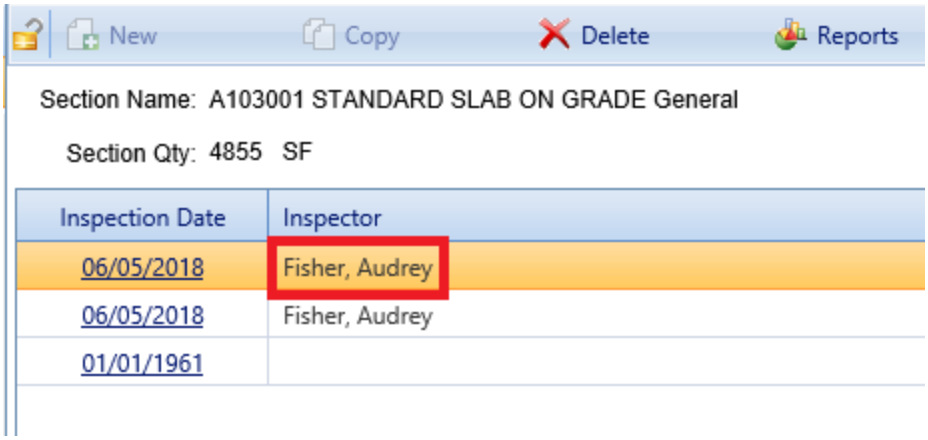
CAUTION: If the default 30-day window has been changed to a different period of time in your organization, that different period of time is what will apply instead.

How to Delete

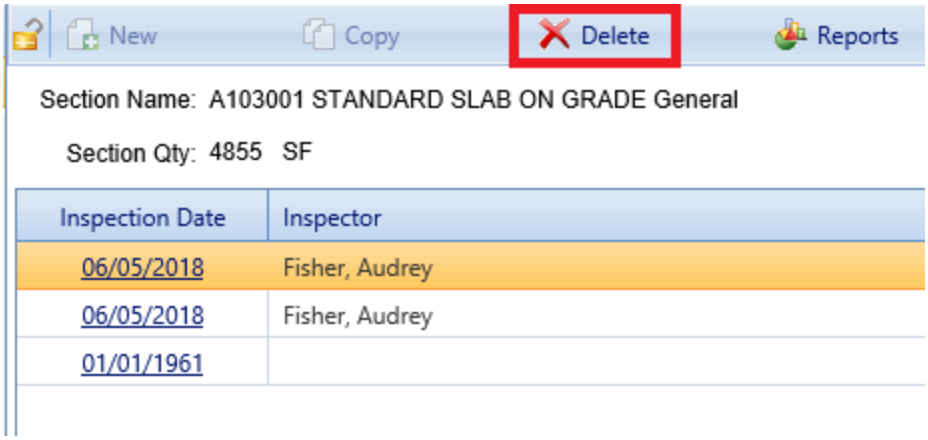
To delete an inspection,

- Navigate to the applicable Component-Section in the condition tree and select it.
- In the table of inspections, activate the inspector name in the row containing the inspection to be deleted. *The row will become highlighted, as shown below.*

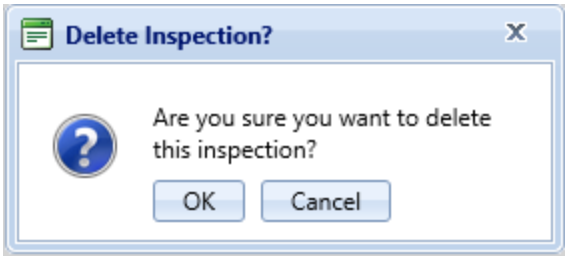
  Note: The reason for activating the inspector name is that selecting the inspection date will activate the link and take you into the inspection itself.



- Activate the **Delete** button on the toolbar.



- Select **OK** in the confirmation popup.



Distress Surveys

About Distress Surveys

This topic introduces the distress survey type of condition assessment, in which the inspector lists the distresses in a Component-Section. *Beginning with **BUILDER** Version 3.4, however, a distress survey condition*

assessment also allows the inspector to select, on a subcomponent by subcomponent basis, between (a) direct rating and (b) entering descriptions of distresses found.

The topic also supplies links to distress survey tasks.

BUILDER 3.4 Changes to Distress Surveys

The distress survey interface has been changed, introducing the ability to assign direct ratings at the subcomponent level as an alternative to listing distresses for the subcomponent.

New Feature: Direct Rating Option for Subcomponents

A new column in the distress survey table of subcomponents (the table you see when you select **Distress Survey** as your inspection type) allows you the option to apply a direct rating to individual subcomponents as an alternative to listing distresses for them.

By contrast, when you select **Direct Rating** as the inspection type to perform, that direct rating applies to the whole Component-Section.

Interface Changes

At the table of subcomponents that is presented when you select Distress Survey as the inspection type, the following changes have been made from Version 3.3.12:

- **D/F column deleted.** The subcomponent-level **D/F** (Defect Free) checkbox column has been removed. Instead, you have the option to select **G+** in the **Direct Rating** column.
- **Insp. column deleted.** The **Insp.** (Inspected) checkbox column has been removed.
- **N/A column moved.** The **N/A** checkbox column has been moved before the **Subcomponent** column.
- **Direct Rating column added.** For any given subcomponent, you can select a direct rating from the dropdown list in the Direct Rating column as an alternative to linking to the "Distresses" popup and listing distresses there. Subject to your organization's policies, technically at least you can mix distress listings and direct ratings at the subcomponent level.

Note: If both a direct rating and distresses are entered for the same subcomponent, the direct rating will take precedence.

What is a Distress Survey?

A distress survey is the most thorough type of condition assessment that can be performed on a Component-Section level in **BUILDER**. It is the Component-Section level condition assessment type that provides the greatest detail as to a Section's deficiencies. It is also more time consuming to perform than a direct rating.

Once details as to the severity and density of a Section's deficiencies have been entered, **BUILDER** will calculate the appropriate condition rating for the Section. After Sections have been inspected, the condition of

the Sections are rolled up to indicate overall condition of Components and Systems, and so on up the asset tree.

When to Use a Distress Survey

To read engineering advice concerning the best timing for a distress survey, see About Choosing Condition Assessment Type.

Additional Information

ERDC/CERL SR-18-7, Knowledge-Based Condition Assessment Reference Manual for Building Component-Sections (December 2018) provides more background conceptual information about condition assessments, and in Chapter 4 provides additional discussion about details such as distress density. Written for **BUILDER** Version 3, this document is available by download at https://support.sms.erdc.dren.mil/downloads/erdc-cerl-technical-publications.

Distress Survey Tasks

Tasks that can be performed on Distress Surveys are:

View a Distress Survey
Add a Distress Survey
Edit a Distress Survey
Distress Survey Data (Not Sampling)
Distress Survey: Distress-Level Data
Delete an Inspection

View a Distress Survey

This topic covers how to open and view an existing distress survey that does not use sampling, and explains the information included there.

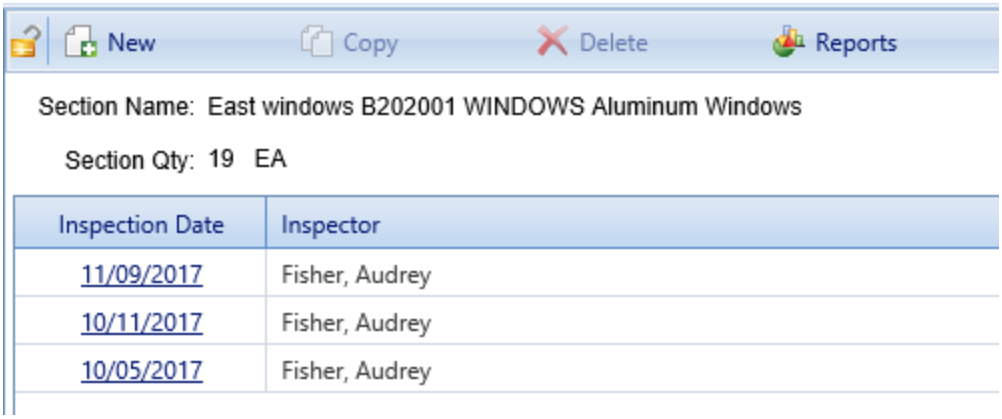
Open an Inspection

Note: An inspection may be viewed at any time. Editing, however, may only be performed within a specified number of days after the inspection date. The number of days is typically 30 by default in **BUILDER** as delivered to customers, but can be configured by a **BUILDER** AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings..

To open an inspection for viewing or editing,

- If you are not already in the condition tree, activate the **Condition** ribbon.
- Navigate to the Building containing the desired inspection.

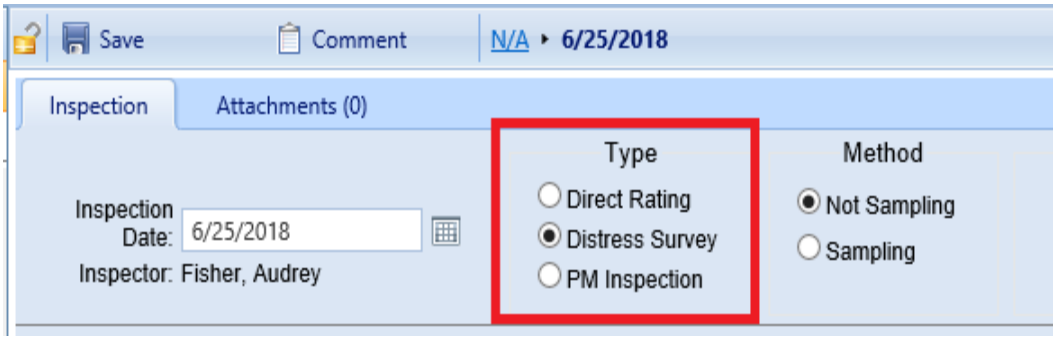
- Expand the Building's **By System** folder.
- Navigate to the desired Section and tap (if touch is enabled) or click on its name. *In the content area you should see a table listing at least one inspection.*



Note: The oldest inspection was automatically generated by **BUILDER** as a direct rating when the Section was added to the inventory. No inspector name will be listed for this inspection.

Because an inventory item is assumed to be new at installation, **BUILDER** assigns a Green+ rating to this automatically generated inspection.

- In the **Inspection Date** column, activate an inspection date link. *The inspection should open. The radio button under the **Type** heading indicates what type of inspection you are viewing or editing.*



View Distress Survey Inspection Data

Information about a distress survey is distributed as follows:

- The **Inspection** tab shows (1) a header section containing inspection identification data and **CI**[1] Condition Index results, followed by (2) a table of subcomponents showing higher-level information about each potential subcomponent in the Section (some of which might simply be recorded as not

[1] Condition Index

applicable).
- For each subcomponent that has distresses recorded against it, a popup can show details about each distress.
- If attachments (the number of which is shown in parentheses on the **Attachments** tab) are associated with the inspection, these are accessible from the **Attachments** tab.
- If one or more comments have been recorded for the inspection, they are shown together in a popup accessed by activating the **Comment** button on the content area toolbar.

Information contained at the inventory tree can sometimes provide helpful background information for evaluation.

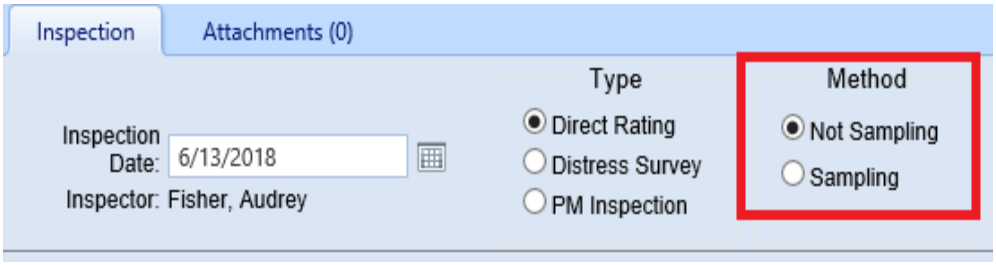
Select a link below for how to view

- Inspection Identification Data (date, inspector name, inspection type and method)
- CI Results
- Inspection Details: Table of Subcomponents
- Inspection Details: Distresses Popup Window
- Inspection Attachments
- Inspection Comments
- Inventory Information

Inspection Identification Data

The following identifying information is contained in the header section at the **Inspection** tab:

- **Inspection Date.** Note that the oldest inspection is one that is automatically generated by **BUILDER**, as a direct rating, as of the date that the Component-Section was built, installed, or renewed.
- Inspector (Read-Only). Inspector name, automatically filled in by **BUILDER** based on user login. Inspector name will not be present for the oldest inspection, which is automatically generated by **BUILDER**.
- **Type.** Available inspection types are **Direct Rating**, **Distress Survey**, and **Preventative Maintenance**.
- **Method.** Available inspection methods are **Not Sampling** and **Sampling**.



CI Results

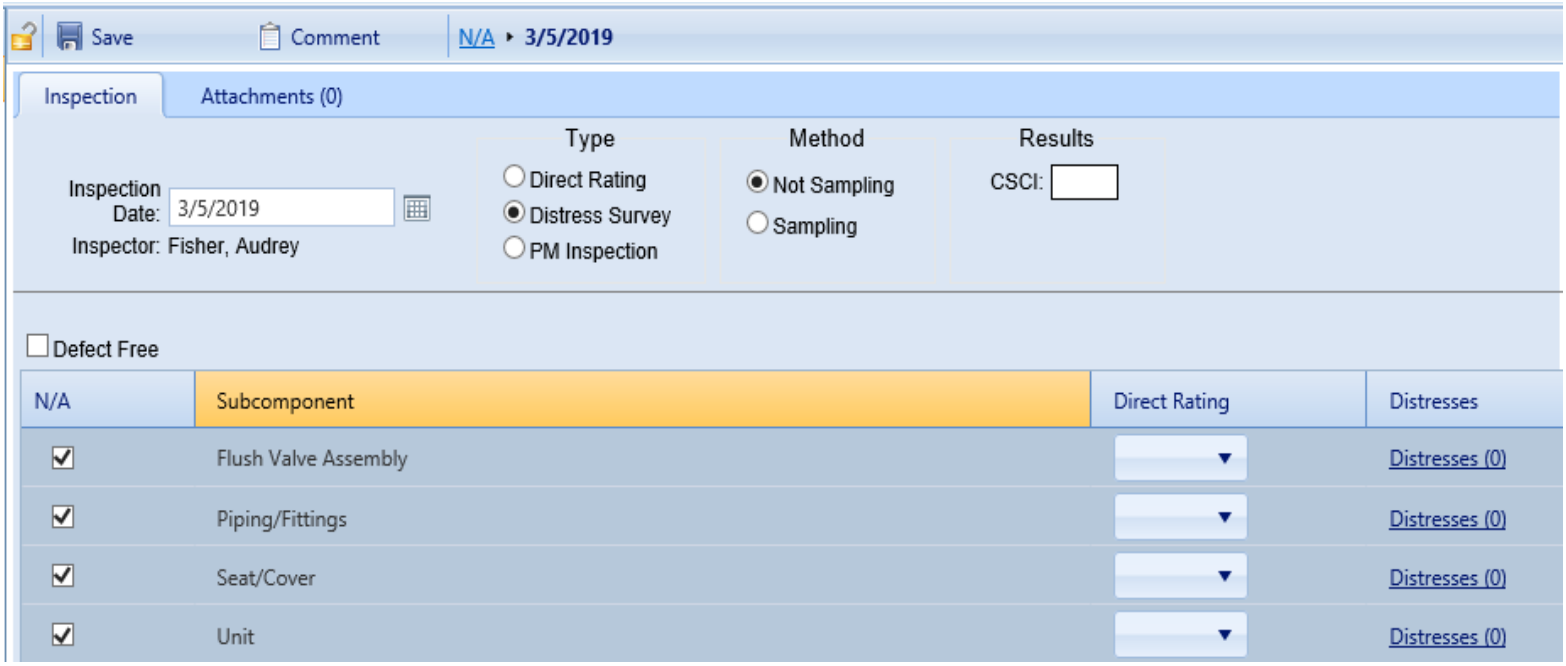
- CSCI (Read-Only). The Component-Section condition index *as of the time of the opened inspection* is listed under the heading **Results** at the right side of the header section.

Even though some or all of the CSCI value is obtained from distress entries, the background color of the CSCI display box is coded to approximate the direct rating color the given CSCI value would correspond to in a direct rating inspection: it will be green, amber, or red. If the background color of the CSCI box is white, it means that data has not yet been entered to produce a result.

- CSCCI (Read-Only) (Painted or coated items only). If the Component-Section is painted or coated, the screen will display a separate condition index for the coating.

Inspection Details: Table of Subcomponents

Below the header section is a table of subcomponents. (If sampling is being used, there will be an intervening section showing sample locations.)



The table of subcomponents lists customary subcomponents for the given type of Component-Section. It has the following columns (see illustration above):

- **N/A.** If, in a completed inspection, the checkbox in the **N/A** column is marked for a given subcomponent, that means this Component-Section does not contain that subcomponent type.

  Note: In a new distress survey that has not been filled in yet, all subcomponents are marked **N/A** by default.

- **Subcomponent (Read-Only).** This column shows the subcomponent type.
- **Direct Rating.** The dropdown lists in this column allow you the option to apply a direct (color) rating to individual subcomponents instead of recording distresses.
- **Distresses.** In each row of the table, the **Distresses** link brings up the "Distresses" popup window, where distresses can be entered and existing distresses can be viewed in detail. (See the listing below under Inspection Details: Distresses Popup Window for a description of distress details.)

Inspection Details: Distresses Popup Window

Each subcomponent that has distresses recorded against it will contain data in the "Distresses" popup window that is accessed via the **Distresses** link in the table of subcomponents.

Distress Details Header Data

The header of the "Distresses" popup window provides the following information (see illustration below):

- **Component.** Identifies the Component number and name.
- **Section.** Identifies the Section number and name.
- **Subcomponent.** This identifies the subcomponent currently being detailed.
- Subcomponent UMUnit of Measure. Examples: Each; LF (linear feet). This shows the Unit of Measure (UMUnit of Measure. Examples: Each; LF (linear feet)) being used for the subcomponent. Each subcomponent has a standard default UMUnit of Measure. Examples: Each; LF (linear feet) that is used in **BUILDER**. However, by checking the Alternative UMUnit of Measure. Examples: Each; LF (linear feet) "Each" checkbox, a user can change the UMUnit of Measure. Examples: Each; LF (linear feet) for the subcomponent being evaluated from the default to "Each," if desired.
- Alternative UMUnit of Measure. Examples: Each; LF (linear feet) "Each" checkbox. If this is checked, the unit of measure used for the component will be Each (EA) rather than a differing default UMUnit of Measure. Examples: Each; LF (linear feet) such as linear feet (LF).

Table of Distress Details

Below the header section containing the inspection identification information is a table of distresses, where the following details can be viewed (see illustration above):

- **Distress.** Type of distress, which has been entered via a dropdown list of options.
- **Severity.** This will be Low, Medium, or High. Detail about what each of the severity designations means can be seen by activating the **Help** link in the rightmost column. Depending on the distress, it's possible that only a limited subset of the three options (Low, Medium, High) will apply as options for the selected distress.

  Note: The options available for Severity are limited by the specifications for the applicable distress being shown, but the set of possibility will always consist of Low, Medium, and High, or some subset of these three options.

- **Subcomponent Qty.** The total subcomponent quantity included in the Component-Section. For example, if there are three lavatories in the Component-Section, and each of them has one faucet, then the "Faucet" subcomponent quantity is 3.
- **Distress Qty.** The subcomponent quantity that is exhibiting the distress. For example, if only one of the faucets mentioned above is exhibiting corrosion, the distress quantity is 1. Another example would be to record the number of linear feet of gutter missing.
- **Density (Required).** What the selected density range indicates is detailed in the specifications page for the distress. To view this information, activate the **Help** link in the rightmost column.
- **Critical.** If this checkbox is marked in the most recent inspection, then replacing or repairing the item will appear on the work plan regardless of the usual KBIKnowledge-Based Inspection scheduling for that type of inventory item.
- ESCEmergency Service Call (Emergency Service Call). If an Emergency Service call has been performed or scheduled, there should be a mark in this checkbox.

  Note:Critical and ESCEmergency Service Call cannot both be checked.

- ESCEmergency Service Call Num. The service call number assigned to the Emergency Service Call.
- ESCEmergency Service Call Date. Date of the Emergency Service Call.
- **Help.** In this column, a link labeled **Help** will connect to the specifications page for the distress described in that row of the table.

Inspection Attachments

The number in parentheses shown on an inspection's **Attachments** tab indicates how many attachments are connected with the inspection. (This is something you can see even when you are at the Inspection tab.) If the number is zero, there are no attachments yet associated with the inspection.

To view one or more attachments,

- Navigate to and activate the **Attachments** tab. *If attachments are present, a table will display their type, title, and description*.
- Activate the link in the **Title** column. *The attachment will appear in the "Image Viewer" popup window.*
- When finished viewing, activate the **Close** button on the popup window toolbar. *You will be returned to the table of attachments.*
- Repeat the two steps immediately above for additional attachments as desired.

Inspection Comments

To view comments for the inspection, activate the **Comment** button on the toolbar above the inspection display. *The "Inspection Comments" popup window will appear.*

Note: If the **Comment** button icon does not show a white checkmark on a green background, no comments have been attached to the inspection.

To close the "Inspection Comments" popup without making any changes, either activate the **Cancel** button on the popup toolbar, or activate the **X** in the upper right corner of the popup window.

Inventory Information

Inventory information is not directly a part of the inspection; however, when viewing an inspection in the condition tree, you have the option to switch to **Inventory** view to see more detail about the Component-Section if desired, by following these steps:

- Without changing your location in the condition tree, activate the **Inventory** ribbon.
- Activate the tabs as desired to see inventory details stored for the Section.
- To return to the inspection, activate the **Condition** ribbon without changing your location in the inventory tree.

When you return to the condition tree, you will not be viewing the inspection itself, but rather the listing of inspections for that Component-Section. Simply re-select the date of the desired inspection to open it again.

Related Links

Add a Distress Survey
Edit a Distress Survey
Distress Survey Data (Not Sampling)
Distress Survey: Distress-Level Data
Delete an Inspection

Add a Distress Survey

This topic covers how to create a new distress survey inspection that does not use sampling.

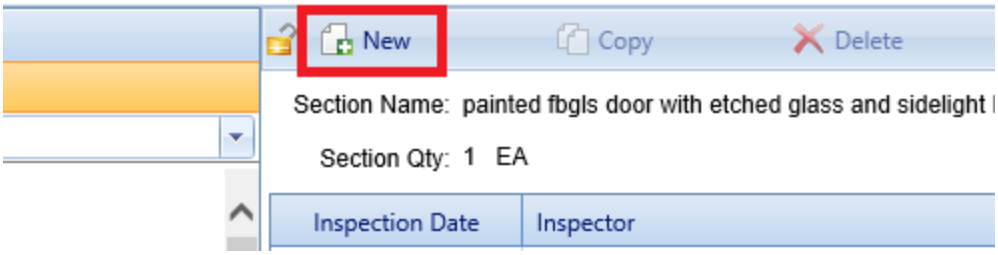
If you are new to **BUILDER** inspections, consider first reviewing the topic View a Distress Survey for a detailed presentation of information contained in this type of inspection.

Initiate a New Inspection

To initiate a new inspection,

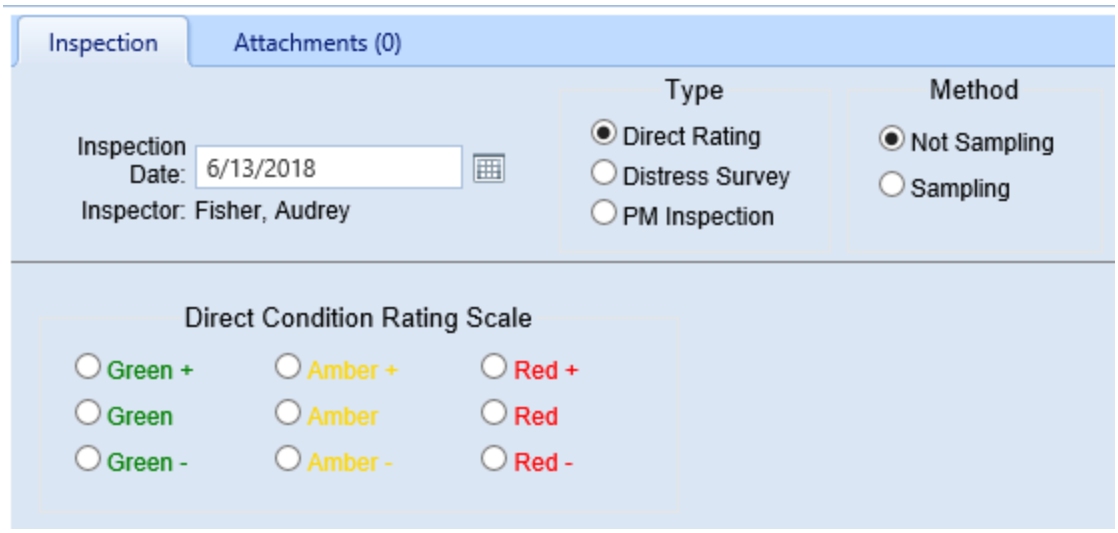
- Make sure you are in the condition tree by activating the **Condition** ribbon.
- Navigate to the Building containing the Section to be inspected.
- Expand the Building's **By System** folder.
- Navigate to the Section to be inspected and activate its name. *In the content area you should see a table listing at least one inspection.*

- In the content area toolbar, activate the **New** icon.



A screen similar to the one illustrated below should appear in the content area. Your name (as entered in your user account user) is automatically filled in as the inspector.

Troubleshooting tip: If the **New** icon is deactivated, it may be because an inspection has already been recently recorded for the Section. If the designated editing window (typically 30 days) has not elapsed, the existing inspection may be edited instead of creating a new inspection.

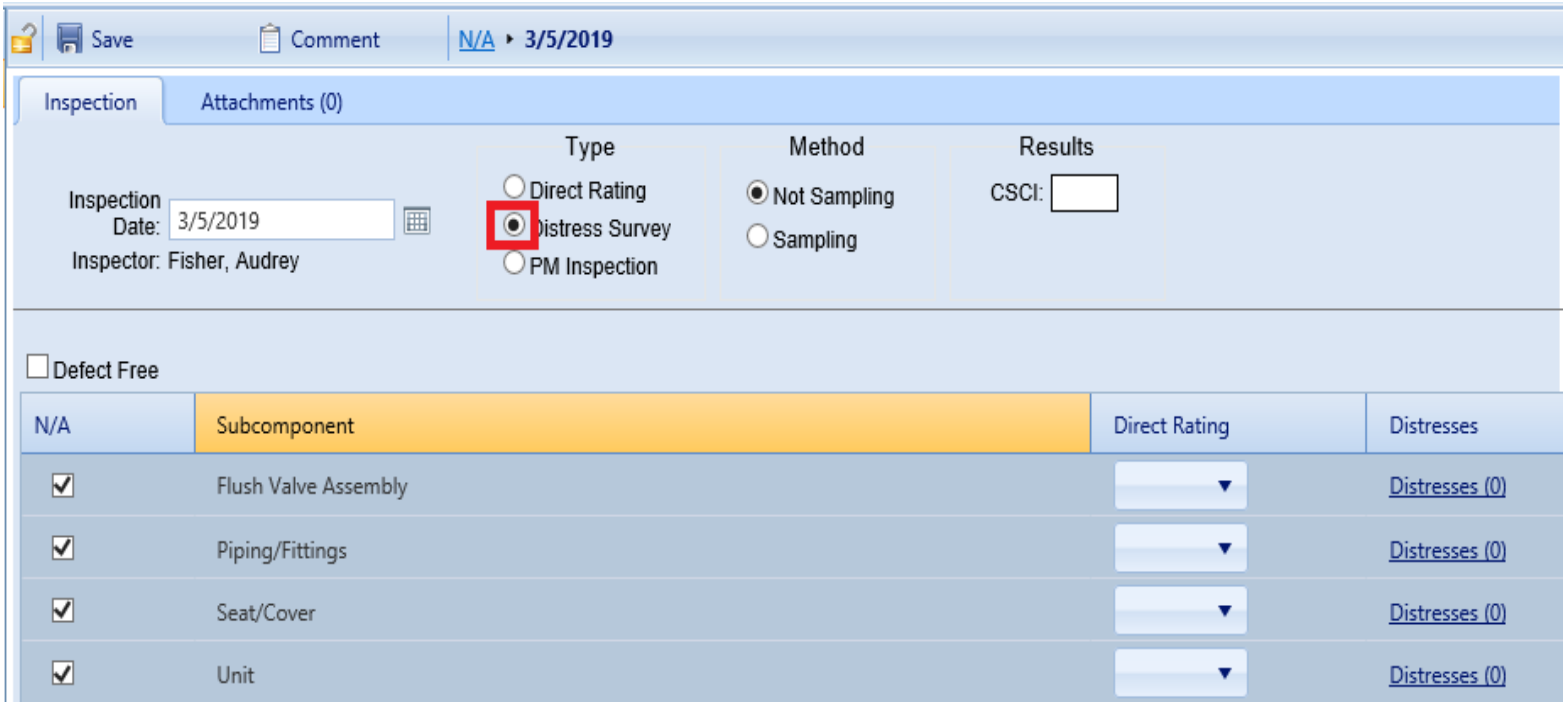


Select Inspection Type

At the default new inspection screen shown above, you have the following choices in the **Type** column:

- Direct Rating
- Distress Survey
- Preventative Maintenance (new as of **BUILDER** Version 3.4)

To create a distress survey, activate the **Distress Survey** radio button in the **Type** column, as shown by the red box below. The content screen will change to the distress survey display:



Enter Inspection Data

See the topic Distress Survey Data (Not Sampling) for how to how to enter or edit data in a distress survey type of inspection.

Related Links

View a Distress Survey
Edit a Distress Survey
Distress Survey Data (Not Sampling)
Distress Survey: Distress-Level Data
Delete an Inspection

Edit a Distress Survey

This topic introduces how to edit an existing distress survey inspection that does not use sampling.

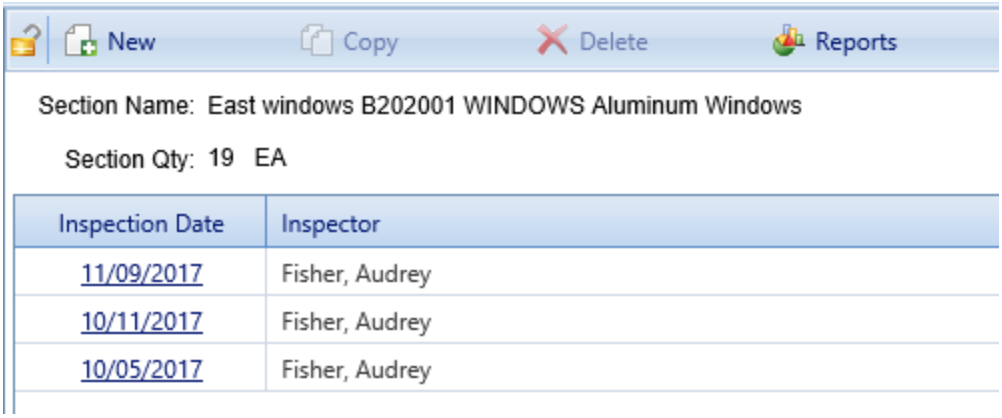
If you are new to **BUILDER** inspections, consider first reviewing the topic View a Distress Survey for a detailed presentation of information contained in this type of inspection.

Open the Inspection

Note: An inspection may be viewed at any time. Editing, however, may only be performed within a specified number of days after the inspection date. The number of days is typically 30 by default in **BUILDER** as delivered to customers, but can be configured by a **BUILDER** AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings..

To open an inspection for viewing or editing,

- If you are not already in the condition tree, activate the **Condition** ribbon.
- Navigate to the Building containing the desired inspection.
- Expand the Building's **By System** folder.
- Navigate to the desired Section and tap (if touch is enabled) or click on its name. *In the content area you should see a table listing at least one inspection.*



Note: The oldest inspection was automatically generated by **BUILDER** as a direct rating when the Section was added to the inventory. No inspector name will be listed for this inspection.

Because an inventory item is assumed to be new at installation, **BUILDER** assigns a Green+ rating to this automatically generated inspection.

- In the **Inspection Date** column, activate an inspection date link. *The inspection should open. The radio button under the **Type** heading indicates what type of inspection you are viewing or editing.*

Edit Inspection Data

See the topic Distress Survey Data (Not Sampling) for how to enter or edit data in a distress survey type of inspection.

Related Links

View a Distress Survey
Add a Distress Survey

Distress Survey Data (Not Sampling)
Distress Survey: Distress-Level Data
Delete an Inspection

Distress Survey Data (Not Sampling)

This topic, along with the topics Distress Survey: Distress-Level Data, Inspection Comments, and Inspection Attachments, provides detail about how to populate or edit a distress survey that does not use sampling.

The distress survey data screen and the "Distresses" popup window provide storage for a wealth of information pertaining to a distress survey inspection of a Component-Section. Sections below and in related topics will explain the following:

- Inspection identification data and CI results
- Subcomponent-level data (Table of Subcomponents)
- Distress-level data, with instructions for how to view, add, copy, edit, or delete distresses
- Inspection comments
- Inspection attachments
- Saving the distress survey

Inspection Identification Data and CI Results

The header tab of a distress survey record shows inspection identification information and **CI**[1]Condition Index results:

- **Inspection Date.** Note that the oldest inspection is one that is automatically generated by **BUILDER**, as a direct rating, as of the date that the Component-Section was built, installed, or renewed.
- InspectorPerson who performs inspections to be input into BUILDER or ROOFER. As a permissions Role, Inspectors can input and edit inventory information in Inventory mode, and can input and edit inspection information from the Condition Assessment screen.Person who performs inspections to be input into BUILDER or ROOFER. As a permissions Role, Inspectors can input and edit inventory information in Inventory mode, and can input and edit inspection information from the Condition Assessment screen. name will not be present for the oldest inspection, which is automatically generated by **BUILDER**.
- **Type.** Inspection type (in this case, the inspection type is **Distress Survey**).
- **Method.** Inspection method (**Not Sampling** vs. **Sampling**).
- **Results (Read-Only).** Shows the CSCIComponent-Section Condition Index - a condition rating for the target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, then subtracting that deduct value from the maximum possible rating of 100. The deduct

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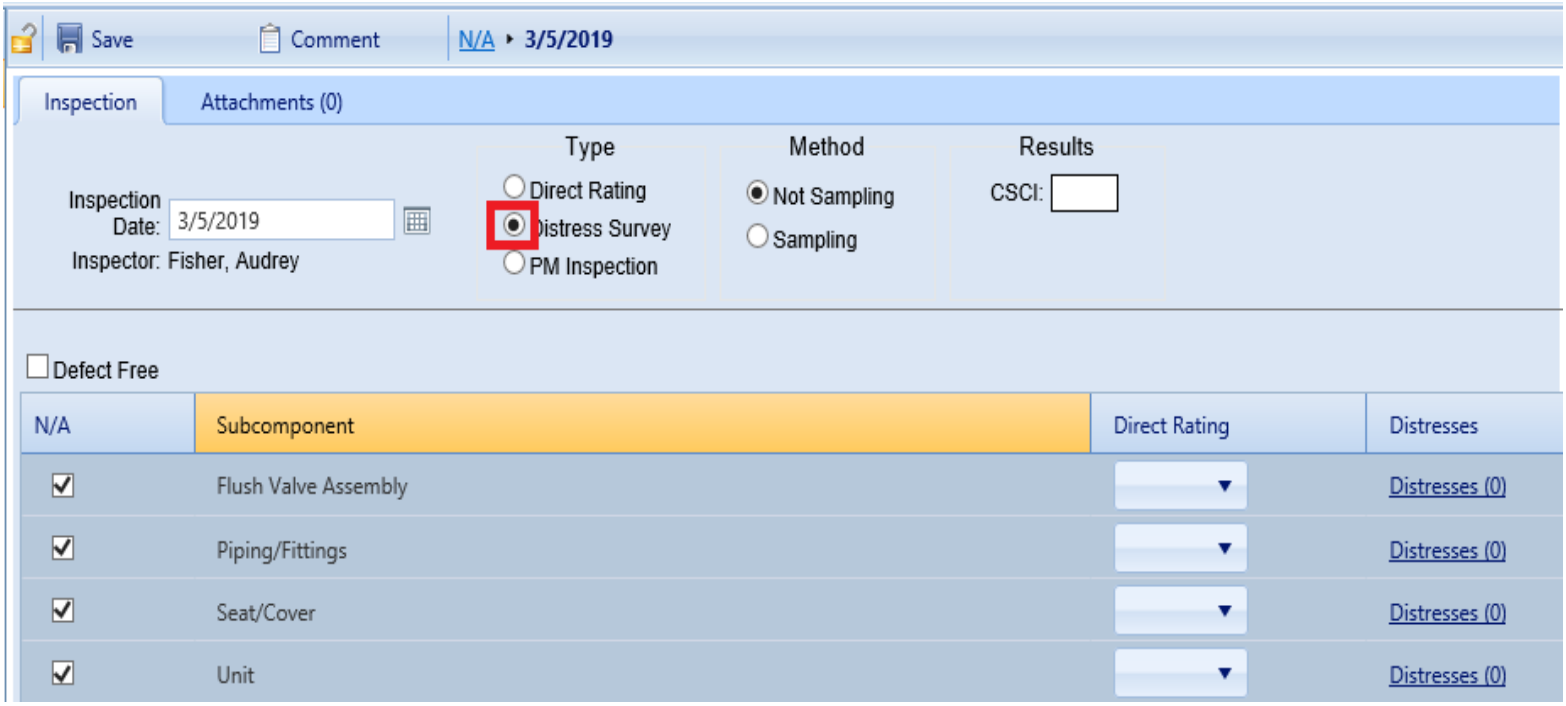
[1]Condition Index

value computation differs for each condition assessment method. at the time of that inspection, and also a paint condition rating if applicable.

Subcomponent-Level Distress Data

This segment describes data that can be viewed, added, and edited at the subcomponent level of the distress survey. To see operations that can be performed at the level of each individual distress are discussed in a separate topic, Distress Survey: Distress-Level Data.

When the **Distress Survey** radio button is first selected in the **Type** column, the content area of the **BUILDER** screen will resemble the screenshot below.



This screenshot shows how a distress survey will appear when first created . By default, all subcomponents are marked **N/A** (Not Applicable) at the outset. If, however, you are editing an existing distress survey, some or all of the checkboxes will likely be unmarked.

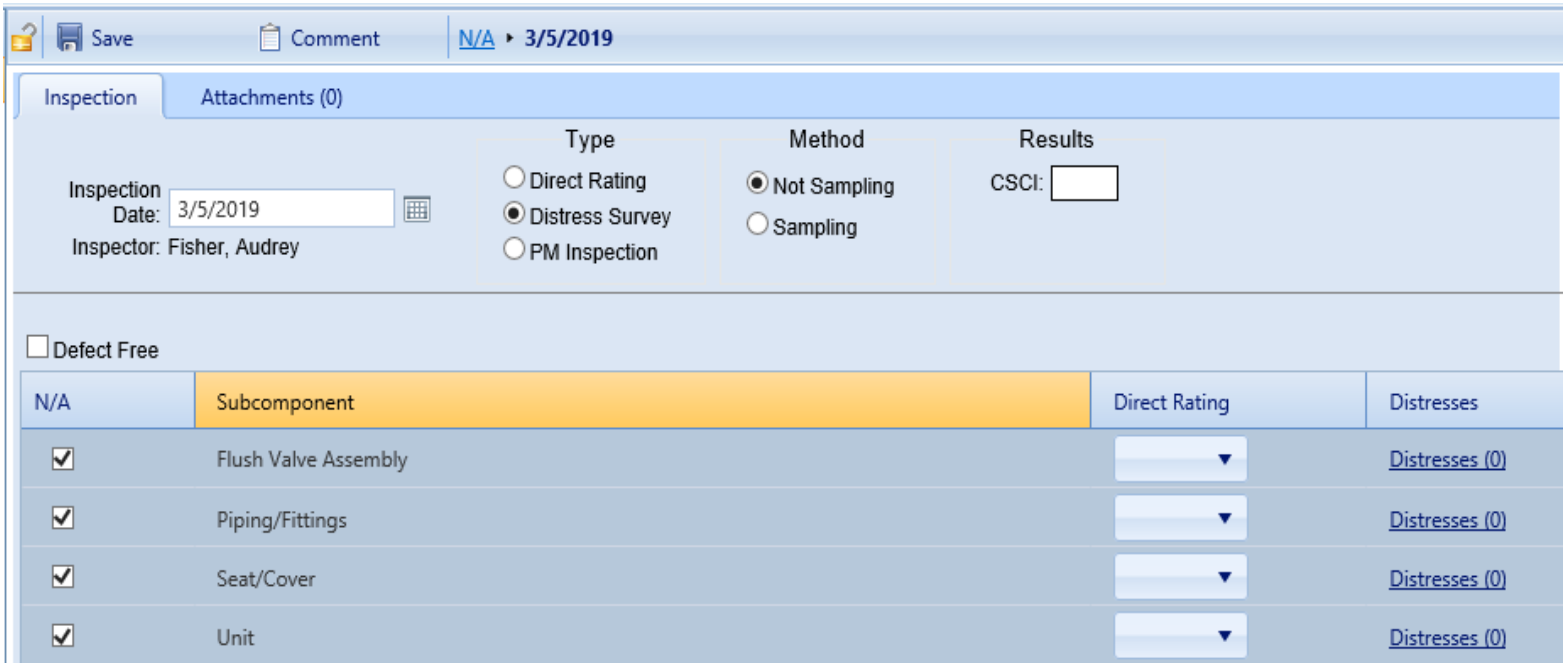
Available Subcomponents

The table of subcomponents below the header section (and below the Sampling section, if present) lists the customary subcomponents for the given type of Component-Section. The selection of subcomponents listed come from the **BUILDER** database. This selection cannot be changed, but subcomponents that do not apply to the Component-Section instance being inspected can be marked **N/A**.

Because **N/A** is marked by default, when adding a distress survey, first activate the checked **N/A** checkbox for each subcomponent that applies to the Section being inspected, which will remove the **N/A** checkmark .

Then, as you enter inspection data, you will enter either distresses or direct ratings for subcomponents that are present.

Subcomponent Details



At the Distress Survey screen shown above, the following condition assessment data can be recorded or edited (with the exception of Read-Only items):

- Defect Free (All) Checkbox. If no distresses are found on any subcomponents, mark this checkbox to speed data entry.
- Paint Defect Free (All) Checkbox. If all subcomponents are painted, a **Paint Defect Free** checkbox will appear. More details about adding or editing data about painted items can be found in Painted Sections.

Below the **Defect Free** checkbox is a grid format listing of possible subcomponents for the current Section. The selection of subcomponents listed is governed by the **BUILDER** database and cannot be altered by the user.

The following data is provided or entered for each subcomponent at the subcomponent level of the distress survey display:

- **N/A Checkbox.** If the subcomponent is not applicable to this Section, this checkbox should be marked.

  Note: Initially, the **N/A** checkbox is marked for each subcomponent.

- **Subcomponent (Read-Only).** Displays the name of a subcomponent, as taken from the **BUILDER** database.

- **Direct Rating.** If the subcomponent is applicable but not defect free, you can optionally assign a direct "color" rating to a subcomponent, which will be used instead of distresses in calculating the CSCIComponent-Section Condition Index - a condition rating for the target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, then subtracting that deduct value from the maximum possible rating of 100. The deduct value computation differs for each condition assessment method..
- **Distresses**. If the subcomponent is applicable but not defect free, activate its **Distresses** link to launch the "Distresses" popup window, unless you decide to do a subcomponent direct rating instead. See the topic Distress Survey: Distress-Level Data for how to view, add, edit, and delete distress details at this window.

Note: In **BUILDER** Version 3.3, there was the option to mark a subcomponent as defect free (**D/F**). In more recent versions, the corresponding action would be to select a **G+** direct rating.

Once an inspection is complete, all subcomponents present in the Component-Section should either have distresses *or direct ratings* recorded against them. Those not present in the Component-Section should be marked in the **N/A** column.

Painted Sections

If the Component-Section is marked as painted, the following columns are added to the grid for each subcomponent, to record the following data:

- **Paint N/A Checkbox** - Mark this checkbox if the subcomponent is not painted or not applicable to this Section. Initially, this checkbox is marked by default for each subcomponent.
- **Paint D/F Checkbox** - Mark this checkbox if the subcomponent is painted and the paint is defect free.

  Note: Marking this box automatically un-checks the **Paint N/A** checkbox.

- **Paint Rating** - If the subcomponent is applicable and painted but the paint is not defect free, select an appropriate rating for from the dropdown list. See Appendix F in the Condition Assessment Reference Manual or Online Help for a detailed description of each paint color rating.

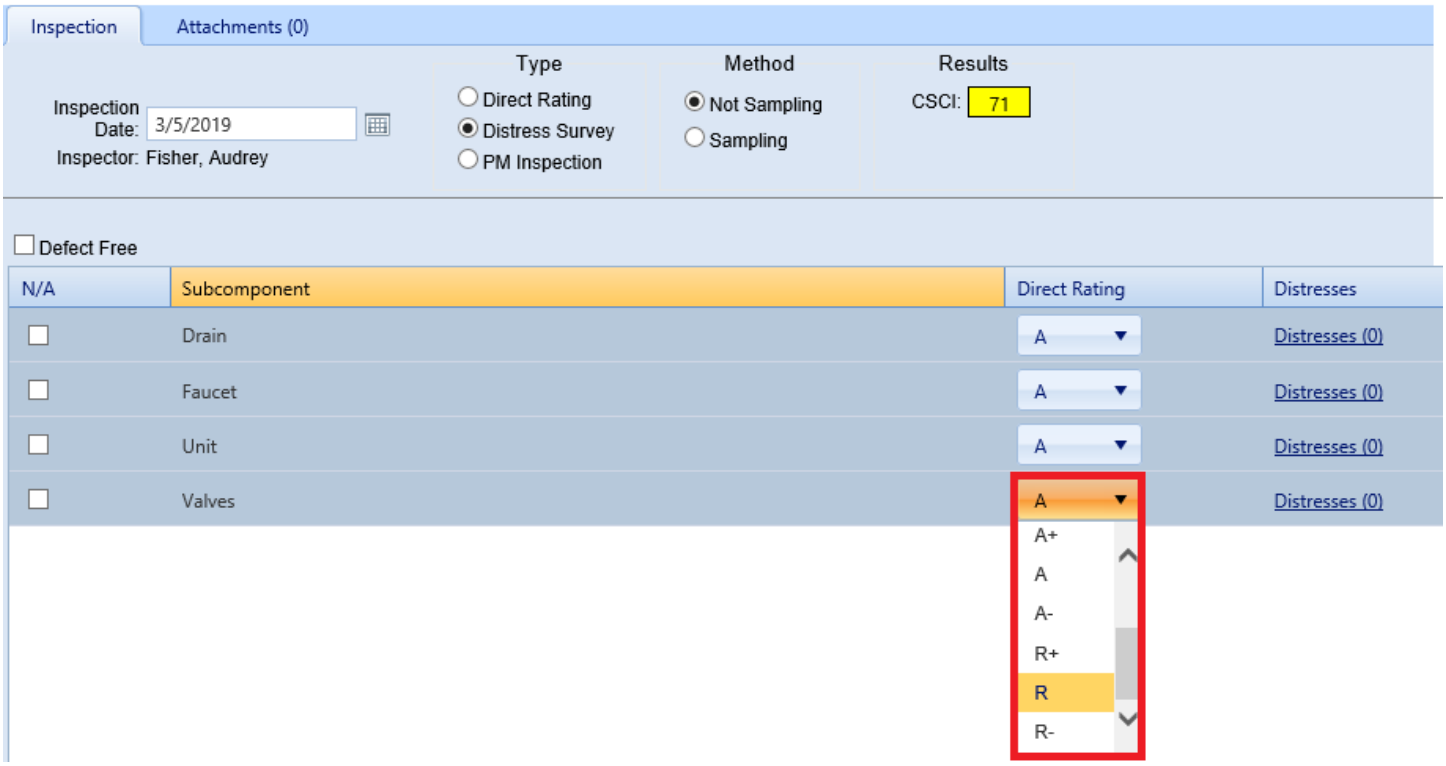
Resource: The Condition Assessment Reference Manual, ERDC/CERL SR-18-7, Knowledge-Based Condition Assessment Reference Manual for Building Component-Sections, is available by download at https://support.sms.erdc.dren.mil/downloads/erdc-cerl-technical-publications.

Using Direct Ratings within a Distress Survey

Within a distress survey, you have the option of evaluating individual subcomponents using the direct rating method.

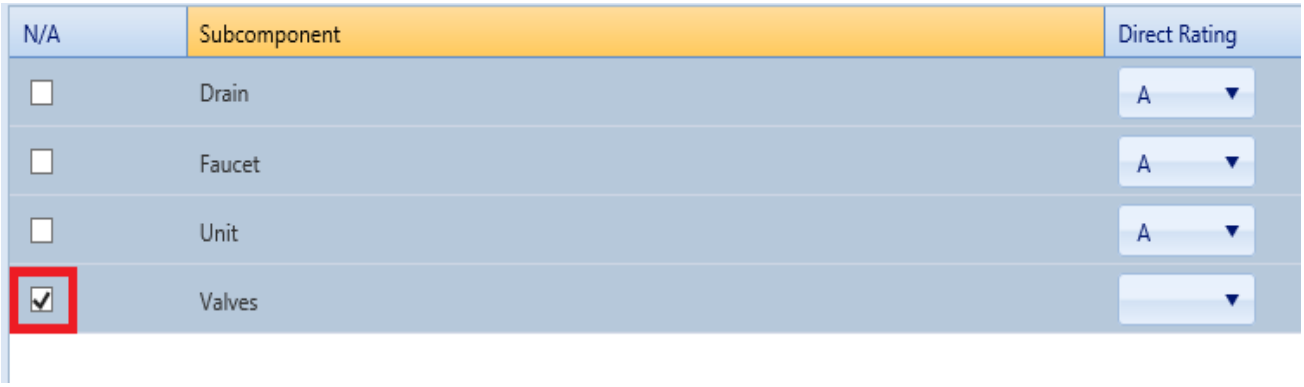
To use direct rating on a subcomponent,

- Activate the dropdown list in the subcomponent's **Direct Rating** column. The ratings A+ through R- will display; to see higher ratings, scroll up.



- Select either a color rating, or else select the topmost option, which is a blank.

- If you select the blank, the subcomponent will be automatically marked as **N/A**.



Unit of Measure

Another data item that pertains to a given subcomponent as a whole is its unit of measure (UMUnit of Measure. Examples: Each; LF (linear feet)). Unit of Measure configuration is accessible at the "Distresses" popup window and will be described with distress-level data, at "Change Subcomponent/Distress Unit of Measure" in the topic Distress Survey: Distress-Level Data.

Distress-Level Data

Viewing and working with the details of individual distresses is explained in the topic Distress Survey: Distress-Level Data.

Inspection Attachments

About Inspection Attachments

The **Attachments** tab (to the right of the **Inspection** tab) allows files such as an image file to be attached to an inspection. An image might be a photograph, or it could be an electronic image of written notes or diagrams made during the inspection.

The attachment may be in any of the following formats:

- .jpg
- .jpeg
- .png
- .zip
- .doc
- .pdf

Note: As of January 31, 2022, .doc format is allowed, but not .docx.

Working with Inspection Attachments

How to view, add, edit, or delete inspection attachments is explained in the topic Inspection Attachments.

View Comments

To view comments for the inspection, activate the **Comment** button on the toolbar above the inspection display. *The "Inspection Comments" popup window will appear.*

Note: If the **Comment** button icon does not show a white checkmark on a green background, no comments have been attached to the inspection.

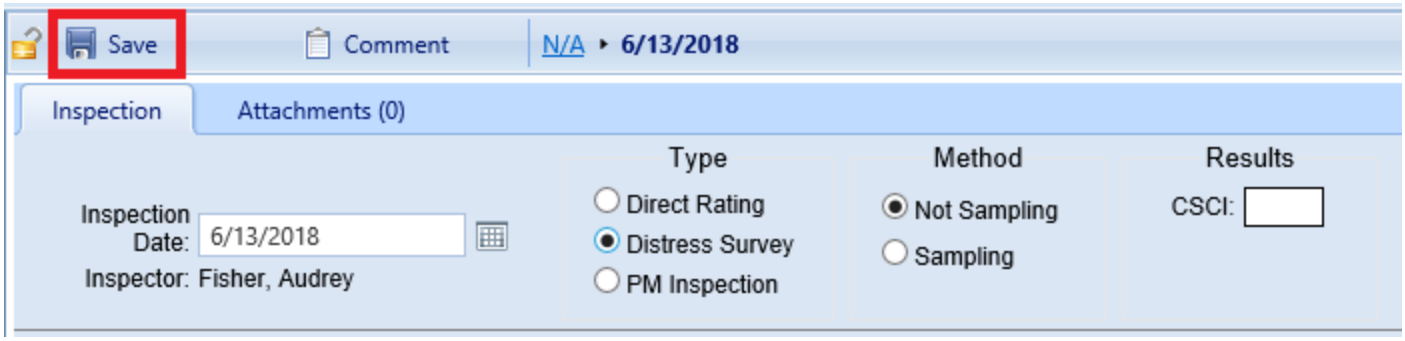
To close the "Inspection Comments" popup without making any changes, either activate the **Cancel** button on the popup toolbar, or activate the **X** in the upper right corner of the popup window.

Add, Edit, or Delete Comments

How to add, edit, or delete inspection comments is explained in the topic Inspection Comments.

- Each distress is confirmed separately at the **Distresses** popup, as described under "Save Distress Data" in the topic Distress Survey: Distress-Level Data.
- After you finish confirming the distresses, you must also activate **Save** on the toolbar after you close the "Distresses" popup and return to the distress survey data screen.

IMPORTANT: If you fail to activate **Save**, your distress entries or edits will not be saved, even if you checkmarked them in the "Distresses" popup.



View a Distress Survey
Add a Distress Survey
Edit a Distress Survey
Distress Survey Data (Not Sampling)
Distress Survey: Distress-Level Data
Delete an Inspection

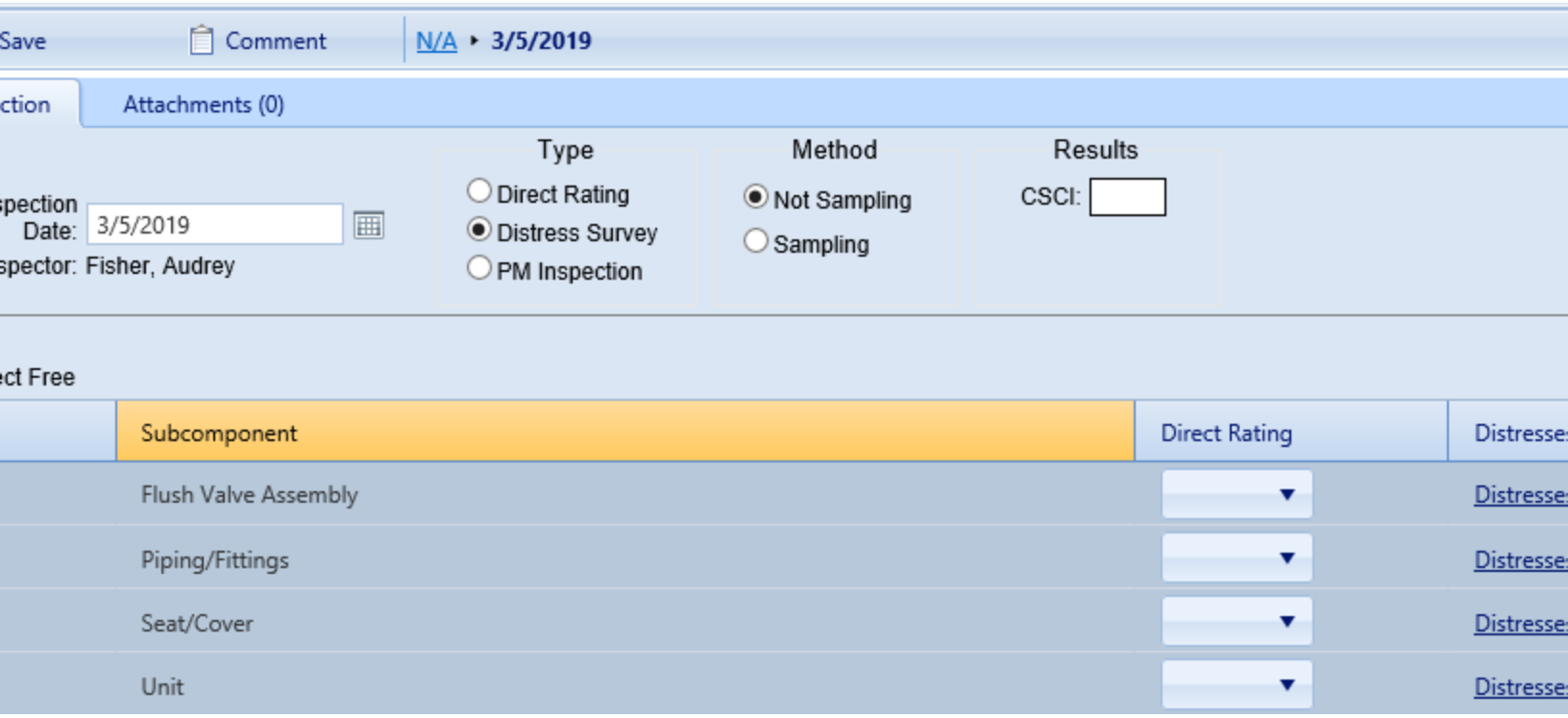
Distress Survey: Distress-Level Data

This topic provides detail about how to populate or edit distress details in a distress survey that does not use sampling.

WARNING: After you enter or edit a distress, if you don't activate the blue checkmark at the left side of the distress record to be saved, your work on that record will be lost!

The distress survey data screen and the "Distresses" popup window provide storage for a wealth of information pertaining to a distress survey inspection of a Component-Section. This topic focuses on working in the "Distresses" popup window. For information at the inspection and subcomponent level rather than the distress level, see the topic Distress Survey Data (Not Sampling).

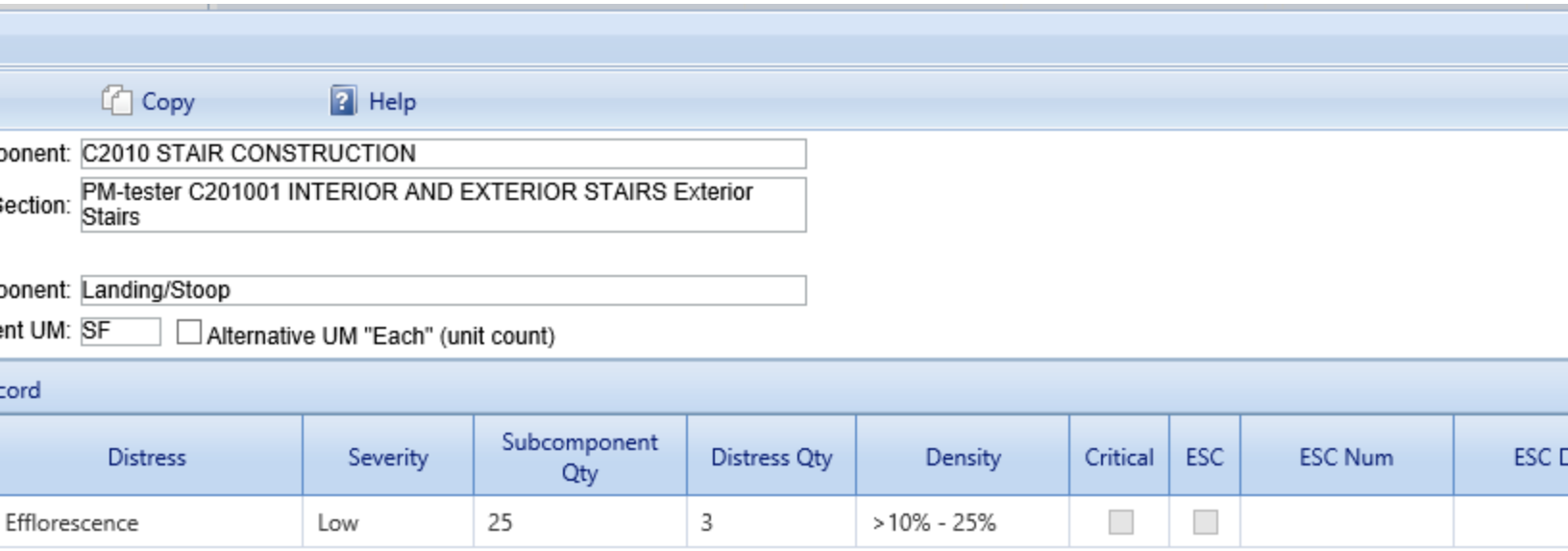
When the **Distress Survey** radio button is selected under the **Type** of condition assessment, the content area of the **BUILDER** screen will resemble the screenshot below.



This screenshot shows how a distress survey will appear when first created. By default, all subcomponents are marked **N/A** for "Not Applicable" at the outset. As you enter inspection data, you will either be entering distresses for subcomponents that are present, or assigning a direct rating (see **Using Direct Ratings within a Distress Survey** in Distress Survey Data (Not Sampling)). This topic details how to view, add, edit, and delete distresses.

View Subcomponent Distress Details

The "Distresses" popup window, shown below, is where you can view, add, copy, edit, or delete individual distresses against a subcomponent. Access to this popup window is via the **Distresses** link in the **Distresses** column of the distress survey screen.



The header section of the popup identifies the Component, Section, and subcomponent, and shows the unit of measure (UM) being used to measure the subcomponent quantity and distress quantity. The (limited) option to change the unit of measure is discussed in Change Subcomponent/Distress Unit of Measure .

The lower section of the popup window is where distress details are recorded. Descriptions of these details are listed in Add a Distress. Subsequent documentation segments will instruct how to add, edit, or delete a distress.

Change Subcomponent/Distress Unit of Measure

BUILDER users who enter distresses have the option to change the unit of measure from a non-"each" default selected by **BUILDER** to a unit of measure of "each." If the Alternative UM "Each" checkbox is marked in the "Distresses" popup window, this means that the unit of measure used for the component will be Each (EA) rather than a differing default UM such as linear feet (LF).

The checkbox for selecting an alternative UM of "Each" is the only user-editable field in the upper section of the "Distresses" popup.

Add a Distress

There are two alternative ways to initiate adding a distress in the "Distresses" popup:

a. Activate the **Add new record** button above the table of distresses, and create a distress from scratch, or
b. Activate the **Copy [Distress]** button on the toolbar to use an existing distress listed in the popup as the starting point for a new distress.

For how to use the second method listed above, see Copy a Distress.

List of Distress Details

This segment will show how to enter the following distress details:

- **Distress Type (Required).** This is in the column labeled **Distress**. From the dropdown list, select a type of distress present on the subcomponent. For definitions of all the distresses, see Appendix A in the Condition Assessment Reference Manual* or the Online Help documentation.
- **Severity(Required).** Select the severity of the distress from the dropdown list. The applicable severities for each distress type are listed and defined in Appendix A in the Condition Assessment Reference Manual* and the Online Help documentation.

  Tip: You might find that you have two distresses of the same type, severity, and density. Such a pair of distresses should be combined into one row with an increased density value.

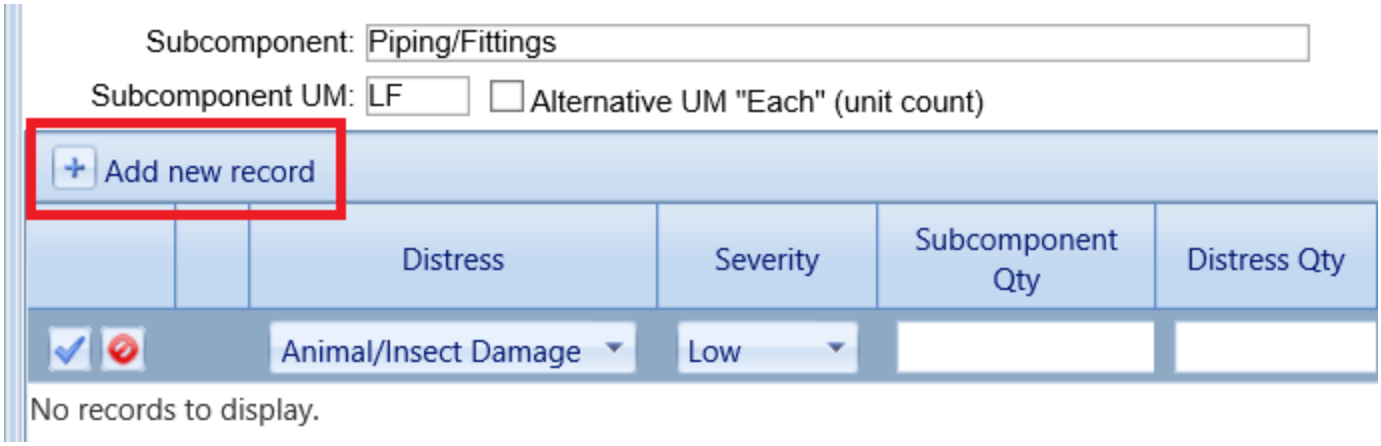
- **Subcomponent Quantity.** Enter the subcomponent quantity in the unit of measure listed above the grid. When the subcomponent's unit of measure should be"Each" but the unit of measure listed in the Subcomponent UM field is not, mark the Alternative UM "Each" checkbox and then enter the number of subcomponents.
- **Distress Quantity.** Enter the quantity of the subcomponent that has the distress in the unit of measure listed above the grid. When the subcomponent's unit of measure should be "Each" but the unit of measure listed in the Subcomponent UMUnit of Measure. Examples: Each; LF (linear feet) field is not, mark the Alternative UM "Each" checkbox and then enter the number of subcomponents with the distress.
- **Density (Required).** Select the density of the distress from the dropdown list. The formulas used to compute the density for each distress type are listed in the definitions of the distresses in Appendix A in the Condition Assessment Reference Manual* and the Online Help documentation.
- **"Critical" Checkbox.** Mark this checkbox if the distress on the subcomponent is critical. Marking this checkbox will make the work item created for this Section "Must Do."
- **Emergency Service Call** ("ESC**") Checkbox.** Mark this checkbox if the distress on the subcomponent requires an ESC.
- ESC **Number.** If an ESC was issued to respond to this distress, enter its number for your records in this field.
- ESC **Date.** If an ESC was issued to respond to this distress and has been completed, enter the date of completion in this field. Distresses with completed service calls are assumed to have no effect on the subcomponent condition.

***Reference:** ERDC/CERL SR-18-7, *Knowledge-Based Condition Assessment Reference Manual for Building Component-Sections*, December 2018, is available by download at https://support.sms.erdc.dren.mil/downloads/erdc-cerl-technical-publications.

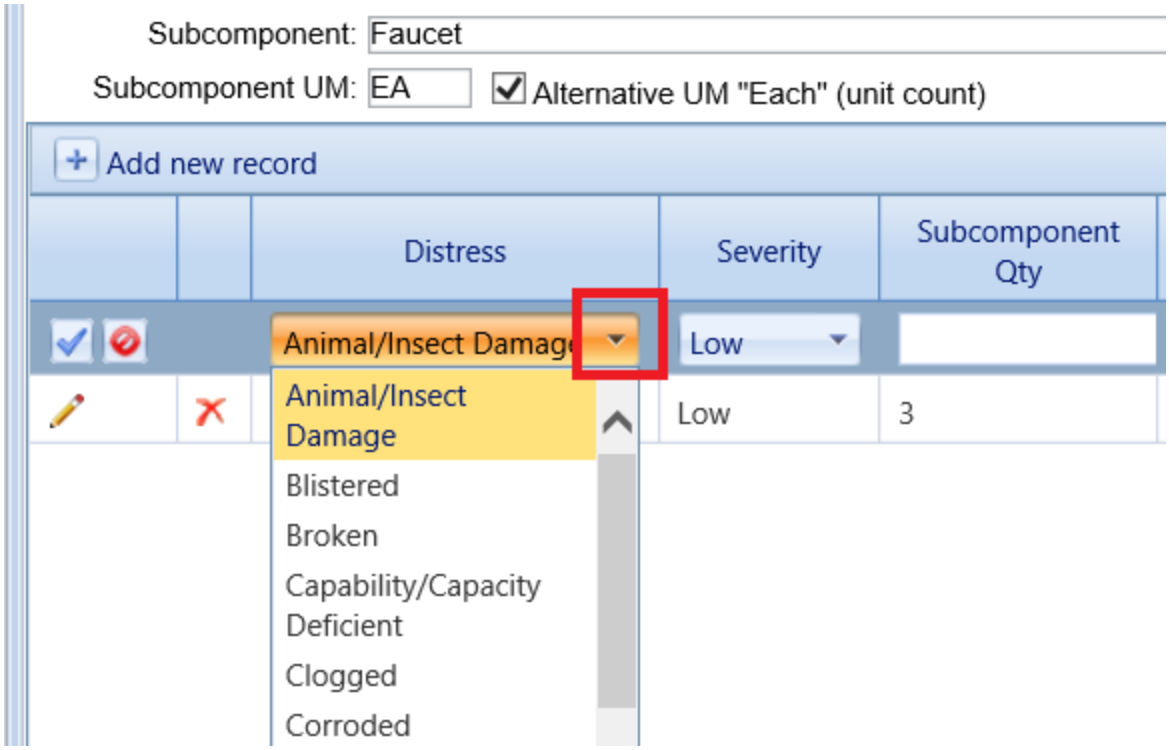
Instructions with Screenshots

To add a distress against the subcomponent shown in the header section of the "Distresses" popup,

- Activate the **+ Add new record** button at the top of the table of distresses.

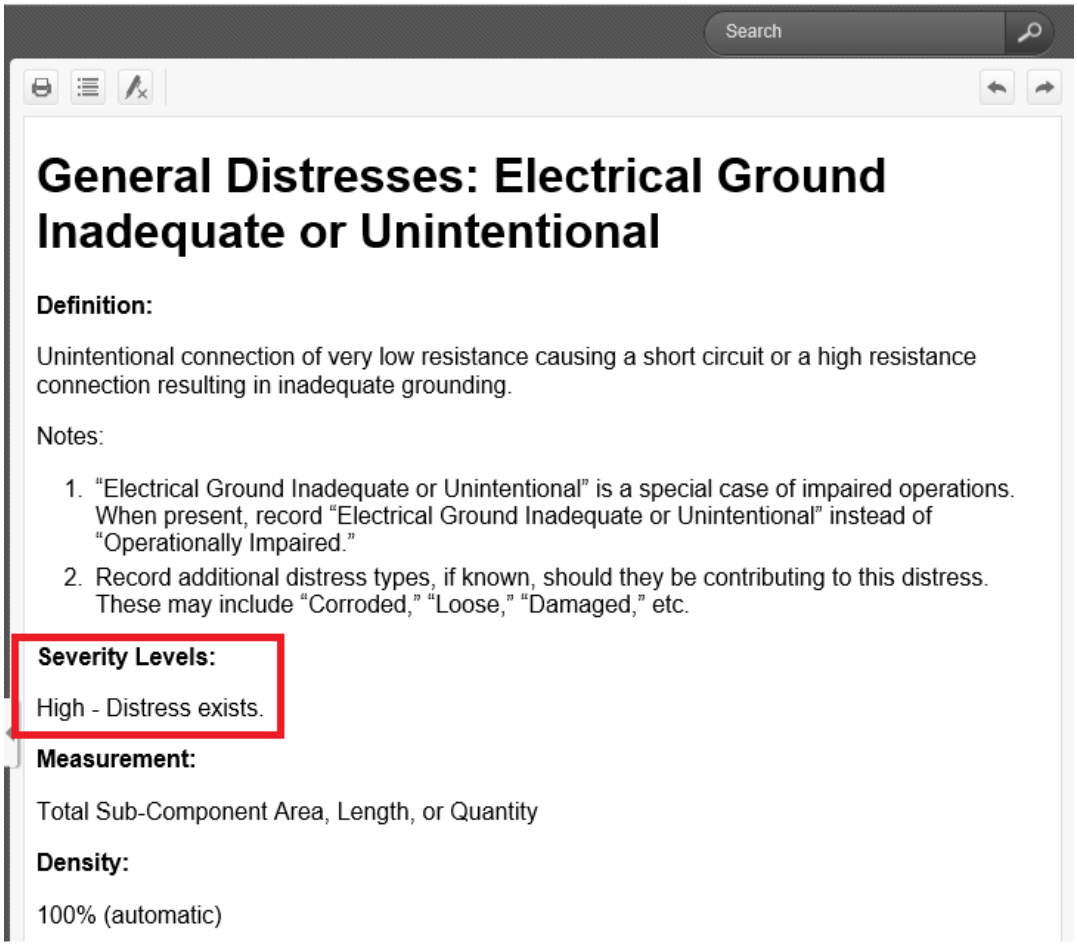


- Select a distress from the dropdown list of options in the **Distress** column.



- Activate the **Help** link in the rightmost column to review the specifications page for the selected distress. A sample specifications page is shown below.

  Tip: Reviewing the specifications page is a good idea to do before selecting a severity for the distress because for some distresses, not all severity levels (Low, Medium, High) will be legitimate entries. For example, for the distress "Electrical Ground Inadequate or Unintentional" (listed as "Elec Grnd Inad or Uninten" in the "Distress" dropdown list), only the severity level High is a legitimate entry, as shown on the specifications page.



  Note: All specification pages are documented in Condition Assessment Reference Manual appendixes, and listed in the **BUILDER** Online Help documentation.

- Select the appropriate severity level from the dropdown list of options in the **Severity** column, keeping in mind any limitation in the Low/Medium/High options indicated by the specifications page for that distress.
- Enter subcomponent quantity and distress quantity as appropriate.

- Select the appropriate density range from the dropdown list of options in the **Density** column. You can activate the **Help** link in the rightmost column to review the appropriate matching between condition of the subcomponent and the corresponding density level to be selected.
- Marking the **Critical** checkbox will trigger a repair work item within the first year of a work plan even if there is still a remaining maintenance life (RML) for the Component-Section.
- ESC stands for Emergency Service Call. If an Emergency Service Call was generated due to the distress, mark this checkbox and fill in the number and date.

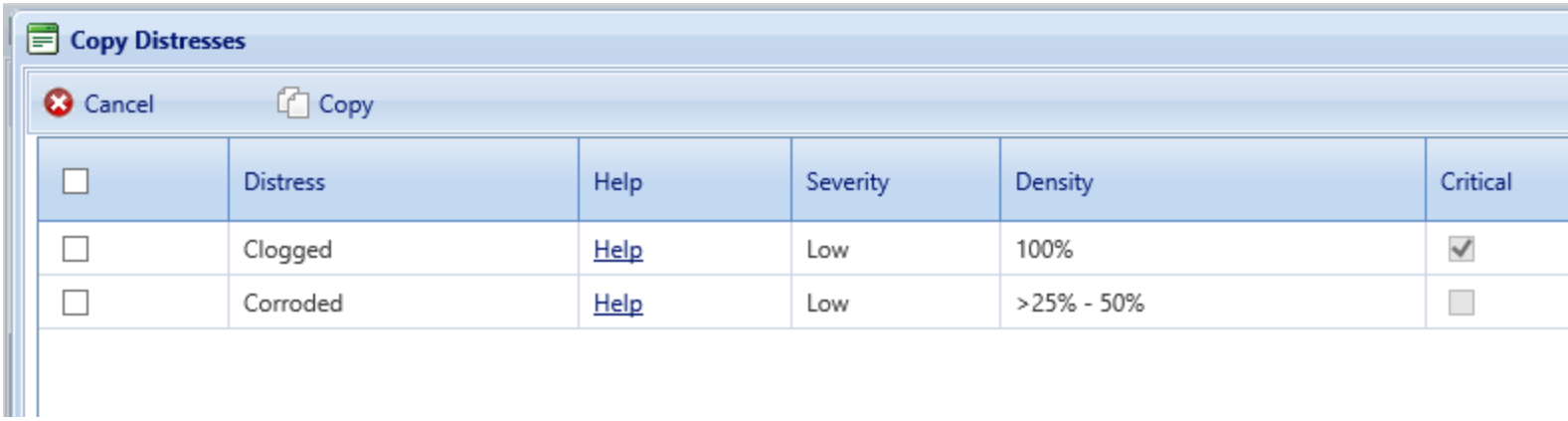
  Note:Critical and ESC should not be used together.

- Save as described in Save Distress Data.

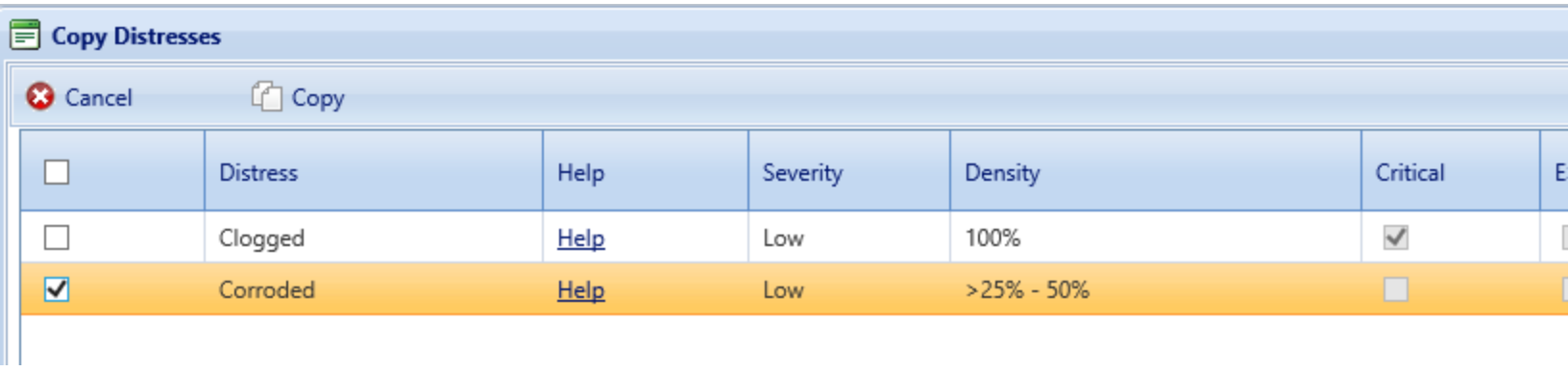
Copy a Distress

To copy a distress from within the same subcomponent to use as a starting place for a new distress,

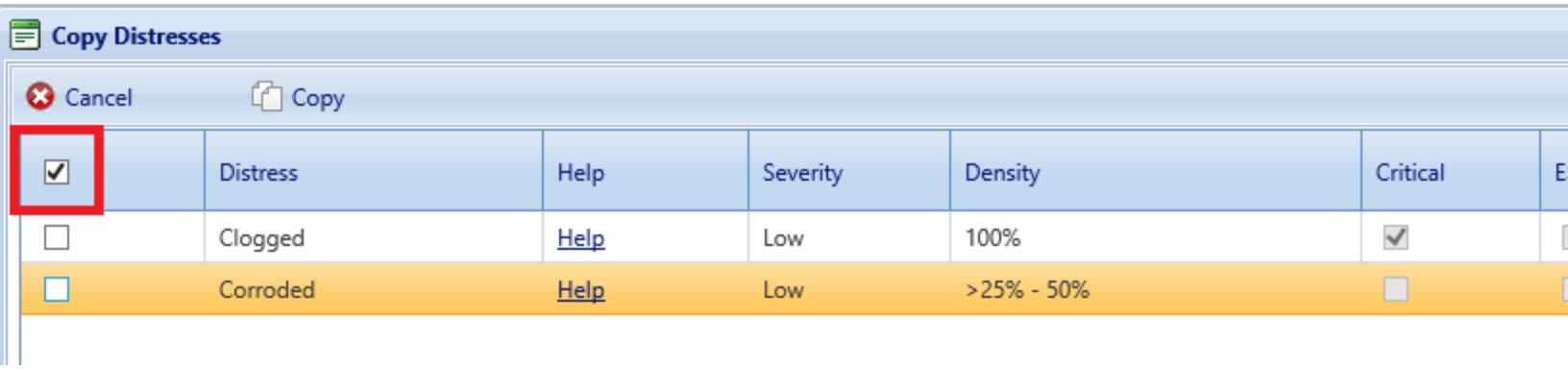
- Activate the **Copy** button on the "Distresses" popup window toolbar. *The "Copy Distresses" popup window will appear, providing checkboxes in the first column for selecting distresses*.



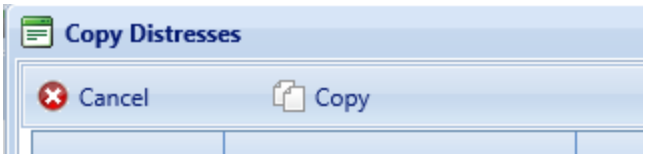
- Mark the checkbox(es) of the distress(es) you wish to copy. Shown below is a sample selection.



- If you wish to copy all of the distresses shown, mark the checkbox in the *first column of the header bar* of the distress table.

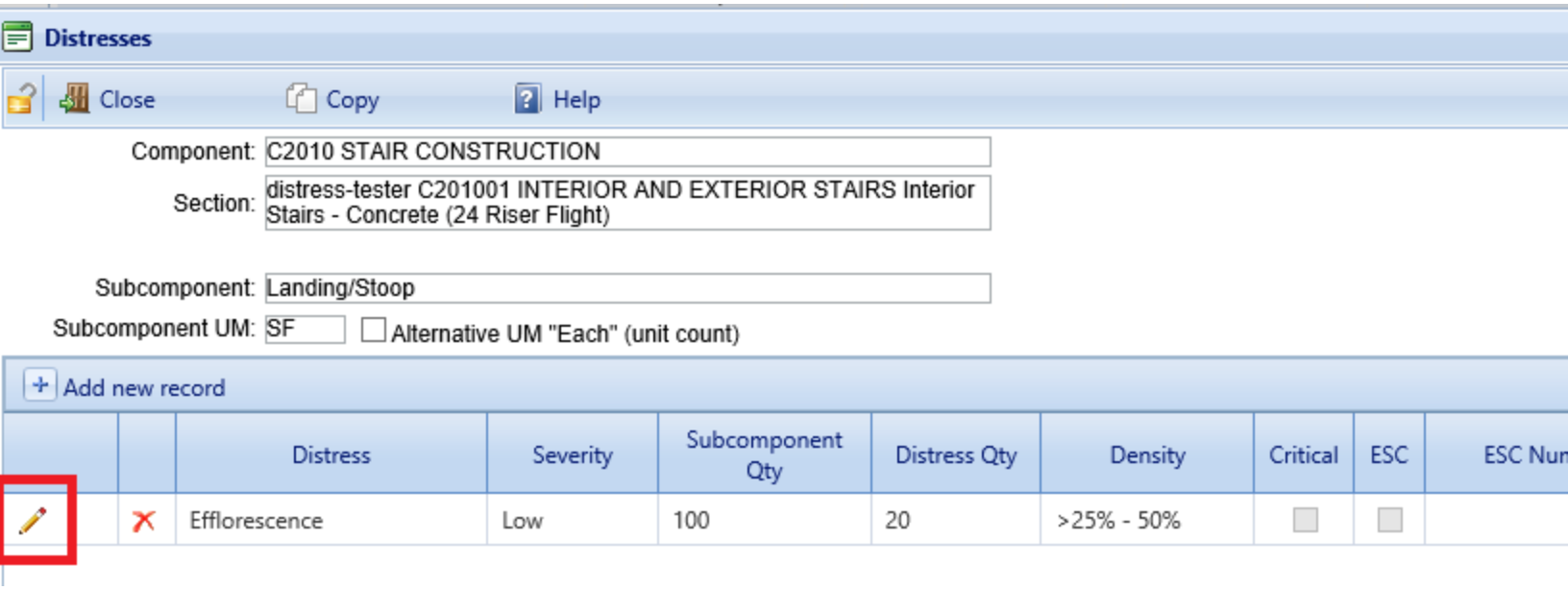


- Copy or Cancel: After you have made your selection(s), activate the **Copy** button on the toolbar to complete the copy/copies. Alternatively, activate the **Cancel** button to cancel the operation and return to the "Distresses" window.

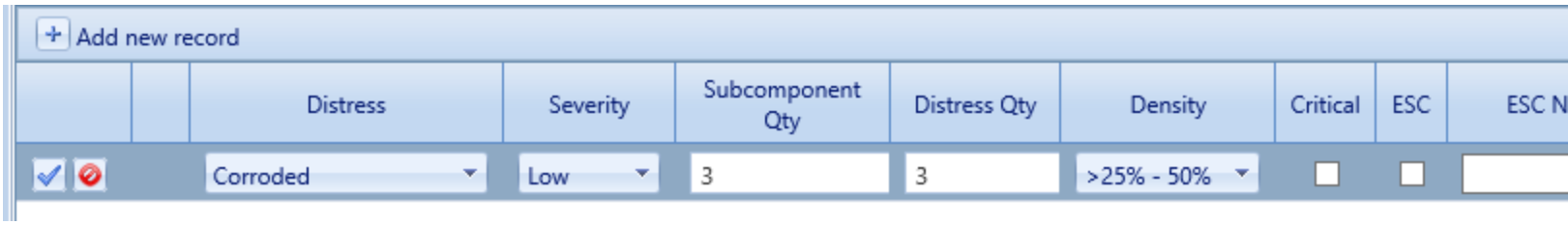


Edit a Distress

To edit a distress that has been entered against the subcomponent shown in the header section of the "Distresses" popup window,



- Activate the pencil icon shown in the left column, as shown above. *The display will change, as shown below:*

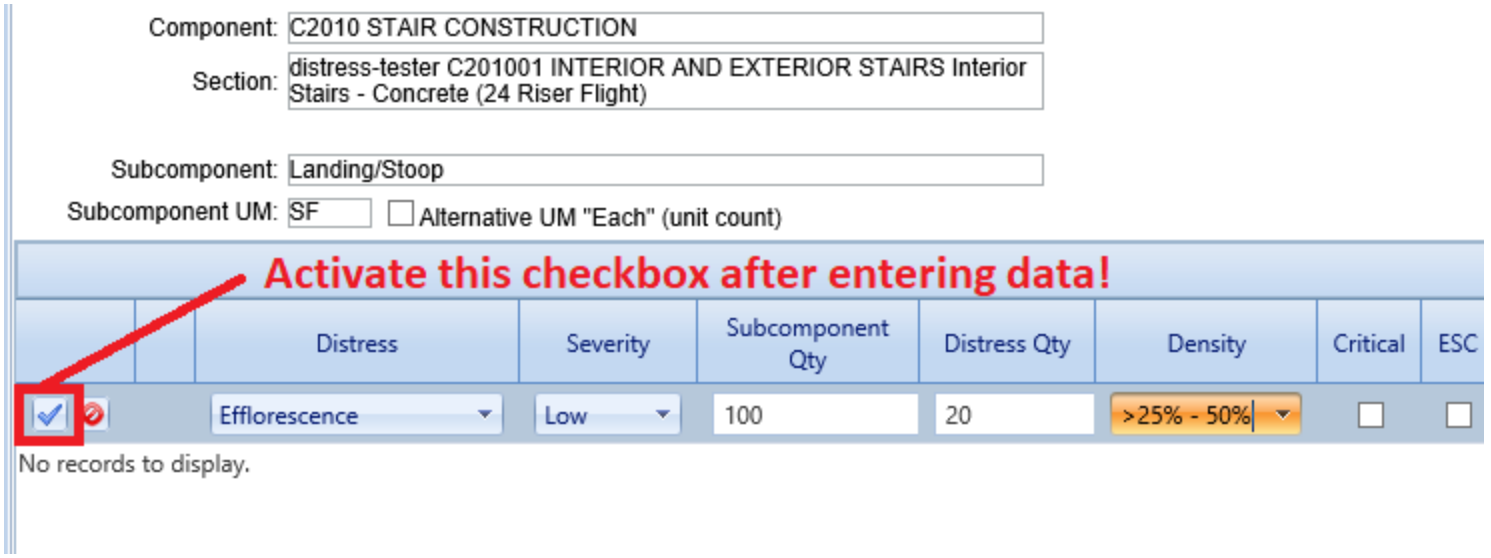


- Edit the desired fields. (Remember that you can consult the specifications page for the distress by activating the **Help** link in the rightmost column).
- Save as described in Save Distress Data.

Save Distress Data

To save distress data, you will need to first confirm your edits in each table row as follows:

- To confirm the distress, activate the blue checkmark icon on the left in that row of data. (Alternatively, if you wish to cancel the changes, activate the cancellation icon; it looks like a "Do Not Enter" sign.)



After confirming the individual distress, you will be returned to the view showing a pencil icon in the left-most column.

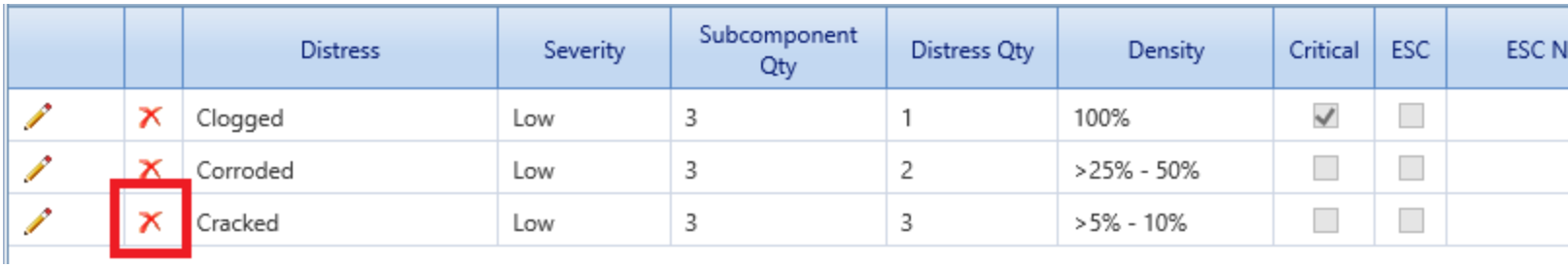
WARNING: If your **BUILDER** instance times out, you may lose work that is not yet fully saved.

- At this point, if you wish to add, edit, or delete other distress records in the "Distresses" popup window, you may do so before *closing the popup.*
- Activate **Close** on the toolbar when you are finished adding distresses to that subcomponent. You will be returned to the Subcomponent table, and you should see that the number of distress has been updated.

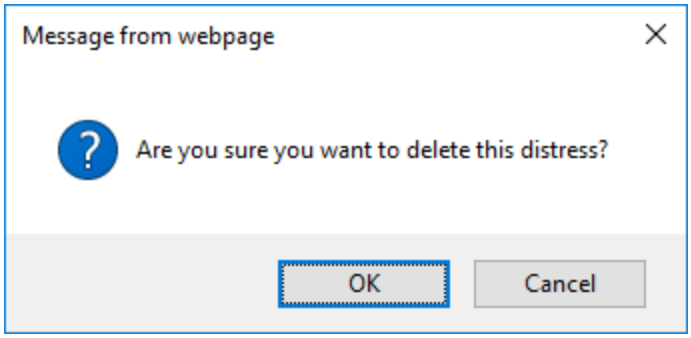
Delete a Distress

To delete a distress listed in the "Distresses" popup window,

- In the table of distresses, activate the ✕ deletion button in the second column of the record you wish to delete.



- Confirm the deletion in the popup confirmation box. (Alternatively, you can select the **Cancel** button to cancel the deletion.)



- Activate **Save** on the content area toolbar. *You will be returned to the **Inspection** tab showing the table of subcomponents*.

Related Links

View a Distress Survey
Add a Distress Survey
Edit a Distress Survey
Distress Survey Data (Not Sampling)
Delete an Inspection

Delete an Inspection

This topic outlines the instructions and needed permissions for deleting an inspection (direct rating or distress survey or preventative maintenance inspection)

Who May Delete an Inspection

- A Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. or BUILDER administrator may delete any inspection.
- You may delete any of your own inspections within 30 days (or possibly less–see **CAUTION** below) of their creation.

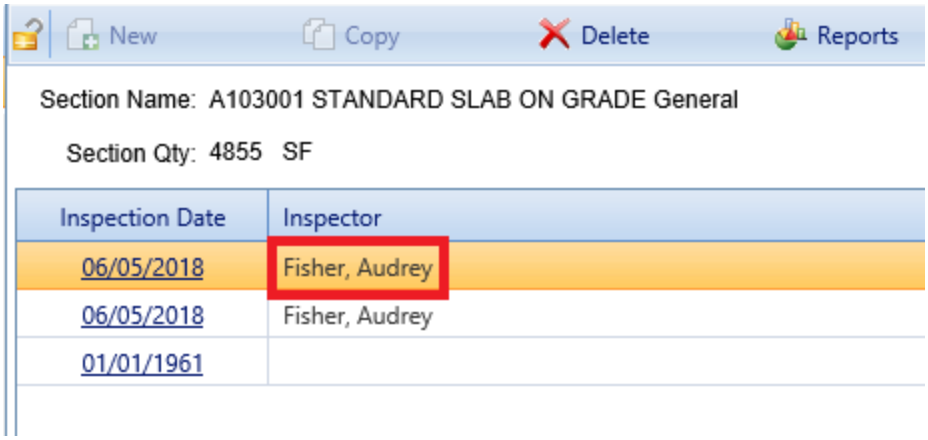
CAUTION: If the default 30-day window has been changed to a different period of time in your organization, that different period of time is what will apply instead.

How to Delete

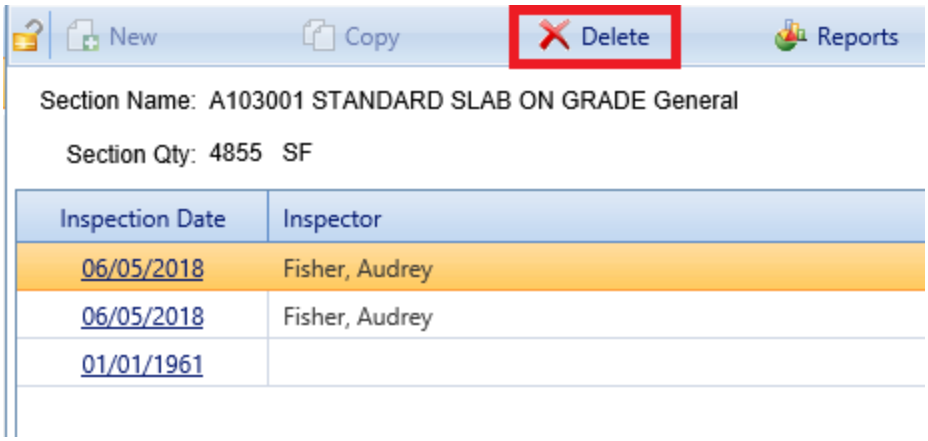
To delete an inspection,

- Navigate to the applicable Component-Section in the condition tree and select it.
- In the table of inspections, activate the inspector name in the row containing the inspection to be deleted. *The row will become highlighted, as shown below.*

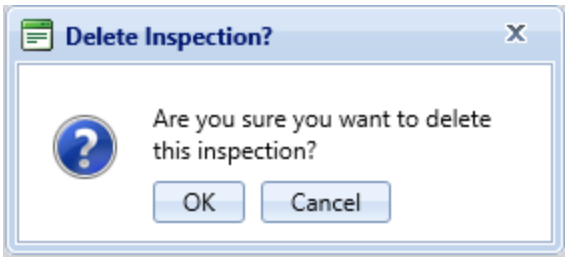
  Note: The reason for activating the inspector name is that selecting the inspection date will activate the link and take you into the inspection itself.



- Activate the **Delete** button on the toolbar.



- Select **OK** in the confirmation popup.



Preventative Maintenance Inspections

Preventative Maintenance (PM) Inspections

This topic introduces the preventative maintenance (PMPreventative Maintenance) inspection type of condition assessment. PMPreventative Maintenance inspections allow the inspector to select, on a subcomponent by subcomponent basis, between direct rating and evaluating by criteria.

The topic also supplies links to PM inspectionPreventative maintenance inspection tasks.

What Is a Preventative Maintenance Inspection?

In **BUILDER**, the PM inspectionPreventative maintenance inspection allows each subcomponent of a Component-Section to be separately evaluated either (a) according to criteria designated for that subcomponent, or (b) by a direct rating. An inspector has the option to "mix and match" the two approaches, (a) and (b), within the same PM inspectionPreventative maintenance inspection on a given Component-Section.

Another benefit, in addition to the flexibility to choose between the two evaluation options listed above, is that a PM inspectionPreventative maintenance inspection in **BUILDER** optionally allows for a predefined list of inspection tasks (such as "check for cracks") to be provided that each inspector is to follow for that subcomponent.

When to Use a Preventative Maintenance Inspection

PMPreventative Maintenance inspections are done when called for by your company's procedures. Also, they can be useful when it's desirable to provide standardized checklists of inspection tasks (via the PMPreventative Maintenance Task List) and/or inspection criteria.

PM Inspection Tasks

Tasks that can be performed on a preventative maintenance inspection are:

View a Preventative Maintenance Inspection
Add a Preventative Maintenance Inspection
Edit a Preventative Maintenance Inspection
Delete an Inspection

View a Preventative Maintenance Inspection

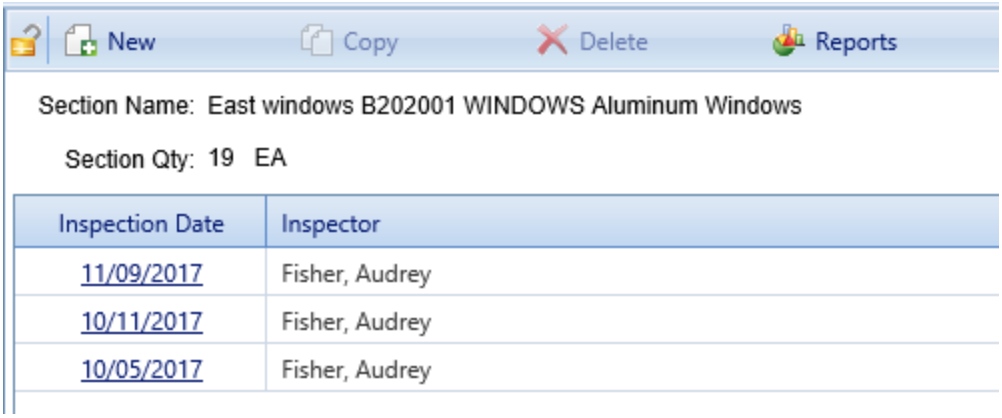
This topic covers how to open and view an existing preventative maintenance inspection that does not use sampling, and explains the information included there.

Open a Preventative Maintenance Inspection

Note: An inspection may be viewed at any time. Editing, however, may only be performed within a specified number of days after the inspection date. The number of days is typically 30 by default in **BUILDER** as delivered to customers, but can be configured by a **BUILDER** AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings..

To open an inspection for viewing or editing,

- If you are not already in the condition tree, activate the **Condition** ribbon.
- Navigate to the Building containing the desired inspection.
- Expand the Building's **By System** folder.
- Navigate to the desired Section and tap (if touch is enabled) or click on its name. *In the content area you should see a table listing at least one inspection.*



  Note: The oldest inspection was automatically generated by **BUILDER** as a direct rating when the Section was added to the inventory. No inspector name will be listed for this inspection.

  Because an inventory item is assumed to be new at installation, **BUILDER** assigns a Green+ rating to this automatically generated inspection.

- In the **Inspection Date** column, activate an inspection date link. *The inspection should open. The radio button under the **Type** heading indicates what type of inspection you are viewing or editing.*

View Preventative Maintenance Inspection Data

Information about a PM inspectionPreventative maintenance inspection is distributed as follows:

- The core information from a PM inspectionPreventative maintenance inspection record is shown at the **Inspection** tab, which is divided into a header section, Preventative Maintenance Task List, and a table of subcomponents.

- If attachments (the number of which is shown in parentheses on the **Attachments** tab) are associated with the inspection, these are accessible from the **Attachments** tab.
- If one or more comments have been recorded for the inspection, they are shown together in a popup accessed by activating the **Comment** button on the content area toolbar.

Information contained at the inventory tree can sometimes provide helpful background information for evaluation.

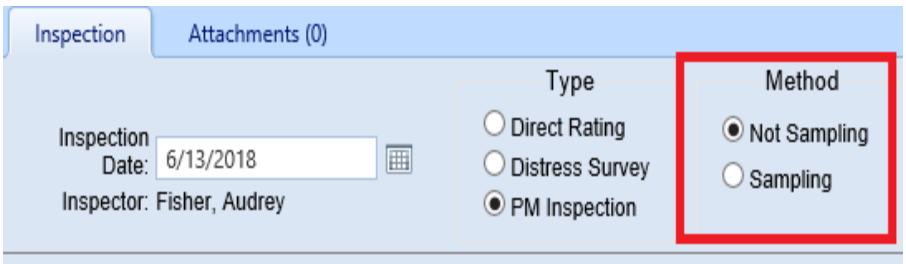
Select a link below for how to view

- Inspection Identification Data
- CI Results
- Preventative Maintenance Task List
- Inspection Details
- Inspection Attachments
- Inspection Comments
- Inventory Information

Inspection Identification Data

The following identifying information is contained in the header section at the **Inspection** tab:

- **Inspection Date.** Note that the oldest inspection is one that is automatically generated by **BUILDER**, as a direct rating, as of the date that the Component-Section was built, installed, or renewed.
- InspectorPerson who performs inspections to be input into BUILDER or ROOFER. As a permissions Role, Inspectors can input and edit inventory information in Inventory mode, and can input and edit inspection information from the Condition Assessment screen. (Read-Only). InspectorPerson who performs inspections to be input into BUILDER or ROOFER. As a permissions Role, Inspectors can input and edit inventory information in Inventory mode, and can input and edit inspection information from the Condition Assessment screen. name, automatically filled in by **BUILDER** based on user login. InspectorPerson who performs inspections to be input into BUILDER or ROOFER. As a permissions Role, Inspectors can input and edit inventory information in Inventory mode, and can input and edit inspection information from the Condition Assessment screen. name will not be present for the oldest inspection, which is automatically generated by **BUILDER**.
- **Type.** Available inspection types are **Direct Rating**, **Distress Survey**, and **Preventative Maintenance**.
- **Method.** Available inspection methods are **Not Sampling** and **Sampling**.



CI Results

- CSCIComponent-Section Condition Index - a condition rating for the target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, then subtracting that deduct value from the maximum possible rating of 100. The deduct value computation differs for each condition assessment method. (Read-Only). In the header section, under the **Results** heading, is the Component-Section condition index *at the time of that inspection*.

Preventative Maintenance Task List

If a task list has been entered into **BUILDER** and associated with the Section type being inspected, the Preventative Maintenance Task List will appear in its own section between the header section and the table of subcomponents. It will show a list of preventative maintenance actions to be performed on the Component-Section.

BUILDER provides default criteria and PMPreventative Maintenance tasks for select component types.

Inspection Details

Inspection details are described in the topic Add a Preventative Maintenance Inspection, in the **Enter Inspection Data** section.

Inspection Attachments

The number in parentheses shown on an inspection's **Attachments** tab indicates how many attachments are connected with the inspection. (This is something you can see even when you are at the **Inspection** tab.) If the number is zero, there are no attachments yet associated with the inspection.

To view one or more attachments,

- Navigate to and activate the **Attachments** tab. *If attachments are present, a table will display their type, title, and description*.
- Activate the link in the **Title** column. *The attachment will appear in the "Image Viewer" popup window.*
- When finished viewing, activate the **Close** button on the popup window toolbar.*You will be returned to the table of attachments.*
- Repeat the two steps immediately above for additional attachments as desired.

Inspection Comments

To view comments for the inspection, activate the **Comment** button on the toolbar above the inspection display. *The "Inspection Comments" popup window will appear.*

Note: If the **Comment** button icon does not show a white checkmark on a green background, no comments have been attached to the inspection.

To close the "Inspection Comments" popup without making any changes, either activate the **Cancel** button on the popup toolbar, or activate the **X** in the upper right corner of the popup window.

Inventory Information

Inventory information is not directly a part of the inspection; however, when viewing an inspection in the condition tree, you have the option to switch to **Inventory** view to see more detail about the Component-Section if desired, by following these steps:

- Without changing your location in the condition tree, activate the **Inventory** ribbon.
- Activate the tabs as desired to see inventory details stored for the Section.
- To return to the inspection, activate the **Condition** ribbon without changing your location in the inventory tree.

When you return to the condition tree, you will not be viewing the inspection itself, but rather the listing of inspections for that Component-Section. Simply re-select the date of the desired inspection to open it again.

Related Links

Add a Preventative Maintenance Inspection
Edit a Preventative Maintenance Inspection
Delete an Inspection

Add a Preventative Maintenance Inspection

This topic covers how to create a new preventative maintenance inspection that does not use sampling.

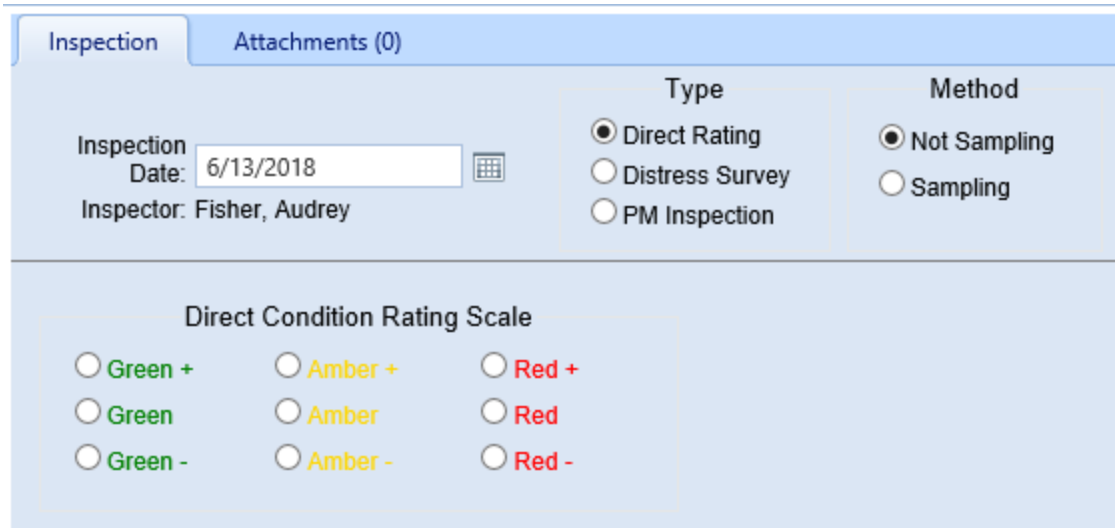
Initiate a New Inspection

To initiate a new inspection,

- Make sure you are in the condition tree by activating the **Condition** ribbon.
- Navigate to the Building containing the Section to be inspected.
- Expand the Building's **By System** folder.
- Navigate to the Section to be inspected and tap (if touch is enabled) or click on its name. *In the content area you should see a table listing at least one inspection.*
- In the content area toolbar, activate the **New** icon. *In the Content area you should see a screen similar to the one illustrated below.*

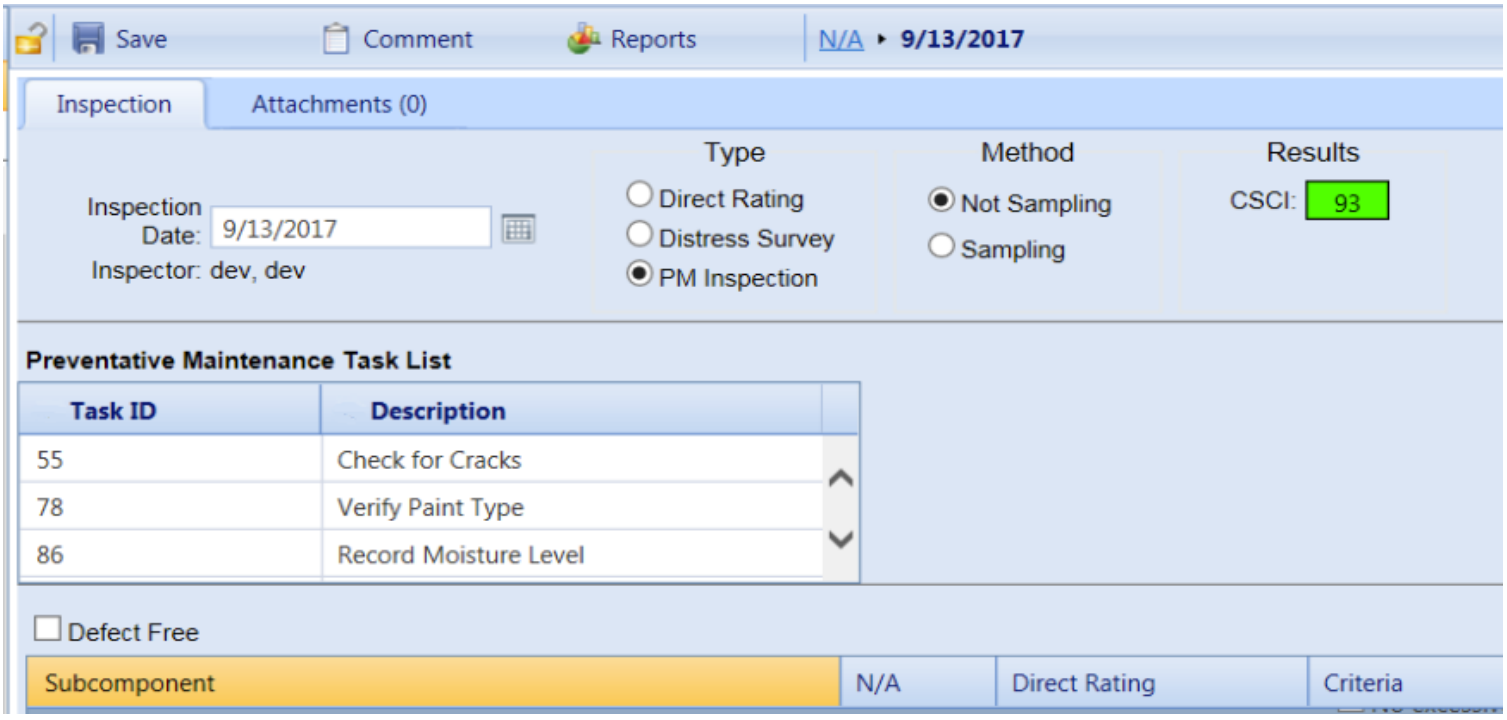
  Troubleshooting tip: If the **New** icon is deactivated, it may be because an inspection has already been recently recorded for the Section. If the designated editing window (typically 30 days) has not elapsed, the existing inspection may be edited instead of creating a new inspection.

Select Inspection Type



At the default new inspection screen shown above, you have **three** choices in the **Type** column located in the top portion of the content area. (**Direct Rating** is marked by default.)

Select the PM**Preventative Maintenance Inspection** radio button. *A screen resembling the following should appear:*



View Task List (Read Only)

When you select the PM inspectionPreventative maintenance inspection type, a task list may appear in the middle (vertically) portion of the content area, The list is read-only, and has two columns: **Task ID** and **Task Description**

If there is a preventative maintenance checklist or job plan that is standard for your company to apply to the selected Section, that information is what should appear in this section of the content area.

Enter Inspection Data

The bottom portion of the PMPreventative Maintenance Inspection content area displays the subcomponent table for the selected Section.

Note: The table displays a description of subcomponents that *could* be associated with the type of Section being inspected. Not all of the subcomponents listed will necessarily apply to every instance of that Section type.

You have a variety of options to consider as you enter or edit inspection data:

- **Defect Free.** If the entire Section is defect free, check the **Defect Free** checkbox above the table of subcomponents. Once you have done so, skip to **Comments and Attachments**, below.

  Note: Section-level **Defect Free** designation takes priority over a designation of **N/A** (next option in this list).

- **N/A.** If one or more of the listed subcomponents are not present in the Section you are inspecting, mark the checkbox in the **N/A** column for each of these.
- **Direct Rating on Subcomponent.** To apply a Direct Rating to a subcomponent, select the appropriate color rating from the dropdown list in the **Direct Rating** column. After applying a direct rating to each subcomponent desired, proceed to the next option in this list if there are still more subcomponents to be inspected.

  Note: If both a Direct Rating and Criteria are applied to the same subcomponent, the direct rating has priority.

- **Criteria.** Using the checkboxes in the **Criteria** column, you can mark each aspect of the subcomponent that is defective. **BUILDER** will then calculate the deduct values for each, adjust for the number of deducts as needed, and use these calculations to produce a **CI**[1]Condition Index value.

  Note: If both a Direct Rating and Criteria are applied to the same subcomponent, Direct Rating has priority.

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[1]Condition Index

Comments and Attachments

IMPORTANT: Save your rating and/or Criteria BEFORE entering a comment or adding an attachment. Clicking or tapping elsewhere on the screen before saving can cause you to lose your entries or edit, This includes activating the **Comment** button on the toolbar.

You can add or modify comments pertaining to the Section being inspected, as outlined in Inspection Comments, and add attachments as described in Inspection Attachments.

Save

IMPORTANT: Save your rating and/or Criteria *BEFORE* entering a comment or adding an attachment. Clicking or tapping elsewhere on the screen before saving can cause you to lose entries, and this includes activating the **Comment** button on the toolbar.

Activate **Save** on the toolbar to save the inspection.

Related Links

View a Preventative Maintenance Inspection
Edit a Preventative Maintenance Inspection
Delete an Inspection

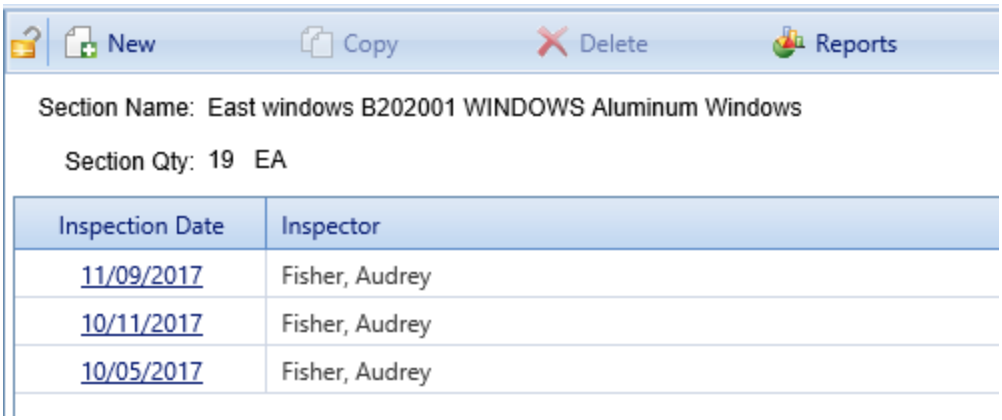
Edit a Preventative Maintenance Inspection

This topic covers how to edit an existing PM inspectionPreventative maintenance inspection that does not use sampling.

Note: An inspection may be viewed at any time. Editing, however, may only be performed within a specified number of days after the inspection date. The number of days is typically 30 by default in **BUILDER** as delivered to customers, but can be configured by a **BUILDER** AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings..

To open an inspection for viewing or editing,

- If you are not already in the condition tree, activate the **Condition** ribbon.
- Navigate to the Building containing the desired inspection.
- Expand the Building's **By System** folder.
- Navigate to the desired Section and tap (if touch is enabled) or click on its name. *In the content area you should see a table listing at least one inspection.*



Note: The oldest inspection was automatically generated by **BUILDER** as a direct rating when the Section was added to the inventory. No inspector name will be listed for this inspection.

Because an inventory item is assumed to be new at installation, **BUILDER** assigns a Green+ rating to this automatically generated inspection.

- In the **Inspection Date** column, activate an inspection date link. *The inspection should open. The radio button under the **Type** heading indicates what type of inspection you are viewing or editing.*

Edit PM Inspection Data

The task list in the (vertically) middle portion of the content area is not editable. However, the subcomponent table for the selected Section, in the lower portion of the PM inspectionPreventative maintenance inspection content area, can be edited.

Note: The table displays a description of subcomponents that *could* be associated with the type of Section being inspected. Not all of the subcomponents listed will necessarily apply to every instance of that Section type.

You have a variety of options to consider as you enter or edit inspection data:

- **Defect Free.** If the entire Section is defect free, check the **Defect Free** checkbox above the table of subcomponents. Once you have done so, skip to **Comments and Attachments**, below.

  Note: Section-level **Defect Free** designation takes priority over a designation of **N/A** (next option in this list).

- **N/A.** If one or more of the listed subcomponents are not present in the Section you are inspecting, mark the checkbox in the **N/A** column for each of these.
- **Direct Rating on Subcomponent.** To apply a Direct Rating to a subcomponent, select the appropriate color rating from the dropdown list in the **Direct Rating** column. After applying a direct rating to each subcomponent desired, proceed to the next option in this list if there are still more subcomponents to be inspected.

Note: If both a Direct Rating and Criteria are applied to the same subcomponent, the direct rating has priority.

- **Criteria.** Using the checkboxes in the **Criteria** column, you can mark each aspect of the sub-component that is defective. **BUILDER** will then calculate the deduct values for each, adjust for the number of deducts as needed, and use these calculations to produce a **CI**[1]Condition Index value.

  Note: If both a Direct Rating and Criteria are applied to the same subcomponent, Direct Rating has priority.

Comments and Attachments

IMPORTANT: Save your rating and/or Criteria BEFORE entering a comment or adding an attachment. Clicking or tapping elsewhere on the screen before saving can cause you to lose your entries or edit, This includes activating the **Comment** button on the toolbar.

You can add or modify comments pertaining to the Section being inspected, as outlined in Inspection Comments, and add attachments as described in Inspection Attachments.

Save

IMPORTANT: Save your rating and/or Criteria BEFORE entering a comment or adding an attachment. Clicking or tapping elsewhere on the screen before saving can cause you to lose your edits, and this includes activating the **Comment** button on the toolbar.

Activate **Save** on the toolbar to save the inspection.

If you decide to add or edit a comment, save again after doing so.

Related Links

View a Preventative Maintenance Inspection
Add a Preventative Maintenance Inspection
Delete an Inspection

Delete an Inspection

This topic outlines the instructions and needed permissions for deleting an inspection (direct rating or distress survey or preventative maintenance inspection)

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[1]Condition Index

Who May Delete an Inspection

- A Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. or BUILDER administrator may delete any inspection.
- You may delete any of your own inspections within 30 days (or possibly less–see **CAUTION** below) of their creation.

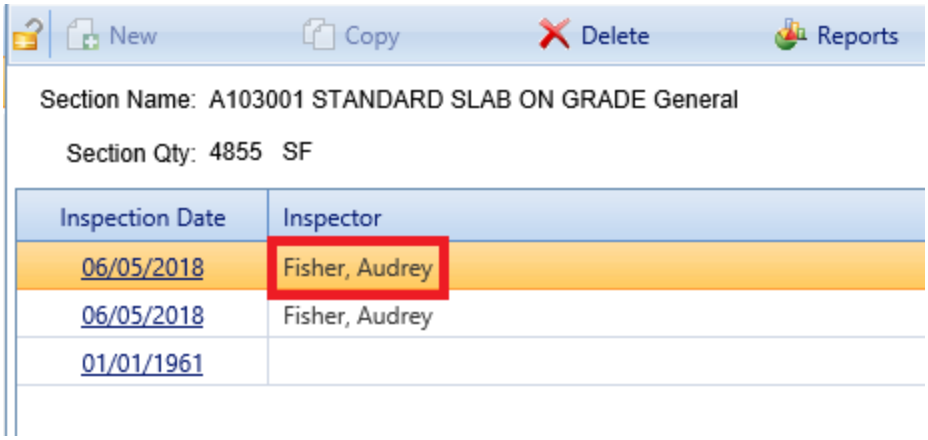
CAUTION: If the default 30-day window has been changed to a different period of time in your organization, that different period of time is what will apply instead.

How to Delete

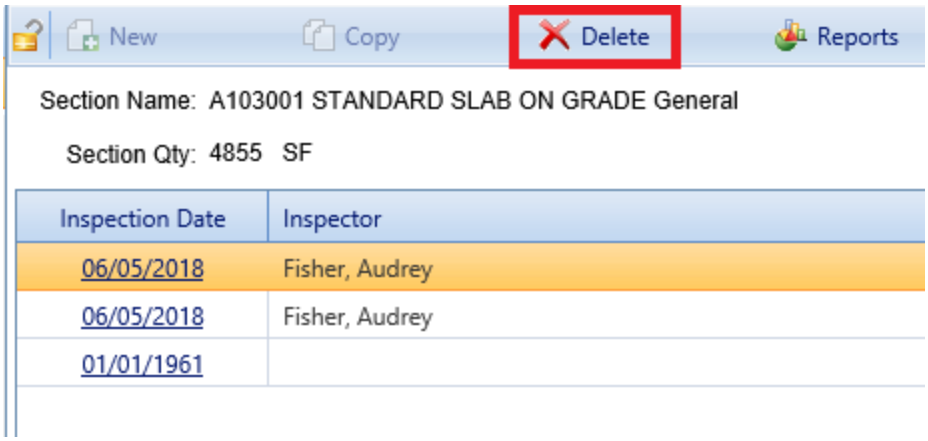
To delete an inspection,

- Navigate to the applicable Component-Section in the condition tree and select it.
- In the table of inspections, activate the inspector name in the row containing the inspection to be deleted. *The row will become highlighted, as shown below.*

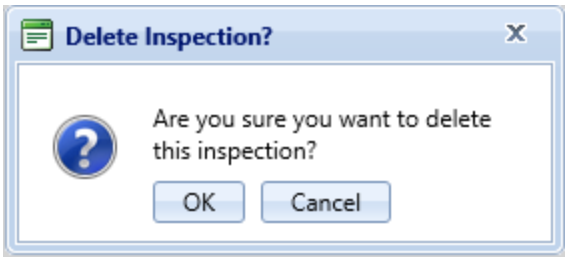
  Note: The reason for activating the inspector name is that selecting the inspection date will activate the link and take you into the inspection itself.



- Activate the ✕ **Delete** button on the toolbar.



- Select **OK** in the confirmation popup.



Inspection Comments and Attachments

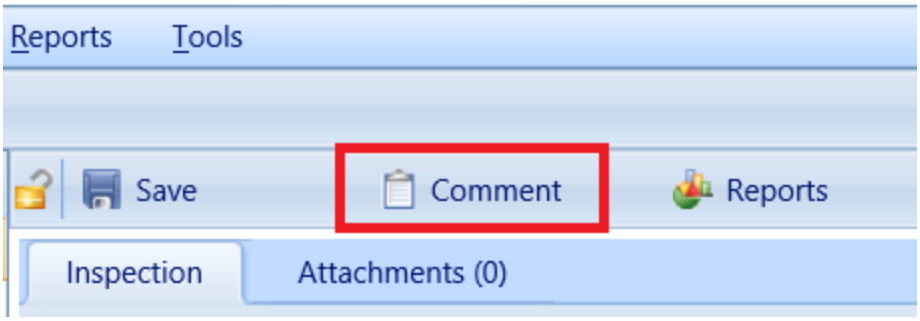
Inspection Comments

This topic explains how to add a comment file to an inspection, and how to view, edit, or delete existing comments.

IMPORTANT: In a direct rating where the Component-Section is given an Amber rating (Amber+, Amber, or Amber-), best practice is to provide a comment listing the observations about the Component-Section's condition that led to the rating.

About Inspection Comments

The **Comment** button on the content area toolbar, above the inspection, indicates whether a comment has been logged for the inspection currently being displayed. The icon portion of the button resembles a clipboard.



If a white checkmark on green background appears at the upper right corner of that icon, it means that a comment has been logged.

Note: For any given inspection, all comments are contained in a single popup window.

View an Inspection Comment

To view comments for the inspection, activate the **Comment** button on the toolbar above the inspection display. *The "Inspection Comments" popup window will appear.*

Note: If the **Comment** button icon does not show a white checkmark on a green background, no comments have been attached to the inspection.

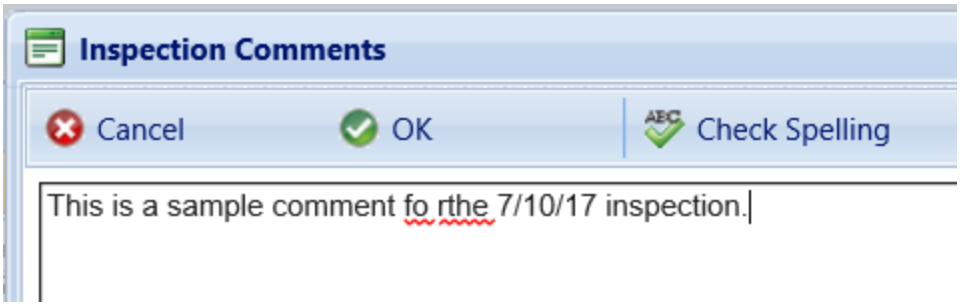
To close the "Inspection Comments" popup without making any changes, either activate the **Cancel** button on the popup toolbar, or activate the **X** in the upper right corner of the popup window.

Add an Inspection Comment

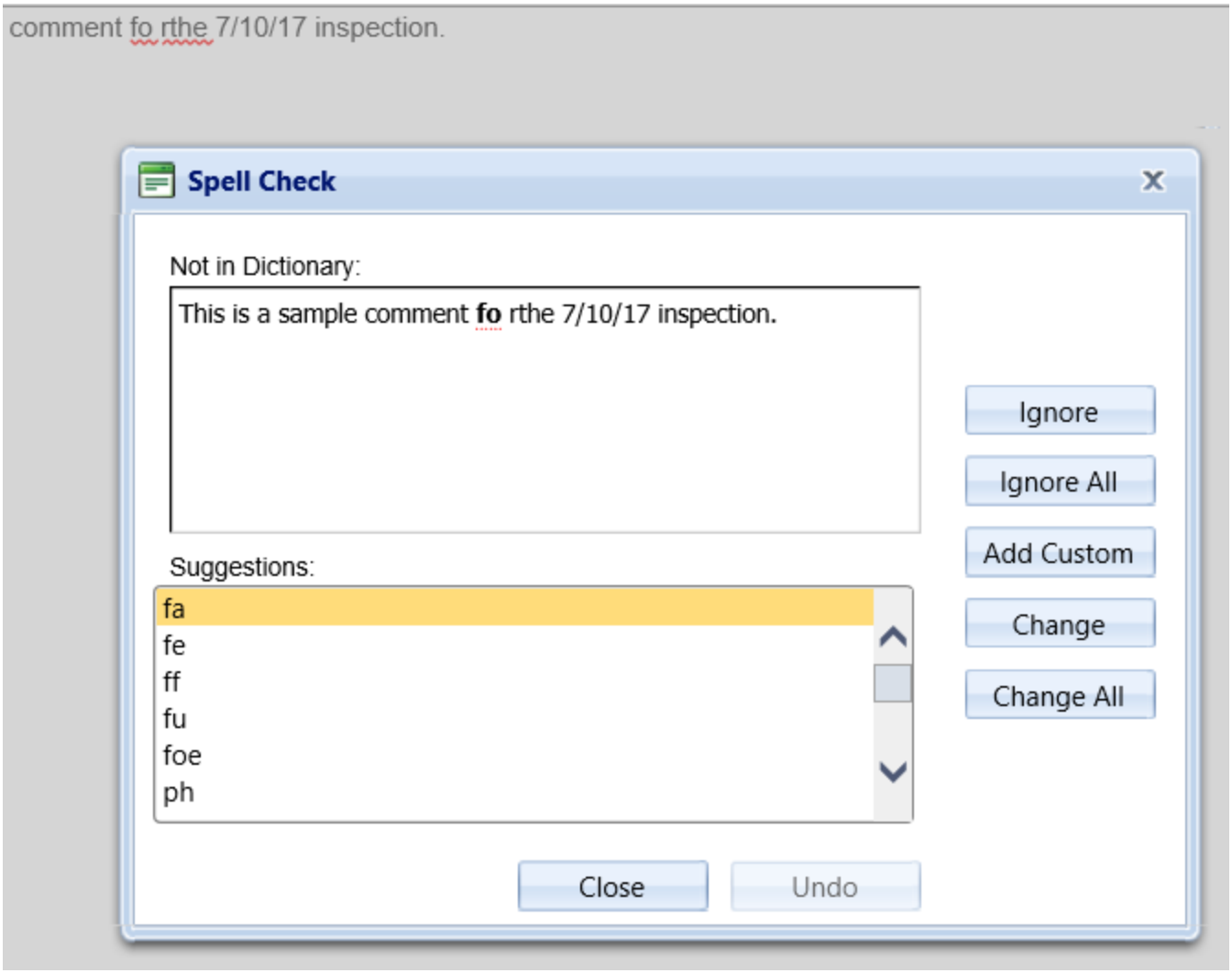
IMPORTANT: In a direct rating where the Component-Section is given an Amber rating (Amber+, Amber, or Amber-), best practice is to provide a comment listing the observations about the Component-Section's condition that led to the rating.

To add one or more comments to the inspection,

- Activate the **Comment** button on the content area toolbar above the inspection. *The "Inspection Comments" popup window will appear.*
- Enter the text of your comment(s) in the popup.



- **Optional:** After entry, you have the option to check and fix spelling as follows:
  a. Activate the **Check Spelling** button.
  b. Make any corrections needed, either by entering the needed changes in the upper ("Not in Dictionary") frame and activating the **Change** button, or by selecting one of the suggestions in the lower frame and then activating the **Change** button.



c. Activate **OK** on the popup that says the spell check is complete.

- Activate **OK** on the "Inspection Comments" popup toolbar. *You will be returned to the **Inspection** tab. The Comment icon on the content area toolbar should be showing a white checkmark on a green background.*

  WARNING: Even though the Comment icon indicates that there is a comment attached to this inspection, the new comment is not yet saved until you activate the **Save** icon. Be sure to complete the next step below!

- Activate **Save** on the content area toolbar.

Edit an Inspection Comment

To edit the inspection comment(s),

- Activate the **Comment** button on the content area toolbar above the inspection. *The "Inspection Comments" popup window will appear.*
- Make desired edits to the comment text in the popup.
- **Optional:** After entry, activate the **Check Spelling** button and make any corrections needed. How to check spelling is described in more detail under Add an Inspection Comment above.
- Activate **OK** on the "Inspection Comments" popup toolbar. *You will be returned to the **Inspection** tab.*

  WARNING: Your edits are not yet saved until you activate the **Save** icon. Be sure to complete the next step below!

- Activate **Save** on the content area toolbar.

Delete an Inspection Comment

To delete an inspection comment,

- Activate the **Comment** button on the content area toolbar above the inspection. *The "Inspection Comments" popup window will appear.*
- Highlight the comment text in the popup that you wish to delete.
- Press the **Delete** key on your keyboard, or perform an equivalent deletion maneuver.
- Activate **OK** on the "Inspection Comments" popup toolbar. *If you deleted all of the text in the comment, the white checkmark on green background should have disappeared from the Comment icon on the content area toolbar.*

  WARNING: Your deletion is not yet saved until you activate the **Save** icon. Be sure to complete the next step below!

- Activate **Save** on the content area toolbar.

Inspection Attachments

This topic explains how to add an attachment to a direct rating or distress survey or preventative maintenance inspection, and how to view, edit, or delete existing attachment files.

About Inspection Attachments

The **Attachments** tab allows files such as an image file to be attached to an inspection. An image might be a photograph, or it could be an electronic image of written notes or diagrams made during the inspection.

The attachment may be in any of the following formats:

- .jpg
- .jpeg
- .png

- .zip
- .doc
- .pdf

Note: As of January 31, 2022, .doc format is allowed, but not .docx.

View an Inspection Attachment

The number in parentheses shown on an inspection's **Attachments** tab indicates how many attachments are connected with the inspection. (This is something you can see even when you are at the **Inspection** tab.) If the number is zero, there are no attachments yet associated with the inspection.

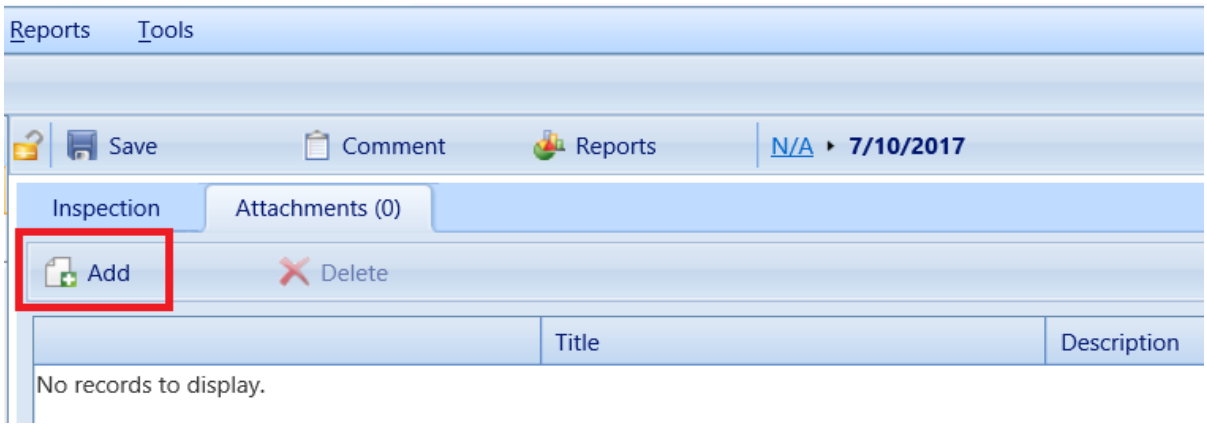
To view one or more attachments,

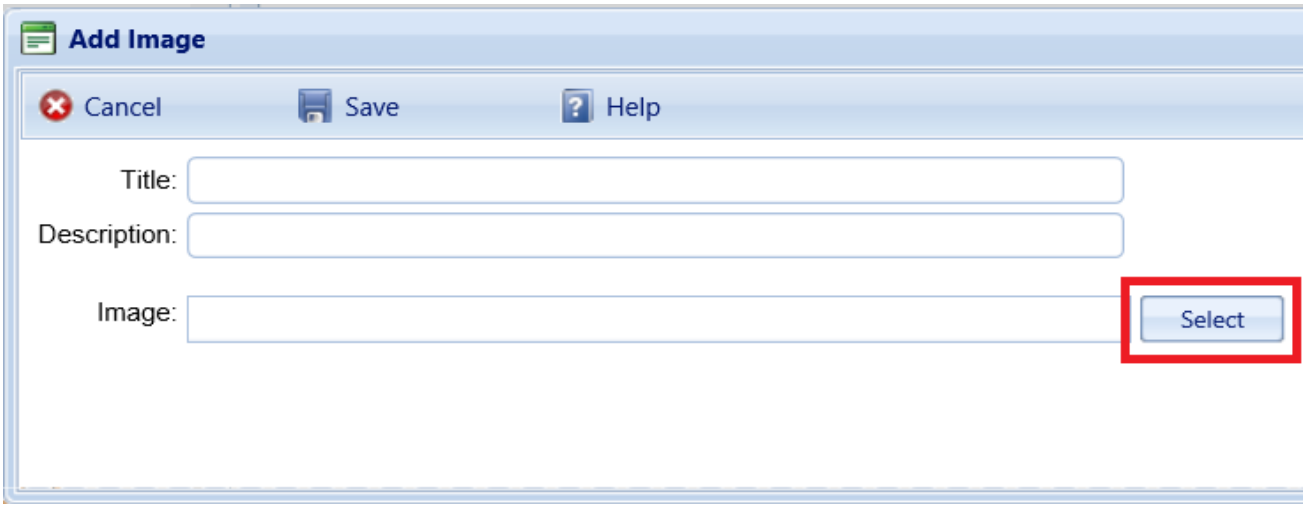
- Navigate to and activate the **Attachments** tab. *If attachments are present, a table will display their type, title, and description*.
- Activate the link in the **Title** column. *The attachment will appear in the "Image Viewer" popup window.*
- When finished viewing, activate the **Close** button on the popup window toolbar. *You will be returned to the table of attachments.*
- Repeat the two steps immediately above for additional attachments as desired.

Add an Inspection Attachment

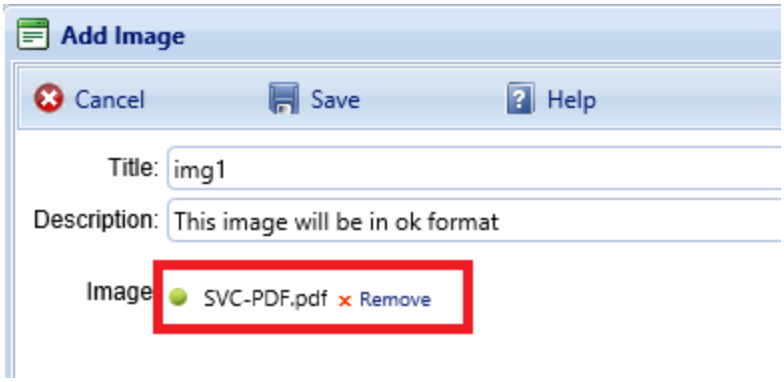
To add an attachment to an inspection,

- Navigate to the inspection's **Attachments** tab.
- Activate the **Add** button as shown immediately below. *The "Add Image" popup window will appear, as displayed next.*

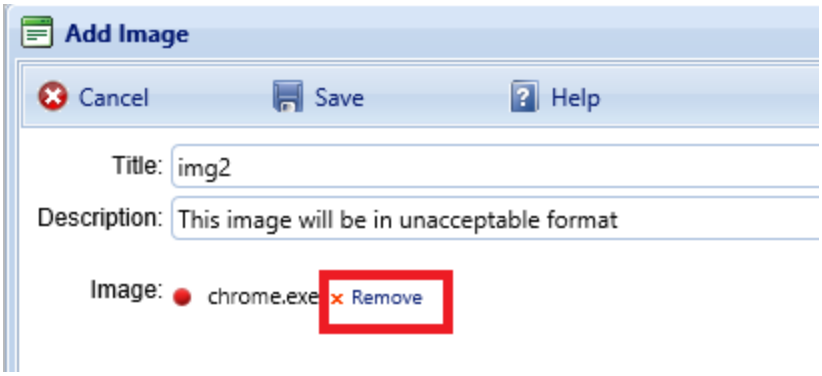




- In the "Add Image" popup, enter a title and a description for your attachment.
- Next, do one of the following to designate the path to the image:
  a. Enter the path name in the **Image** field.
  b. Alternatively, activate the **Select** button. Navigate to the image file, and select it to attach it.
- *The display in the popup window will change to indicate whether the attachment is in an acceptable format (green dot indicates acceptable format; red dot indicates unsupported format). You are also given the option here to remove the image if you wish.*



- If the attachment is not in an acceptable format, activate the **x Remove** button as shown below and repeat from step 4.



- Once all of the information in the popup window is satisfactory, activate **Save** on the popup toolbar.

After an image has been added, the "Add Image" popup will close and you will be returned to the **Attachments** tab. A table in the content area will show the type, title, and description of each attachment.

Edit an Inspection Attachment

If the number in parentheses shown on the **Attachments** tab is greater than zero, there are one or more attachments associated with the inspection.

You can edit the title and/or description of an attachment as follows:

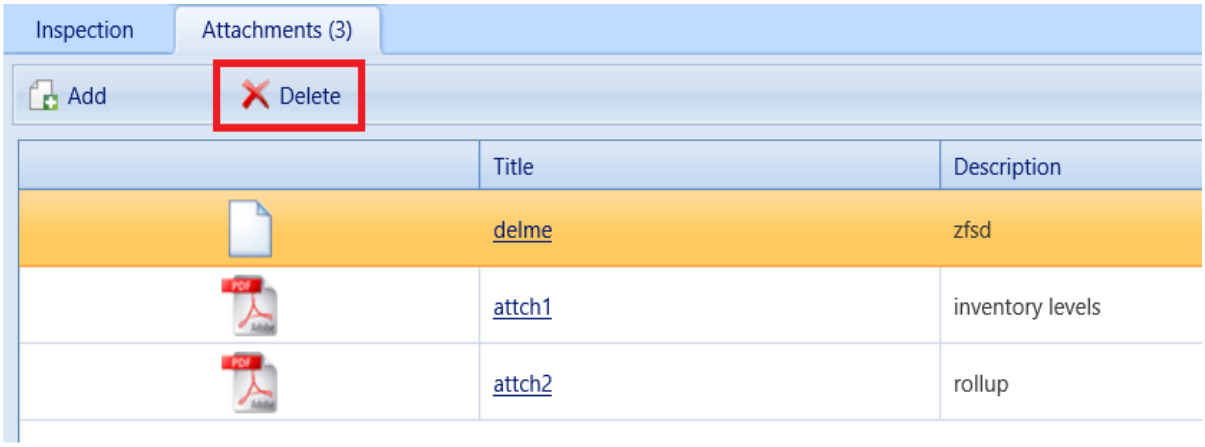
- Navigate to the **Attachments** tab to view the attachments table.
- Activate a link in the **Title** column. *The attachment will appear in the "Image Viewer" popup window.*
- In the header section above the attachment, make the desired changes in the **Title** and/or **Description** field(s).
- Activate **Save** on the popup toolbar to store your changes and return to the table of attachments.
- Alternatively, if you want to cancel the change, activate **Close** on the popup toolbar. *You will be returned to the table of attachments*.

If you wish to change the contents of the attachment, you will need to delete the existing attachment file and add a new one.

Delete an Inspection Attachment

To delete an attachment,

- Navigate to the inspection's **Attachments** tab to view the attachments table.
- Select the attachment you wish to delete (do *not* activate the link in the **Title** column). *When properly selected, that record in the table will change background color as illustrated below:*



- Activate the **Delete** button above the table.
- Activate **Yes** in the confirmation box to delete the attachment, or **No** to cancel.

Sampling

How To Prepare for Sampling

If an entire Component-Section is not readily viewable–whether due to its size (quantity), complexity, inaccessibility, or other reasons–sampling can be used to cut down the workload or to estimate the condition of an entire Component-Section based on the condition of accessible parts. This topic introduces how to prepare for sampling.

The information in this topic is adapted and rearranged from Section 2.9 of ERDC/CERL SR-18-7, Knowledge-Based Condition Assessment Reference Manual for Building Component-Sections, available by download at https://support.sms.erdc.dren.mil/downloads/erdc-cerl-technical-publications.

Why Sample?

Sampling is a way of breaking up the assessment of large or spatially dispersed Component-Sections into more manageable parts, with each part being assessed individually. The use of sampling can also potentially provide some efficiencies in the assessment process, because the sum of the individual sample quantities need not equal the overall quantity of the Component-Section.

When to Use Sampling

Performing a condition survey inspection by sampling should be done when the component is large, complex, and/or discontinuous. In a practical sense, this means that the entire Component-Section is not readily viewable. Depending on organizational policies or guidance given to the inspector, sampling may not always be allowed but if it is, the decision to sample or not will be a judgment call made by the inspector based on Building size and Component-Section quantities. Once the Minimum Representative Sample Quantities has been

met, sampling rates are up to the discretion of the inspector and/or organizational policy. Both sampling and non-sampling approaches can be used in the same Building for different Component-Sections.

Representative vs. Nonrepresentative Samples

Samples may be representative or nonrepresentative. Representative samples are those that *are* in a typical condition for the Component-Section as a whole. This does not mean that they are in exactly the same condition; some variation is expected. Nonrepresentative samples are those that are *not* in typical condition for the Component-Section as a whole. This can be either significantly better or worse condition. The designation as "representative" or not *will* affect the **CI**[1]. Nonrepresentative samples are considered isolated, and thus they have less of an influence on the **CI**[2] than do representative samples.

Minimum Representative Sample Quantities

The minimum quantities specified below are for representative samples. As long as the minimum number of representative samples is met, nonrepresentative samples or additional representative samples may also be added.

The number of representative (as to condition) samples to be taken of a specific Component-Section with the unit of measure of “each” are listed below:

- One (1) sample when the Component-Section quantity is 1-4.
- Two (2) samples when the Component-Section quantity is 5-9.
- At least three (3) samples when the Component-Section quantity is 10 or more.
- AND a minimum of 10% of the Component-Section quantity.

The number of representative (as to condition) samples to be taken of a specific Component-Section with the unit of measure of square feet (square meters) or linear feet (meters) are listed below:

- One (1) sample when the number of potential samples is 1-4.
- Two (2) samples when the number of potential samples is 5-9.
- At least three (3) samples when the number of potential samples is 10 or more.
- AND a minimum of 10% of the Component-Section quantity.

Non-Representative Samples

- Inspect nonrepresentative Component-Sections in addition to the required representative sample quantity amounts.
- Ensure that the nonrepresentative samples are designated as such.

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[1]Condition Index

[2]Condition Index

Representative Sample Creation and Selection

Representative sample locations and sample sizes are determined by the layout of a given Building. There are a few simple rules to follow, as listed below.

- A general walkthrough of the Building is recommended prior to selecting samples, to ensure that they are representative.
- Use discrete Building discontinuities (e.g., entire rooms, wall corners) to help delineate sample boundaries, especially when the quantity has a unit of measure of square feet (square meters) or linear feet (meters).
- When an area of the Building (e.g., specific room) is selected for sampling, it is recommended but not required that all of the Component-Sections at that location be inspected as part of the sample (e.g., all Component-Sections for all Systems found in a room).
- Specific Component-Sections with a unit-of-measure of “each” should most often be sampled individually, (e.g., sample five of 25 interior doors as five separate samples).
- Sample sizes for Component-Sections with a unit-of-measure of “each” need not be restricted to one.
- Sample sizes are often situation specific. Try to have them be of approximately equal size, but be practical. There will be situations when this is not possible or practical.
- Ensure that all samples are properly identified as to location, including room number or name, if applicable, (think of the next person or inspector – can he/she easily find this location?).
- When sampling is used for a given condition survey inspection cycle, either the distress survey, preventative maintenance, or direct condition rating approach may be used for a given Component-Section. However, do *not* combine the methods for any given Component-Section (i.e., don't use distress survey for one sample and direct condition rating for another sample).

Sampling Suggestions

- Specific rooms inside of a Building (e.g., "Room 110"), where all of the various Component-Sections in that room would be sampled (e.g., ceiling, walls, wall finish, floor, floor covering, light fixtures, etc.).
- Exterior wall locations (e.g. “North Wall”), where all Component-Sections included in that wall would be sampled (e.g., wall surface, doors, windows, awnings, lights).
- A Component-Section consisting of 10 roof ventilating fans (all 10 are the same) could label samples as “Fan 1”, “Fan 2”, etc.
- Interior doors denoted by room number (e.g., along a hallway) has many doors leading to rooms, so select the requisite number of doors with each door being a sample).
- Specific structural columns, beams, frames, trusses.
- A specific Component-Section (e.g., fireplace) with a quantity greater than one, but still a small number (such as two or three) that are geographically separated such that they cannot be inspected together. Inspect each one as a sample with a specific location. All Component-Sections will need to be inspected to be in conformance with the minimum sample quantity addressed above.
- If an entire Component-Section happens to be co-located at a defined sample location where other Component-Sections were sampled (e.g., a fireplace in a room selected for sampling of walls, ceiling, flooring), that Component-Section can either be included in the sample location or simply inspected

without sampling.
- In general, do what makes sense, but ensure that the rules are followed.

The Importance of Sample Locations

The importance of sample locations cannot be overemphasized. The above sections briefly touched on sample locations, but two important considerations of inspection data management (past, present, and future) and field data collection practicalities are addressed below.

First, the sample location creation possibly provides a basis for collecting condition survey data for a number of different Component-Sections. For example if a room were chosen as a location, the walls, ceiling, light fixtures, etc. could all be inspected and associated with the same location. This can be very useful for future inspections even if all of the Component-Sections are not inspected in a given cycle, because a method of sorting inspection data is by sample location. These locations can be used year after year and will be illustrated later in this manual.

Second, the creation of sample locations will affect sampling rates and sizes. It was stated earlier that Component-Sections with the unit-of-measure of “each” should be sampled individually. However, sometimes this is impractical. If a sample location has been created that covers a specific area, such as a room, the Component-Section may have a quantity of more than one in that room. A logical clustering of individual items may form a practical basis for a sample. An example would be a Component-Section quantity of one hundred (100) light fixtures in a Building. A room being sampled may have four fixtures out of that total Component-Section quantity. The intent would be to not inspect each light fixture in the sample location room. Rather, all four light fixtures would encompass a single sample. Under these circumstances it becomes important to make all sample sizes roughly the same for a given Component-Section. That is, avoid one sample of four (4) lights and another sample of forty (40) lights.

Additional Information: Refer to ERDC/CERL SR-18-7, pages 25 and 26, for information about unusual condition situations and about sampling to quantify work needs for a distress survey with distress quantity.

Related Links

Add a Sample
Edit a Sample
Delete a Sample
Sampling Data

Add a Sample

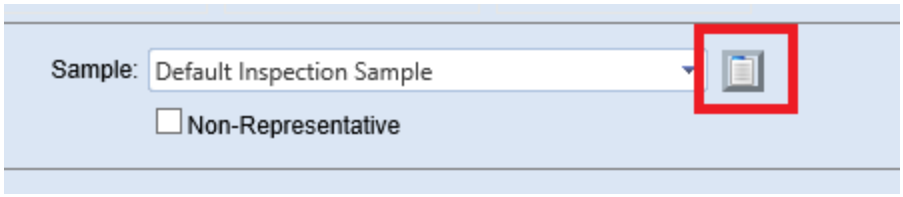
This topic shows how to add a sample when using the sampling method in a direct rating or distress survey or PM inspection.

Tip: Before embarking on sampling for the first time, be sure to read How To Prepare for Sampling.

When the **Sampling** radio button is selected in the header section of the inspection, (whether it be a direct rating, or a distress survey, or a preventative maintenance inspection), an additional section of the screen will open up because additional data is required for condition assessments that are performed using sampling. This additional data is reviewed at Sampling Data.

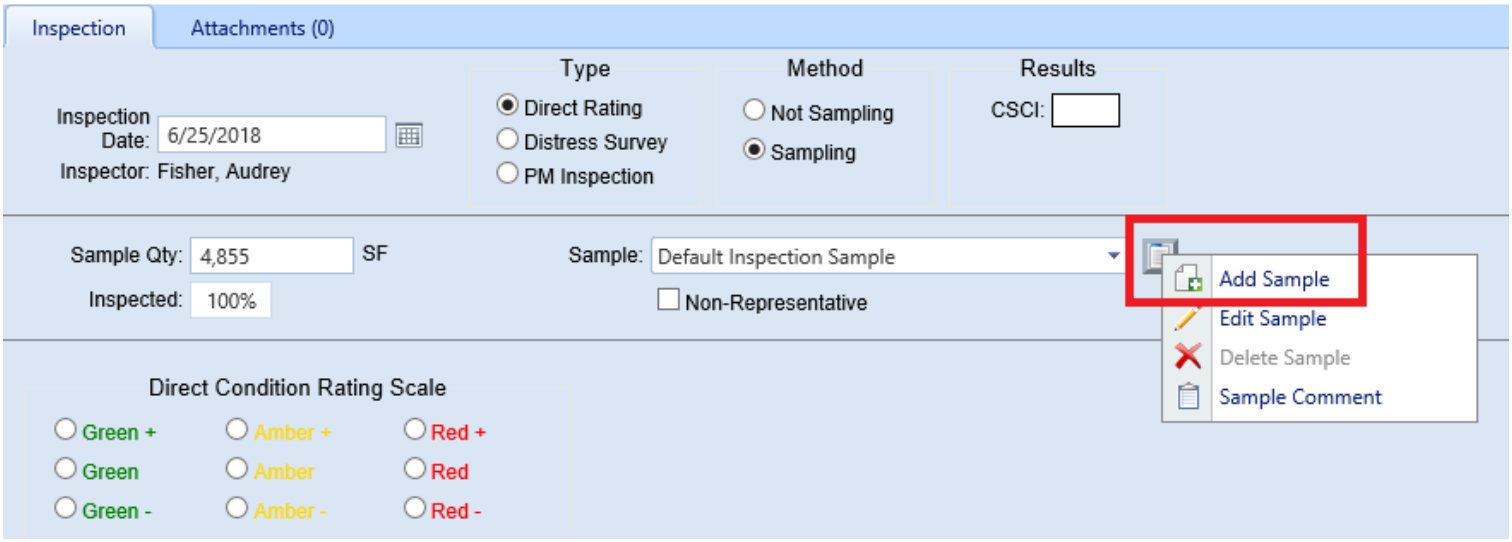
To add a sample,

- Activate the button to the right of the **Sample** field.



Note: BUILDER provides an initial default sample named "Default Inspection Sample" which is initially sized at 100% of the Component-Section.

- In the list of options, select **Add Sample**. *The "Add Location" popup window will appear.*



- In the "Add Location" popup, you have the option to select an existing sample location for the current Section. Alternatively, activate the **Create a new sample location** radio button and enter the sample name in the field.
- Activate **Save** on the popup toolbar.

WARNING: When you create your first sample for a Component-Section, you should either delete or reduce the size (**Sample Qty**) of the Section's Default Inspection Sample provided at delivery of **BUILDER**, because that default sample is initially sized at 100% of the Component-Section. *Failure to do this can result in the percentage inspected, reported in the "Inspected" field, to be greater than 100 percent.*

Related Links

[How To Prepare for Sampling]
[Edit a Sample]
[Delete a Sample]
[Sampling Data]

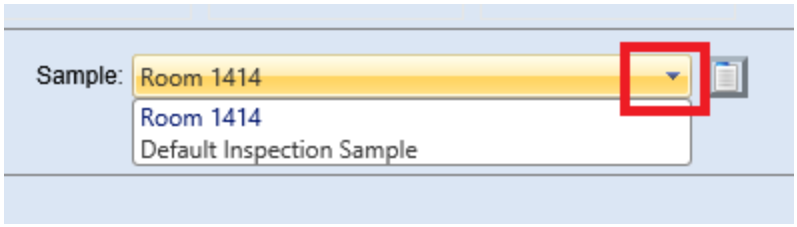
Edit a Sample

This topic shows how to edit a sample when using the sampling method in a direct rating or distress survey or PM inspectionPreventative maintenance inspection.

When the **Sampling** radio button is selected in the header section of the inspection, (whether it be a direct rating, or a distress survey, or a preventative maintenance inspection), an additional section of the screen will open up because additional data is required for condition assessments that are performed using sampling. This additional data is reviewed at Sampling Data.

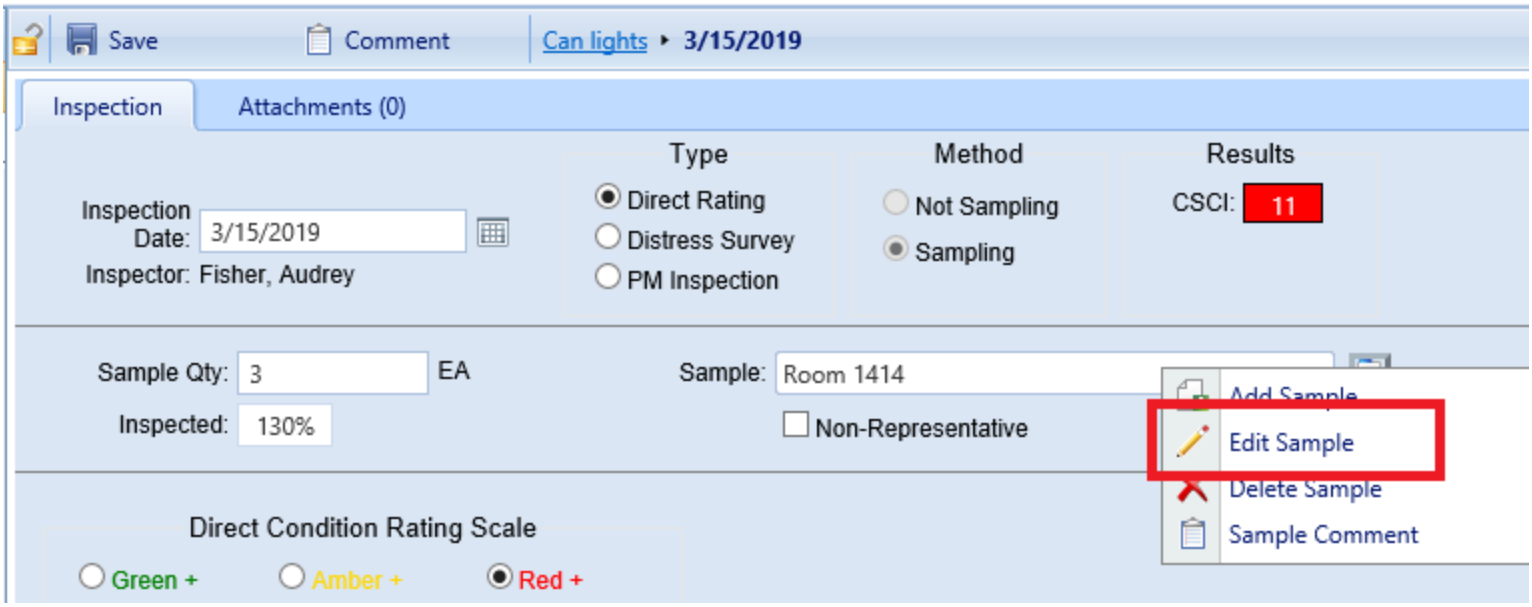
To edit a sample,

- Expand the dropdown list in the **Sample** field.



- In the list, select the sample you wish to edit.
- Activate the button to the right of the **Sample** field.

- In the list of options, select **Edit Sample**



- If you wish to change the sample quantity, do so in the Sample Qty field. Make sure to adhere to the minimum quantity for representative samples, as listed in How To Prepare for Sampling.

  Note: If the percent inspected shows as more than 100%, you may want to consider deleting or reducing the size of the Default Inspection Sample, which is initially sized at 100% of the Component-Section.

- You can also change whether the sample is designated as representative or not, by marking or unmarking the **Non-Representative** checkbox. This distinction is explained in How To Prepare for Sampling.
- Activate **Save** on the toolbar.

Related Links

How To Prepare for Sampling
Add a Sample
Delete a Sample
Sampling Data

Sampling Data

This topic reviews the data available about a sample when using the sampling method in a direct rating or distress survey or PM inspectionPreventative maintenance inspection.

When the **Sampling** radio button is selected in the header section of the inspection, (whether it be a direct rating, or a distress survey, or a preventative maintenance inspection), an additional section of the screen will open up because additional data is required for condition assessments that are performed using sampling.

Additional data related to sampling:

- **Sample Qty.** The quantity of the Section inspected at the current sample location. (The unit of measure is displayed to the right of the data field.)
- **% Inspected (Read-Only).** Displays the total percentage of the Section that has been inspected for the current inspection date. This value is calculated by summing the sample quantities of all sample locations and dividing by the Section quantity.

Note:BUILDER provides an initial default sample named "Default Inspection Sample" which is initially sized at 100% of the Component-Section. Thus, if additional samples are added without deleting or reducing the size of the Default Inspection Sample, the percent inspected can be over 100%.

- Sample. The list of all available sample names is stored in this field, in a dropdown. Using the button to the right of this field, you can choose to
  a. Add a sample location.
  b. Edit the currently selected sample.
  c. Delete the currently selected sample.
  d. Add comments regarding the current sample.
- **Non-Representative.** Mark this checkbox if the condition of the current sample is not representative of the Component-Section as a whole. Representative samples are those that are in a “typical” condition for the Component-Section as a whole. This does not mean that they are exactly in the same condition. Some variation is expected. Non-representative samples are those that are not in typical condition for the Component-Section as a whole. This can be either significantly better or worse condition. Non-representative samples are considered isolated and thus have less of an influence on the condition index than representative samples.

Related Links

How To Prepare for Sampling
Add a Sample
Delete a Sample

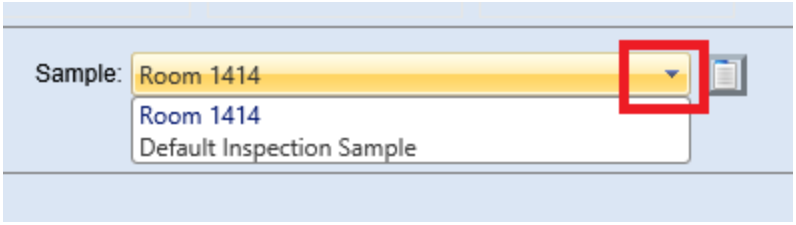
Delete a Sample

Tip: When you create your first sample for a Component-Section, you should either delete or reduce the size (**Sample Qty**) of the Section's Default Inspection Sample provided at delivery of **BUILDER**, because that

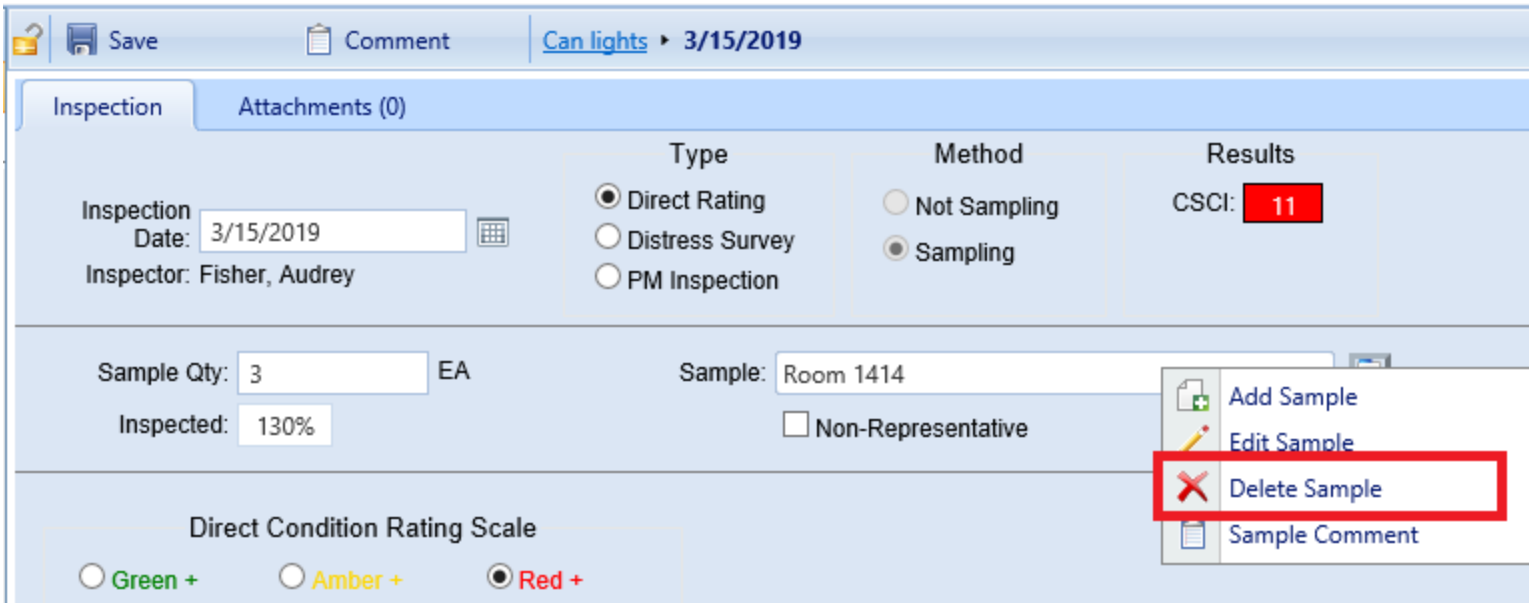
default sample is initially sized at 100% of the Component-Section. This would lead to the percentage inspected–reported in the **Inspected** field–to be greater than 100 percent after creating more samples.

To delete a sample,

- Expand the dropdown list in the **Sample** field.



- In the list, select the sample you wish to delete.
- Activate the button to the right of the **Sample** field.
- In the list of options, select ✕ "Delete Sample."



- Activate **Save** on the toolbar.

Related Links

[How To Prepare for Sampling]
[Add a Sample]
[Edit a Sample]
[Sampling Data]

Scheduling Assessments

About Manual Inspection Scheduling

This topic points to information about best practices for inspection scheduling. To learn about **BUILDER**'s automated scheduling tool, see About Knowledge-Based Inspection Scheduling .

To read about the principles of inspection scheduling, see Section 2.6 in the **Overview** chapter of the manual referenced immediately below.

Resource: ERDC/CERL SRShingle Roofing-18-7, *Knowledge-Based Condition Assessment Reference Manual for Building Component-Sections*, is available by download from the SMSSustainment Management System community user's group website at https://support.sms.erdc.dren.mil/downloads/erdc-cerl-technical-publications.

About Knowledge-Based Inspection Scheduling

Overview

The knowledge-based inspection (KBIKnowledge-Based Inspection) feature in **BUILDER** is designed to select from your entire inventory a subset of Component-Sections that should be considered for inclusion in the next round of condition assessments. Additionally, this feature is able to determine the type of condition assessments to perform. The selection algorithm is based on pieces of data (knowledge) associated with the Component-Sections that are compared with user-defined parameters.

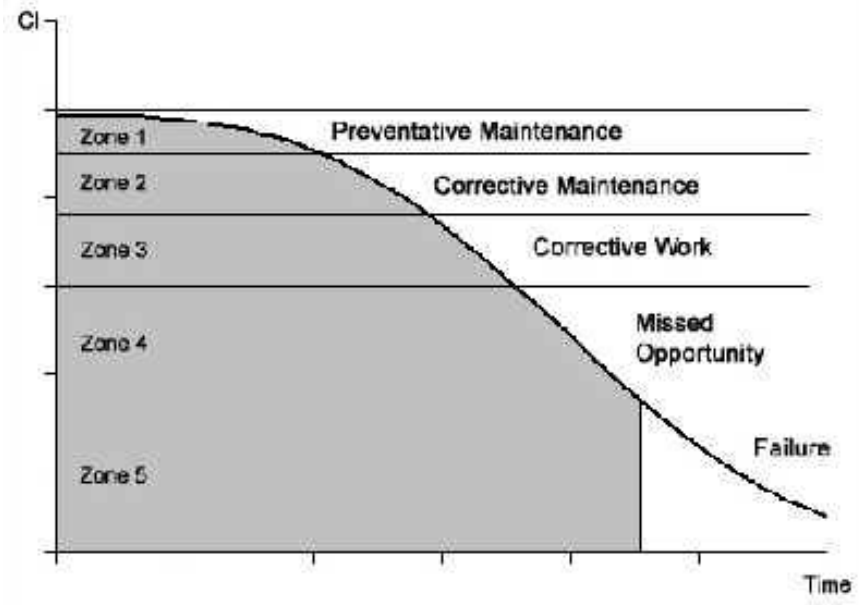
Note: The KBIKnowledge-Based Inspection feature is an optional tool. It can assist in selecting candidates for condition assessment if other structured programs for scheduling inspections are lacking.

For an explanation of the Knowledge-Based Inspection principles, please refer to the **Overview** chapter of ERDC/CERL SR-18-7, *Knowledge-Based Condition Assessment Reference Manual for Building Component-Section*s, available by download at https://support.sms.erdc.dren.mil/downloads/erdc-cerl-technical-publications.

Determining When to Perform a Condition Assessment

As stated above, the KBIKnowledge-Based Inspection feature needs to compare knowledge about the Component-Section with user-defined parameters to determine when a condition assessment is to be performed. These parameters are input when creating a condition standard and must be input for each of the five condition zones shown in the figure below. For an explanation of each condition zone, see Section 2.5, **Condition Zones**, in the **Overview** chapter of the manual referenced immediately below.

Resource: ERDC/CERL SR-18-7, *Knowledge-Based Condition Assessment Reference Manual for Building Component-Sections*, is available by download at https://support.sms.erdc.dren.mil/downloads/erdc-cerl-technical-publications.



The user-defined parameters for the KBIKnowledge-Based Inspection feature include:

- **CI[1]Condition Index Lower Bound.** The lower bound of the **CI**[2]Condition Index range of the condition zone. Providing the lower bound for each zone breaks the condition curve as shown above.
- **Maximum Inspection Interval.** The maximum amount of time, in years, between condition assessments in each condition zone.
- **Number of Inspections in Zone.** The maximum number of condition assessments that should be performed in each condition zone.
- **Degradation Factor.** The ratio of the maximum relative rate of deterioration to the expected rate of deterioration when a condition assessment is triggered. That is, if the deterioration rate were set to 2, any measured deterioration rate greater than twice the expected rate would trigger another inspection.

Based on the projected **CI**[3]Condition Index of the Component-Section, the KBIKnowledge-Based Inspection feature determines which range the Component-Section is in, and how many inspections to perform in that range. It then calculates the time between inspections to accomplish this. This interval is compared to the maximum inspection interval, and the lesser of the two becomes the allowable inspection interval.

When the time since the last inspection becomes greater than the allowable interval between condition assessments, the Component-Section is flagged for inclusion into the next round of assessments. In addition, if the rate of deterioration of the **CI**[4]Condition Index seen by the last condition assessment is greater than the

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[1]Condition Index

[2]Condition Index

[3]Condition Index

[4]Condition Index

allowable rate of deterioration determined by the deterioration factor discussed above, the Component-Section will also be flagged for inclusion into the next round of assessments.

Determining the Type of Condition Assessment to Perform

Once the KBIKnowledge-Based Inspection program selects the subset of recommended Component-Sections for inclusion into the next round of assessments, it must determine the assessment type that will be used for each condition assessment. Based on the **CI**[1]Condition Index range that the component is projected to be in, the general guidelines below apply.

Range	Procedure
1	Direct
2	Distress
3	Distress
4	Direct
5	Direct

In some instances, a more detailed level of condition assessment may be warranted regardless of the guidelines recommended above. If a more detailed assessment was performed previously, this same assessment type will be recommended again for zones 1 - 3. This means, for example, if the Component-Section is still in range 1 and the previous condition assessment type was a distress survey, the KBIKnowledge-Based Inspection program would recommend a distress survey be performed.

Using the KBI Feature in BUILDER

To begin using the KBIKnowledge-Based Inspection feature, see Add a Knowledge-Based Inspection Schedule.

[1]Condition Index

Inspection Tools

BUILDER Remote Entry Database (BRED)

Remote Inspection and Inventory Entry Using BuilderRED

This topic

- Introduces the **BUILDER** Remote Entry Database (BuilderRED) tool.
- Provides the download location.
- Explains briefly what the tool can do.
- Links to topics giving detailed instructions for exporting to and importing from BuilderRED.

What is BuilderRED?

The **BUILDER**™ Remote Entry Database (BuilderRED, or BREDBUILDER Remote Entry Database (BuilderRED)) is an optional tool designed for use with **BUILDER**. It allows you to (1) capture and collect inventory and inspection data using a Windows tablet or laptop as you walk through a Building, and then (2) later, load that data into the BUILDER database. The inspection data collected can be either for condition assessment or for functionality assessment.

You can download BREDBUILDER Remote Entry Database (BuilderRED) from the SMSSustainment Management System community user's group website at https://support.sms.erdc.dren.mil/downloads/bred-versions.

Collecting Inventory Data

When performing inventory, Buildings and their subparts can be created in BuilderRED, then imported into **BUILDER**. If the Buildings have already been created in **BUILDER**, they can be exported to BuilderRED, where inventory details can be entered on-site, then imported back into **BUILDER**.

Performing Inspections

Inspectors can use BuilderRED to enter condition assessment data in BUILDER format and then import it into **BUILDER**. Standard functionality assessments are also built into BuilderRED. These assessments can be initiated and filled out in the field, then imported into **BUILDER**.

Export and Import

The following topics cover how to Export Data to BuilderRED and Import Data from BuilderRED.

Export Data to BuilderRED

You can choose to export database items to BuilderRED (aka BREDBUILDER Remote Entry Database (BuilderRED)) either (a) with or (b) without the images that are linked to these items.

Below are some recommendations for best practices to follow to help ensure successful and less time-consuming export of files to BuilderRED:

Best Practice Recommendation #1: Be sure to observe the 30-day time limit on editing inspections and re-importing them into **BUILDER**, or the time limit in effect for your implementation of **BUILDER** if it differs from 30 days.

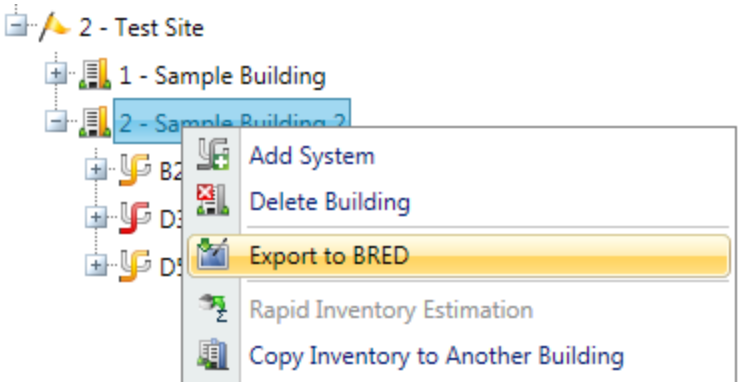
Best Practice Recommendation #2: Some Facilities (Buildings) within your Site can already contain several hundred photos. If you know beforehand that you will not need to view or edit these existing photos in BuilderRED, the best practice is to just download the BRED file without images.

Best Practice Recommendation #3: 800 pixels is the recommended maximum width and maximum height for images to be used in BuilderRED.

The next section describes how to export both database information and images to BuilderRED. For instructions on exporting database information without images, see Export Database Information Alone to BuilderRED.

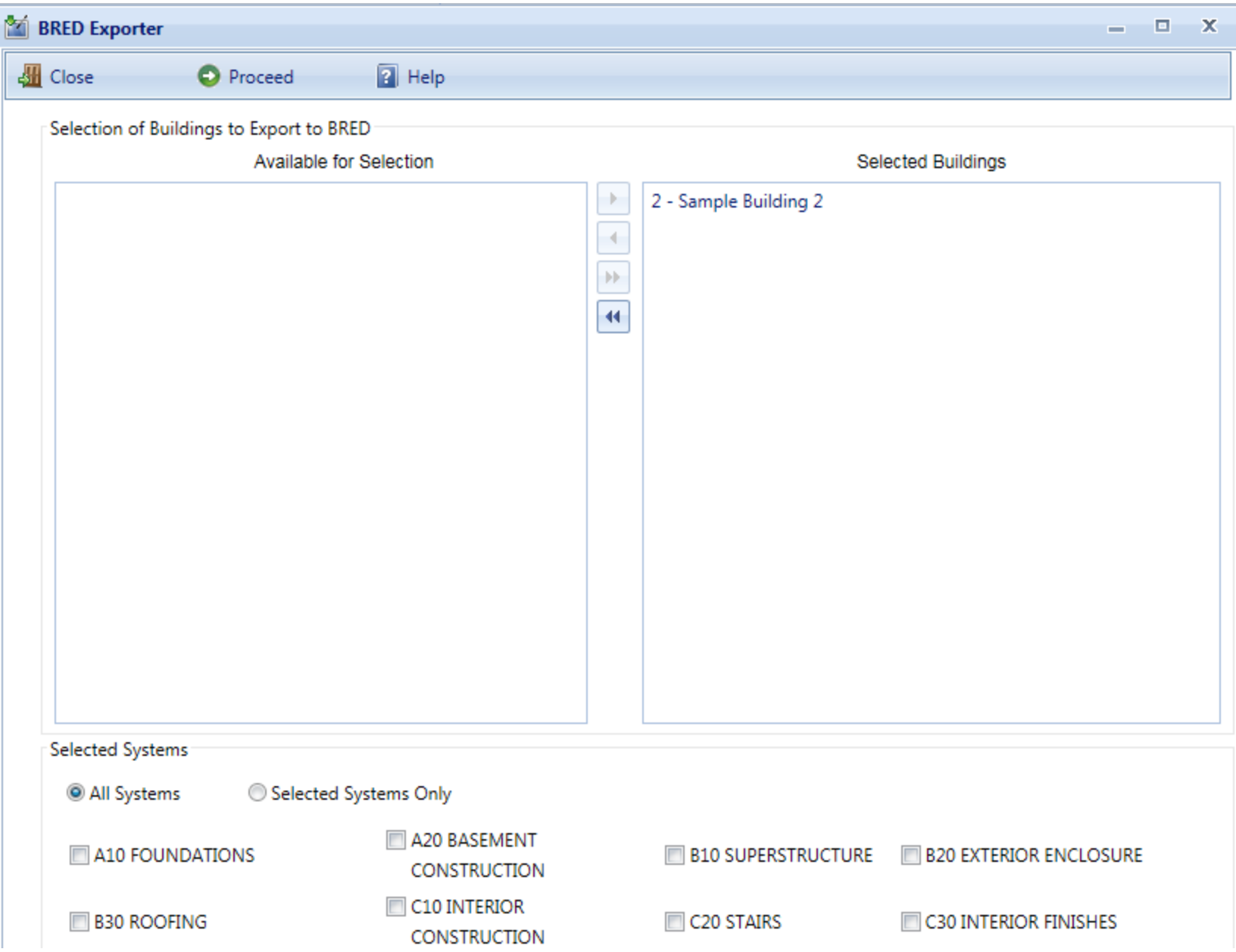
Export Database Information and Images to BuilderRED

- In the **BUILDER** navigation tree, right-click the lowest level node (Site, Complex, or Building) that contains the items you wish to export.
- Select the “Export to BRED” option:



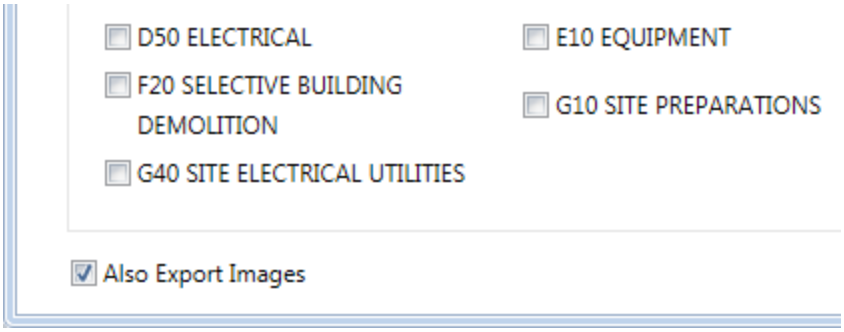
- In the "BRED Exporter" popup window, highlight the Building(s) you want to export, using the arrows to move Buildings in or out of the Selected Buildings list. Consult the following table to see ways you can select buildings.

All Buildings:	Activate the double arrow.
One Building:	• Select the Building. • Activate the single arrow.
Multiple Buildings, contiguous in the list:	• Select the first Building. • Press and hold **SHIFT**, then select the last Building. • Release **SHIFT**. • Activate the single arrow.
Multiple Buildings, not contiguous in the list:	• Select the first Building. • Press and hold **CTRL**, then select each subsequent Building desired. • Release **CTRL**. • Activate the single arrow.
To deselect a highlighted Building from the list:	a. Press and hold **CTRL**, then select the Building. b. Alternatively, you can wait until the Building has been moved to the right-hand column under "Selected Buildings", then select the Building, and activate the single arrow pointing to the left. This will move the Building back into the "Available for Selection" column.

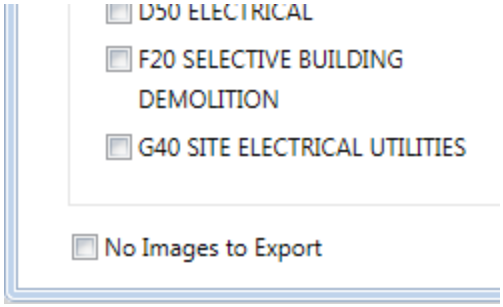


- Once the desired Buildings are in the Selected Buildings column, do one of the following in the lower section of the "BREDBUILDER Remote Entry Database (BuilderRED) Exporter" window:
  a. Select **All Systems** (radio button; this is the default); or
  b. Select the **Selected Systems Only** radio button, then mark the checkboxes for specific systems.

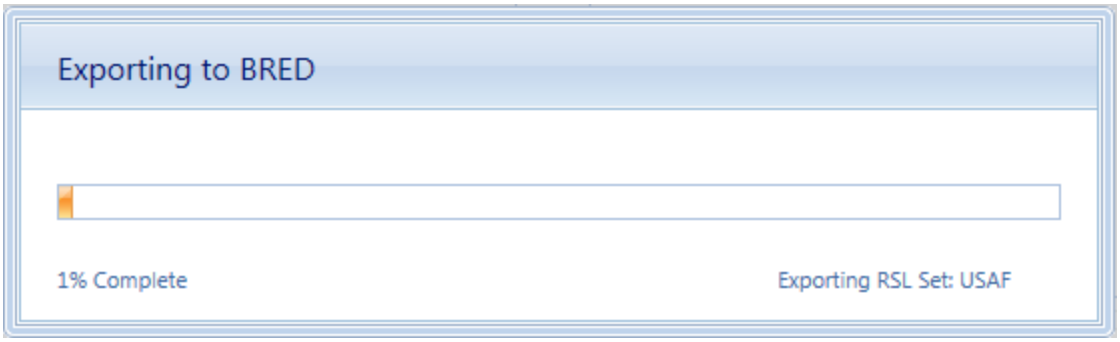
- (Optional) In order to download images with the BRED file, you must select “Also Export Images” at the bottom of BRED Exporter Window, as shown below:



Note: If instead of “Also Export Images” you see “No Images to Export” it means that the Building(s) you have selected to export do(es) not currently have any images:



- To start the export, activate the **Proceed** button near the top of the window. *A progress bar will display as the BREDBUILDER Remote Entry Database (BuilderRED) database file is downloaded*:

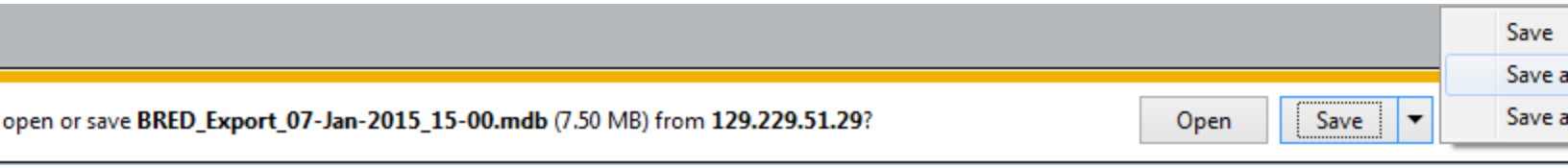


By activating the **Proceed** button, the following tasks are accomplished:

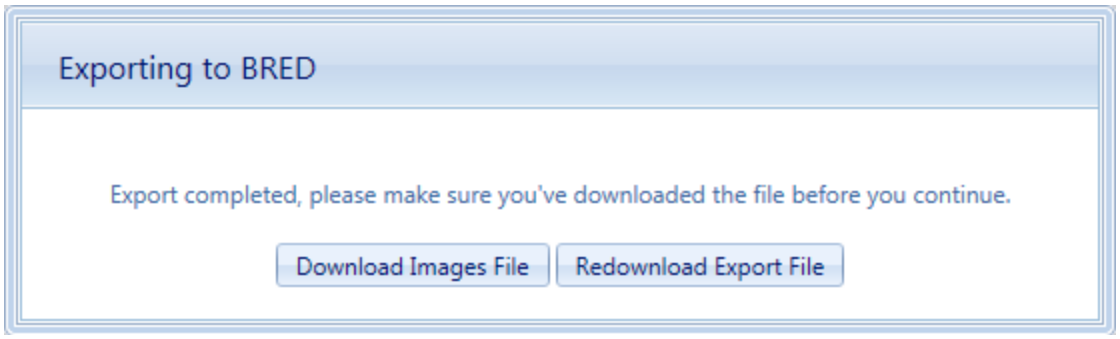
- A Microsoft Access database is created, which will be identified by the path and name you choose after the export has completed. The database will contain the inventory and condition assessment data for the selected Systems in the Buildings in the Selected Buildings list. This database is accessible to a computer with the BRED BUILDER Remote Entry Database (BuilderRED) software, where inventory and/or condition assessment data can be recorded. Once complete, this file can be imported into **BUILDER** to add the new data is added to the database.
- The Building inventory records of the selected Systems that were exported are locked so changes cannot be made to them in **BUILDER** while being edited with BREDBUILDER Remote Entry Database

(BuilderRED). The records are unlocked when the BRED BUILDER Remote Entry Database (BuilderRED) data is imported back into the database.

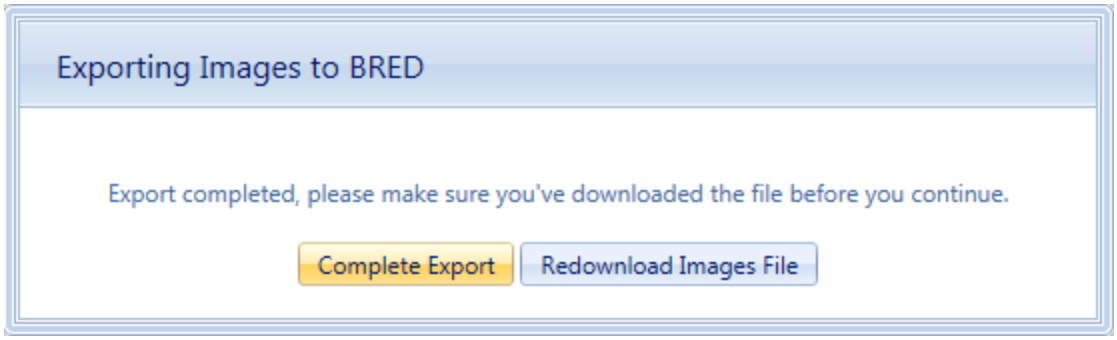
- After the database file has successfully downloaded, select the “Save As” option to designate a file location for it:



- If the BREDBUILDER Remote Entry Database (BuilderRED) file did not download correctly, select “Redownload Export File.” Otherwise, select “Download Images File” to start the second download (the download of the images file into BREDBUILDER Remote Entry Database (BuilderRED)):



- After the second download completes, activate “Save As” and designate the **same file location** as your BRED BUILDER Remote Entry Database (BuilderRED) database file.
- Lastly, select “Complete Export” to finish the export process:

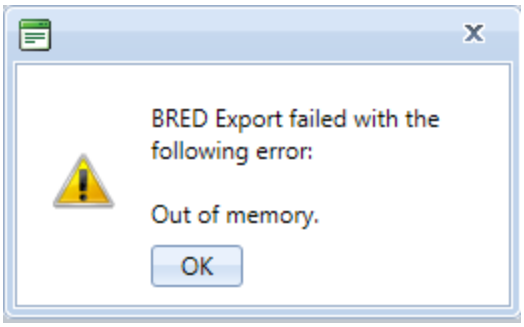


Time Limit on Editing Inspections

Once the export is complete, you can use BuilderRED to collect Inventory data or perform Inspections.

Note: It is a common standard to have a 30-day time limit from the date of an Inspection to edit the Inspection or the comments in it. This time limit applies both in BuilderRED and after the data has been imported back into BUILDER.

Known Issue with Image Export from Builder



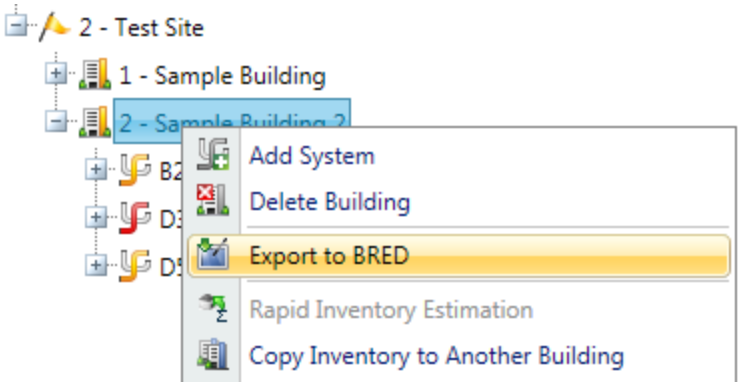
This issue applies to versions of BUILDER 3.3.9 and older.

If the BRED BUILDER Remote Entry Database (BuilderRED) Export error message shown above displays after you try to download the image file from BUILDER, that indicates that somewhere in the exported files there is an attachment (such as a PDF, an Excel file, etc.) that is not an image. The workaround is to export the Building(s) without images.

Export Database Information Alone to BuilderRED

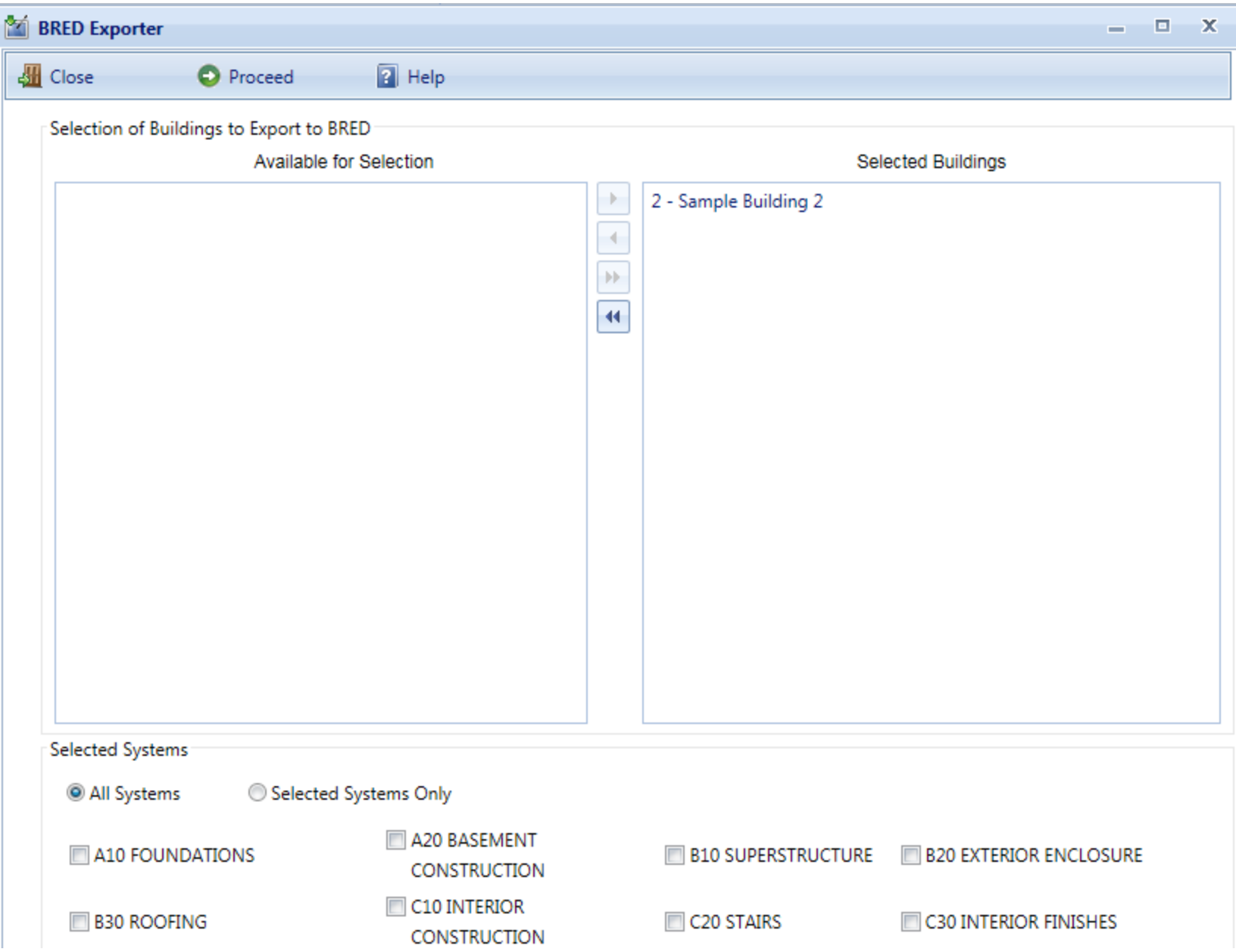
This section outlines the procedure to export data from **BUILDER** to BuilderRED without any of the associated image files.

- In the **BUILDER** navigation tree, right-click the lowest level node (Site, Complex, or Building) that contains the items you wish to export.
- Select the “Export to BRED BUILDER Remote Entry Database (BuilderRED)” option:



In the "BRED BUILDER Remote Entry Database (BuilderRED) Exporter" popup window, highlight the Building(s) you want to export, using the arrows to move Buildings in or out of the Selected Buildings list. Refer to the following table to see different ways you can select Buildings.

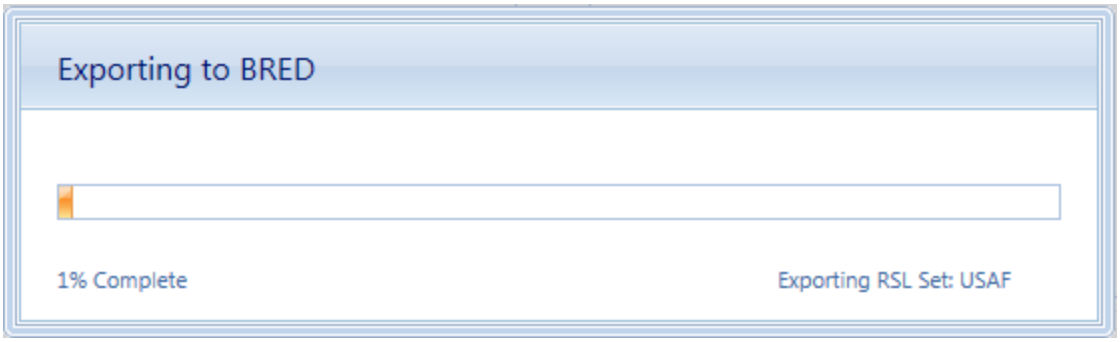
All Buildings:	Activate the double arrow.
One Building:	• Select the Building. • Activate the single arrow.
Multiple Buildings, contiguous in the list:	• Select the first Building. • Press and hold **SHIFT**, then select the last Building. • Release **SHIFT**. • Activate the single arrow.
Multiple Buildings, not contiguous in the list:	• Select the first Building. • Press and hold **CTRL**, then select each subsequent Building desired. • Release **CTRL**. • Activate the single arrow.
To deselect a highlighted Building from the list:	a. Press and hold **CTRL**, then select the Building. b. Alternatively, you can wait until the Building has been moved to the right-hand column under "Selected Buildings", then select the Building, and activate the single arrow pointing to the left. This will move the Building back into the "Available for Selection" column.



- Once the desired Buildings are in the Selected Buildings column, do one of the following in the lower section of the "BREDBUILDER Remote Entry Database (BuilderRED) Exporter" window:
  a. Select **All Systems** (radio button; this is the default); or
  b. Select the **Selected Systems Only** radio button, then mark the checkboxes for specific systems.

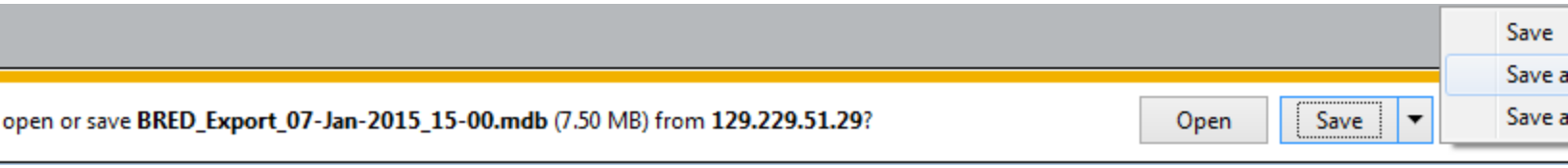
- In order to download the BRED BUILDER Remote Entry Database (BuilderRED) file without down-loading the associated images, make sure that the Also Export Images checkbox at the bottom of the BRED BUILDER Remote Entry Database (BuilderRED) Exporter Window is *not* checked.

- To start the export, activate the **Proceed** button near the top of the window. *A progress bar will display as the BRED BUILDER Remote Entry Database (BuilderRED) database file is downloaded*:

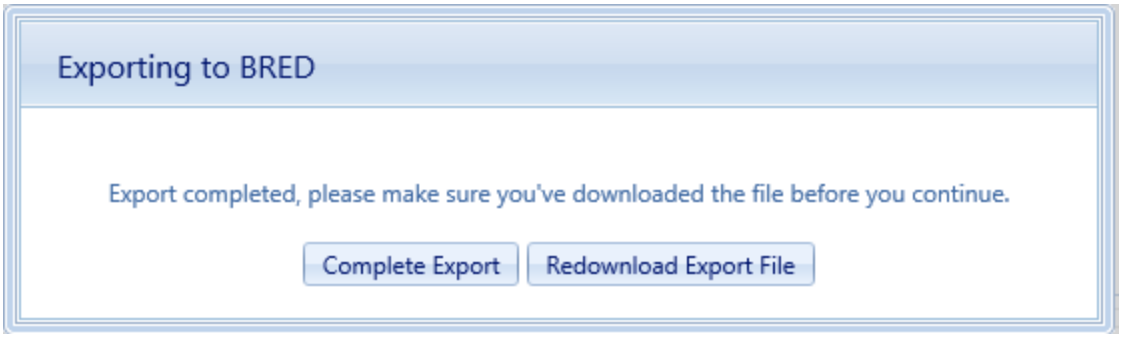


By activating the **Proceed** button, the following tasks are accomplished:

- A Microsoft Access database is created, which will be identified by the path and name you choose after the export has completed. The database will contain the inventory and condition assessment data for the selected Systems in the Buildings in the Selected Buildings list. This database is accessible to a computer with the BRED BUILDER Remote Entry Database (BuilderRED) software, where inventory and/or condition assessment data can be recorded. Once complete, this file can be imported into BUILDER to add the new data is added to the database.
- The Building inventory records of the selected Systems that were exported are locked so changes cannot be made to them in **BUILDER** while being edited with BRED BUILDER Remote Entry Database (BuilderRED). The records are unlocked when the BREDBUILDER Remote Entry Database (BuilderRED) data is imported back into the database.
- After the database file has successfully downloaded, select the “Save As” option to designate a file location for it:



- If the BRED BUILDER Remote Entry Database (BuilderRED)file did not download correctly, select “Redownload Export File.” Otherwise, select “Complete Export” to finish the export process:



Time Limit on Editing Inspections

Once the export is complete, you can use BuilderRED to collect Inventory data or perform Inspections.

Note: It is a common standard to have a 30-day time limit from the date of an Inspection to edit the Inspection or the comments in it. This time limit applies both in BuilderRED and after the data has been imported back into BUILDER.

Import Data from BuilderRED to BUILDER

Overview of the Import Process

In order to load data collected using BREDBUILDER Remote Entry Database (BuilderRED) into the BUILDER database, you will need to import the database from BREDBUILDER Remote Entry Database (BuilderRED) into BUILDER. It is important to note that the database file containing your new data must be loaded so that the BUILDER program has access to its path and can complete the importing process.

If you added new images during Inventory or Inspections, then importing your information back into BUILDER will be done in two steps: (1) importing the BREDBUILDER Remote Entry Database (BuilderRED) database into BUILDER, and (2) importing the image archive file.

These two steps may be followed by an optional third step: (3) performing a manual condition rollup. This step is optional because the system performs automated rollups nightly.

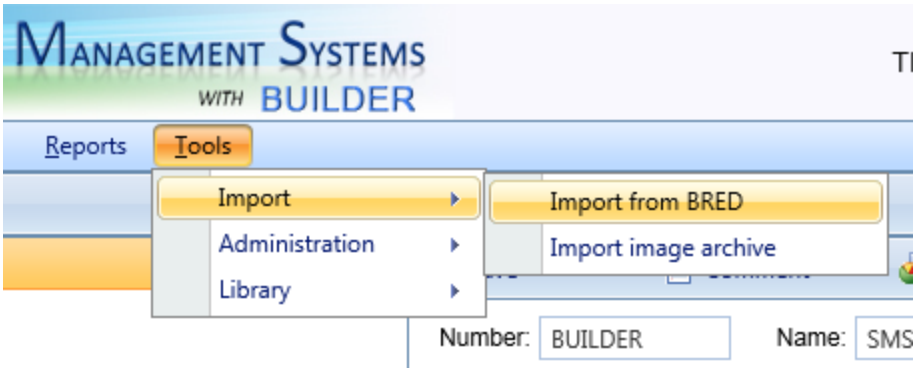
If you have no images to import, then you can go straight from importing the BREDBUILDER Remote Entry Database (BuilderRED) database information into BUILDER to performing a rollup.

How To Import Database Information

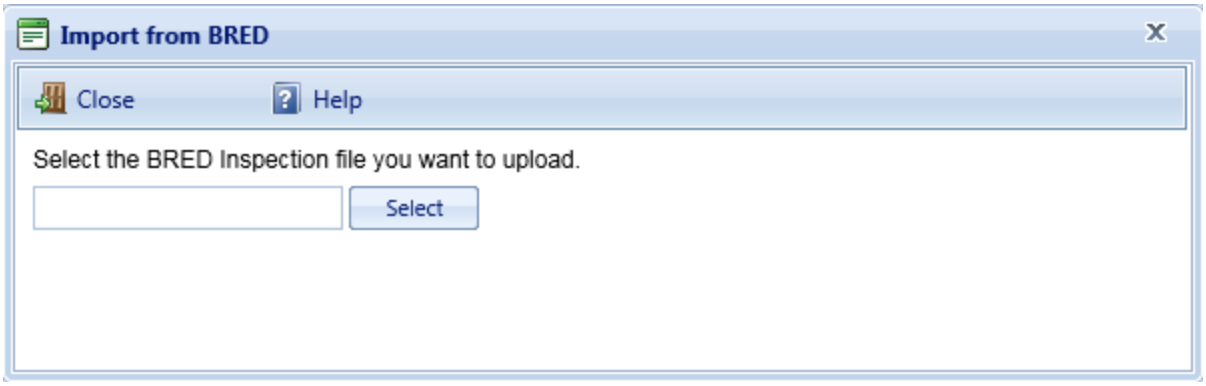
After you have finished adding, editing, and deleting Inventory and/or Inspections data, the updated database must be imported back into BUILDER, to assess the condition of the installation and to plan maintenance and repair.

To import database information into BUILDER from BuilderRED:

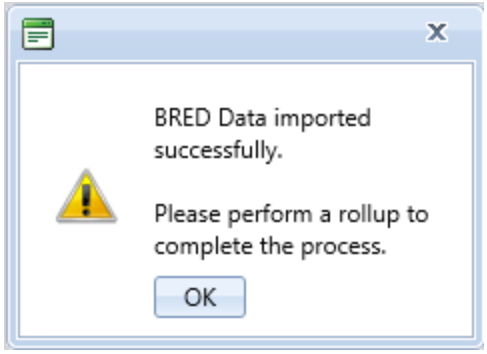
- Save all changes to the database in BuilderRED.
- Open BUILDER.
- Select Tools > Import > Import from BREDBUILDER Remote Entry Database (BuilderRED) starting at the main menu.



The "Import from BREDBUILDER Remote Entry Database (BuilderRED)" popup window will appear:



- Locate the database you wish to import, by either (a) entering the full path and file name in the text box or (b) activating the **Select** button, navigating to the database file, and selecting it.
- All changes to the database will be imported into BUILDER and you will see a popup window with the following message:



- If you don't have any images to be imported into BUILDER, activate **OK**. You are finished with the import, and can perform a rollup if you wish.
- **IMPORTANT: I**f you have images to import from BuilderRED, it is recommended that you NOT activate **OK** to perform a manual condition rollup at this point. Instead, close the popup box by activating the "x," then follow the instructions in the next section:

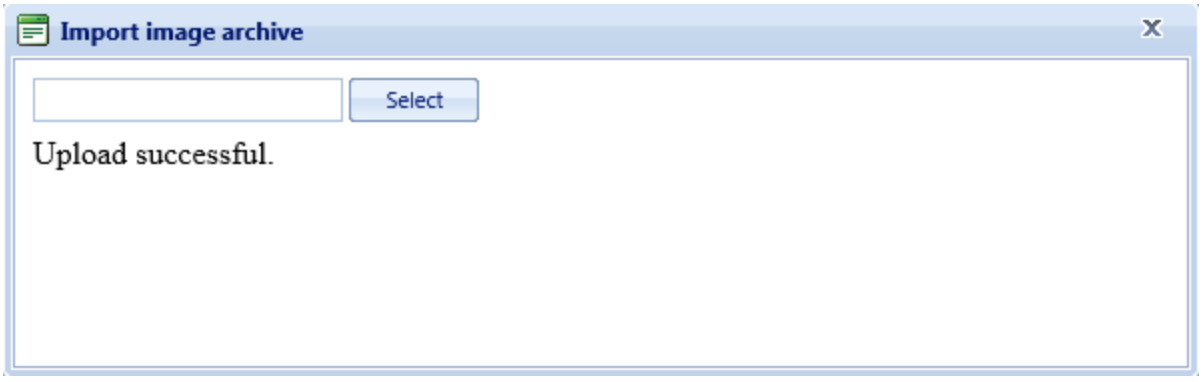
How To Import Images

The process of importing images makes use of an image archive file that has the extension .bredpackage. By default, the image archive file has the same name as the .mdb BREDBUILDER Remote Entry Database (BuilderRED) data file containing the imported data, except for the extension.

WARNING: It is very important that the name of the image archive file match the name of the .mdb data file. If you rename one of these files, be sure to rename the other one identically (except for the extension). Images will not be found by the BREDBUILDER Remote Entry Database (BuilderRED) (.mdb) file if the .bredpackage file name doesn't match.

To import images into BUILDER from BuilderRED:

- If you have new images that need to be imported from BREDBUILDER Remote Entry Database (BuilderRED), this procedure needs to be done *after* importing the database information (see section above).
- Select Tools > Import > Import image archive starting at the main menu. (The "Import image archive" popup window will appear.)
- Locate the image ("bredpackage") file corresponding to the database you just imported, by either (a) entering the full path and file name in the text box or (b) activating **Select**, navigating to the database file, and selecting it. The image archive will be in the same location as the database file, and similarly named except that the extension is .bredpackage instead of .mdb.
- When you see the message "Upload successful," close the "Import image archive" window. Follow with a manual condition rollup as warranted (see next section).



Should I Perform a Rollup after Import?

The items you import from BuilderRED are unlocked as soon as the import is complete, whether you do a manual condition rollup or not. However, the condition and Functionality Indexes will not yet have been updated.

If you only performed inventory with BuilderRED, you need to do a rollup only if

- one or more cost books or other reference books have changed, or
- you wish to see updated PRVs or RSLs immediately instead of waiting on BUILDER's automated rollup (performed overnight)

If you entered inspection data in BuilderRED, performing a rollup after the import is completed allows you to see the changes in the following indexes right away:

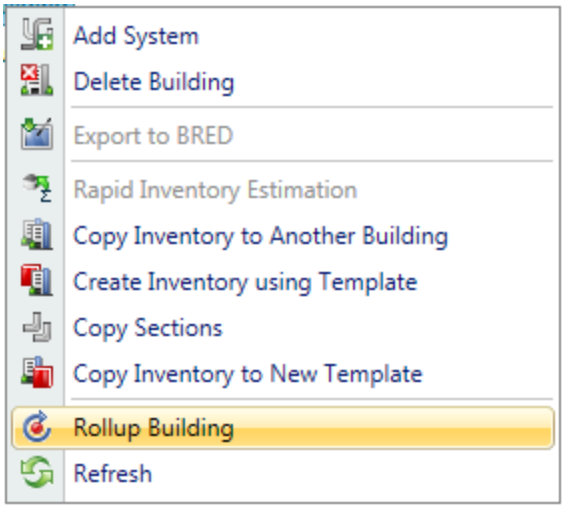
- condition indexes
- functionality indexes
- performance indexes

If you do not perform a rollup at this time, the SMSSustainment Management System will do the rollup automatically overnight, and the updated index figures will be available the next day.

How To Perform a Manual Rollup after Importing from BuilderRED

To perform a manual rollup, do one of the following:

a. Right-click the affected Building (or Complex, if multiple Buildings were exported from the same Complex). Then select "Rollup Building" or "Rollup Complex."



b. Alternatively, select the Building (or Complex, if multiple Buildings were exported from the same Complex) and activate the Rollup icon

on the toolbar.

You have the option to roll up the entire Site in similar fashion, but be aware that a Site rollup can take an extremely long time. It would typically be less time consuming to sequentially select the applicable Complexes and Buildings for manual rollup.

Knowledge-Based Inspection Scheduling

About Knowledge-Based Inspection Scheduling

Overview

The knowledge-based inspection (KBIKnowledge-Based Inspection) feature in **BUILDER** is designed to select from your entire inventory a subset of Component-Sections that should be considered for inclusion in the next round of condition assessments. Additionally, this feature is able to determine the type of condition assessments to perform. The selection algorithm is based on pieces of data (knowledge) associated with the Component-Sections that are compared with user-defined parameters.

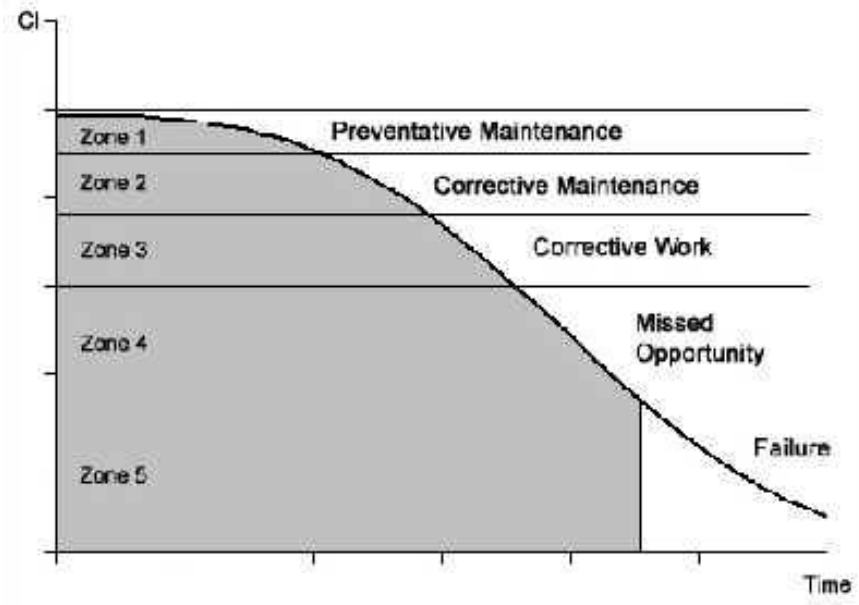
Note: The KBIKnowledge-Based Inspection feature is an optional tool. It can assist in selecting candidates for condition assessment if other structured programs for scheduling inspections are lacking.

For an explanation of the Knowledge-Based Inspection principles, please refer to the **Overview** chapter of ERDC/CERL SR-18-7, *Knowledge-Based Condition Assessment Reference Manual for Building Component-Section*s, available by download at https://support.sms.erdc.dren.mil/downloads/erdc-cerl-technical-publications.

Determining When to Perform a Condition Assessment

As stated above, the KBIKnowledge-Based Inspection feature needs to compare knowledge about the Component-Section with user-defined parameters to determine when a condition assessment is to be performed. These parameters are input when creating a condition standard and must be input for each of the five condition zones shown in the figure below. For an explanation of each condition zone, see Section 2.5, **Condition Zones**, in the **Overview** chapter of the manual referenced immediately below.

Resource: ERDC/CERL SR-18-7, *Knowledge-Based Condition Assessment Reference Manual for Building Component-Sections*, is available by download at https://support.sms.erdc.dren.mil/downloads/erdc-cerl-technical-publications.



The user-defined parameters for the KBIKnowledge-Based Inspection feature include:

- **CI[1]Condition Index Lower Bound.** The lower bound of the **CI**[2]Condition Index range of the condition zone. Providing the lower bound for each zone breaks the condition curve as shown above.
- **Maximum Inspection Interval.** The maximum amount of time, in years, between condition assessments in each condition zone.
- **Number of Inspections in Zone.** The maximum number of condition assessments that should be performed in each condition zone.
- **Degradation Factor.** The ratio of the maximum relative rate of deterioration to the expected rate of deterioration when a condition assessment is triggered. That is, if the deterioration rate were set to 2, any measured deterioration rate greater than twice the expected rate would trigger another inspection.

Based on the projected **CI**[3]Condition Index of the Component-Section, the KBIKnowledge-Based Inspection feature determines which range the Component-Section is in, and how many inspections to perform in that range. It then calculates the time between inspections to accomplish this. This interval is compared to the maximum inspection interval, and the lesser of the two becomes the allowable inspection interval.

When the time since the last inspection becomes greater than the allowable interval between condition assessments, the Component-Section is flagged for inclusion into the next round of assessments. In addition, if the rate of deterioration of the **CI**[4]Condition Index seen by the last condition assessment is greater than the

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[1]Condition Index

[2]Condition Index

[3]Condition Index

[4]Condition Index

allowable rate of deterioration determined by the deterioration factor discussed above, the Component-Section will also be flagged for inclusion into the next round of assessments.

Determining the Type of Condition Assessment to Perform

Once the KBIKnowledge-Based Inspection program selects the subset of recommended Component-Sections for inclusion into the next round of assessments, it must determine the assessment type that will be used for each condition assessment. Based on the **CI**[1]Condition Index range that the component is projected to be in, the general guidelines below apply.

Range	Procedure
1	Direct
2	Distress
3	Distress
4	Direct
5	Direct

In some instances, a more detailed level of condition assessment may be warranted regardless of the guidelines recommended above. If a more detailed assessment was performed previously, this same assessment type will be recommended again for zones 1 - 3. This means, for example, if the Component-Section is still in range 1 and the previous condition assessment type was a distress survey, the KBIKnowledge-Based Inspection program would recommend a distress survey be performed.

Using the KBI Feature in BUILDER

To begin using the KBIKnowledge-Based Inspection feature, see Add a Knowledge-Based Inspection Schedule.

Add a Knowledge-Based Inspection Schedule

To add a knowledge-based inspection schedule in BUILDER,

- Start with full-screen view (BUILDER window to the full size of your computer screen) for best results.
- Activate the Condition ribbon unless you are already in the condition tree.
- Navigate to a location in the tree that is at or below the Site level.
- Then do one of the following:

    a. Activate the Inspection Schedule icon in the inspection navigation toolbar, as shown in the image below.

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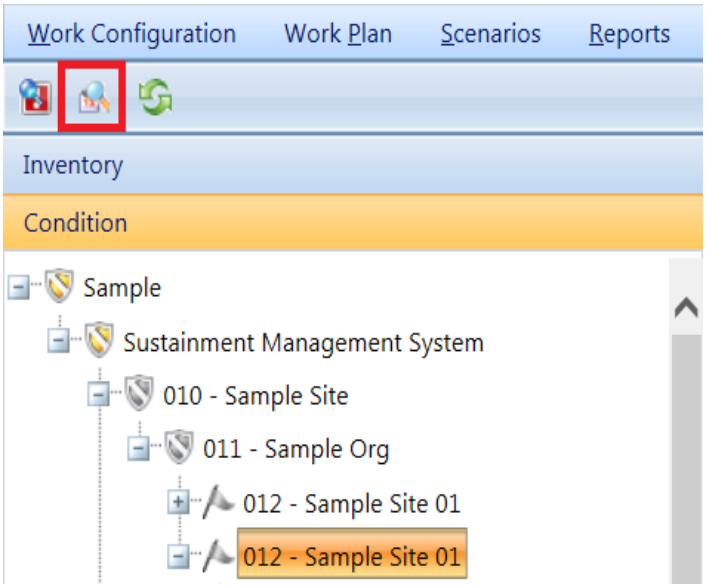
[1]Condition Index



b. Alternatively, right-click the location in the Condition navigation tree and select "Inspection Schedule."

The Knowledge-Based Inspection Scheduling window will appear.

Knowledge-Based Inspection Scheduling Toolbar

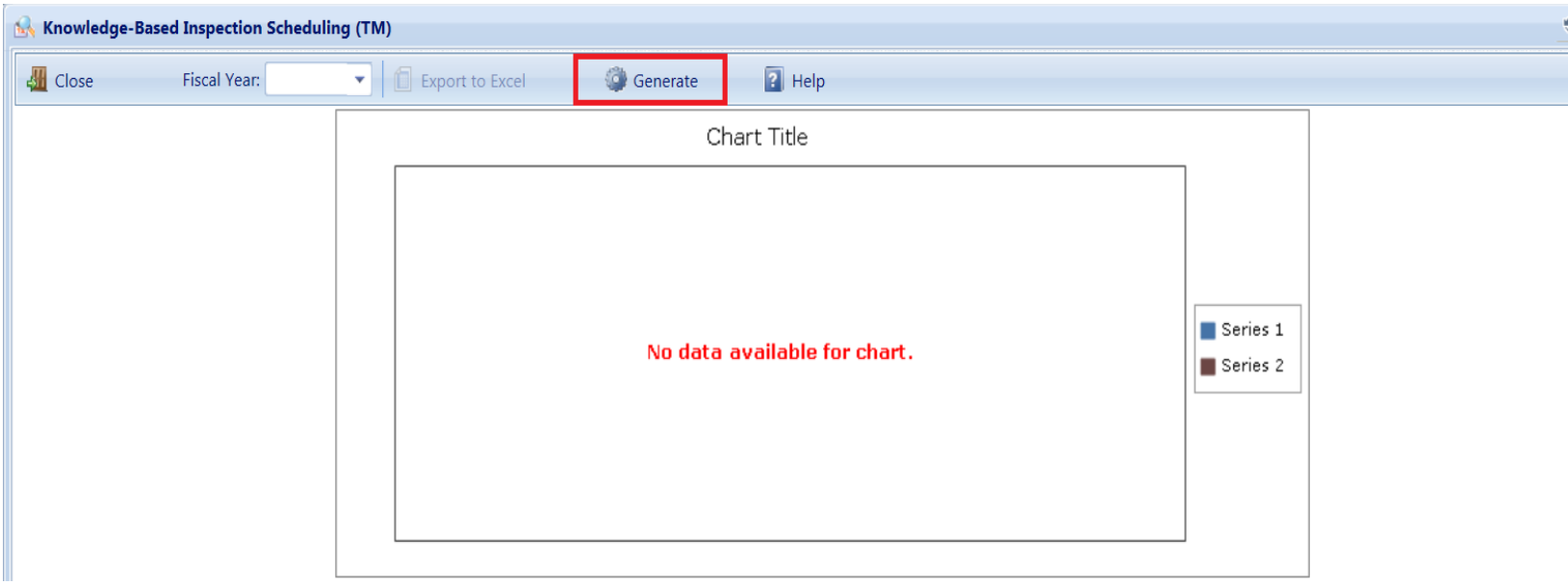
The following options are available at the Knowledge-Based Inspection Scheduling toolbar:

- Close. Closes the Knowledge-Based Inspection Scheduling window and returns to the Condition ribbon.
- Export to Excel. Exports the current inspection schedule to a Microsoft Excel spreadsheet.
- Generate. Generates a new inspection schedule.
- Create Work Items. Work items can be created from this location, but this generation takes a long time.
- Delete Selected. Deletes any row of the inspection table where the checkbox is marked.
- Help. Opens a help document in a new browser tab.

Creating an Inspection Schedule

To create a knowledge-based inspection schedule,

- Activate the Generate button in the toolbar.

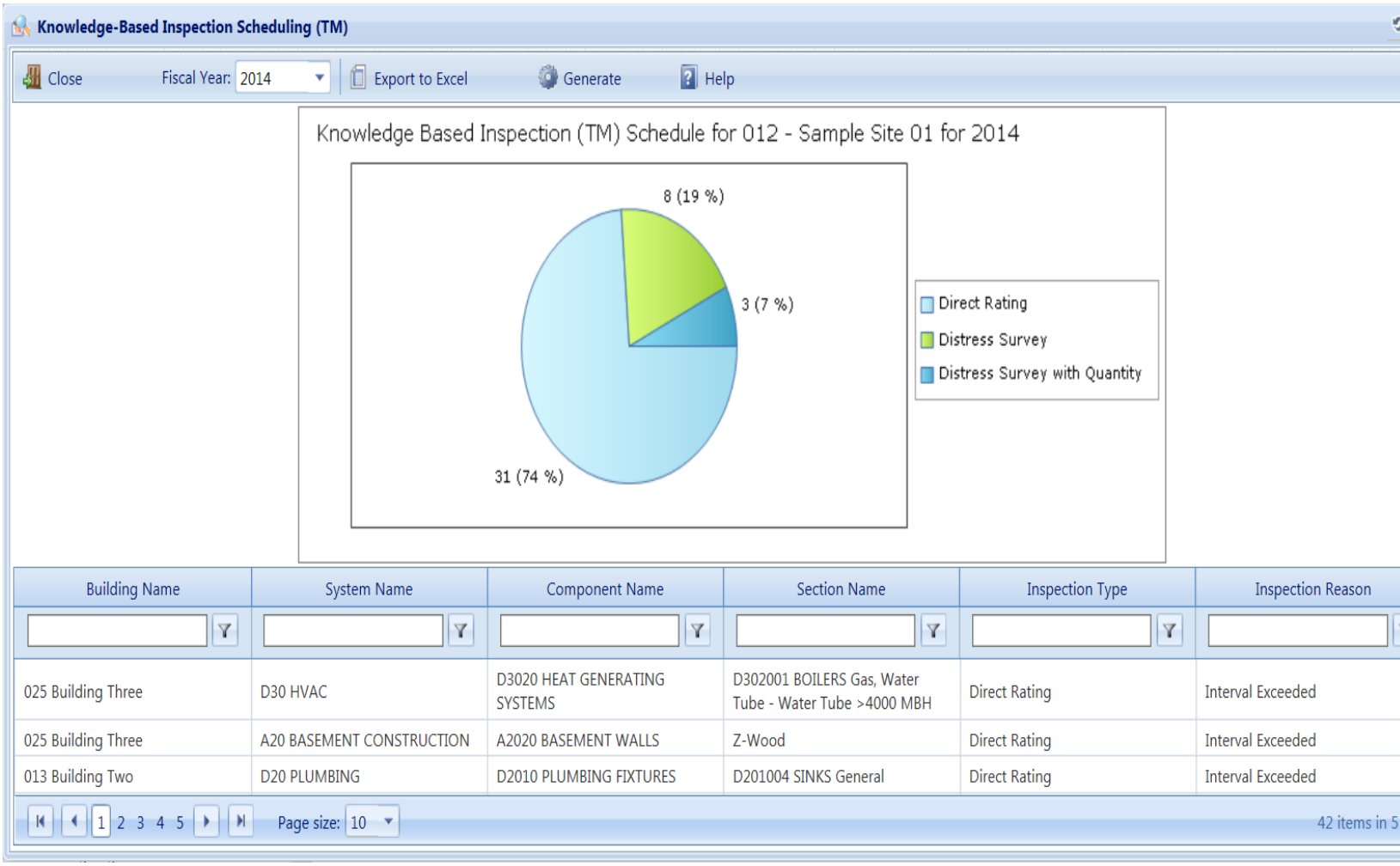


The "Scheduler" popup window will appear.

- In the Scheduler window, first use the dropdown to select how many years of inspection schedule to generate.
- Next, activate Proceed to delete your current inspection schedule and generate a new one with KBI Knowledge-Based Inspection. (Alternatively, activate Cancel to cancel and exit the Scheduler window.)

  WARNING: Generating a new inspection schedule will delete the current inspection schedule.

  Using the policy sequence defined in the Site data, the KBIComponent material category inspection schedule will be generated and shown in the window.



- To export the schedule to a Microsoft Excel spreadsheet, activate Export to Excel in the toolbar.

Rapid Inspection Method

Rapid Inspection Method (Direct Rating)

In an effort to speed the data input process, **BUILDER** offers a Rapid Inspection method feature for rapidly creating direct rating assessment records. This topic

- Outlines types of situations where the Rapid Inspection method can be used to advantage.
- Explains how to use the Rapid Inspection method.
- Lists the required information to be entered.

Example Situations

Some example situations where the Rapid Inspection feature might be used:

- You have just renovated a family housing complex, and multiple systems have been completely replaced in every house. You need to record these new conditions in your **BUILDER** database.
- You have just completed your **BUILDER** inventory, and although your resources for physical inspections are very limited, you have staff members who are intimately knowledgeable of conditions in most of your Buildings.
- You structured your **BUILDER** inventory so that every door, window, room wall/floor/ceiling, etc. is identified as a Component-Section (see the inventory for 1131 Administration Building in the Example database as an illustration of this). Now that you have to perform an assessment, you find that every door, window, room wall/floor/ceiling, etc. must have its own inspection record, but you want to do a quick walkthrough of the Building and record component ratings for everything.

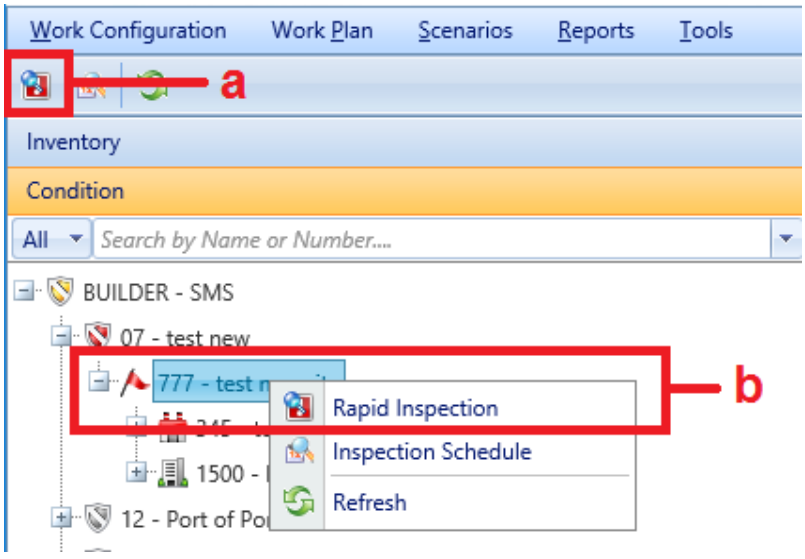
In all of these situations, you want to input condition ratings for Systems or Components for which you already know the rating. This is when Rapid Inspection can be very useful.

Note: After explaining how to implement a Rapid Inspection, this topic will outline an appropriate Rapid Inventory approach for each of the situations above, in the section Example Situations Revisited.

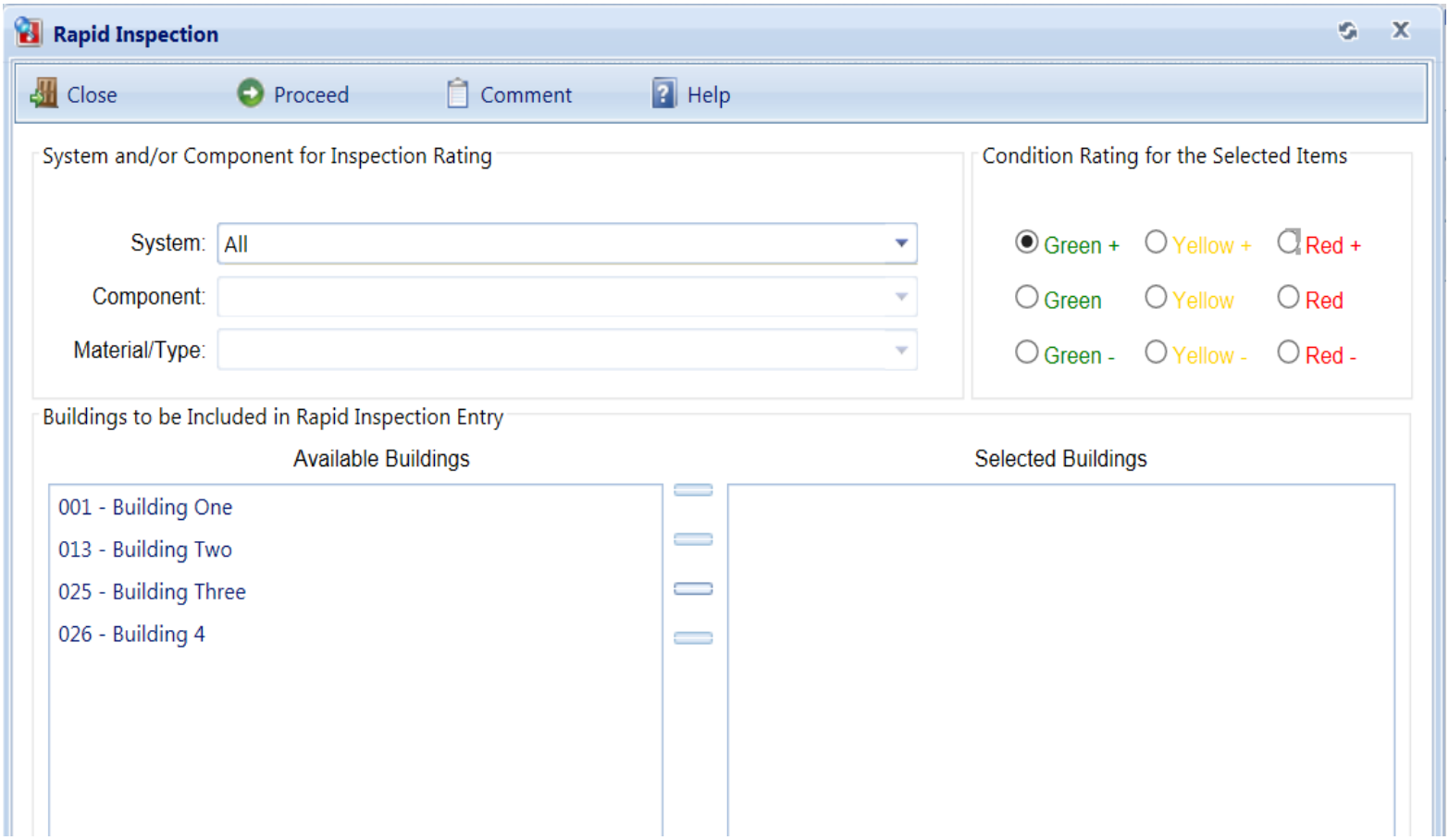
Initiate a Rapid Inspection

To launch the Rapid Inspection window:

- Highlight the smallest inventory item (Site, Complex, or Building) in the condition assessment tree that contains all of the Buildings that the rapid inspection will be used in.
- Either (a) activate the **Rapid Inspection** icon on the inspection toolbar menu, or (b) right-click the inventory item and select "Rapid Inspection."



The "Rapid Inspection" popup window will appear:



Enter Rapid Inspection Parameters

Required Data

The following data are required before you can proceed with the Rapid Inspection process:

- **System.** In the dropdown list, select the System for which inspections are to be created.
- **Component and/or Material/Type.** If you don't specify a Component, then every Component-Section belonging to the selected kind of System in a selected Building(s) will have an assessment created for it. However, if you specify a Component but not a Material/Type, then every Component-Section belonging only to that kind of component in a selected Building(s) will have an assessment created for it. Finally, if you specify a Material/Type, then every Component-Section of that material and type in the selected Building(s) will have an assessment created for it.
- **Condition Rating for the Selected Items** - Select a Condition Rating for all of the inspections to be created.
- **Buildings to be Included in Rapid Inspection Entry** - Select the Buildings for which condition assessments are to be created by using the arrow keys to build the list of **Selected Buildings** from the **Available Building** list.

Optional Data

If you want to enter a comment to be recorded with every inspection created, activate the **Comment** button in the toolbar.

Activate Rapid Inspection

When all data has been entered, activate the **Proceed** button to start the Rapid Inspection process. If you do not wish to perform the Rapid Inspection, activate the **Close** button.

Example Situations Revisited

For the examples discussed above, here is how this feature may have been used:

- You know that all of the roofs were rebuilt in the family housing complex. Select all of the houses, select Roofing as the System, and select G+ as the rating. Activating **Proceed** will create an inspection record with condition rating G+ for every Component-Section in the roofing system of every selected house.
- Have each staff member sit down sequentially with **BUILDER** to do the following process: Select sets of Buildings within his/her expertise that all have the same known condition for certain Systems or Components. Use the Rapid Inspection feature to create inspections as appropriate. If two staff members happen to input records for the same Component-Section, the later rating will overwrite the earlier rating if the ratings are done on the same day. (**BUILDER** allows only one inspection record per day per Component-Section.)
- You have scanned the interior doors in your walk-through of the Building, and they are all in good condition (rating G). Your inventory has 50 interior door Component-Sections, each door identified with the room it is in. Use Rapid Inspection by selecting the Building, selecting Interior Construction/Interior Doors, and selecting condition rating G. Activating **Proceed** will automatically create 50 inspection records, one for each interior door Component-Section.

Functionality Assessment

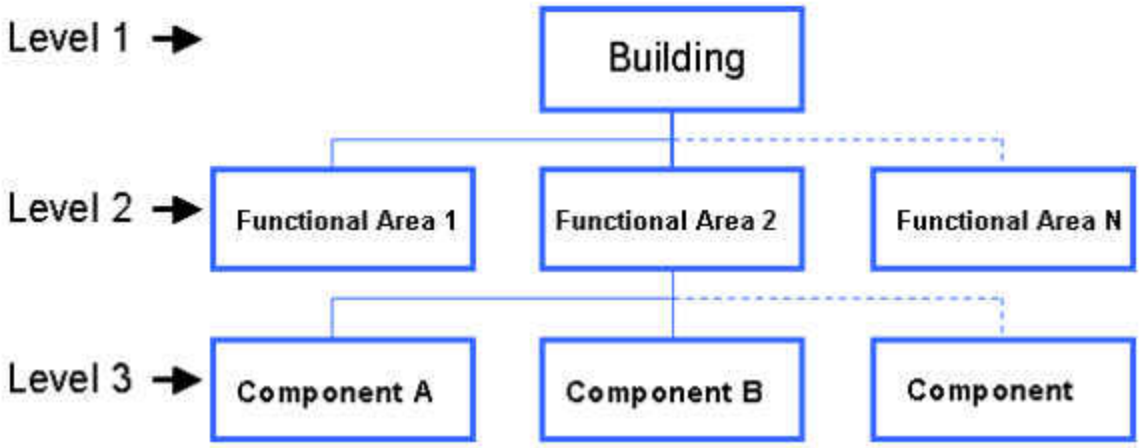
Functionality Assessment Overview

BUILDER has the ability to perform functional assessments on Buildings to measure their "functionality" state. The functionality state relates to the Building's suitability to function as intended and required for mission. The functionality state is distinct from, and determined independently from, the physical condition state that is evaluated using condition assessment.

Although the functionality assessment is *not* a detailed engineering assessment, it does satisfy the requirements necessary for routine Building facility management activities, including long range budgeting and modernization planning. It also helps to quickly identify problem areas that need more detailed assessments. There may be times when detailed engineering assessments may be required to diagnose specific problems.

Functionality Assessment Tiers

A functional assessment is structured according to a three-tiered, top-down approach that narrows the focus and is able to provide, at each lower level, greater assessment detail to the problem issues identified in the level above it. This approach saves effort, reduces cost, and focuses attention where needed. It also allows the process of identifying and developing modernization requirements to efficiently flow from a broad strategic planning phase to a detailed execution phase. The assessment approach encompasses the three levels shown below.



In BUILDER 3.6 and up, functionality assessments can be performed at the first and second tiers (Building and Functional Area levels). Later versions will include a third tier (Component-Section level) for functionality assessments.

First Tier Assessment: Building Level

The first tier of the functionality assessment is a fast, scoping Building-level assessment. Using a limited set of questions (listed in First Tier Functionality Issues and Sub-Issues) that address general functionality issues

throughout the Building, the first tier provides a quick and accurate way to

- Rule out from further assessment issues that are not a problem,
- Identify issues that will require further assessment at the next tier level, and
- Compute the Building Functionality Index (BFIBuilding Functionality Index - computed from the results of a functionality assessment.).

This level of assessment should be performed when an overall indication of the functionality of the Building is desired and when areas that will require further assessment need to be identified.

Second Tier Assessment: Functional Area Level

The second tier of the functionality assessment is a methodical Building Functional Area assessment. This level of assessment produces more accurate results than the first tier, but it is also more time consuming and expensive to perform because it is performed multiple times due to multiple Functional Areas. In the second tier, a complete list of functionality questions (see Second Tier Functionality Issues and Sub-Issues) is used to

- Identify the specific functionality deficiencies in each Functional Area,
- Compute the Functional Area Functionality Index, and
- Refine the BFIBuilding Functionality Index - computed from the results of a functionality assessment..

This level of assessment should be used when the functionality deficiencies within Functional Areas need to be identified and when the results of the first tier need to be refined.

Functionality Assessment Sets

At any assessment tier level, when you create a new assessment, the **BUILDER** Functionality module will ask which type of Assessment Set to create. Each Assessment Set created represents a snapshot of the facility's functionality state of a certain type at a point in time.

The following assessment sets are built in to **BUILDER** Version 3.6:

- **Functionality**. This is the baseline assessment set in BUILDER.
- **Cultural Resources**.
- HPSBHigh Performance and Sustainable Building Facility. This assessment set, High Performance and Sustainable Building, examines the area of energy efficiency.

These assessment sets can be created and assessed at either the Building or Functional Area tier (first or second tier).

About the Functionality Index

Functionality Index Computation

Functionality assessments directly support the computation of a functionality index **(FI**[1]Functionality Index) for a Building as a whole, and for the Functional Areas within the Building. These indices are known as the Building Functionality Index (BFIBuilding Functionality Index - computed from the results of a functionality assessment.) and the Functional Area Functionality Index (FAFIFunctional Area Functionality Index), respectively, and they were developed for assessing Building functionality. Both the BFIBuilding Functionality Index - computed from the results of a functionality assessment. and FAFIFunctional Area Functionality Index are general obsolescence metrics that address issues related to user requirements, technical obsolescence, and regulatory or code compliance at the Building level and Functional Area level, respectively.

All **FI**[2]Functionality Index metrics are based on a scale of 0-100, which matches the scale used in BUILDER for condition indices (BCIBuilding Condition Index - a condition rating for the overall Building. For each Building, the BCI is computed by taking the average of its Systems' CIs (SCIs), weighted by replacement cost., SCISystem Condition Index - a condition rating for a Building System. For each System, the SCI is computed by taking the average of its Components' CIs, weighted by replacement cost., BCCIBuilding Component Condition Index - a condition rating for the target Building Component. For each Component, the BCCI is computed by taking the average of its Sections' CIs, weighted by replacement cost, and CSCIComponent-Section Condition Index - a condition rating for the target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, then subtracting that deduct value from the maximum possible rating of 100. The deduct value computation differs for each condition assessment method.). **BUILDER** contains the model algorithms that compute the FIs automatically once the functionality assessment data are entered. The algorithms use the data entered regarding the functionality issues present in the Building, the severity of the issues, and the density of each issue to calculate the BFIBuilding Functionality Index - computed from the results of a functionality assessment.. This process is illustrated by the figure below.

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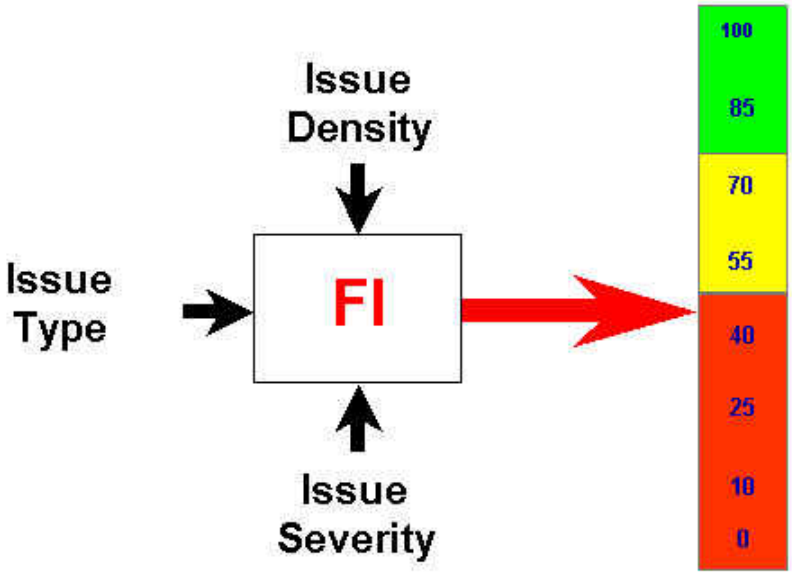
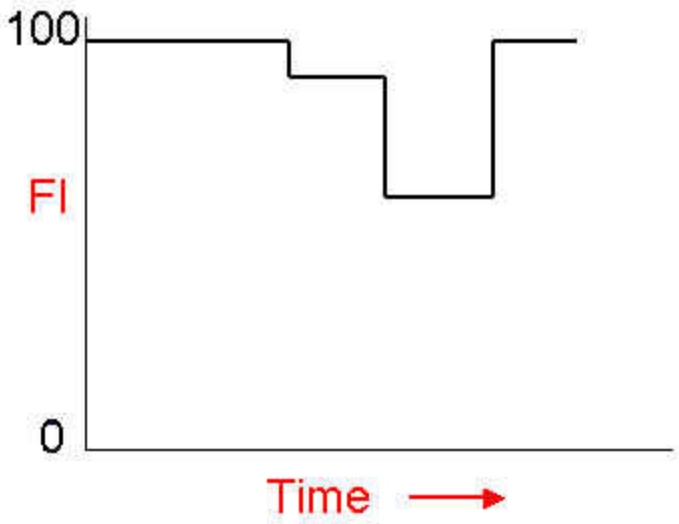
[1]Functionality Index.

[2]Functionality Index.



It is important to note that the **FI**[1]Functionality Index metrics are step functions over time, unlike the smooth, continuous functions seen in BUILDER's condition indices. This is because functionality, unlike condition, is not an ongoing process. The functionality of a Building or of a Functional Area depends on user needs, technical obsolescence, and compliance with code or regulations. These factors do not change gradually, but rather at discrete points in time. These discrete changes are reflected in the “steps” in the **FI**[2]Functionality Index over time. The figure below shows an example **FI**[3]Functionality Index over time.



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[1]Functionality Index.

[2]Functionality Index.

[3]Functionality Index.

Functionality / Condition / Performance Index

The functionality index is one of two indexes used to calculate another index called the *performance index* (the other contributing index is the condition index). The performance index is what determines the color (green, amber, or red) shown for an inventory asset.

In a nutshell, **BUILDER** calculates the performance index by first collecting the condition index value and the functionality index value applicable to the target inventory asset. Next, the lower index value is multiplied by 60 percent and the higher index value is multiplied by 40 percent. Finally, the two numbers are added together to determine the performance index value for that inventory asset.

Note: Until a functionality assessment is performed on a Building, the functionality index for that Building is 100 percent by default.

Perform a First Tier Functionality Assessment

This topic covers how to perform a first tier functionality assessment using BUILDER. Functional assessments can also be performed using BuilderRED.

A first tier functionality assessment is associated with a Building as a whole. Default functionality assessments provided with non-customized instances of BUILDER are the Functionality assessment set, the Cultural Resources assessment set, and the HPSBHigh Performance and Sustainable Building assessment set.

Prerequisites

The following are required before performing a first tier functionality assessment:

- Create the Building. This needs to be done in Inventory mode in BUILDER or BuilderRED. If you have not created the Building in Inventory mode with proper data down to the Component-Section level, you will *not* be able to enter functionality assessment data for it.
- Be familiar with the concepts in the Functionality Assessment Overview and in First Tier Functionality Issues and Sub-Issues.

Note: With the addition of the Current Status property in BUILDER , it is possible to have functionality assessment records for non-current Buildings. Performing assessments on non-current Buildings is done in the same manner as performing them on current Buildings.

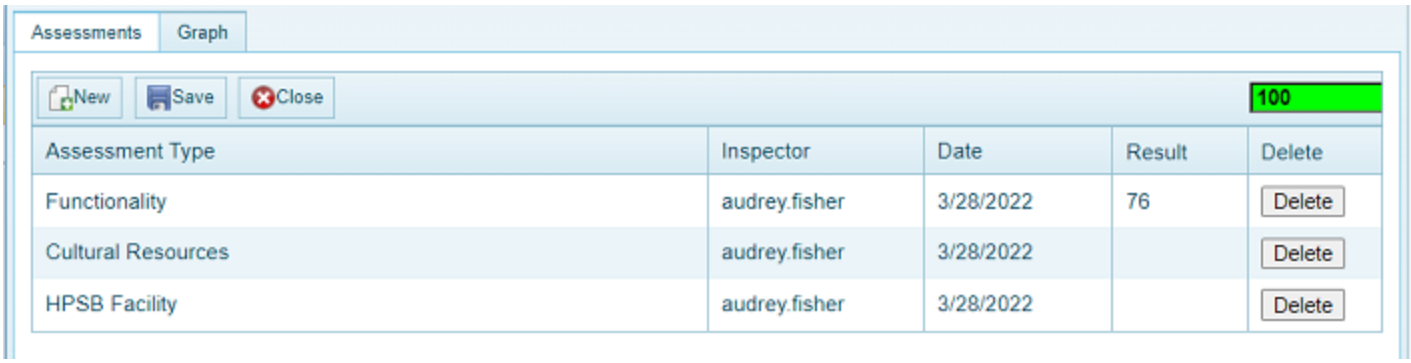
The following sections tell you how to create a first tier functionality assessment in **BUILDER**. and how to complete an assessment.

First Tier (Building) Functionality Assessment in BUILDER

Create or Open

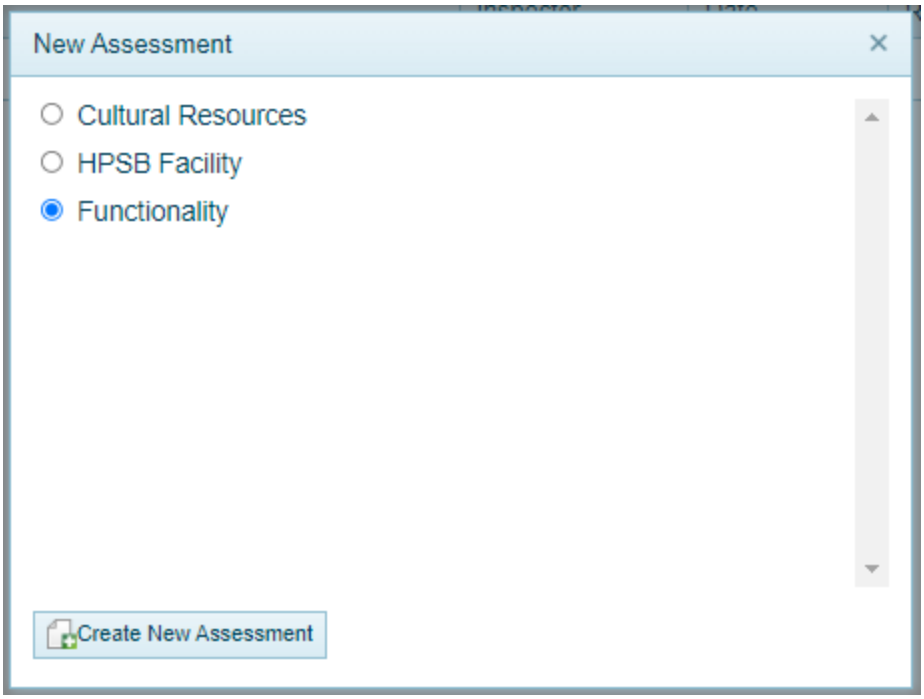
When you are ready to add or open a functionality assessment data for a Building,

- Activate the **Functionality** ribbon in the Navigation pane (it may be semi-hidden at the bottom of your screen).
- Navigate to and select the desired Building/Facility.
- Verify that you are at the **Assessments** tab in the content area of the screen. *Any existing assessments will show in a table in the content area.*



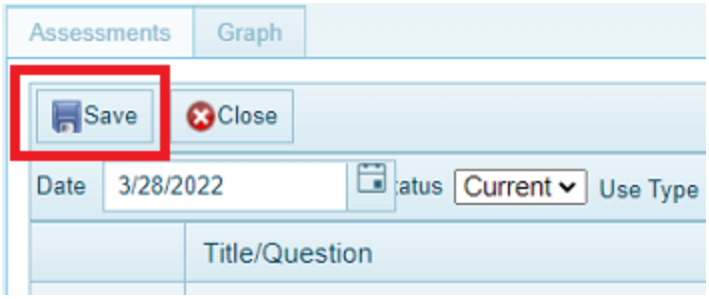
- To open an existing assessment, activate the assessment's row in the table. You can now skip to Fill In the Assessment.
- To start a new assessment, activate the

button at the upper left of the table. *The "New Assessment" popup will appear*.
- Select the desired assessment type by activating the radio button next to it.



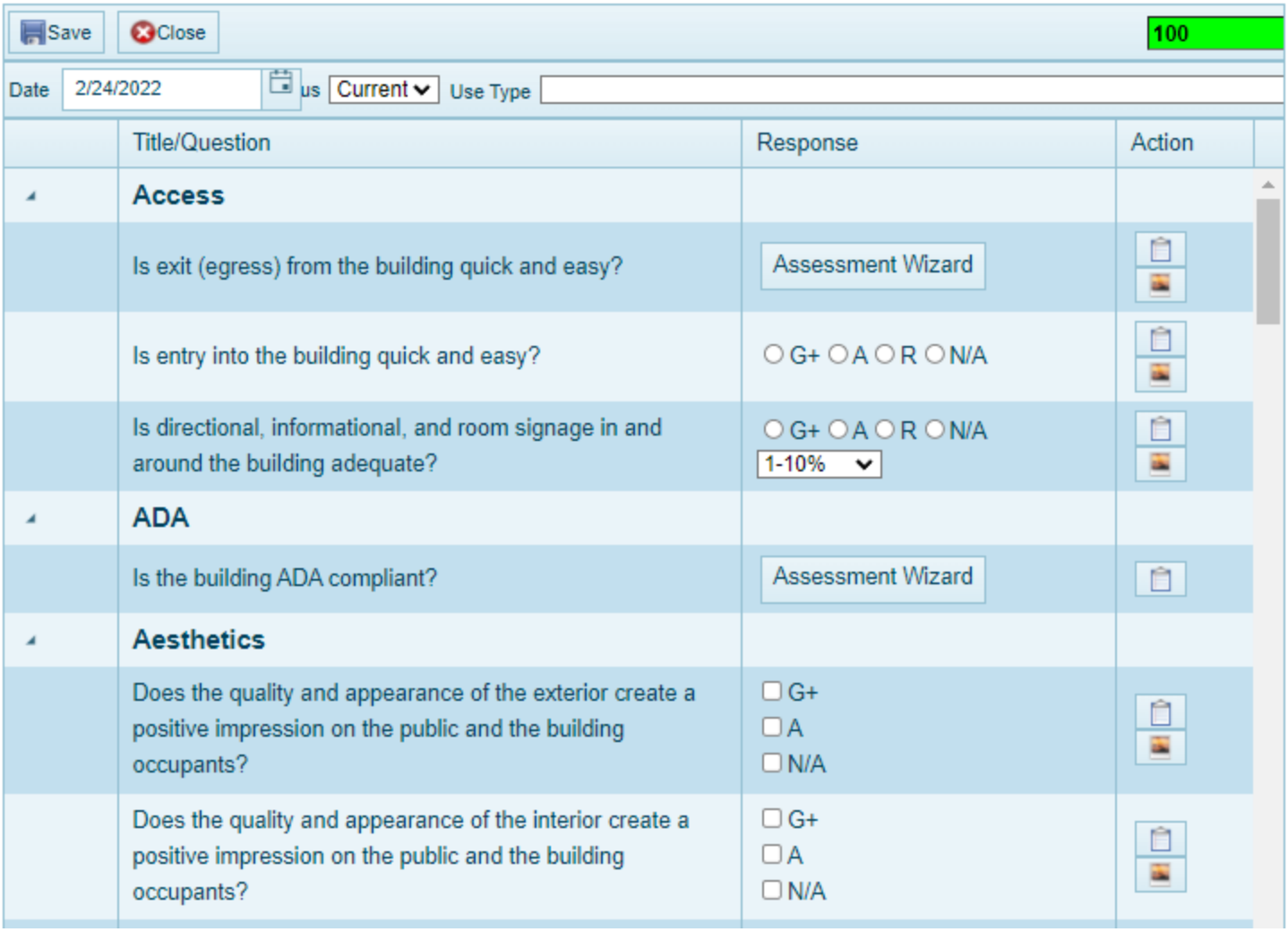
- Activate the

button at the bottom of the popup. *You will be brought to a new instance of the selected assessment type.*
- For now, activate **Save**, located at the upper left of the content pane, so that the assessment will be saved in the table of assessments even if it is not yet complete.



After performing the steps above, you should be inside the selected assessment.

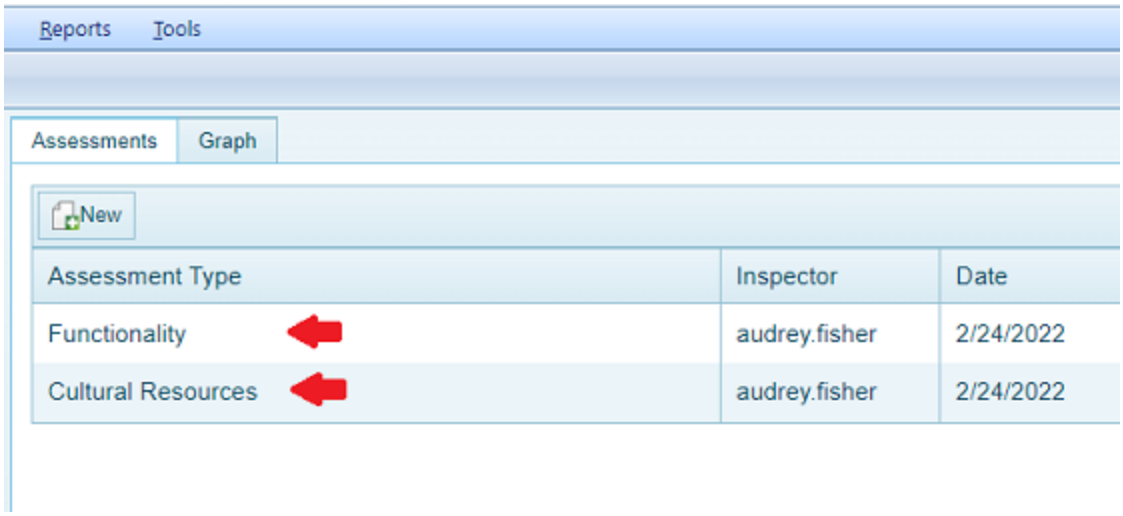
The screenshot below shows a Functionality type functionality assessment, where Wizards for some sub-issues are mixed in with other assessment questions:



Note: If you want to see more detail about assessment metadata, see Functionality Assessment Data Overview below.

Fill In the Assessment

If an assessment is not already open, you can open one by selecting it from the table of functionality assessments shown at the Assessments tab:



To complete the assessment, use the radio buttons or checkboxes to answer each question.

Saving your work periodically as you work through the issues and sub-issues is a good idea.

Rating Sub-Issues with Wizards

For some sub-issues in the Functionality assessment, a wizard is provided to help you perform the rating for that sub-issue. To launch a wizard, activate the **Assessment Wizard** button included in the sub-issue row and follow the instructions in the wizard.

Adding or Editing Comments

By activating the **Comment** icon, you can create or edit comments for most of the sub-issue questions in the functionality assessment. A checkmark on the **Comment** icon indicates the presence of a comment.

Adding Images to the Assessment

Wherever you see the **Images** icon, you can attach an image that supports understanding of the sub-issue and/or its assessment. A checkmark on this icon indicates that one or more images are already associated with the assessment.

Note: The image you attach must be in one of the following formats: .png, .bmp, or .jpg/.jpeg

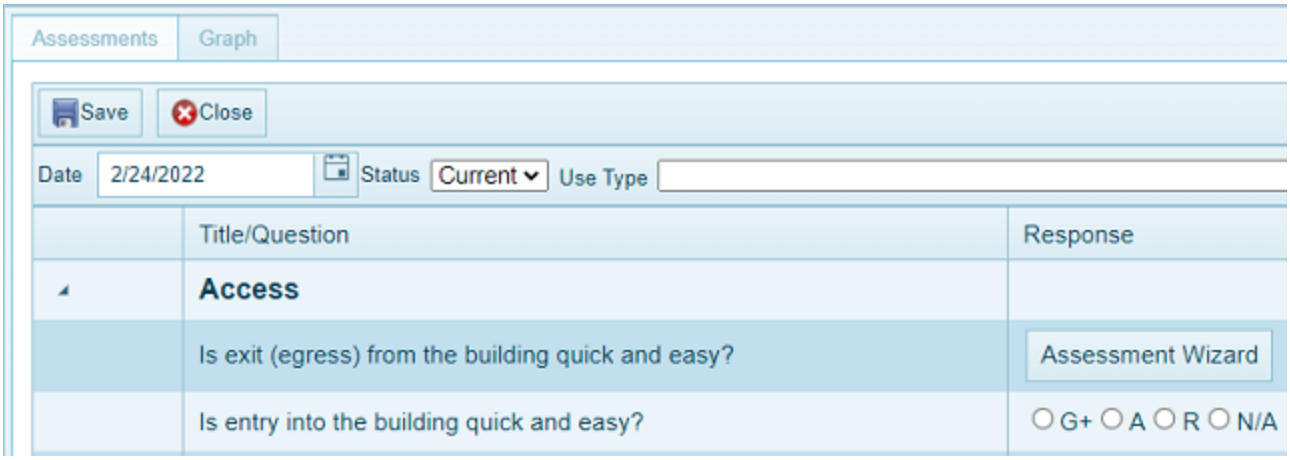
To attach an image,

- Activate the **Images** icon.
- In the "Photo" popup, activate the **Choose File** button.
- Browse to the location(s) where you have images you want to attach to the assessment.
- Select the desired image. *BUILDER will insert the image and close the file browser window.*
- Repeat steps 2 to 4 as desired.

- When finished adding image attachments, activate the **Save** button. Alternatively, activate the "X" in the upper right corner of the popup if you don't want to add the selected image attachments.

Save Assessment

When you are finished filling in the functionality assessment, activate **Save** at the upper left of the content area, then **Close**.



Functionality Assessment Data Overview

When a Building is selected in Functionality mode but no assessment is opened, the following will be shown in a table at the **Assessments** tab, for each available assessment:

- **Assessment Type (Read-Only)**. This will show the type of assessment(s) that have been performed on the Building: Functionality, Cultural Resources, and/or HPSBHigh Performance and Sustainable Building Facility.
- InspectorPerson who performs inspections to be input into BUILDER or ROOFER. As a permissions Role, Inspectors can input and edit inventory information in Inventory mode, and can input and edit inspection information from the Condition Assessment screen. (Read-Only). This will show the name of the InspectorPerson who performs inspections to be input into BUILDER or ROOFER. As a permissions Role, Inspectors can input and edit inventory information in Inventory mode, and can input and edit inspection information from the Condition Assessment screen. who has created previous assessments.
- **Date (Read-Only)**. This is the date of the assessment.
- **Result (Read-Only)**. This is the functionality index of the assessment. Before assessment questions are answered, this will be 100 .
- **Delete**. The **Delete** button gives the user the option to delete past assessments.

  Note: Deleting a functionality assessment is not allowed in BuilderRED.

To inspect further data, choose which functionality assessment you wish to see data for, and activate its row in the table. All functionality assessments that have been previously recorded (and not deleted) will be accessible from this table.

Once you open a functionality assessment, the following data will be displayed at the top of the assessment:

- **Date**.
- **Status (Current or Future)**.
- **Use Type**.

First Tier Functionality Issues and Sub-Issues

Functionality Assessment Set

As stated in the Functionality Assessment Overview, the first tier of the functionality assessment presents a limited set of questions that address general functionality issues throughout the Building. These questions are divided into functionality issues (*italicized headings*), which are further divided into sub-issues. The sub-issues are rated when performing a first tier functionality assessment.

The first tier of assessment addresses a total of 13 functionality issues (numbered from 1 to 13 below), each with a varying number of sub-issues. Each issue and its corresponding sub-issues are listed below.

Activate any sub-issue to see its definition.

- *Access*
  - Entry
  - Signage
  - Egress

- *American with Disabilities Act (ADA) Compliance*
  - Non-Grandfathered
  - Grandfathered

- *Aesthetics*
  - Exterior Aesthetics
  - Interior Aesthetics

- *Anti-Terrorism/Force Protection (ATFPAntiterrorism Force Protection)*
  - Requirements and Recommendations

- *Building Services*
  - Internal Power Supply
  - Uninterruptible Power Supply (UPS)
  - Water Supply
  - Hot Water Supply
  - Specialty Water Supply
  - Plumbing Fixtures
  - Stand-Alone Wastewater Removal
  - Industrial Wastewater Removal
  - Information Technology (IT) System
  - Fuel Distribution System
  - Compressed Air System
  - Oxygen (or other gas) System
  - Security System
  - Telephone System
  - Electrical Distribution
  - Electrical Grounding
  - Electrical Outlets

- *Building Size and Configuration*
  - Occupant Interaction
  - Overcrowding
  - Configuration

- *Comfort*
  - Heating
  - Cooling
  - Dehumidifying
  - Humidifying
  - Ventilation
  - HVAC Controls
  - Disruptive Noise
  - Lighting
  - Lighting Controls

- *Efficiency and Obsolescence*
  - Equipment
  - HVAC Zones
  - Lighting Fixtures

    - Lighting Controls
    - Water Conservation Mechanisms
    - Windows and Doors
    - Insulation

- *Environmental and Health*
    - Lightning Protection
    - Asbestos
    - Indoor Air Quality (IAQ)
    - Lead Paint
    - Lead in Water
    - Polychlorinated Biphenyls (PCBs)
    - Radon
    - Fire and Smoke Warning/Detection System
    - Flammable and Combustible Material Storage
    - Fire Suppression Equipment

- *Location*
    - Floodplain
    - Airfield Safety Clearance
    - Explosive Arc Distance
    - Excessive Noise
    - Mission Support

- *Maintainability*
    - Design and Placement of Equipment

- *Missing or Improper Components*
    - Needed and/or Desired Components
    - Incorrect Component Types

- *Structural Adequacy*
    - Seismic Conditions
    - Loading Conditions

Cultural Resources Assessment Set

This assessment set is separate from the basic Functionality assessment set. It helps determine if significant historic or cultural resources are present.

The functionality issue is *Cultural Resources*; its sub-issues are listed below.

Activate any sub-issue to see its definition.

- Programmatic Agreement/MOA/MOU
- National Register Eligibility
- Contributing Resource
- Near a Historic Property
- Archeological Site
- NAGPRA Sacred Site

HPSB Facility Assessment Set

The High Performance and Sustainable Building (HPSBHigh Performance and Sustainable Building) Facility assessment set is available at the Building level only. The functionality issue is HPSB*High Performance and Sustainable Building Facility*; its sub-issues are listed below.

- Integrated Assessment, Operation, and Management Principles
- Energy Performance
- Water Conservation
- Indoor Environmental Quality

Add a Functional Area to a Building

In **BUILDER**, you can separate a Building into Functional Areas. *This must be done before you Perform a Second Tier Functionality Assessment* . This Help topic covers how to add a Functional Area using BUILDER. Functional Areas can also be added in the field using BuilderRED.

Note: In **BUILDER**, Functional Areas are visible only in the Functionality navigation tree.

Prerequisite: None

Microsoft Silverlight is **no longer required** for BUILDER's Functionality features.

Functional Area Types

There are 26 different Functional Area types you can include in your Buildings:

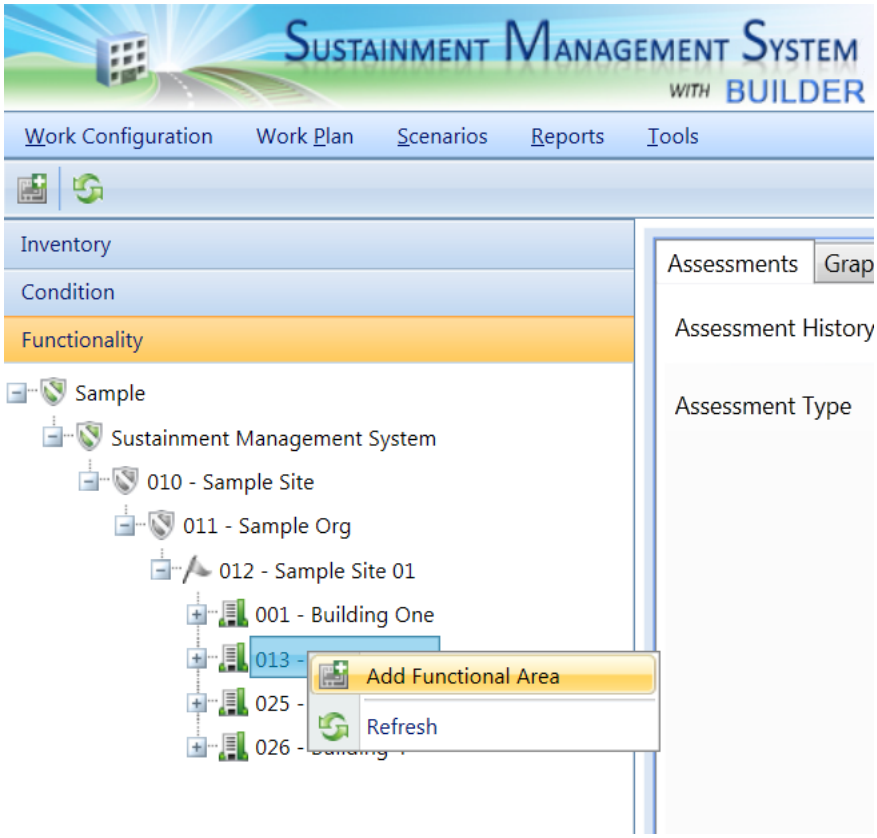
- Administration Area
- Assembly Area
- Circulation
- Display Area
- Education Area
- Equipment Area
- Exterior Envelope
- Food Preparation Area
- High Hazard Area
- Laboratory Area
- Living Area

- Loading Dock/Bay
- Maintenance/Production Area
- Medical Treatment Area
- Operations Area
- Outdoor Circulation
- Recreation Area
- Research Area
- Restroom Area
- Security Area
- Site
- Storage Area
- Technical Equipment Area
- Training Area
- Transaction Area
- Vehicle Area

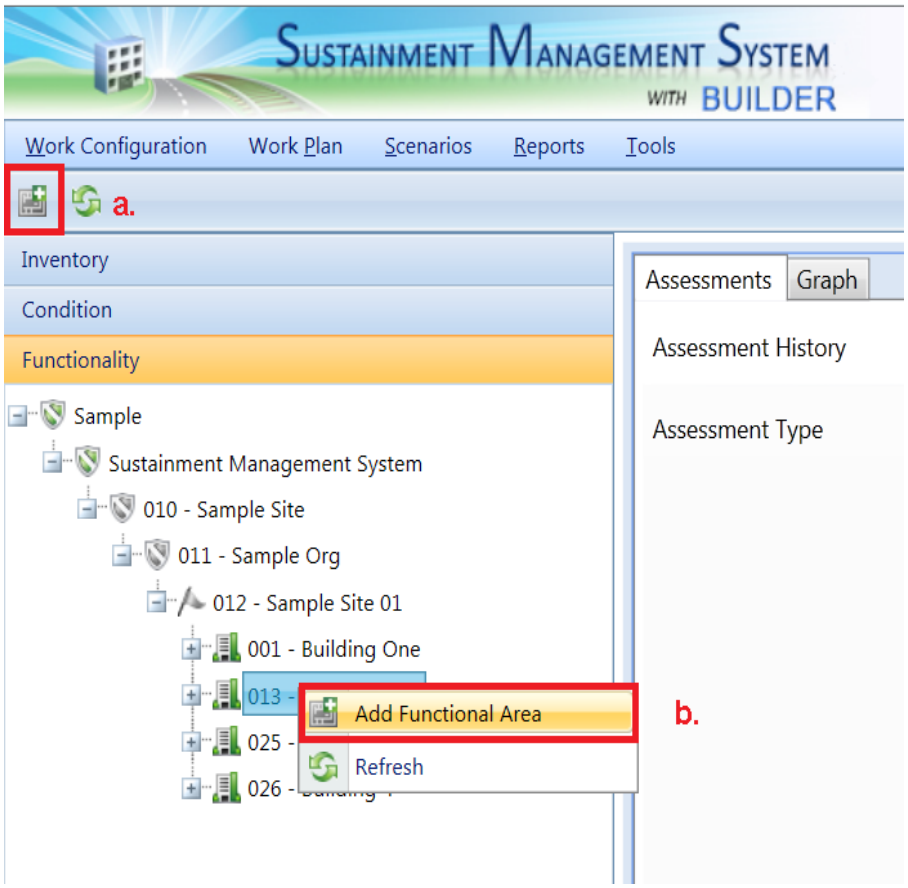
Add a Functional Area Using BUILDER

To add a Functional Area to a Building in the BUILDER software,

- Select the **Functionality** ribbon in the lower left corner of the BUILDER application. Once you do so, this ribbon will move above the navigation tree.
- In the functionality tree, navigate to the desired Building and select it.



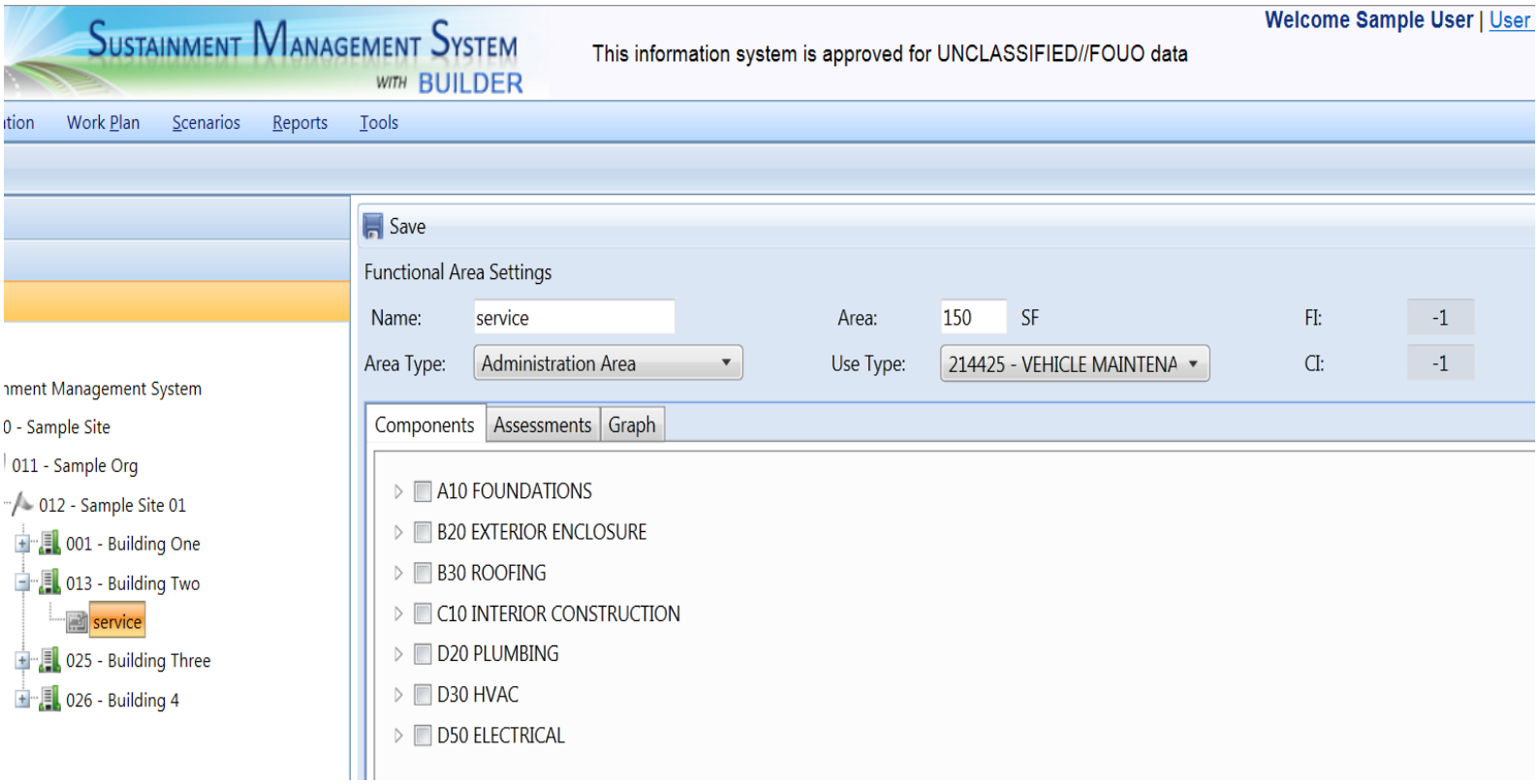
- After selecting your Building, you can either
  a. Activate the **Add Functional Area** icon in the main toolbar above the tree (see first red box in screenshot below); or
  b. Right-click the Building and select "Add Functional Area."



- In the New Functional Area popup window, enter the following data for the Functional Area:
  - **Name** (*Optional*) . The name or a brief description of the Functional Area.
  - **Area Type (Functional Use)** (*Required*). Select the functional use from the dropdown list that most closely matches the Functional Area. BUILDER allows you to choose from 26 different Functional Area types. This field is helpful when a Functional Area is being assessed against many functional uses to determine its optimal functional use.
  - **Use Type** (*Required*). Select the use type from the dropdown list that most closely matches the Functional Area. If you are a Department of Defense activity, BUILDER should display familiar category codes for your service. This field is helpful when a Functional Area is being assessed against many use types to determine its optimal use type.
  - **Size (Area)**. Size in the selected units of measurement (SF or SM)
- After completing the entries, create the Functional Area by activating **Add** on the popup's toolbar. The Functional Area will be created in the Building, and the content pane will now focus on the newly created Functional Area, as depicted in the image below in the section Enter Functional Area Data.

  Note: If you do not wish to create the Functional Area, activate Cancel on the toolbar.

Enter Functional Area Data



From this screen, all of the data described in Add a Functional Area Using BUILDER *above* can be edited, and the following functionality is available:

- **FI**[1]Functionality Index (Read-Only) - Displays the current FAFIFunctional Area Functionality Index of the selected Functional Area. The current FAFIFunctional Area Functionality Index is computed using the results of the active functionality assessment for the Functional Area.
- **CI**[2]Condition Index (Read-Only) - Displays the current **CI**[3]Condition Index of the Functional Area. In BUILDER, the current **CI**[4]Condition Index is computed using an average of the section CIs in the Functional Area, weighted by replacement cost. In BuilderRED, the **CI**[5]Condition Index is the condition index that was exported from BUILDER; this metric will be updated only after importing inventory back into BUILDER and performing rollup.

---

[1]Functionality Index.
[2]Condition Index
[3]Condition Index
[4]Condition Index
[5]Condition Index

- **Components Tab** - At this tab, you can add Systems, Components, and/or Component-Sections from the Building's inventory to the Functional Area. See Add Inventory to a Functional Area for a complete description.
- **Assessments Tab** - This tab will allow you to Perform a Second Tier Functionality Assessment in the Functional Area after sufficient inventory has been added to the Functional Area.
- **Graph Tab** - This tab displays the **CI**[1]Condition Index, **FI**[2]Functionality Index, and **PI**[3]Performance Index. See also: BPI. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. trends of the Functional Area from the date of construction to the current date.

When you are finished entering the data for the Functional Area, activate **Save** at the top left of the content pane.

Next Step....

After you have added a functional area, you can add inventory to it.

Add Inventory to a Functional Area

Adding BUILDER inventory to a Functional Area allows users to see how various portions of their facility are performing, both in the functionality index as well as the condition index. The Functionality interface allows you to add specific Component-Sections, specific Components, or even entire Systems to a Functional Area.

Prerequisite

Before inventory can be added to a Functional Area, the relevant part of the inventory tree must be filled in down to the Component-Section level.

Add Inventory to a Functional Area Using BUILDER

To add inventory items into a Functional Area,

- Select the Functional Area.
- Make sure you are at the **Components** tab. What should I see?A list of Systems associated with the Functional Area's Use Type will appear in the right window pane.

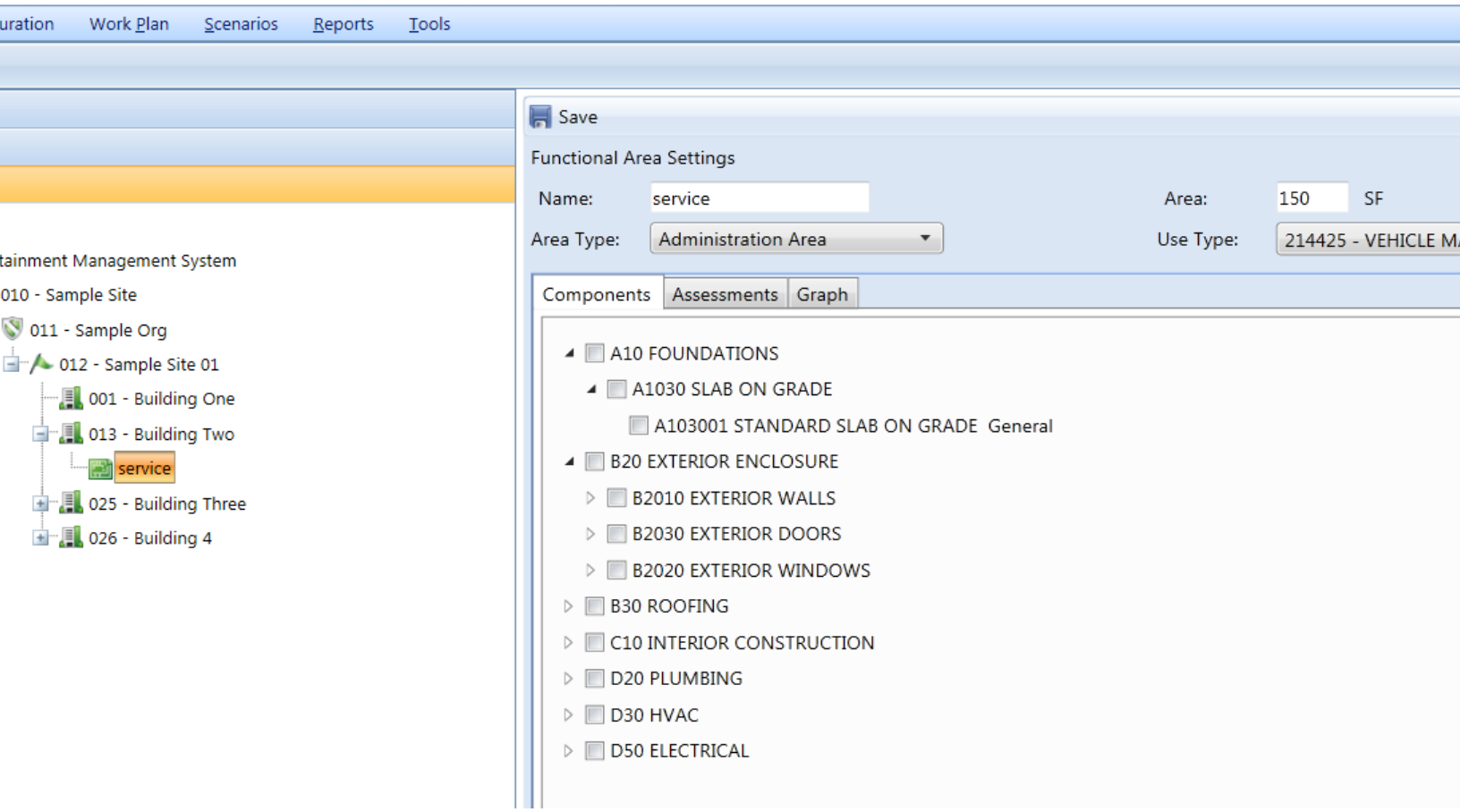
---

[1]Condition Index

[2]Functionality Index.

[3]Performance Index. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. If no functional assessment has been performed, the FI is assigned a value of 100.

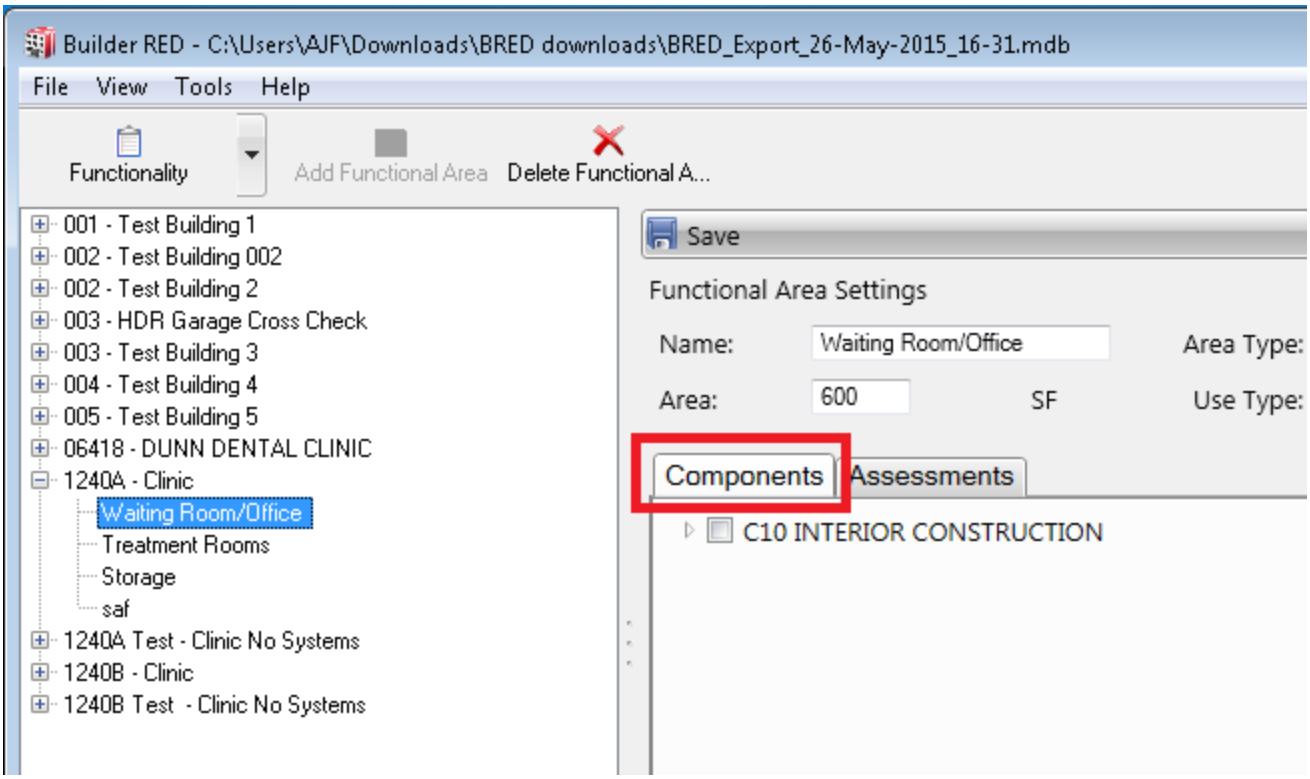
- To add one or more System(s), mark the checkbox(es) next to each desired System(s). **If this is all you need, skip to the last step.**
- To add one or more Component(s) not in a selected System, expand the list of Systems as needed to navigate to and select the desired Component(s). How?(1) Activate the arrow left of a System's check-box to reveal its Components.
  (2) Mark the checkbox(es) next to the desired Component(s).
  (3) Repeat until all desired Components are selected.
- To add one or more Component-Section(s) not in a selected Component, expand the list as needed to navigate to and select the desired Component-Section(s). How?(1) As needed, activate the arrow left of a System's checkbox to reveal its Components.
  (2) Activate the arrow left of a Component's checkbox to reveal its Component Sections.
  (3) Mark the checkbox(es) next to the desired Component Section(s).
  (4) Repeat until all desired Component Sections are selected.
- When your selections are complete, activate **Save**.



Add Inventory to a Functional Area Using BuilderRED

To add Inventory items into a Functional Area,

- Enter **Functionality** mode, using either (a) the **View** option on the BuilderRED toolbar or (b) the Inventory/Inspections/Functionality toggle in the leftmost position on the BuilderRED toolbar.
- Activate the "+" next to the Building containing the relevant Functional Area.
- Select the Functional Area.
- Make sure you are at the **Components** tab.



- To add one or more System(s), mark the checkbox(es) next to each desired System(s). *If this is all you need, skip to the last step.*
- To add one or more Component(s) not in a selected System, expand the list of Systems as needed to navigate to and select the desired Component(s). How?(1) Activate the arrow left of a System's checkbox to reveal its Components.
  (2) Mark the checkbox(es) next to the desired Component(s).
  (3) Repeat until all desired Components are selected.
- To add one or more Component Section(s) not in a selected Component, expand the list as needed to navigate to and select the desired Component Section(s). How?(1) As needed, activate the arrow left of a System's checkbox to reveal its Components.
  (2) Activate the arrow left of a Component's checkbox to reveal its Component Sections.
  (3) Mark the checkbox(es) next to the desired Component Section(s).
  (4) Repeat until all desired Component Sections are selected.
- When your selections are complete, activate **Save**.

Perform a Second Tier Functionality Assessment

This topic covers how to perform a second tier functionality assessment using BUILDER. Functional assessments can also be performed using BuilderRED.

Second tier functionality assessments are performed on individual Functional Areas in the Building. Default functionality assessments provided with non-customized instances of BUILDER are the Functionality assessment set and the Cultural Resources assessment set.

Prerequisites

The following are required before performing a second tier functionality assessment:

- You must first create Functional Areas in the Building with the proper data. If you have not done so, you will not be able to enter this level of functionality assessment data.
- Additionally, you should be familiar with the concepts in the Functionality Assessment Overview and the Second Tier Functionality Issues and Sub-Issues.

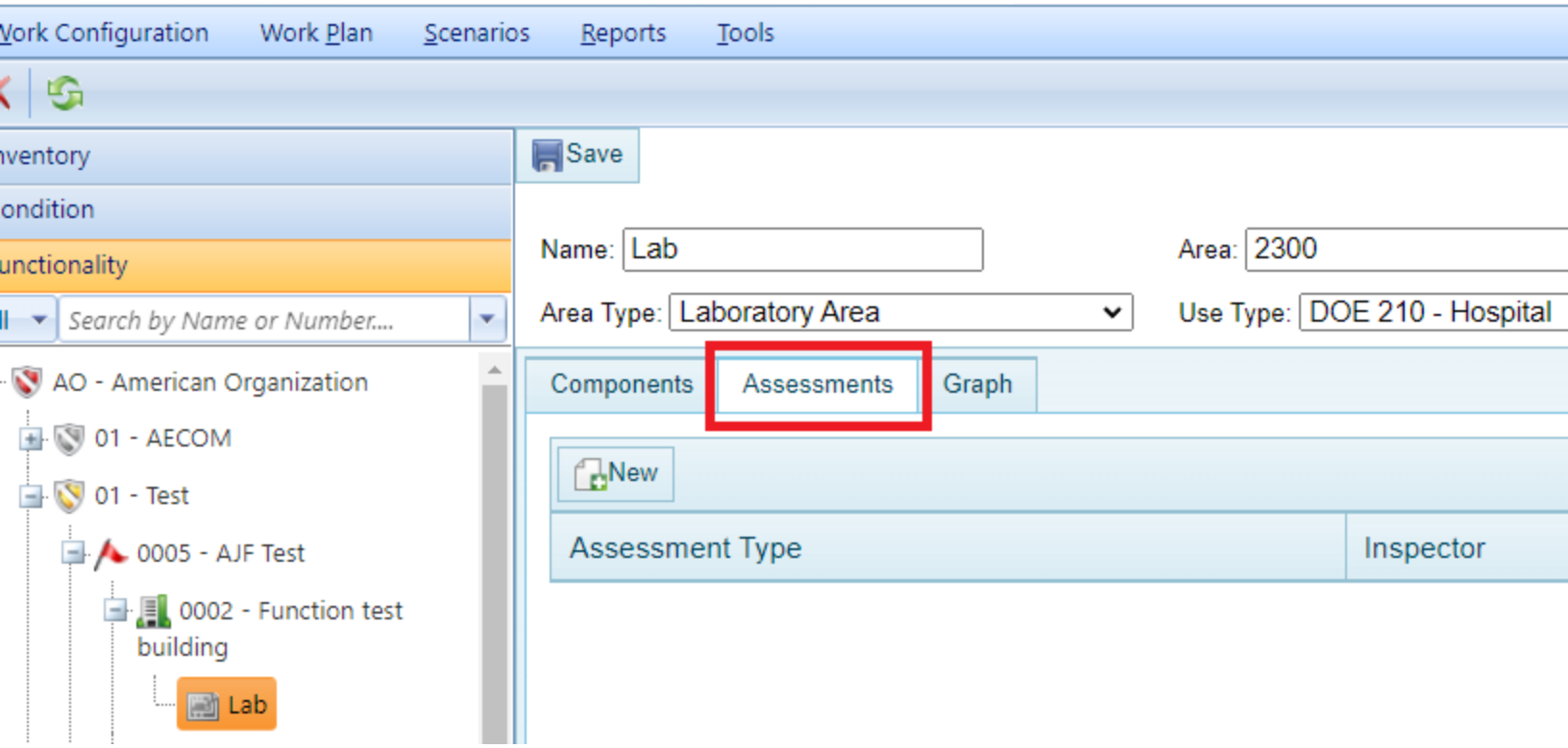
Second Tier Functionality Assessment in BUILDER

Create or Open

When you are ready to add or edit functionality assessment data for a Functional Area,

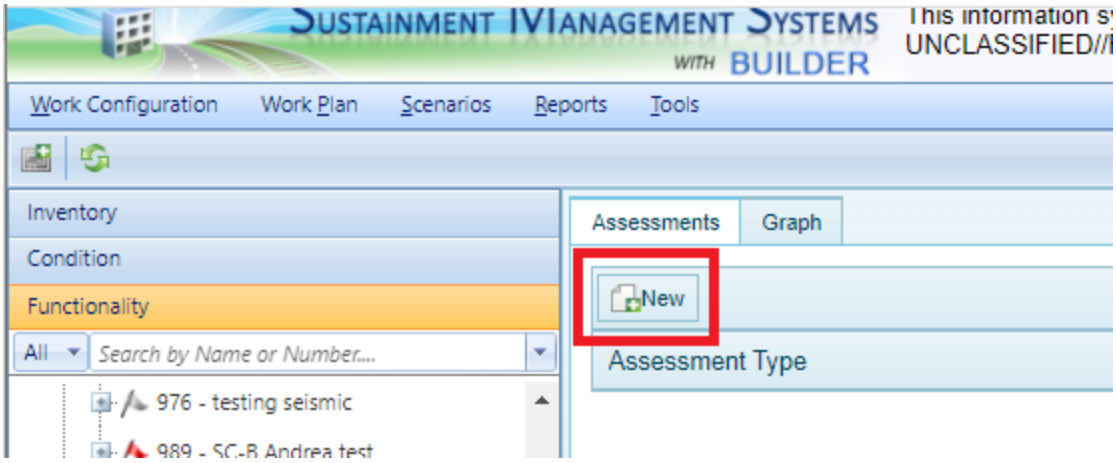
- Select the **Functionality** ribbon in the left pane of the BUILDER application (the ribbon may be either at the top or the bottom of the left pane). The functionality assessment navigation tree will appear.
- Navigate the tree to the Functional Area you wish to perform the functionality assessment on.
- Select the Functional Area. (see "Lab" in the screenshot below)

- Activate the **Assessments** tab in the content area.

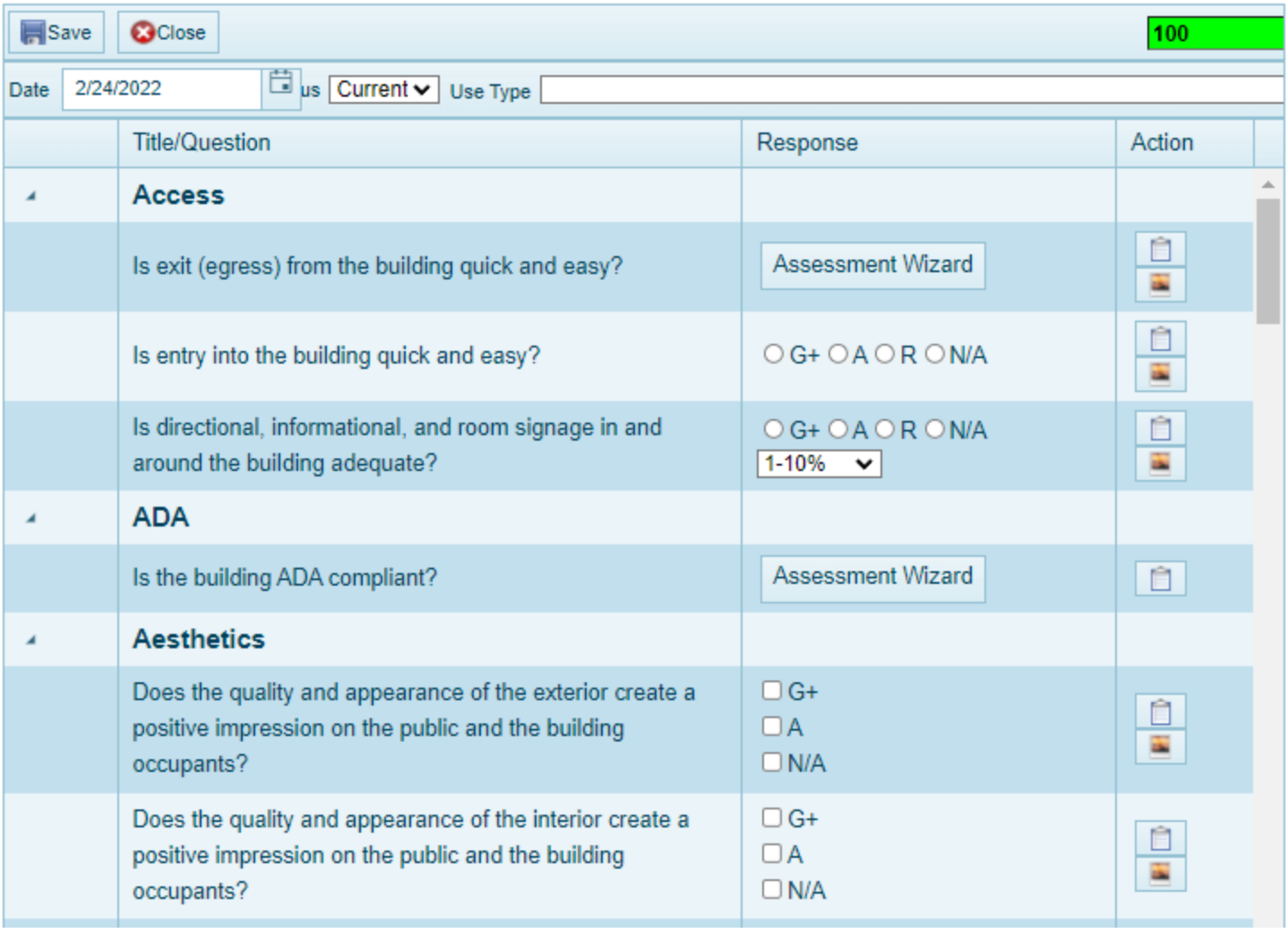


- To open an existing assessment, activate the assessment's row in the table. You can now skip to Select Components.
- Activate the New button (below the **Components** tab).

  Note: If you do not see the **New** button, it may be because you only have read privileges for this location.



- In the **"New Assessment"** popup window, view the available options. The baseline assessment set is called **Functionality**. At the Functional Area level, there is also an assessment set for Cultural Resources.

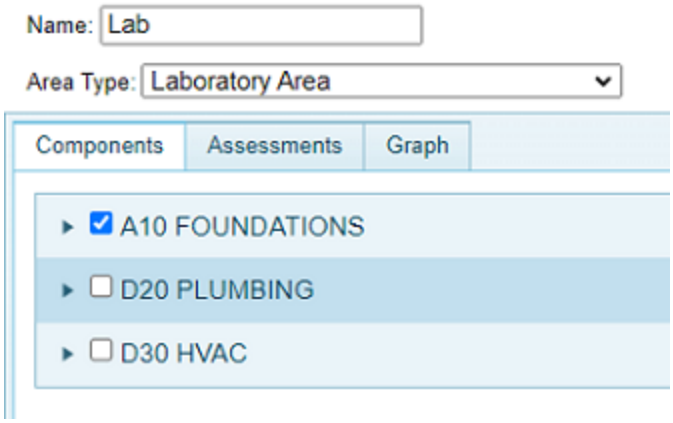


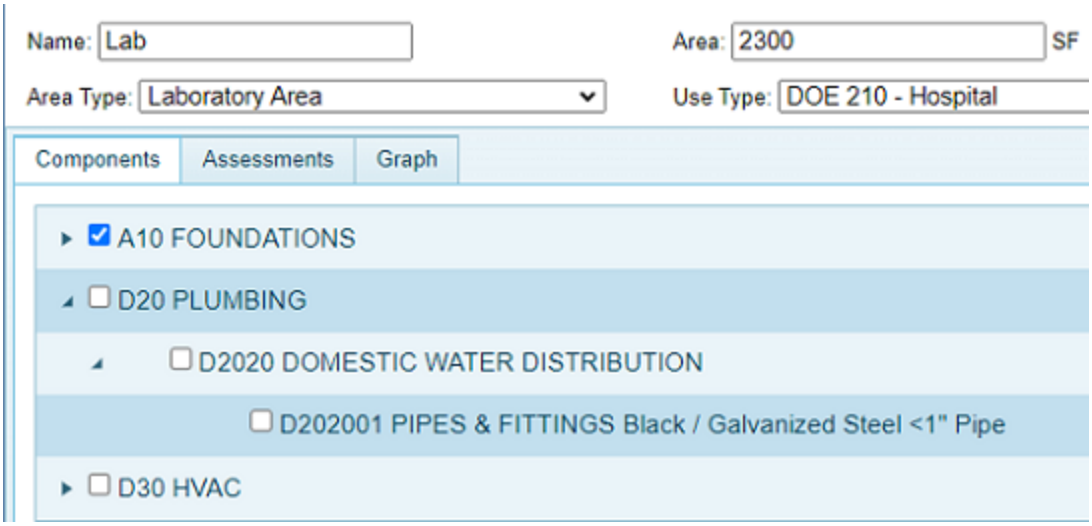
- For now, activate **Save**, located at the upper left of the content pane, so that the assessment will be saved in the table of assessments even if it is not yet complete.

If you want to see more detail about assessment metadata, see Functionality Assessment Data Overview below.

Select Components

In a new Functional Area-level functionality assessment, you first need to select which components to include in the assessment (by System, or you can select at a lower level if desired). Use the checkboxes shown to select by System; or, activate the arrows to expand the inventory items shown, to lower levels.

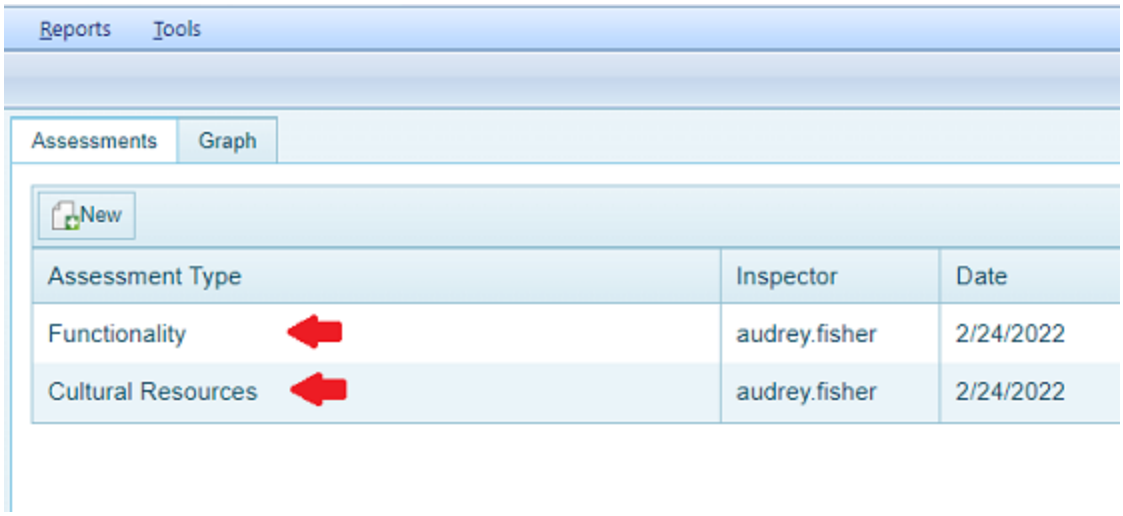




Next, follow instructions given in Fill In the Functionality Assessment.

Fill In the Functionality Assessment

If an assessment is not already open, you can open one by selecting it from the table of functionality assessments shown at the Assessments tab:



To complete the assessment, use the radio buttons or checkboxes to answer each question.

Saving your work periodically as you work through the issues and sub-issues is a good idea.

Rating Sub-Issues with Wizards

For some sub-issues in the Functionality assessment, a wizard is provided to help you perform the rating for that sub-issue. To launch a wizard, activate the Assessment Wizard button included in the sub-issue row and follow the instructions in the wizard.

Adding or Editing Comments

By activating the Comment icon, you can create or edit comments for most of the sub-issue questions in the functionality assessment. A checkmark on the Comment icon indicates the presence of a comment.

Adding Images to the Assessment

Wherever you see the Images icon, you can attach an image that supports understanding of the sub-issue and/or its assessment. A checkmark on this icon indicates that one or more images are already associated with the assessment.

Note: The image you attach must be in one of the following formats: .png, .bmp, or .jpg/.jpeg

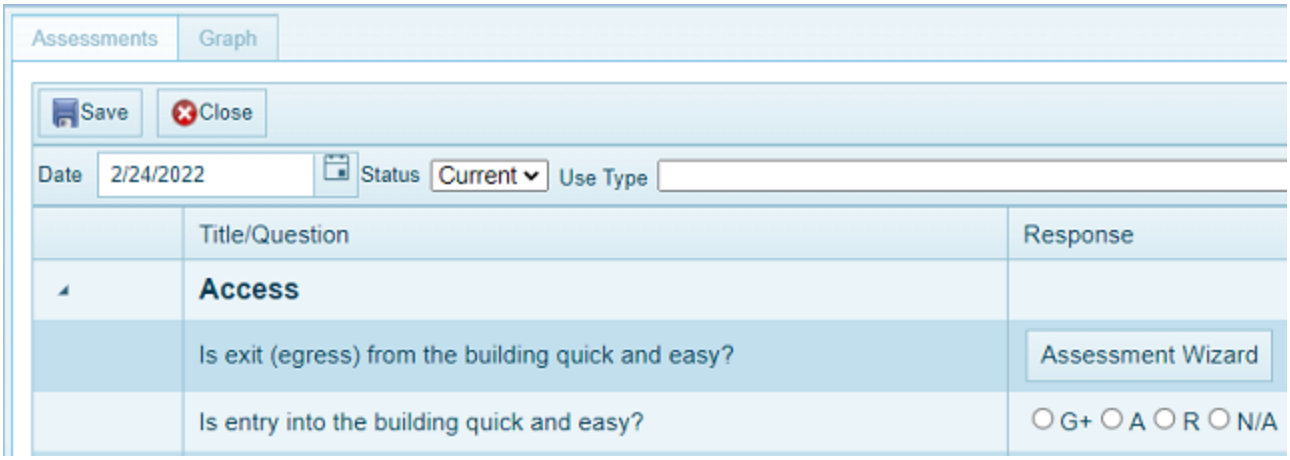
To attach an image,

- Activate the Images icon.
- In the "Photo" popup, activate the Choose File button.
- Browse to the location(s) where you have images you want to attach to the assessment.
- Select the desired image. BUILDER will insert the image and close the file browser window.
- Repeat steps 2 to 4 as desired.

- When finished adding image attachments, activate the Save button. Alternatively, activate the "X" in the upper right corner of the popup if you don't want to add the selected image attachments.

Save Assessment

When you are finished filling in the functionality assessment, activate Save at the upper left of the content area, then Close.



Functionality Assessment Data Overview

After a Functional Area is selected, the general data that was input when creating the Functional Area will be shown at the top of the screen:

- Name (Optional) . The name or a brief description of the Functional Area.
- Area. Size in the selected units of measurement (SF or SM)
- Area Type (Functional Use) (Required). Select the functional use from the dropdown list that most closely matches the Functional Area. BUILDER allows you to choose from 26 different Functional Area types. This field is helpful when a Functional Area is being assessed against many functional uses to determine its optimal functional use.
- Use Type (Required). From the dropdown list, select the use type that most closely matches the Functional Area. If you are a Department of Defense activity, BUILDER should display familiar category codes for your service. This field is helpful when a Functional Area is being assessed against many use types to determine its optimal use type.

Additionally, to the right of this general data two indexes are displayed:

- **FI**[1]Functionality Index (Assessment FAFIFunctional Area Functionality Index) (Read-Only). Displays the FAFIFunctional Area Functionality Index, computed based on the data recorded for the assess-

[1]Functionality Index.

ment currently selected.
- **CI**[1]Condition Index (Read-Only). The condition index of the items included in the Functional Area.

To inspect further data, activate the Assessments tab. Then select from the table of assessments the functionality assessment you wish to see data for by activating its row in the table. All functionality assessments that have been previously recorded (and not deleted) will be accessible from this table. For each of them, the inspector name and date of the inspection is provided. If you have created a new functionality assessment, the current date will be shown in the "Date" field.

Inside the functionality assessment, the following data are in the header above the list of assessment issues:

- Status (Required). Select the status of the current assessment from the dropdown list. The status options available for a functionality assessment in BUILDER 3.6 are:
  - Current. Sets the current functionality assessment to active and is used to compute the current FAFIFunctional Area Functionality Index.
  - Future. Sets the current functionality assessment to a future year when user requirements, codes, or obsolescence are expected to change and affect the functionality of the area. These assessments are particularly useful to use when running Scenarios.

- Effective Date (Conditional). Enter the year the status of the assessment will become active, or effective in the Functional Area. This field will be operational only if the Status is set to Future. Enter the date in the field provided, or else use the calendar to select a date from the calendar.
- Use Type (Required). Select the use type from the dropdown list that most closely matches the Functional Area. If you are a Department of Defense activity, BUILDER should display familiar category codes for your service. This field is helpful when a Functional Area is being assessed against many use types to determine its optimal use type.
- Date (Required). Shows the date the assessment was created. Changes may be made to the assessment only within a 30-day window from this date.

  Note: the 30-day deadline is something that a BUILDER AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. can change based on local policy. It may be that your change window is shorter.

- Assessment FAFIFunctional Area Functionality Index (Read-Only). Displays the FAFIFunctional Area Functionality Index, computed based on the data recorded for the assessment currently selected. Before assessment questions are answered, this will be 100 .

The Components tab shows the Systems (or lower-level inventory levels) chosen for the assessment to apply to.

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[1]Condition Index

Second Tier Functionality Issues and Sub-Issues

Functionality Assessment Set

As stated in the Functionality Assessment Overview, the second tier of functionality assessment is a methodical assessment of a Building's Functional Areas. As in the first tier of assessment, questions are divided into functionality issues (*italicized headings*), which are further divided into sub-issues. The sub-issues are rated when Perform a Second Tier Functionality Assessment .

The second tier of assessment addresses 13 functionality issues (Cultural Resources and HPSB High Performance and Sustainable Building are first tier only), each with a varying number of sub-issues. Each issue and its associated sub-issues is listed below.

Activate any sub-issue to see its definition.

- Access
  - Entry
  - Signage
  - Exit (Egress)
- American with Disabilities Act (ADA) Compliance
  - Non-Grandfathered
  - Grandfathered
- Aesthetics
  - FA Aesthetics
- Anti-Terrorism/Force Protection (ATFP Antiterrorism Force Protection) Compliance
  - Requirements and Recommendations
- Building Services
  - Internal Power Supply
  - Uninterruptible Power Supply (UPS)
  - Water Supply
  - Hot Water Supply
  - Specialty Water Supply
  - Plumbing Fixtures
  - Stand-Alone Wastewater Removal
  - Industrial Wastewater Removal
  - Information Technology (IT) System
  - Fuel Distribution System
  - Oxygen (or other gas) System
  - Compressed Air System
  - Security System
  - Telephone System
  - Electrical Distribution

    - Electrical Grounding
    - Electrical Outlets
- Building Size and Configuration
    - Occupant Interaction
    - Overcrowding
    - Configuration
- Comfort
    - Heating
    - Cooling
    - Dehumidifying
    - Humidifying
    - Ventilation
    - HVAC Controls
    - Disruptive Noise
    - Lighting
    - Lighting Controls
- Efficiency and Obsolescence
    - Equipment
    - HVAC Zones
    - Lighting Fixtures
    - Lighting Controls
    - Water Conservation Mechanisms
    - Windows and Doors
    - Insulation
- Environmental and Health
    - Lightning Protection
    - Asbestos
    - Indoor Air Quality (IAQ)
    - Lead Paint
    - Lead in Water
    - Polychlorinated Biphenyls (PCBs)
    - Radon
    - Fire and Smoke Warning/Detection System
    - Flammable and Combustible Material Storage
    - Fire Suppression Equipment
- Location
    - Mission Support
- Maintainability
    - Design and Placement of Equipment

- Missing or Improper Components
  - Needed and/or Desired Components
  - Incorrect Component Types
- Structural Adequacy
  - Loading Conditions
  - Seismic Conditions

Cultural Resources Assessment Set

- Programmatic Agreement/MOA/MOU
- National Register Eligibility
- Contributing Resource
- Near a Historic Property
- Archeological Site
- NAGPRA Sacred Site

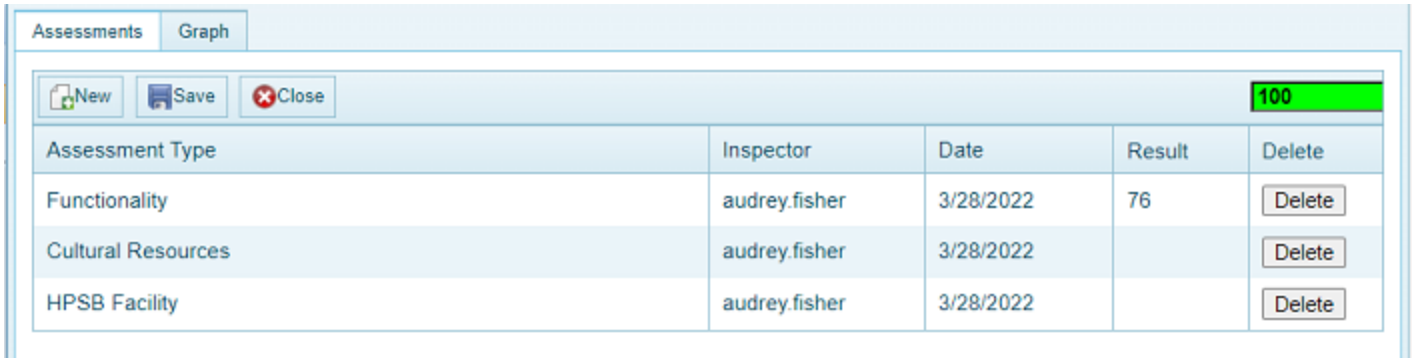
Functionality Wizards

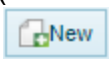
Functionality Assessment Wizards Overview

Building-Level Wizards

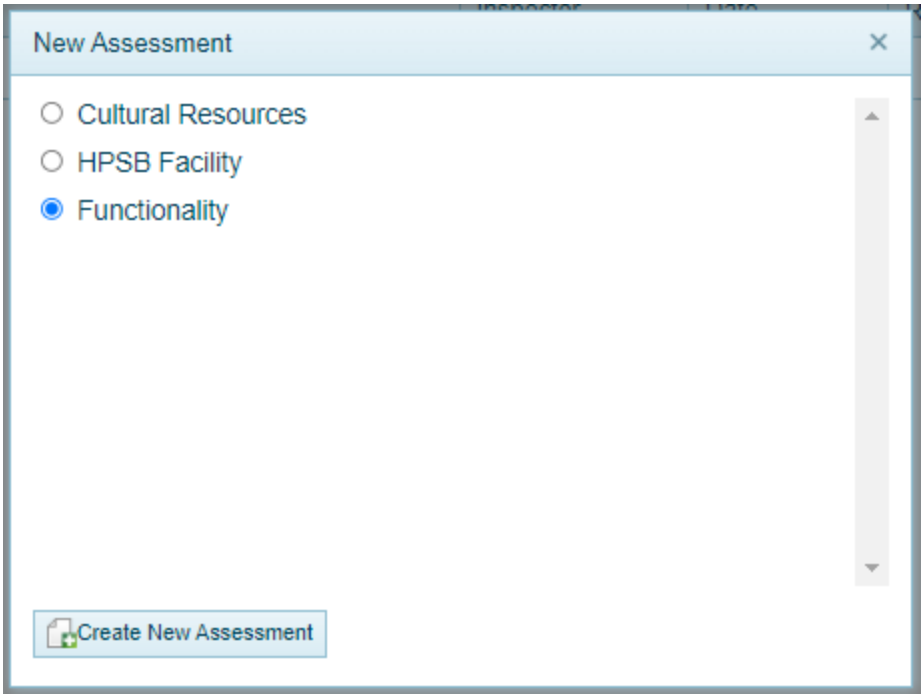
As part of the Functionality assessment provided in the default configuration of **BUILDER**, there are multiple Wizards to help with assessing specific functionality questions. To access one or more of these Wizards, open an existing Functionality assessment, or else start a new one:

- Activate the **Functionality** ribbon in the Navigation pane (it may be semi-hidden at the bottom of your screen).
- Navigate to and select the desired Building/Facility.
- Verify that you are at the **Assessments** tab in the content area of the screen. *Any existing assessments will show in a table in the content area.*



- To open an existing assessment, activate the assessment's row in the table, then refer to the assessment type at one of the headings below (no more instructions from this list are needed).
- To start a new assessment, activate the 

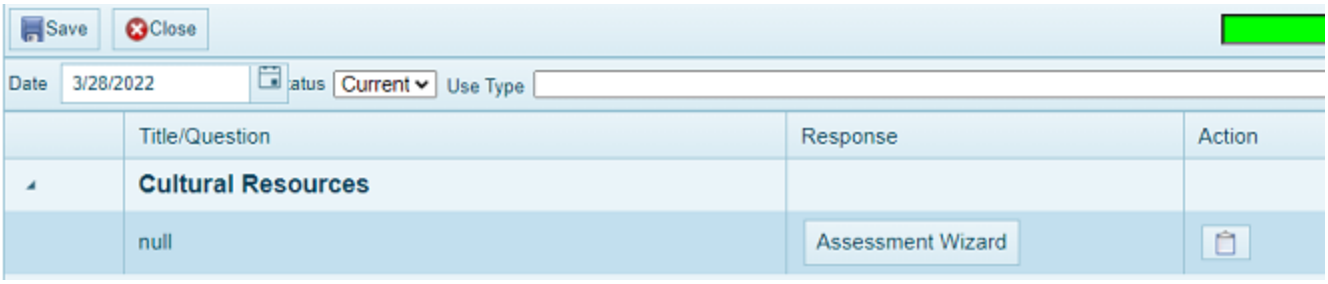
button at the upper left of the table. *The "New Assessment" popup will appear*.
- Select **Cultural Resources** or **Functionality** by activating the radio button next to it (HPSB High Performance and Sustainable Building assessment does not have a Wizard).



- Activate the Create New Assessment button at the bottom of the popup. *You will be brought to a new instance of the selected assessment type. The types with associated Wizards are described below.*

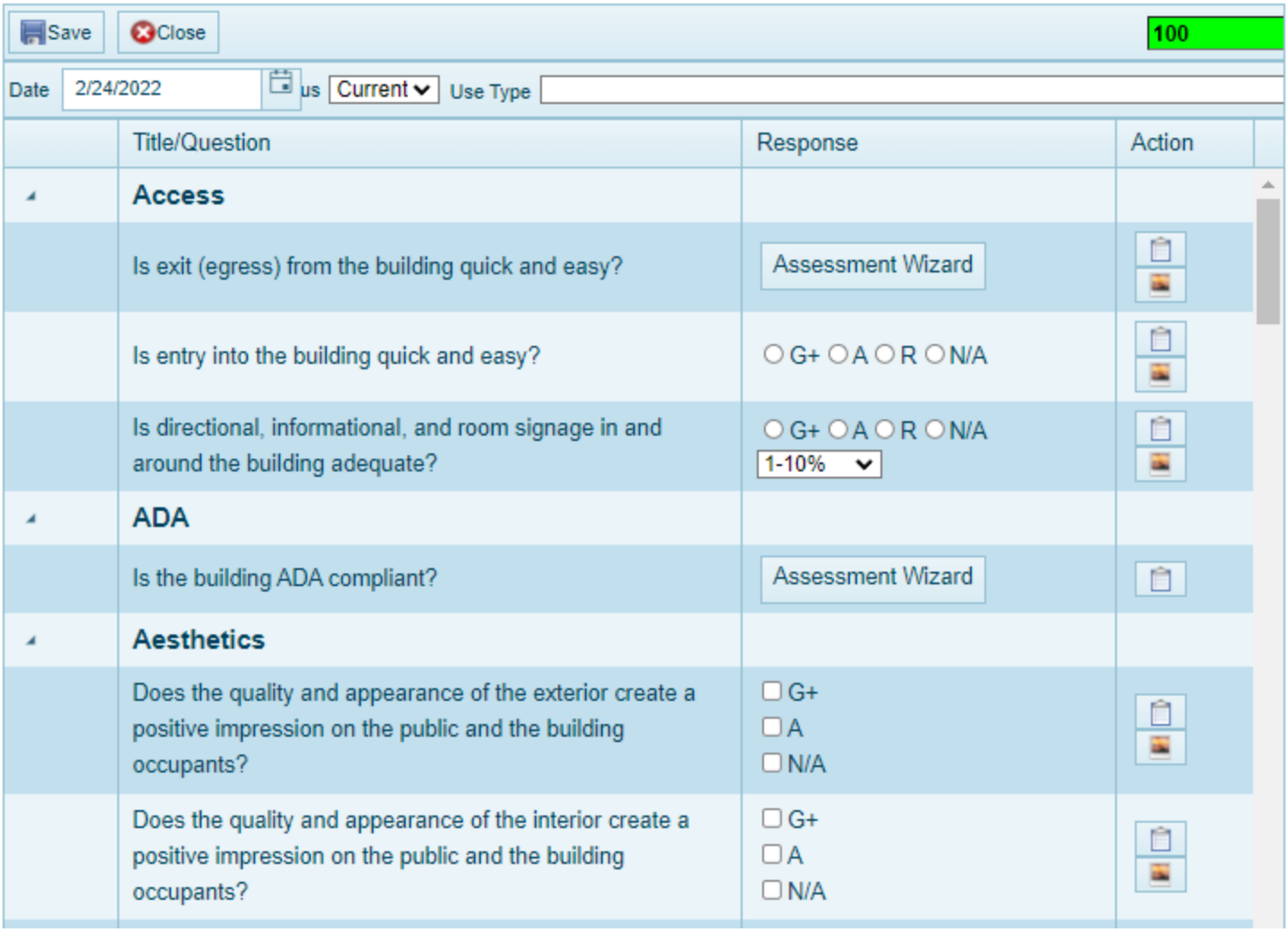
Cultural Resources

If you open an existing Cultural Resources assessment, or create a new one, the following screen appears. Activate the **Assessment Wizard** button to enter the Wizard. See the Cultural Resources Wizard topic for more details.



Functionality

If you open an existing Functionality assessment, or create a new one, the following screen appears. This assessment type contains multiple Wizards. Activate the **Assessment Wizard** buttons to enter the associated Wizards. See the Functionality Wizards topic for more details.



Functional Area-Level Wizards

In **BUILDER**, both the Cultural Resources Wizard and the functionality Wizards associated with the Functionality type functionality assessment (see Functionality Wizards) are available the Functional Area level.

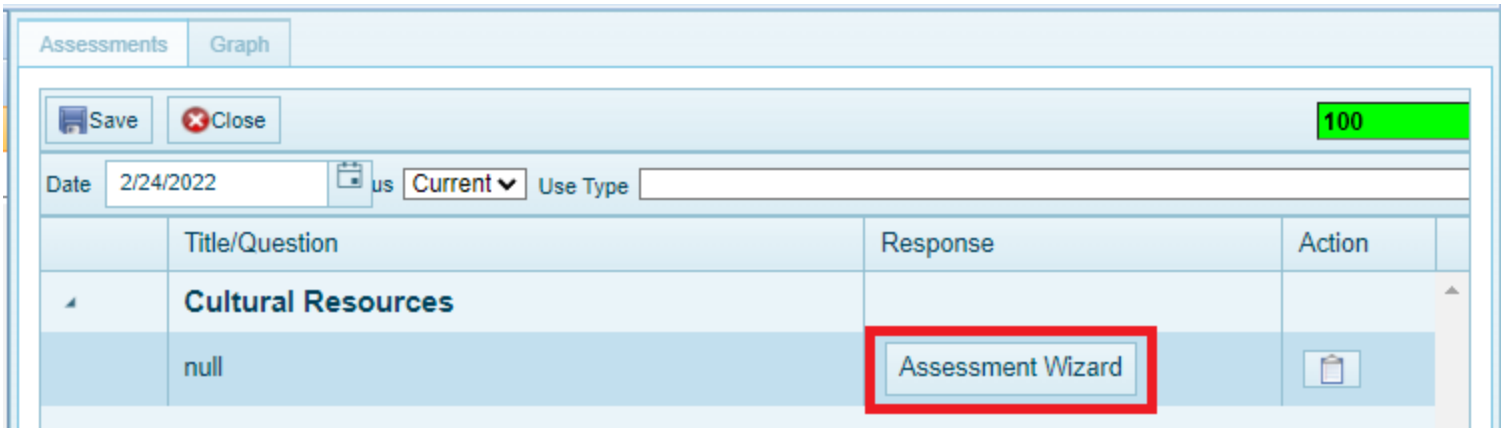
Cultural Resources Wizard

Note: The Cultural Resources Wizard is available at the Building/Facility level and at the Functional Area level.

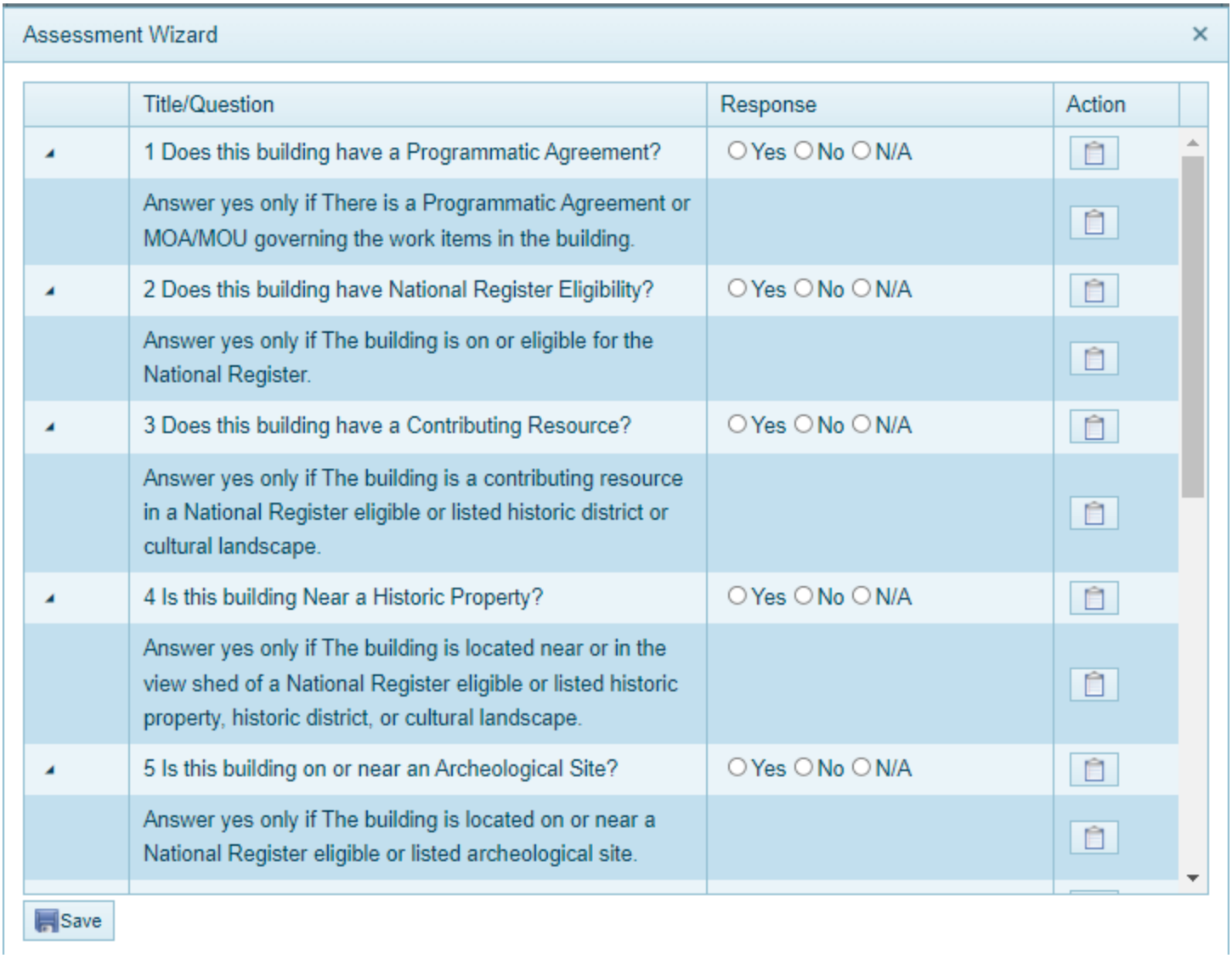
To access the Cultural Resources Wizard, open an existing Cultural Resources assessment, or else start a new one as follows:

- Activate the **Functionality** ribbon in the Navigation pane.
- Navigate to the desired Building/Facility or Functional Area.

- Verify that you are at the **Assessments** tab in the content area of the screen.
- Activate the New button. *The "New Assessment" popup will appear*.
- Select the Cultural Resources assessment set by activating the radio button next to **Cultural Resources**.
- Activate the Create New Assessment button at the bottom of the popup. *The header **Cultural Resources** should appear on the first line in the table in the content area. If it doesn't, it may be that BUILDER timed out; try logging out and back in, and repeating the steps to this point.*
- Once your new assessment is created, activate the **Assessment Wizard** button in the **Response** column of the second line of the table. *The "Assessment Wizard" popup should appear.*



The Cultural Resources Wizard will appear in a popup:



The wizard will have a series of questions that help determine the Building's Cultural Resources status. If you are unsure of the question, you can activate the arrow to the left of the question to get a further explanation of the question.

If you answered Yes to any of the first set of numbered questions, then the building is historically significant and you must fill out the following information.

- **Classification.** Select the historic classification of the Building from the dropdown list.
- **Building Style.** Select the building style from the dropdown list.
- **HABS Historic American Buildings Survey / HAER Historic American Engineering Record.** The Historic American Buildings Survey (HABS Historic American Buildings Survey) and Historic American Engineering Record (HAER Historic American Engineering Record) are the national historical architectural and engineering documentation programs of the National Park Service that

promote documentation incorporated into the HABS Historic American Buildings Survey/ HAER Historic American Engineering Record collections in the Library of Congress. If HABS Historic American Buildings Survey/ HAER Historic American Engineering Record documentation has been submitted for this building, note identification/registration numbers here.

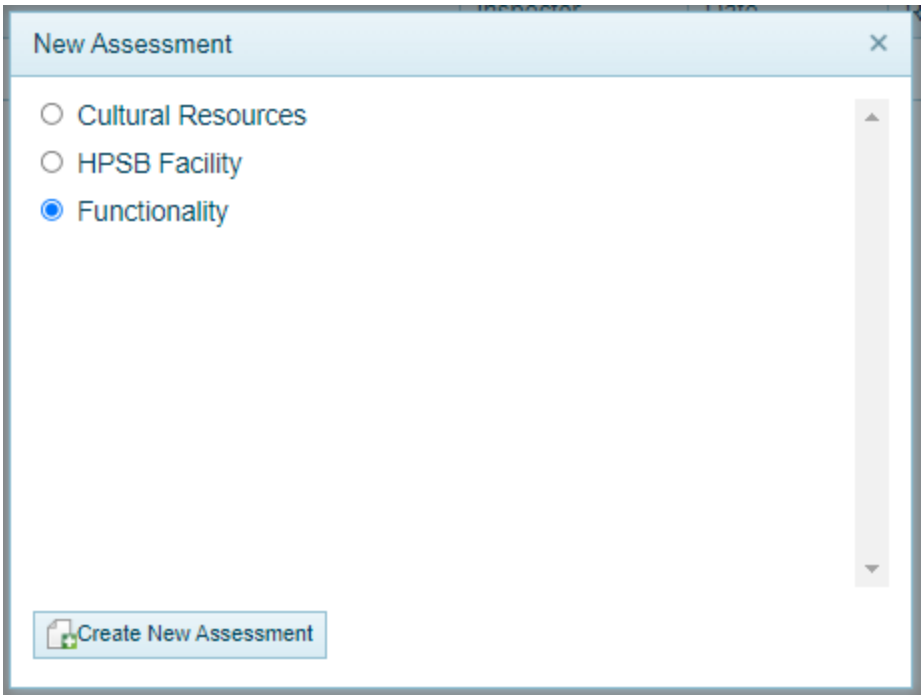
- **Register Number.** If the building is listed on the National Register, enter its register number.

To record the results of the wizard, activate the **Save** button at the upper left of the content area. When finished, activate **Save**, then **Close**.

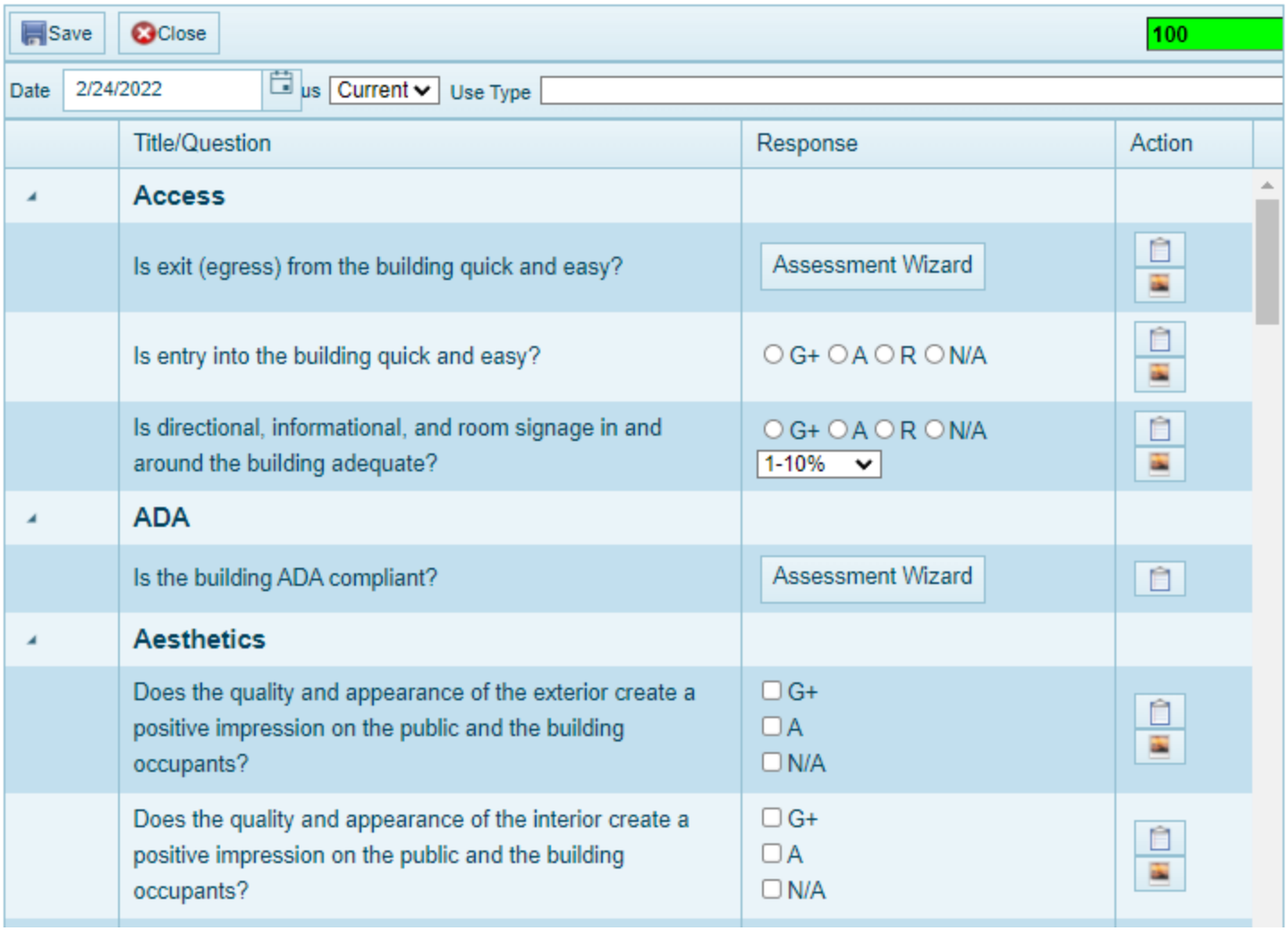
Functionality Wizards

As part of the Functionality assessment provided in the default configuration of **BUILDER**, there are multiple Wizards to help with assessing specific functionality questions. To access one or more of these, open an existing Functionality assessment, or else start a new one as follows:

- Activate the **Functionality** ribbon in the Navigation pane (it may be semi-hidden at the bottom of your screen).
- Navigate to and select the desired Building/Facility or Functional Area.
- Verify that you are at the **Assessments** tab in the content area of the screen.
- Activate the New button. *The "New Assessment" popup will appear*.
- Select the Functionality assessment set by activating the radio button next to **Functionality**.



- Activate the Create New Assessment button at the bottom of the popup. *The Functionality assessment will appear.* The Functionality assessment is made up of subsections, some of which have a wizard associated with them.



- Once your new assessment is created, you can activate one or more wizards from the **Response** column. Individual wizards in the Functionality group are described below.

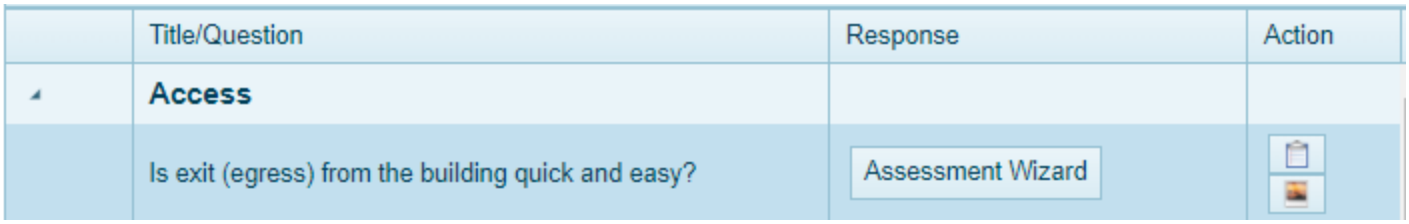
The wizards currently available are:

- Egress Wizard
- ADA Wizard
- Seismic Wizard. This wizard is based on the FEMA Federal Emergency Management Agency-154 data collection form.

Egress Wizard

The Egress Wizard is under the **Access** section of the Functionality assessment and addresses the question "Is exit (egress) from the building quick and easy?"

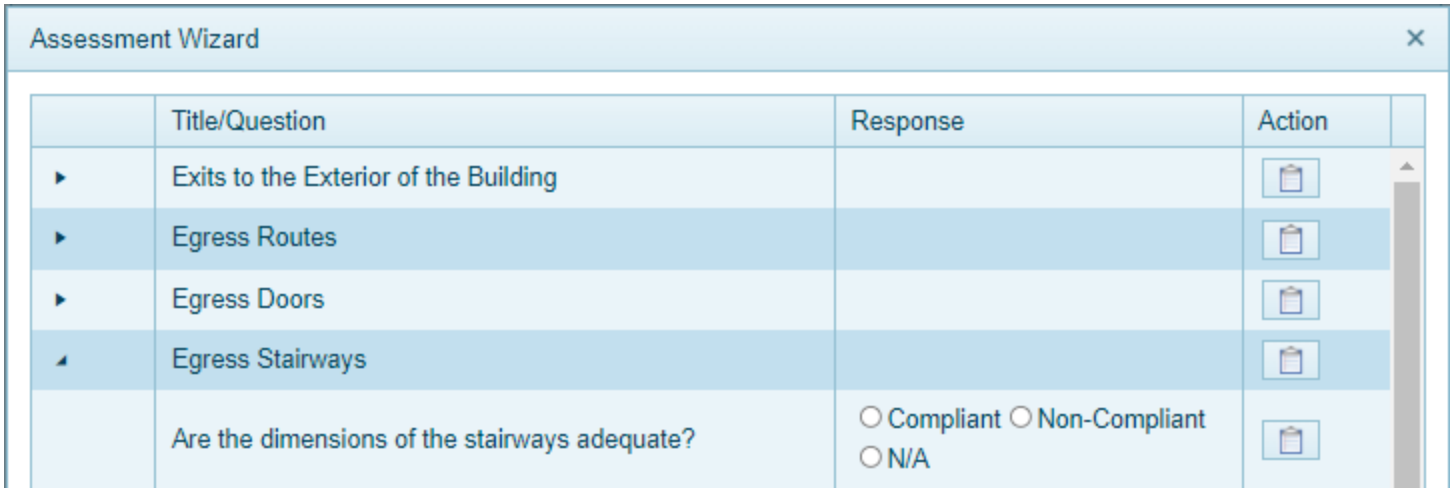
Activate the **Assessment Wizard** button in the **Response** column to activate the wizard.



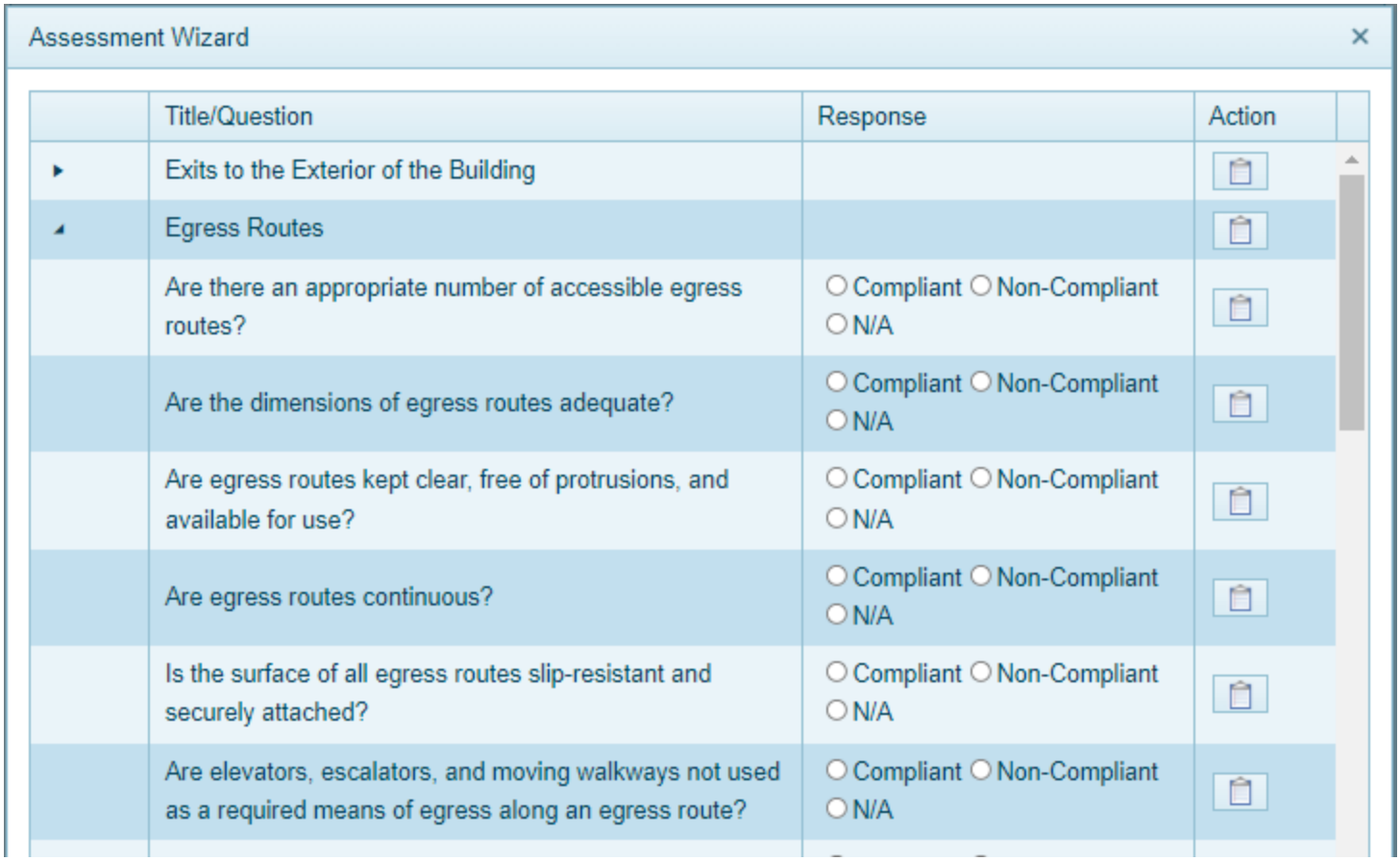
Expanding and Contracting Sub-Areas

Once you are in the Egress Wizard, if you find that any of the wizard's sub-areas have been compacted (i.e., the arrow points directly to the right, instead of angled down), you can activate the arrow to expand that sub-area and show the questions.

"Egress Routes" compacted:



"Egress Routes" expanded:



Entering Responses

In the Egress Wizard, most of the responses call for you to select between "Compliant," "Non-Compliant," and "N/A."

Detailed background information for each question, such as tables showing number of exits needed per level of occupancy, can be found at Egress Checklist.

Comments

In the **Action** column is a button showing a clipboard. To enter a comment, activate the button, enter (and/or edit) the comment, then activate Save at the bottom of the comment pop-up.

If there is a green checkmark next to the clipboard on the button, it means that there is already some comment content.

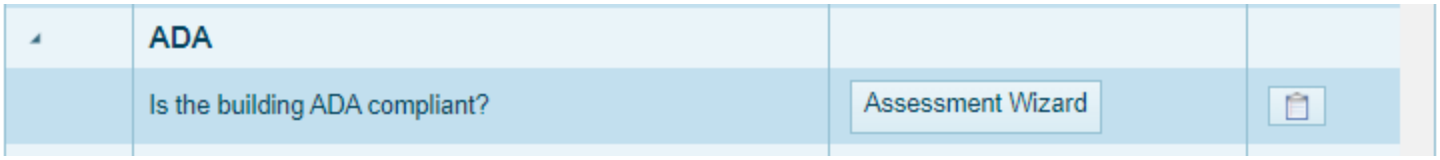
Save

Save the wizard by activating the **Save** button at the bottom. Also consider activating the Functionality assessment's **Save** button (at the top of the assessment) periodically as you work your way through the assessment.

ADA Wizard

The ADA Wizard is in the **ADA** section of the Functionality assessment and addresses the question "Is the building ADA compliant?"

Activate the **Assessment Wizard** button in the **Response** column to activate the wizard.



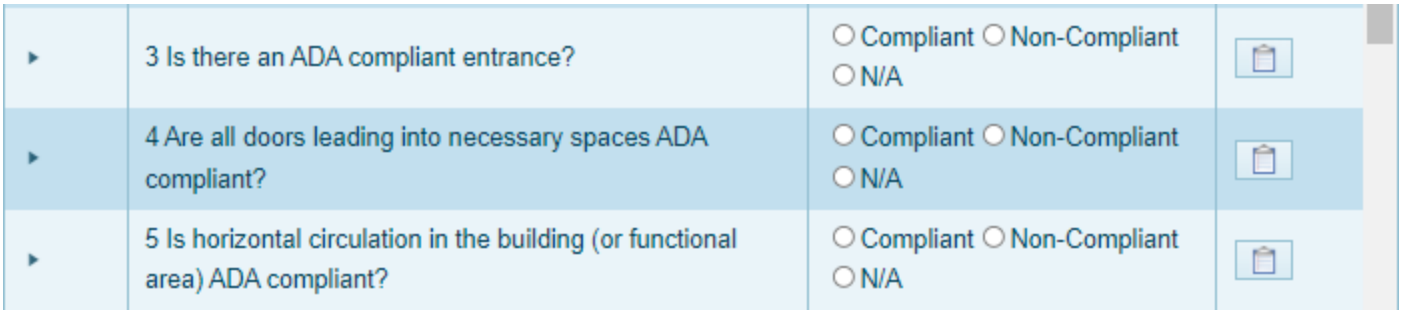
Entering Responses

In the ADA Wizard, most of the responses call for you to select between "Compliant," "Non-Compliant," and "N/A."

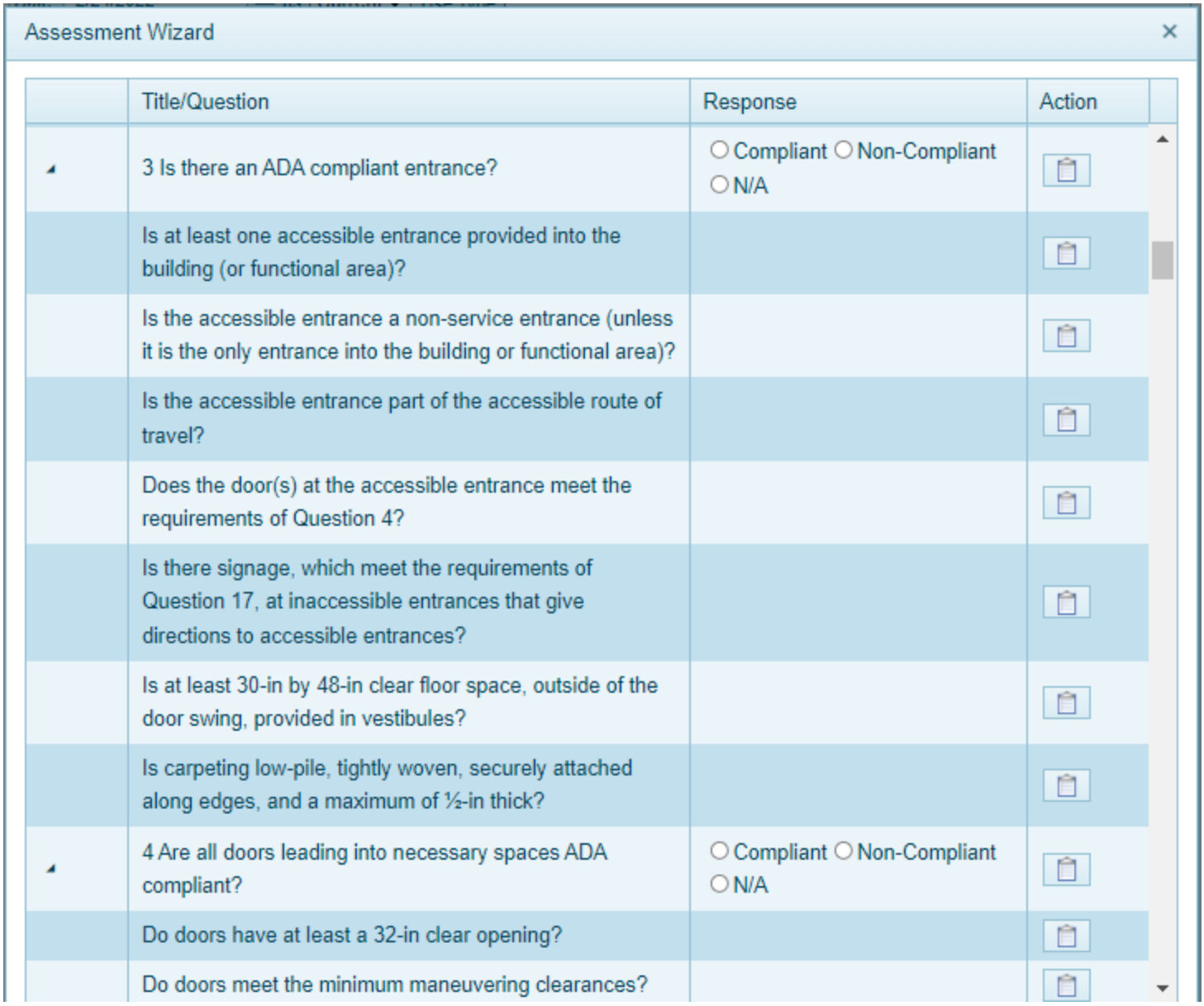
Expanding to see Compliance Requirements

In the ADA Wizard, if you see that the arrow next to a numbered question points directly to the right, this question can be expanded to show all of the requirements needed for the item to be "Compliant." Activate the arrow to expand.

Questions not expanded:



Questions expanded:



Comments

In the **Action** column is a button showing a clipboard. To enter a comment, activate the button, enter (and/or edit) the comment, then activate **Save** at the bottom of the comment pop-up.

If there is a green checkmark next to the clipboard on the button, it means that there is already some comment content.

Save

Save the wizard by activating the **Save** button at the bottom. Also consider activating the Functionality assessment's **Save** button (at the top of the assessment) periodically as you work your way through the assessment.

Printable Copy

For a copy of the questions presented in the ADA Wizard, see the Americans with Disabilities Act (ADA) Checklist topic.

ATFP Wizard

Inactive

Equipment Efficiency Wizard

Inactive

Maintainability Wizard

Inactive

Missing Components

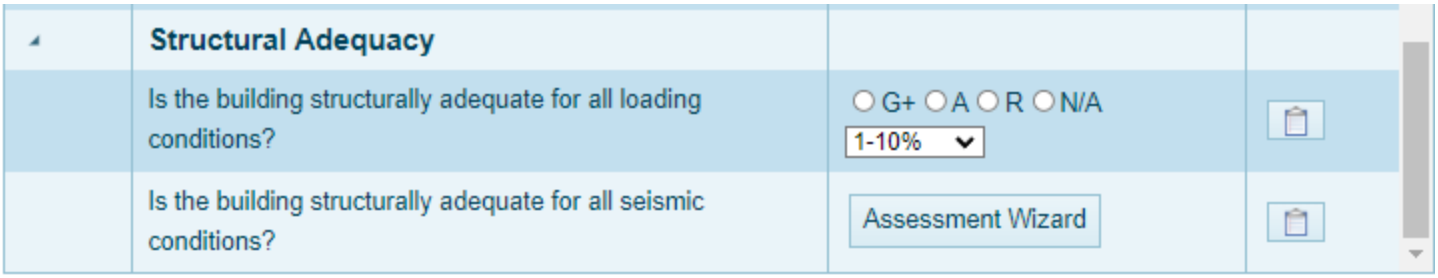
Inactive

Seismic Wizard

CAUTION: This wizard is under construction. You can browse the list of items on the FEMA Federal Emergency Management Agency-154 data collection form and enter comments (make sure to **Save**).

The Seismic Wizard is under the **Structural Adequacy** section of the Functionality assessment and addresses the question "Is the building structurally adequate for all seismic conditions?"

Activate the **Assessment Wizard** button in the **Response** column to activate the wizard.



Entering Responses

Currently the only form of entering responses in this wizard is to enter comments (make sure to **Save**).

Comments

In the **Action** column is a button showing a clipboard. To enter a comment, activate the button, enter (and/or edit) the comment, then activate **Save** at the bottom of the comment pop-up.

If there is a green checkmark next to the clipboard on the button, it means that there is already some comment content.

Save

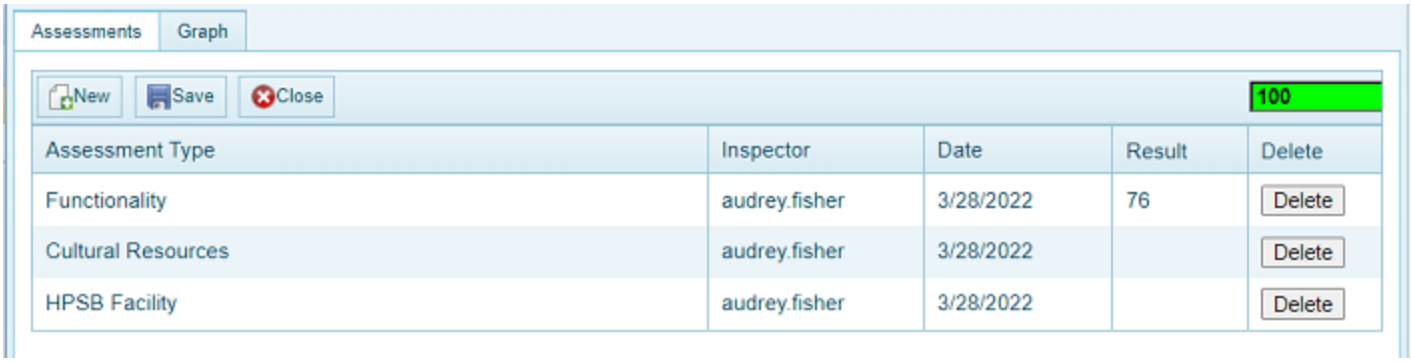
Save the wizard by activating the **Save** button at the bottom. Also consider activating the Functionality assessment's **Save** button (at the top of the assessment) periodically as you work your way through the assessment.

Functionality Assessment Wizards Overview

Building-Level Wizards

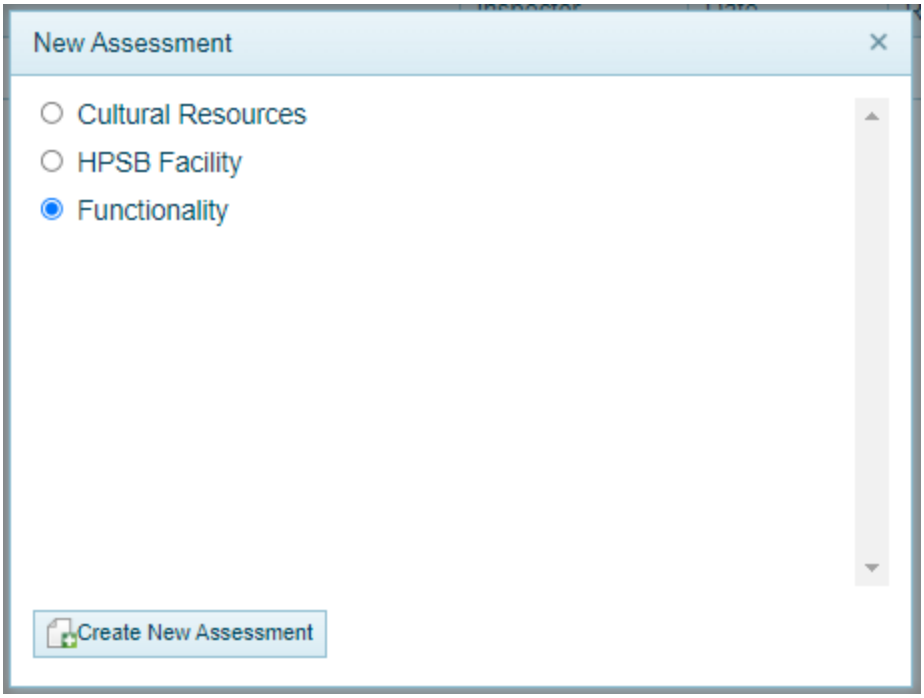
As part of the Functionality assessment provided in the default configuration of **BUILDER**, there are multiple Wizards to help with assessing specific functionality questions. To access one or more of these Wizards, open an existing Functionality assessment, or else start a new one:

- Activate the **Functionality** ribbon in the Navigation pane (it may be semi-hidden at the bottom of your screen).
- Navigate to and select the desired Building/Facility.
- Verify that you are at the **Assessments** tab in the content area of the screen. *Any existing assessments will show in a table in the content area.*



- To open an existing assessment, activate the assessment's row in the table, then refer to the assessment type at one of the headings below (no more instructions from this list are needed).
- To start a new assessment, activate the

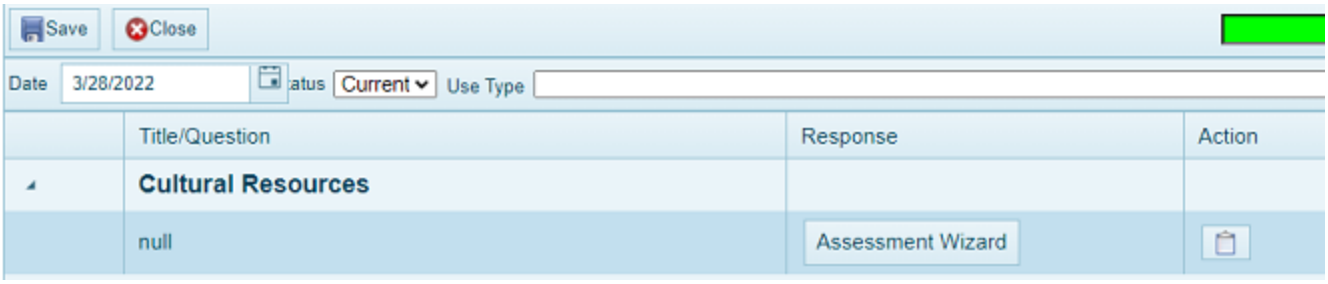
button at the upper left of the table. *The "New Assessment" popup will appear*.
- Select **Cultural Resources** or **Functionality** by activating the radio button next to it (HPSB High Performance and Sustainable Building assessment does not have a Wizard).



- Activate the Create New Assessment button at the bottom of the popup. *You will be brought to a new instance of the selected assessment type. The types with associated Wizards are described below.*

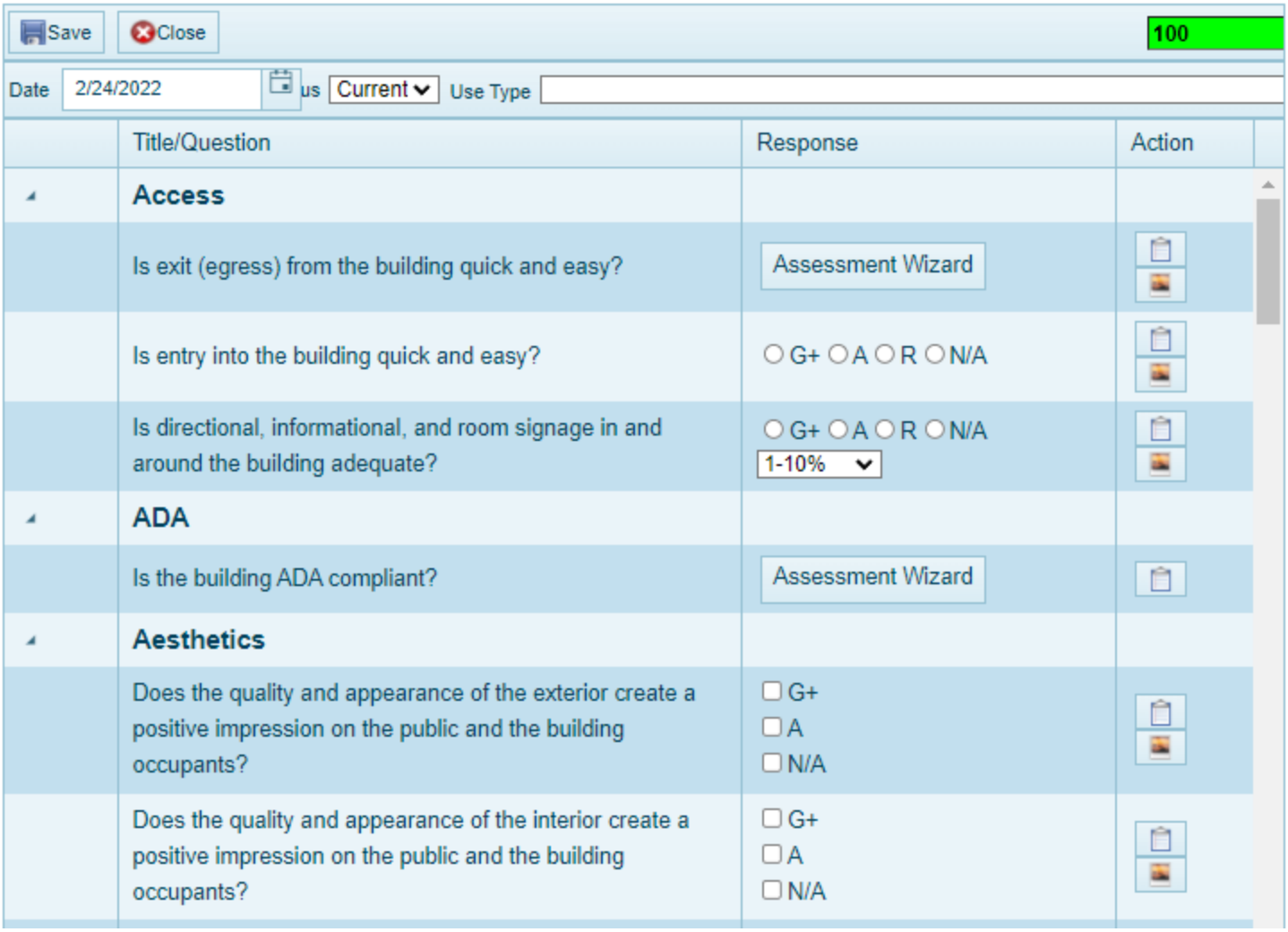
Cultural Resources

If you open an existing Cultural Resources assessment, or create a new one, the following screen appears. Activate the **Assessment Wizard** button to enter the Wizard. See the Cultural Resources Wizard topic for more details.



Functionality

If you open an existing Functionality assessment, or create a new one, the following screen appears. This assessment type contains multiple Wizards. Activate the **Assessment Wizard** buttons to enter the associated Wizards. See the Functionality Wizards topic for more details.



Functional Area-Level Wizards

In **BUILDER**, both the Cultural Resources Wizard and the functionality Wizards associated with the Functionality type functionality assessment (see Functionality Wizards) are available the Functional Area level.

Sub-Issue Definitions

Access - Egress

Functionality Issue: Access

Sub-Issue: Egress

Definition:

Egress from the building (or functional area) is difficult and slow.

Severity Levels:

Red - Egress from the building (or functional area) is slow and/or difficult, posing a life safety issue.

Amber - Egress from the building (or functional area) is slow and/or difficult, but life safety is not an issue.

Green(+) - Egress from the building (or functional area) is quick and easy.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area of the Building (or Functional Area)

B = Total Area of the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- Protrusions block the path of egress in the building (or functional area).
- Not enough exits from the building in the building (or functional area).
- Egress route is not slip-resistant in the building (or functional area).

Access - Entry

Functionality Issue: Access

Sub-Issue: Entry

Definition:

Entry into the building (or functional area) is slow and/or difficult.

Severity Levels:

Red - Entry into the building (or functional area) is slow and/or difficult, posing a life safety issue or adversely affecting the mission to a significant degree.

Amber - Entry into the building (or functional area) is slow and/or difficult, but life safety is not an issue and the mission is not affected to the level of red.

Green (+) - Entry into the building (or functional area) is quick and easy.

Examples:

- Building (or functional area) entrance is not large enough for equipment entry.
- Not enough doors at building (or functional area) entrance for occupant usage at peak usage.

Access - Signage

Functionality Issue: Access

Sub-Issue: Signage

Definition:

The directional, informational, and room signage in and around the building (or functional area) is inadequate.

Severity Levels:

Red - Directional, informational and room signage in and around the building (or functional area) is inadequate, adversely affecting the mission to a significant degree.

Amber - Directional, informational and room signage in and around the building (or functional area) is inadequate, but the mission is not affected to the level of red.

Green (+) - Directional, informational and room signage in and around the building (or functional area) is adequate.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area of the Building (or Functional Area)

B = Total Area of the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- No room numbers are posted in the building (or functional area).
- Inaccurate directional signage posted in the building (or functional area).
- Out-dated informational signage posted in the building (or functional area).

ADA - Grandfathered

Functionality Issue: Americans with Disabilities Act (ADA)

Sub-Issue: Grandfathered Buildings (or Functional Areas)

Definition:

A building (or functional area) built before July 26, 1992 that does not meet the ADA standards and does not have users that require compliance.

Severity Levels:

Red - The ADA standards are not met in the building (or functional area), and there are users that require ADA compliance.

Amber - The ADA standards are not met in the building (or functional area), but there are no users that require ADA compliance.

Green(+) - The ADA standards are met in the building (or functional area) or the building (or functional area) is exempt.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area of the Building (or Functional Area)

B = Total Area of the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- No accessible route of travel to upper floors.
- There are not enough accessible parking spots.
- Emergency systems do not have flashing lights and audible signals.

ADA - Non-Grandfathered

Functionality Issue: Americans with Disabilities Act (ADA)

Sub-Issue: Non-Grandfathered Buildings (or Functional Areas)

Definition:

The building (or functional area) was built after July 26, 1992 and does not meet the ADA standards.

Severity Levels:

Red - The ADA standards are not met in the building (or functional area).

Green(+) - The ADA standards are met in the building (or functional area).

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area of the Building (or Functional Area)

B = Total Area of the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- There is no accessible restroom in the building.
- Slope of accessibility ramp is too steep.
- Entrance doors are not wide enough for wheelchair entrance.

Aesthetics - Exterior

Functionality Issue: Aesthetics

Sub-Issue: Exterior

Definition:

The quality and appearance of the exterior of the building does not create a positive impression on the public and the building occupants.

Note: This sub-issue only appears in the first tier of the functionality assessment.

Severity Levels:

Amber - The quality and appearance of the exterior of the building does not create a positive impression on the public and the building occupants.

Green (+) - The quality and appearance of the exterior of the building creates a positive impression on the public and the building occupants.

Examples:

- The exterior of the building does not appear proportional.
- The exterior of the building has a lack of detail.

Aesthetics - Interior

Functionality Issue: Aesthetics

Sub-Issue: Interior

Definition:

The quality and appearance of the interior of the building does not create a positive impression on the public and the building occupants.

Note: This sub-issue only appears in the first tier of the functionality assessment.

Severity Levels:

Amber - The quality and appearance of the interior of the building does not create a positive impression on the public and the building occupants.

Green(+) - The quality and appearance of the interior of the building creates a positive impression on the public and the building occupants.

Examples:

- The interior of the building does not use a variety of materials.
- Building services are not well integrated with the interior of the building.

Aesthetics - Functional Area

Functionality Issue: Aesthetics

Sub-Issue: Functional Area

Definition:

The quality and appearance of the functional area does not create a positive impression on the public and the building occupants.

Note: This sub-issue only appears in the second tier of the functionality assessment.

Severity Levels:

Amber - The quality and appearance of the functional area does not create a positive impression on the public and the building occupants.

Green (+) - The quality and appearance of the functional area creates a positive impression on the public and the building occupants.

Examples:

- The functional area does not appear proportional.
- The functional area has a lack of detail.

Anti-Terrorism/Force Protection (ATFP)

Functionality Issue: Anti-Terrorism/Force Protection (ATFP Antiterrorism Force Protection)

Sub-Issue: Requirements and Recommendations

Definition:

The building (or functional area) does not meet the ATFP requirements and recommendations.

Severity Levels:

Red - The applicable ATFP requirements are not met in the building (or functional area).

Amber – The ATFP requirements are met, but the ATFP recommendations are not met in the building (or functional area).

Green (+) - The ATFP requirements and recommendations are met in the building (or functional area).

Density:

Automatically computed by BUILDER

Density Ranges:

- 1% - 10%
- 10% - 25%

- 25% - 50%
- 50% - 100%

Examples:

- Standoff distances are not met.
- Mailroom does not have a separate ventilation system.
- Masonry walls are not reinforced.

Building Services - Compressed Air System

Functionality Issue: Building (or Functional Area) Services

Sub-Issue: Compressed Air System

Definition:

The compressed air system in the building (or functional area) is inadequate.

Severity Levels:

Red - There is no compressed air system or the compressed air system violates code or is inadequate (pressure or capacity), adversely affecting the mission to a significant degree.

Amber - The compressed air system is inadequate, but the mission is not affected to the level of red.

Green (+) - The compressed air system is adequate.

*If the building (or functional area) does not have and does not require a fuel distribution system, rate this sub-issue "N/A."

Examples:

- The compressed air system has inadequate pressure.
- The compressed air system is contaminated.
- The compressed air system does not serve all necessary parts of the building (or functional area).

Building Services - Electrical Distribution Capacity

Functionality Issue: Building (or Functional Area) Services

Sub-Issue: Electrical Distribution Capacity

Definition:

The electrical distribution in the building (or functional area) is inadequate.

Severity Levels:

Red - Circuit breakers trip due to an overload of the distribution system, posing a life safety issue or adversely affecting the mission to a significant degree.

Amber - Circuit breakers trip due to an overload of the distribution system, but life safety is not an issue and the mission is not affected to the level of red.

Green (+) - The distribution system is adequate.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area of the Building (or Functional Area)

B = Total Area of the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- Circuit breakers trip occasionally when computers and printers are running at the same time.
- Circuit breakers trip when every time refrigerator, electric stove, and microwave are running at the same time.

Building Services - Electrical Grounding

Functionality Issue: Building (or Functional Area) Services

Sub-Issue: Electrical Grounding

Definition:

The electrical distribution system is grounded inadequately in the building (or functional area).

Severity Levels:

Red - The electrical system is not grounded or grounded inadequately.

Green (+) - The electrical system is grounded adequately.

Examples:

- Electrical system is not grounded at all.
- Electrical ground connection is inadequate.

Building Services - Electrical Outlets

Functionality Issue: Building (or Functional Area) Services

Sub-Issue: Electrical Outlets

Definition:

The electrical outlets in the building (or functional area) are inadequate.

Severity Levels:

Red - Electrical outlets are inadequate, violating code, posing a life safety issue, and/or adversely affecting the mission to a significant degree.

Amber - Electrical outlets are inadequate, but codes are not violated, life safety is not an issue, and the mission is not affected to the level of red.

Green (+) - Electrical outlets are adequate.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Number of Inadequate Electrical Outlets in the Building (or Functional Area)

B = Total Number of Electrical Outlets in the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- There are not enough electrical outlets in the building (or functional area).
- The electrical outlets are in poor locations throughout the building (or functional area).

Building Services - Fuel Distribution System

Functionality Issue: Building (or Functional Area) Services

Sub-Issue: Fuel Distribution System

Definition:

The fuel distribution system in the building (or functional area) is inadequate.

Severity Levels:

Red - There is no fuel distribution system* or the fuel distribution system violates code and/or is inadequate adversely affecting the mission to a significant degree.

Amber - A substitute or temporary fuel is used instead of the required fuel system (i.e. propane tanks).

Green (+) - The fuel distribution system is adequate.

*If the building (or functional area) does not have and does not require a fuel distribution system, rate this sub-issue "N/A."

Examples:

- The fuel distribution system has inadequate pressure.
- The fuel distribution system has inadequate capacity to serve all parts of the building (or functional area).
- Propane tanks are used in the production area instead of hooking into the natural gas line.

Building Services - Gas System

Functionality Issue: Building (or Functional Area) Services

Sub-Issue: Oxygen (or Other Gas) System

Definition:

The oxygen (or other gas) system in the building (or functional area) is inadequate.

Severity Levels:

Red - There is no oxygen (or other gas) system* or the oxygen (or other gas) system violates code or is inadequate (pressure or capacity), adversely affecting the mission to a significant degree.

Amber - The oxygen (or other gas) system is inadequate, but the mission is not affected to the level of red.

Green (+) - The oxygen (or other gas) system is adequate.

*If the building (or functional area) does not have and does not require an oxygen or other gas distribution system, rate this sub-issue "N/A."

Examples:

- The oxygen system is contaminated.
- The nitrogen system has inadequate pressure.

- There is no hydrogen system in the building (or functional area), and it is necessary for the mission.

Building Services - Hot Water Supply

Functionality Issue: Building (or Functional Area) Services

Sub-Issue: Hot Water Supply

Definition:

The hot water supply in the building (or functional area) is inadequate.

Severity Levels:

Red - There is no hot water supply or the water supply is inadequate, posing a health problem or adversely affecting the mission to a significant degree.

Amber - The hot water supply is inadequate, but health is not a problem and the mission is not affected to the level of red.

Green (+) - The hot water supply is adequate.

Examples:

- The water in the building (or functional area) cannot be heated to the necessary temperature.
- There is not enough hot water in the building (or functional area).
- There is no hot water connection in the building (or functional area).

Building Services - Industrial Wastewater Removal

Functionality Issue: Building (or Functional Area) Services

Sub-Issue: Industrial Wastewater Removal System

Definition:

The industrial wastewater removal system is inadequate in the building (or functional area).

Severity Levels:

Red - There is no industrial waste removal system, or the industrial waste removal system violates code or is out of date/undersized.

Amber - The industrial waste removal system is exempt from current compliance, but future modernization will be required.

Green (+) - The industrial waste removal system is adequate.

Examples:

- The industrial wastewater removal system has an inadequate capacity.
- The industrial wastewater removal system is in violation of local codes
- The industrial wastewater removal system is obsolete.

Building Services - Internal Power Supply

Functionality Issue: Building (or Functional Area) Services

Sub-Issue: Internal Power Supply

Definition:

The internal power supply, such as a generator, within the building (or functional area) is inadequate.

Severity Levels:

Red - The components assigned to the generator do not receive the appropriate power, posing a life safety issue or adversely affecting the mission to a significant degree.

Amber - The components assigned to the generator do not receive the appropriate power, but life safety is not an issue and the mission is not affected to the level of red.

Green (+) - The internal power supply is adequate.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Components not Receiving Appropriate Power in the Building (or Functional Area)

B = Total Number of Components on Power Supply in the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- Lighting fixtures are not connected to generator.
- Generator runs out of power in a half hour before it needs to be recharged.
- Only half of the computers receive adequate power from the generator.

Building Services - IT System

Functionality Issue: Building (or Functional Area) Services

Sub-Issue: Information Technology (IT) System

Definition:

The IT system in the building (or functional area) is inadequate.

Severity Levels:

Red - There is no IT system or the IT system is obsolete and/or has insufficient connections, adversely affecting the mission to a significant degree.

Amber - The IT system is slowed or bogged down and/or has insufficient connections, but the mission is not affected to the level of red.

Green (+) - The IT system is adequate.

Examples:

- Dial-up internet services are used instead of high-speed internet services.
- There is an inadequate number of IT hookups in the building (or functional area).
- The IT system does not serve all necessary parts of the building (or functional area).

Building Services - Telephone System

Functionality Issue: Building (or Functional Area) Services

Sub-Issue: Telephone System

Definition:

The telephone system in the building (or functional area) is inadequate.

Severity Levels:

Red - There is no telephone system or the telephone system is obsolete, experiences frequent outages, and/or has insufficient instruments, adversely affecting the mission to a significant degree.

Amber - The telephone system experiences occasional outages, has static/interference, and/or has insufficient instruments, but the mission is not affected to the level of red.

Green (+) - The telephone system is adequate.

Examples:

- Not enough telephone hook-ups in the building (or functional area).
- Obsolete rotary phones are used in the building (or functional area).
- Phone hooks-ups are in poor locations in the building (or functional area).
- The voicemail system is obsolete.

Building Services - Plumbing Fixtures

Functionality Issue: Building (or Functional Area) Services

Sub-Issue: Plumbing Fixtures

Definition:

The plumbing fixtures in the building (or functional area) are inadequate.

Severity Levels:

Red - The plumbing fixtures are inadequate, adversely affecting the mission to a significant degree.

Amber - The plumbing fixtures are inadequate, but the mission is not affected to the level of red.

Green (+) - The plumbing fixtures are adequate.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Number of Inadequate Plumbing Fixtures in the Building (or Functional Area)

B = Total Number of Plumbing Fixtures in the Building (or Functional Area)

Density Ranges:

- 1%-10%
- 10%-25%
- 25% - 50%
- 50% - 100%

Examples:

- There are not enough sinks in the building (or functional area).
- Water fountain is in a dead end hallway.
- Water fountains are metal when they should be ceramic.

Building Services - Stand-Alone Wastewater Removal System

Functionality Issue: Building (or Functional Area) Services

Sub-Issue: Stand-Alone Wastewater Removal System

Definition:

The stand-alone wastewater removal system is inadequate in the building (or functional area).

Severity Levels:

Red - There is no stand-alone wastewater removal system, or the wastewater removal system violates code and/or is out of date/undersized.

Amber - The stand-alone wastewater removal system is exempt from current compliance, but future modernization will be required.

Green (+) - The stand-alone wastewater removal system is adequate.

Examples:

- A septic tank is used instead of connecting to the municipal line.
- The stand-alone wastewater removal system has an inadequate capacity.
- The stand-alone wastewater removal system is in violation of local codes.

Building Services - Security System

Functionality Issue: Building (or Functional Area) Services

Sub-Issue: Security System

Definition:

The security system in the building (or functional area) is inadequate for the associated threat level.

Note: If the building (or functional area) does not have or require a security system, rate this sub-issue "N/A."

Severity Levels:

Red - There is no security system or the security system is inadequate for threat.

Green (+) - The security system is adequate for threat.

Examples:

- There are an inadequate number of intruder detection devices in use.
- There is no alarm system, and one is required.
- There locations of the security cameras in the building (or functional area) are inadequate.

Building Services - Specialty Water Supply

Functionality Issue: Building (or Functional Area) Services

Sub-Issue: Specialty Water Supply

Definition:

The specialty water supply in the building (or functional area) is inadequate.

Severity Levels:

Red - There is no specialty water supply or the water supply is inadequate, posing a health problem or adversely affecting the mission to a significant degree.

Amber - The specialty water supply is inadequate, but health is not a problem and the mission is not affected to the level of red.

Green (+) - The specialty water supply is adequate.

Examples:

- The water in the building (or functional area) is not deionized.
- The water in the building (or functional area) is not distilled.

Building Services - Uninterruptible Power Supply

Functionality Issue: Building (or Functional Area) Services

Sub-Issue: Uninterruptible Power Supply (UPS)

Definition:

The UPS in the building (or functional area) is inadequate.

Severity Levels:

Red - The components assigned to the UPS do not receive the appropriate power, posing a life safety issue or adversely affecting the mission to a significant degree.

Amber - The components assigned to the UPS do not receive the appropriate power, but life safety is not an issue and the mission is not affected to the level of red.

Green (+) - The uninterruptible power supply is adequate.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Components not Receiving Appropriate UPS in the Building (or Functional Area)

B = Total Number of Components on UPS in the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- Emergency lighting fixtures are not connected to UPS.
- Only a quarter of the critical equipment is connected to the UPS.
- UPS only supplies power for one hour before shutting down.

Building Services - Water Supply

Functionality Issue: Building (or Functional Area) Services

Sub-Issue: Water Supply

Definition:

The water supply in the building (or functional area) is inadequate.

Severity Levels:

Red - There is no water supply or the water supply is inadequate, posing a health problem or adversely affecting the mission to a significant degree.

Amber - The water supply is inadequate, but health is not a problem and the mission is not affected to the level of red.

Green (+) - The water supply is adequate.

Examples:

- There is inadequate water pressure in the building (or functional area).
- The water is not potable in the building (or functional area).

Building Size and Configuration - Configuration

Functionality Issue: Building (or Functional Area) Size and Configuration

Sub-Issue: Configuration

Definition:

The configuration of the building (or functional area) is inadequate.

Severity Levels:

Red - The building (or functional area) configuration is inadequate, adversely affecting the mission to a significant degree.

Amber - The building (or functional area) configuration is inadequate, but the mission is not affected to the level of red.

Green(+) - The building (or functional area) configuration is adequate.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area of the Building (or Functional Area)

B = Total Area of the Building (or Functional Area)

Density Ranges:

- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- Protrusions in the building (or functional area).
- Irregular floor shapes in the building (or functional area) hindering furniture placement.
- Outdated design of the building (or functional area).
- Inadequate movement through the building (or functional area) due to configuration.

Building Size and Configuration - Overcrowding

Functionality Issue: Building (or Functional Area) Size and Configuration

Sub-Issue: Overcrowding

Definition:

The building (or functional area) is inadequately sized and is overcrowded.

Severity Levels:

Red - The building (or functional area) is overcrowded, adversely affecting the mission to a significant degree.

Amber - The building (or functional area) is overcrowded, but the mission is not affected to the level of red.

Green (+) - The building (or functional area) is not overcrowded.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area of the Building (or Functional Area)

B = Total Area of the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- Building occupant load exceeds maximum allowed in the building (or functional area).
- There is not have enough room in the building (or functional area) to perform mission to the highest ability.

Building Size and Configuration - Occupant Interaction

Functionality Issue: Building (or Functional Area) Size and Configuration

Sub-Issue: Occupant Interaction

Definition:

The level of occupant interaction in the building (or functional area) is inadequate.

Severity Levels:

Red - The building (or functional area) does not encourage the appropriate level of occupant interaction, adversely affecting the mission to a significant degree.

Amber - The building (or functional area) does not encourage the appropriate level of occupant interaction, but the mission is not affected to the level of red.

Green (+) - The building (or functional area) encourages the appropriate level of occupant interaction.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area of the Building (or Functional Area)

B = Total Area of the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- The building (or functional area) has an inadequate number of areas where interaction can occur between users.
- The building (or functional area) has inadequately sized areas where informal interaction can occur between users.

Comfort - Cooling Capacity

Functionality Issue: Comfort

Sub-Issue: Cooling Capacity

Definition:

The HVAC system does not have the capacity to adequately cool the building (or functional area).

Severity Levels:

Red - The building (or functional area) cannot be adequately cooled on a regular basis.

Amber - The building (or functional area) cannot be adequately cooled occasionally.

Green (+) - The building (or functional area) can be adequately cooled.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area of the Building (or Functional Area)

B = Total Area of the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- The building (or functional area) cannot be adequately cooled throughout the summer.
- The building (or functional area) cannot be adequately cooled, but only on the hottest days of the year.

Comfort - Dehumidification Capacity

Functionality Issue: Comfort

Sub-Issue: Dehumidification Capacity

Definition:

The HVAC system does not have the capacity to adequately dehumidify the building (or functional area).

Severity Levels:

Red - The building (or functional area) cannot be adequately dehumidified on a regular basis.

Amber - The building (or functional area) cannot be adequately dehumidified occasionally.

Green (+) - The building (or functional area) can be adequately dehumidified.

Density:

x 100 = Problem Density

A = Affected Area of the Building (or Functional Area)

B = Total Area of the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- The building (or functional area) cannot be dehumidified throughout the summer.
- The building (or functional area) cannot be adequately dehumidified, but only on the most humid days of the year.

Comfort - Disruptive Noise

Functionality Issue: Comfort

Sub-Issue: Disruptive Noise

Definition:

There is disruptive noise within the building (or functional area).

Severity Levels:

Red - There is disruptive noise within the building (or functional area), adversely affecting the mission to a significant degree.

Amber - There is some disruptive noise within the building (or functional area), but the mission is not affected to the level of red.

Green (+) - There is no disruptive noise within the building (or functional area).

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area of the Building (or Functional Area)

B = Total Area of the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- Overhead vents rattle in the building (or functional area).
- Inadequately muting of exterior noises into the building (or functional area).
- Inadequate muting of surrounding interior noise within the building (or functional area).

Comfort - Heating

Functionality Issue: Comfort

Sub-Issue: Heating Capacity

Definition:

The HVAC system does not have the capacity to adequately heat the building (or functional area).

Severity Levels:

Red - The building (or functional area) cannot be adequately heated on a regular basis.

Amber - The building (or functional area) cannot be adequately heated occasionally.

Green(+) - The building (or functional area) can be adequately heated.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area of the Building (or Functional Area)

B = Total Area of the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- The building (or functional area) cannot be adequately heated throughout the winter.
- The building (or functional area) cannot be adequately heated, but only on the coldest days of the year.

Comfort - Humidifying

Functionality Issue: Comfort

Sub-Issue: Humidification Capacity

Definition:

The HVAC system does not have the capacity to adequately humidify the building (or functional area).

Severity Levels:

Red - The building (or functional area) cannot be adequately humidified on a regular basis.

Amber - The building (or functional area) cannot be adequately humidified occasionally.

Green (+) - The building (or functional area) can be adequately humidified.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area of the Building (or Functional Area)

B = Total Area of the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- The building (or functional area) cannot be humidified throughout the winter.
- The building (or functional area) cannot be adequately humidified, but only on the most arid days of the year.

Comfort - HVAC Controls

Functionality Issue: Comfort

Sub-Issue: HVAC Controls

Definition:

The HVAC controls in the building (or functional area) are inadequate.

Severity Levels:

Red - The HVAC controls are inadequate, adversely affecting the mission to a significant degree.

Amber - The HVAC controls are inadequate, but the mission is not affected to the level of red.

Green (+) - The HVAC controls are adequate.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Area of Inadequate HVAC Control in the Building (or Functional Area)

B = Total Area of HVAC Control (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- HVAC controls are in the incorrect location in the building (or functional area).
- HVAC controls cannot adequately control the HVAC services in the building (or functional area).

Comfort - Lighting

Functionality Issue: Comfort

Sub-Issue: Lighting

Definition:

The lighting in the building (or functional area) is inadequate.

Severity Levels:

Red - The building (or functional area) is inadequately lit, adversely affecting mission to a significant degree.

Amber - The building (or functional area) has inadequate natural lighting and/or is inadequately lit, but the mission is not affected to the level of red.

Green (+) - The building (or functional area) is adequately lit, including natural lighting where applicable.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area of the Building (or Functional Area)

B = Total Area of the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- The building (or functional area) is too dark.
- The building (or functional area) area is too bright.
- There is inadequate natural lighting where necessary in the building (or functional area).

Comfort - Lighting Controls

Functionality Issue: Comfort

Sub-Issue: Lighting Controls

Definition:

The lighting controls in the building (or functional area) are inadequate.

Severity Levels:

Red - The lighting controls are inadequate, adversely affecting the mission to a significant degree.

Amber - The lighting controls are inadequate, but the mission is not affected to the level of red.

Green (+) - The lighting controls are adequate.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Number of Inadequate Lighting Controls in the Building (or Functional Area)

B = Total Number of Lighting Controls in the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- Lighting controls are in the incorrect location in the entire building (or functional area).
- Lighting controls in the building (or functional area) do not serve the correct lighting fixtures.
- Dimmers are not used in the building (or functional area).

Comfort - Ventilation Capacity

Functionality Issue: Comfort

Sub-Issue: Ventilation Capacity

Definition:

The HVAC system does not have the capacity to adequately ventilate the building (or functional area).

Severity Levels:

Red - The building (or functional area) cannot be adequately ventilated on a regular basis.

Amber - The building (or functional area) cannot be adequately ventilated occasionally.

Green(+) - The building (or functional area) can be adequately ventilated.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area of the Building (or Functional Area)

B = Total Area of the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- Odors are present in the building (or functional area).
- The building (or functional area) is stuffy.

Cultural Resources - Second Tier / Functional Area

Functionality Issue: Cultural Resources

Sub-Issue: Second Tier / Functional Area

Definition:

For the 2nd tier of assessment there is only one sub-issue for the cultural resources issue, which is determined from the results of the first tier Cultural Resources Wizard results. If the wizard has identified cultural resources within the building, then the following sub-issue question will appear:

"Are the cultural resources/historical aspects identified in the first tier assessment present in this functional area?"

If the wizard has not identified cultural resources within the building, then the following sub-issue wording will appear:

"Results of the first tier assessment identified no cultural resources or historical aspects in the building."

Sub-Issue Responses:

If cultural resources were identified in the building, the following responses are available:

- Yes – The cultural resources/historical aspects identified in the first tier of assessment are present in and affect the functional area.
- No - The cultural resources/historical aspects identified in the first tier of assessment are not present in and do not affect the functional area.

If no cultural resources were identified in the building, then no response is required because this sub-issue does not apply to the functional area.

Cultural Resources - Archeological Site

Functionality Issue: Cultural Resources

Sub-Issue: Archeological Site

Definition:

The building is located on or near a National Register eligible or listed archeological site.

Note:

The cultural resources sub-issues are not rated in the same manner as the rest of the sub-issues. Instead of choosing a severity and density, these sub-issues are questions that are answered either “Yes” or “No” to determine if the building has historic or cultural resource aspects.

These sub-issues are not rated like the other sub-issues because there is no inherent “functionality loss” associated with these sub-issues. The objective of these sub-issues is to determine which buildings have historic or cultural resource aspects that would govern the types of work items that can be performed in the building.

Also, these sub-issues only appear in the first tier of the functionality assessment.

Sub-Issue Responses:

Yes – The building is located on or near a National Register eligible or listed archeological site.

No - The building is not on or near a National Register eligible or listed archeological site.

Cultural Resources - Contributing Resource

Functionality Issue: Cultural Resources

Sub-Issue: Contributing Resource

Definition:

The building is a contributing resource in a National Register eligible or listed historic district or cultural landscape.

Note:

The cultural resources sub-issues are not rated in the same manner as the rest of the sub-issues. Instead of choosing a severity and density, these sub-issues are questions that are answered either “Yes” or “No” to determine if the building has historic or cultural resource aspects.

These sub-issues are not rated like the other sub-issues because there is no inherent “functionality loss” associated with these sub-issues. The objective of these sub-issues is to determine which buildings have historic or cultural resource aspects that would govern the types of work items that can be performed in the building.

Also, these sub-issues only appear in the first tier of the functionality assessment.

Sub-Issue Responses:

Yes – The building is a contributing resource in a National Register eligible or listed historic district or cultural landscape.

No - The building is not a contributing resource in a National Register eligible or listed historic district or cultural landscape.

Cultural Resources - Programmatic Agreement/MOA/MOU

Functionality Issue: Cultural Resources

Sub-Issue: Programmatic Agreement/MOA /MOU

Definition:

The building has a Programmatic Agreement or MOA/MOU that would govern the work items (repair, replacement, modernization) in the building.

Note:

The cultural resources sub-issues are not rated in the same manner as the rest of the sub-issues. Instead of choosing a severity and density, these sub-issues are questions that are answered either “Yes” or “No” to determine if the building has historic or cultural resource aspects.

These sub-issues are not rated like the other sub-issues because there is no inherent “functionality loss” associated with these sub-issues. The objective of these sub-issues is to determine which buildings have historic or cultural resource aspects that would govern the types of work items that can be performed in the building.

Also, these sub-issues only appear in the first tier of the functionality assessment.

Sub-Issue Responses:

Yes – There is a Programmatic Agreement or MOA/MOU governing the work items in the building.

No - There is no Programmatic Agreement or MOA/MOU in the building.

Cultural Resources - NAGPRA Sacred Site

Functionality Issue: Cultural Resources

Sub-Issue: NAGPRA Sacred Site

Definition:

The building is located on or near a NAGPRA eligible Native American sacred site.

Note:

The cultural resources sub-issues are not rated in the same manner as the rest of the sub-issues. Instead of choosing a severity and density, these sub-issues are questions that are answered either “Yes” or “No” to determine if the building has historic or cultural resource aspects.

These sub-issues are not rated like the other sub-issues because there is no inherent “functionality loss” associated with these sub-issues. The objective of these sub-issues is to determine which buildings have historic or cultural resource aspects that would govern the types of work items that can be performed in the building.

Also, these sub-issues only appear in the first tier of the functionality assessment.

Sub-Issue Responses:

Yes – The building is located on or near a National Register eligible or listed archeological site.

No - The building is not on or near a National Register eligible or listed archeological site.

Cultural Resources - National Register Eligibility

Functionality Issue: Cultural Resources

Sub-Issue: National Register Eligibility

Definition:

The building is on or is eligible to be placed on the National Register for historic buildings.

Note:

The cultural resources sub-issues are not rated in the same manner as the rest of the sub-issues. Instead of choosing a severity and density, these sub-issues are questions that are answered either “Yes” or “No” to determine if the building has historic or cultural resource aspects.

These sub-issues are not rated like the other sub-issues because there is no inherent “functionality loss” associated with these sub-issues. The objective of these sub-issues is to determine which buildings have historic or cultural resource aspects that would govern the types of work items that can be performed in the building.

Also, these sub-issues only appear in the first tier of the functionality assessment.

Sub-Issue Responses:

Yes – The building is on or eligible for the National Register.

No - The building is not on or eligible for the National Register.

Cultural Resources - Near a Historic Property

Functionality Issue: Cultural Resources

Sub-Issue: Near a Historic Property

Definition:

The building is located near or in the view shed of a National Register eligible or listed historic property, historic district, or cultural landscape?

Note:

The cultural resources sub-issues are not rated in the same manner as the rest of the sub-issues. Instead of choosing a severity and density, these sub-issues are questions that are answered either “Yes” or “No” to determine if the building has historic or cultural resource aspects.

These sub-issues are not rated like the other sub-issues because there is no inherent “functionality loss” associated with these sub-issues. The objective of these sub-issues is to determine which buildings have historic or cultural resource aspects that would govern the types of work items that can be performed in the building.

Also, these sub-issues only appear in the first tier of the functionality assessment.

Sub-Issue Responses:

Yes – The building is located near or in the view shed of a National Register eligible or listed historic property, historic district, or cultural landscape.

No - The building is not located near or in the view shed of a National Register eligible or listed historic property, historic district, or cultural landscape.

Efficiency - Equipment

Functionality Issue: Efficiency and Obsolescence

Sub-Issue: Equipment

Definition:

The equipment in the building (or functional area) is inefficient and/or obsolete.

Severity Levels:

Amber - The equipment’s technology is ineffective, inefficient, and/or unreliable.

Green (+) - The equipment’s technology is effective, efficient, and reliable.

Density:

Automatically computed by BUILDER.

Examples:

- The water pump is energy inefficient.
- The boiler cannot be repaired due to obsolescence (i.e. cannot get repair parts).

Efficiency - HVAC Controls

Functionality Issue: Efficiency and Obsolescence

Sub-Issue: HVAC Controls

Definition:

Efficient HVAC controls in the building (or functional area) are inadequate.

Severity Levels:

Amber - Efficient HVAC controls are inadequate or not used or where applicable.

Green(+) - Efficient HVAC controls are in use and adequate.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Number of Inadequate HVAC Controls in the Building (or Functional Area)

B = Total Number of HVAC Controls in the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- Occupant sensors, timers, etc. are not used where applicable.
- Occupant sensors, timers, etc. do not conserve an adequate amount of energy.

Efficiency - HVAC Zones

Functionality Issue: Efficiency and Obsolescence

Sub-Issue: HVAC Zones

Definition:

The building (or functional area) is inadequately zoned for HVAC to accommodate varying needs for environmental controls.

Severity Levels:

Amber - The building (or functional area) is inadequately zoned for HVAC.

Green (+) - The building (or functional area) is adequately zoned for HVAC.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area of the Building (or Functional Area)

B = Total Area of the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- The restrooms do not have their own ventilation system.
- The kitchen and office area are in the same HVAC zone.

Efficiency - Insulation

Functionality Issue: Efficiency and Obsolescence

Sub-Issue: Insulation

Definition:

The insulation in the building (or functional area) does not meet the building (or functional area) requirements.

Severity Levels:

Amber – The insulation does not meet the building (or functional area) requirements.

Green (+) - The insulation meets the building (or functional area) requirements.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area of the Building (or Functional Area)

B = Total Area of the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%

- 25% - 50%
- 50% - 100%

Examples:

- Exterior walls on part of the building (or functional area) have an inadequate R-value.
- The roof has an inadequate insulation type (i.e. rigid when non-rigid is required).

Efficiency - Lighting Fixtures

Functionality Issue: Efficiency and Obsolescence

Sub-Issue: Lighting Fixtures

Definition:

Energy efficient lighting fixtures in the building (or functional area) are inadequate.

Severity Levels:

Amber - Energy efficient lighting fixtures are inadequate or not used where applicable.

Green (+) - Energy efficient lighting fixtures are in use and adequate.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Number of Inadequate Lighting Fixtures in the Building (or Functional Area)

B = Total Number of Lighting Fixtures in the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- Energy efficient lighting fixtures are not used anywhere in the building (or functional area) and should be.
- The efficient lighting fixtures in the building (or functional area) do not conserve an adequate amount of energy.

Efficiency - Lighting Controls

Functionality Issue: Efficiency and Obsolescence

Sub-Issue: Lighting Controls

Definition:

Efficient lighting controls in the building (or functional area) are inadequate.

Severity Levels:

Amber - Efficient lighting controls are inadequate or not used or where applicable.

Green (+) - Efficient lighting controls are in use and adequate.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Number of Inadequate Lighting Controls in the Building (or Functional Area)

B = Total Number of Lighting Control in the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- Light sensors, timers, photocells, etc. are not used in the building (or functional area) and should be.
- Light sensors, timers, photocells, etc. are energy inefficient for current standards.

Efficiency - Water Conservation Mechanisms

Functionality Issue: Efficiency and Obsolescence

Sub-Issue: Water Conservation Mechanisms

Definition:

The water conservation mechanisms in the building (or functional area) are inadequate.

Severity Levels:

Amber - Water conservation mechanisms are inadequate or not used where applicable.

Green (+) - Water conservation mechanisms are in use and adequate.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Number of Inadequate Water Conservation Mechanisms in the Building (or Functional Area)

B = Total Number of Water Conservation Mechanisms in the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- Faucet sensors are not installed in sinks where they are necessary.
- Toilets and urinals have inefficient flush mechanisms installed on them.

Efficiency - Windows and Doors

Functionality Issue: Efficiency and Obsolescence

Sub-Issue: Windows and Doors

Definition:

The windows and doors in the building (or functional area) are energy inefficient.

Severity Levels:

Amber – Energy efficient windows and doors are inadequate or not used where applicable.

Green (+) - Energy efficient windows and doors are in use and adequate.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Number of Inadequate Windows and Doors in the Building (or Functional Area)

B = Total Number of Windows and Doors in the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%

- 25% - 50%
- 50% - 100%

Examples:

- The windows in the building (or functional area) are single pane when they should be double pane.
- The entry doors into the building (or functional area) are not completely sealed.
- The exterior doors on the building (or functional area) have an inadequate R-Value.

Environment/Health - Asbestos

Functionality Issue: Environment/Health

Sub-Issue: Asbestos

Definition:

Asbestos is present in the building (or functional area).

Severity Levels:

Red - Friable asbestos is present in the building (or functional area), posing a health problem.

Amber - Encapsulated or non-friable asbestos is present in the building (or functional area), but health is not a problem.

Green (+) - No asbestos is present in the building (or functional area).

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area of the Building (or Functional Area)

B = Total Area of the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- Friable asbestos pipes are present in the building (or functional area).
- Encapsulated asbestos insulation is present in the building (or functional area).

Environment/Health - Flammable/Combustible Material Storage

Functionality Issue: Environment/Health

Sub-Issue: Flammable/Combustible Material Storage

Definition:

Flammable/combustible materials are inadequately stored in the building (or functional area).

Severity Levels:

Red - Flammable and combustible materials are inadequately stored in the building (or functional area), posing a life safety issue or violating code.

Green (+) - Flammable and combustible materials are adequately stored in the building (or functional area).

Environment/Health - Fire and Smoke Warning System

Functionality Issue: Environment/Health

Sub-Issue: Fire and Smoke Warning/Detection System

Definition:

The fire and smoke warning/detection system is inadequate in the building (or functional area).

Severity Levels:

Red - The fire and smoke warning/detection system is inadequate, posing a life safety issue or violating code.

Amber - The fire and smoke warning/detection system meets code and life safety is not an issue, but the system could be upgraded.

Green (+) - The fire and smoke warning/detection system is adequate.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area of the Building (or Functional Area)

B = Total Area of the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%

- 25% - 50%
- 50% - 100%

Examples:

- There is no fire and smoke warning/ detection system in the building (or functional area).
- There are an inadequate number of smoke detectors in the building (or functional area).

Environment/Health - Fire Suppression Equipment

Functionality Issue: Environment/Health

Sub-Issue: Fire Suppression Equipment

Definition:

The fire suppression equipment in the building (or functional area) is inadequate.

Severity Levels:

Red - The fire suppression equipment is inadequate, posing a life safety issue or violating code.

Amber - The fire suppression equipment meets code and life safety is not an issue, but the system could be upgraded.

Green (+) - The fire suppression equipment is adequate.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area of the Building (or Functional Area)

B = Total Area of the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- There is no sprinkler system in the building (or functional area).
- Halon sprinklers could be used instead of water sprinklers in the building (or functional area).

Environment/Health - Indoor Air Quality

Functionality Issue: Environment/Health

Sub-Issue:Indoor Air Quality (IAQ)

Definition:

The IAQ in the building (or functional area) is inadequate.

Severity Levels:

Red - The IAQ in the building (or functional area) is inadequate, posing a health problem.

Amber - The IAQ is inadequate (or functional area) in the building, but health is not a problem.

Green (+) - The IAQ is adequate (or functional area) in the building (or functional area).

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area of the Building (or Functional Area)

B = Total Area of the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- Toxic chemicals are present in the building (or functional area).
- Multiple users have developed occupational asthma in the building (or functional area).

Environment/Health - Lead in Water

Functionality Issue: Environment/Health

Sub-Issue: Lead in Water

Definition:

Lead is present in the building's (or functional area's) water.

Note: This sub-issue deals with lead in the water only from pipe solder, etc; not water contaminated with lead from the source.

Severity Levels:

Red - Lead is present in the building’s (or functional area's) water, posing a health problem.

Amber - Lead is present in the building’s (or functional area's) water, but health is not a problem.

Green (+) - No lead is present in the building’s (or functional area's) water.

Density:

x 100 = Problem Density

A = Affected Area of the Building (or Functional Area)

B = Total Area of the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- The amount of lead present in the building’s (or functional area's) water is above the safety threshold.
- There is a minimal amount of lead present in the building’s (or functional area's) water, but it is below the safety threshold.

Environment/Health - Lead Paint

Functionality Issue: Environment/Health

Sub-Issue: Lead Paint

Definition:

Lead paint is present in the building (or functional area).

Severity Levels:

Red - Lead paint is present in the building (or functional area), posing a health problem.

Amber - Lead paint is present in the building (or functional area), but health is not a problem.

Green (+) - No lead is present in the building (or functional area).

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area of the Building (or Functional Area)

B = Total Area of the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- Lead paint is flaking off the walls in the building (or functional area).
- Lead paint is painted over and sealed with a non-lead based paint in the building (or functional area).

Environment/Health - Lightning Protection

Functionality Issue: Environment/Health

Sub-Issue: Lightning Protection

Definition:

The building (or functional area) has inadequate lightning protection

Severity Levels:

Red - The building (or functional area) has inadequate or no lightning protection.

Green (+) - The building (or functional area) has adequate lightning protection.

Examples:

- There is no lightning protection on parts of the roof where it is necessary.
- The lightning protection has inadequate connections.

Environment/Health - Polychlorinated Biphenyls (PCBs)

Functionality Issue: Environment/Health

Sub-Issue: Polychlorinated Biphenyls (PCBs)

Definition:

PCBs are present in the building (or functional area).

Severity Levels:

Red - PCBs are present in the building (or functional area), posing a health problem or violating code.

Amber - PCBs are used in the building (or functional area), but health is not a problem and codes are not violated.

Green (+) - No PCBs are present in the building (or functional area).

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area of the Building (or Functional Area)

B = Total Area of the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 100%

Examples:

- Exposed PCBs are present in the building (or functional area).
- Encapsulated PCBs are present in the lighting fixtures in the building (or functional area).

Environment/Health - Radon

Functionality Issue: Environment/Health

Sub-Issue: Radon

Definition:

Radon is present in the building (or functional area).

Severity Levels:

Red - Radon is present in the building (or functional area), posing a health problem.

Amber - Radon is present in the building (or functional area), but health is not a problem.

Green (+) - No radon is present in the building (or functional area).

Examples:

- Radon is present in the building (or functional area), and it is above the threshold of safety.
- Radon is present in the building (or functional area), but it is below the threshold of safety.

Location - Airfield Safety Clearance

Functionality Issue: Location

Sub-Issue: Airfield Safety Clearance

Definition:

The building is located in an airfield safety clearance.

Note: This sub-issue only appears in the first tier of the functionality assessment.

Severity Levels:

Red - The building is located in an airfield safety clearance and is unable to obtain a location waiver.

Amber - The building is located in an airfield safety clearance but has a location waiver.

Green (+) - The building is not located in an airfield safety clearance.

Location - Excessive Noise

Functionality Issue: Location

Sub-Issue: Excessive Noise

Definition:

The building is located in an area of disruptive noise.

Note: This sub-issue only appears in the first tier of the functionality assessment.

Severity Levels:

Red - The building is located near sources of excessive noise, posing a health problem or adversely affecting the mission to a significant degree.

Amber - The building is located near sources of excessive noise, but health is not a problem and the mission is not affected to the level of red.

Green (+) - The building is not located near sources of excessive noise.

Location - Explosive Arc Distance

Functionality Issue: Location

Sub-Issue: Explosive Arc Distance

Definition:

The building is located in an explosive arc.

Note: This sub-issue only appears in the first tier of the functionality assessment.

Severity Levels:

Red - The building is located in an explosive arc and is unable to obtain a location waiver.

Amber - The building is located in an explosive arc but has a location waiver.

Green (+) - The building is not located in an explosive arc.

Location - Floodplain

Functionality Issue: Location

Sub-Issue: Floodplain

Definition:

The building is located on a floodplain.

Note: This sub-issue only appears in the first tier of the functionality assessment.

Severity Levels:

Red - The building is located on a floodplain, and the building and/or site floods frequently (roughly every 1-2 years).

Amber - The building is located on a floodplain, but building and/or site floods infrequently (roughly every 25-30 years).

Green (+) - The building is not located on a floodplain.

Location - Mission Support (Functional Area)

Functionality Issue: Location

Sub-Issue: Functional Area Location

Definition:

The functional area’s location is inadequate to support the mission.

Note: This sub-issue only appears in the second tier of the functionality assessment.

Severity Levels:

Red - The functional area is located inadequately for support, adversely affecting the mission to a significant degree.

Amber - The functional area is located inadequately for support, but the mission is not affected to the level of red.

Green (+) - The functional area is located adequately for support of the mission.

Examples:

- The administration area is not located near the conference rooms (assembly areas).
- The restrooms are not located centrally to the building.
- The security area is located in or near public areas of the building.

Location - Mission Support (Building)

Functionality Issue: Location

Sub-Issue: Mission Support

Definition:

The building's location is inadequate to support the mission.

Note: This sub-issue only appears in the first tier of the functionality assessment.

Severity Levels:

Red - The building is located inadequately for support, adversely affecting the mission to a significant degree.

Amber - The building is located inadequately for support, but the mission is not affected to the level of red.

Green (+) - The building is located adequately for support of the mission.

Maintainability - Design and Placement of Equipment

Functionality Issue: Maintainability

Sub-Issue: Design and Placement of Equipment

Definition:

The design and/or placement of equipment in the building (or functional area) does not allow for easy maintenance.

Severity Levels:

Amber - The design and/or placement of equipment does not allow for easy maintenance, resulting in insufficient care.

Green (+) - The design and placement of equipment allows for easy maintenance.

Density:

Automatically computed by BUILDER.

Examples:

- The transformer is directly next to a fence, making it difficult to maintain.
- Deficient sub-components on an air handler cannot be reached to repair or replace.

Missing or Improper Component - Incorrect Component Types

Functionality Issue: Missing or Improper Component Types

Sub-Issue: Incorrect Component Types

Definition:

Component(s) in the building (or functional area) are the incorrect type.

Note: The sub-issue is intended only for components that have not been evaluated in other sub-issues.

Severity Levels:

Red – Component(s) in the building (or functional area) are the incorrect type, posing a life safety issue or adversely affecting the quality of life or mission to a significant degree.

Amber - Component(s) in the building (or functional area) are the incorrect type, but life safety is not an issue and the mission and quality of life are not affected to the level of red.

Green (+) - Component(s) in the building (or functional area) are the correct type.

Density:

Automatically computed by BUILDER.

Examples:

- A 20-ton crane is present where a 40-ton crane is necessary in the building (or functional area).
- A building has a flat roof instead of a pitched roof.

Missing or Improper Component - Needed or Desired Component

Functionality Issue: Missing or Improper Component Types

Sub-Issue: Needed or Desired Components

Definition:

Needed or desired components are missing from the building (or functional area).

Note: The sub-issue is intended only for components that have not been evaluated in other sub-issues.

Severity Levels:

Red - Needed or desired components are not present in the building (or functional area), posing a life safety issue or adversely affecting the quality of life or mission to a significant degree.

Amber - Desired components are not present in the building (or functional area), but life safety is not an issue and the mission and quality of life are not affected to the level of red.

Green (+) - All needed and desired components are present in the building (or functional area).

Density:

Automatically computed by BUILDER.

Examples:

- An elevator is needed in the building (or functional area) and not present.
- There is no vehicle lift in the maintenance shop.

Structural Adequacy - Loading Conditions

Functionality Issue: Structural Adequacy

Sub-Issue: Loading Conditions

Definition:

The building’s (or functional area's) structural system is inadequate for the loading conditions (dead, live, wind, snow, etc.) of its current use.

Severity Levels:

Red - The building’s (or functional area's) structural system is inadequate, posing a life safety issue.

Amber - The building’s (or functional area's) structural system is inadequate, but life safety is not an issue.

Green (+) - The building’s (or functional area's) structural system is adequate.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = Affected Area of the Building (or Functional Area)

B = Total Area of the Building (or Functional Area)

Density Ranges:

- 1% - 10%
- 10% - 25%

- 25% - 50%
- 50% - 100%

Examples:

- Excessive floor deflections in the building (or functional area).
- Cracks in the shear walls in the building (or functional area).
- Stairways vibrate when used by occupants.

Structural Adequacy - Seismic Conditions

Functionality Issue: Structural Adequacy

Sub-Issue: Seismic Conditions

Definition:

The building's structural system is inadequate for seismic conditions.

Note: This sub-issue only appears in the first tier of the functionality assessment.

Severity Levels:

Red - The building's structural system is inadequate for seismic conditions.

Amber - The building's structural system is exempt from seismic evaluation.

Green (+) - The building's structural system is adequate for seismic conditions.

Examples:

- FEMA rating of the building is sub-standard for local conditions.

Work Planning

Work Planning Overview

This work planning overview lays out the interrelationship between the work items, (optional) work projects, and work plans needed for successful work management.

After work configuration standards, policies, and policy sequences have been established in the work configuration phase, you can use BUILDER's automated processes to generate a work plan. A work plan is a collection of work items planned for a Building, Site, or Organization. After a work plan has been auto-generated, you also have the option to manually create work items.

Note: You can't manually create a work item until after BUILDER has generated a work plan.

Definitions

Work Item

A work item is a discrete work activity applied to a single managed object and intended to improve its life cycle performance. The "managed object" is most typically a Component-Section, but it can also be a group of work items called a work project, which is described separately below.

There are multiple ways that work items can come into being:

- Work items can be created by BUILDER's automated work generator, using (1) thresholds defined in work configuration standards, (2) policies governing what standards to apply to which types of assets, and (3) policy sequences that determine the priority order in which the policies are applied. These are described in the section of documentation starting with the topic Work Configuration Overview.
- A work item can be manually generated.
- Work items can be copied into a work plan from a scenario.

Work Project

A work project is a work item type that allows you to group other work items together and manage them as a single work effort that is prioritized and funded as a whole. The work items selected for the work project need not be in the same System or even in the same Building. An example of a work project would be a renovation effort that affects multiple Systems in a Building. A work project is the most customizable level of work item organization.

Work Plan

A work plan is a collection of work items and/or work projects planned within a designated scope. The scope of a work plan will be all of the work items pertaining to a particular Building, Complex, Site, or Organization.

What's Involved in Work Planning?

The automated processes use condition assessment data to plan maintenance and repair work at the Component-Section level, and they use functionality assessment data to plan modernization work at the Building or Functional Area level.

Work planning will consist of:

- Prioritizing the work items for funding using tools such as BUILDER's standards, policies, and policy sequences, which are found under the Work Configuration main menu item. This preparation process is what allows BUILDER to automatically generate appropriate work items.
- Creating work items. As mentioned in the definition of a work item, this can be accomplished by (a) automation, (b) manual addition of work items, or (c) import from a scenario.
- (Optional) Grouping some or all of the work items into work projects. This process is described in the topic Organize Work Items into a Project. (Alternatively, for more detail, you can start at About Work Projects).
- Entering or editing anticipated funding levels by year, at Work Configuration > Funding > Expected Funds tab; see the topic "Add a Funding Stream" in Add a Funding Stream.

Regardless of the type of work planned, a work item record is generated for each work activity needed.

The work item stores basic information about what work is planned, including the type of work, description, estimated cost, funding year, and quantity. Groups of work items can be viewed in several useful ways, such as:

- a list of all past, present, and future work in the Building
- a list filtered by year, status, System, Component, and/or Component-Section

Work Planning Tasks

To learn about work planning tasks, start with the topics About Work Plans, About Work Items, and About Work Projects.

About Work Plans

For a higher-level overview encompassing work plans, work projects, and work items, see Work Planning Overview.

What is a Work Plan?

The work plan is what will define, guide, and track progress on sustainment, modernization, or demolition work that needs to be done. Creating the work plan is the goal of the inventory, assessment, data reference, and work configuration efforts that precede it.

In the BUILDER software, a work plan is an aggregate of work items

- with a given scope–a particular Organization, Site, Complex, or Building
- for a given time period, such as the current fiscal year or next fiscal year

Within the work plan, the work items may or may not be organized into discrete work projects.

How is a Work Plan Created?

Work plans are generated by BUILDER, based on the condition and/or functionality index of assets, using specifications defined by condition standards, condition policies, etc., which together comprise work configuration. For more information about work configuration, see the Work Configuration Overview.

After initial generation, manual entry of work items into a work plan is also possible.

Related Links

For more about the work items contained in a work plan, start with the topic About Work Items.

Work Plan Tasks

View a Work Plan
Add a Work Plan
Edit a Work Plan
Work Plan Data
Prioritize Work Items in a Work Plan
Export a Work Plan or Work Items to Excel
Delete a Work Plan

Instructional Link

Work Planning Overview

View a Work Plan

When you select an inventory item in the navigation pane at the work plan page, work items relevant to that inventory location and below it in the tree will display in the main content area. This topic explains filtering, sorting, and other methods you can use to find work items and arrange them in a particular order.

Another way to view work plan data is to use BUILDER's Reports feature.

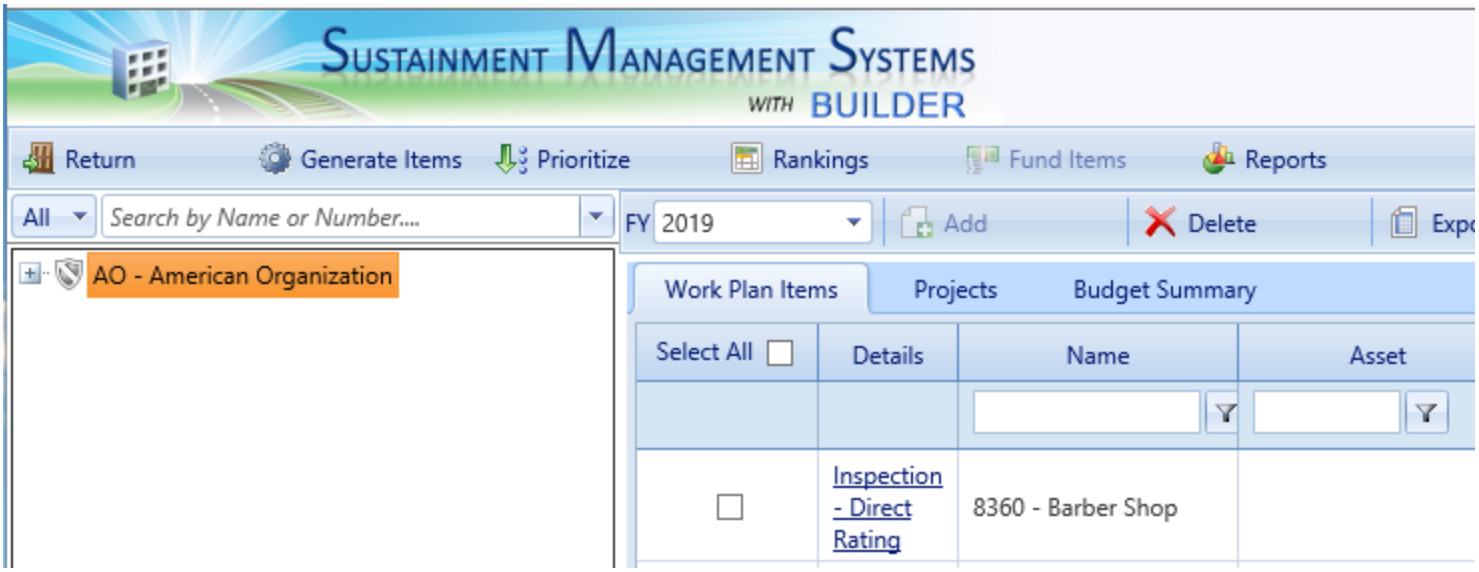
Note: If, when you reach the desired work plan location, the message "No records to display" appears, this may be for one of two reasons:

a. A work plan might not have been generated yet. See Add a Work Plan.
b. It's possible that no work is needed at the selected inventory location following the standards, policies, etc. established.

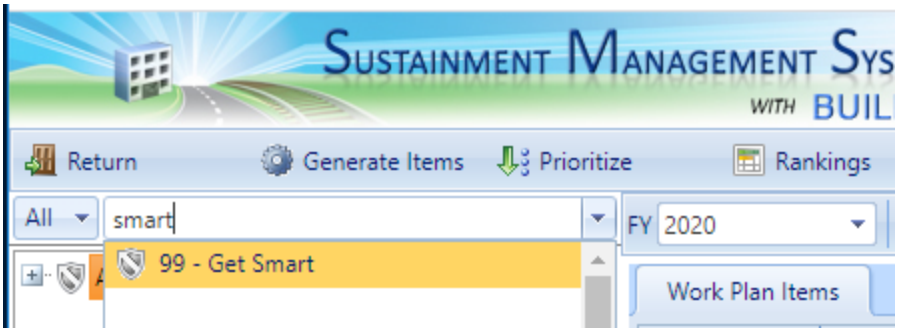
Open Work Plan

To open a work plan to view it,

- Select Work Plan from the BUILDER main menu. The work items window will appear, initially showing just the top level Organization.



- In the work items window select the inventory item whose work plan you want to view, add, or edit, using one of two methods: (a) expansion plus navigation, or (b) search:
  a. Expansion plus navigation - In the navigation tree (left pane), expand the tree as needed to navigate to the desired location and select it.
  b. Search - Alternatively, you can use the search function by typing the number, name, or part of the name of the desired inventory item into the search field just above the navigation tree (this field will be labeled "*Search by Name or Number*" until you click in it). Then select the inventory item's name in the list of results, as shown below.



For an explanation of the columns of a work plan, see the topic Work Plan Data. To change the presentation of the work plan on the screen, see Change/Refine Work Plan View in this topic.

Work Plan Toolbar

Toolbar Before a Work Plan Is Generated

If a work plan has not yet been generated for the selected location, the toolbar will contain only the buttons shown below:

After a work plan has been generated, the toolbar will contain the buttons listed below.

Toolbar After a Work Plan Has Been Generated

- Return. Closes the work plan screen.
- Generate Items. Automatically generates work items. Note that if you desire to add work items manually, generating work items is required at least once first, to establish a work plan.
- Prioritize. Prioritizes the work items for a work plan.
- Rankings.Shows rankings of the work items for a work plan.
- Fund Items. Allocates funding to the work items in a work plan.
- Reports. Launches the Report Selection tool, which gives you access to a list of standard reports relevant to the work items. See How to Use the Report Viewer.

Change/Refine Work Plan View

The work plan screen initially shows the work plan

- for the current fiscal year
- at the highest inventory level

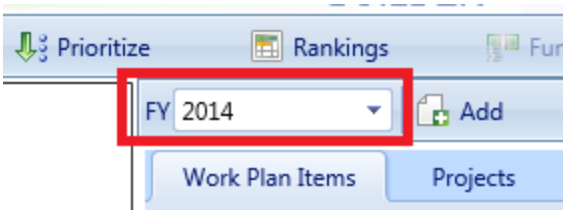
To view the work plan for a different inventory level, navigate the tree at the left side of the window to the desired level, or use the search bar, which is just above the tree. The work plan for the selected inventory level will be shown for the current fiscal year. To change the fiscal year, see the section "Select Fiscal Year," below.

In addition to constraining the work plan view by inventory item and by fiscal year, you can further constrain it by using filters, and determine the order of presentation of the work items using the sort function. More detail is presented below.

Note: The sort function does not appear on the toolbar or in the table. It is activated by clicking or double-clicking on the desired column.

Select Fiscal Year

To view the work plan for past or future fiscal years, select the desired fiscal year from the dropdown list at the top of the window:



Note: The selected fiscal year will remain active if you change your location in the navigation tree.

Filter

You can filter by any column or by multiple columns having a blank field for entry and a filter icon below the column header.

To filter,

- Enter a search term in the blank field.
- Next, activate the filter icon and select from the dropdown a condition such as "Contains" or "StartsWith" or "EqualTo". This should activate the filter. When the filter finishes, only entries that meet the filter criterion will remain. Example:

Description	Cost	Status
ROOF		
Replace B3010 ROOF COVERINGS B301090 OTHER ROOFING Other	$136,000	Awaiting Funds
Replace B3010 ROOF COVERINGS B301003 ROOF INSULATION & FILL General	$50,000	Awaiting Funds
Replace B1020 ROOF CONSTRUCTION B102003 ROOF DECKS AND SLABS Deck - Other	$447,000	Awaiting Funds

Note: If you change your location in the navigation tree, the selected filter will remain active and still apply.

To clear the filter, re-activate the filter button and select the first option, which is "NoFilter."

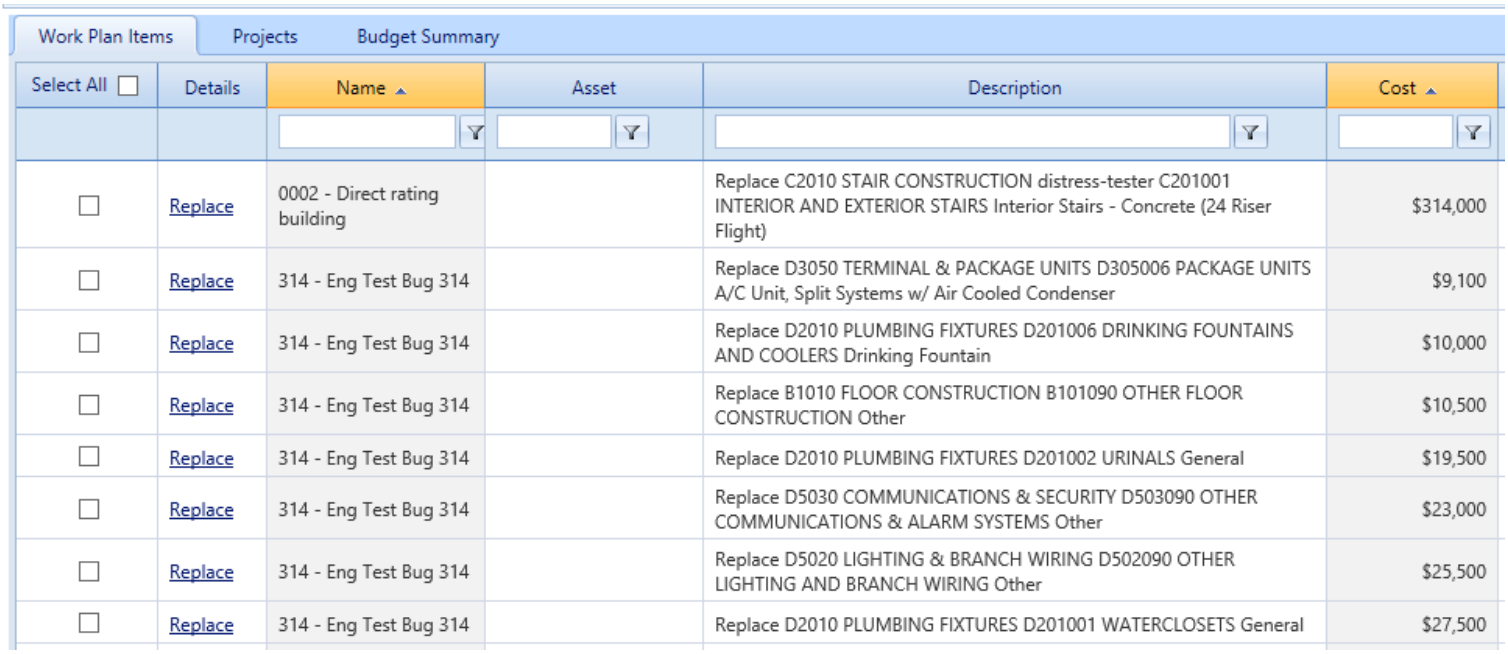
Sort

Primary Sort

Once the desired work plan year is shown, and ideally any desired filtering has already been done (because filtering an unsorted list should be faster than filtering a sorted list), choose an ascending or descending primary sort by tapping/clicking or double-tapping/double-clicking the desired column. The column header will stay highlighted to indicate that a sort has been performed.

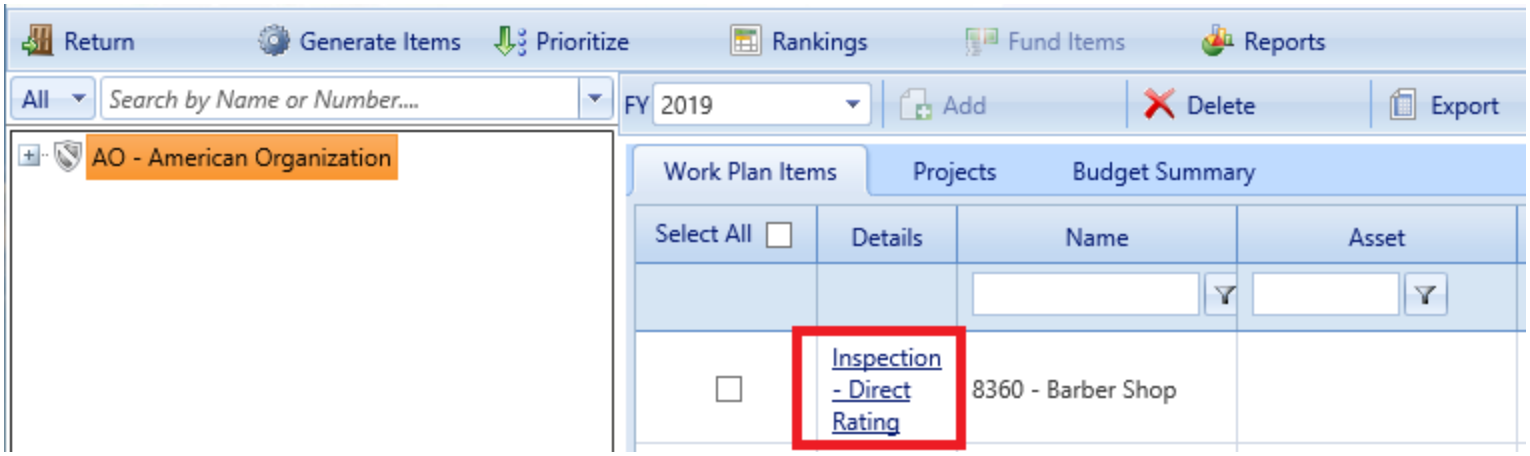
Secondary Sort

If a column header is already highlighted (indicating that a primary sort has been performed) and you then click or double-click on a second column, that will perform a secondary sort within each of the distinctive entries in the primary sort column. The screenshot below shows a primary sort on the Name column followed by a secondary sort on the Cost column.



View a Work Item

To view details of an individual work item, activate the link in the Details column.



If the work item is a Section-level work item, you will see the Section-Level Work Item Data in the "Details: popup. If the work item is a Building-level work item, the "Details" popup will show Building-Level Work Item Data .

Related Links

Task Links

Add a Work Plan
Edit a Work Plan
Work Plan Data
Prioritize Work Items in a Work Plan
Export a Work Plan or Work Items to Excel
Delete a Work Plan

Instructional Links

About Work Plans
Work Planning Overview

Add a Work Plan

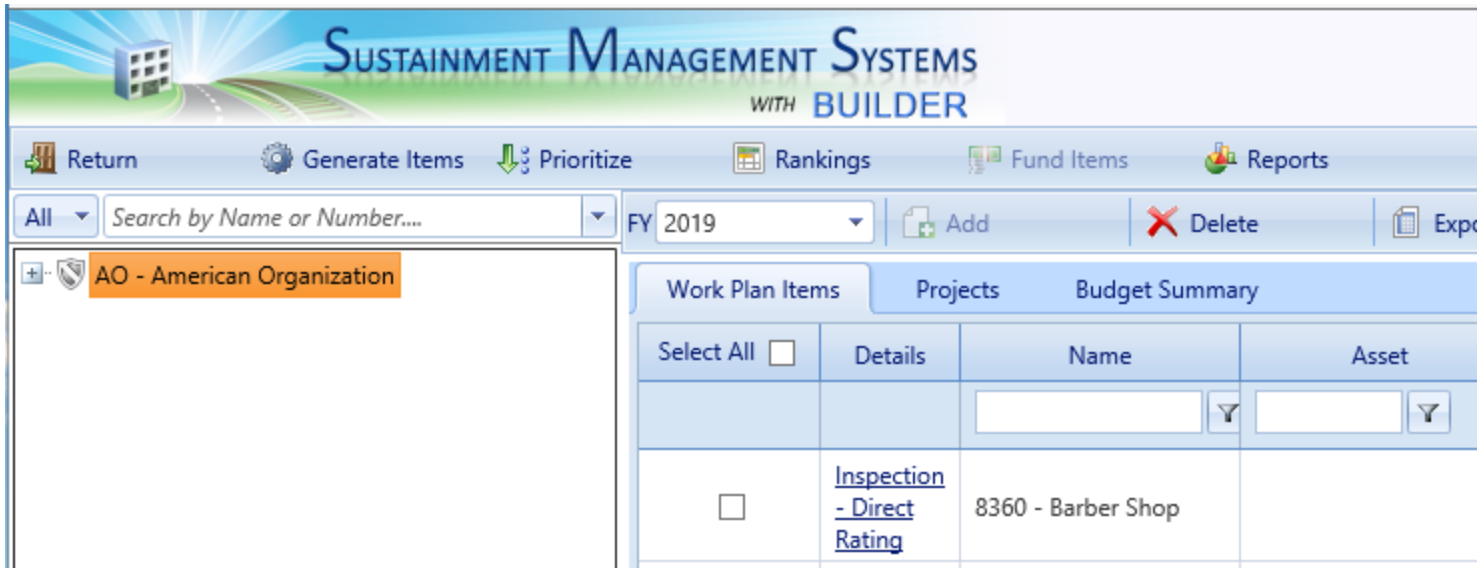
This topic shows how to create a work plan using BUILDER's automatic generation process.

To add a work plan, you must use BUILDER's automated process to generate a plan after establishing work configuration standards, policies, and policy sequences in the work configuration.

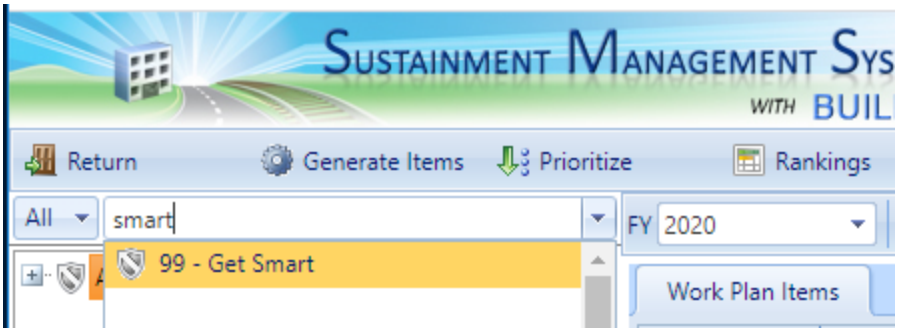
Navigate to Work Plan Location

To navigate to the desired work plan location,

- Select Work Plan from the BUILDER main menu. The work items window will appear, initially showing just the top level Organization.



- In the work items window select the inventory item whose work plan you want to view, add, or edit, using one of two methods: (a) expansion plus navigation, or (b) search:
  a. Expansion plus navigation - In the navigation tree (left pane), expand the tree as needed to navigate to the desired location and select it.
  b. Search - Alternatively, you can use the search function by typing the number, name, or part of the name of the desired inventory item into the search field just above the navigation tree (this field will be labeled "*Search by Name or Number*" until you click in it). Then select the inventory item's name in the list of results, as shown below.



Note: The inventory item you select determines the scope of the work plan. The work plan generated will cover that inventory item (Organization, Site, Complex, or Building) and all inventory items below it in the tree.

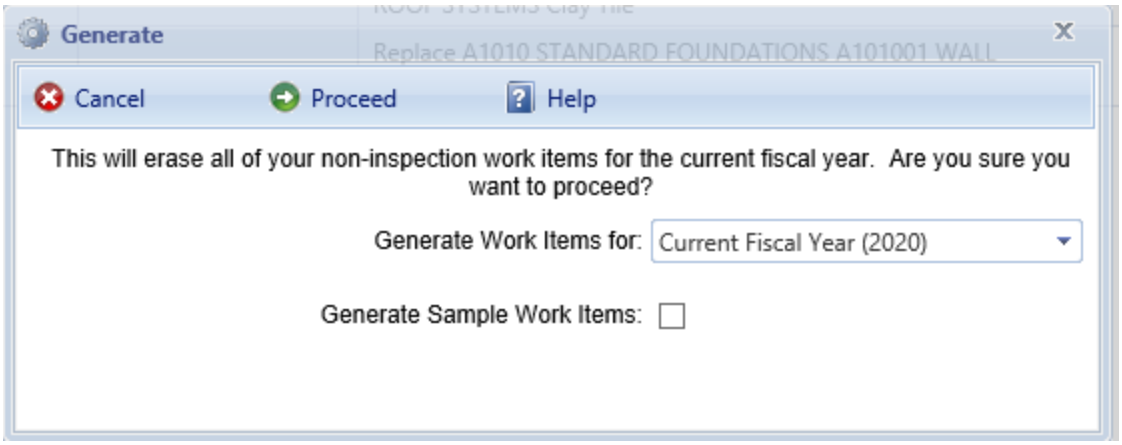
Generate Plan

Note that when generating a work plan, BUILDER will use the policy sequence defined in the Site data and compare the value for each applicable Component-Section, Functional Area, and/ or Building property with the threshold value set in the standards, to determine where and what type of work should be performed. Additionally, the estimated cost of each work item is computed using the Cost Book assigned to the Site in the Site's **General Information** tab. When the process is complete, the work plan will appear in the work plan screen, displaying all of the newly generated work items. All of the newly generated work items will have the status "Awaiting Funds." You may then refine the work item list as you wish.

CAUTION: BUILDER's work generation algorithms are still primitive in the sense that they are unable to detect work conflicts and precedences. For example, they may generate a need to repair a roof deck without a concurrent effort to repair the roof surface. Your own manual processing of the work item list must address such problems.

To generate the work plan,

- At the topmost toolbar, activate Generate Items. The "Generate" popup will appear.



- In the field titled Generate Work Items for, select "Current Fiscal Year" or "Next Fiscal Year" in the drop-down.
- (Optional) If you want the condition of inspection samples to be each considered separately in generating the work plan, rather than using the overall condition of the Component-Section, mark the Generate Sample Work Items checkbox.
- When ready, activate Proceed on the popup menu bar. (Alternatively, activate Cancel to avoid erasing and re-generating work items.)

Result: Except for work items that have been manually edited, when you proceed with generating work items all BUILDER-generated work items at that inventory location and all inventory items below it in the tree will be regenerated.

Note: Work items that were manually generated or edited will be preserved in the work plan; they will not be eliminated by work plan re-generation.

Related Links

Task Links

View a Work Plan
Edit a Work Plan
Work Plan Data
Prioritize Work Items in a Work Plan
Export a Work Plan or Work Items to Excel
Delete a Work Plan

Instructional Links

About Work Plans
Work Planning Overview

Edit a Work Plan

This topic introduces multiple ways by which you can change a work plan.

Edits to a work plan can be made in any of the following ways:

- make one or more changes to work configuration specifications, and regenerate the work plan
  –see Regenerate Work Items under Different Conditions
- add or alter one or more inventory items within the scope of the work plan, preferably also performing assessments on them, and regenerate the work plan
  –see Regenerate Work Items under Different Conditions
- Add or change one or more condition or functionality assessments pertaining to assets within the scope of the work plan, and regenerate the work plan
  see Regenerate Work Items under Different Conditions
- change the target fiscal year and regenerate the work plan
  –see Change Fiscal Year
- manually add one or more work items
  –see Manually Add a Work item
- manually delete one or more work items
  –see Delete a Work Item
- if the work plan was created by a scenario, change the scenario inputs, re-run the scenario, and re-import the results to the work plan
  –see the topic Copy Work Items from a Scenario; also referred to below at Change a Scenario

Each of these editing options is described in this topic; however, for some of them full detail may require consulting other, linked topics.

To change properties (other than fiscal year) of work items, see the documentation section on work items, starting with About Work Items.

Regenerate Work Items under Different Conditions

Because BUILDER generates work plans automatically based on work configuration and the results of assessments, you can change a work plan either by altering the underlying configuration specifications, or by making entries into BUILDER that change a condition or performance index enough to cross a threshold set in work configuration.

Options are:

a. Make one or more changes to work configuration specifications. See Work Configuration Overview for an introduction to work configuration.
b. Change one or more inventory items that are within the scope of the work plan, or add new ones, preferably also performing assessments on them.

c. Add or change one or more condition or functionality assessments pertaining to assets within the scope of the work plan.

After changing the inputs (work configuration settings, entries in the inventory tree, and/or condition and/or functionality inspections), navigate to the desired location in the work item tree (if needed, see instructions at Add a Work Plan), and regenerate the work plan following the instructions at Regenerate the Work Plan.

Note: Work items that were manually generated or edited will be preserved in the work plan; they will not be eliminated by work plan re-generation when you activate Generate Items on the Work Items screen toolbar.

Change Fiscal Year

When viewing a work plan, you can set the fiscal year to a present, past or future year. This is done at the main work plan screen.

When generating a work plan, however, you have the choice only of the current fiscal year or next fiscal year. This is done in the "Generate" popup window.

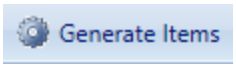
To change the fiscal year. starting at the work item screen,

- While at the desired location in the tree, activate Generate Items on the toolbar.
- In the Generate Work Items for field, select current fiscal year or next fiscal year from the dropdown list.
- Activate Proceed on the popup toolbar.

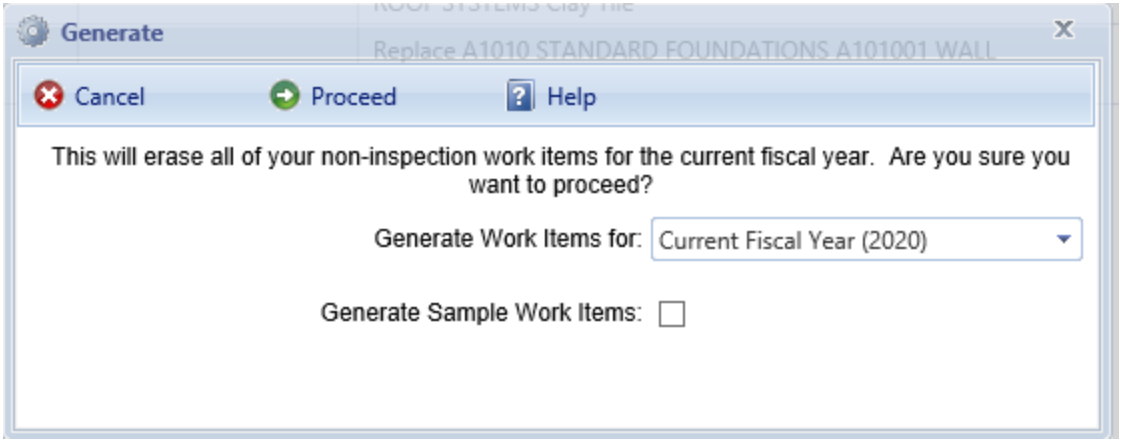
Regenerate the Work Plan

After changing either the FY (fiscal year) setting or the work configuration settings, you will need to regenerate the work plan.

To generate the work plan,

- At the topmost toolbar, activate 

Generate Items. The "Generate" popup will appear.



- In the field titled Generate Work Items for, select "Current Fiscal Year" or "Next Fiscal Year" in the drop-down.
- (Optional) If you want the condition of inspection samples to be each considered separately in generating the work plan, rather than using the overall condition of the Component-Section, mark the Generate Sample Work Items checkbox.
- When ready, activate Proceed on the popup menu bar. (Alternatively, activate Cancel to avoid erasing and re-generating work items.)

Result: Except for work items that have been manually edited, when you proceed with generating work items all BUILDER-generated work items at that inventory location and all inventory items below it in the tree will be regenerated.

Note: Work items that were manually generated or edited will be preserved in the work plan; they will not be eliminated by work plan re-generation.

Manually Add a Work item

Note: Work items that were manually generated or edited will be preserved in the work plan; they will not be eliminated by work plan re-generation when you activate the Generate Items button.

Section-Level Work Item

To manually add a Section-level work item to an existing work plan,

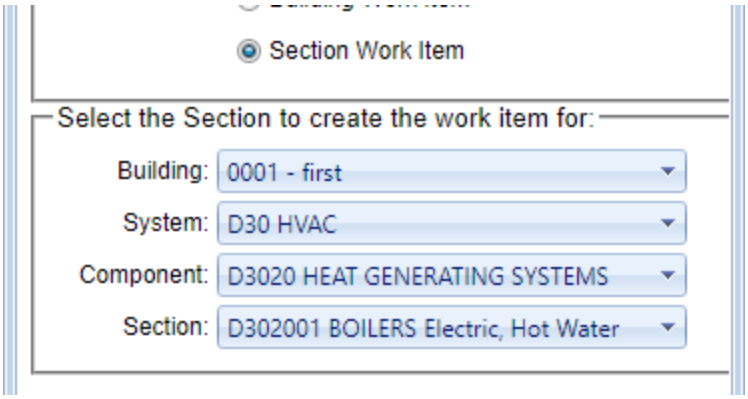
- Activate Work Plan in the main menu.
- Navigate in the tree to the desired work plan.

  IMPORTANT: This must be at Site level or below in order to add a Section-level work item.

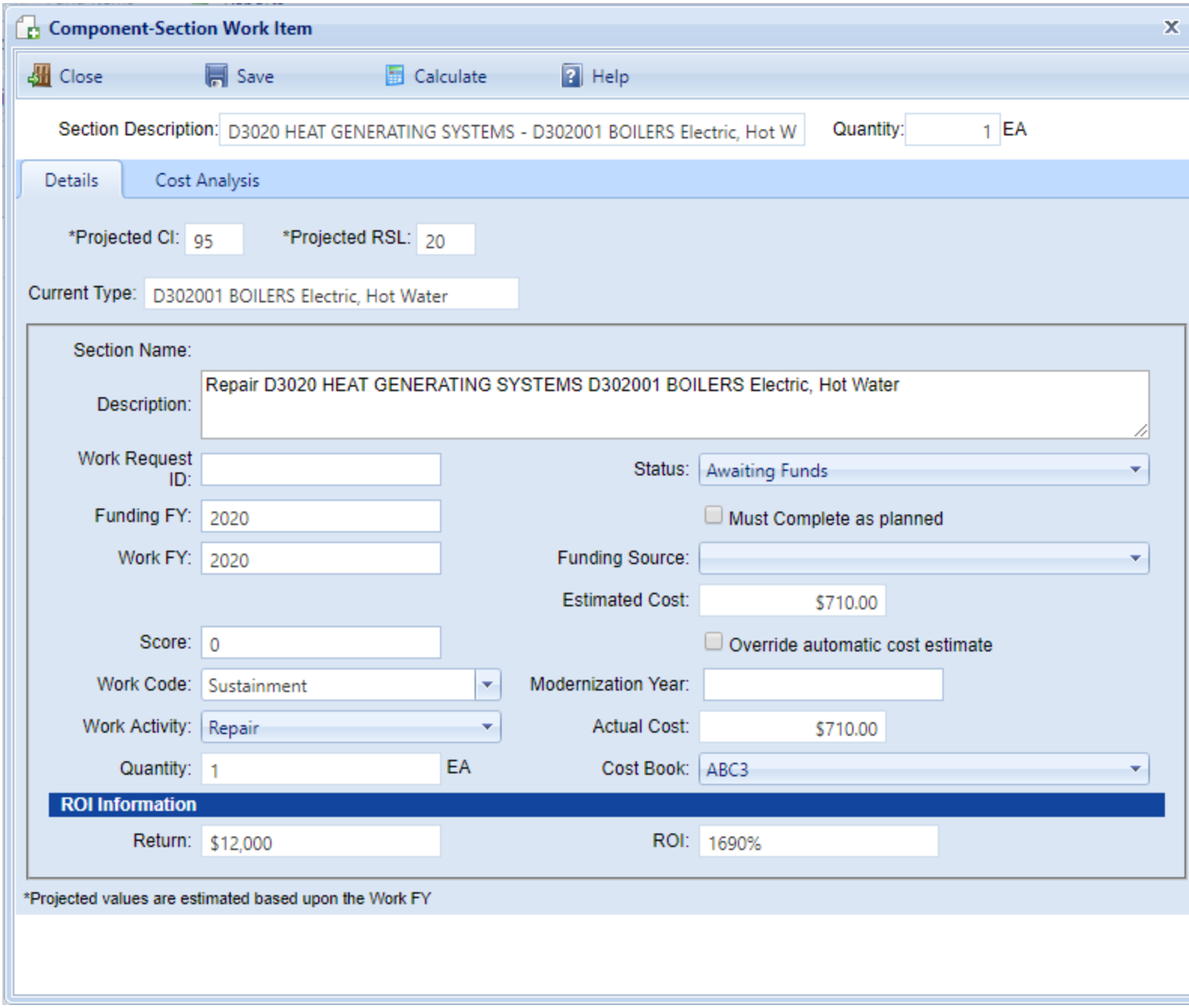
- On the second-level toolbar, activate Add. The "New Work Item" popup will appear.
- In the popup, select Section Work Item.

  Troubleshooting Tip: If you are unable to select Section Work Item, check to see if you are at the Organization level in the navigation tree. Only a Project may be added at the Organization level.

- Use the dropdowns to specify the relevant Section.

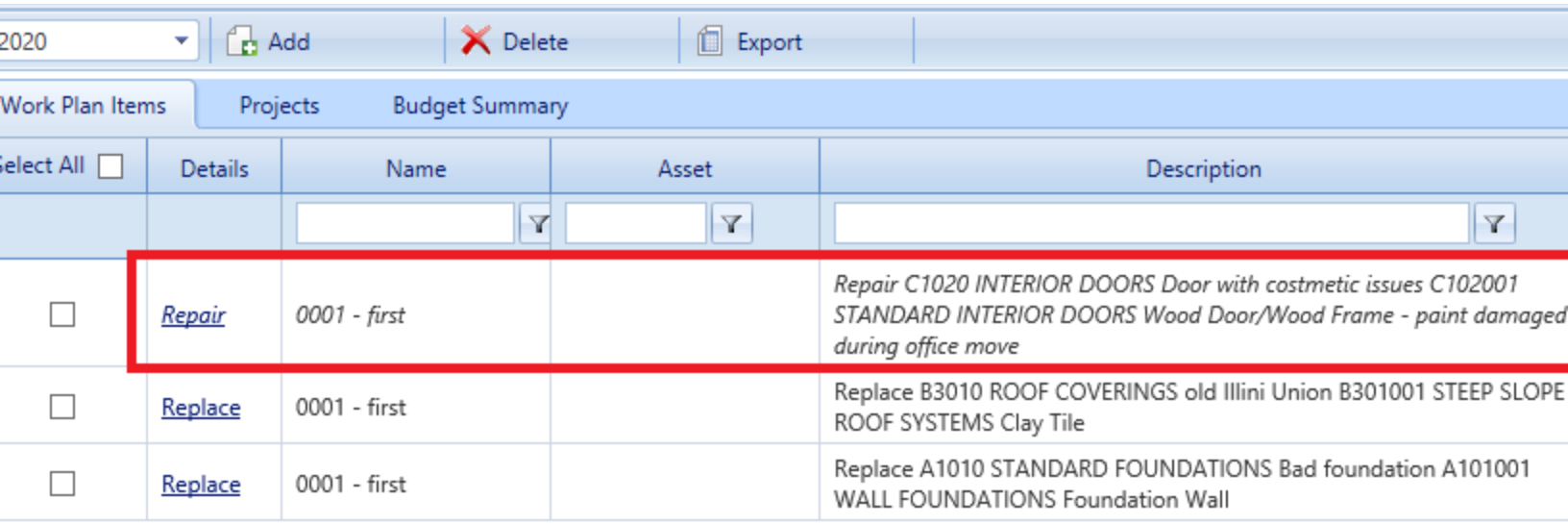


- Activate Proceed in the popup toolbar. The "Component-Section Work Item" popup will appear.



- Fill in fields as needed at the Details tab. To enter your own amount in the Estimated Cost field, you will first need to mark the Override automatic cost estimate checkbox. To revert to an automated estimate, activate the Estimate button.
- Save either as you go, or when finished.
- Activate Close.

A manually added work item will appear in the work plan in italics:



Building-Level Work Item

To manually add a Building-level work item to an existing work plan,

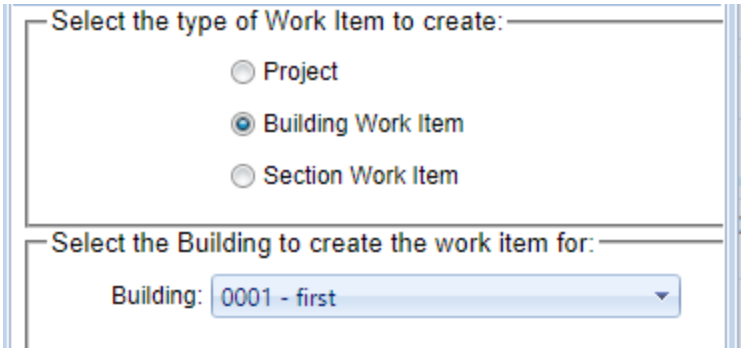
- Activate Work Plan in the main menu.
- Navigate in the tree to the desired work plan.

  IMPORTANT: This must be at Site level or below in order to add a Building-level work item.

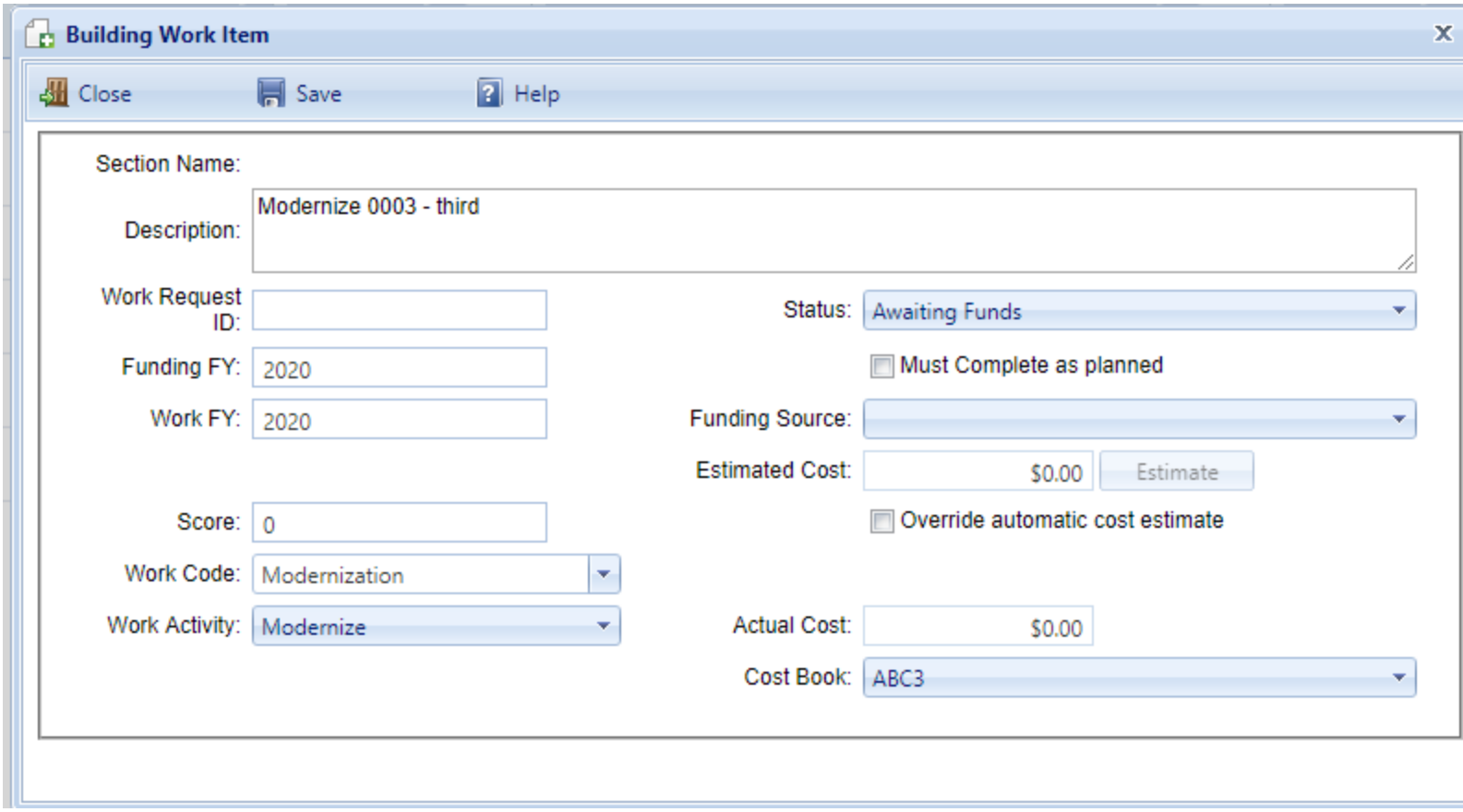
- On the second-level toolbar, activate Add. The "New Work Item" popup will appear.
- In the popup, select Building Work Item.

  Troubleshooting Tip: If you are unable to select Building Work Item, check to see if you are at the Organization level in the navigation tree. Only a Project may be added at the Organization level.

- Select the relevant Building in the dropdown.

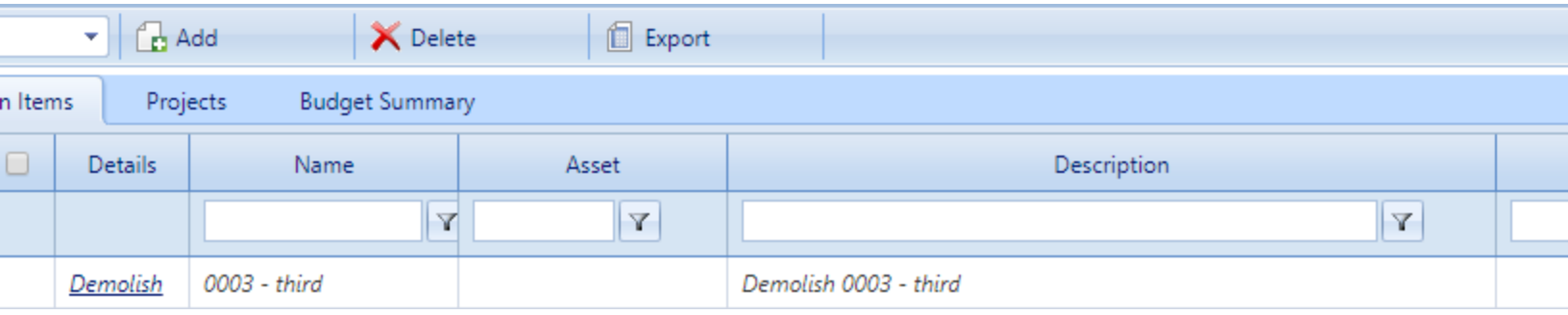


- Activate Proceed in the popup toolbar. The "Building Work Item" popup will appear.



- In the first column, select the Work Code and Work Activity from the dropdowns.
- In the second column, select or fill in fields as needed. To enter your own amount in the Estimated Cost field, you will first need to mark the Override automatic cost estimate checkbox.
- Save either as you go, or when finished.
- Activate Close.

A manually added work item will appear in the work plan in italics:



Project

You can edit a work plan by gathering collections of work items into one or more work projects. The ability to do this simplifies management of work plans by reducing the number of separate items to be managed. See the topic Organize Work Items into a Project, or begin with the topic About Work Projects.

Delete a Work Item

You can edit a work plan by deleting one or more work items as described in the topic Delete a Work Item. If, however, these items were generated instead of manually added, they will re-appear if the work plan is re-generated under the same conditions. So, after regeneration, you may need to re-check for these work items and delete them again.

Change a Scenario

If the work plan was created by importing from a scenario's results, you can change a work plan by changing the scenario's inputs, re-running the scenario, and re-importing the results to the work plan. See the Scenarios topics Edit a Scenario and Run a Scenario and Copy Work Items from a Scenario.

Related Links

Task Links

View a Work Plan
Add a Work Plan
Work Plan Data
Prioritize Work Items in a Work Plan
Export a Work Plan or Work Items to Excel
Delete a Work Plan

Instructional Links

Edit a Work Plan
Work Planning Overview

Work Plan Data

This topic explains the contents of a work plan table that is displayed when you activate Work Plans from the main menu.

The columns in the table at the Work Plan Items tab are as follows:

- Select All - Marking or unmarking the checkbox next to the Select All column title will mark or unmark all the checkboxes in the column. Alternatively, you can manually mark desired checkboxes in the column to select a customized collection of individual work items to be dealt with as a group.

- Details - Activating a link-formatted entry in the Details column will trigger a popup showing details for that work item.
- Name - Shows the Building number and name where the work will take place.
- Asset - The inventory asset that the work item applies to.
- Description - Description of the work that needs to be done.
- Cost - Estimated cost of the work to be done.
- Status - Status choices are listed at the Status field in work item Details (activate a link in the second column of the table to view work item Details).
- Score - If you have prioritized the work items, then this work item's score will be displayed here. The default value is 0, which indicates that the work items have not been prioritized.
- Date Completed - Expected work completion date.
- Must Do (Checkbox) - If this box is checked, the work item has been marked "Must Complete as planned" in the work item Details and will be funded before all other competing work items that are not marked as Must Do.
- Project Name - If the work item has been grouped into a work project, the name of that project will be listed in this column.

Related Links

Task Links

View a Work Plan
Add a Work Plan
Edit a Work Plan
Prioritize Work Items in a Work Plan
Export Work Items
Delete a Work Plan

Instructional Links

About Work Plans
Work Planning Overview

Prioritizing Work Items in a Work Plan

Prioritize Work Items in a Work Plan

This topic shows how to prioritize Section-level work items, and suggests when to prioritize. It also explains how prioritizing can be used to calibrate a prioritization scheme.

After you prioritize, you can View Work Item Rankings.

Note: Prioritizing work items in your wok plan can only be done if a prioritization scheme that applies to the area of the tree you are working in has been established as part of work configuration.

If a prioritization scheme has been created for the area of the tree you are working in, you can prioritize the work items in your work plan using the **Prioritize** button on the toolbar of the work plan screen. This will generate a **priority score** for each work item or work project in the plan, with the exception of Building-level work items.

Building-Level Work Items

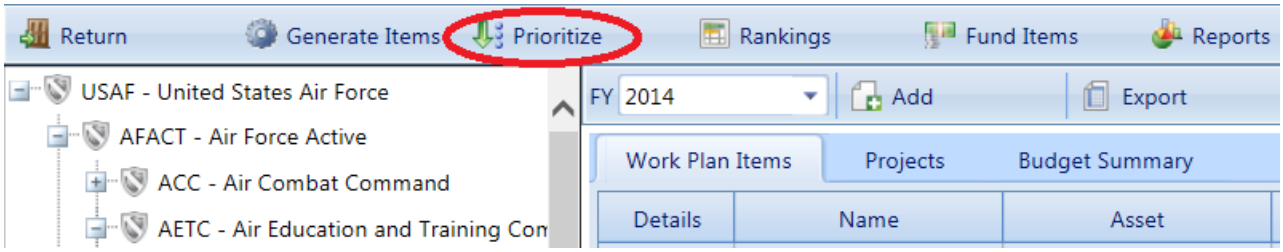
Building-level work items, such as a Building-level Modernization, do not participate in prioritization; their scores will remain at zero. However, you can cause a Building-level work item to be completed in Scenarios by marking it "Must do as planned" and providing a fund source with a criteria the work item can satisfy.

Note: Scenarios capability is provided with the **BUILDER** module only.

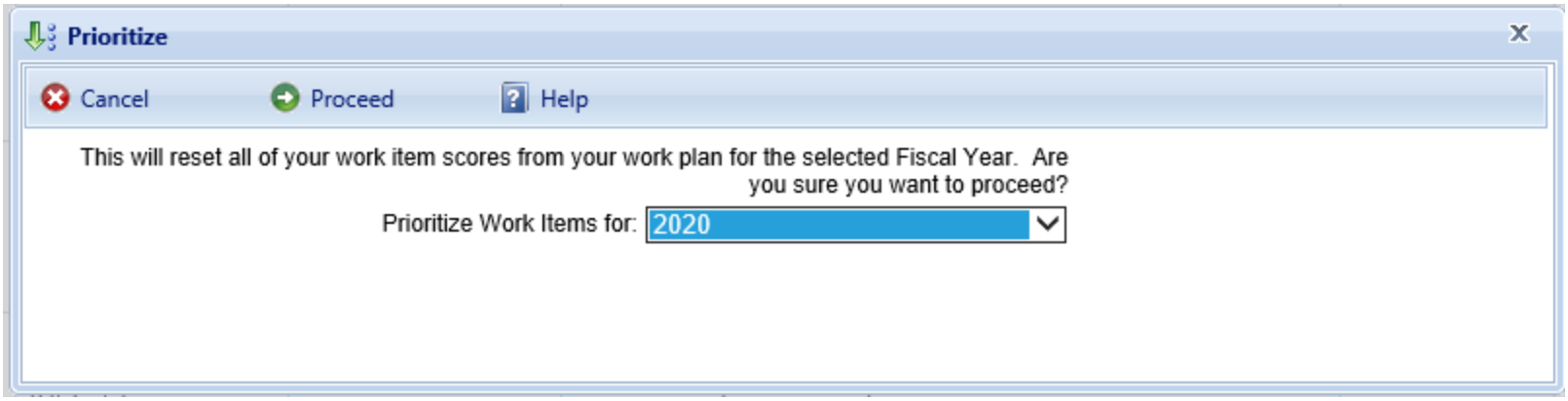
Section-Level work Items

To prioritize Section-level work items,

- With the Work Plan tab selected, activate Prioritize on the toolbar.



A popup warning box will appear, stating that all current work item scores from your work plan for the selected fiscal year will be reset if you continue.



- **IMPORTANT:** Select the desired fiscal year in the "Prioritize Work Items for" field (see screenshot above).
- Activate **Proceed** on the popup toolbar if you still wish to delete the current scores for the for Section-level work items and recompute new prioritization scores. The prioritization scores will be computed using the prioritization scheme selected in the Reference Settings area at the Site or Organization's **General Information** tab. (Alternatively, activate the **Cancel** button if you do not wish to perform these actions; you will be returned to the work plan.)

Result:

After a priority score has been computed for each work item, all work items will be shown in the work plan ranked from highest score to lowest. Project priority scores are computed by averaging the priority scores of the work items in the project, weighted by cost.

Projects

Project priority scores are computed by averaging the priority scores of the work items in the project, weighted by cost.

When to Prioritize

You can prioritize the work plan as often as you wish. Listed below are situations where prioritizing is recommended.

When Adding New Work Items

If you add new work items, you should re-prioritize to include the new items.

To Calibrate a Prioritization Scheme

You may also want to evaluate a prioritized work plan in order to calibrate the weights and points you have assigned in a particular prioritization scheme. To calibrate,

- Prioritize the work plan.
- Consider the order in which work items have been ranked, and their scores.
- When you see ordering discrepancies or score differences from your expert judgment, this might allow you to identify measures that should carry more relative weight, or measure values that warrant higher points such that the order of the work items will come out correct.
- Adjust measures and re-prioritize so that the order of the work items is acceptable.

The goal of a prioritization scheme, which is established as part of Work Configuration, is to rank work items by algorithmic calculation into the same order that expert facility managers at your agency would rank them by following sound engineering principles.

Related Links

To learn about grouping work items into projects, start with the topic About Work Projects. Or, for information about work plans, start with the topic About Work Plans.

Work Item Tasks

- View a Work Item
- Add a Work Item
- Edit a Work Item
- Section-Level Work Item Data
- Building-Level Work Item Data
- Fund Work Items
- View Work Item Rankings
- Export Work Items
- Delete a Work Item

Instructional Links

- About Work Items
- About Work Item Cost Analysis
- Work Planning Overview

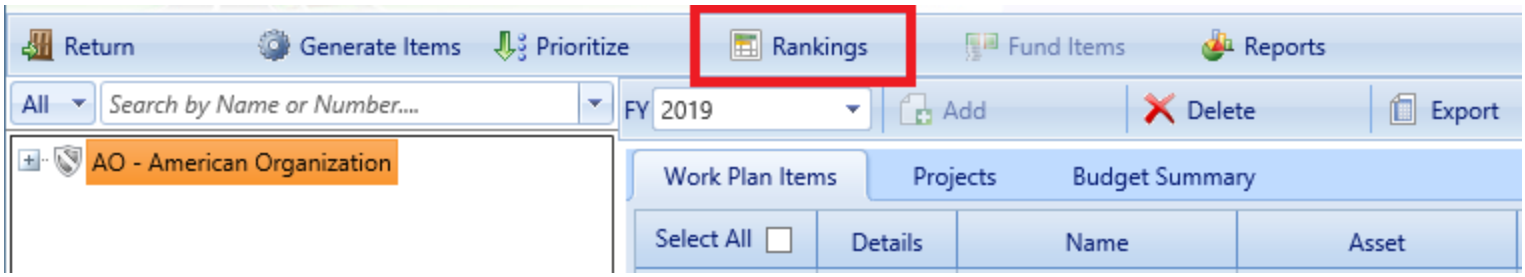
View Work Item Rankings

If you have created a prioritized work plan, you can view the rankings of the work items in your work plan, broken down into the constituent scores for each measure used in the prioritization scheme. This topic shows the steps for viewing the rankings and briefly explains the results.

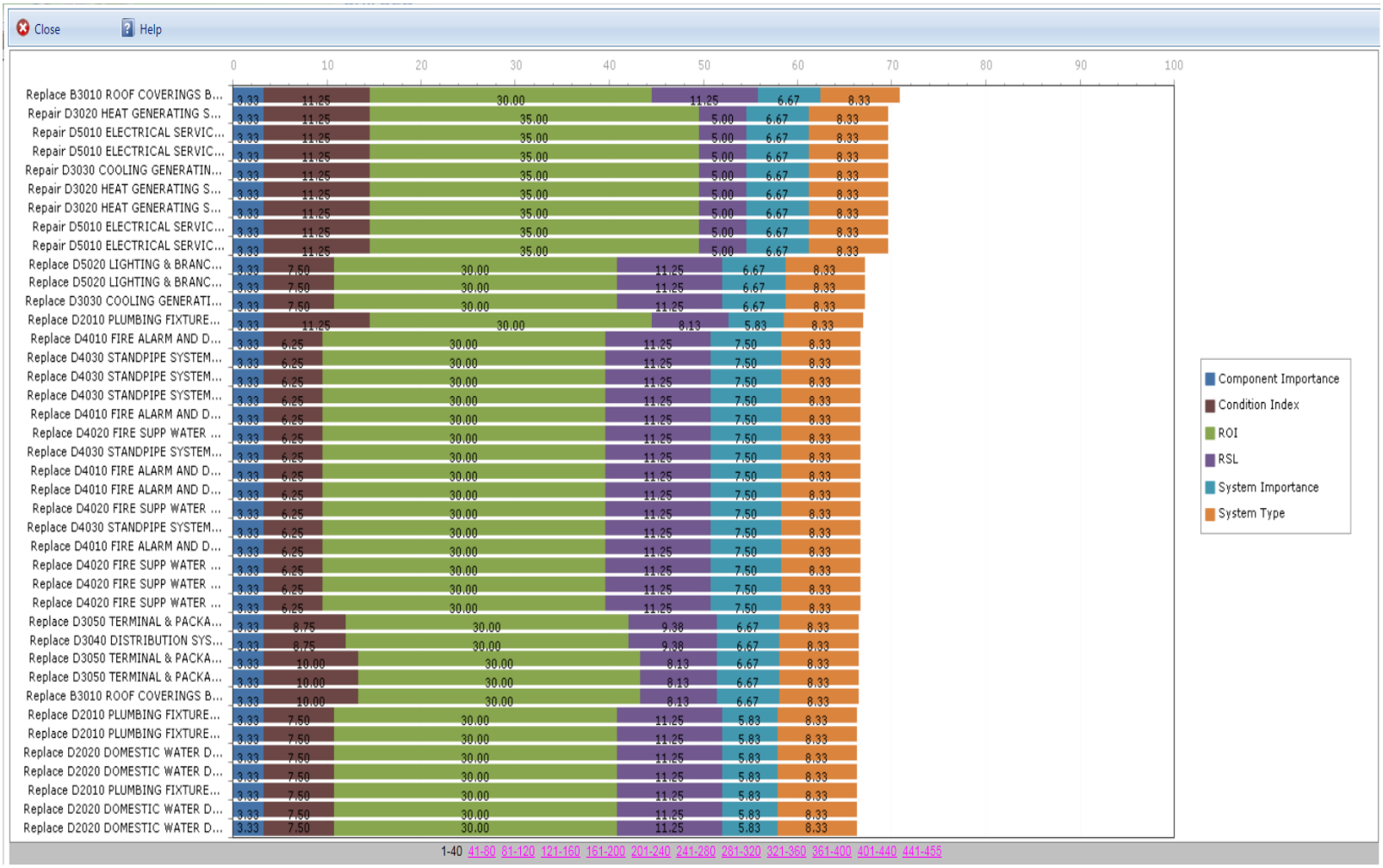
Note: This can only be done if a prioritization scheme that applies to the area of the tree you are working in has been established as part of work configuration.

To rank work items,

- At the work plan screen, navigate to or search-select the desired Organization or Site. This sets the scope for the ranking.
- Activate **Rankings** on the toolbar.



The Rankings window will appear.



Result:

The rankings of each Section-level work item will be shown from highest priority score to lowest. The score for each work item will be broken down into the constituent scores for each measure used in the **prioritization scheme** established in Work Configuration. A legend will be displayed, correlating the colors to their respective measures.

Related Links

To learn about grouping work items into projects, start with the topic About Work Projects. Or, for information about work plans, start with the topic About Work Plans.

Work Item Tasks

View a Work Item
Add a Work Item

Edit a Work Item
Section-Level Work Item Data
Building-Level Work Item Data
Fund Work Items
Prioritize Work Items in a Work Plan
Export Work Items
Delete a Work Item

Instructional Links

About Work Items
About Work Item Cost Analysis
Work Planning Overview

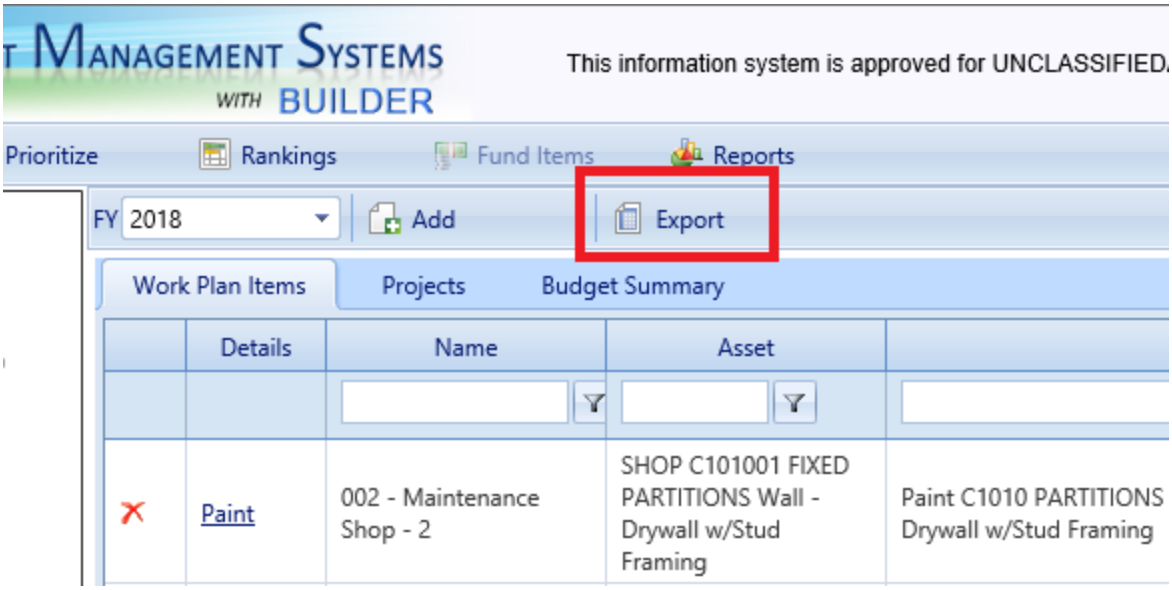
Export a Work Plan or Work Items to Excel

This topic explains multiple ways to export a work plan or work items. Work items can be exported to a Microsoft Excel spreadsheet, either from the work plan or from the Scenario Visualization / Scenario Analysis screen.

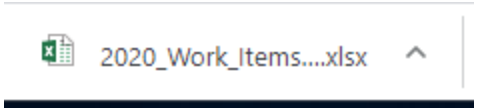
Export Work Items from the Work Plan

To export a work plan to an Excel spreadsheet from the Work Plan Items tab on the work plan screen,

- On the BUILDER main menu, activate Work Plan.
- At the work plan screen, select the desired location in the navigation tree at the left. This will determine the scope of the work plan, which will contain all work items for that location and below it in the tree.
- On the secondary toolbar, activate Export.



- When the Excel work plan shows as downloaded in the lower left corner of the window (see illustration immediately below), double-click on it to open. Alternatively, you can activate the up arrow to be able to select between opening the file and showing it in its Downloads folder location.



- If you want to save the opened spreadsheet, you need to activate the **File** tab in the spreadsheet, then specify the location, and re-name as desired (the spreadsheet will have been assigned a default file name).

Export Work Project Work Items

You can choose to export just those work items contained in a particular work project. To do so,

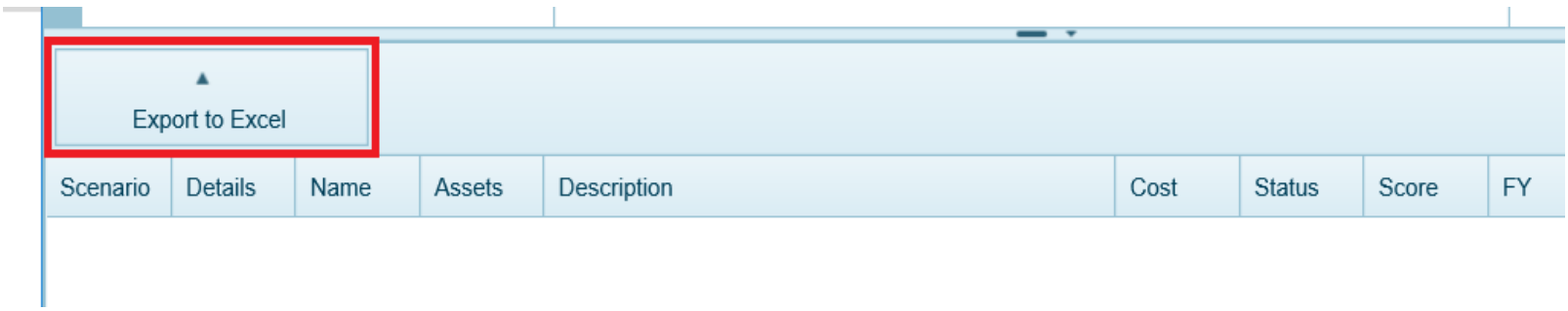
- At the work plan screen, open the **Projects** tab. All projects pertaining to the current tree location on down will be listed in the content area.

  Tip: If you are at the head of the navigation tree and too many projects are listed, you can choose to navigate farther down in the tree towards or to the work plan containing the project.

- Open the "Details" popup for the desired project by activating its Details link in the first column of the desired work project.
- In the popup, open the Work Items tab.
- If the **Only Show Selected Project Work Items** checkbox is not marked, mark it to restrict the view to just those work items that are in the project.
- Activate the **Export** button on the popup toolbar.
- When the Excel tab with the project name on it appears at the lower left of the screen, activate it to open the Excel file containing the project work items.
- Save the exported file if desired (you can also rename it).

Export Work Items from Scenario Analysis

At **Scenarios > Analysis** (aka Scenario Visualization), an **Export** button has been added above the grid of work items at the bottom of the Scenarios analysis screen. This button will export to Microsoft Excel any work items listed in the grid:



Note: The tiny arrow at the bottom of the Scenarios analysis screen is what opens or closes the drawer containing the grid of work items (if there are work items for the selected Component-Section).

Related Links

Task Links

View a Work Plan
Add a Work Plan
Edit a Work Plan
Work Plan Data
Prioritize Work Items in a Work Plan
Delete a Work Plan

Instructional Links

About Work Plans
Work Planning Overview

Delete a Work Plan

A work plan is created automatically from work configuration specifications and can not be deleted.

Individual work items can be deleted. However, you need to keep the following distinctions in mind:

- Automatically generated work items: Depending on (1) whether and how the work configuration specifications may have been altered and (2) how assessment values or age may have changed the condition index or performance index of inventory items within the scope of the work plan, work items that were automatically generated will very likely re-appear when the Generate Items button is activated.
- Manually entered work items: Individual work items that have been added after initial work plan generation can be deleted, as outlined in Delete a Work Item.

Related Links

Task Links

View a Work Plan
Add a Work Plan
Edit a Work Plan
Work Plan Data
Prioritize Work Items in a Work Plan
Export a Work Plan or Work Items to Excel

Instructional Links

About Work Plans
Work Planning Overview

Scenarios

About Scenarios

The Scenarios simulation tool allows you to project facilities sustainment work requirements for up to ten years in the future. This can be done at the Site level (by the installation manager, for example). Simulations can also be run across an entire Organization, at any Organization level.

The purpose of this overview is to explain how the Scenarios tool does this and how you can benefit from using its projections to improve your facility management practices.

Advantages of Using Scenarios

This section shows how this tool can be used advantageously to

- establish and defend a long-term facilities sustainment budget
- base your facilities sustainment budget on your actual inventory in its current condition
- identify and quantify the consequences of a facilities sustainment backlog

The ability to run a simulation with different settings makes Scenarios a valuable tool in creating a credible long-term facilities sustainment budget. For a manager of a large number of buildings, establishing and defending a budget for the next 5 to 10 years is a very difficult problem. Often, managers use industry-standard planning factors to prepare a budget. Figures such as 2% - 4% of building replacement cost per year are often used. The DoD Facility Cost Handbook publishes a cost per square foot for facilities sustainment by Building Use (category code), a planning tool similar to several commercial tools which also use a per-square-foot factor for building sustainment. One problem with these methods of forecasting costs is that they are each based on the assumption of a continuing investment that allows the manager to repair what needs to be repaired when it needs to be repaired, which assumes no backlog of facilities sustainment . Very few managers have ever had sufficient funds to meet that assumption. Another problem with these methods is that they are averages that could miss the mark in any given year for any given Building by a factor of 2, 3, or much more. The manager of a thousand buildings could be faced with a very large shortfall. Still another problem is that budgets prepared with planning factors are difficult to defend. If cuts are to be made, the manager is hard pressed to identify what will suffer. Without the ability to identify consequences, erosion of funds is inevitable.

Scenarios gives you the opportunity to prepare a long-term facilities sustainment budget based on your actual inventory in its current condition. When Scenarios has finished a running a scenario, it has produced records that tell the story about what is forecast to happen under the scenario's parameters. Each Component-Section in the inventory is tracked during the simulation. Dated condition assessments track expected deterioration. Dated work items show when work was done and how much it costs. When grouped by year, the work items provide an annual work plan constrained by expected funding levels. Annual work plans can be summarized by cost of completed and incomplete work, allowing you know what the backlog was each year

and you know which work went unfunded. With rolled-up **CI**[1]Condition Index values, you can determine how well buildings or even locations did over the simulated period.

You can run a scenario either constrained or unconstrained by budget. With an unconstrained budget, all work items are completed when they are first recognized. Analysis of this type of scenario will provide estimates of your total annual requirement. With a constrained budget, work items are funded in rank order until funds are exhausted. Work items not completed in one year will be generated the following year at a higher cost due to inflation and, for repair work types, to the cost for additional deterioration. Analysis of a constrained scenario will give you insight into what parts of your inventory will suffer at a given funding level.

Required Data

The data required to construct a BUILDER database and its embedded knowledge and methods regarding condition assessment, component life expectancy, and costs combine to provide a complete model of your facilities and business processes. This includes:

- where your facilities are and the effect of location on costs
- records of each Building's use, age, size, construction type, etc.
- decomposition of each Building into its Component-Sections, specified as to type, material, quantity, age, etc.
- history of past condition assessments of each Component-Section, with a dated condition index rating for each
- history of facilities sustainment work performed
- cost estimating capability for various work activities related to Building components
- expected service life and paint life of each component by material category and type
- models for projecting condition and remaining service life on the basis of past condition assessment results
- standards, policies, and policy sequences for determining when work is required
- prioritization schemes for ranking a given set of work items by their importance
- funding sources with their future expected levels of funding, their restrictions, and their order of allocation

Scenarios uses all of this information as the basis for predicting how your inventory will change over time.

BUILDER shows you the past and present for your inventory. Scenarios shows you the future. It is able to show you the future in very much the same way that BUILDER is able to show you the past and present. That is, Scenarios shows you the future by adding and changing records in your database at each step in simulated time the same way that you add or change records with the passing of real time.

The difference is that, for example, when you add a new condition assessment record, it is based on a physical observation, whereas when Scenarios adds a new condition assessment, it has calculated the expected condition based on prior condition, deterioration rates, and work activity records. As another example, a work

---

[1]Condition Index

item in BUILDER may be subject to a good deal of off-line planning and debate before it is finally funded and complete, while in Scenarios the prioritization scheme and funding algorithms methodically calculate whether or not a particular work item can be completed.

Outline of Scenarios

The following list is a brief description of how Scenarios simulates change in your inventory over a one- to ten-year period, starting at the date the scenario is run.

- with the current inventory, updates all time-sensitive data elements (**CI**[1]Condition Index, **RSL**[2]Remaining Service Life, Cost) for every Component-Section as of the current date
- uses the selected policy sequence to determine the appropriate standard for each Component-Section.
- cycles through all of the Component-Sections in the inventory, and uses each Component-Section's standard to identify and generate necessary work items
- prioritizes the work items for the current year using the selected prioritization scheme
- allocates funding sources to the work items in rank order, following the funding amounts, precedence rules, and restrictions established for each funding source
- schedules completion of funded work items for later in the current year
- sets current date to the date scheduled for work item completion, and registers the effect of the work as follows: creates a condition assessment for the current date with appropriate findings, changes the Component-Section record if replaced or painted, and marks work item as completed
- sets current date to the end of the current year and calculate CIs for all Component-Sections, taking into account the appropriate prior **CI**[3]Condition Index, deterioration rate, and any work completed
- after the previous steps have completed one simulated year: advance the current date to the start of next year and go back to the first step until 10 years have been simulated, or the established length of the scenario specified in the set-up process

This very simple outline of what Scenarios does shows that you will have to specify several key elements of the process before a scenario is able to move through these steps. They include the policy sequence, the prioritization scheme, and the funding levels. You will do this when you manage a scenario. The particular policy sequence you choose will affect what work is identified. The particular prioritization scheme you choose will affect which work items rank highest in a year's work plan. The particular funding levels you choose will affect the amount of work that can be accomplished in any given year. As you might imagine, scenarios in which different policy sequences, prioritization schemes, and/or funding levels are used will yield very different outcomes and can be compared and analyzed to determine the optimal work plan for your inventory.

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[1]Condition Index

[2]Remaining service life.

[3]Condition Index

Related Links

Recommended Reading

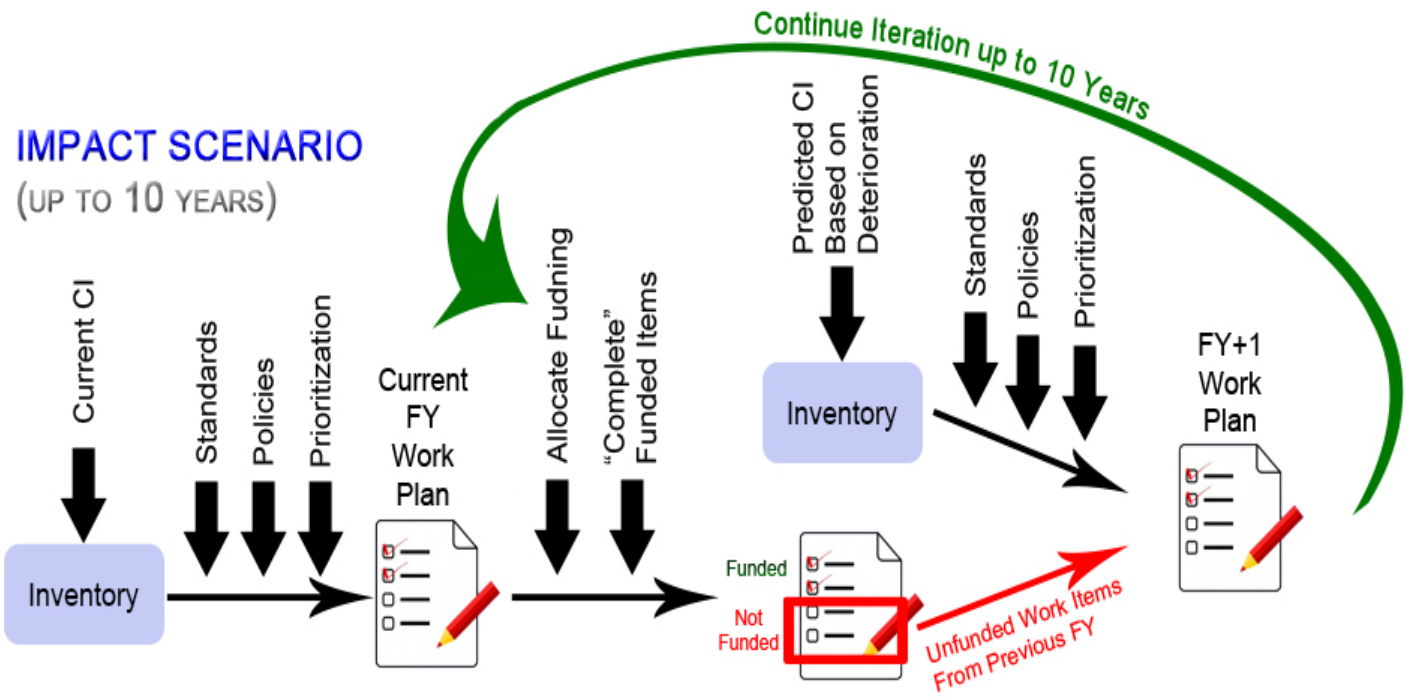
[About Scenario Management]

Task Links

[Add a Scenario]
[Edit a Scenario]
[Run a Scenario]
[Copy Work Items from a Scenario]
[Scenario Visualization / Analysis]
[Delete a Scenario]

About Scenario Management

A simplified outline of the steps in a Scenarios simulation was described in the [About Scenarios] . You should review that topic before proceeding. Shown below is a conceptual illustration of the process:



In Scenario Management, a scenario is a set of data to be presented to the simulation model consisting of particular inventory data and a set of initial parameters. The result of running the scenario is expressed as a copy

of inventory records in which the "current date" is sometime in the future, typically 5 to 10 years, and in which the time-stamped records beyond the run date are generated by the Scenario Simulation Model.

The first step in using Scenarios is to create a scenario and establish the set of initial parameters. The initial parameters are a set of values for key elements of the simulation decision process, such as the length of time to simulate, the policy sequence to use for generating work, the prioritization scheme to use for prioritizing work, and the funding levels to use for determining whether or not work can be completed. Additional parameters include specifications for future changes in a Building's Current Status, the addition of new inventory or even entire Buildings, and the addition of new functionality assessments for Buildings and Functional Areas. After the initial parameters are set, you are ready to run the simulation.

Related Links

Task Links

- Add a Scenario
- Edit a Scenario
- Run a Scenario
- Copy Work Items from a Scenario
- Scenario Visualization / Analysis
- Delete a Scenario

Instructional Link

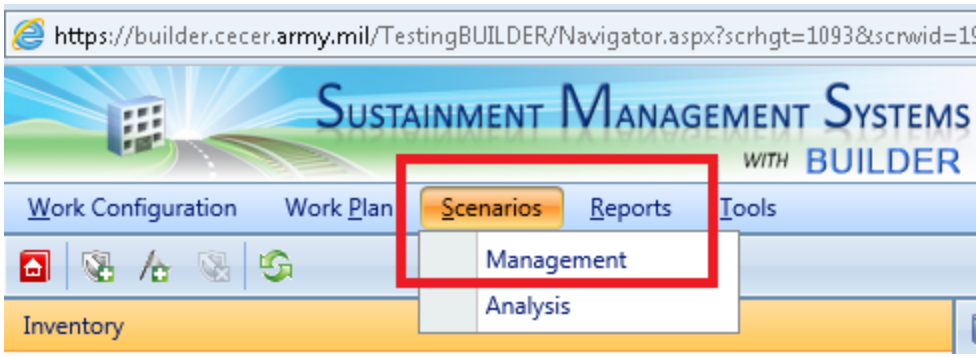
- About Scenarios

Add a Scenario

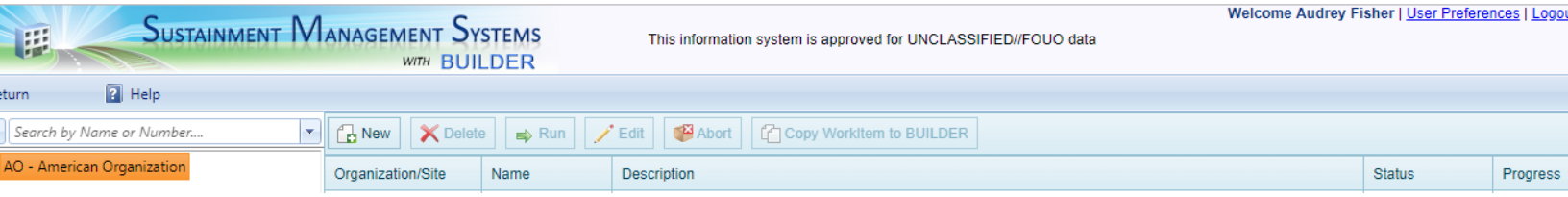
Note: Internet Explorer is no longer required for interacting with Scenarios, and is not supported in BUILDER 3.6. Please use Chrome, Firefox, or Edge.

Select an Organization or Site

To prepare to view, add or edit a scenario, first select Scenarios > Management from the main menu.



The following window will appear, and the location will automatically be set to the top of the inventory tree.



In the navigation tree, select an Organization, Site, or Complex. All available scenarios for the selected scope will be listed in the grid in the content area. The Organization/Site/Complex, Name, Description, Status, and Progress columns will show additional information about each scenario.

Add

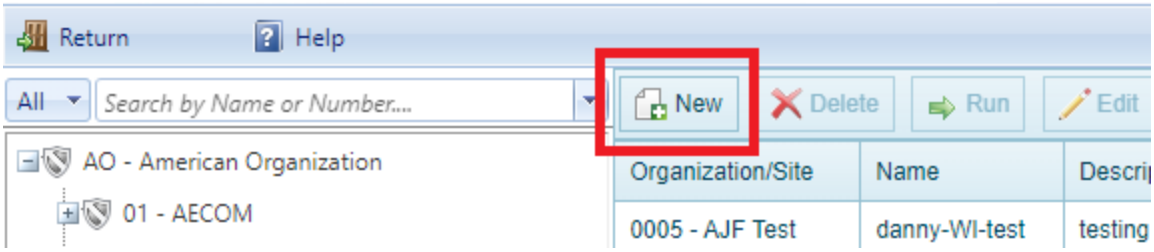
WARNING: Any one of the following actions or events will cause you to lose all editing or data entry work done since last entering the Scenarios popup:

- BUILDER timing out
- activating the Cancel button at the bottom of the popup
- closing the popup without activating Save (or Create) at the bottom of the popup

If your instance of BUILDER has a timeout, be mindful of that and consider doing a Save periodically if you are entering or editing data. You will then need to re-select your scenario and activate the Edit button.

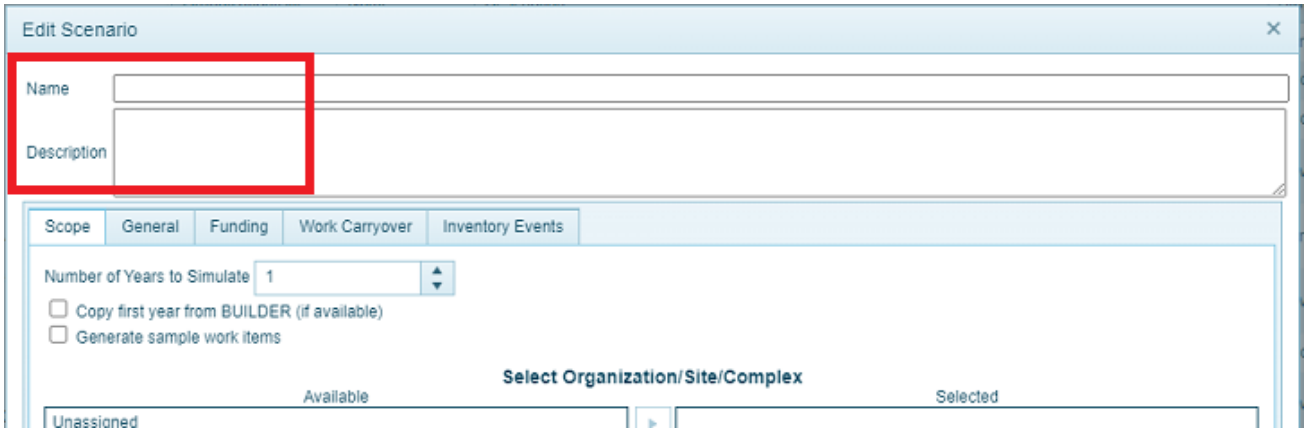
To create a new scenario within the scope selected,

- Activate New on the toolbar.



  A popup window will appear, listing available Organizations/Sites in the Available column. (Note that in some versions of BUILDER only the tabs Scope, General, and Funding will show.)

- At the top of the popup window, enter the following information:
  - Scenario Name
  - Scenario Description



Enter additional data at the tabs described below. Because you will lose data if BUILDER times out, you may want to Create/Save Scenario before you are finished with entry, and then re-enter to continue entering data by editing the scenario (see Edit a Scenario).

- Scope Tab
- General Tab
- Funding Tab
- Work Carryover Tab
- Inventory Events Tab

Note: The descriptions of the data tabs are identical in the Add a Scenario and Edit a Scenario topics.

Scope Tab

The Scope tab, which displays when the "Edit Scenario" popup appears, specifies (1) the planning horizon (2) the Buildings to be included in the simulation, and (3) which Systems are to be included.

Note: Individual Buildings cannot be selected, but they are selected via Organization(s), Site(s), and/or Complex(es).

The data entered at the Scope tab includes:

- Number of Years to Simulate. Select the number of years the simulation will run (1-10), either by typing in a number or by using the arrows.
- Copy first year from BUILDER (if available). (Checkbox)
- Generate sample work items. (Checkbox)
- Select Organization/Site/Complex. This is where you specify the Organization, Sites, and/or Complexes to be included in the simulation. The Available column lists all of the Organizations, Sites, and Complexes currently in the inventory at your current location in the inventory tree. Available Complexes will include, at a minimum, the "Unassigned" Complex that contains all Buildings at the Site that are not specifically assigned to a named Complex.

  Use the arrow keys between the two columns to create, in the Selected column, a list of inventory that

is to be included in the simulation. The scenario will only include Buildings that are in at least one of the Organizations, Sites, or Complexes listed in the Selected column.

Note: It is okay if there is overlap in the Selected inventory; that is, if the same Building is in more than one of the groups in the Selected list.

- Systems to be included. Starting with BUILDER Version 3.6.4, all Systems will be included by default in the scenario unless you change this option here. To change, toggle the System checkboxes to select or one or more individual Systems. This selection will pertain to all Buildings selected. The ability to narrow down to a subset of Systems is especially useful if you are simply developing a long-term repair and replacement plan for a single System in one or more Buildings.

General Tab

The General tab allows you to set the Cost Book, Inflation Book, Service (Life) Book, Policy Sequence, Prioritization Scheme, and/or **FCI**[1] Policy options to use for the scenario.

The default for each of the options listed above is the setting that has been specified at Tools > Library and in Work Configuration for the associated Organization, Site, or the parent of any Complex selected. Scenarios can be run even if the settings for some of the selected assets differ from other selected assets; however, work items from Scenarios cannot be copied into a work plan if the settings conflict with each other.

Each option is described in greater detail below, and values can be selected via dropdown as shown by example for the Service (Life) Book in the screenshot.

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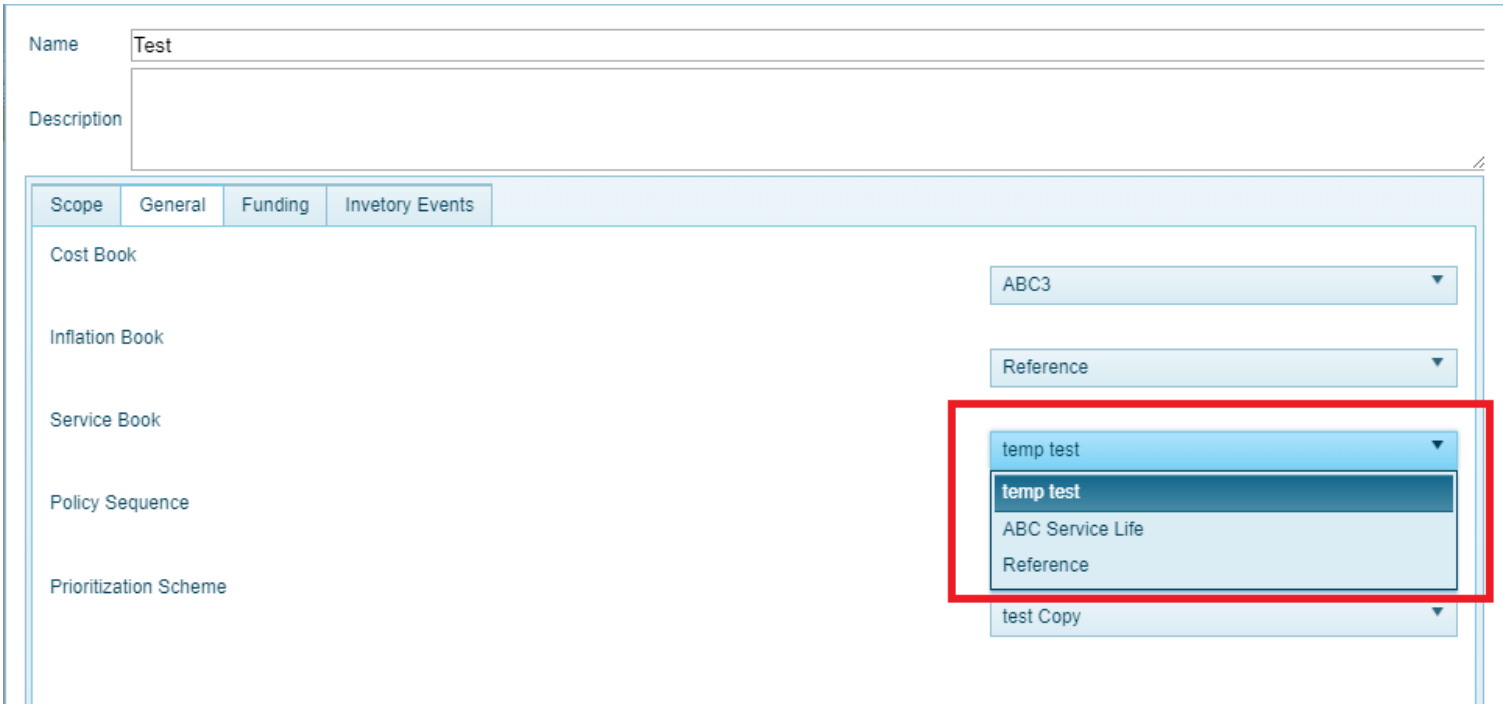
[1] Facility Condition Index.



- Cost Book. Select the cost book you wish to use for the scenario from the dropdown list. A cost book is defined so the cost of each work item can be computed. See the topic About Cost Books, in the BUILDER Work Configuration Guide, for more information.
- Inflation Book. Select the inflation book you wish to use from the dropdown list. An inflation book is defined to allow the scenario to assess the inflation rates from year to year to be applied to the cost of work items.
- Service (Life) Book. Select the service life book you wish to use from the dropdown list. A service life book is defined so that the service life of all Component-Sections in the inventory can be estimated.
- Policy Sequence. Select the policy sequence you wish to use for the scenario from the dropdown list. A policy sequence is defined so that when it is applied to the inventory, it will determine a standard for every Component-Section by using its default standard and then successively applying the applicable policies. See the topic Work Configuration Overview for general information or About Policy Sequences for links to information on how to add and edit policy sequences.
- Prioritization Scheme. Select the prioritization scheme you wish to use for the scenario from the drop-down list. A prioritization scheme is defined so that a priority score can be calculated for each Section-level work item based on the measures, point values, and weights you have assigned. See the topic About Prioritization Schemes for more information. The Prioritization Scheme will be used only when funding is constrained, but you must select a scheme here even if the funding is unconstrained.
- **FCI**[1] Policy. Select the **FCI**[2] policy you wish to use from the dropdown list.

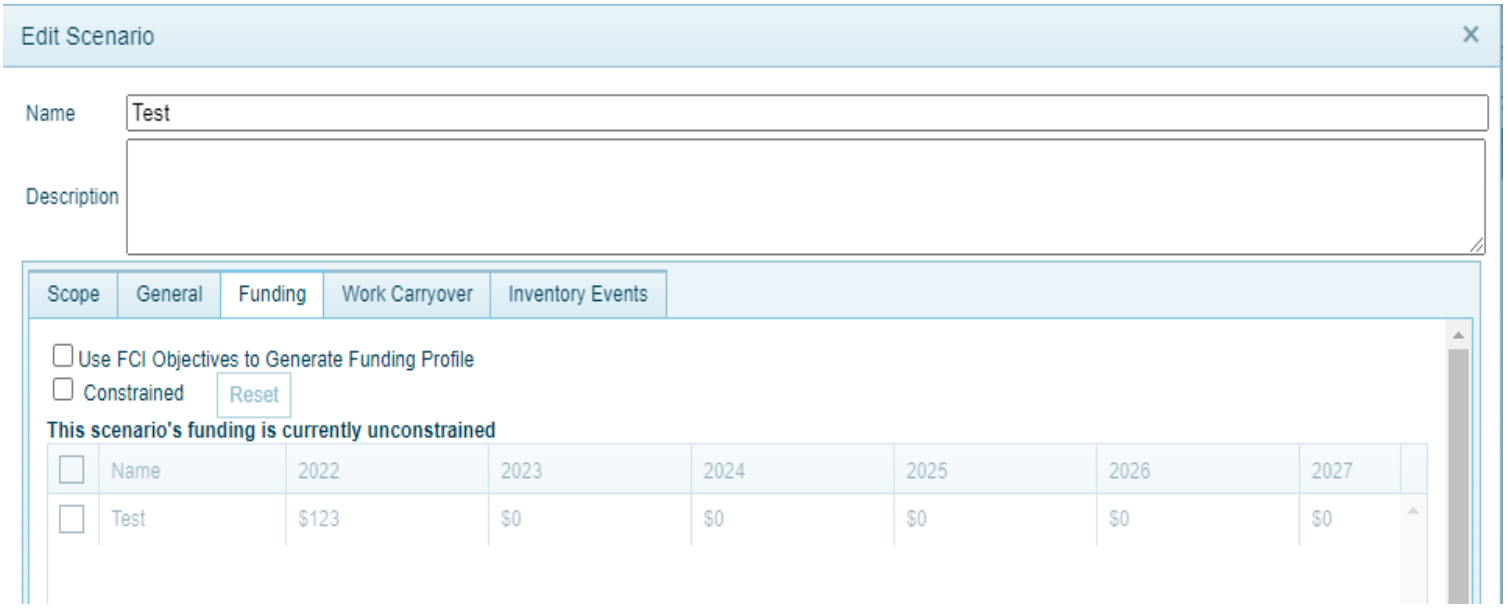
[1]Facility Condition Index.

[2]Facility Condition Index.

Funding Tab

The Funding tab presents multiple options for allocating funding to work items. You can choose to have **FCI**[1] objectives guide the funding, to run the simulation with no funding constraints, or to enter funding constraints in a funding table.

These options, as well as instructions for entering funding constraints for the scenario, are described below.



FCI Objectives

To activate this feature, mark the Use **FCI**[2] Objectives to Generate Funding Profile checkbox. Work items to achieve the **FCI**[3] goal selected at the General tab will be added into the scenario results.

About **FCI**[4] Objectives/Goals:

A "POMProgram Objectives Memorandum Scenarios" feature has been introduced that allows Facility Condition Index (**FCI**[5]) targets to be programmed into BUILDER such that Scenarios can be configured to calculate the funding required to meet these targets.

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[1]Facility Condition Index.
[2]Facility Condition Index.
[3]Facility Condition Index.
[4]Facility Condition Index.
[5]Facility Condition Index.

The name of the feature, introduced in BUILDER Version 3.5.0, is Scenarios Work Generation in Support of Program Objectives Memorandum (POMProgram Objectives Memorandum).

This feature allows Scenarios to output the funding required to meet those **FCI**[1] targets, in addition to the recommended work actions. To do this, **FCI**[2] targets can be established alongside work configuration Policy settings. BUILDER Scenarios generates the recommended work candidates based on the user's work configuration settings (Policy Sequences / Prioritization) and then begins "funding" work items for each facility in priority order until the **FCI**[3] target is achieved. The output is a list of work items that need to be accomplished in order to meet the target **FCI**[4].

Funding Constraints

Independently of whether you choose the option to use **FCI**[5] objectives to generate the funding profile, you can choose whether the scenario is to be constrained by funding or unconstrained by funding:

- If unconstrained, all simulated work items will be completed in the year they are generated.
- If constrained, you must specify the annual funding levels for all funding sources that were previously identified in BUILDER during the Work Configuration process. In a constrained scenario, work items and projects will be ranked by priority and funded for completion in order of rank until funds are exhausted. Work items and projects that are not funded cannot be completed. Projects and user-created work items that are not completed as planned will be carried over to the next year (see Work Carryover Tab).

When you have funding constraints, these will appear on the Scenarios popup at the Funding tab in a grid showing funding sources and amounts. Select the checkbox next to each funding source that is to be used for the scenario. You may not delete a funding source in Scenarios, but you can edit the dollar amount or even set it to $0. To do so, tap (if touch is enabled) or click on the dollar amount and type in the replacement quantity, or use the up and down arrows.

To activate or deactivate funding constraints,

- Select the Constrained checkbox if funding is constrained.

  Note: If funding is unconstrained, the table of constraints will appear in gray color.

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[1] Facility Condition Index.
[2] Facility Condition Index.
[3] Facility Condition Index.
[4] Facility Condition Index.
[5] Facility Condition Index.

- If funding is constrained, select the checkbox next to each constraint in the table that applies to the scenario. To select all of the constraints, select the checkbox in the header row.
- You can use the Reset button to the right of the Constrained checkbox to clear all checkboxes in the constraints table, or you can select checkboxes to toggle them.

The constraints that appear in the table come from the data entered at the Expected Funds tab in the Work Configuration process, which is performed by a user with Work Planner or higher permissions.

Work Carryover Tab

Here you can make adjustments to work carried over due to funding constraints (see Funding Tab for more about funding constraints).

Inventory Events Tab

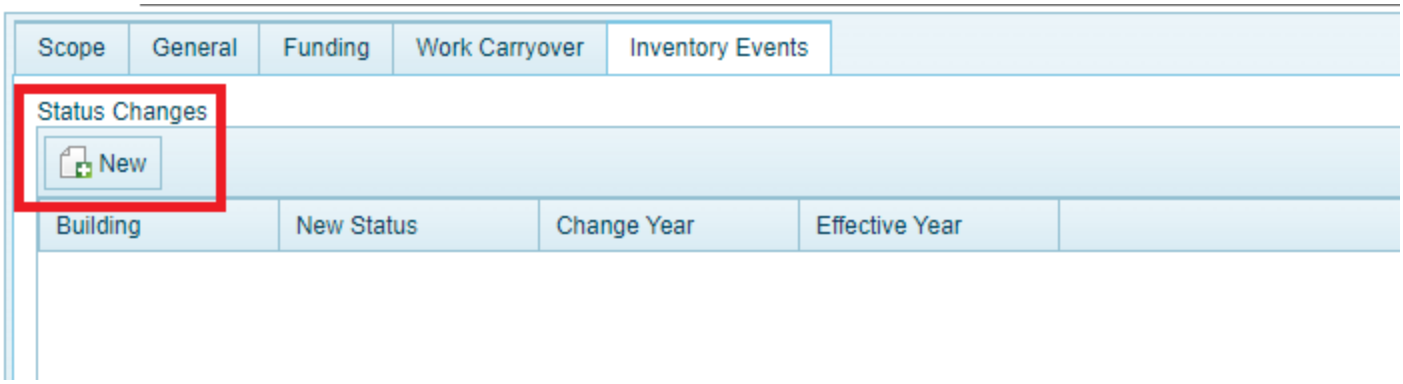
At the Inventory Events tab, future "whole building" events such as Current (Building) Status changes can be triggered at particular points in the simulation. In addition, completely new Buildings ("New Inventory") can be dynamically added to the inventory during the simulation. Each of these capabilities is described in greater detail below.

Status Changes

Buildings in the BUILDER inventory that have a Current Status that starts with "To be" will have the implied effects of those status changes represented during the scenario. For example, if a Building has a status of "To be demolished" in year X, the Scenarios simulation will include the occurrence of the demolition in year X. In addition, you can schedule status changes in the scenario's parameters. This capability allows you to do the following:

- Add new Buildings to the inventory dynamically as the scenario progresses. To do this, add the Buildings to the BUILDER inventory with a Current Status of "To be built" or "To be acquired," with an effective year equal to the year the status is to change to "Active." When the scenario time reaches that year, the status will be changed. At that point, the Building will be considered in the automated processes of condition assessment and work planning. If you wish to override the effective year of the status change as recorded in BUILDER inventory, in Scenarios you can enter a status change for the Building in the scenario for a different year.
- Plan to demolish or transfer a Building as the simulation progresses. You may do this in any of several ways:
    a. Enter a Current Status of "To be demolished"/"To be transferred" in the BUILDER inventory, with an effective year set to the year the Building is to be removed, OR
    b. Enter a scenario status change to "Demolished"/"Transferred" in the appropriate change year, OR
    c. Enter a scenario status change to "To be demolished"/"To be transferred" in a chosen year. Note that this allows you to model the progression from (1) an active Building to (2) one that is to be demolished (accompanied perhaps by reduced maintenance standards) to (3) a demolished Building that is removed from work planning considerations.

To initiate a status change in the simulation, activate the New button in the Status Changes portion of the screen.



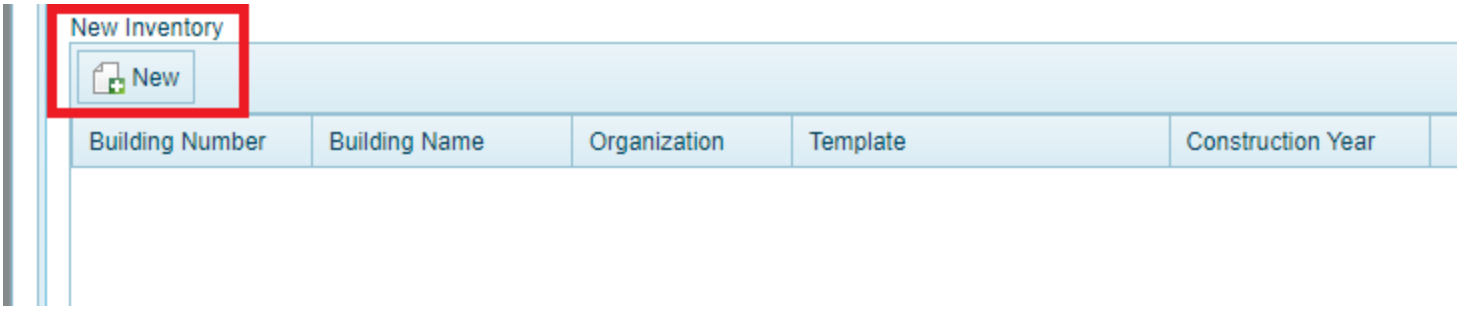
Next, select values from the dropdown lists for the following data elements in the "Inventory Change Event" popup that appears:

- Building. Select the Building for which the change in status applies.
- New Status. Select the new status of the Building using the dropdown list.
- Change Year. Enter the year in which the Building's status is to change to the new status.
- Effective Year. Enter the effective year of the new status.

After making your selections, activate Create at the bottom of the popup. Alternatively, activate Cancel to return to the initial values shown.

New Inventory

BUILDER allows you to add completely new Buildings during a scenario by activating the New button in the New Inventory portion of the screen.



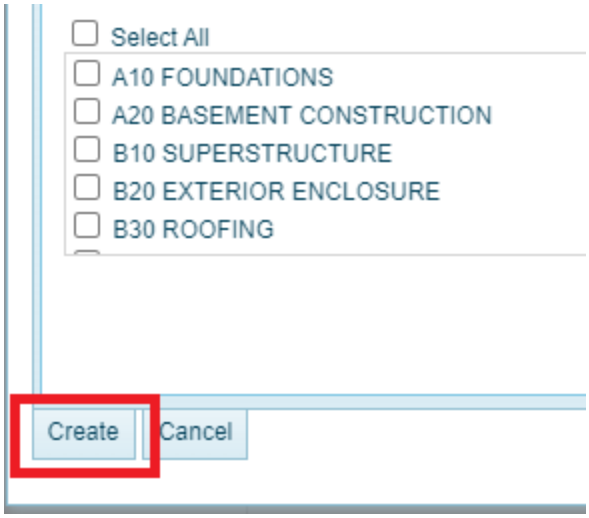
Next, enter the following data in the "Inventory New Event" popup:

- Building Number. Enter the number identifier for the new Building.
- Building Name. Enter the name identifier for the new Building.
- Organization. Select the Organization to add the new Building to.
- Construction Year. Select the year the new Building will be added to the inventory.

After making your entries and selections, activate Create at the bottom of the popup. Alternatively, activate Cancel to return to the initial values shown.

Create/Save Scenario

IMPORTANT: After you have finished entering data at all relevant Scenarios tabs, activate the Create at the bottom of the popup to finish creating the scenario.



WARNING: Any one of the following actions or events will cause you to lose all editing or data entry work done since last entering the Scenarios popup:

- BUILDER timing out
- activating the Cancel button at the bottom of the popup
- closing the popup without activating Save (or Create) at the bottom of the popup

If your instance of BUILDER has a timeout, be mindful of that and consider doing a Save periodically if you are entering or editing data. You will then need to re-select your scenario and activate the Edit button.

Run Scenario

For how to run the scenario, see the topic Run a Scenario.

Related Links

Task Links

Edit a Scenario
Run a Scenario
Copy Work Items from a Scenario
Scenario Visualization / Analysis
Delete a Scenario

Instructional Links

[About Scenarios](#)
[About Scenario Management](#)

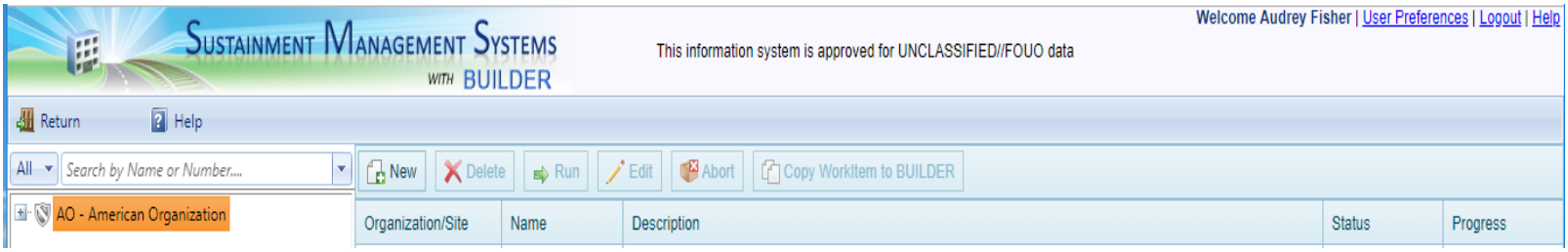
Edit a Scenario

Note: Internet Explorer is no longer required for interacting with Scenarios, and is not supported in BUILDER 3.6. Please use Chrome, Firefox, or Edge.

Select an Organization or Site

To prepare to view, add or edit a scenario, first select Scenarios > Management from the main menu.

The following window will appear, and the location will automatically be set to the top of the inventory tree.



In the navigation tree, select an Organization, Site, or Complex. All available scenarios for the selected scope will be listed in the grid in the content area. The Organization/Site/Complex, Name, Description, Status, and Progress columns will show additional information about each scenario.

Edit

WARNING: Any one of the following actions or events will cause you to lose all editing or data entry work done since last entering the Scenarios popup:

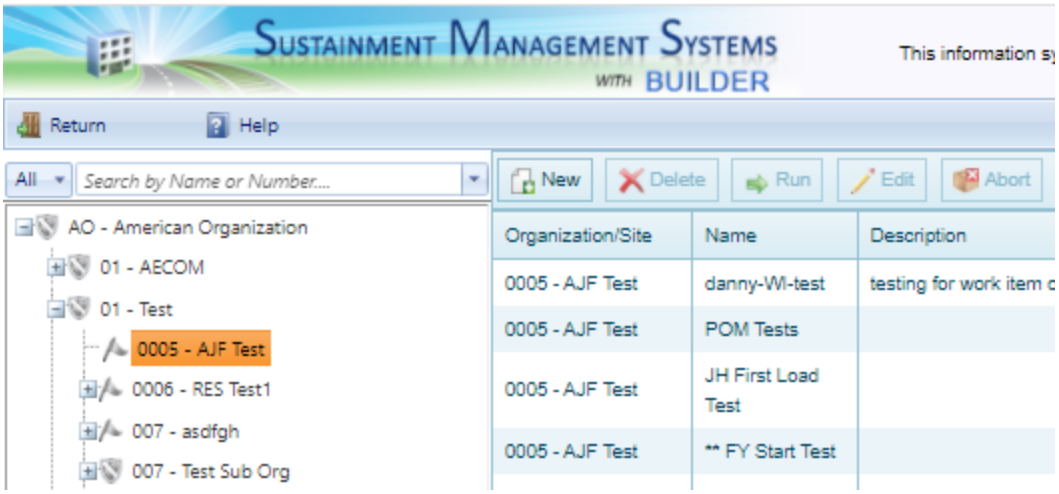
- BUILDER timing out
- activating the Cancel button at the bottom of the popup

- closing the popup without activating Save (or Create) at the bottom of the popup

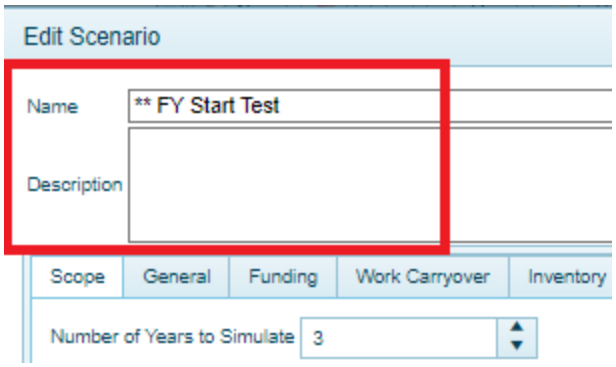
If your instance of BUILDER has a timeout, be mindful of that and consider doing a Save periodically if you are entering or editing data. You will then need to re-select your scenario and activate the Edit button.

To edit an existing scenario,

- OPTIONAL: If desired, navigate in the tree at the left and select an Organization or Site to narrow down the selection of scenarios.



- Select the name of the scenario in the grid shown in the content area.
- Activate Edit on the toolbar. A popup window will appear. (Note that in some versions of BUILDER only the tabs Scope, General, and Funding will show.)
- At the top of the popup window, edit the following information if desired:
  - Scenario Name
  - Scenario Description



- Enter additional data at the tabs described below. Because you will lose data if BUILDER times out, you may want to Create/Save Scenario before you are finished with entry, and then re-enter to continue entering data by editing the scenario again.

Note: The descriptions of the data tabs are identical in the Add a Scenario and Edit a Scenario topics.

- Scope Tab
- General Tab
- Funding Tab
- Work Carryover Tab
- Inventory Events Tab

Note: The descriptions of the data tabs are identical in the Add a Scenario and Edit a Scenario topics.

Scope Tab

The Scope tab, which displays when the "Edit Scenario" popup appears, specifies (1) the planning horizon (2) the Buildings to be included in the simulation, and (3) which Systems are to be included.

Note: Individual Buildings cannot be selected, but they are selected via Organization(s), Site(s), and/or Complex(es).

The data entered at the Scope tab includes:

- Number of Years to Simulate. Select the number of years the simulation will run (1-10), either by typing in a number or by using the arrows.
- Copy first year from BUILDER (if available). (Checkbox)
- Generate sample work items. (Checkbox)
- Select Organization/Site/Complex. This is where you specify the Organization, Sites, and/or Complexes to be included in the simulation. The Available column lists all of the Organizations, Sites, and Complexes currently in the inventory at your current location in the inventory tree. Available Complexes will include, at a minimum, the "Unassigned" Complex that contains all Buildings at the Site that are not specifically assigned to a named Complex.

  Use the arrow keys between the two columns to create, in the Selected column, a list of inventory that is to be included in the simulation. The scenario will only include Buildings that are in at least one of the Organizations, Sites, or Complexes listed in the Selected column.

  Note: It is okay if there is overlap in the Selected inventory; that is, if the same Building is in more than one of the groups in the Selected list.

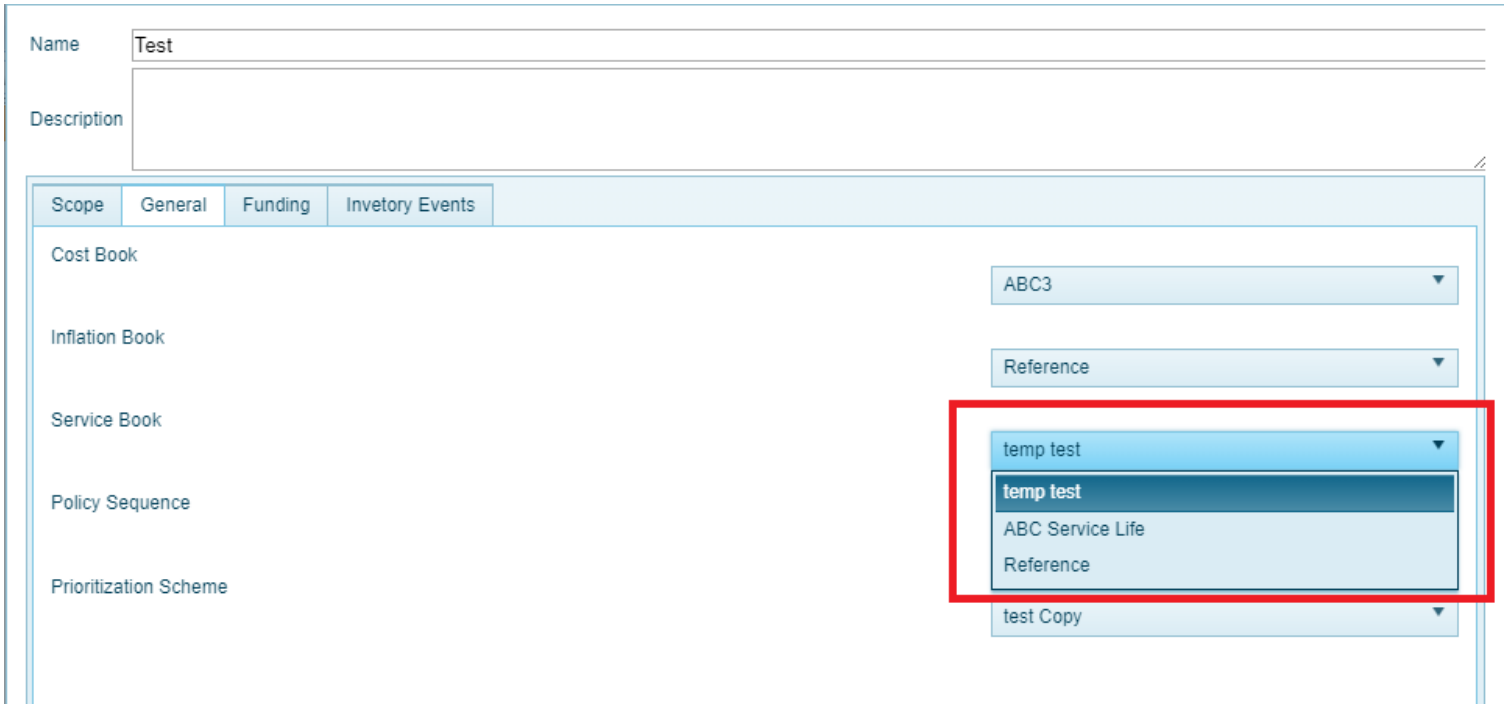
- Systems to be included. Starting with BUILDER Version 3.6.4, all Systems will be included by default in the scenario unless you change this option here. To change, toggle the System checkboxes to select or one or more individual Systems. This selection will pertain to all Buildings selected. The ability to narrow down to a subset of Systems is especially useful if you are simply developing a long-term repair and replacement plan for a single System in one or more Buildings.

General Tab

The General tab allows you to set the Cost Book, Inflation Book, Service (Life) Book, Policy Sequence, Prioritization Scheme, and/or **FCI**[1] Policy options to use for the scenario.

The default for each of the options listed above is the setting that has been specified at Tools > Library and in Work Configuration for the associated Organization, Site, or the parent of any Complex selected. Scenarios can be run even if the settings for some of the selected assets differ from other selected assets; however, work items from Scenarios cannot be copied into a work plan if the settings conflict with each other.

Each option is described in greater detail below, and values can be selected via dropdown as shown by example for the Service (Life) Book in the screenshot.



- Cost Book. Select the cost book you wish to use for the scenario from the dropdown list. A cost book is defined so the cost of each work item can be computed. See the topic About Cost Books, in the BUILDER Work Configuration Guide, for more information.
- Inflation Book. Select the inflation book you wish to use from the dropdown list. An inflation book is defined to allow the scenario to assess the inflation rates from year to year to be applied to the cost of work items.
- Service (Life) Book. Select the service life book you wish to use from the dropdown list. A service life book is defined so that the service life of all Component-Sections in the inventory can be estimated.

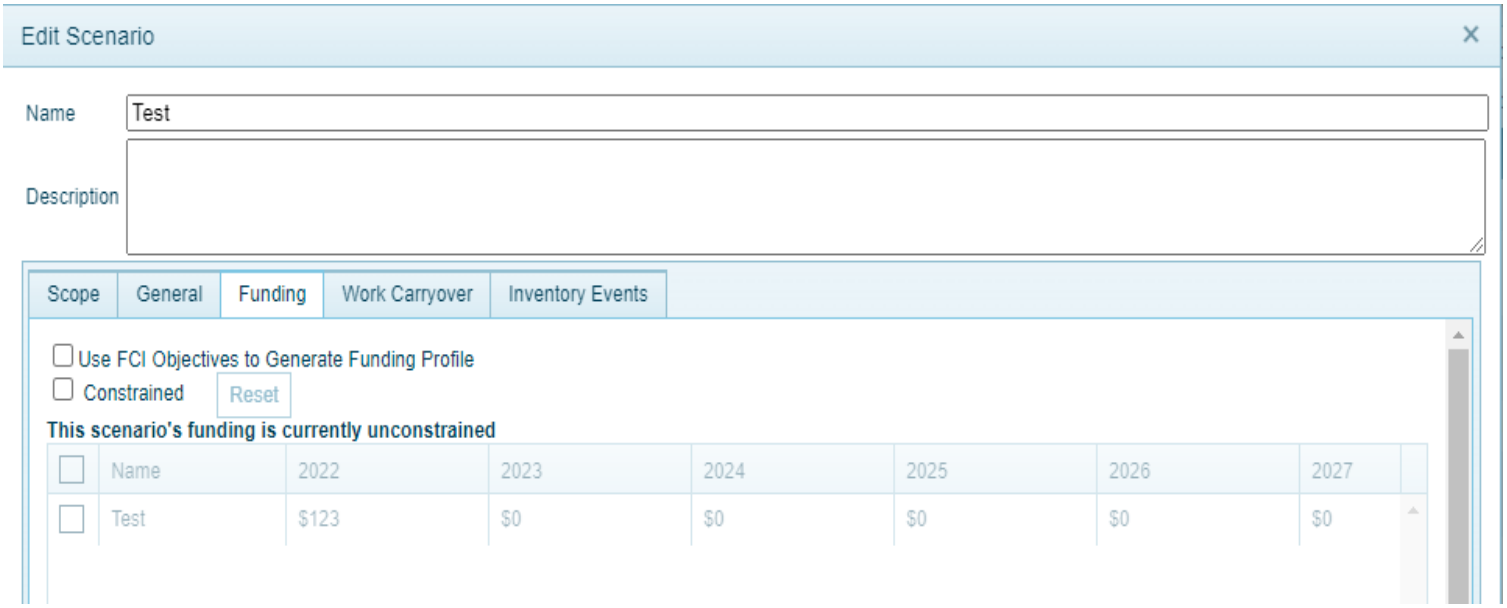
[1] Facility Condition Index.

- Policy Sequence. Select the policy sequence you wish to use for the scenario from the dropdown list. A policy sequence is defined so that when it is applied to the inventory, it will determine a standard for every Component-Section by using its default standard and then successively applying the applicable policies. See the topic Work Configuration Overview for general information or About Policy Sequences for links to information on how to add and edit policy sequences.
- Prioritization Scheme. Select the prioritization scheme you wish to use for the scenario from the drop-down list. A prioritization scheme is defined so that a priority score can be calculated for each Section-level work item based on the measures, point values, and weights you have assigned. See the topic About Prioritization Schemes for more information. The Prioritization Scheme will be used only when funding is constrained, but you must select a scheme here even if the funding is unconstrained.
- **FCI**[1] Policy. Select the **FCI**[2] policy you wish to use from the dropdown list.

Funding Tab

The Funding tab presents multiple options for allocating funding to work items. You can choose to have **FCI**[3] objectives guide the funding, to run the simulation with no funding constraints, or to enter funding constraints in a funding table.

These options, as well as instructions for entering funding constraints for the scenario, are described below.



[1]Facility Condition Index.

[2]Facility Condition Index.

[3]Facility Condition Index.

FCI Objectives

To activate this feature, mark the Use **FCI**[1] Objectives to Generate Funding Profile checkbox. Work items to achieve the **FCI**[2] goal selected at the General tab will be added into the scenario results.

About **FCI**[3] Objectives/Goals:

A "POMProgram Objectives Memorandum Scenarios" feature has been introduced that allows Facility Condition Index (**FCI**[4]) targets to be programmed into BUILDER such that Scenarios can be configured to calculate the funding required to meet these targets.

The name of the feature, introduced in BUILDER Version 3.5.0, is Scenarios Work Generation in Support of Program Objectives Memorandum (POMProgram Objectives Memorandum).

This feature allows Scenarios to output the funding required to meet those **FCI**[5] targets, in addition to the recommended work actions. To do this, **FCI**[6] targets can be established alongside work configuration Policy settings. BUILDER Scenarios generates the recommended work candidates based on the user's work configuration settings (Policy Sequences / Prioritization) and then begins "funding" work items for each facility in priority order until the **FCI**[7] target is achieved. The output is a list of work items that need to be accomplished in order to meet the target **FCI**[8].

Funding Constraints

Independently of whether you choose the option to use **FCI**[9] objectives to generate the funding profile, you can choose whether the scenario is to be constrained by funding or unconstrained by funding:

- If unconstrained, all simulated work items will be completed in the year they are generated.
- If constrained, you must specify the annual funding levels for all funding sources that were previously identified in BUILDER during the Work Configuration process. In a constrained scenario, work items and projects will be ranked by priority and funded for completion in order of rank until funds are

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[1] Facility Condition Index.
[2] Facility Condition Index.
[3] Facility Condition Index.
[4] Facility Condition Index.
[5] Facility Condition Index.
[6] Facility Condition Index.
[7] Facility Condition Index.
[8] Facility Condition Index.
[9] Facility Condition Index.

exhausted. Work items and projects that are not funded cannot be completed. Projects and user-created work items that are not completed as planned will be carried over to the next year (see Work Carryover Tab).

When you have funding constraints, these will appear on the Scenarios popup at the Funding tab in a grid showing funding sources and amounts. Select the checkbox next to each funding source that is to be used for the scenario. You may not delete a funding source in Scenarios, but you can edit the dollar amount or even set it to $0. To do so, tap (if touch is enabled) or click on the dollar amount and type in the replacement quantity, or use the up and down arrows.

To activate or deactivate funding constraints,

- Select the Constrained checkbox if funding is constrained.

  Note: If funding is unconstrained, the table of constraints will appear in gray color.

- If funding is constrained, select the checkbox next to each constraint in the table that applies to the scenario. To select all of the constraints, select the checkbox in the header row.
- You can use the Reset button to the right of the Constrained checkbox to clear all checkboxes in the constraints table, or you can select checkboxes to toggle them.

The constraints that appear in the table come from the data entered at the Expected Funds tab in the Work Configuration process, which is performed by a user with Work Planner or higher permissions.

Work Carryover Tab

Here you can make adjustments to work carried over due to funding constraints (see Funding Tab for more about funding constraints).

Inventory Events Tab

At the Inventory Events tab, future "whole building" events such as Current (Building) Status changes can be triggered at particular points in the simulation. In addition, completely new Buildings ("New Inventory") can be dynamically added to the inventory during the simulation. Each of these capabilities is described in greater detail below.

Status Changes

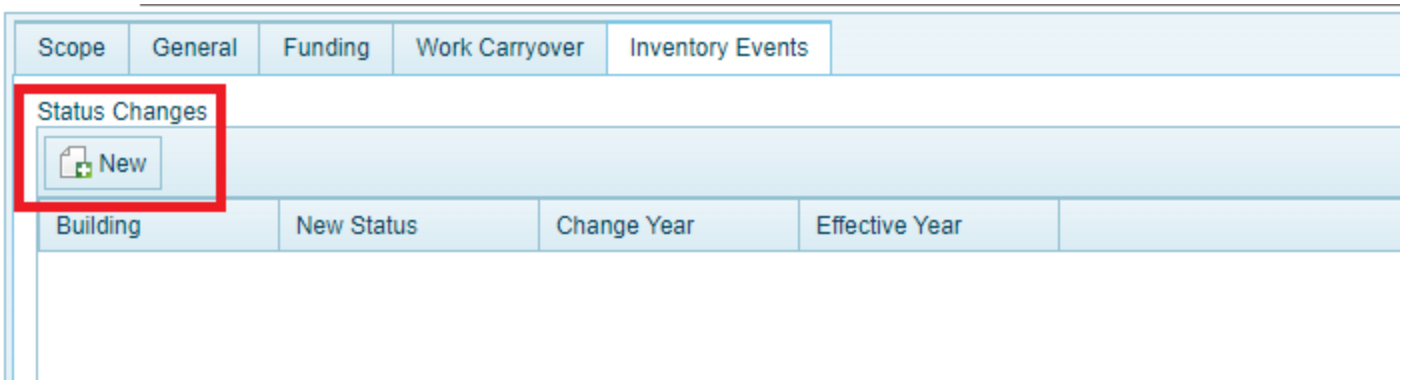
Buildings in the BUILDER inventory that have a Current Status that starts with "To be" will have the implied effects of those status changes represented during the scenario. For example, if a Building has a status of "To be demolished" in year X, the Scenarios simulation will include the occurrence of the demolition in year X. In addition, you can schedule status changes in the scenario's parameters. This capability allows you to do the following:

- Add new Buildings to the inventory dynamically as the scenario progresses. To do this, add the Buildings to the BUILDER inventory with a Current Status of "To be built" or "To be acquired," with an effective year equal to the year the status is to change to "Active." When the scenario time reaches that

year, the status will be changed. At that point, the Building will be considered in the automated processes of condition assessment and work planning. If you wish to override the effective year of the status change as recorded in BUILDER inventory, in Scenarios you can enter a status change for the Building in the scenario for a different year.

- Plan to demolish or transfer a Building as the simulation progresses. You may do this in any of several ways:
    a. Enter a Current Status of "To be demolished"/"To be transferred" in the BUILDER inventory, with an effective year set to the year the Building is to be removed, OR
    b. Enter a scenario status change to "Demolished"/"Transferred" in the appropriate change year, OR
    c. Enter a scenario status change to "To be demolished"/"To be transferred" in a chosen year. Note that this allows you to model the progression from (1) an active Building to (2) one that is to be demolished (accompanied perhaps by reduced maintenance standards) to (3) a demolished Building that is removed from work planning considerations.

To initiate a status change in the simulation, activate the New button in the Status Changes portion of the screen.



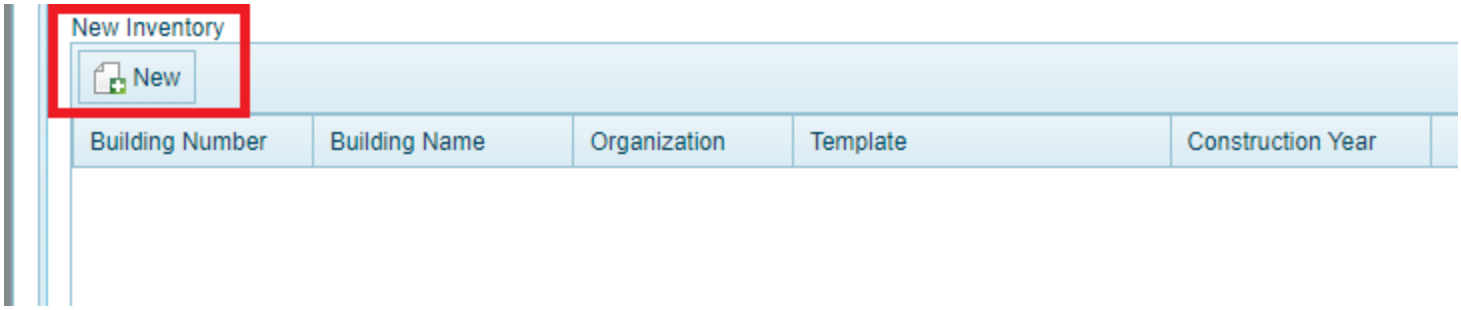
Next, select values from the dropdown lists for the following data elements in the "Inventory Change Event" popup that appears:

- Building. Select the Building for which the change in status applies.
- New Status. Select the new status of the Building using the dropdown list.
- Change Year. Enter the year in which the Building's status is to change to the new status.
- Effective Year. Enter the effective year of the new status.

After making your selections, activate Create at the bottom of the popup. Alternatively, activate Cancel to return to the initial values shown.

New Inventory

BUILDER allows you to add completely new Buildings during a scenario by activating the New button in the New Inventory portion of the screen.



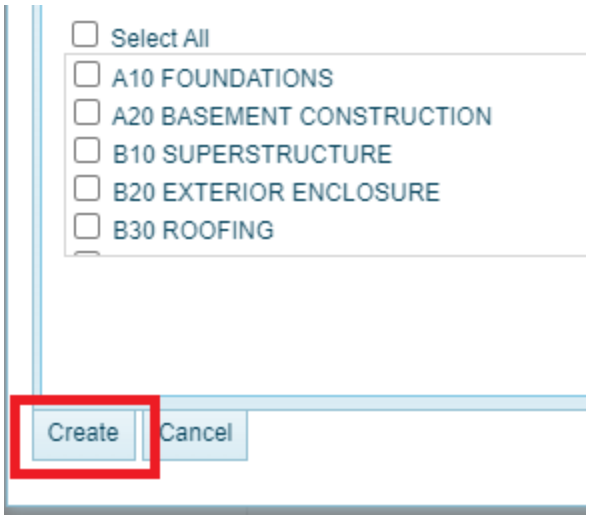
Next, enter the following data in the "Inventory New Event" popup:

- Building Number. Enter the number identifier for the new Building.
- Building Name. Enter the name identifier for the new Building.
- Organization. Select the Organization to add the new Building to.
- Construction Year. Select the year the new Building will be added to the inventory.

After making your entries and selections, activate Create at the bottom of the popup. Alternatively, activate Cancel to return to the initial values shown.

Create/Save Scenario

IMPORTANT: After you have finished editing data at these tabs, activate the Save or Create button at the bottom of the popup to update the scenario. This will save your changes. (Alternatively, you can activate the Cancel button.)



WARNING: Any one of the following actions or events will cause you to lose all editing or data entry work done since last entering the Scenarios popup:

- BUILDER timing out
- activating the Cancel button at the bottom of the popup
- closing the popup without activating Save (or Create) at the bottom of the popup

If your instance of BUILDER has a timeout, be mindful of that and consider doing a Save periodically if you are entering or editing data. You will then need to re-select your scenario and activate the Edit button.

Run Scenario

For how to run the scenario, see the topic Run a Scenario.

Related Links

Task Links

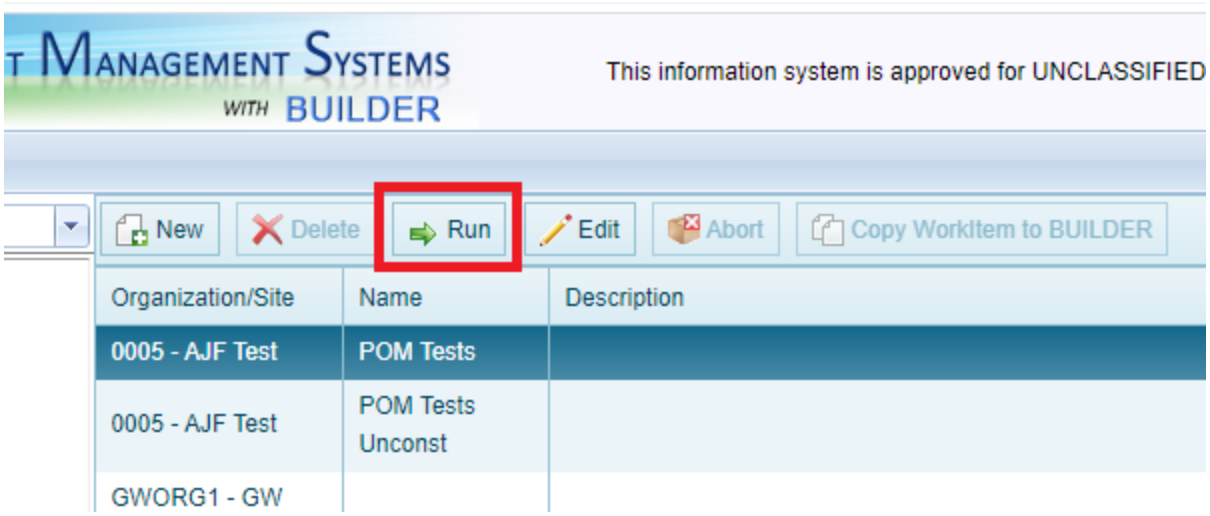
- Add a Scenario
- Run a Scenario
- Copy Work Items from a Scenario
- Scenario Visualization / Analysis
- Delete a Scenario

Instructional Links

- About Scenarios
- About Scenario Management

Run a Scenario

After all of a scenario's parameters are set, you can run the simulation by selecting the scenario in the content pane and then activating Run on the toolbar.



A progress report will generate at the bottom of the window, entering a new line each time a new activity begins. Each line of the progress report beings with the system time on your computer, which allows you to

judge how long each step takes. The activity stream will repeat for each year included in the simulation. By calculating how long it takes to simulate one year, you can estimate how long the simulation will be running.

CAUTION:BUILDER simulations are computationally intensive. Run time will depend on your computer system's speed and the size of the inventory in the simulation. The simulation could take from a few minutes up to several hours to finish. It does not allow for any interaction after you have activated Run in the dropdown list, other than allowing you to abort the run at any time.

If the simulation is taking too long, you have the option to abort the process by right-clicking on the scenario and selecting the "Abort" option. The simulation will prepare to finish its current process and stop running the scenario.

After Completion

When the scenario has run to completion (assuming it has not stopped due to errors or been aborted), you can do any of the following with the results:

- use the results to copy work items from the scenario to create a work plan in BUILDER
- compare the results with the results of other scenarios using Scenario Visualization / Analysis.

Related Links

Task Links

Add a Scenario
Edit a Scenario
Scenario Data
Copy Work Items from a Scenario
Scenario Visualization / Analysis
Delete a Scenario

Instructional Links

About Scenarios
About Scenario Management

Copy Work Items from a Scenario

After a scenario has been run, the expected work items for all of the years in the scenario can be copied into BUILDER as the work plan. If the scenario was constrained by funding levels, then only the future work items with "Completed" status will form annual work plans constrained by budget.

WARNING: The steps to copy work items from a scenario into BUILDER are rather drastic in their manipulation of work item records, and it is possible for work items to be deleted and/or lost in the shuffle. It would be wise to make a copy of the database and work with the copy to ensure nothing is lost.

To create a work plan using the scenario's results, navigate to the Scenarios module and expand the tree on the left hand portion of the screen to the desired Site. Once the Site has been selected, the scenarios for this Site will load in the content area. Right-click the scenario to be copied and select "Copy Work Items to BUILDER." Alternatively, activate the Copy Work Item to BUILDER button on the content area toolbar.

When a scenario is copied to the work plan, BUILDER will take the following steps:

- If your work plan contained work items for the years prior to the scope of the scenario, those work items receive preferential treatment so that no conflicting work efforts will be generated during the scenario and the original work items will move along in the process with the simulated work items. The original work items will have to compete for resources if the scenario has funding constraints, so that original work items may not be "Completed" and therefore not re-imported back into your production database during the Copy Scenario process. One way to ensure that the manually created future work items already in your production database do not get lost in the scenario is to mark them as "Must Complete as Planned." This will essentially require that they be completed as planned in the scenario.
- All current year and future work items for Buildings in the scope of your scenario will be deleted.
- All "Completed" current year and future work items in the selected scenario will be imported into annual work plans with a status of "Awaiting Funds," a rank of "1/1," and a score of "0.000."

By using the Scenarios tool, you can refine a work plan. If you start with no future work plan, then running a scenario should give you a first cut at constructing future work plans. Use the "Copy Work Items to BUILDER" option in the right-click menu to import the budget-constrained, completed work items from the scenario into your production database. You can then refine the work items from the work plan screen, moving work items from year to year, changing work item properties, perhaps marking those that will definitely be completed as planned so that the next run of the scenario will insure that each one is completed. You may even re-inspect sections identified as needing work, especially if they have not been inspected for some time. Improvements in the accuracy of your data will improve simulation results as well.

You can then run another scenario with your new data and the same scenario parameters, and use the scenario's "Copy Work Items to BUILDER" option described above to import the work plan from the new scenario's database. Each cycle should improve the work plan generated and the overall scenario results. This is important because the work plan generated will begin to represent your future work plans more realistically, and the scenario results will give you a more realistic view of the next 5 to 10 years and improve your insights into the consequences of a given funding level.

Related Links

Task Links

Add a Scenario
Edit a Scenario
Scenario Data
Run a Scenario

Scenario Visualization / Analysis
Delete a Scenario

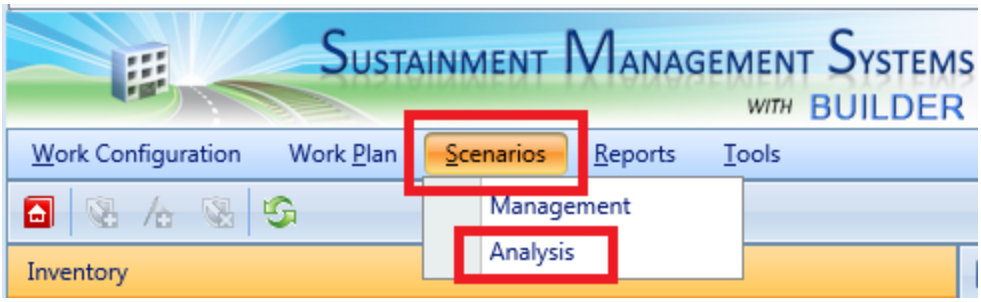
Instructional Links

About Scenarios
About Scenario Management

Scenario Visualization / Analysis

Scenario Visualization allows you to visualize aspects of a scenario or combination of scenarios by specifying parameters and then selecting from available predefined graph types.

To access Scenario Visualization, select Scenarios > Analysis from the main menu.



For details about opening and closing items in the Scenario Visualization page, see About Navigating the Scenario Visualization Page. To get started creating a Scenario visualization, see Create a Scenario Visualization.

IMPORTANT: You cannot create a scenario at the Scenario Visualization page; you can only view and analyze scenarios that you have already created using the steps specified in Add a Scenario.

About Navigating the Scenario Visualization Page

The layout of the Scenario Visualization page consists of these areas:

- an Analysis Options column on the left
- a Graph Options column on the right
- a Work Items drawer at the bottom
- a central area (the "viewing board") where the graphs will be displayed

If the first three areas are not visible when you enter Scenario Visualization, you can bring the Analysis Options and Graph Options into view by activating or clicking on the left-hand and right-hand blue border bars. To bring the work items into view, activate the small arrow centered at the bottom of the screen to expand the Work items drawer (see Show and Hide Work Items in the section Navigating Analysis Options and Graph Options).

Navigating Analysis Options and Graph Options

In the Scenario Visualization page, activating or clicking on the darkest colored bars, both vertical and horizontal, will expand and minimize areas of the page. The only area that does not minimize is the Selected Scope area in Analysis Options.

Work Items

Show and Hide Work Items

At the bottom of the page is the drawer for work items connected with the scenario(s) being visualized.

- To expand the Work Items drawer and show the contents, activate the tiny up arrow centered at the bottom of the page.

- To close the Work Items drawer, activate the tiny down arrow at the top of the Work Items section.

Change the Size of the Work Items Drawer

You can change the size of the Work Items drawer when it is open by following these steps:

- Place the cursor on the top border bar of the Work Items drawer.
- When the cursor changes to a double-headed arrow and the top border bar turns a solid color, click the left mouse button and drag up or down the screen (up for a larger drawer, down for a smaller drawer). New position will be indicated by a dark horizontal bar.
- When the dark bar is where you want the Work Items border bar to be, release the mouse button.

Create a Scenario Visualization

Set Analysis Options

Select Scope

Your first task in creating a Scenario Visualization is to set the scope of your visualization by selecting a location:

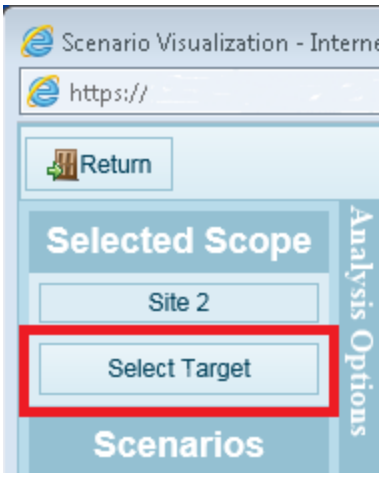
- Under Selected Scope in the left column (Analysis Options), activate the Select Target button.
- In the popup box (Select Scope), activate the expansion arrow next to each node in the navigation tree until you reach the location you want as your scope.

  Note: The scope must be either an Organization (any level) or a Site.

  Tip: As soon as the popup window appears, the Select Target button is renamed Cancel. To exit without saving, activate Cancel. To save what you have and exit, you can activate the white arrow that points from the top of the popup box to Selected Scope.

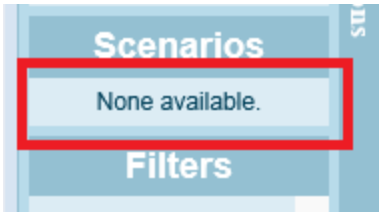
- Select the name of your desired location in the popup box to highlight it.
- Activate OK at the bottom of the popup box.

At this point the popup box should disappear, and your selected location will be listed above the Select Target button.



Select Scenario(s)

Your second task is to select one or more scenarios under Scenarios. However, if you see the message "None available" then you will need to first create a scenario appropriate to your selected scope. To do so, activate the Return button at the upper left of the screen to return to the main menu, then follow instructions under Add a Scenario.



To select one or more scenarios,

- Under Scenarios in the left column (Analysis Options), activate the Add button. The "Select Scenarios" popup box will appear.

  Tip: As soon as the popup window appears, the Add button is renamed Cancel. To exit the selection process without saving, activate Cancel. To save what you have and exit, you can activate the white arrow that points from the top of the popup box to Scenarios.

- In the popup box, use the up and down arrows in the vertical scroll bar to navigate through the list of available scenarios.

Note: If the list appears blank, but the message "None available" doesn't appear, the list may contain a scenario that has a space as its name.

- Click the square box next to each scenario desired. A black check mark will appear in the box.
- Activate OK at the bottom of the popup box to complete the scenario selection process. The popup box should disappear.

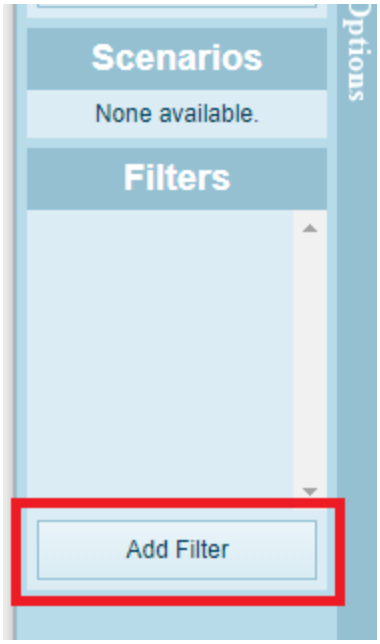
Note: If you see the message "None available" then you will need to first create a scenario appropriate to your selected location (Scope). To do so, activate the Return button at the upper left of the screen to return to the main menu, then follow instructions under Add a Scenario.

Add Filters (Optional)

An optional additional task is to create one or more filters to perform on your data.

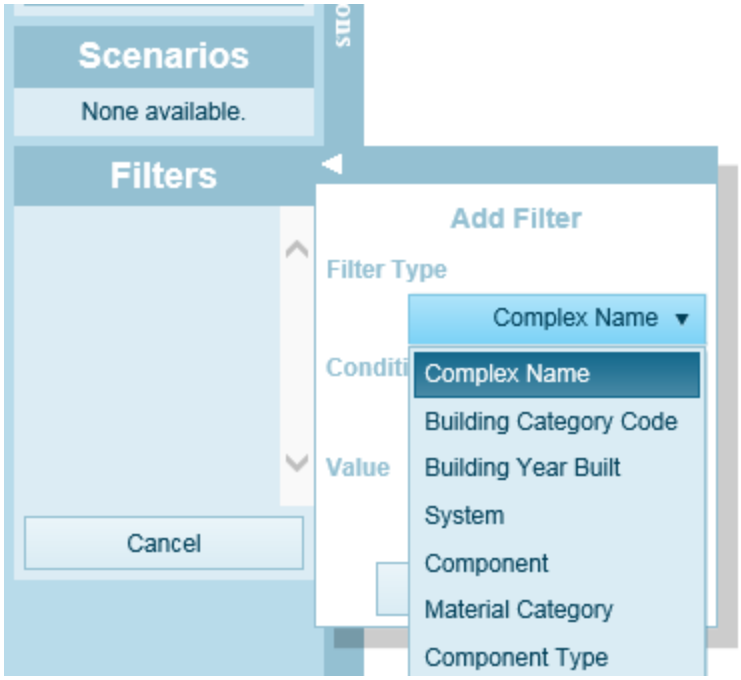
To create a filter,

- Activate the Add Filter button. A popup box labeled "Add Filter" will appear.

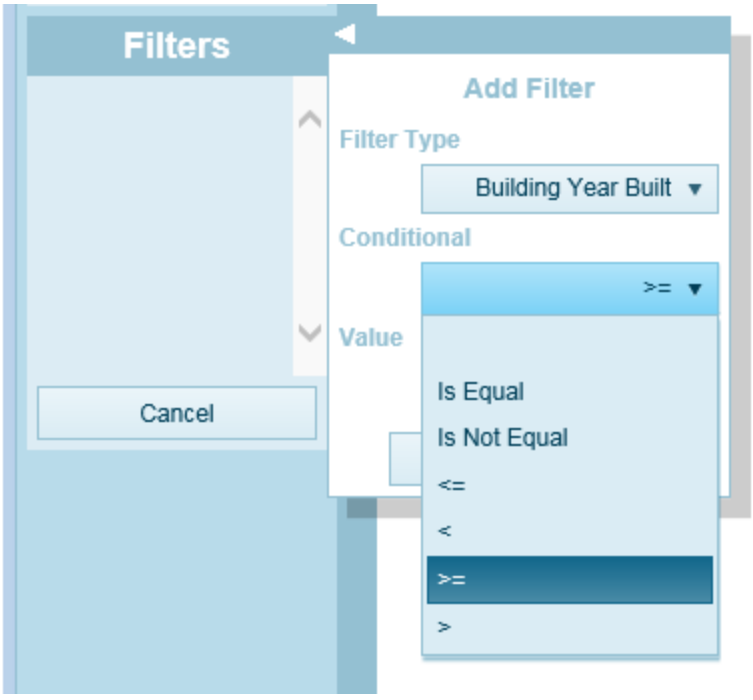


Tip: As soon as the popup window appears, the Add Filter button is renamed Cancel. To exit without saving, activate Cancel. To save and exit, you can activate the white arrow that points from the top of the popup box to Filters.

- Select a Filter Type from the first dropdown list:

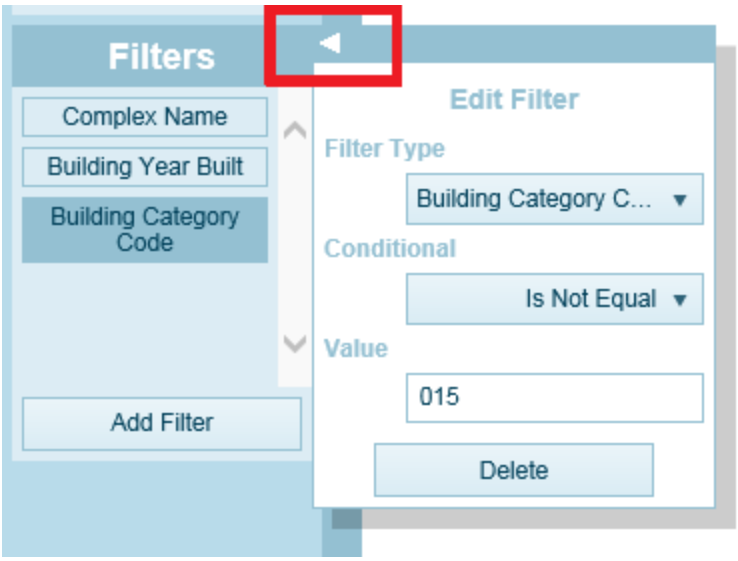


- Select a Conditional (e.g., Is Equal, Is Not Equal, greater than, less than) from the second dropdown list:



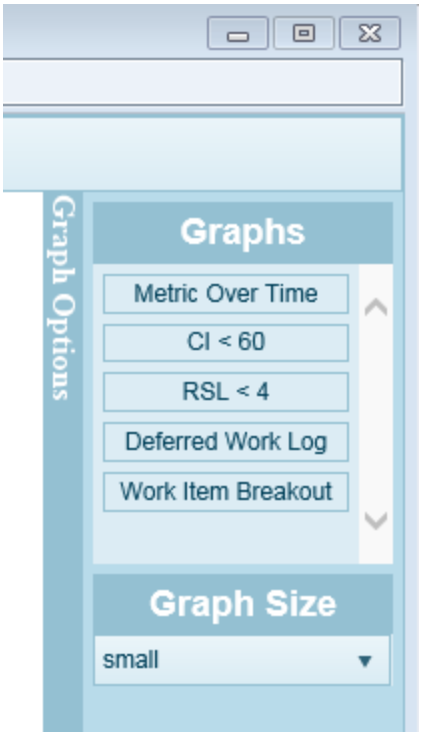
- Click in the third box and enter a value for comparison.
- Activate Create at the bottom of the popup box to complete the filter. A rectangle showing the filter type should appear in the list of filters.
- To add another filter, repeat steps 2 through 5 in the popup box.

- When you are finished adding filters, activate the white arrow that points from the top of the popup box to Filters. The popup box should disappear.



Set Graph Options

In the rightmost column of the Scenario Visualization screen is a list of graphs that can be drawn for your selected package of scenario parameters. If the list of graphs is longer than the available space, the up and down arrows in the vertical scroll bar will be black instead of gray, and you can use them to navigate the list.



Select a Graph to View

- If the Graph Options column is not expanded at the right side of your screen, click on the dark vertical bar labeled Graph Options.
- Hover over one of the graph names listed (it will highlight).
- Hold down the mouse button and drag the graph to the viewing board, into box labeled "Drag a graph here."

How To Select Additional Graphs

The viewing board is able to hold at least nine graphs at one time. However, speed may suffer with a larger number of graphs. If you are placing more than two graphs on the viewing board, the process will be easier if the Graph Size is set to small.

To select additional graphs,

- Hover over a graph name (it will highlight).
- Hold down the mouse button and drag the graph to the box indicated by a darker color.

How To Remove a Graph from the View

To remove a graph from the viewing board,

- If the blue header bar is showing at the top of the graph, skip to step 3.
- Bring the cursor to the top of the graph to make the blue graph header bar appear.
- Activate the white "x" at the upper right corner of the graph.

How To Change Graph Size

Under Graph Size in the right column (Graph Options), activate the down arrow for the full dropdown list and select between small and large. This will change the size of all graphs on the viewing board.

Edit Scenario Visualization Parameters

Change Scope

To change the scope of your visualization, follow the same instructions as for initial scope selection:

- Under Selected Scope in the left column (Analysis Options), activate the Select Target button.
- In the popup box (Select Scope), activate the expansion arrow next to each node in the navigation tree until you reach the location you want as your scope.
  Note: The scope must be either an Organization (any level) or a Site.

  Tip: as soon as the popup window appears, the Select Target button is renamed Cancel. To exit without saving, activate Cancel. To save what you have and exit, you can click the white arrow that points from the top of the popup box to Selected Scope.

- Select the name of your desired location to highlight it.
- Activate OK at the bottom of the popup box.

Change Scenario Selection

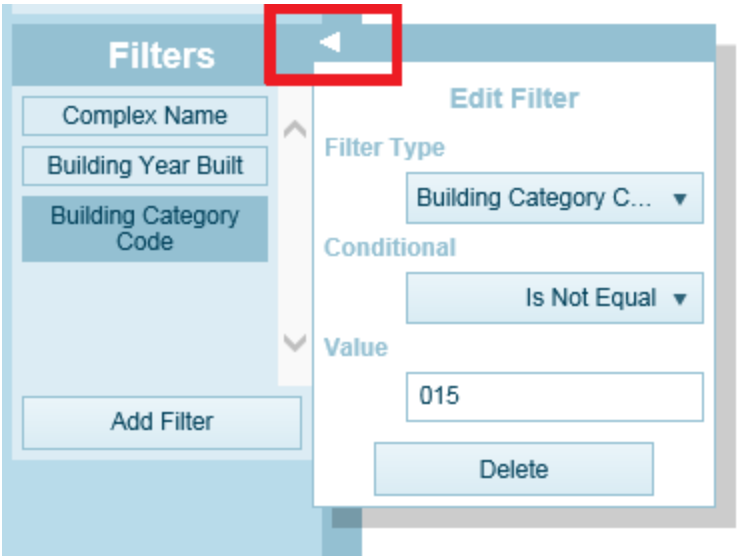
To change the selection of scenarios,

- Under Scenarios in the left column (Analysis Options), activate the Add button.
- In the popup box, use the up and down arrows to navigate through the list of available scenarios.
- If a scenario is selected that you do not wish, click in the square box next to it. The black check mark will disappear.
- To select a scenario that is not currently selected, click in the square box next to it. A black check mark will appear in the box.
- Activate OK at the bottom of the popup box to complete the scenario selection process.

Change Filters

To change a filter,

- In the list under Filters, activate the filter you wish to edit by selecting it. It will be highlighted, and a popup box (Edit Filter) will appear.
- Change the Filter Type and/or Conditional and/or Value as desired.
- To save your change(s) and exit, activate the white arrow that points from the top of the popup box to Filters:



Delete a Filter

To delete a filter,

- In the list under Filters, activate the filter you wish to delete by selecting it. It will be highlighted, and a popup box (Edit Filter) will appear.
- After checking the filter details to confirm that it's the one you wish to delete, activate the Delete button at the bottom of the popup box.

Exit Scenario Visualization

To exit Scenario Visualization, activate the Return button at the top left of the screen.

Related Links

Task Links

Add a Scenario
Edit a Scenario
Run a Scenario
Copy Work Items from a Scenario
Delete a Scenario

Instructional Links

About Scenarios
About Scenario Management

Delete a Scenario

Permissions Note: Only a Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. or BUILDER AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. can delete a scenario.

To delete a scenario,

- Select Scenarios > Management from the main menu.
- In the left pane, navigate to the desired level in the Scenarios tree.
- In the table of scenarios in the content area, select the scenario you wish to delete.
- On the toolbar, activate the ❌ Delete button.
- In the confirmation popup, respond to "Are you sure you want to delete the selected scenario?" by activating the Yes button.

Related Links

Task Links

Add a Scenario
Edit a Scenario
Run a Scenario
Copy Work Items from a Scenario
Scenario Visualization / Analysis

Instructional Links

About Scenarios
About Scenario Management

Work Planning

Work Plans

About Work Plans

For a higher-level overview encompassing work plans, work projects, and work items, see Work Planning Overview.

What is a Work Plan?

The work plan is what will define, guide, and track progress on sustainment, modernization, or demolition work that needs to be done. Creating the work plan is the goal of the inventory, assessment, data reference, and work configuration efforts that precede it.

In the BUILDER software, a work plan is an aggregate of work items

- with a given scope–a particular Organization, Site, Complex, or Building
- for a given time period, such as the current fiscal year or next fiscal year

Within the work plan, the work items may or may not be organized into discrete work projects.

How is a Work Plan Created?

Work plans are generated by BUILDER, based on the condition and/or functionality index of assets, using specifications defined by condition standards, condition policies, etc., which together comprise work configuration. For more information about work configuration, see the Work Configuration Overview.

After initial generation, manual entry of work items into a work plan is also possible.

Related Links

For more about the work items contained in a work plan, start with the topic About Work Items.

Work Plan Tasks

View a Work Plan
Add a Work Plan
Edit a Work Plan
Work Plan Data
Prioritize Work Items in a Work Plan
Export a Work Plan or Work Items to Excel
Delete a Work Plan

Instructional Link

Work Planning Overview

View a Work Plan

When you select an inventory item in the navigation pane at the work plan page, work items relevant to that inventory location and below it in the tree will display in the main content area. This topic explains filtering, sorting, and other methods you can use to find work items and arrange them in a particular order.

Another way to view work plan data is to use BUILDER's Reports feature.

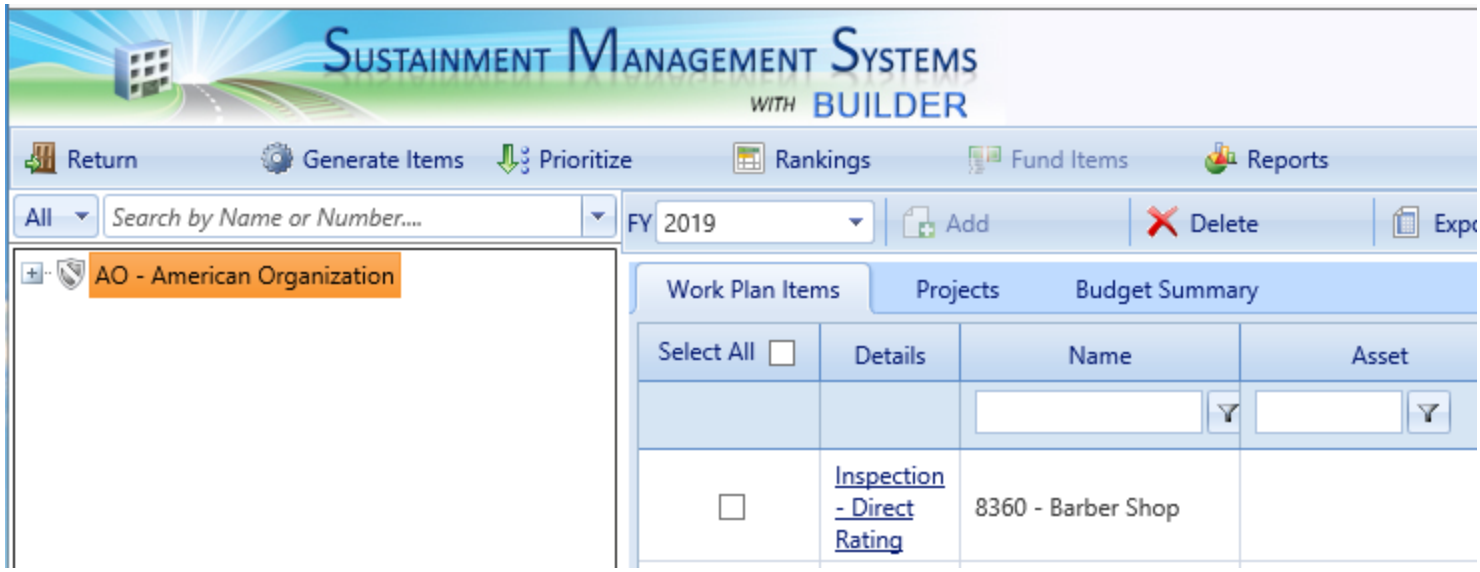
Note: If, when you reach the desired work plan location, the message "No records to display" appears, this may be for one of two reasons:

a. A work plan might not have been generated yet. See Add a Work Plan.
b. It's possible that no work is needed at the selected inventory location following the standards, policies, etc. established.

Open Work Plan

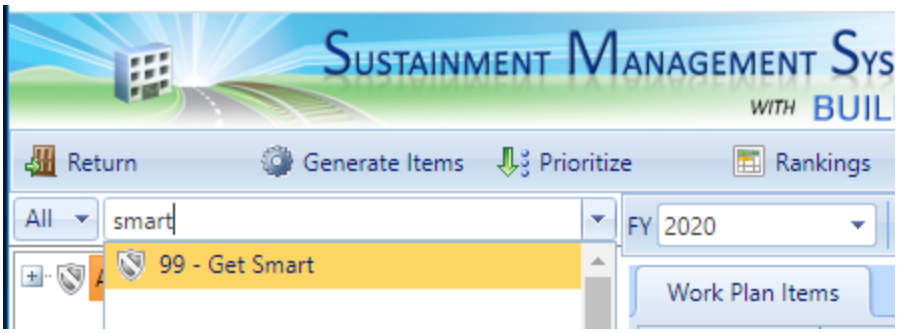
To open a work plan to view it,

- Select Work Plan from the BUILDER main menu. The work items window will appear, initially showing just the top level Organization.



- In the work items window select the inventory item whose work plan you want to view, add, or edit, using one of two methods: (a) expansion plus navigation, or (b) search:
  a. Expansion plus navigation - In the navigation tree (left pane), expand the tree as needed to navigate to the desired location and select it.
  b. Search - Alternatively, you can use the search function by typing the number, name, or part of the name of the desired inventory item into the search field just above the navigation tree (this field

will be labeled "*Search by Name or Number*" until you click in it). Then select the inventory item's name in the list of results, as shown below.



For an explanation of the columns of a work plan, see the topic Work Plan Data. To change the presentation of the work plan on the screen, see Change/Refine Work Plan View in this topic.

Work Plan Toolbar

Toolbar Before a Work Plan Is Generated

If a work plan has not yet been generated for the selected location, the toolbar will contain only the buttons shown below:

After a work plan has been generated, the toolbar will contain the buttons listed below.

Toolbar After a Work Plan Has Been Generated

- Return. Closes the work plan screen.
- Generate Items. Automatically generates work items. Note that if you desire to add work items manually, generating work items is required at least once first, to establish a work plan.
- Prioritize. Prioritizes the work items for a work plan.
- Rankings.Shows rankings of the work items for a work plan.
- Fund Items. Allocates funding to the work items in a work plan.
- Reports. Launches the Report Selection tool, which gives you access to a list of standard reports relevant to the work items. See How to Use the Report Viewer.

Change/Refine Work Plan View

The work plan screen initially shows the work plan

- for the current fiscal year
- at the highest inventory level

To view the work plan for a different inventory level, navigate the tree at the left side of the window to the desired level, or use the search bar, which is just above the tree. The work plan for the selected inventory

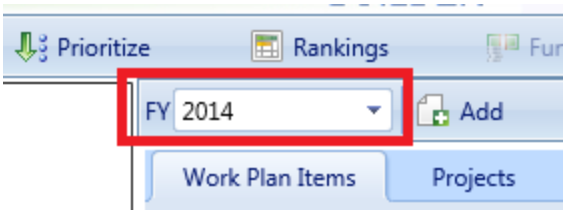
level will be shown for the current fiscal year. To change the fiscal year, see the section "Select Fiscal Year," below.

In addition to constraining the work plan view by inventory item and by fiscal year, you can further constrain it by using filters, and determine the order of presentation of the work items using the sort function. More detail is presented below.

Note: The sort function does not appear on the toolbar or in the table. It is activated by clicking or double-clicking on the desired column.

Select Fiscal Year

To view the work plan for past or future fiscal years, select the desired fiscal year from the dropdown list at the top of the window:



Note: The selected fiscal year will remain active if you change your location in the navigation tree.

Filter

You can filter by any column or by multiple columns having a blank field for entry and a filter icon below the column header.

To filter,

- Enter a search term in the blank field.
- Next, activate the filter icon and select from the dropdown a condition such as "Contains" or "StartsWith" or "EqualTo". This should activate the filter. When the filter finishes, only entries that meet the filter criterion will remain. Example:

Description	Cost	Status
ROOF		
Replace B3010 ROOF COVERINGS B301090 OTHER ROOFING Other	$136,000	Awaiting Funds
Replace B3010 ROOF COVERINGS B301003 ROOF INSULATION & FILL General	$50,000	Awaiting Funds
Replace B1020 ROOF CONSTRUCTION B102003 ROOF DECKS AND SLABS Deck - Other	$447,000	Awaiting Funds

Note: If you change your location in the navigation tree, the selected filter will remain active and still apply.

To clear the filter, re-activate the filter button and select the first option, which is "NoFilter."

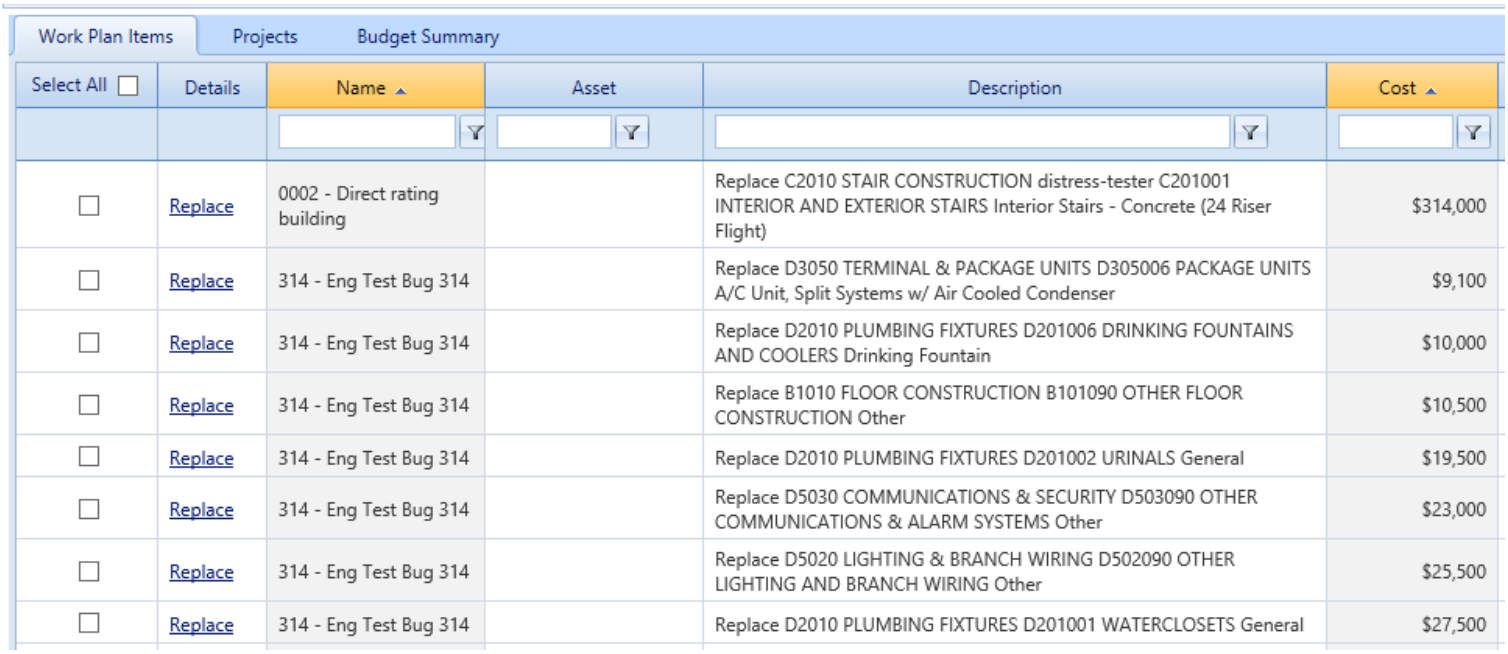
Sort

Primary Sort

Once the desired work plan year is shown, and ideally any desired filtering has already been done (because filtering an unsorted list should be faster than filtering a sorted list), choose an ascending or descending primary sort by tapping/clicking or double-tapping/double-clicking the desired column. The column header will stay highlighted to indicate that a sort has been performed.

Secondary Sort

If a column header is already highlighted (indicating that a primary sort has been performed) and you then click or double-click on a second column, that will perform a secondary sort within each of the distinctive entries in the primary sort column. The screenshot below shows a primary sort on the Name column followed by a secondary sort on the Cost column.

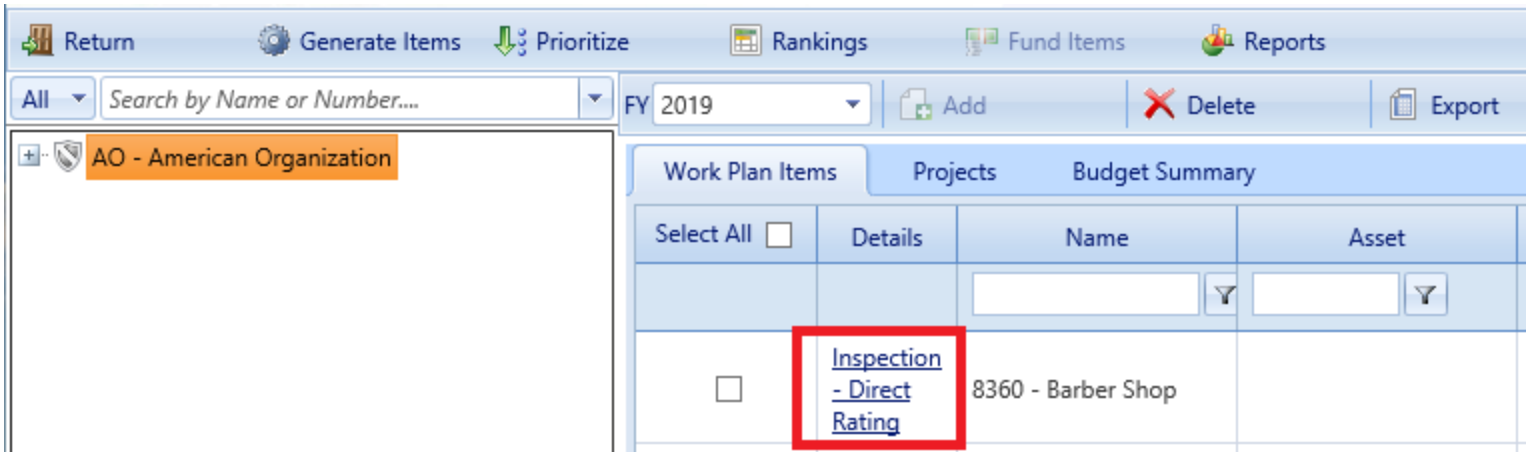


Work Plan Items | Projects | Budget Summary

Select All ☐	Details	Name ▲	Asset	Description	Cost ▲
☐	Replace	0002 - Direct rating building		Replace C2010 STAIR CONSTRUCTION distress-tester C201001 INTERIOR AND EXTERIOR STAIRS Interior Stairs - Concrete (24 Riser Flight)	$314,000
☐	Replace	314 - Eng Test Bug 314		Replace D3050 TERMINAL & PACKAGE UNITS D305006 PACKAGE UNITS A/C Unit, Split Systems w/ Air Cooled Condenser	$9,100
☐	Replace	314 - Eng Test Bug 314		Replace D2010 PLUMBING FIXTURES D201006 DRINKING FOUNTAINS AND COOLERS Drinking Fountain	$10,000
☐	Replace	314 - Eng Test Bug 314		Replace B1010 FLOOR CONSTRUCTION B101090 OTHER FLOOR CONSTRUCTION Other	$10,500
☐	Replace	314 - Eng Test Bug 314		Replace D2010 PLUMBING FIXTURES D201002 URINALS General	$19,500
☐	Replace	314 - Eng Test Bug 314		Replace D5030 COMMUNICATIONS & SECURITY D503090 OTHER COMMUNICATIONS & ALARM SYSTEMS Other	$23,000
☐	Replace	314 - Eng Test Bug 314		Replace D5020 LIGHTING & BRANCH WIRING D502090 OTHER LIGHTING AND BRANCH WIRING Other	$25,500
☐	Replace	314 - Eng Test Bug 314		Replace D2010 PLUMBING FIXTURES D201001 WATERCLOSETS General	$27,500

View a Work Item

To view details of an individual work item, activate the link in the Details column.



If the work item is a Section-level work item, you will see the Section-Level Work Item Data in the "Details: popup. If the work item is a Building-level work item, the "Details" popup will show Building-Level Work Item Data .

Related Links

Task Links

Add a Work Plan
Edit a Work Plan
Work Plan Data
Prioritize Work Items in a Work Plan
Export a Work Plan or Work Items to Excel
Delete a Work Plan

Instructional Links

About Work Plans
Work Planning Overview

Add a Work Plan

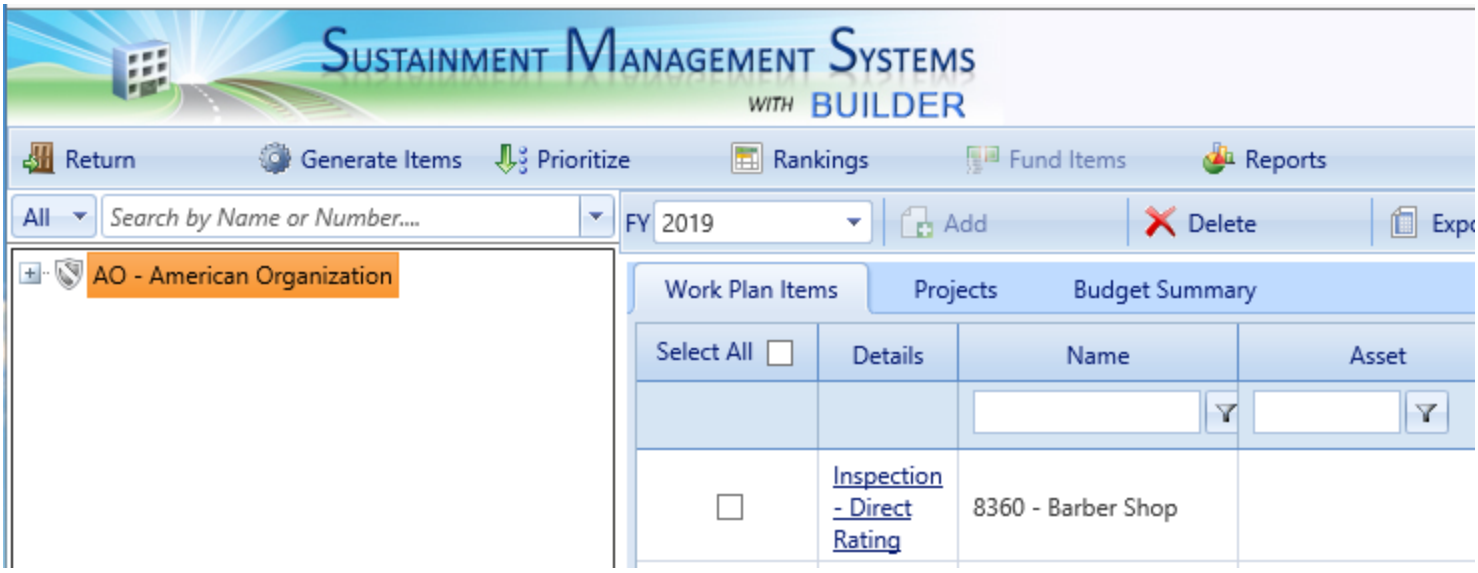
This topic shows how to create a work plan using BUILDER's automatic generation process.

To add a work plan, you must use BUILDER's automated process to generate a plan after establishing work configuration standards, policies, and policy sequences in the work configuration.

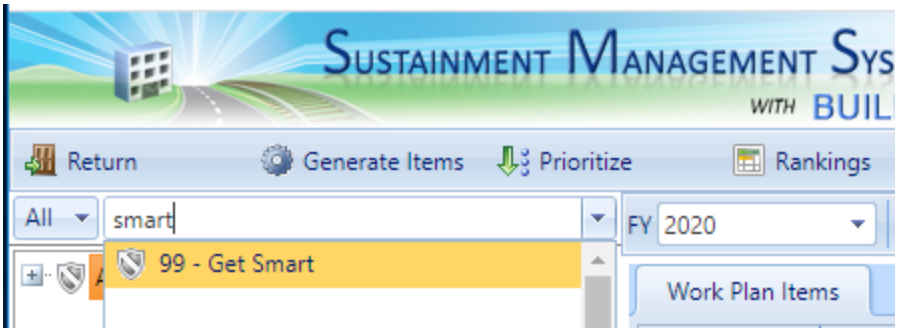
Navigate to Work Plan Location

To navigate to the desired work plan location,

- Select Work Plan from the BUILDER main menu. The work items window will appear, initially showing just the top level Organization.



- In the work items window select the inventory item whose work plan you want to view, add, or edit, using one of two methods: (a) expansion plus navigation, or (b) search:
  a. Expansion plus navigation - In the navigation tree (left pane), expand the tree as needed to navigate to the desired location and select it.
  b. Search - Alternatively, you can use the search function by typing the number, name, or part of the name of the desired inventory item into the search field just above the navigation tree (this field will be labeled "*Search by Name or Number*" until you click in it). Then select the inventory item's name in the list of results, as shown below.



Note: The inventory item you select determines the scope of the work plan. The work plan generated will cover that inventory item (Organization, Site, Complex, or Building) and all inventory items below it in the tree.

Generate Plan

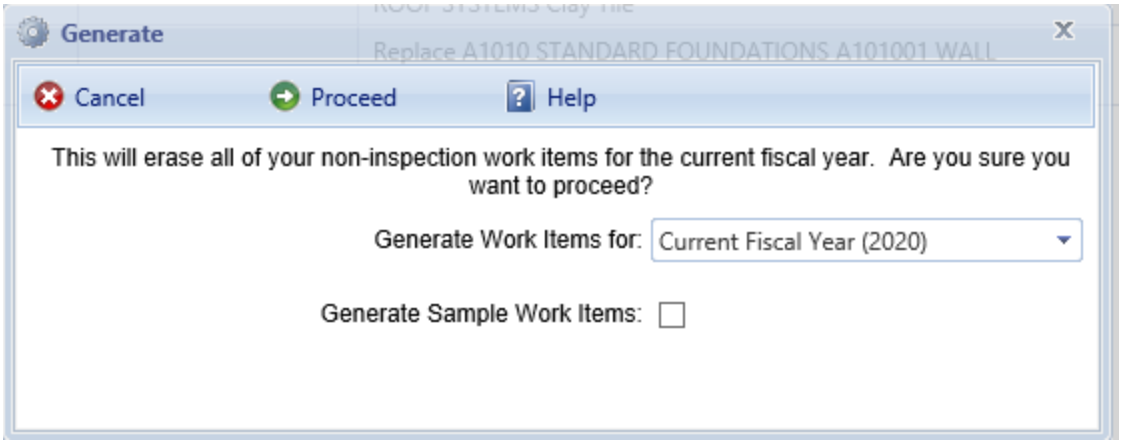
Note that when generating a work plan, BUILDER will use the policy sequence defined in the Site data and compare the value for each applicable Component-Section, Functional Area, and/ or Building property with the threshold value set in the standards, to determine where and what type of work should be performed. Additionally, the estimated cost of each work item is computed using the Cost Book assigned to the Site in the Site's **General Information** tab. When the process is complete, the work plan will appear in the work plan

screen, displaying all of the newly generated work items. All of the newly generated work items will have the status "Awaiting Funds." You may then refine the work item list as you wish.

CAUTION: BUILDER's work generation algorithms are still primitive in the sense that they are unable to detect work conflicts and precedences. For example, they may generate a need to repair a roof deck without a concurrent effort to repair the roof surface. Your own manual processing of the work item list must address such problems.

To generate the work plan,

- At the topmost toolbar, activate Generate Items Generate Items. The "Generate" popup will appear.



- In the field titled Generate Work Items for, select "Current Fiscal Year" or "Next Fiscal Year" in the drop-down.
- (Optional) If you want the condition of inspection samples to be each considered separately in generating the work plan, rather than using the overall condition of the Component-Section, mark the Generate Sample Work Items checkbox.
- When ready, activate Proceed on the popup menu bar. (Alternatively, activate Cancel to avoid erasing and re-generating work items.)

Result: Except for work items that have been manually edited, when you proceed with generating work items all BUILDER-generated work items at that inventory location and all inventory items below it in the tree will be regenerated.

Note: Work items that were manually generated or edited will be preserved in the work plan; they will not be eliminated by work plan re-generation.

Related Links

Task Links

View a Work Plan
Edit a Work Plan
Work Plan Data
Prioritize Work Items in a Work Plan
Export a Work Plan or Work Items to Excel
Delete a Work Plan

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About Work Plans
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Edit a Work Plan

This topic introduces multiple ways by which you can change a work plan.

Edits to a work plan can be made in any of the following ways:

- make one or more changes to work configuration specifications, and regenerate the work plan
  –see Regenerate Work Items under Different Conditions
- add or alter one or more inventory items within the scope of the work plan, preferably also performing assessments on them, and regenerate the work plan
  –see Regenerate Work Items under Different Conditions
- Add or change one or more condition or functionality assessments pertaining to assets within the scope of the work plan, and regenerate the work plan
  see Regenerate Work Items under Different Conditions
- change the target fiscal year and regenerate the work plan
  –see Change Fiscal Year
- manually add one or more work items
  –see Manually Add a Work item
- manually delete one or more work items
  –see Delete a Work Item
- if the work plan was created by a scenario, change the scenario inputs, re-run the scenario, and re-import the results to the work plan
  –see the topic Copy Work Items from a Scenario; also referred to below at Change a Scenario

Each of these editing options is described in this topic; however, for some of them full detail may require consulting other, linked topics.

To change properties (other than fiscal year) of work items, see the documentation section on work items, starting with About Work Items.

Regenerate Work Items under Different Conditions

Because BUILDER generates work plans automatically based on work configuration and the results of assessments, you can change a work plan either by altering the underlying configuration specifications, or by making entries into BUILDER that change a condition or performance index enough to cross a threshold set in work configuration.

Options are:

a. Make one or more changes to work configuration specifications. See Work Configuration Overview for an introduction to work configuration.
b. Change one or more inventory items that are within the scope of the work plan, or add new ones, preferably also performing assessments on them.
c. Add or change one or more condition or functionality assessments pertaining to assets within the scope of the work plan.

After changing the inputs (work configuration settings, entries in the inventory tree, and/or condition and/or functionality inspections), navigate to the desired location in the work item tree (if needed, see instructions at Add a Work Plan), and regenerate the work plan following the instructions at Regenerate the Work Plan.

Note: Work items that were manually generated or edited will be preserved in the work plan; they will not be eliminated by work plan re-generation when you activate Generate Items on the Work Items screen toolbar.

Change Fiscal Year

When viewing a work plan, you can set the fiscal year to a present, past or future year. This is done at the main work plan screen.

When generating a work plan, however, you have the choice only of the current fiscal year or next fiscal year. This is done in the "Generate" popup window.

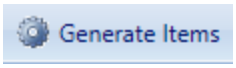
To change the fiscal year. starting at the work item screen,

- While at the desired location in the tree, activate Generate Items on the toolbar.
- In the Generate Work Items for field, select current fiscal year or next fiscal year from the dropdown list.
- Activate Proceed on the popup toolbar.

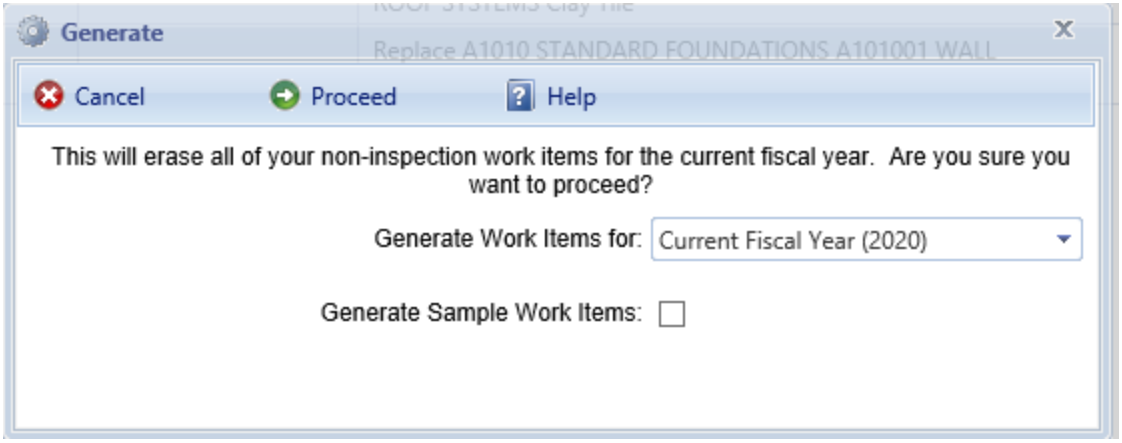
Regenerate the Work Plan

After changing either the FY (fiscal year) setting or the work configuration settings, you will need to regenerate the work plan.

To generate the work plan,

- At the topmost toolbar, activate 

Generate Items. The "Generate" popup will appear.



- In the field titled Generate Work Items for, select "Current Fiscal Year" or "Next Fiscal Year" in the drop-down.
- (Optional) If you want the condition of inspection samples to be each considered separately in generating the work plan, rather than using the overall condition of the Component-Section, mark the Generate Sample Work Items checkbox.
- When ready, activate Proceed on the popup menu bar. (Alternatively, activate Cancel to avoid erasing and re-generating work items.)

Result: Except for work items that have been manually edited, when you proceed with generating work items all BUILDER-generated work items at that inventory location and all inventory items below it in the tree will be regenerated.

Note: Work items that were manually generated or edited will be preserved in the work plan; they will not be eliminated by work plan re-generation.

Manually Add a Work item

Note: Work items that were manually generated or edited will be preserved in the work plan; they will not be eliminated by work plan re-generation when you activate the Generate Items button.

Section-Level Work Item

To manually add a Section-level work item to an existing work plan,

- Activate Work Plan in the main menu.
- Navigate in the tree to the desired work plan.

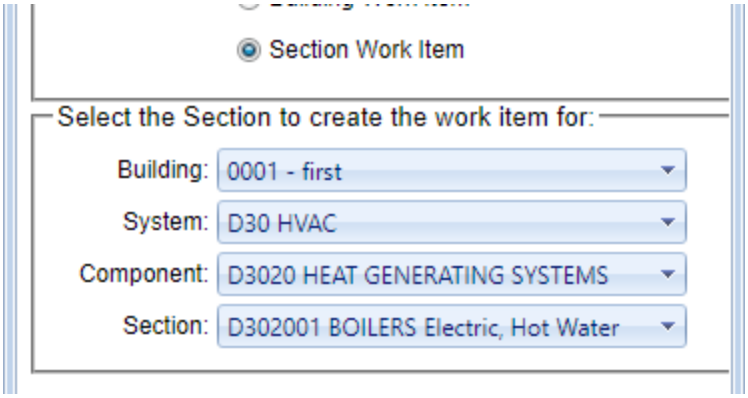
  IMPORTANT: This must be at Site level or below in order to add a Section-level work item.

- On the second-level toolbar, activate Add. The "New Work Item" popup will appear.

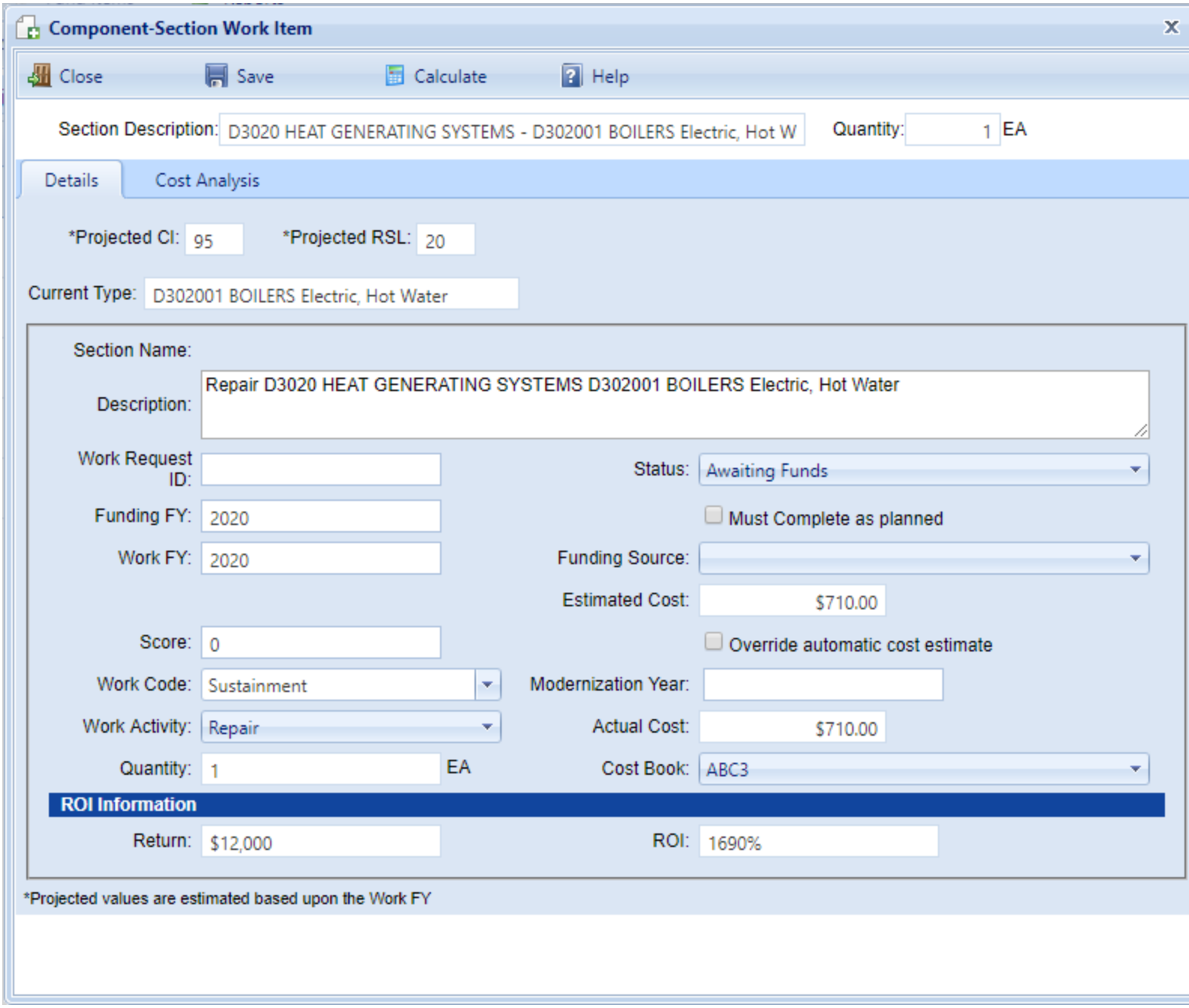
- In the popup, select Section Work Item.

  Troubleshooting Tip: If you are unable to select Section Work Item, check to see if you are at the Organization level in the navigation tree. Only a Project may be added at the Organization level.

- Use the dropdowns to specify the relevant Section.

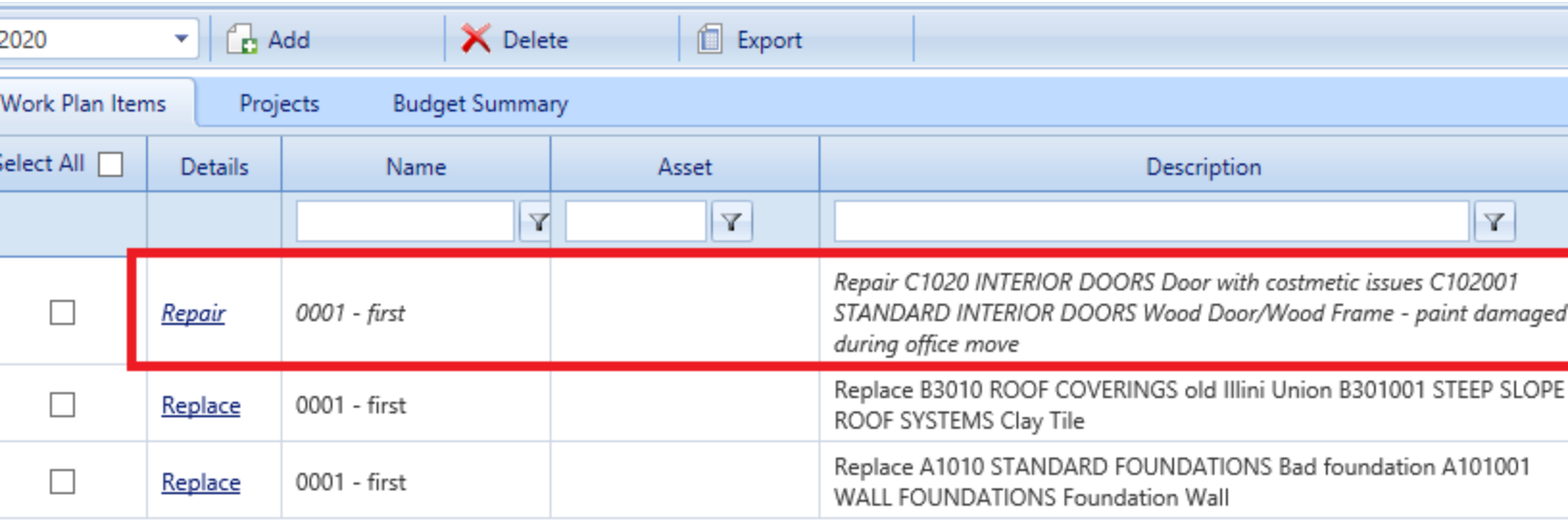


- Activate Proceed in the popup toolbar. The "Component-Section Work Item" popup will appear.



- Fill in fields as needed at the Details tab. To enter your own amount in the Estimated Cost field, you will first need to mark the Override automatic cost estimate checkbox. To revert to an automated estimate, activate the Estimate button.
- Save either as you go, or when finished.
- Activate Close.

A manually added work item will appear in the work plan in italics:



Building-Level Work Item

To manually add a Building-level work item to an existing work plan,

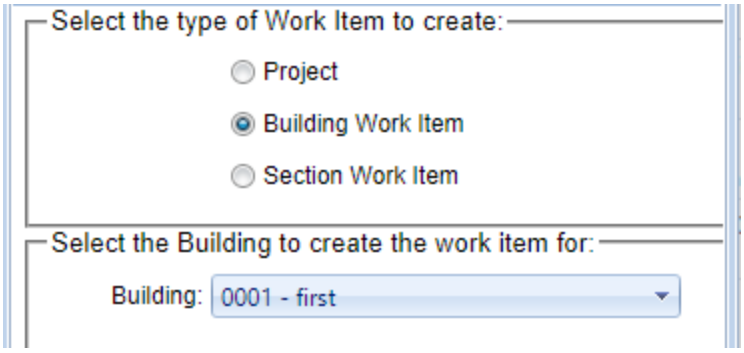
- Activate Work Plan in the main menu.
- Navigate in the tree to the desired work plan.

  IMPORTANT: This must be at Site level or below in order to add a Building-level work item.

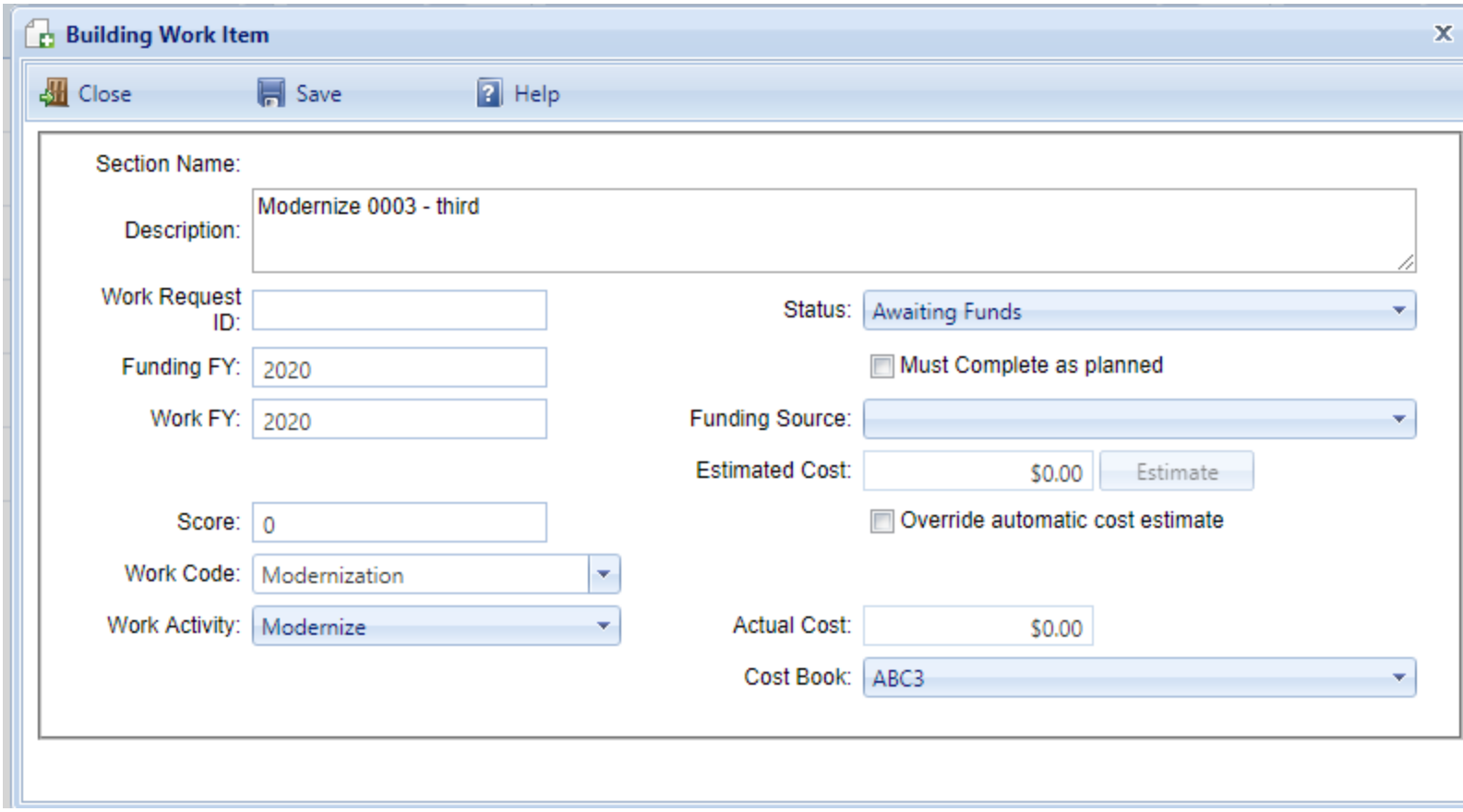
- On the second-level toolbar, activate Add. The "New Work Item" popup will appear.
- In the popup, select Building Work Item.

  Troubleshooting Tip: If you are unable to select Building Work Item, check to see if you are at the Organization level in the navigation tree. Only a Project may be added at the Organization level.

- Select the relevant Building in the dropdown.

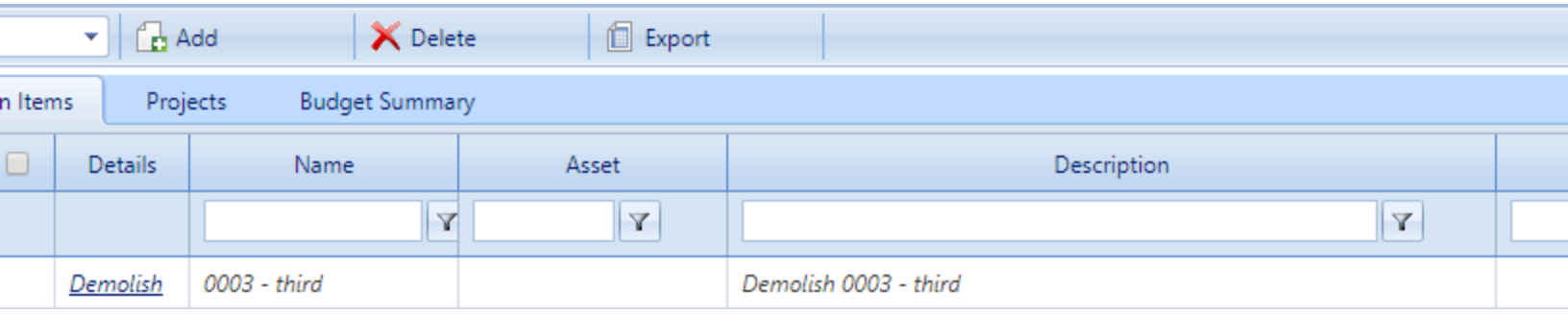


- Activate Proceed in the popup toolbar. The "Building Work Item" popup will appear.



- In the first column, select the Work Code and Work Activity from the dropdowns.
- In the second column, select or fill in fields as needed. To enter your own amount in the Estimated Cost field, you will first need to mark the Override automatic cost estimate checkbox.
- Save either as you go, or when finished.
- Activate Close.

A manually added work item will appear in the work plan in italics:



Project

You can edit a work plan by gathering collections of work items into one or more work projects. The ability to do this simplifies management of work plans by reducing the number of separate items to be managed. See the topic Organize Work Items into a Project, or begin with the topic About Work Projects.

Delete a Work Item

You can edit a work plan by deleting one or more work items as described in the topic Delete a Work Item. If, however, these items were generated instead of manually added, they will re-appear if the work plan is re-generated under the same conditions. So, after regeneration, you may need to re-check for these work items and delete them again.

Change a Scenario

If the work plan was created by importing from a scenario's results, you can change a work plan by changing the scenario's inputs, re-running the scenario, and re-importing the results to the work plan. See the Scenarios topics Edit a Scenario and Run a Scenario and Copy Work Items from a Scenario.

Related Links

Task Links

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Work Plan Data
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Export a Work Plan or Work Items to Excel
Delete a Work Plan

Instructional Links

Edit a Work Plan
Work Planning Overview

Work Plan Data

This topic explains the contents of a work plan table that is displayed when you activate Work Plans from the main menu.

The columns in the table at the Work Plan Items tab are as follows:

- Select All - Marking or unmarking the checkbox next to the Select All column title will mark or unmark all the checkboxes in the column. Alternatively, you can manually mark desired checkboxes in the column to select a customized collection of individual work items to be dealt with as a group.

- Details - Activating a link-formatted entry in the Details column will trigger a popup showing details for that work item.
- Name - Shows the Building number and name where the work will take place.
- Asset - The inventory asset that the work item applies to.
- Description - Description of the work that needs to be done.
- Cost - Estimated cost of the work to be done.
- Status - Status choices are listed at the Status field in work item Details (activate a link in the second column of the table to view work item Details).
- Score - If you have prioritized the work items, then this work item's score will be displayed here. The default value is 0, which indicates that the work items have not been prioritized.
- Date Completed - Expected work completion date.
- Must Do (Checkbox) - If this box is checked, the work item has been marked "Must Complete as planned" in the work item Details and will be funded before all other competing work items that are not marked as Must Do.
- Project Name - If the work item has been grouped into a work project, the name of that project will be listed in this column.

Related Links

Task Links

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Prioritize Work Items in a Work Plan
Export Work Items
Delete a Work Plan

Instructional Links

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Work Planning Overview

Prioritizing Work Items in a Work Plan

Prioritize Work Items in a Work Plan

This topic shows how to prioritize Section-level work items, and suggests when to prioritize. It also explains how prioritizing can be used to calibrate a prioritization scheme.

After you prioritize, you can View Work Item Rankings.

Note: Prioritizing work items in your wok plan can only be done if a prioritization scheme that applies to the area of the tree you are working in has been established as part of work configuration.

If a prioritization scheme has been created for the area of the tree you are working in, you can prioritize the work items in your work plan using the **Prioritize** button on the toolbar of the work plan screen. This will generate a **priority score** for each work item or work project in the plan, with the exception of Building-level work items.

Building-Level Work Items

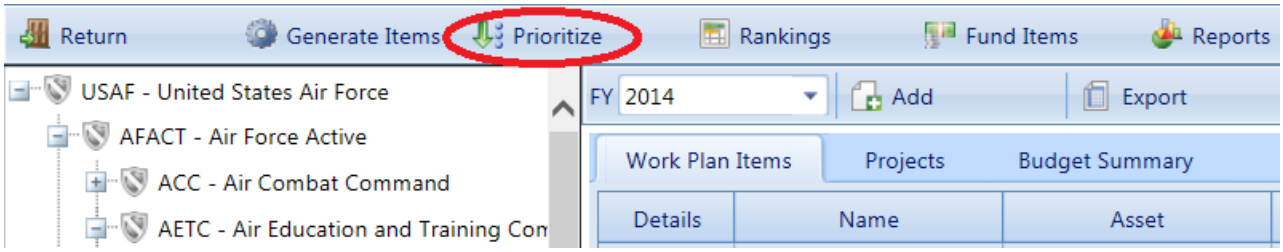
Building-level work items, such as a Building-level Modernization, do not participate in prioritization; their scores will remain at zero. However, you can cause a Building-level work item to be completed in Scenarios by marking it "Must do as planned" and providing a fund source with a criteria the work item can satisfy.

Note: Scenarios capability is provided with the **BUILDER** module only.

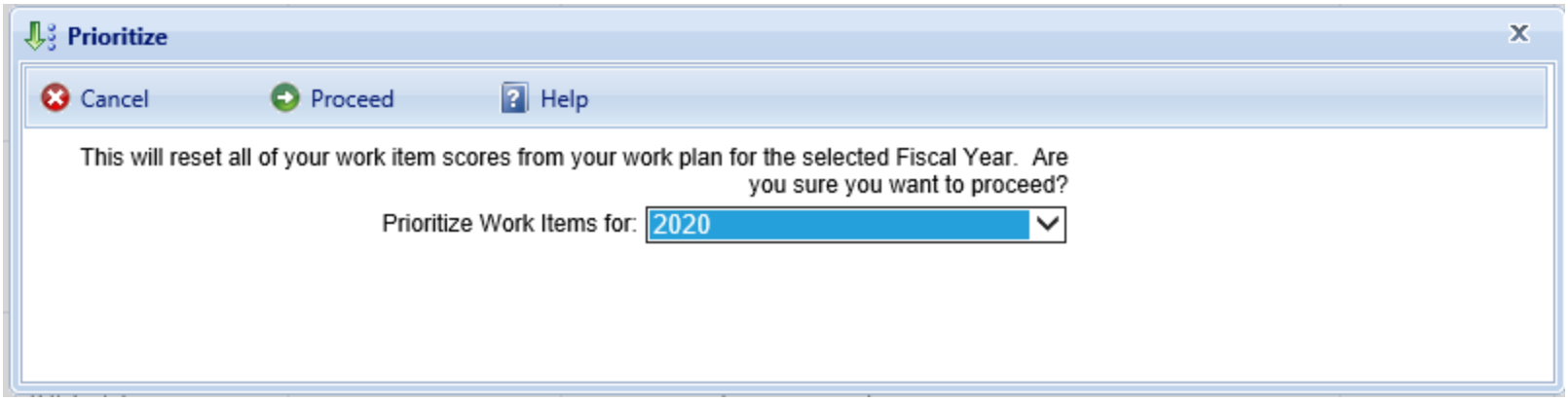
Section-Level work Items

To prioritize Section-level work items,

- With the Work Plan tab selected, activate Prioritize on the toolbar.



A popup warning box will appear, stating that all current work item scores from your work plan for the selected fiscal year will be reset if you continue.



- **IMPORTANT:** Select the desired fiscal year in the "Prioritize Work Items for" field (see screenshot above).
- Activate **Proceed** on the popup toolbar if you still wish to delete the current scores for the for Section-level work items and recompute new prioritization scores. The prioritization scores will be computed using the prioritization scheme selected in the Reference Settings area at the Site or Organization's **General Information** tab. (Alternatively, activate the **Cancel** button if you do not wish to perform these actions; you will be returned to the work plan.)

Result:

After a priority score has been computed for each work item, all work items will be shown in the work plan ranked from highest score to lowest. Project priority scores are computed by averaging the priority scores of the work items in the project, weighted by cost.

Projects

Project priority scores are computed by averaging the priority scores of the work items in the project, weighted by cost.

When to Prioritize

You can prioritize the work plan as often as you wish. Listed below are situations where prioritizing is recommended.

When Adding New Work Items

If you add new work items, you should re-prioritize to include the new items.

To Calibrate a Prioritization Scheme

You may also want to evaluate a prioritized work plan in order to calibrate the weights and points you have assigned in a particular prioritization scheme. To calibrate,

- Prioritize the work plan.
- Consider the order in which work items have been ranked, and their scores.
- When you see ordering discrepancies or score differences from your expert judgment, this might allow you to identify measures that should carry more relative weight, or measure values that warrant higher points such that the order of the work items will come out correct.
- Adjust measures and re-prioritize so that the order of the work items is acceptable.

The goal of a prioritization scheme, which is established as part of Work Configuration, is to rank work items by algorithmic calculation into the same order that expert facility managers at your agency would rank them by following sound engineering principles.

Related Links

To learn about grouping work items into projects, start with the topic About Work Projects. Or, for information about work plans, start with the topic About Work Plans.

Work Item Tasks

- View a Work Item
- Add a Work Item
- Edit a Work Item
- Section-Level Work Item Data
- Building-Level Work Item Data
- Fund Work Items
- View Work Item Rankings
- Export Work Items
- Delete a Work Item

Instructional Links

- About Work Items
- About Work Item Cost Analysis
- Work Planning Overview

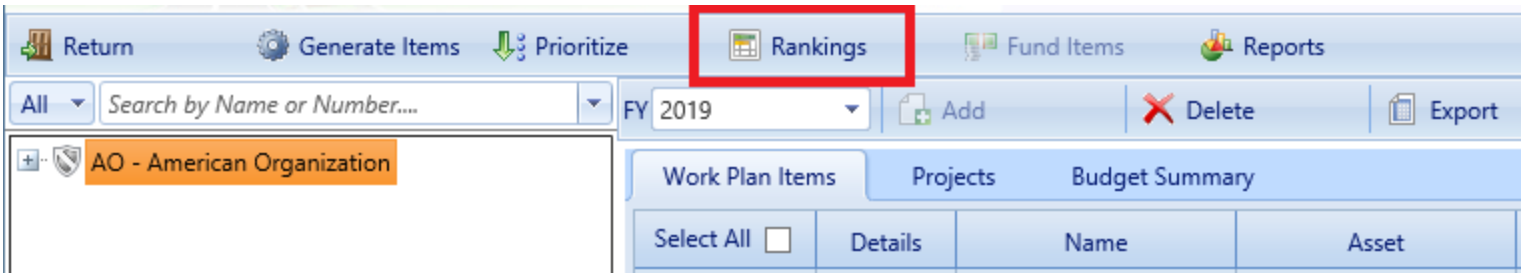
View Work Item Rankings

If you have created a prioritized work plan, you can view the rankings of the work items in your work plan, broken down into the constituent scores for each measure used in the prioritization scheme. This topic shows the steps for viewing the rankings and briefly explains the results.

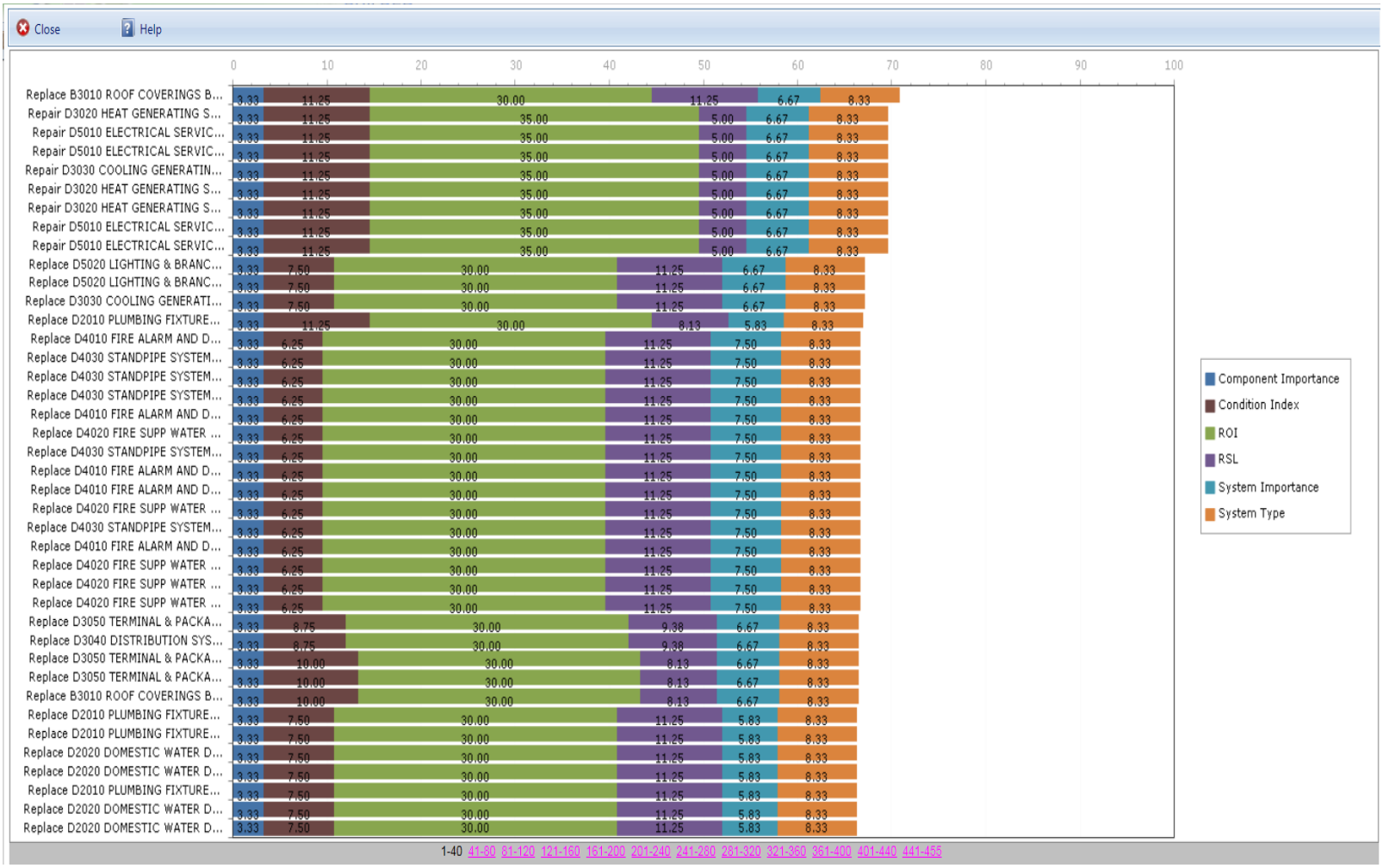
Note: This can only be done if a prioritization scheme that applies to the area of the tree you are working in has been established as part of work configuration.

To rank work items,

- At the work plan screen, navigate to or search-select the desired Organization or Site. This sets the scope for the ranking.
- Activate **Rankings** on the toolbar.



The Rankings window will appear.



Result:

The rankings of each Section-level work item will be shown from highest priority score to lowest. The score for each work item will be broken down into the constituent scores for each measure used in the **prioritization scheme** established in Work Configuration. A legend will be displayed, correlating the colors to their respective measures.

Related Links

To learn about grouping work items into projects, start with the topic About Work Projects. Or, for information about work plans, start with the topic About Work Plans.

Work Item Tasks

View a Work Item
Add a Work Item

Edit a Work Item
Section-Level Work Item Data
Building-Level Work Item Data
Fund Work Items
Prioritize Work Items in a Work Plan
Export Work Items
Delete a Work Item

Instructional Links

About Work Items
About Work Item Cost Analysis
Work Planning Overview

Export a Work Plan or Work Items to Excel

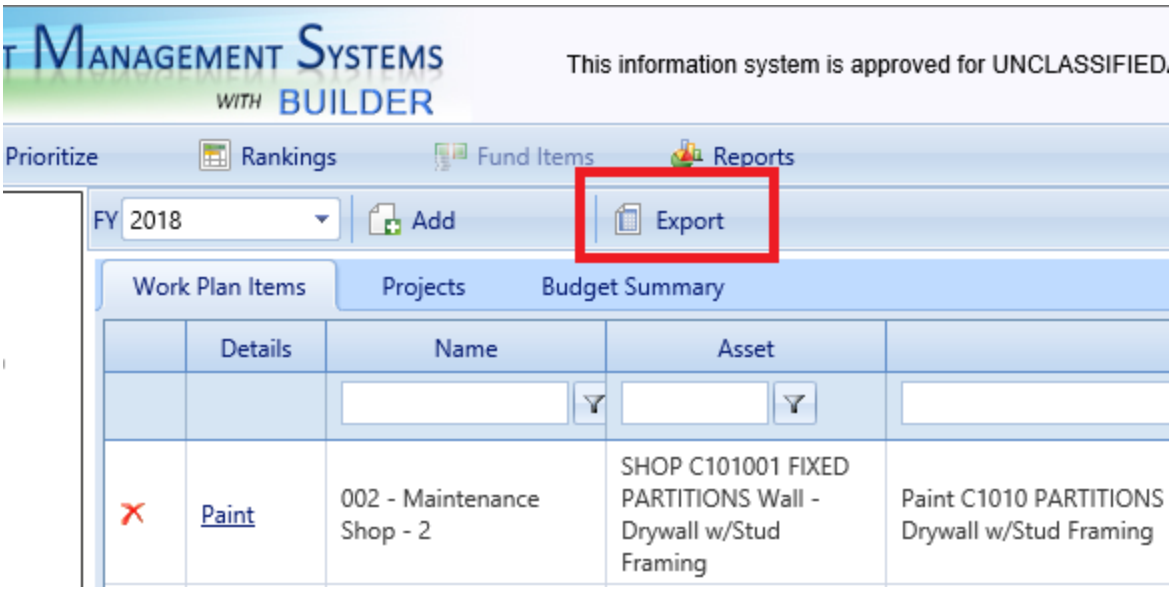
This topic explains multiple ways to export a work plan or work items. Work items can be exported to a Microsoft Excel spreadsheet, either from the work plan or from the Scenario Visualization / Scenario Analysis screen.

Export Work Items from the Work Plan

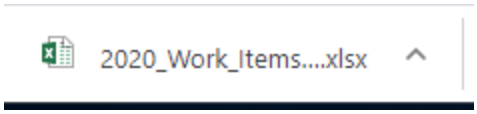
To export a work plan to an Excel spreadsheet from the Work Plan Items tab on the work plan screen,

- On the BUILDER main menu, activate Work Plan.
- At the work plan screen, select the desired location in the navigation tree at the left. This will determine the scope of the work plan, which will contain all work items for that location and below it in the tree.

- On the secondary toolbar, activate Export.



- When the Excel work plan shows as downloaded in the lower left corner of the window (see illustration immediately below), double-click on it to open. Alternatively, you can activate the up arrow to be able to select between opening the file and showing it in its Downloads folder location.



- If you want to save the opened spreadsheet, you need to activate the **File** tab in the spreadsheet, then specify the location, and re-name as desired (the spreadsheet will have been assigned a default file name).

Export Work Project Work Items

You can choose to export just those work items contained in a particular work project. To do so,

- At the work plan screen, open the **Projects** tab. All projects pertaining to the current tree location on down will be listed in the content area.

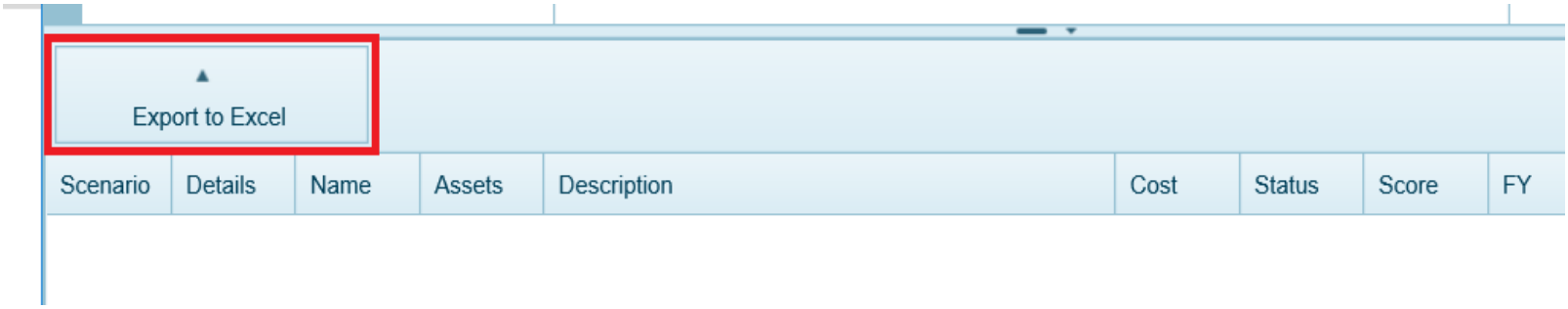
  Tip: If you are at the head of the navigation tree and too many projects are listed, you can choose to navigate farther down in the tree towards or to the work plan containing the project.

- Open the "Details" popup for the desired project by activating its Details link in the first column of the desired work project.
- In the popup, open the Work Items tab.
- If the **Only Show Selected Project Work Items** checkbox is not marked, mark it to restrict the view to just those work items that are in the project.

- Activate the **Export** button on the popup toolbar.
- When the Excel tab with the project name on it appears at the lower left of the screen, activate it to open the Excel file containing the project work items.
- Save the exported file if desired (you can also rename it).

Export Work Items from Scenario Analysis

At **Scenarios > Analysis** (aka Scenario Visualization), an **Export** button has been added above the grid of work items at the bottom of the Scenarios analysis screen. This button will export to Microsoft Excel any work items listed in the grid:



Note: The tiny arrow at the bottom of the Scenarios analysis screen is what opens or closes the drawer containing the grid of work items (if there are work items for the selected Component-Section).

Related Links

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Delete a Work Plan

A work plan is created automatically from work configuration specifications and can not be deleted.

Individual work items can be deleted. However, you need to keep the following distinctions in mind:

- Automatically generated work items: Depending on (1) whether and how the work configuration specifications may have been altered and (2) how assessment values or age may have changed the condition index or performance index of inventory items within the scope of the work plan, work items that were automatically generated will very likely re-appear when the Generate Items button is activated.
- Manually entered work items: Individual work items that have been added after initial work plan generation can be deleted, as outlined in Delete a Work Item.

Related Links

Task Links

View a Work Plan
Add a Work Plan
Edit a Work Plan
Work Plan Data
Prioritize Work Items in a Work Plan
Export a Work Plan or Work Items to Excel

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Work Planning Overview

Work Items

About Work Items

A work item describes work that needs to be performed either on a Component-Section (Section work item) or on a Building (Building work item). Information stored with the work item shows

- what was done or is to be done
- when it is to be done or was done
- its cost or expected cost
- its funding source
- its importance relative to other work items competing for the same resources at the same time

An additional work item type, described below, is the project.

Work Item Types

Building Work Item

Building-level work item types are

- Demolish
- Modernize
- Replace

Section Work Item

Section-level work item types are

- Repair
- Replace

Best Practice Tip: Graphs generated by the work item cost analysis feature can be used to compare costs and length of extended service life for repair, stop gap repair, and replacement of a Section. For details, see the topic About Work Item Cost Analysis.

Project

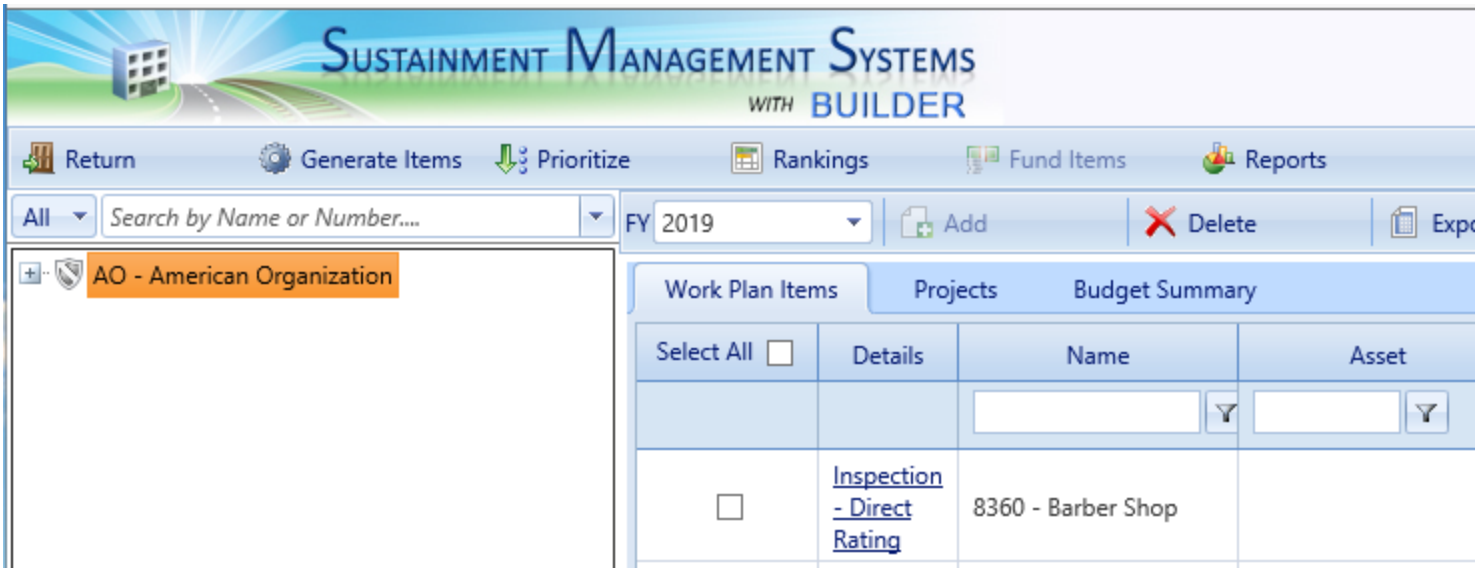
Optionally, you can group selected Section and/or Building work items into one or more projects. Project is the third type of work item available. Once grouped into a work project, the work to be performed is treated as one unit for funding. For more information about projects, start with About Work Projects.

Work Item Groupings

Fiscal Year (Work Plan)

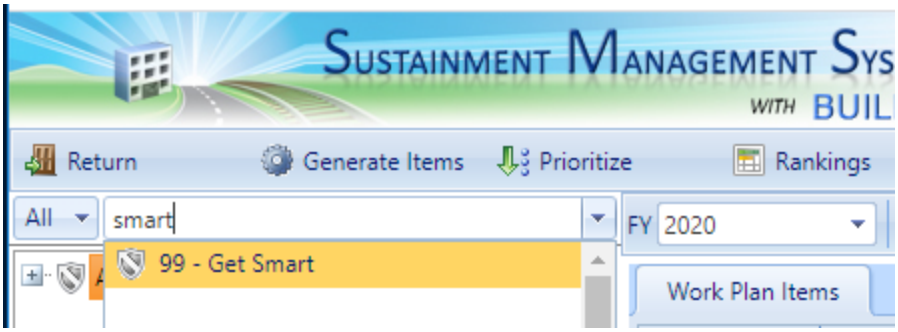
Work items are automatically grouped by fiscal year into work plans. Work plans can be viewed in the work plan screen. To access a work plan,

- Select Work Plan from the BUILDER main menu. The work items window will appear, initially showing just the top level Organization.



- In the work items window select the inventory item whose work plan you want to view, add, or edit, using one of two methods: (a) expansion plus navigation, or (b) search:
  a. Expansion plus navigation - In the navigation tree (left pane), expand the tree as needed to navigate to the desired location and select it.

b. Search - Alternatively, you can use the search function by typing the number, name, or part of the name of the desired inventory item into the search field just above the navigation tree (this field will be labeled "*Search by Name or Number*" until you click in it). Then select the inventory item's name in the list of results, as shown below.



Note the fiscal year (FY) field on the lower toolbar, where you can select the fiscal year from the dropdown.

Work Project

Another type of grouping you can use, which is optional, is the work project, briefly described above in Project.

Related Links

To learn about grouping work items into projects, start with the topic About Work Projects. Or, for information about work plans, start with the topic About Work Plans.

Work Item Tasks

View a Work Item
Add a Work Item
Edit a Work Item
Section-Level Work Item Data
Building-Level Work Item Data
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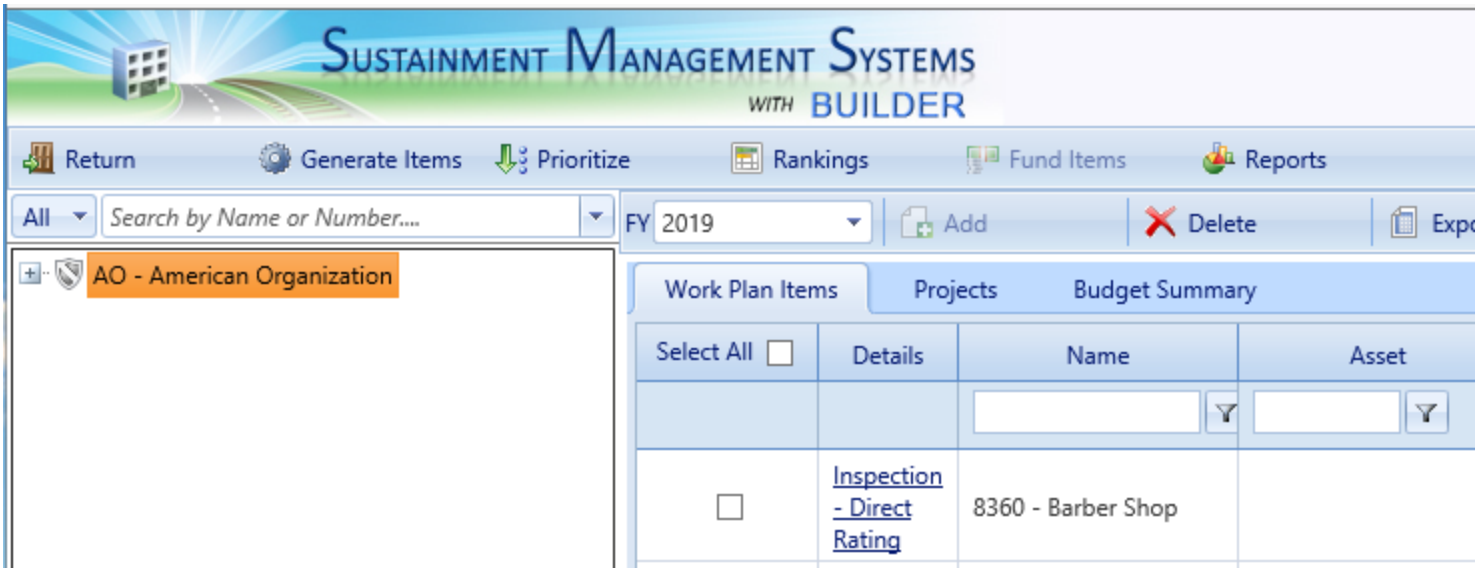
View a Work Item

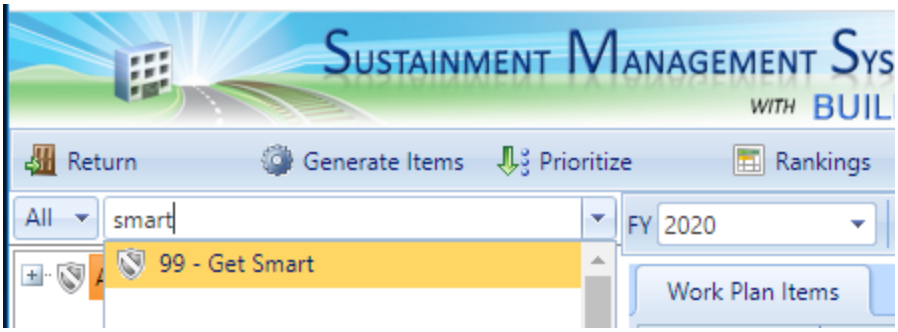
Navigate to Work Plan

To view a work item, you must first navigate to the work plan it is contained in. To navigate to a work plan,

- Select Work Plan from the BUILDER main menu. The work items window will appear, initially showing just the top level Organization.



- In the work items window select the inventory item whose work plan you want to view, add, or edit, using one of two methods: (a) expansion plus navigation, or (b) search:
  a. Expansion plus navigation - In the navigation tree (left pane), expand the tree as needed to navigate to the desired location and select it.
  b. Search - Alternatively, you can use the search function by typing the number, name, or part of the name of the desired inventory item into the search field just above the navigation tree (this field will be labeled "*Search by Name or Number*" until you click in it). Then select the inventory item's name in the list of results, as shown below.

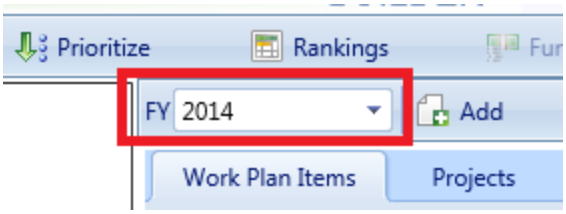


Customize View of Work Items (Optional)

As also described in View a Work Plan under the heading "Change/Refine Work Plan View," you can customize what work items appear on screen, and the order that they appear in, as described immediately below.

Select Fiscal Year

To view the work plan for past or future fiscal years, select the desired fiscal year from the dropdown list at the top of the window:



Note: The selected fiscal year will remain active if you change your location in the navigation tree.

Filter

You can filter by any column or by multiple columns having a blank field for entry and a filter icon below the column header.

To filter,

- Enter a search term in the blank field.
- Next, activate the filter icon and select from the dropdown a condition such as "Contains" or "StartsWith" or "EqualTo". This should activate the filter. When the filter finishes, only entries that meet the filter criterion will remain. Example:

Description	Cost	Status
ROOF		
Replace B3010 ROOF COVERINGS B301090 OTHER ROOFING Other	$136,000	Awaiting Funds
Replace B3010 ROOF COVERINGS B301003 ROOF INSULATION & FILL General	$50,000	Awaiting Funds
Replace B1020 ROOF CONSTRUCTION B102003 ROOF DECKS AND SLABS Deck - Other	$447,000	Awaiting Funds

Note: If you change your location in the navigation tree, the selected filter will remain active and still apply.

To clear the filter, re-activate the filter button and select the first option, which is "NoFilter."

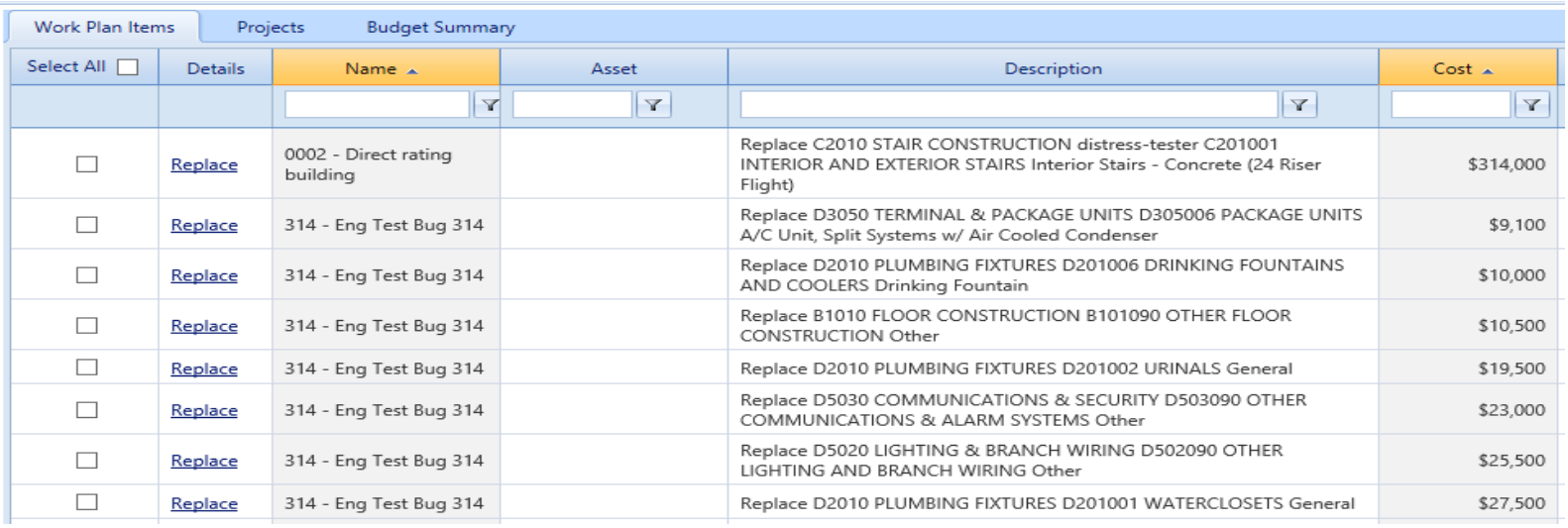
Sort

Primary Sort

Once the desired work plan year is shown, and ideally any desired filtering has already been done (because filtering an unsorted list should be faster than filtering a sorted list), choose an ascending or descending primary sort by tapping/clicking or double-tapping/double-clicking the desired column. The column header will stay highlighted to indicate that a sort has been performed.

Secondary Sort

If a column header is already highlighted (indicating that a primary sort has been performed) and you then click or double-click on a second column, that will perform a secondary sort within each of the distinctive entries in the primary sort column. The screenshot below shows a primary sort on the Name column followed by a secondary sort on the Cost column.

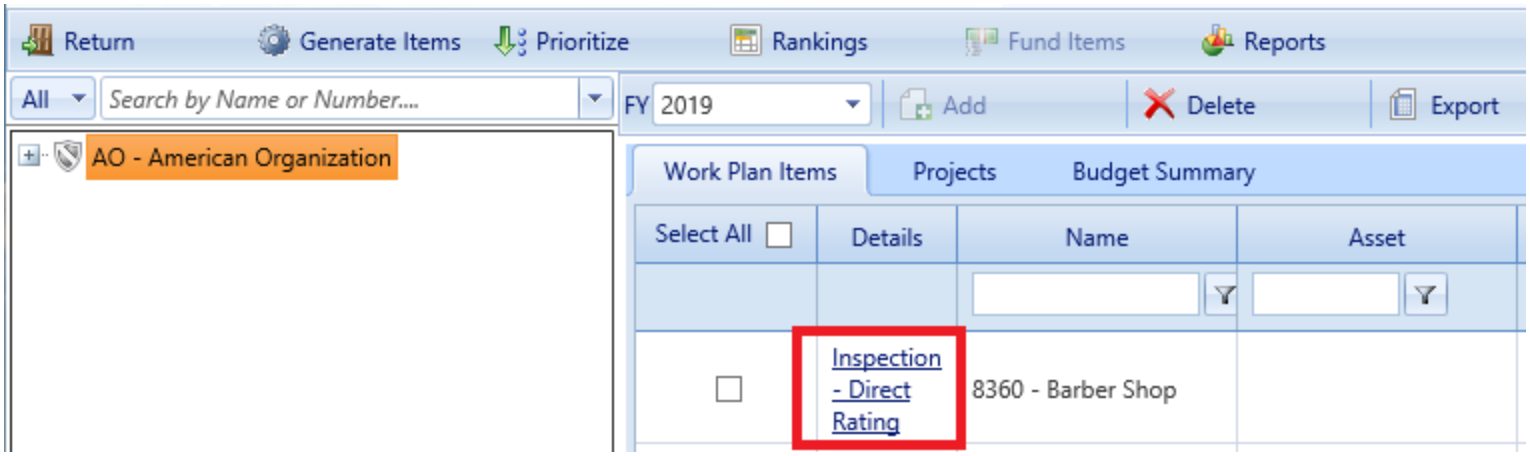


Work Plan Items | Projects | Budget Summary

Select All ☐	Details	Name ▲	Asset	Description	Cost ▲
☐	Replace	0002 - Direct rating building		Replace C2010 STAIR CONSTRUCTION distress-tester C201001 INTERIOR AND EXTERIOR STAIRS Interior Stairs - Concrete (24 Riser Flight)	$314,000
☐	Replace	314 - Eng Test Bug 314		Replace D3050 TERMINAL & PACKAGE UNITS D305006 PACKAGE UNITS A/C Unit, Split Systems w/ Air Cooled Condenser	$9,100
☐	Replace	314 - Eng Test Bug 314		Replace D2010 PLUMBING FIXTURES D201006 DRINKING FOUNTAINS AND COOLERS Drinking Fountain	$10,000
☐	Replace	314 - Eng Test Bug 314		Replace B1010 FLOOR CONSTRUCTION B101090 OTHER FLOOR CONSTRUCTION Other	$10,500
☐	Replace	314 - Eng Test Bug 314		Replace D2010 PLUMBING FIXTURES D201002 URINALS General	$19,500
☐	Replace	314 - Eng Test Bug 314		Replace D5030 COMMUNICATIONS & SECURITY D503090 OTHER COMMUNICATIONS & ALARM SYSTEMS Other	$23,000
☐	Replace	314 - Eng Test Bug 314		Replace D5020 LIGHTING & BRANCH WIRING D502090 OTHER LIGHTING AND BRANCH WIRING Other	$25,500
☐	Replace	314 - Eng Test Bug 314		Replace D2010 PLUMBING FIXTURES D201001 WATERCLOSETS General	$27,500

Open Work Item

To view details of an individual work item, activate its hyperlink in the Details column.



The "Details" popup that will appear will differ in format depending on what kind of work item you have selected. Connect to one of the topics below for details about the data shown:

- If the work item is a Building-level work item, see Building-Level Work Item Data .
- If the work item is a Section-level work item or an inspection, see Section-Level Work Item Data.

Related Links

To learn about grouping work items into projects, start with the topic About Work Projects. Or, for information about work plans, start with the topic About Work Plans.

Work Item Tasks

Add a Work Item
Edit a Work Item
Section-Level Work Item Data
Building-Level Work Item Data
Fund Work Items
Prioritize Work Items in a Work Plan
View Work Item Rankings
Export Work Items
Delete a Work Item

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Add a Work Item

A BUILDER work item may be added in any one of the following ways:

- generate a work plan (this will likely add more than one work item)
- manually add the work item to an already generated work plan and fill in appropriate details
- copy a work item or multiple work items from scenario results (not available for Building-level modernization work)

This topic will explain each of these ways, referring to other topics for more detail as needed.

Adding a work item can be done in any of the following ways:

- by generating a work plan
  –see Add Work Items by Generating a Work Plan
- manually
  –see Add a Work Item Manually
- by copying the work item from a scenario
  –see Copy Work Item from Scenario

Add Work Items by Generating a Work Plan

Generating a work plan automatically with BUILDER will create a work plan composed of one or more individual work items. Re-generating a work plan may change how many work items are in the plan, and what they are.

For how to generate a work plan, see Add a Work Plan. Alternatively, for more in-depth information, you can start at either Work Planning Overview or About Work Plans.

For how to re-generate a work plan, see Edit a Work Plan.

Add a Work Item Manually

The manual method of entering work items is especially useful for recording past work efforts. It gives you an opportunity to capture institutional memory regarding what work you have done and when it was accomplished. In addition to basic details such as when the work was completed, its actual cost, and its funding source, the work item description allows you to add multiple notes about that particular work effort.

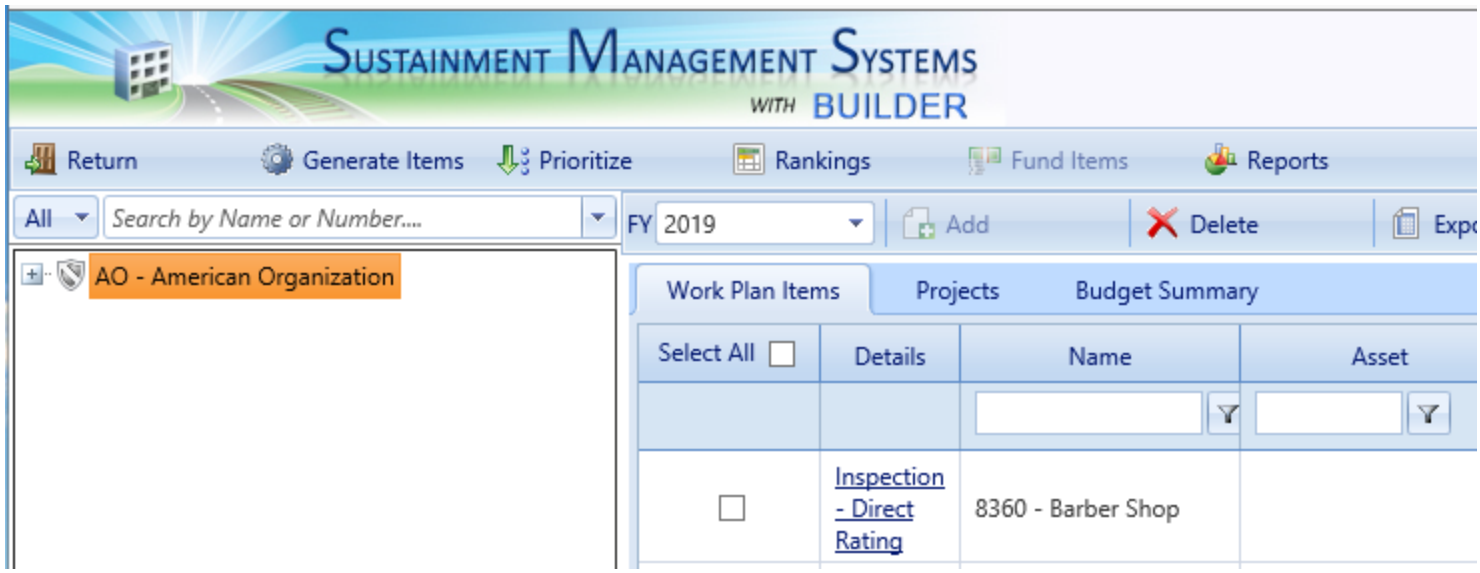
Note: A work plan must already be generated by BUILDER before you can add a work item to it. See the section Add Work Items by Generating a Work Plan (above) for a brief description and/or for links to more detailed information.

Note: Manually added or edited work items will be preserved intact when a work plan is regenerated.

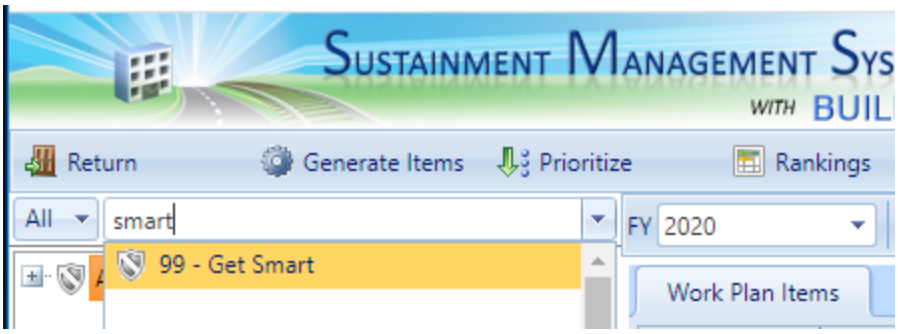
Navigate to Work Plan

First, navigate to the appropriate work plan (that you want to add the work item to) as follows:

- Select Work Plan from the BUILDER main menu. The work items window will appear, initially showing just the top level Organization.



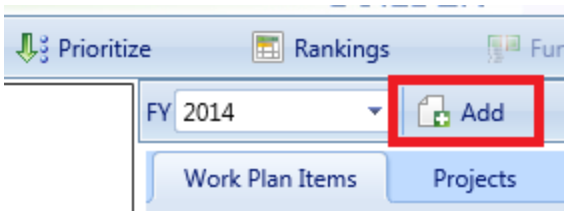
- In the work items window select the inventory item whose work plan you want to view, add, or edit, using one of two methods: (a) expansion plus navigation, or (b) search:
  a. Expansion plus navigation - In the navigation tree (left pane), expand the tree as needed to navigate to the desired location and select it.
  b. Search - Alternatively, you can use the search function by typing the number, name, or part of the name of the desired inventory item into the search field just above the navigation tree (this field will be labeled "*Search by Name or Number*" until you click in it). Then select the inventory item's name in the list of results, as shown below.



Add Work Item

After you have navigated to the desired work plan,

- Make sure that the Add button on the secondary toolbar is not grayed out. If it is grayed out, you may need to click on your node in the tree in the left pane in order to make the Add button visible. This is especially the case if you are working at the default, top-level node of the tree.
- Activate the Add button while the Work Plan Items tab is selected.



The "New Work Item" popup will appear.

- In the popup, select the work item type: Project, Building Work Item, or Section Work Item.
- Activate Proceed on the popup toolbar.
- Enter as much data as is needed in the "Details" popup window. See the next three steps to determine what documentation topic to refer to for helpful information.
- If the new work item is a Building-level work item, refer to Building-Level Work Item Data.
- If the work item is a project, refer to Work Project Data.
- If the work item is a Section-level work item, refer to Section-Level Work Item Data.

Save

After entering the data for the work item, activate Save on the popup toolbar to save the information.

(Alternatively, if you do not wish to save the changes made to the work item, activate Cancel on the toolbar.)

Reasons for Manual Entry

You might choose to enter work items manually as a basic business practice. The following steps describe a procedure you could follow:

- Review BUILDER reports regarding remaining service life, condition index (**CI**[1]) trends, functionality index (**FI**[2]) trends, and performance index (**PI**[3]) trends to identify possible work requirements.
- Verify possible work requirements by re-inspecting, especially if you have recorded no recent condition/functionality assessment data for the items. At the same time, collect the more detailed data needed for the work item specifications (exact quantities, manufacturer, scheduling restrictions, etc.).

---

[1]Condition Index

[2]Functionality Index.

[3]Performance Index. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. If no functional assessment has been performed, the FI is assigned a value of 100.

- Compile a list for approval by your chain of command.
- Enter each work item as it clears the process.

Another reason for manual entry is that manually entered work items will never be deleted in the work plan regeneration process.

Copy Work Item from Scenario

Note: Modernization work, whether at the Building or Functional Area level, is not generated in Scenarios because FIs are step functions over time, unlike the smooth, continuous functions seen in the condition indexes. Because the FIs are not smooth, continuous functions, future FIs cannot be predicted and modernization work cannot be planned. The only way to determine when and by how much the functionality changes and the associated modernization work is to physically perform functionality assessments in the Building.

For how to copy work items from a scenario, see the topic Copy Work Items from a Scenario.

Using Scenarios to Create Out-Year Work Plans

BUILDER offers the use of Scenarios, a simulation model integrated with BUILDER's business rules and databases, to create condition-related work items for your inventory.

Scenarios uses your inventory database and a set of initial scenario parameters to simulate how your inventory will evolve over the next 5 to 10 years. The simulation works by stepping through each future year generating work items using the standards and policies, prioritizing the work items based on the prioritization scheme established in Work Configuration, and funding work items by priority ranking until all funding levels have been exhausted.

When a scenario is completed, the Scenarios database contains a record of annual work plans constrained by budget. These work plans can be used as the foundation for your out-year plans.

Copying Work Items from a Scenario to a Work Plan

If you have run a scenario, you may copy its results to the work plan by right-clicking on that scenario in the Scenarios module. This will create a work plan for the current year as well as future years. See the topic Copy Work Items from a Scenario for more information on using this tool.

Related Links

To learn about grouping work items into projects, start with the topic About Work Projects. Or, for information about work plans, start with the topic About Work Plans.

Work Item Tasks

View a Work Item
Edit a Work Item
Section-Level Work Item Data

Building-Level Work Item Data
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View Work Item Rankings
Export Work Items
Delete a Work Item

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Edit a Work Item

This topic explains how to manually edit an existing work item. To change work items by regenerating a work plan, see Edit a Work Plan.

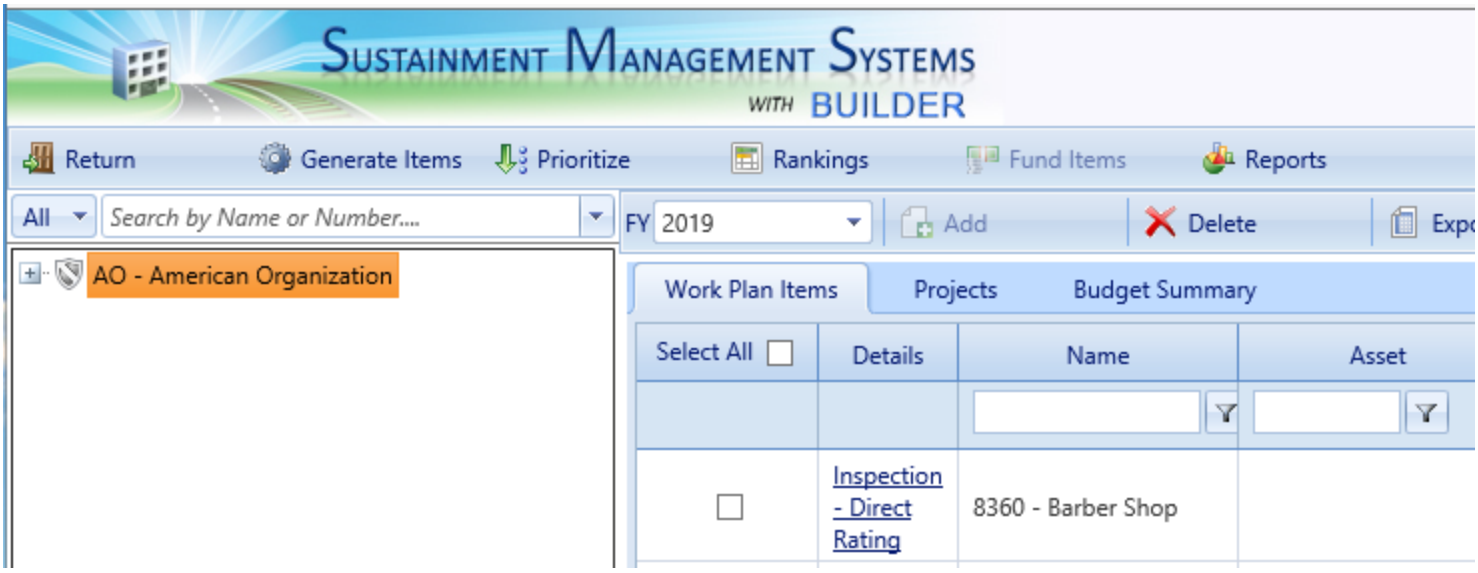
Tip: Because manually added or edited work items will be preserved intact when a work plan is regenerated, manually editing a work item is a way to ensure that the work item will not disappear when the work plan is regenerated. (Marking the item "Must Do" is another way to accomplish this.)

Note: To change a work project, see Edit a Work Project.

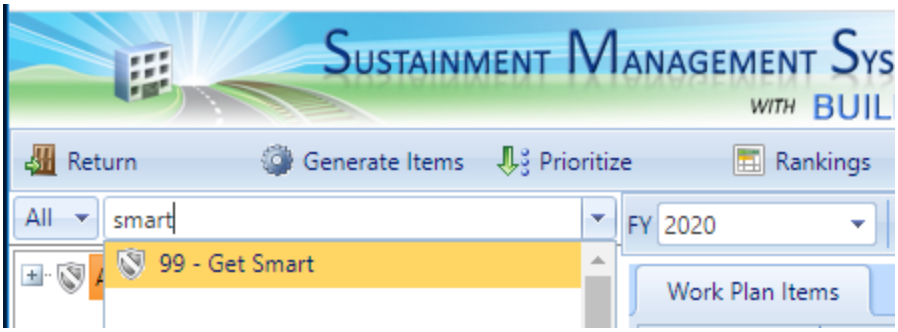
Navigate to Work Plan

First, navigate to the appropriate work plan (where the work item is that you want to edit) as follows:

- Select Work Plan from the BUILDER main menu. The work items window will appear, initially showing just the top level Organization.



- In the work items window select the inventory item whose work plan you want to view, add, or edit, using one of two methods: (a) expansion plus navigation, or (b) search:
  a. Expansion plus navigation - In the navigation tree (left pane), expand the tree as needed to navigate to the desired location and select it.
  b. Search - Alternatively, you can use the search function by typing the number, name, or part of the name of the desired inventory item into the search field just above the navigation tree (this field will be labeled "*Search by Name or Number*" until you click in it). Then select the inventory item's name in the list of results, as shown below.



Edit Work Item

After you have navigated to the desired work plan,

- If needed, use filters and/or sorting to locate the desired work item. Refer to the Change/Refine Work Plan View section in View a Work Plan for details.
- At the Work Plan Items tab, in the Details column, activate the link to the work item's details. The "Details" popup will appear.

- Refer to Building-Level Work Item Data or Section-Level Work Item Data for information about the data that can be edited in the "Details" popup.
- Edit fields as desired.

Note: To change a work project, see Edit a Work Project.

Save

After editing the data for the work item, activate Save on the popup toolbar to save the changes to the work item.

(Alternatively, if you do not wish to save the changes made to the work item, activate Cancel on the toolbar.)

Related Links

To learn about grouping work items into projects, start with the topic About Work Projects. Or, for information about work plans, start with the topic About Work Plans.

Work Item Tasks

View a Work Item
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Section-Level Work Item Data
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Delete a Work Item

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Section-Level Work Item Data

This topic explains the data fields for a Section-level work item. This will help with understanding both the "Component-Section Work Item" popup when adding a Section-level work item, or the "Details" popup that appears when viewing or editing a Section-level work item.

A Section-level work item is an individual record of repair or replacement needed for an item in your BUILDER inventory. The information stored with the work item shows

- what was or is to be done
- when it was or is to be done
- its cost
- its funding source (at the Budget Summary tab)
- its importance relative to the other work items competing for the same resources at the same time (in the Score field)

In the "Component-Section Work Item" popup or "Details" popup, the following data for the Section-level work item is or can be recorded:

Below the menu bar and above the tabs, the Section Description (of the Component-Section the work item pertains to) and Quantity (the inventory quantity for the Component-Section) will be listed. Then, at the Details tab, the following data for the work item is displayed. Some of the data is read-only, and some can be entered or edited.

- Projected **CI**[1] (Read-Only) - Displays the projected condition index (**CI**[2]) for the Section in the funding FY. If the funding FY changes, BUILDER will recalculate the projected **CI**[3]Condition Index for the new funding FY.
- Projected **RSL**[4] (Read-Only) - Displays the projected remaining service life (**RSL**[5]) for the Section in the funding FY. If the funding FY changes, BUILDER will recalculate the projected **RSL**[6] for the new funding FY.
- Current Type (Read-Only) - Displays the material/equipment type and component subtype of the Component-Section.
- New Type (For "Replace" only) - For a Replace work activity (where the link in the Details column of the work plan table is Replace), the default is to replace in kind. with the same type. However, you do have the option to replace the current Component-Section type with a different type. To do so, select a different type and material/equipment type from the dropdown list of available options.
- Description - Description of the work item. Limit: 255 alphanumeric characters.
- Work Request ID. If applicable, your agency's work request number for the project. Limit: 50 alphanumeric characters.

  Note:Work Request ID is not used by BUILDER in any analyses. The field is available for customer use.

---

[1]Condition Index

[2]Condition Index

[3]Condition Index

[4]Remaining service life.

[5]Remaining service life.

[6]Remaining service life.

- Status. Current status of the work item, selected from the dropdown. The status will change over time as the work item moves from planning to completion. The values Status can take are:
    - Awaiting Contract Award
    - Awaiting Funds
    - Awaiting Funds (Special Project)
    - Budgeted
    - Canceled
    - Completed
    - Deferred
    - Funded
    - Funded (Service Call)
    - Funded (Special Project)
    - In Design
    - In Progress
    - On hold
- Funding FY - The four-digit fiscal year that the work item was or will be funded.
- Must Complete as Planned (Checkbox) - Mark this box if the work item falls into the "must do" category. Marking it will force the work item to be funded in a Scenarios projection before all other competing work items that are not marked as "Must Complete as Planned" (also called "Must Do" in the work plan column heading).
- Work FY - This is the year in which the Section falls below the standard and when the work should start.
- Funding Source - The funding source to be used for this work item, selected from the dropdown.
- Date Completed - The date the work item was completed. This field will appear only if Status is "Completed."
- Estimated Cost - The estimated cost of performing the work item. If you activate Calculate in the popup toolbar, BUILDER will estimate the initial cost once you have entries or appropriate selections in the Funding FY, Work Activity, Cost Book, and Quantity fields. Alternatively, if you have sufficient permissions, you can mark the Override automatic cost estimate checkbox and enter a different cost.

  Note: The cost module is unable to estimate the cost of activities to Add/Install and Alter, so the Calculate button is grayed out for those work activities.

- Score (Read-Only) - If you have prioritized the work items, then this work item's score will be displayed here. The default value is 0, indicating that the work items have not been prioritized.
- Override Automatic Cost Estimate - Mark this checkbox if you wish to override the cost estimated using the Calculate button and enter your own estimated cost of the work item instead.
- Work Code - Work code of the work item, selected from the dropdown. The available work codes are:
    - Demolition
    - New Footprint
    - Modernization
    - Sustainment

- Efficiency Savings (Optional) - When used, this number is entered by the user. If replacing an asset with a higher efficiency model will generate operational cost savings due to efficiency (such as energy or water savings), then enter here the amount you would expect to save each year by the replacement. This will then be factored into the ROI calculation at the Cost Analysis tab.
- Work Activity - The work activity associated with this work item, selected from the dropdown. The work activities are:
    - Inspection - Direct Rating
    - Inspection - Distress Survey
    - Inspection - Distress Survey with Quantity
    - Remove
    - Repair
    - Replace
    - Stop Gap
- Actual Cost - The actual cost of the work item after completion. Before the work item is completed, the contents of this field will mirror the contents in the Estimated Cost field.
- Quantity - The quantity of Section applicable to the work item. The value listed in Quantity near the top of the popup is the actual Component-Section quantity, but the quantity applicable to the work item may be different. For example, you might replace only 5 of the 10 doors in a Component-Section.
- Cost Book - The cost book to be used in estimating the cost of the work item, selected from the dropdown.
- ROI Information (Read-Only) - Displays the Return and ROI (return on investment), which summarize the calculations on the Cost Analysis tab.

Related Links

To learn about grouping work items into projects, start with the topic About Work Projects. Or, for information about work plans, start with the topic About Work Plans.

Work Item Tasks

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Building-Level Work Item Data
Add a Work Item
Edit a Work Item
Fund Work Items
Prioritize Work Items in a Work Plan
View Work Item Rankings
Export Work Items
Delete a Work Item

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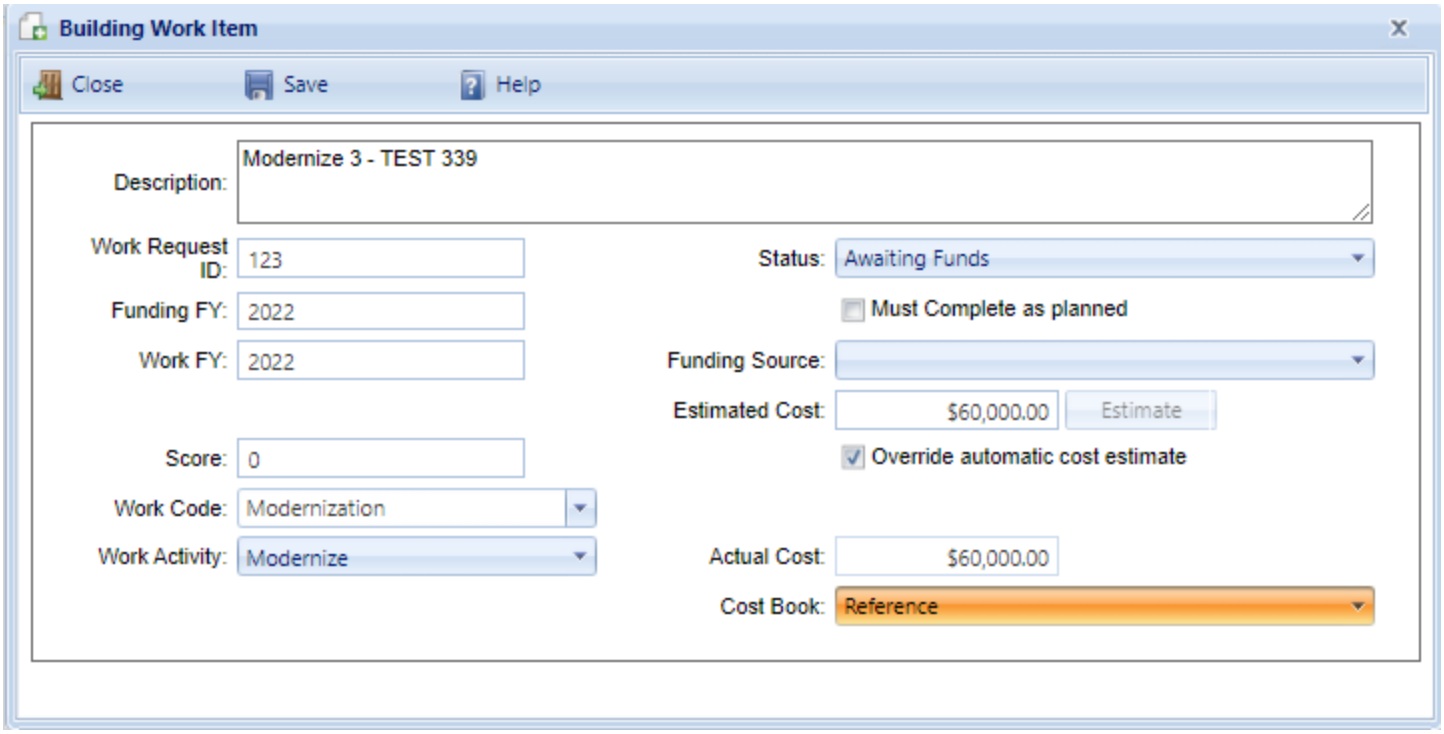
Work Planning Overview

Building-Level Work Item Data

This topic explains the data fields for a Building-level work item. This will help with understanding both the "Building Work Item" popup when adding a Building-level work item, or the "Details" popup that appears when viewing or editing a Building-level work item.

When you add a work item, and choose the "Building Work Item" option, you will see the following popup.



In the "Building Work Item" popup or "Details" popup, the following data for the Building-level work item is or can be recorded:

- Description - Description of the work item. Limit: 255 alphanumeric characters.
- Work Request ID. If applicable, your agency's work request number for the project. Limit: 50 alpha-numeric characters.

  Note:Work Request ID is not used by BUILDER in any analyses. The field is available for customer use.

- Status. Current status of the project, selected from the dropdown. The status will change over time as the project moves from planning to completion. The values Status can take are:
    - Awaiting Contract Award
    - Awaiting Funds
    - Awaiting Funds (Special Project)
    - Budgeted
    - Canceled
    - Completed
    - Deferred
    - Funded
    - Funded (Service Call)
    - Funded (Special Project)
    - In Design
    - In Progress
    - On hold

- Funding FY - The four-digit fiscal year that the work item was or will be funded.
- Must Complete as Planned (Checkbox) (aka "Must Do") - Mark this checkbox if the work item falls into the "must do" category. Marking it will force the work item to be funded in a Scenarios projection before all other competing work items that are not marked as "Must Complete as Planned" (also called "Must Do" in the work plan column heading).
- Work FY - The four-digit fiscal year in which the work should be performed.
- Funding Source - The funding source to be used for this work item, selected from the dropdown.
- Date Completed - The date the work item was completed. This field will appear only if Status is "Completed."
- Estimated Cost -This field is for the estimated cost of the work item. BUILDER may be able to estimate the cost if you have (1) chosen a cost book in the Cost Book field and (2) the cost book contains information relevant to the work to be done. To have BUILDER make the estimate, activate the Estimate button next to the Estimated Cost field, if the button is active (not grayed out). Alternatively, you can mark the Override Automatic Cost Estimate checkbox to enter your own estimated cost for the work to be done.
- Score - Work prioritization score.

  Note: Work items to demolish Buildings are not scored by prioritization schemes in BUILDER, so the score is defaulted to 0. Despite the score of zero, however, you can take special steps to ensure that the work item is completed. See Must Complete as Planned above, in this list of fields.

- Override Automatic Cost Estimate (Checkbox) - If you wish to override the cost that has been estimated using the Calculate button, mark this checkbox and enter your own estimated cost for the work to be done.
- Work Code - Select the work code of the work item. The available work codes are:
    - Demolition
    - New Footprint

    - Modernization
    - Sustainment

- Work Activity - Select the activity of the work item from the dropdown list. The available activities are Demolish, Modernize, and Replace.
- Actual Cost. The actual cost of the work item after completion. Before completion, this with equal the Estimated Cost field.
- Cost Book - The cost book to be used in estimating the cost of the work item, selected from the drop-down.

Related Links

To learn about grouping work items into projects, start with the topic About Work Projects. Or, for information about work plans, start with the topic About Work Plans.

Work Item Tasks

View a Work Item
Section-Level Work Item Data
Add a Work Item
Edit a Work Item
Fund Work Items
Prioritize Work Items in a Work Plan*
View Work Item Rankings
Export Work Items
Delete a Work Item

Instructional Links

About Work Items
About Work Item Cost Analysis
Work Planning Overview

*Note: Prioritize Work Items in a Work Plan does not apply to Building-level work items; the score for Building-level work items will be 0.000. To have a Building-level work item completed in Scenarios, mark the work item as "Must do as planned" and provide a fund source with a criteria the work item can satisfy.

Prioritize Work Items in a Work Plan

This topic shows how to prioritize Section-level work items, and suggests when to prioritize. It also explains how prioritizing can be used to calibrate a prioritization scheme.

After you prioritize, you can View Work Item Rankings.

Note: Prioritizing work items in your wok plan can only be done if a prioritization scheme that applies to the area of the tree you are working in has been established as part of work configuration.

If a prioritization scheme has been created for the area of the tree you are working in, you can prioritize the work items in your work plan using the **Prioritize** button on the toolbar of the work plan screen. This will generate a **priority score** for each work item or work project in the plan, with the exception of Building-level work items.

Building-Level Work Items

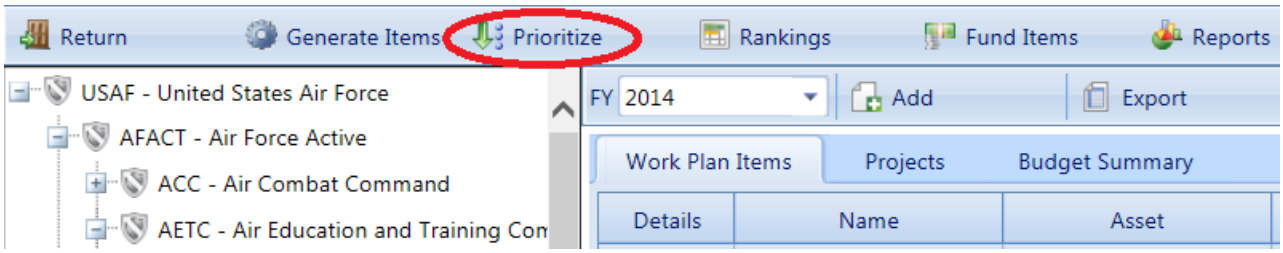
Building-level work items, such as a Building-level Modernization, do not participate in prioritization; their scores will remain at zero. However, you can cause a Building-level work item to be completed in Scenarios by marking it "Must do as planned" and providing a fund source with a criteria the work item can satisfy.

Note: Scenarios capability is provided with the **BUILDER** module only.

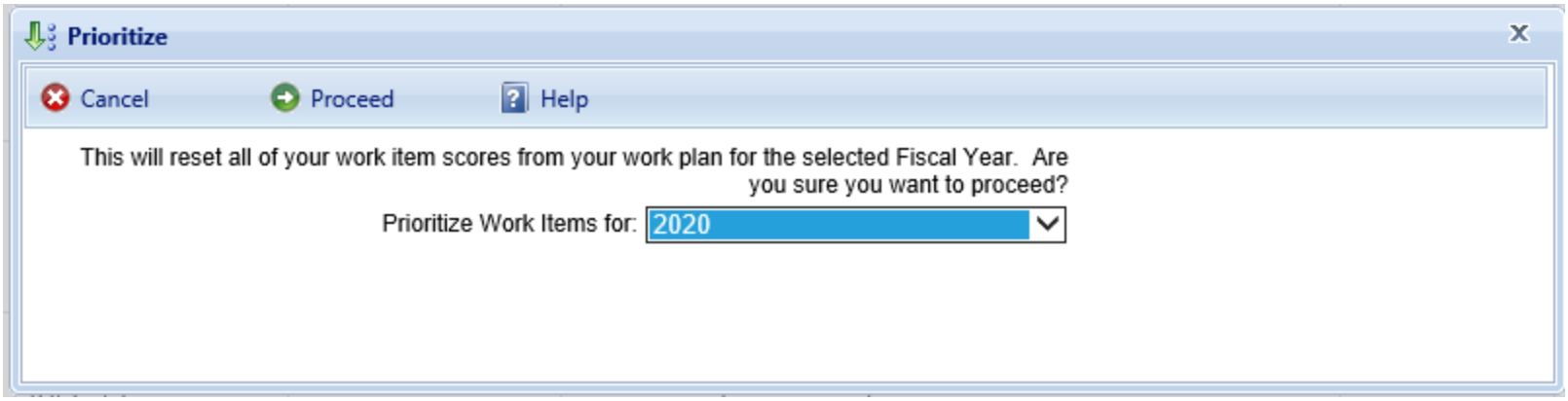
Section-Level work Items

To prioritize Section-level work items,

- With the Work Plan tab selected, activate Prioritize on the toolbar.



A popup warning box will appear, stating that all current work item scores from your work plan for the selected fiscal year will be reset if you continue.



- **IMPORTANT:** Select the desired fiscal year in the "Prioritize Work Items for" field (see screenshot above).
- Activate **Proceed** on the popup toolbar if you still wish to delete the current scores for the for Section-level work items and recompute new prioritization scores. The prioritization scores will be computed using the prioritization scheme selected in the Reference Settings area at the Site or Organization's **General Information** tab. (Alternatively, activate the **Cancel** button if you do not wish to perform these actions; you will be returned to the work plan.)

Result:

After a priority score has been computed for each work item, all work items will be shown in the work plan ranked from highest score to lowest. Project priority scores are computed by averaging the priority scores of the work items in the project, weighted by cost.

Projects

Project priority scores are computed by averaging the priority scores of the work items in the project, weighted by cost.

When to Prioritize

You can prioritize the work plan as often as you wish. Listed below are situations where prioritizing is recommended.

When Adding New Work Items

If you add new work items, you should re-prioritize to include the new items.

To Calibrate a Prioritization Scheme

You may also want to evaluate a prioritized work plan in order to calibrate the weights and points you have assigned in a particular prioritization scheme. To calibrate,

- Prioritize the work plan.
- Consider the order in which work items have been ranked, and their scores.

- When you see ordering discrepancies or score differences from your expert judgment, this might allow you to identify measures that should carry more relative weight, or measure values that warrant higher points such that the order of the work items will come out correct.
- Adjust measures and re-prioritize so that the order of the work items is acceptable.

The goal of a prioritization scheme, which is established as part of Work Configuration, is to rank work items by algorithmic calculation into the same order that expert facility managers at your agency would rank them by following sound engineering principles.

Related Links

To learn about grouping work items into projects, start with the topic About Work Projects. Or, for information about work plans, start with the topic About Work Plans.

Work Item Tasks

View a Work Item
Add a Work Item
Edit a Work Item
Section-Level Work Item Data
Building-Level Work Item Data
Fund Work Items
View Work Item Rankings
Export Work Items
Delete a Work Item

Instructional Links

About Work Items
About Work Item Cost Analysis
Work Planning Overview

View Work Item Rankings

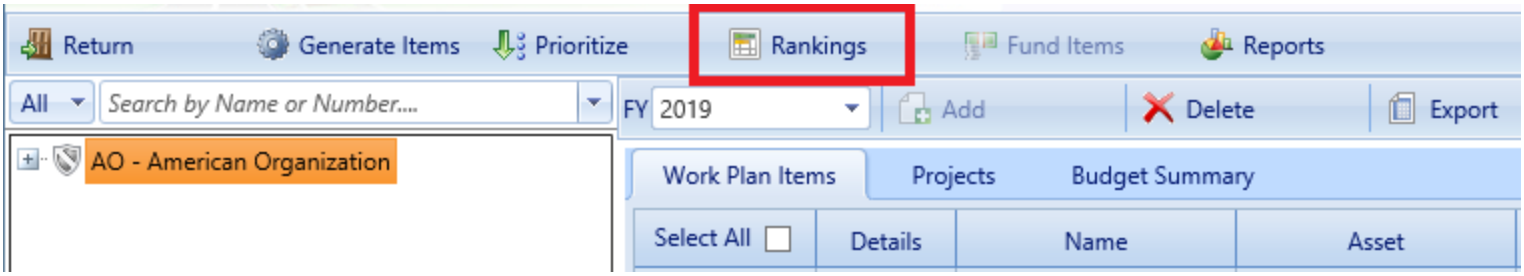
If you have created a prioritized work plan, you can view the rankings of the work items in your work plan, broken down into the constituent scores for each measure used in the prioritization scheme. This topic shows the steps for viewing the rankings and briefly explains the results.

Note: This can only be done if a prioritization scheme that applies to the area of the tree you are working in has been established as part of work configuration.

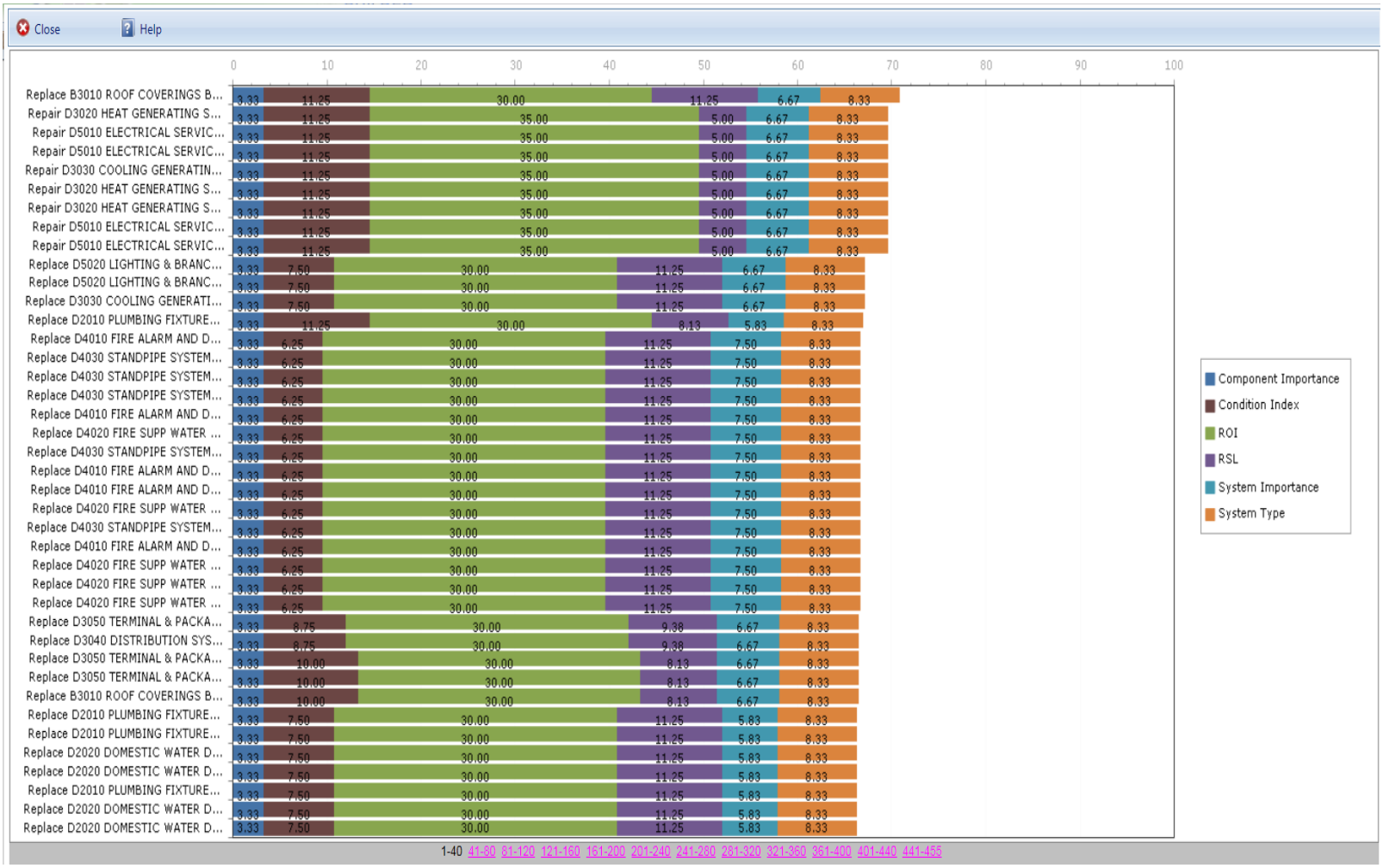
To rank work items,

- At the work plan screen, navigate to or search-select the desired Organization or Site. This sets the scope for the ranking.

- Activate **Rankings** on the toolbar.



The Rankings window will appear.



Result:

The rankings of each Section-level work item will be shown from highest priority score to lowest. The score for each work item will be broken down into the constituent scores for each measure used in the **prioritization**

scheme established in Work Configuration. A legend will be displayed, correlating the colors to their respective measures.

Related Links

To learn about grouping work items into projects, start with the topic About Work Projects. Or, for information about work plans, start with the topic About Work Plans.

Work Item Tasks

View a Work Item
Add a Work Item
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Section-Level Work Item Data
Building-Level Work Item Data
Fund Work Items
Prioritize Work Items in a Work Plan
Export Work Items
Delete a Work Item

Instructional Links

About Work Items
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Export Work Items

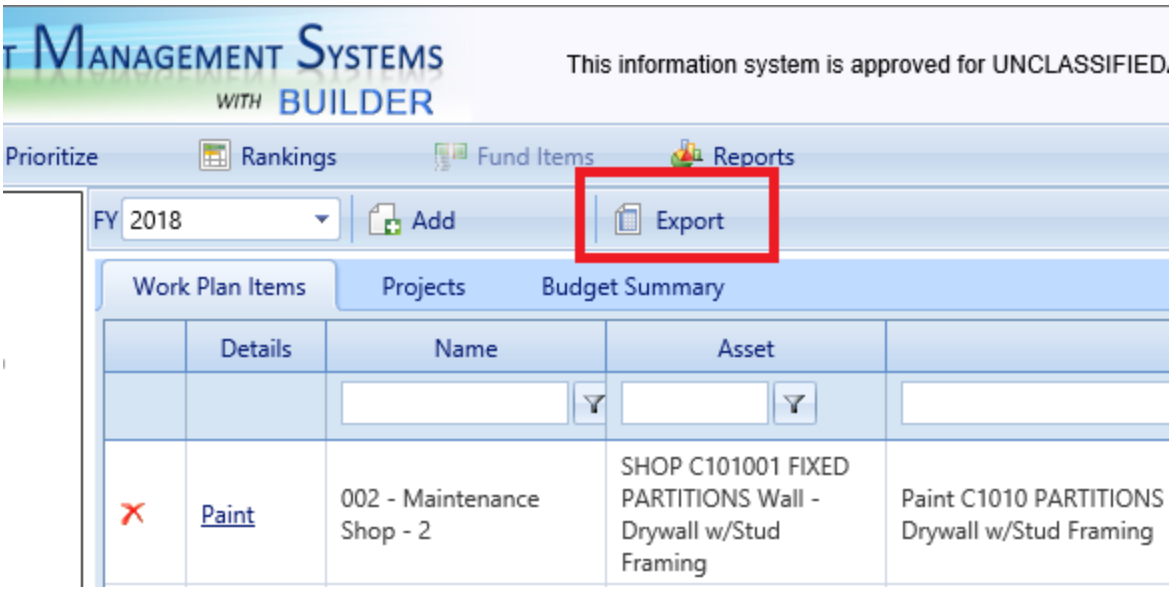
This topic explains multiple ways to export work items. Work items can be exported to a Microsoft Excel spreadsheet, either from the work plan or from the Scenario Visualization / Scenario Analysis screen.

Export Work Items from the Work Plan

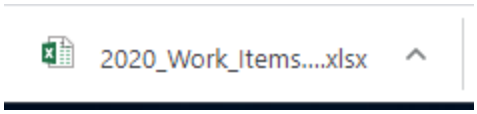
To export a work plan to an Excel spreadsheet from the Work Plan Items tab on the work plan screen,

- On the **BUILDER** main menu, activate Work Plan.
- At the work plan screen, select the desired location in the navigation tree at the left. This will determine the scope of the work plan, which will contain all work items for that location and below it in the tree.

- On the secondary toolbar, activate **Export**.



- When the Excel work plan shows as downloaded in the lower left corner of the window (see illustration immediately below), double-click on it to open. Alternatively, you can activate the up arrow to be able to select between opening the file and showing it in its Downloads folder location.



- If you want to save the opened spreadsheet, you need to activate the **File** tab in the spreadsheet, then specify the location, and re-name as desired (the spreadsheet will have been assigned a default file name).

Export Work Project Work Items

You can choose to export just those work items contained in a particular work project. To do so,

- At the work plan screen, open the **Projects** tab. *All projects pertaining to the current tree location on down will be listed in the content area.*

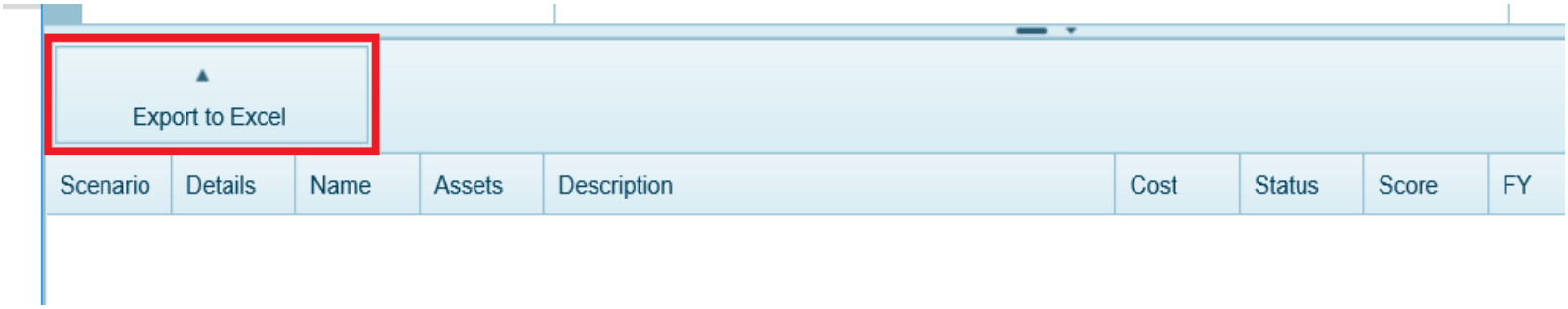
  Tip: If you are at the head of the navigation tree and too many projects are listed, you can choose to navigate farther down in the tree towards or to the work plan containing the project.

- Open the "Details" popup for the desired project by activating its **Details** link in the first column of the desired work project.
- In the popup, open the **Work Items** tab.
- If the **Only Show Selected Project Work Items** checkbox is not marked, mark it to restrict the view to just those work items that are in the project.

- Activate the **Export** button on the popup toolbar.
- When the Excel tab with the project name on it appears at the lower left of the screen, activate it to open the Excel file containing the project work items.
- Save the exported file if desired (you can also rename it).

Export Work Items from Scenario Analysis

At **Scenarios > Analysis** (aka Scenario Visualization), an **Export** button has been added above the grid of work items at the bottom of the Scenarios analysis screen. This button will export to Microsoft Excel any work items listed in the grid:



Note: The tiny arrow at the bottom of the Scenarios analysis screen is what opens or closes the drawer containing the grid of work items (if there are work items for the selected Component-Section).

Related Links

To learn about grouping work items into projects, start with the topic About Work Projects. Or, for information about work plans, start with the topic About Work Plans.

Work Item Tasks

View a Work Item
Add a Work Item
Edit a Work Item
Section-Level Work Item Data
Building-Level Work Item Data
Fund Work Items
Prioritize Work Items in a Work Plan
View Work Item Rankings
Delete a Work Item

Instructional Links

[About Work Items]
[About Work Item Cost Analysis]
[Work Planning Overview]

Delete a Work Item

This topic shows how to delete work items at the work plan screen accessed via Work Plan on the main menu.

Productivity Tip: If you are using a version of BUILDER (3.3.13 and later) that allows selecting multiple work items at one time, and if some or all of the work items you wish to delete are all of the work items contained in a particular node of the tree in the left pane, then it will save time to navigate to that node and delete all of its work items with one Select All checkbox selection, even if those work items are not all of the ones you wish to delete. You can then continue to delete work items from other locations in the tree if necessary.

Navigate to Work Plan

If you are not already looking at the work item(s) you wish to delete, do the following:

- Activate Work Plan in the main menu. You should now be viewing the work plan screen, which has a Return button at the upper left.
- Navigate in the tree to the lowest inventory node containing the work item(s) you wish to delete. You should be viewing the work items at the Work Plan Items tab.

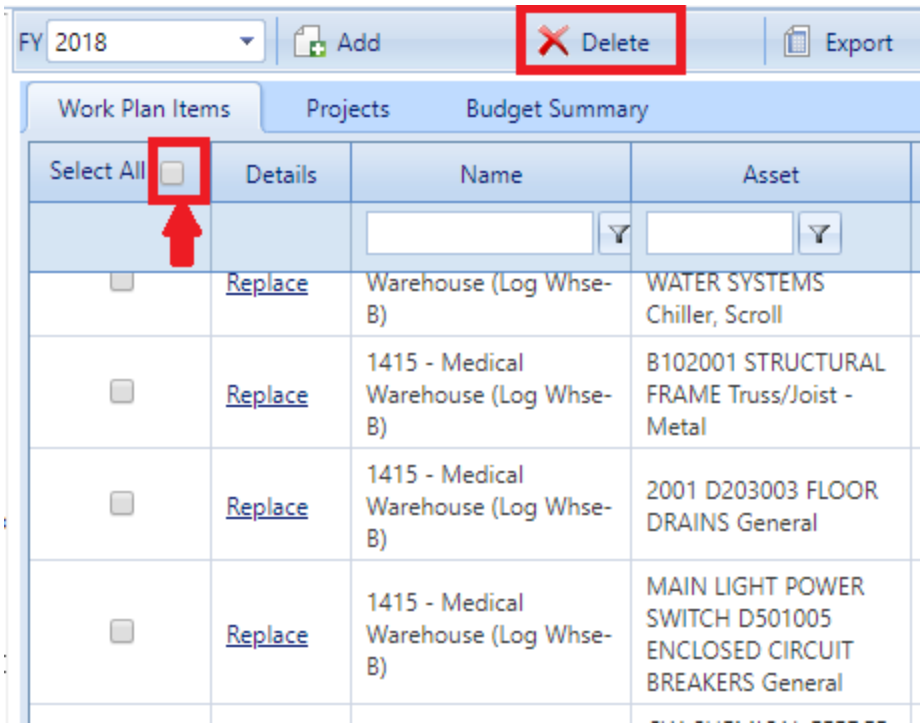
Bulk Delete Work Items Where Possible

In BUILDER Version 3.3.13 or later, you can easily delete all work items at the current node of the work item tree. This requires careful selection of your starting point.

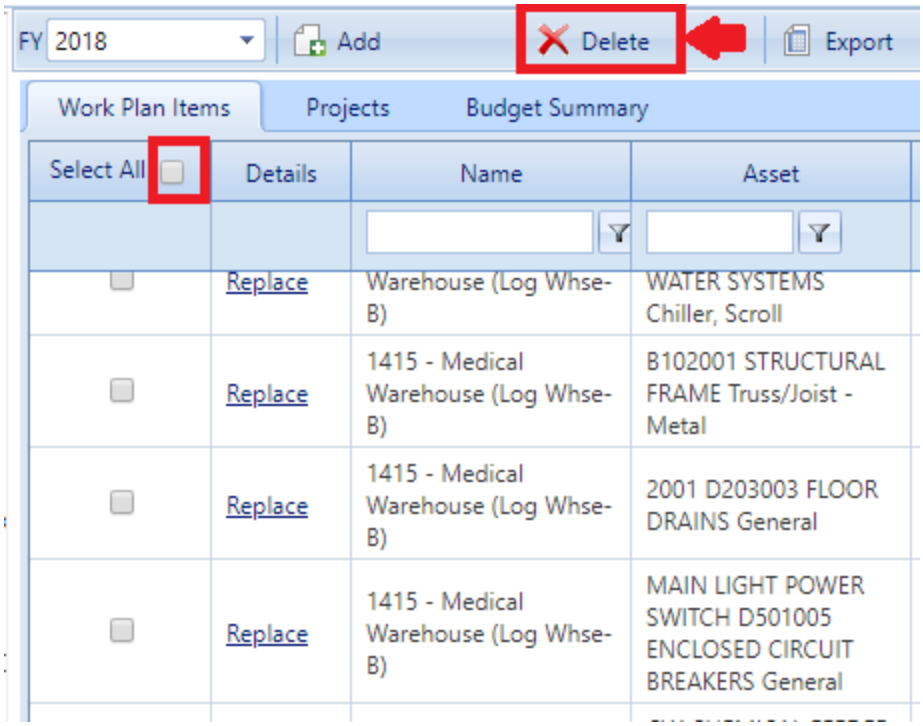
To delete work items in bulk,

- In the left pane, navigate in the tree to the lowest node in which you want to delete all of the work items. Don't worry if this is not all of the work items you want to delete; you can continue to (a) repeat these steps to bulk delete at other locations in the tree and/or (b) delete individually selected work items as shown in Delete Selected Work Item(s).
- Make sure you are at the Work Plan Items tab in the content pane.

- Mark the Select All checkbox at the top of the first column.



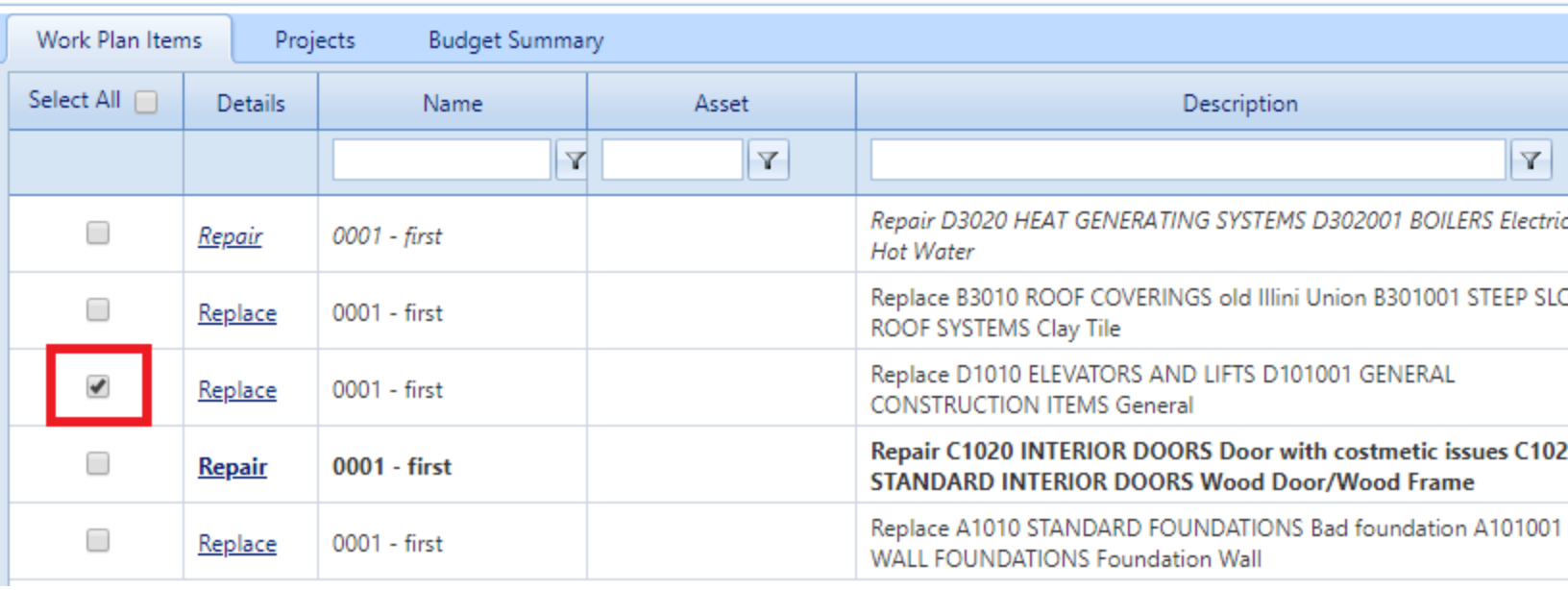
- Finally, activate ✕ Delete on the toolbar above the work items table.



Delete Selected Work Item(s)

To delete one or more individually selected work items from the current work plan,

- Select one or more item(s) you wish to delete by marking the corresponding checkbox(es) in the first column of the work item table.



- Activate ✕ Delete on the toolbar above the work items table.

Related Links

To learn about grouping work items into projects, start with the topic About Work Projects. Or, for information about work plans, start with the topic About Work Plans.

Work Item Tasks

View a Work Item
Section-Level Work Item Data
Building-Level Work Item Data
Add a Work Item
Edit a Work Item
Fund Work Items
Prioritize Work Items in a Work Plan
View Work Item Rankings
Export Work Items

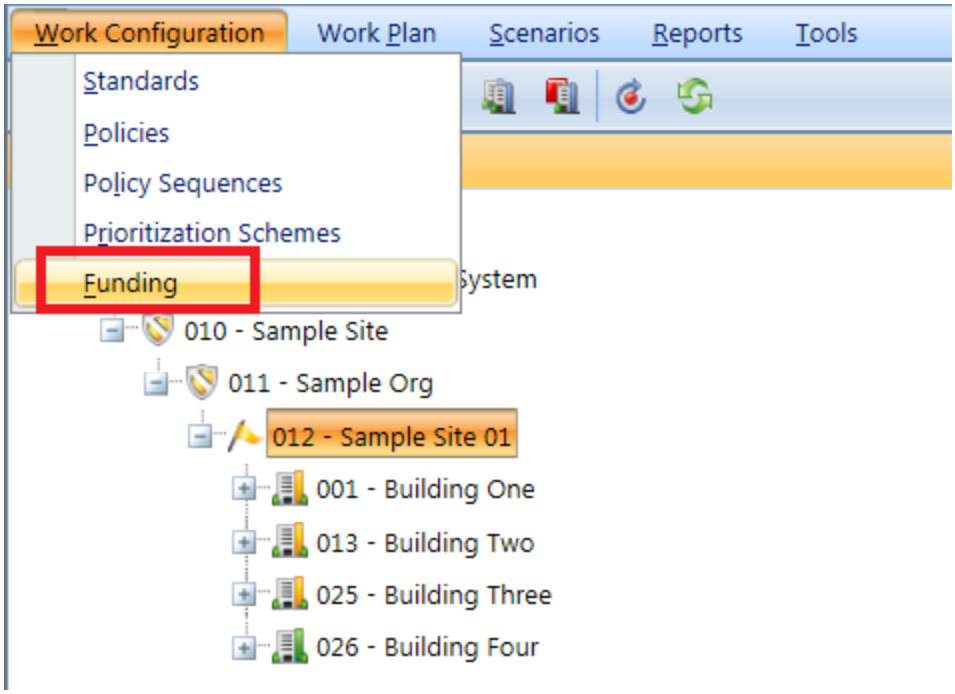
Instructional Links

[About Work Items]
[About Work Item Cost Analysis]
[Work Planning Overview]

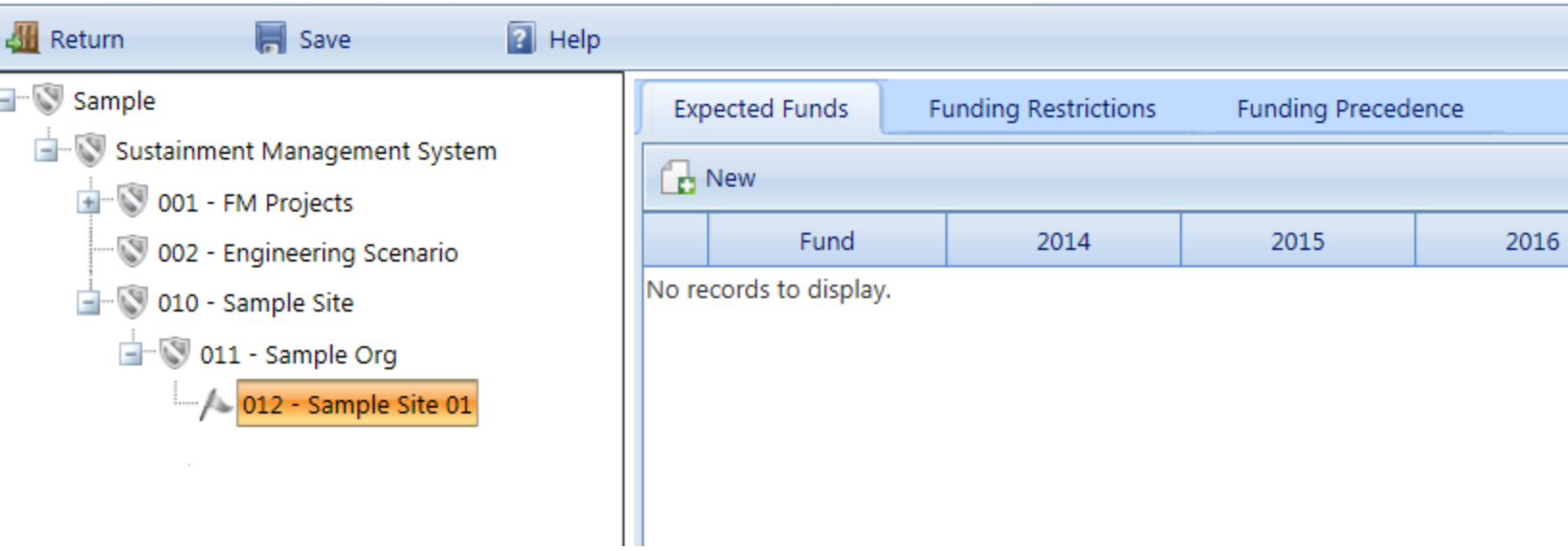
Funding Work Items

Enter or Edit Anticipated Funding Levels

To add, enter, or edit funding levels, select **Work Configuration > Funding** starting at the main menu.



The Funding window will appear.

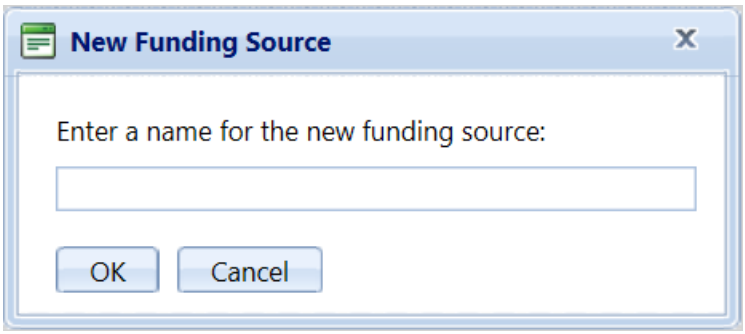


Navigate the tree on the left of the screen to the Site you wish to edit the funding options for. Once a Site has been chosen in the tree, the funding levels, funding restrictions, and funding precedence can be set from the different tabs. Further descriptions of each tab is provided below.

Note: Anticipated funding levels only need to be input if you are planning to use Scenarios for multi-year work planning constrained by budget. The funding sources and amounts you enter here will be used as the initial defaults for each scenario you create. You may, of course, edit the amounts in the scenario itself, but you will not be able to add new funding sources, change their restrictions, or change their precedence order in a scenario. For more information about Scenarios, begin with About Scenarios.

Toolbar Options

- **Return**. Closes the Funding window.
- **Save**. Saves changes made to the funding levels, restrictions, or precedence.
- **New**. This button is at the Expected Funds tab rather than on the main toolbar. Use this button to create a new funding source. *When **New** is activated, the "New Funding Source" popup window will appear*.

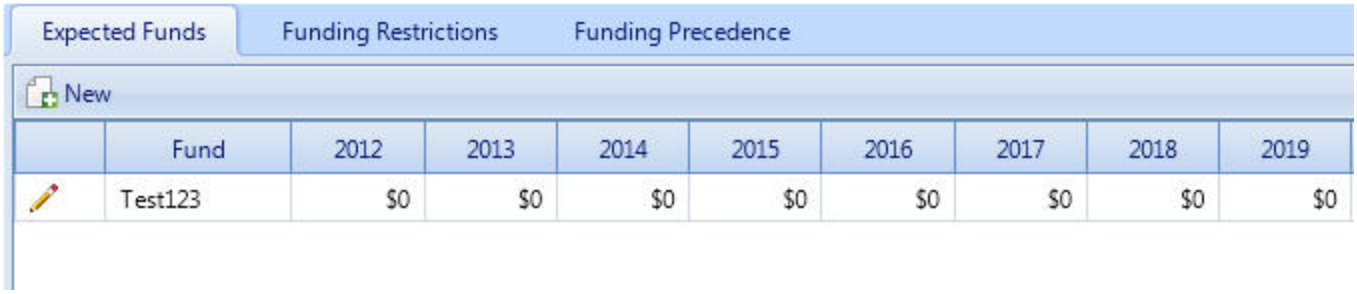


Enter the name of the funding source you wish to add. The name is limited to 50 alphanumeric characters and must be unique.

- **Delete**. Deletes the selected funding source. Note that a funding source can only be deleted from the **Expected Funds** tab. The selected funding source is identified in this tab by the arrow in the left column of the grid.
- **Help**. Launches the help topic associated with funding.

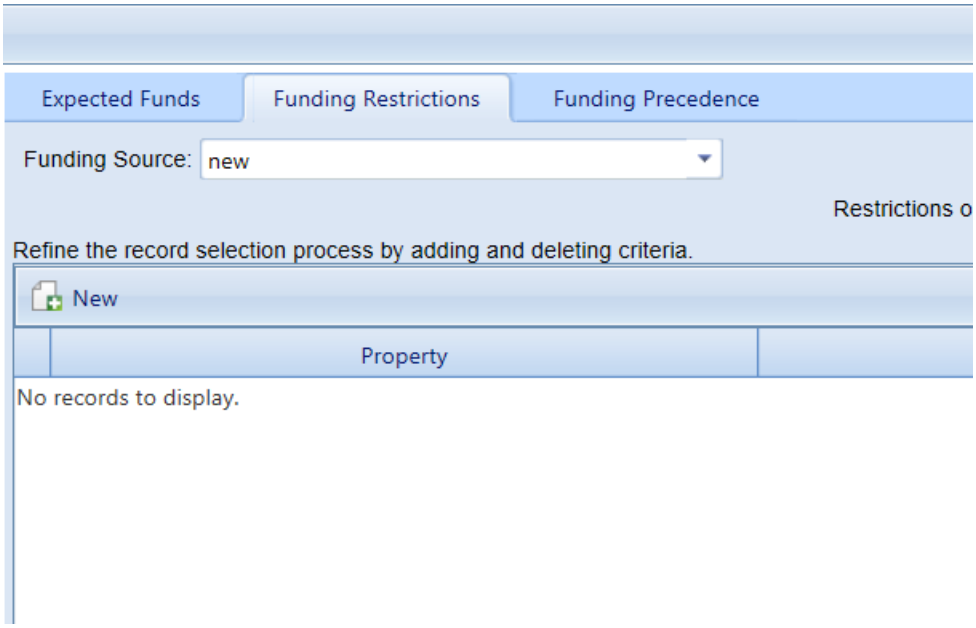
Expected Funds Tab

The **Expected Funds** tab provides an editable list of funding sources and amounts for the next ten years. To edit a funding source level for a particular year, activate the pencil icon on the left side of the grid and enter the expected funds for the next 10 years. After completing the funds, activate the checkmark icon to accept the changes made.



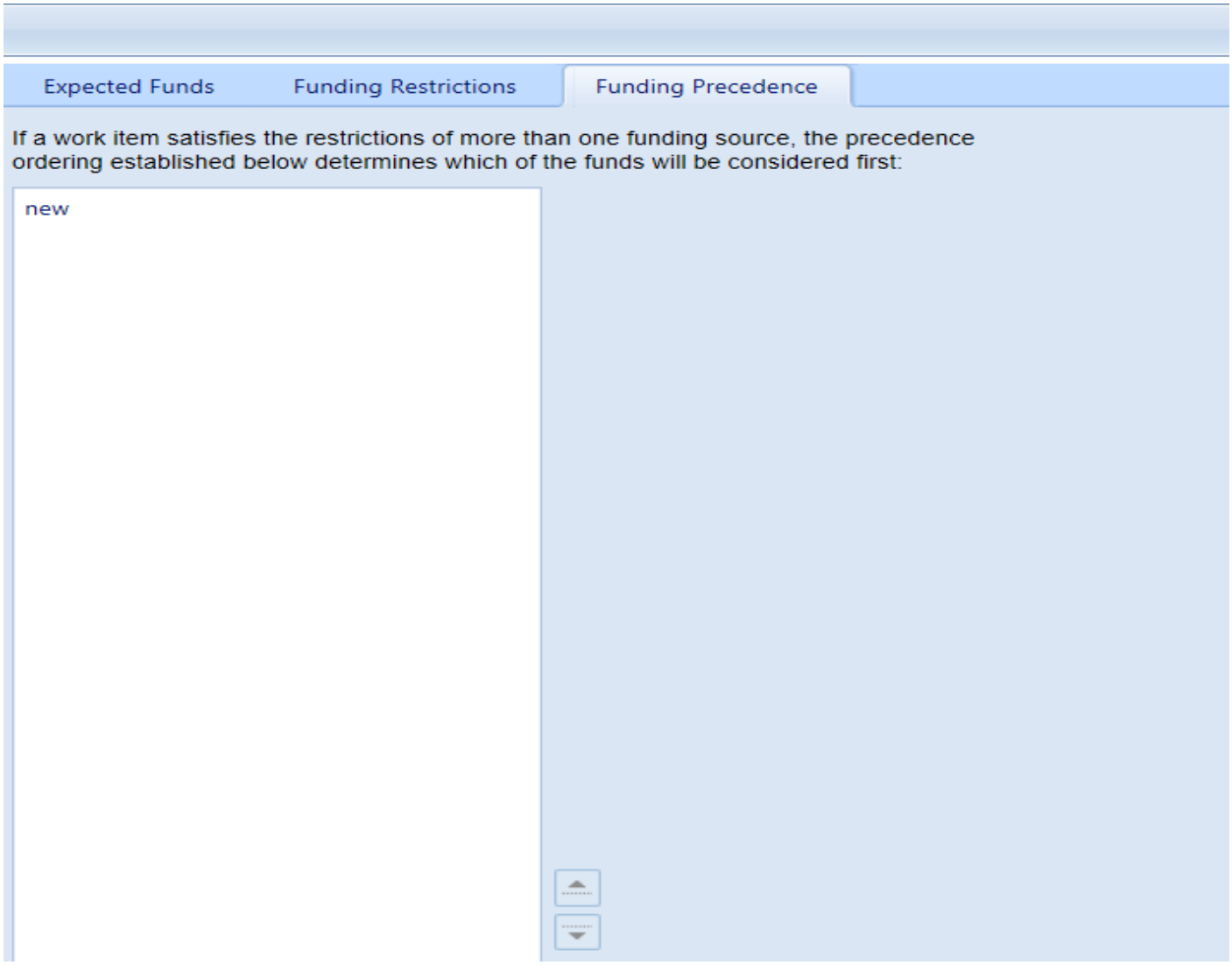
Funding Restrictions Tab

The **Funding Restrictions** tab provides a means of establishing selection criteria that determines whether or not a particular funding source can be used for a particular work item. This tab allows you to identify properties that a work item must have in order to use the selected funding source. To add a funding restriction, select the funding source from the drop down list, activate the **Add** button, and the enter the data regarding the restriction (selection criteria) in the grid.



Funding Precedence Tab

BUILDER allocates funds algorithmically when it is processing a prioritized list of work items. After the funding sources, the amounts, and the criteria for using sources are set, the only further requirement is to specify how the automated process will determine which funding source to use if a work item satisfies the restrictions (selection criteria) of more than one funding source. The **Funding Precedence** tab provides a means of establishing an order of precedence among the funding sources for a work item. To change the order of the funding sources, select a source and use the up and down arrows to move it in the list. When funds are allocated, the first funding source listed will be checked first, then the second, and so on until funding is found or the list is exhausted.



Related Links

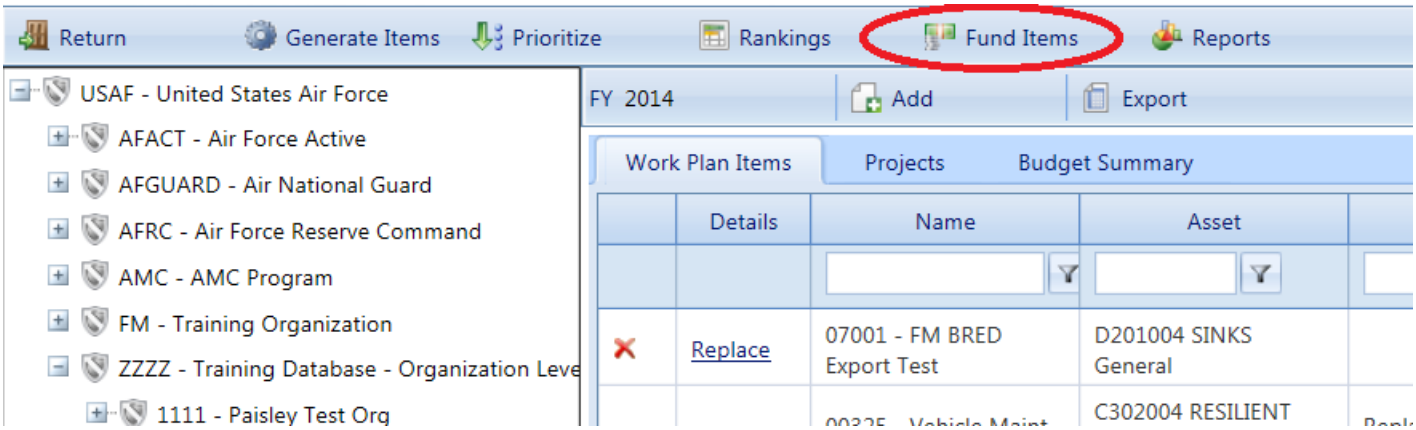
[Add a Funding Stream]
[Edit a Funding Stream]
[Delete a Funding Stream]
[About Funding Streams]

Fund Work Items

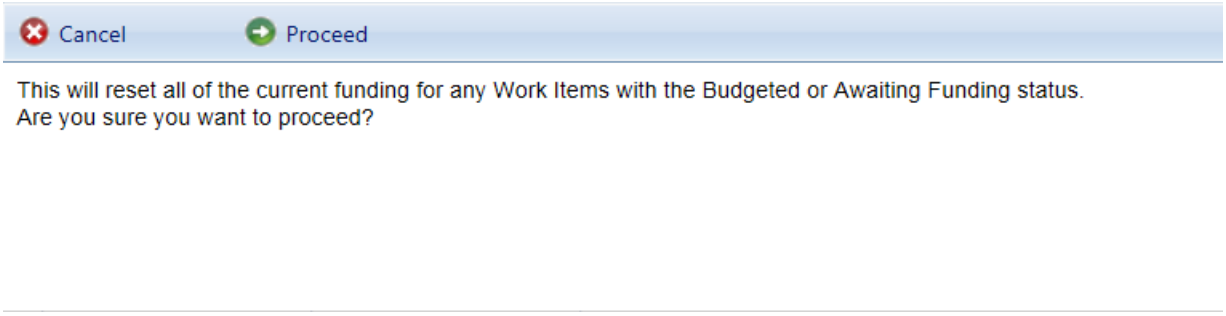
BUILDER can automatically fund work items based on their priority scores and the available fund sources. If you choose to use this tool, the work items with the highest priority scores will have their status changed to "budgeted" until all of the funds are exhausted. All remaining work items that are not budgeted will have their

status changed to "Awaiting Funding." It is important to note that the funding sources are subject to all the restrictions and precedences that are set in the funding screen during work configuration.

To fund the work items in a work plan, activate Fund Items on the work plan toolbar.



The Fund Work Items screen will appear.



From this window, you have the option of funding the work items for the current or next fiscal year.

Select the year you wish to fund the work items in and activate the Proceed button. After completion,

- The work items with the highest priority scores will be marked as "Budgeted" until all applicable sources are allocated.
- Remaining work items will be marked as "Awaiting Funds."

If you do not wish to fund the work items, simply activate the Cancel button in the window to be returned to the Work Items window.

Related Links

To learn about grouping work items into projects, start with the topic About Work Projects. Or, for information about work plans, start with the topic About Work Plans.

Work Item Tasks

- View a Work Item
- Add a Work Item
- Edit a Work Item
- Section-Level Work Item Data
- Building-Level Work Item Data
- Prioritize Work Items in a Work Plan
- View Work Item Rankings
- Export Work Items
- Delete a Work Item

Instructional Links

- About Work Items
- About Work Item Cost Analysis
- Work Planning Overview

Work Item Cost Analysis

About Work Item Cost Analysis

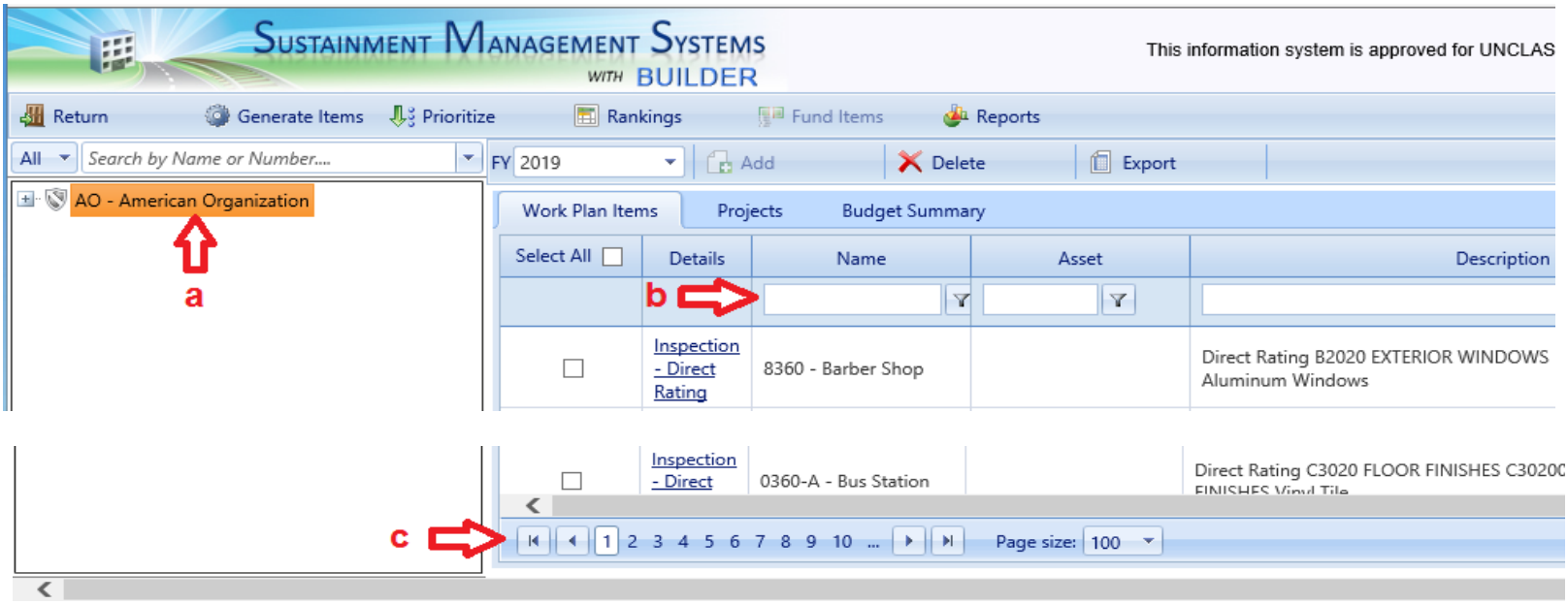
Work Item cost analysis is a feature available at the Cost Analysis tab on a work item's "Details" popup window. This feature provides additional data regarding the work items in your inventory to ensure that the most cost-effective work activity can be chosen and performed. It displays the possible work activities for the Section, showing for each the return on investment (typically this is the most important information needed) and other cost data, to aid in choosing the best work activity to perform.

To view a work item's cost analysis,

Select Work Plan at the main menu.

The navigation tree will change to showing the topmost Organization (or Site), and the corresponding work plan items will be displayed in the content area

.



- To bring the desired work item record into view, use one or more of the following as needed (labeled in red on image above):
  a. tree navigation (left pane)
  b. filters (second row of the table at the Work Plan Items tab)
  c. page navigation (at the bottom of the content pane)
- When you have located the desired work item record, activate its Repair or Replace link in the Details column. The "Details" popup will appear.

  Note: Inspection links will not show cost analysis.

Component Information

Just under the popup toolbar, the following general information regarding the work item will be displayed:

- Section Description (Read-Only). Displays a description of the Section for the work item.
- Quantity (Read-Only). Displays the quantity inventory quantity of the Section.

Under Component Info at the Cost Analysis tab, the following information is displayed:

- Year Installed. Year Installed is taken from inventory information.
- Designed SL. Service life from the associated Service Life book.
- Modified SL. Service life as modified by the latest inspection results.
- Replace Cost. Replacement cost from the associated cost book.
- Repair Cost Factor.

Comparison Graph

Just below the general component information is a graph of the condition indices over time when different work activities are performed on the Section. There are four work activities for each Component-Section, each with data elements associated with them. Each of these is described under Action Alternatives below.

Action Alternatives

Do Nothing

This option displays the data for the Section if no work is performed on it:

- Will Fail In (Read-Only). Displays the year the Section will reach the terminal **CI**[1], based on the current **CI**[2] and deterioration rate.
- Current **CI**[3] (Read-Only). Displays the current **CI**[4] of the Section.
- **RSL**[5] (Read-Only). Displays the current remaining service life of the Section.

Stop Gap Repair

This option displays the data for the Section if a stop gap repair, where the **CI**[6]Condition Index is held constant for one year, is performed on the Section:

- In Year. Enter the year the stop gap repair will be performed on the Section. Initially this field is defaulted to the value of the Completed FY field at the Details tab.

---

[1]Condition Index

[2]Condition Index

[3]Condition Index

[4]Condition Index

[5]Remaining service life.

[6]Condition Index

- Hold **CI**[1] @ (Read-Only). Displays the **CI**[2] value the Section will be held at for one year. This value will be the current **CI**[3] if the work item is performed in the current year, other wise it will be computed based on the current **CI**[4] and deterioration rates.
- ASL (Read-Only). Displays the additional service life of the Section gained by performing the stop gap work activity.
- **RSL**[5] (Read-Only). Displays the remaining service life of the Section after performing the stop gap work activity. This value is computed by adding the ASL from this work activity and the **RSL**[6] from the Do Nothing work activity.
- $ Generated (Read-Only). Displays the money generated, or saved over time, by performing the stop gap work activity.
- Work Cost. Displays the BUILDER-estimated cost (using the default cost book and current **CI**[7]) of performing the stop gap work activity. This field can be manually edited if the Overwrite Estimate checkbox is marked.
- Return on Investment(Read-Only). Displays the return on investment for performing the stop gap on the Section. This value is calculated by dividing the $ Generated by the Work Cost and converting to a percentage.

Repair

This option displays the data for this Section if it is repaired:

- In Year. Enter the year the Section will be repaired. Initially this field is defaulted to the value in the Completed FY field at the Details tab.
- Repair To (Read-Only). Displays the **CI**[8] value the Section will be restored to after the repair is completed. The **CI**[9] will always be repaired to 95, unless the current **CI**[10] is greater than 95. If the **CI**[11] is greater than 95, the **CI**[12] will be restored to 100.
- ASL (Read-Only). Displays the additional service life of the Component-Section after repairing the Section.

---

[1]Condition Index
[2]Condition Index
[3]Condition Index
[4]Condition Index
[5]Remaining service life.
[6]Remaining service life.
[7]Condition Index
[8]Condition Index
[9]Condition Index
[10]Condition Index
[11]Condition Index
[12]Condition Index

- **RSL**[1] (Read-Only). Displays the remaining service life of the Section after repairing the Section. This value is computed by adding the ASL from this work activity and the **RSL**[2] from the Do Nothing work activity.
- Section will become inactivated or is part of a modernization project in. Enter the year the Section will become inactive or will be removed/replaced in a modernization project. If the Section becomes inactive or is replaced during modernization, the saving generated by repairing the Section after this year will not be included in the $ Generated field.
- $ Generated (Read-Only). Displays the money generated, or saved over time, by repairing the Section.
- Work Cost. Displays the BUILDER-estimated cost (using the default cost book and current **CI**[3]) of repairing the Section. This field can be manually edited if the Overwrite Estimate checkbox is marked. If this box is marked, enter the cost of the repair work activity.
- Return on Investment (Read-Only). Displays the return on investment for repairing the Section. This value is calculated by dividing the $ Generated by the Work Cost and converting to a percentage.

Replace

This option displays the data for the Section if it is replaced:

- In Year. Enter the year the Section will be replaced. Initially this field is defaulted to the value in the Completed FY field on the Details tab.
- ASL (Read-Only). Displays the additional service life of the Section after replacement.
- **RSL**[4] (Read-Only). Displays the remaining service life of the Section after replacement. This value is computed by adding the ASL from this work activity and the **RSL**[5]Remaining Service Life from the Do Nothing work activity.
- Replacing Component will lower annual Operational/Maintenance cost by. Enter the annual amount saved on operation and/or maintenance due to the replacement of the Section. This amount multiplied by the number of years will be added to the $ Generated field.
- $ Generated (Read-Only). Displays the money generated, or saved over time by performing the replacement.
- Work Cost. Displays the BUILDER-estimated cost (using the default cost book) of performing the replacement. This field can be manually edited if the Overwrite Estimate checkbox is marked. If this checkbox is marked, enter the cost of the replacement.
- Return on Investment (Read-Only). Displays the return on investment for performing the replacement. This value is calculated by dividing the $ Generated by the Work Cost and converting to a percentage.

---

[1]Remaining service life.

[2]Remaining service life.

[3]Condition Index

[4]Remaining service life.

[5]Remaining service life.

Selecting the Work Activity to Perform

After all of the applicable data has been entered and edited for each work activity, the Calculate button can be used to compute the return on investment (ROI) for each work activity. The work activity with the highest ROI should be selected for the Section. To select a work activity, activate the Select button next to the ROI of the preferred work activity. Activating the Select button will update the following fields on details tab for the work item based on the data entered for the work activity:

- Description of Work Item
- Completion FY
- Estimated Cost
- Activity
- ROI Information (Return and ROI).

Related Links

To learn about grouping work items into projects, start with the topic About Work Projects. Or, for information about work plans, start with the topic About Work Plans.

Work Item Tasks

View a Work Item
Add a Work Item
Edit a Work Item
Section-Level Work Item Data
Building-Level Work Item Data
Fund Work Items
Prioritize Work Items in a Work Plan
View Work Item Rankings
Export Work Items
Delete a Work Item

Instructional Links

About Work Items
Work Planning Overview

Work Projects

About Work Projects

This topic answers common questions about work projects and provides links to work project tasks.

- **What is a work project?**

  A Maintenance and Rehabilitation (M&R) *work project* allows you to group work items together to manage them as a single work effort that is prioritized and funded as a whole. The work items in a project may span different Systems in a single Building, as in a renovation effort. A project may also span multiple Buildings.

  In general, a project is a collection of any work items grouped together in an "all or nothing" work unit with a single funding source and a single work year.

- **What is the benefit of using work projects?**

  Constructing logical groupings of work items can help simplify and reduce the workload of tracking work items.

- **What can I put in a work project?**

  A work project can contain Section work items and/or Building work items. It can *not* contain another project.

Related Links

For more about the work items contained in a work project, start with the topic About Work Items.

Work Project Tasks

View a Work Project
Work Project Data
Add a Work Project
Organize Work Items into a Project
Edit a Work Project
Export a Work Project
Delete a Work Project

Instructional Link

About Work Projects
Work Planning Overview

View a Work Project

If one or more work projects have been created in a work plan, you can view project information starting at the work plan's Projects tab. You can view information displayed in the projects table at the Projects tab (this provides a smaller amount of detail), or by navigating to the project's "Details" popup. Both ways are described in this topic.

Projects Table Information

The columns displayed at the Projects tab of a work plan are a subset of those shown at the Work Plan Items tab. For additional details about the work project, you can

- (Details) - Activating a link-formatted entry in the first column will trigger a popup showing details for that work project.
- Name - Name of the project.
- Description - Description of the project.
- Cost - The aggregated cost of the estimates for performing the work items in the project.
- Status - Current status of the project.
- Score - If work items in the project have been prioritized, the score will be displayed here. The default value is 0, indicating that the work items have not been prioritized.
- Date Completed - Date the project was completed, if it has been completed.
- Must Do (Checkbox) - If the Must Do checkbox is marked, then in Scenarios the project will be the project to be funded in a Scenarios projection before all other competing work items that are not marked as "must do."

"Details" Popup Information

For a greater level of detail, activate the project's Details link in the first column of the projects table. This will bring up the "Details" popup where you can view the following information:

- Project Name - Name of the project. Limit: 30 alphanumeric characters. The project name will be used for selecting, tracking and reporting.
- Description - Description of the work project. Limit: 255 alphanumeric characters.
- Work Request ID. If applicable, your agency's work request number for the project. Limit: 50 alphanumeric characters.

  Note:Work Request ID is not used by BUILDER in any analyses. The field is available for customer use.

- Status - Current status of the project, selected from the dropdown. The status will change over time as the project moves from planning to completion. The values Status can take are:
  - Awaiting Contract Award
  - Awaiting Funds
  - Awaiting Funds (Special Project)
  - Budgeted
  - Canceled
  - Completed
  - Deferred
  - Funded
  - Funded (Service Call)
  - Funded (Special Project)
  - In Design

    - In Progress
    - On hold

- Funding FY - The four-digit fiscal year that the project was or will be funded.
- Must Complete as Planned - Mark this box if the project falls into the "must do" category. Marking it will force the project to be funded in a Scenarios projection before all other competing work items that are designated "Must Do."
- Work FY - The four-digit fiscal year in which the work is expected to be performed.
- Funding Source - The funding source to be used for this project, selected from the dropdown.
- Completion FY - Enter the four-digit fiscal year that the project was or will be completed.
- Date Completed - The date the project was completed. This field will appear only if Status is "Completed."
- Estimated Cost - The estimated cost of the project, as a total of the costs of the work items contained in the project.
- Score - If you have prioritized the work items, then this project's score will be displayed here. The score for a project is computed as the average of its work items' scores weighted by their estimated cost. The default value is 0.000, which indicates that the work items in the project have not been prioritized.
- Override automatic cost estimate - Mark this box if you wish to override the cost estimate provided by BUILDER and enter your own estimated cost of the project instead.
- Work Code - The work code for the project. The available work codes are:
    - Demolition
    - New Footprint
    - Modernization
    - Sustainment
- Actual Cost. The actual cost of the project after completion. Before completion, this with equal the Estimated Cost.

Related Links

Task Links

Work Project Data
Add a Work Project
Organize Work Items into a Project
Edit a Work Project
Export a Work Project
Delete a Work Project

Instructional Link

View a Work Project
Work Planning Overview

Add a Work Project

Project Location

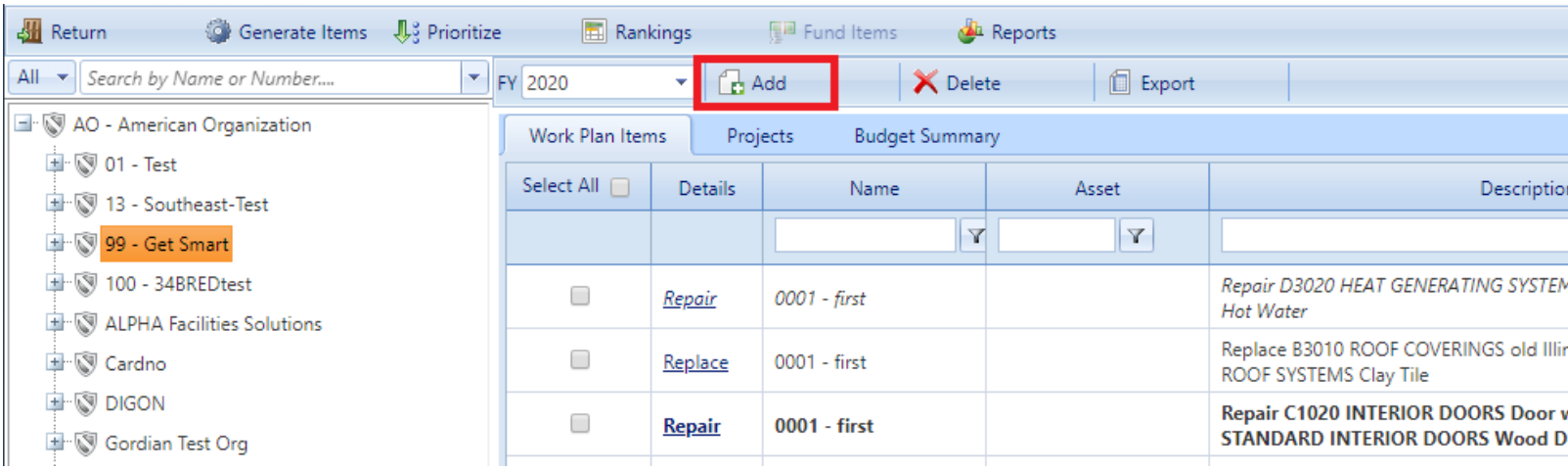
Before adding a work project, you should give thought as to its best position in the navigation tree. For example, if the project entails re-roofing at multiple Sites, then you should add the project at an Organization level that is above all of those Sites. Ideally, a project should be placed low enough in the tree that you don't have a lot of unnecessary work items to wade through, but high enough in the tree to accommodate all of the work items to be included in the project.

Steps to Add Work Project

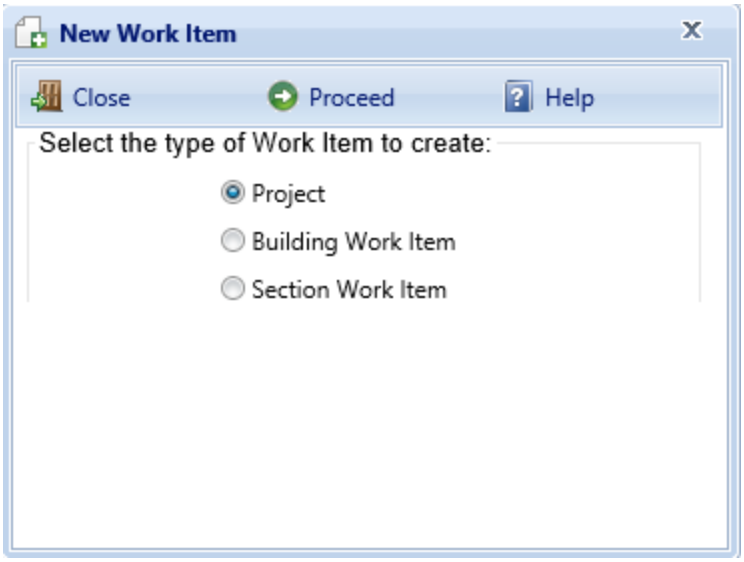
To add a work project,

- At the work plan screen, navigate to the appropriate location where the project should reside (see commentary at Project Location above).
- Activate Add on the secondary toolbar on the work plan screen.

  Troubleshooting Tip: If the Add button is grayed out, click again on the desired location in the navigation tree; this should refresh the button.

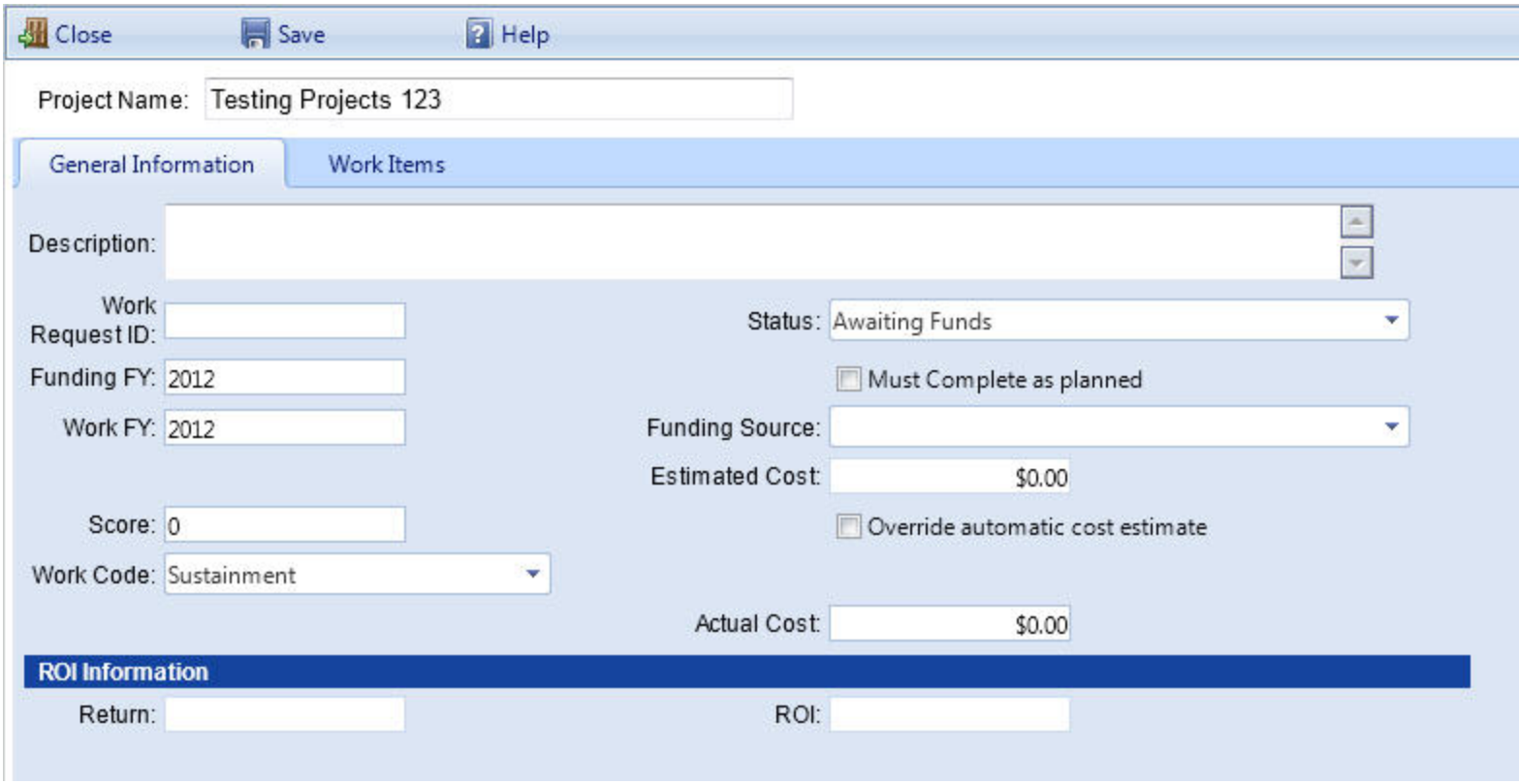


The "New Work Item" window will appear:



- In the popup window, select the Project radio button option.
- Next, activate Proceed on the toolbar.

The "Project" popup window will appear, opened to the General Information tab.



- In the "Project" popup, fill in the following data as needed at the General Information tab:
  - Project Name - Name of the project. Limit: 30 alphanumeric characters. The project name will be used for selecting, tracking and reporting.
  - Description - Description of the work project. Limit: 255 alphanumeric characters.
  - Work Request ID. If applicable, your agency's work request number for the project. Limit: 50 alphanumeric characters.

    Note:Work Request ID is not used by BUILDER in any analyses. The field is available for customer use.

  - Status - Current status of the project, selected from the dropdown. The status will change over time as the project moves from planning to completion. The values Status can take are:
    - Awaiting Contract Award
    - Awaiting Funds
    - Awaiting Funds (Special Project)
    - Budgeted
    - Canceled
    - Completed
    - Deferred
    - Funded
    - Funded (Service Call)
    - Funded (Special Project)
    - In Design
    - In Progress
    - On hold
  - Funding FY - The four-digit fiscal year that the project was or will be funded.
  - Must Complete as Planned - Mark this box if the project falls into the "must do" category. Marking it will force the project to be funded in a Scenarios projection before all other competing work items that are designated "Must Do."
  - Work FY - The four-digit fiscal year in which the work is expected to be performed.
  - Funding Source - The funding source to be used for this project, selected from the dropdown.
  - Completion FY - Enter the four-digit fiscal year that the project was or will be completed.
  - Date Completed - The date the project was completed. This field will appear only if Status is "Completed."
  - Estimated Cost - The estimated cost of the project, as a total of the costs of the work items contained in the project.
  - Score - If you have prioritized the work items, then this project's score will be displayed here. The score for a project is computed as the average of its work items' scores weighted by their estimated cost. The default value is 0.000, which indicates that the work items in the project have not been prioritized.
  - Override automatic cost estimate - Mark this box if you wish to override the cost estimate provided by BUILDER and enter your own estimated cost of the project instead.
  - Work Code - The work code for the project. The available work codes are:

        - Demolition
        - New Footprint
        - Modernization
        - Sustainment
    - Actual Cost. The actual cost of the project after completion. Before completion, this with equal the Estimated Cost.
- Activate Save on the popup toolbar.
- Activate Close on the popup toolbar.

Related Links

Task Links

View a Work Project
Work Project Data
Organize Work Items into a Project
Edit a Work Project
Export a Work Project
Delete a Work Project

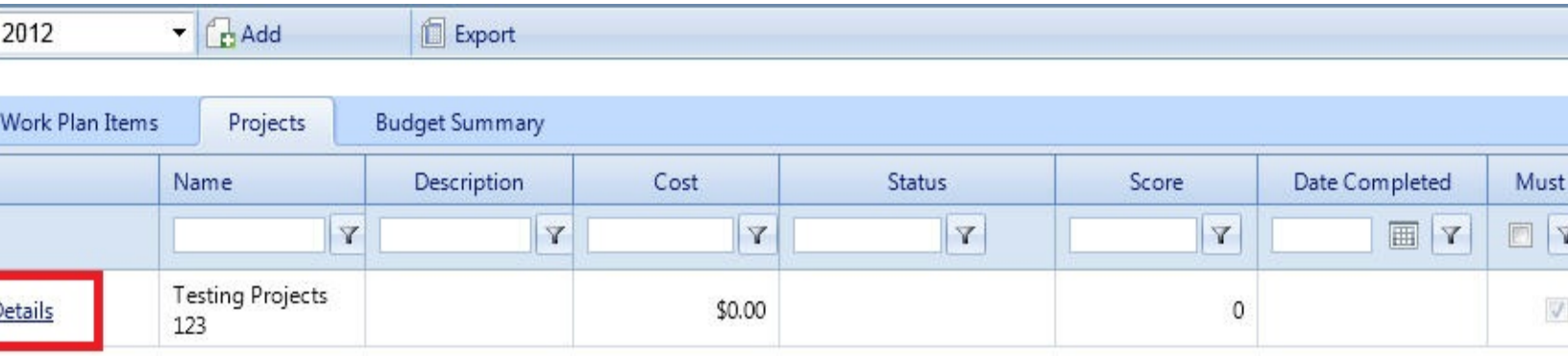
Instructional Links

Add a Work Project
Work Planning Overview

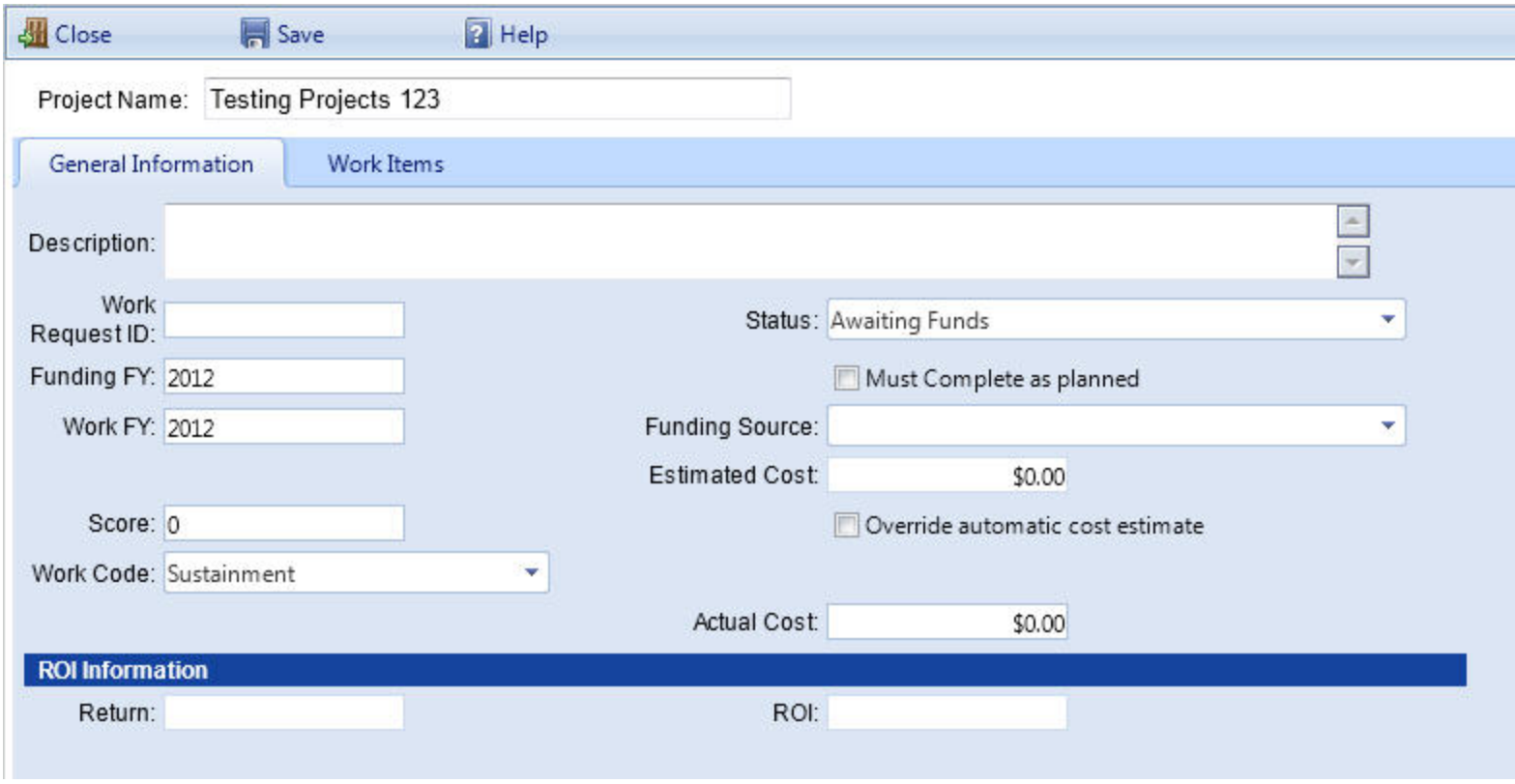
Edit a Work Project

To edit a work project,

- At the work plan screen, open the Projects tab (you do not have to be at the work project's location to do this; you can be anywhere above it in the navigation tree as well).
- In the first column of the work plan table, activate the Details link for the desired work project.



The project's Details popup window will appear, opened to the General Information tab.



- In the popup, edit the following data as needed at the General Information tab:
  - Project Name - Name of the project. Limit: 30 alphanumeric characters. The project name will be used for selecting, tracking and reporting.
  - Description - Description of the work project. Limit: 255 alphanumeric characters.
  - Work Request ID. If applicable, your agency's work request number for the project. Limit: 50 alphanumeric characters.

    Note:Work Request ID is not used by BUILDER in any analyses. The field is available for customer use.

  - Status - Current status of the project, selected from the dropdown. The status will change over time as the project moves from planning to completion. The values Status can take are:
    - Awaiting Contract Award
    - Awaiting Funds
    - Awaiting Funds (Special Project)
    - Budgeted
    - Canceled
    - Completed
    - Deferred

        - Funded
        - Funded (Service Call)
        - Funded (Special Project)
        - In Design
        - In Progress
        - On hold
    - Funding FY - The four-digit fiscal year that the project was or will be funded.
    - Must Complete as Planned - Mark this box if the project falls into the "must do" category. Marking it will force the project to be funded in a Scenarios projection before all other competing work items that are designated "Must Do."
    - Work FY - The four-digit fiscal year in which the work is expected to be performed.
    - Funding Source - The funding source to be used for this project, selected from the dropdown.
    - Completion FY - Enter the four-digit fiscal year that the project was or will be completed.
    - Date Completed - The date the project was completed. This field will appear only if Status is "Completed."
    - Estimated Cost - The estimated cost of the project, as a total of the costs of the work items contained in the project.
    - Score - If you have prioritized the work items, then this project's score will be displayed here. The score for a project is computed as the average of its work items' scores weighted by their estimated cost. The default value is 0.000, which indicates that the work items in the project have not been prioritized.
    - Override automatic cost estimate - Mark this box if you wish to override the cost estimate provided by BUILDER and enter your own estimated cost of the project instead.
    - Work Code - The work code for the project. The available work codes are:
        - Demolition
        - New Footprint
        - Modernization
        - Sustainment
    - Actual Cost. The actual cost of the project after completion. Before completion, this with equal the Estimated Cost.
- To change what work items are associated with the project, follow instructions in Organize Work Items into a Project.
- Activate Save on the popup toolbar. (Alternatively, if you do not wish to save the changes made to the project, activate Close on the toolbar without selecting Save first.)
- Activate Close on the popup toolbar.

Related Links

Task Links

View a Work Project
Work Project Data
Add a Work Project
Organize Work Items into a Project

Export a Work Project
Delete a Work Project

Instructional Link

Edit a Work Project
Work Planning Overview

Work Project Data

This topic explains the data fields for a work project. This will help with understanding both the "Project" popup when adding a work project, or the "Details" popup that appears when viewing or editing a work project at the Projects tab in the work plan table.

A Maintenance and Rehabilitation (M&R) work project allows you to group work items together to manage them as a single work effort that is prioritized and funded as a whole. The work items in a project may span different Systems in a single Building, as in a renovation effort. A project may also span multiple Buildings.

In general, a project is a collection of any work items grouped together in an "all or nothing" work unit with a single funding source and a single work year.

Below is a description of the data fields in a work project, to assist you when you view, add, or edit a work project.

General Information Tab

At the General Information tab, the following general data for the project is or can be recorded:

- Project Name. Name of the project. This field is located between the toolbar and the tabs. Limit: 30 alphanumeric characters. The project name will be used for selecting, tracking and reporting.
- Description. Description of the work item. Limit: 255 alphanumeric characters.
- Work Request ID. If applicable, your agency's work request number for the project. Limit: 50 alphanumeric characters.

  Note:Work Request ID is not used by BUILDER in any analyses. The field is available for customer use.

- Status. Current status of the project, selected from the dropdown. The status will change over time as the project moves from planning to completion. The values Status can take are:
  - Awaiting Contract Award
  - Awaiting Funds
  - Awaiting Funds (Special Project)
  - Budgeted
  - Canceled
  - Completed

    - Deferred
    - Funded
    - Funded (Service Call)
    - Funded (Special Project)
    - In Design
    - In Progress
    - On hold

- Funding FY - The four-digit fiscal year that the project was or will be funded.
- Must Complete as Planned (Checkbox) (aka "Must Do") - Mark this box if the project falls into the "must do" category. Marking it will force the work items in the project to be funded before all other competing work items that are not marked as "Must Complete as Planned" (also called "Must Do" in the work plan column heading).
- Work FY - The four-digit fiscal year in which the work item will be performed.
- Funding Source - The funding source to be used for the project, selected from the dropdown
- Date Completed - The date the work item was completed. This field will appear only if Status is "Completed."
- Estimated Cost - The estimated cost of the project. BUILDER provides a means of estimating the initial cost using the Calculate button next to this field once you have chosen the work items in the project under the Work Items tab.
- Score - If you have prioritized the work items, then this project's score will be displayed here. The score for a project is computed as the average of its work items' scores weighted by their estimated cost. The default value is 0.000, indicating that the work items in the project have not been prioritized.
- Override Automatic Cost Estimate - Mark this box if you wish to override the cost estimated using the Calculate button and enter your own estimated cost of the project instead.
- Work Code - The work code of the work item, selected from the dropdown. The available work codes are:
    - Sustainment
    - Modernization
    - Demolition
    - New Footprint
- Actual Cost - Enter the actual cost of the project after completion.
- ROI Information - Displays information pertaining to the work items in the project.

Work Items Tab

The Work Items tab is used to build the list of work items for a project. The top grid on this tab displays the list of work items in the project and the bottom grid lists the work items not currently assigned to a project that can be added to the project. Note that work items from all fiscal years are available for selection to the project. If a work item from a different fiscal year is selected, its fiscal year will be changed to the project's fiscal year before the project is saved.

To add a work item to the project, select the check box next to the work item. To remove a work item from the project, unmark the checkbox next to the work item. If you are returning to add more work items to the project, unmark the Only Show Selected Project Work Items checkbox to see all work items for the Site.

Help

ility	Description	Cost	Status

y Project:

o group by that column

ility	Description	Cost	Status
F	Replace Roof Section A	$111,160	Awaiting Fun
F	Replace Roof Section A	$52,202	Awaiting Fun
	Projected Replacement of Roof Section A	$14,146	Awaiting Fun
	Projected Replacement of Roof Section B	$2,417	Awaiting Fun
F	Replace Roof Section C	$30,439	Awaiting Fun
F	Replace Roof Section B	$216,245	Awaiting Fun
F	Replace Roof Section A	$216,245	Awaiting Fun
	Projected Replacement of Roof Section E	$1,949	Awaiting Fun
	Projected Replacement of Roof Section B	$278,025	Awaiting Fun
	Projected Replacement of Roof Section C	$82,855	Awaiting Fun
	Repair Roof Section A	$11,555	Awaiting Fun

After entering the data for the project on the General Information and Work Items tabs, activate Save on the toolbar to save the changes to the project.

Alternatively, if you do not wish to save the changes made to the project, activate Close on the toolbar.

Related Links

Task Links

View a Work Project
Add a Work Project
Organize Work Items into a Project
Edit a Work Project
Export a Work Project
Delete a Work Project

Instructional Link

Work Project Data
Work Planning Overview

Organize Work Items into a Project

The Work Items tab at a work project's "Details" popup is used to build and display the list of work items contained in a project. By use of the checkbox Only Show Selected Project Work Items, the list of all work items and the list of work items selected for the project are layered into the same space.

Prerequisite: Add Work Project

If the work project doesn't already exist that you want to organize work items into, see Add a Work Project.

Open Work Project

To open the work project that will contain the work items,

- Activate Work Plan at BUILDER's main menu.
- Activate the Projects tab. If you are at the head of the navigation tree, this should list all projects.
- Activate the Details link for the desired project. The "Details" popup will appear.

  Tip: If too many projects are listed, you can navigate in the tree to or closer to the work plan where the work project is located. The list of work projects will automatically adjust.

Designate Work Items

To designate work items to be included in the project,

- In the project's "Details" popup, open the Work Items tab.
- In the upper left corner, below the tabs, if the Only Show Selected Project Work Items checkbox is marked, unmark it to display all work items.
- In the first column, mark the checkbox for each work item you wish to include in the project.
- Optionally, if you see an error in a work item while you are selecting work items for the project, you can correct it immediately by following these substeps:
    a. Activate the work item's Details link.
    b. Correct any fields needed at the work item's "Details" popup.
    c. Activate Save on the work item's "Details" popup toolbar.
    d. Activate Close on the work item's "Details" popup toolbar (NOT the work project "Details" popup).
- When you have all of the desired work items selected, mark the Only Show Selected Project Work Items checkbox to restrict the view to just those work items that are in the project. The display will collapse to show just the highlighted, checkmarked work items.

Save

- IMPORTANT: Make sure to save your work item designations by activating Save on the popup toolbar.
- You can then activate Close to return to the work plan screen.

Related Links

Task Links

View a Work Project
Work Project Data
Add a Work Project
Edit a Work Project
Export a Work Project
Delete a Work Project

Instructional Links

Organize Work Items into a Project
Work Planning Overview

Export a Work Project

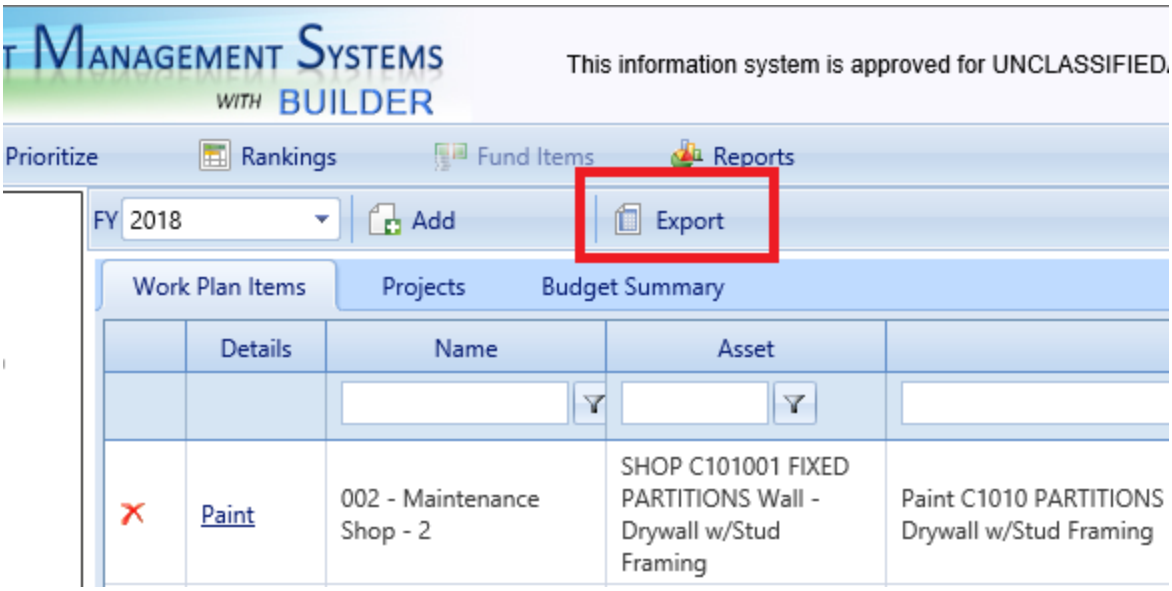
At the "Details" popup for a work project, you can choose to export just those work items pertaining to that project. Instructions are contained in this topic.

To export a work project, see "Export Work Project Work Items" in the export choices below. (All export methods have been clustered in this topic, to allow users to discover other methods that might be useful.)

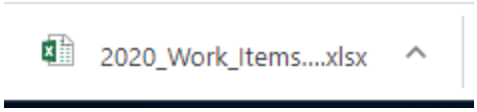
Export Work Items from the Work Plan

To export a work plan to an Excel spreadsheet from the Work Plan Items tab on the work plan screen,

- On the **BUILDER** main menu, activate Work Plan.
- At the work plan screen, select the desired location in the navigation tree at the left. This will determine the scope of the work plan, which will contain all work items for that location and below it in the tree.
- On the secondary toolbar, activate **Export**.



- When the Excel work plan shows as downloaded in the lower left corner of the window (see illustration immediately below), double-click on it to open. Alternatively, you can activate the up arrow to be able to select between opening the file and showing it in its Downloads folder location.



- If you want to save the opened spreadsheet, you need to activate the **File** tab in the spreadsheet, then specify the location, and re-name as desired (the spreadsheet will have been assigned a default file name).

Export Work Project Work Items

You can choose to export just those work items contained in a particular work project. To do so,

- At the work plan screen, open the **Projects** tab. *All projects pertaining to the current tree location on down will be listed in the content area.*

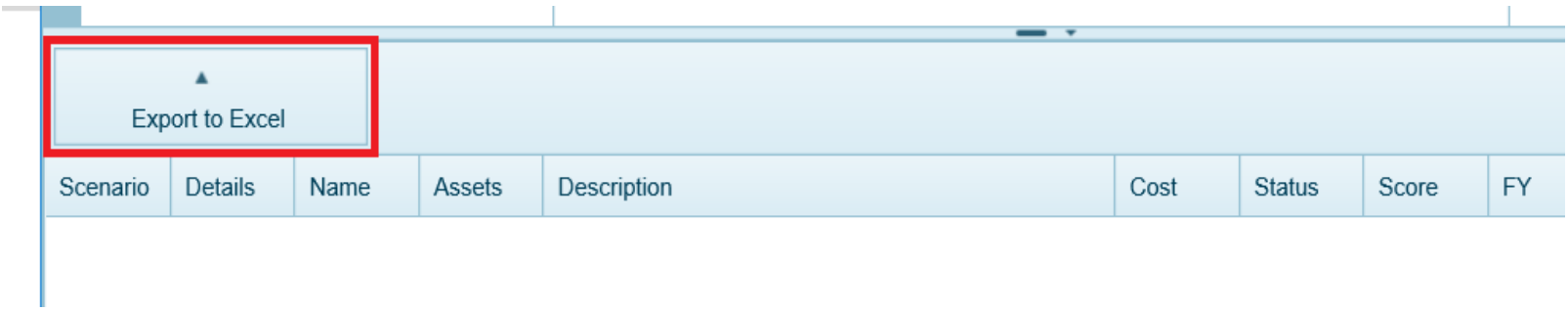
  Tip: If you are at the head of the navigation tree and too many projects are listed, you can choose to navigate farther down in the tree towards or to the work plan containing the project.

- Open the "Details" popup for the desired project by activating its **Details** link in the first column of the desired work project.

- In the popup, open the **Work Items** tab.
- If the **Only Show Selected Project Work Items** checkbox is not marked, mark it to restrict the view to just those work items that are in the project.
- Activate the **Export** button on the popup toolbar.
- When the Excel tab with the project name on it appears at the lower left of the screen, activate it to open the Excel file containing the project work items.
- Save the exported file if desired (you can also rename it).

Export Work Items from Scenario Analysis

At **Scenarios > Analysis** (aka Scenario Visualization), an **Export** button has been added above the grid of work items at the bottom of the Scenarios analysis screen. This button will export to Microsoft Excel any work items listed in the grid:



Note: The tiny arrow at the bottom of the Scenarios analysis screen is what opens or closes the drawer containing the grid of work items (if there are work items for the selected Component-Section).

Related Links

Task Links

View a Work Project
Work Project Data
Add a Work Project
Organize Work Items into a Project
Edit a Work Project
Delete a Work Project

Instructional Links

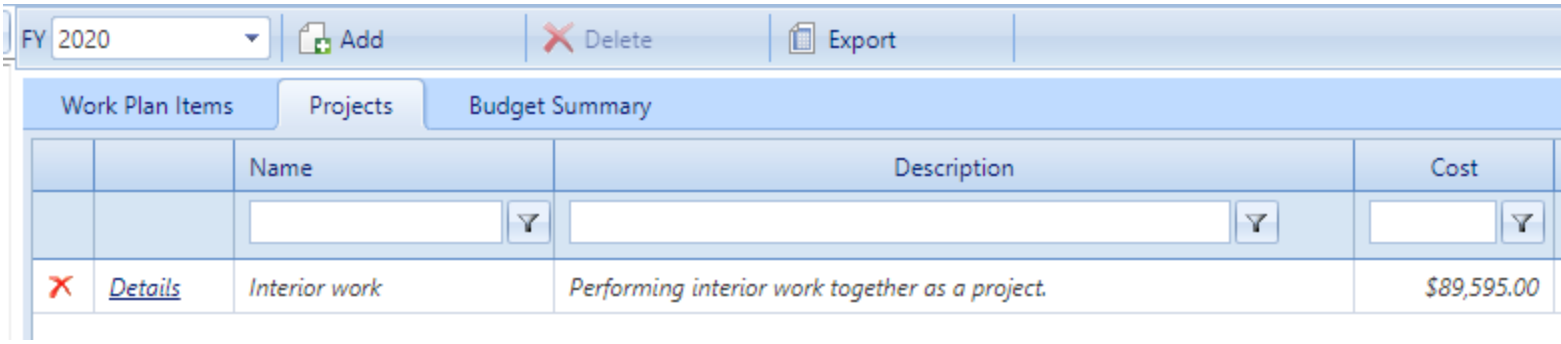
Export a Work Project
Work Planning Overview

Delete a Work Project

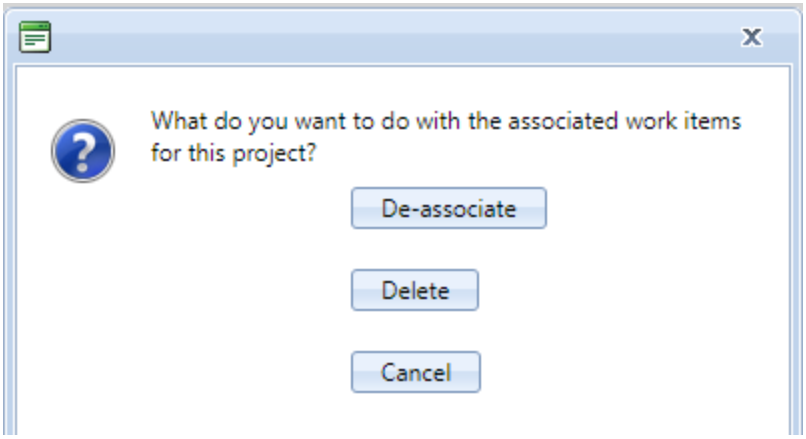
CAUTION: If a red X doesn't appear in the first column at the Projects tab, that might mean you don't have permission to delete the project, or it may just be an artifact of the method you used to navigate to the project listing.

To delete a work project,

- At the work plan screen, select the node in the tree where the work project is located. (Although you can select a project from a listing generated at the head of the tree, the delete indicator(s) might not display properly if you do so.)
- Open the Projects tab.
- Activate the red X in the first column of its row in the projects table.



- At this point, you will be presented with a choice to be made in a popup. Activate the button of your choice; the implications of each choice are described in the list below.



a. If you choose to de-associate the work items contained in the project, the project will be deleted, but the work items will remain in the work plan. If it is your only project at that location, "No records to display" should appear after a time at the Projects tab.

b. If you choose to delete the work items associated with the project, then both the project and the work items will be deleted. If it is your only project at that location, "No records to display" should appear after a time at the Projects tab.
c. The third option is to cancel the deletion; both the project and the work items will remain.

- If you return to the Work Plan Items tab on the work plans screen, you can check whether the work plan items have remained or been deleted as desired.

Related Links

Task Links

View a Work Project
Work Project Data
Add a Work Project
Organize Work Items into a Project
Edit a Work Project
Export a Work Project

Instructional Links

Delete a Work Project
Work Planning Overview

ROOFER

Introduction to ROOFER™

ROOFER uses standardized inspection procedures and numerical indexes for assessing condition. A roof's condition is determined based on distress data collected during visual inspections; for insulated membrane roofs, additional information is provided by nondestructive moisture surveys and gravimetric analysis of core cuts.

Roof inspections make use of pre-populated lists of roof distresses in a method developed by ERDC-CERLU.S. Army Engineer Research and Development Center, Construction Engineering Research Laboratory. Distresses identified during inspection provide inputs needed to develop the repair/replace ratio. The repair/replace ratio in ROOFER provides users with a powerful tool to decide which option (repair or replace) is most cost effective.

The inspection data also provides the information needed to generate condition indexes for the major roof components and an overall roof condition index (RCI). Component indexes for the membrane (MCI), flashing (**FCI**[1]) and insulation (ICI) comprise the RCI for low-slope membrane roofs. For asphalt shingle roofs, two component indexes, the shingle condition index and the **FCI**[2], comprise the RCI. These indexes provide an objective, consistent measure of roof condition, repairs needed, and waterproof integrity.

ROOFER enables building managers to rate their present roof condition, prioritize projects, and optimally allocate the budget. At the project level, ROOFER can help select repair and replacement strategies and identify work requirements. In the long term, this technology results in maximized roof conditions using available funds.

For the latest information, announcements, links to documents, and discussion forums, visit the SMS community user's group website at https://support.sms.erdc.dren.mil/.

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[1]Facility Condition Index.

[2]Facility Condition Index.

Developed by U.S. Army ERDC-CERLU.S. Army Engineer Research and Development Center, Construction Engineering Research Laboratory

8/23/2024

Getting Started

Getting Started with ROOFER

Setting up Your Account

A ROOFER AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. will set you up with a user account that has a particular level of user privileges.

Once you are logged into ROOFER, you can access the User Preferences (the link is at the upper right hand corner of the main screen) to do any of the following:

- change your user email address
- change your password
- register your smart card or CAC to be able to use it to log in (optional)
- change the default view you wish to see when you start the program
- set your preferred unit of measure (English vs. metric).

To do any of these things, refer to the User Preferences topic.

Finding Information About....

Inventory Structure

To become acquainted with the organizational hierarchy used in ROOFER, see Understanding ROOFER Inventory Hierarchy .

Screens

Before using ROOFER for the first time, you should get familiar with the menus, navigation scheme, and common icons. Refer to Navigating ROOFER and Recognizing Common Icons.

Online Help

Refer to How to Use Online Help to see instructions for using the online help documentation.

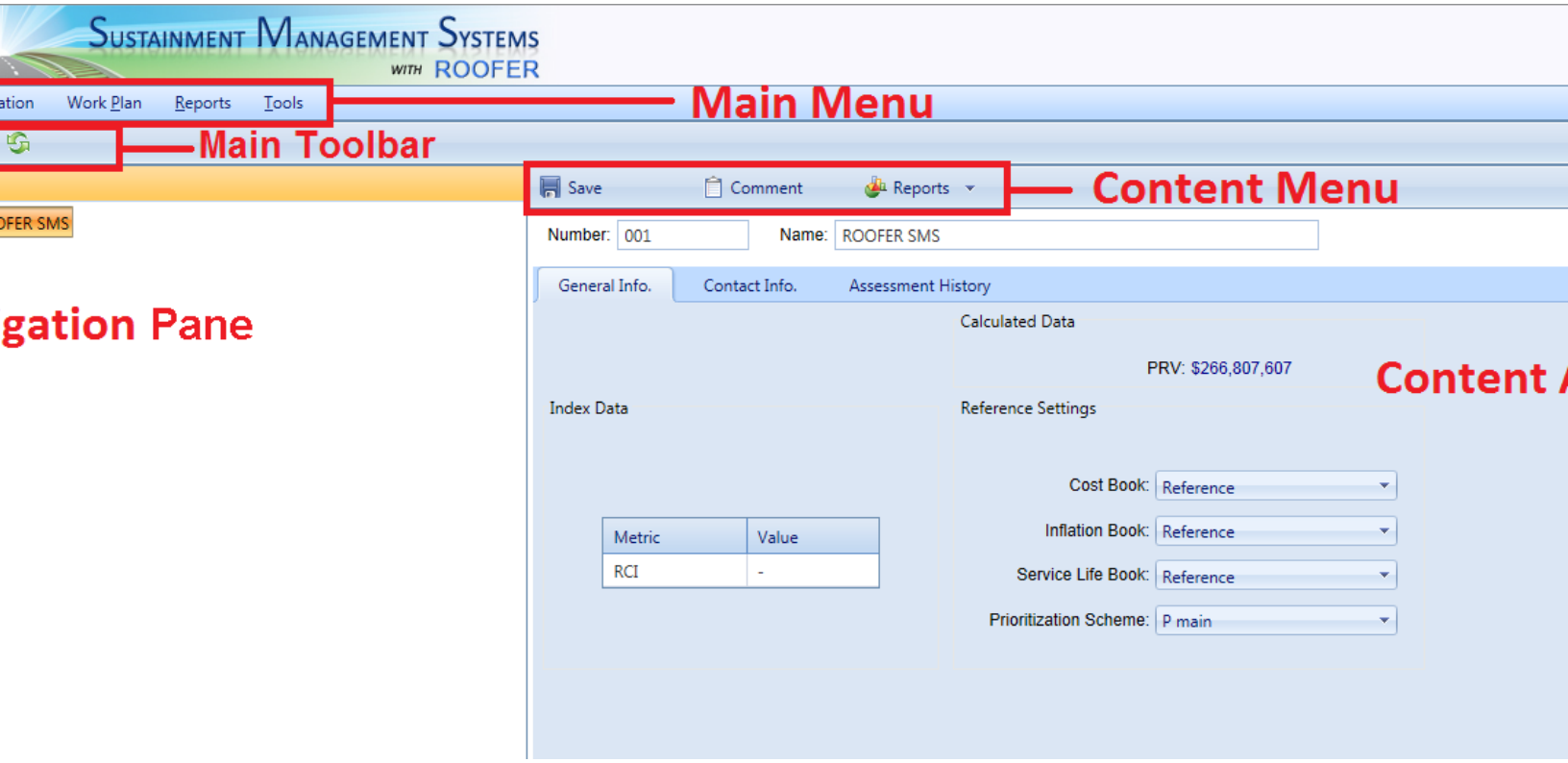
Administrator Information

If you will be responsible for assigning roles to other users, then you should also study Overview of ROOFER Permissions Roles.

Navigating ROOFER

This topic describes elements of ROOFER's entry page, explains main menu options and user links, and introduces the navigation tree.

After you log in to the ROOFER website, a screen similar to the one shown below will appear:



The user interface has the following main areas, each of which is described in greater detail below:

- User Links (upper right, not shown in illustration above)
- Main Menu
- Main Toolbar
- Navigation Pane
- Content Area
- Content Menu

User Links

The User Links area (upper right) offers these options:

- User Preferences. This option allows you to change the unit of measure; to clear all the locks on the database records; or to change the password to your database.
- Logout. Selecting this option causes you to log out of (sign off from) ROOFER. After logging out of ROOFER, you will no longer be able to view or edit data until you are logged back in.

- Help. This option gives you access to a sub-list of multiple user Help options:
  - Context-Sensitive Help. Select this to launch a context-sensitive help file pertaining to the current ROOFER screen.
  - Table of Contents. This is the Contents for the online help documentation. To reach it, first select Index in the dropdown list of Help options. This will bring you to a Welcome page. In the navigation pane at the left you can choose between (1) Contents, (2) the Index, and (3) a Glossary.
  - Index. Selecting this option from the dropdown list of Help options will bring you to a Welcome page. In the navigation pane at the left you can choose between (1) Contents, (2) the Index, and (3) a Glossary.
  - Glossary. To reach the Glossary, first select Index in the dropdown list of Help options. This will bring you to a Welcome page. In the navigation pane at the left you can choose between (1) Contents, (2) the Index, and (3) the Glossary.
  - Contact Help. This option will open an Outlook window for submitting a ticket to ROOFER support. Alternatively, it will enable some other form of access as determined by your specific ROOFER support representative.
  - About ROOFER. Select this to open a popup window showing version information pertaining to your ROOFER software. To close the popup window, select the OK button in the popup.

Main Menu

The main menu has the following options:

- Work Configuration. This option drops down a sub-menu with two options:
  - The Prioritization Schemes option allows you to configure prioritization schemes that are used to generate work items.
  - The Funding option allows you to manage settings for Expected Funds, Funding Restrictions, and Funding Precedence for multiple years into the future.

  In each of these areas, the Return button, located above the navigation pane, will return you to the Main Menu page.
- Work Plan. Selecting Work Plan opens a window used to:
  - Develop work plans by generating and prioritizing work items;
  - Fund work items (given sufficient permissions level); and
  - Develop projects based on the generated work items.

  The Return button, located above the navigation pane, will return you to the Main Menu page.
- Reports. This button on the main menu bar is one of two methods for accessing ROOFER reports available at the current hierarchical level. See ROOFER Reports for more detail about reports.
- Tools. This option opens a sub-menu with two options. Administration, accessible only by users with Administrator Role, provides administrative tools for application settings, general security and user settings. Library provides functions to edit cost, inflation and service life data. In each of these areas, the Return button, located above the navigation pane, will return you to the Main Menu page.

Toolbar

The options displayed on the toolbar will vary, depending on the currently active level (Organization, Site, Complex, etc.).

Navigation Pane / Navigation Tree

The left-hand viewing area is the navigation pane. It contains the ROOFER navigation tree.

The navigation tree allows you to select the different levels of the tree and to view data related to that level in the content area.

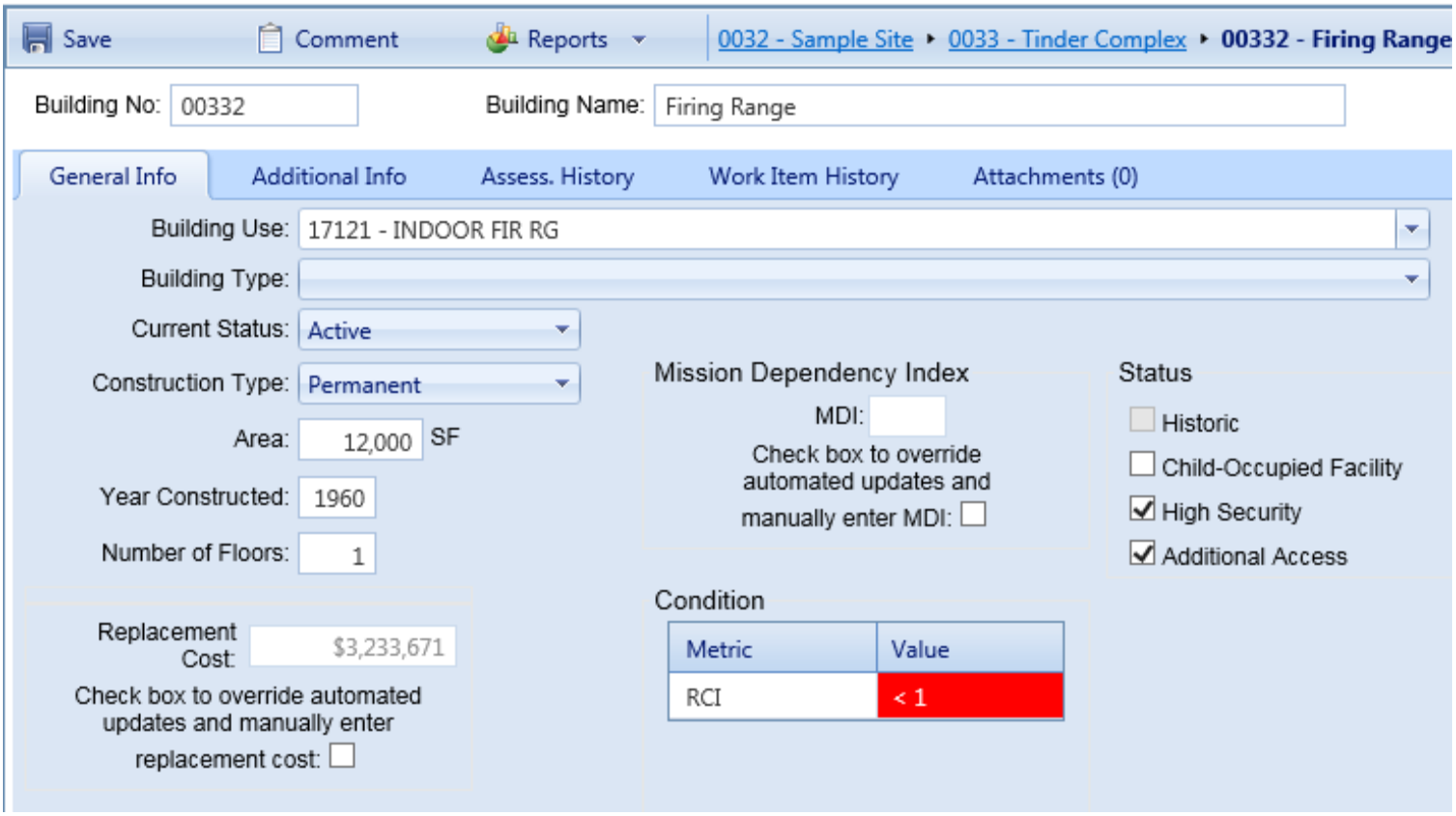
Shown below is an example of the inventory tree:

Here, the tree can be expanded by activating the "+" next to an inventory level or collapsed by activating the "-" next to an inventory level.

An item in the tree can be selected by clicking on it. Detail information corresponding to that item will appear in the content area. An icon menu appears in the toolbar above the navigation pane; the available selections correspond to the actions that can be taken at the selected level or on the selected item within the tree. (If an icon is grayed out, it means that you do not have the permission level authorized to perform the action.) See Recognizing Common Icons for the icon definitions.

Content Area

The content area displays specific information pertaining to the current item selected in the navigation tree. This area is used to input, edit and work on the items relevant data. The input forms are accessed by selecting folder tabs at the top of the content area. The tabs are specific to the item type selected in the tree or the action selected on the menus. Shown below is an example of what would appear in the content area when Building 00332 is selected from the navigation tree in the example above:



When you want to view information pertaining to a different item than the one shown in the content area, navigate in the tree to the new item and select it by clicking on it.

Content Menu

The Content Menu is specific to the item selected and information displayed in the Content Area. In the above example, the options of Save, Comment, and Reports are available for building 00332.

Recognizing Common Icons

Listed below are the common command, toolbar, and menu buttons you will encounter when using ROOFER. It's a good idea to become familiar with these icons before using the program.

Inventory Icons

- - ADD ORGANIZATION: Activate to add a new Organization to the inventory.
- - DELETE ORGANIZATION: Activate to delete a selected Organization from the navigation tree.
- - ORGANIZATION: Activate this icon on the navigation tree to access data about a particular Organization. The icon color (Gray, Green, Yellow, Red) reflects the condition of the Organization.
- - ADD SITE: Activate to add a new Site under an Organization in the inventory.
- - DELETE SITE: Activate to delete a selected Site from the navigation tree.
- - SITE: Activate this icon on the navigation tree to access data about a particular Site. The icon color (Gray, Green, Yellow, Red) reflects the condition of the Site.
- - ADD COMPLEX: Activate to add a Complex to a Site.
- - DELETE COMPLEX: Activate to delete a selected Complex from the navigation tree.
- - COMPLEX: Activate this icon on the navigation tree to access data about a particular Complex. The icon color (Gray, Green, Yellow, Red) reflects the condition of the complex.
- - ADD BUILDING: Activate to add a new Building to a Site.
- - DELETE BUILDING: Activate to delete a selected Building from a Site.
- - BUILDING: Activate this icon on the navigation tree to access data about a particular Building. The icon color (Gray, Green, Yellow, Red) reflects the condition of the Building.
- - ADD ROOF SECTION: Activate to add a roof section to a Building.
- - DELETE ROOF SECTION: Activate to delete a selected roof section from a Building.
- - ROOF SECTION: Type: Membrane. Activate this icon on the navigation tree to access data for a particular membrane type roof section.The icon color (Gray, Green, Yellow, Red) reflects the condition of the roof section.
- - ROOF SECTION: Type: Metal Panel. Activate this icon on the navigation tree to access data for a particular metal-panel type roof section. The icon color (Gray, Green, Yellow, Red) reflects the condition of the roof section.
- - ROOF SECTION: Type: Steep Roof (Non-Metal). Activate this icon on the navigation tree to access data for a particular steep-roof type roof section. The icon color (Gray, Green, Yellow, Red) reflects the condition of the roof section.
- - ROLLUP: Activate to manually roll up performance metrics for a selected Building, Complex, Site, or Organization.
- - REFRESH: Activate to refresh the inventory tree to reflect the latest data edits. Note that refreshing the tree collapses all expanded nodes.

Task and Form Icons

General

- - SAVE: Activate to permanently save and store changes to the data in the content area or popup window.
- - COMMENT: Activate to add a comment about a particular inventory item.
- - NEW: Activate to create a new record. The type of record to be created is determined by where the NEW button is located.
- - EDIT: Activate to edit a selected record. This icon is available in multiple contexts within BUILDER.
- - DELETE: Activate to delete a selected record. The record to be deleted is determined by where the DELETE button is located.
- - CANCEL: Activate to cancel the defined operation.
- - PROCEED: Activate to proceed with the defined operation.
- - CLOSE: Activate to close a particular popup window or form.
- - HELP: Activate to access context specific help within a particular window or form.
- - CALENDAR: Activate to select a date from a calendar to populate a date type field.

Reports

- - REPORTS: Activate to access reports available for the item in the content area.

Work Configuration

- - EVALUATE: Activate to assign weighting points to the various values of a measure. (A measure is a type of objective.)
- - OBJECTIVE: Objective or sub-objective in a prioritization schema. Activate to access the Objective data.
- - MEASUREMENT: Measurement belonging to an objective or sub-objective in a prioritization schema. Activate to evaluate a measurement.

Work Plan

- - GENERATE ITEMS: Activate to generate analysis results. This may be for inspection schedules, work items, or scenarios.
- - PRIORITIZE: Activate to prioritize work items according to the active prioritization scheme. The prioritization scheme created in the Work Configuration > Work Prioritization area will prioritize and rank your work plan in a quick, objective, repeatable, and representative method with the touch of this button.

- - RANKINGS: Activate to view the rankings of the work items in your work plan.
- - FUND ITEMS: Activate to apply funding to work items according to their priority.
- - EXPORT: Activate to export work items to an Excel spreadsheet.

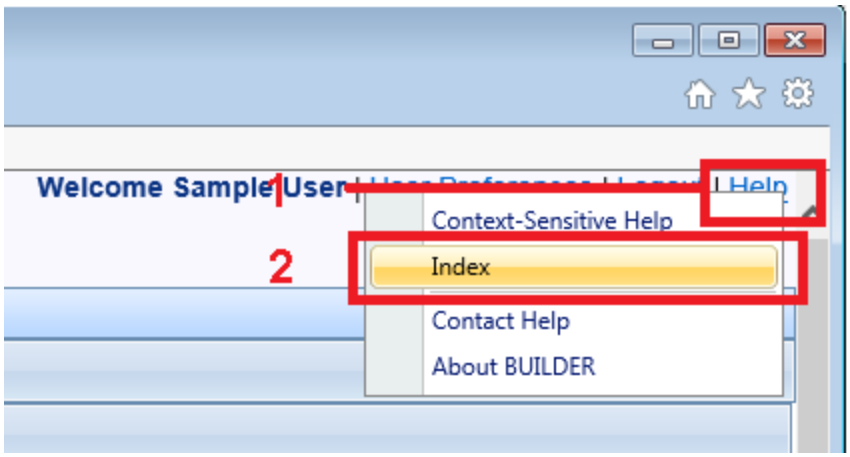
How to Use Online Help

Online Help Table of Contents

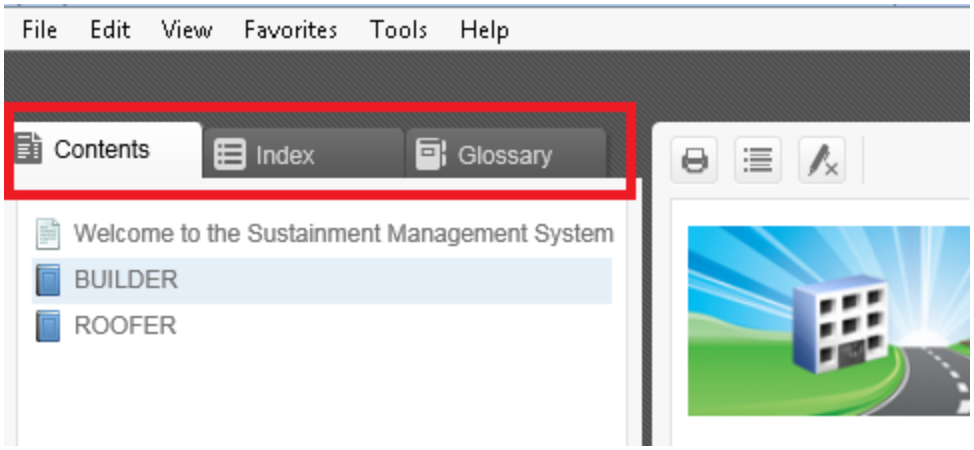
Open Table of Contents

To open the table of contents for the online help documentation,

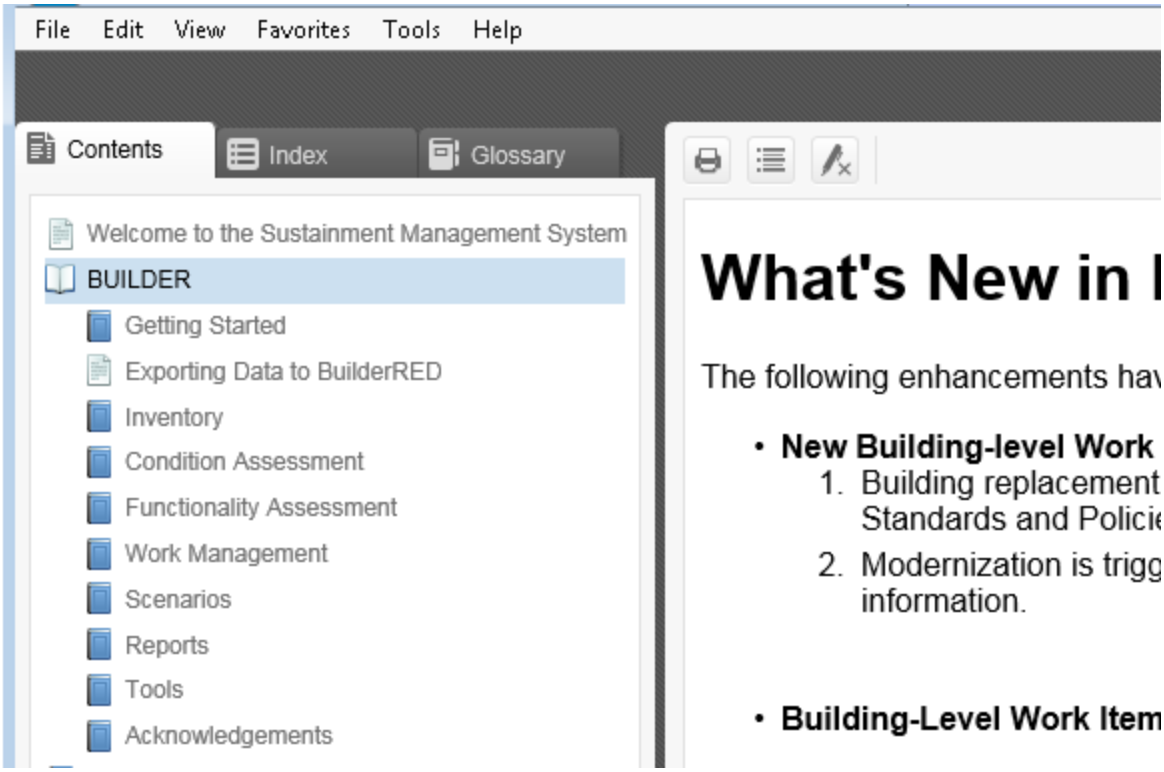
- Activate Help in the User Links area at the upper right of the main screen.
- Select "Index" from the dropdown list.



This will open a Welcome page that has, at the left in the navigation pane, tabs for (1) the online help Contents, (2) the Index, and (3) the Glossary. The Contents tab is open by default.



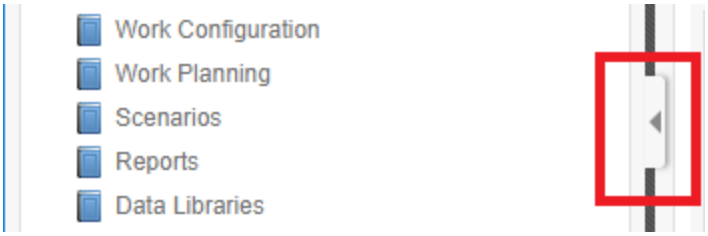
- To expand the table of contents, activate any closed blue book icon to expand that area of the Contents. By contrast, activating a page icon will open that topic.



Hide or Unhide Table of Contents

Hide

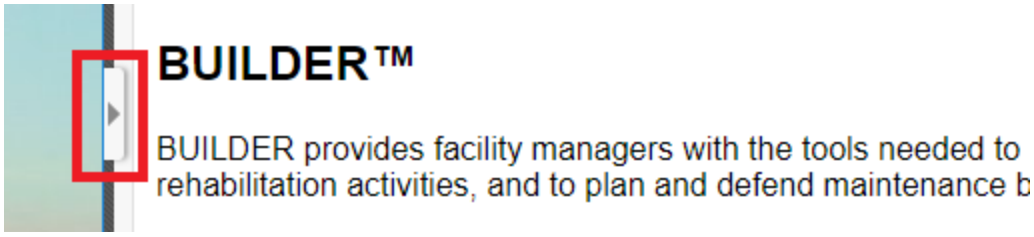
To hide the navigation pane containing the table of contents (or index or glossary), activate the arrow button halfway down the window, between the navigation pane and content area:



The content area will expand into the navigation pane space, and a right-pointing arrow button will appear halfway down the left edge of the window.

Unhide

To re-open the table of contents, activate the right-pointing arrow button.



Context-Sensitive Help

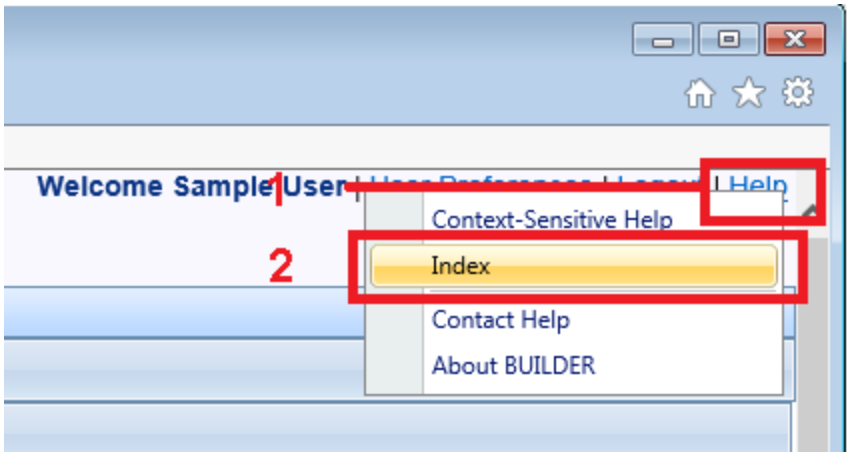
Selecting Context-Sensitive Help from the Help dropdown list options should take you directly to a documentation topic that is helpful for a likely task that users might want to perform at the current location. Additionally, the Help Table of Contents will be displayed at the left.

Index

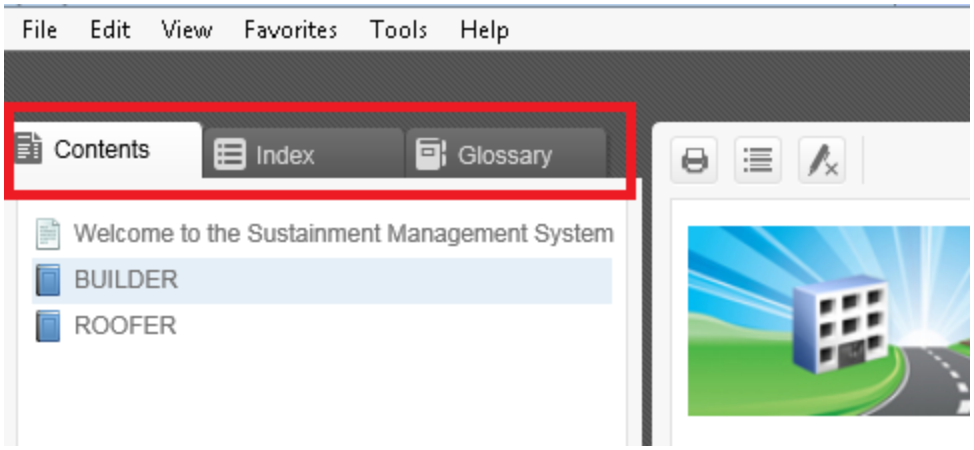
Open Online Help Index

To open the Index,

- Activate Help in the User Links area at the upper right of the main screen.
- Select "Index" from the dropdown list.



This will open a Welcome page that has, at the left in the navigation pane, tabs for (1) the online help Contents, (2) the Index, and (3) the Glossary. The Contents tab is open by default.

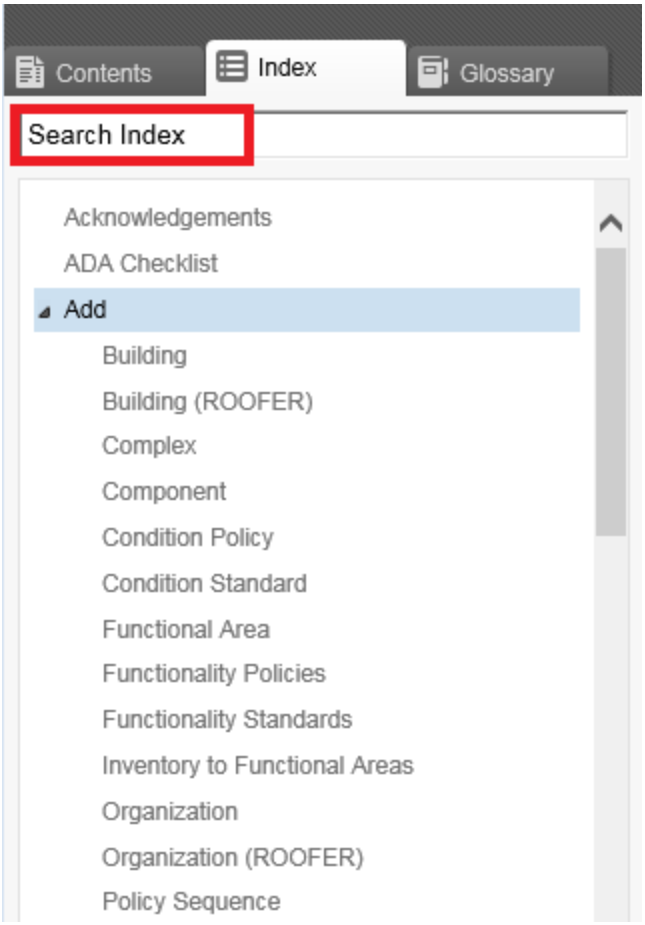


Search the Online Help Index

You can look for an item in the online help index in either of two ways:

a. Activate the Search box (where the text "Search Index" is initially entered) and type in the item you are looking for.
b. Alternatively, browse the alphabetical list of index entries.

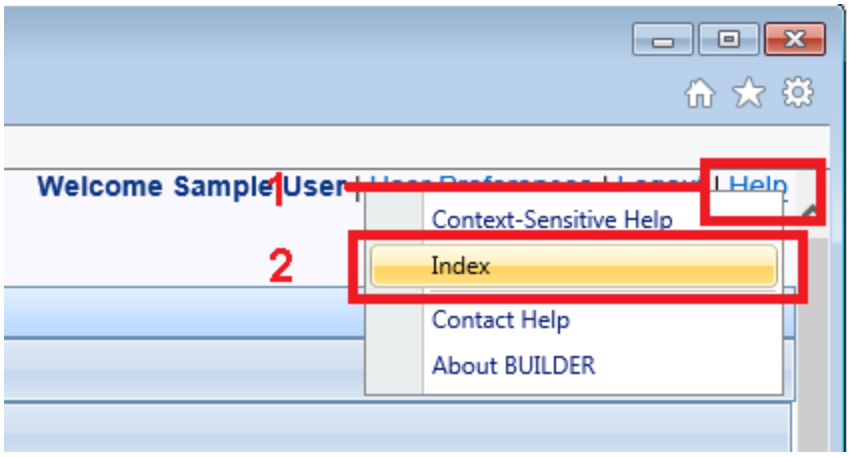
Selecting a term in the index entries that has a right-pointing arrow to the left of it will show sub-entries for that term. (The white arrow will turn black and tilt when the sub-entries are shown.)



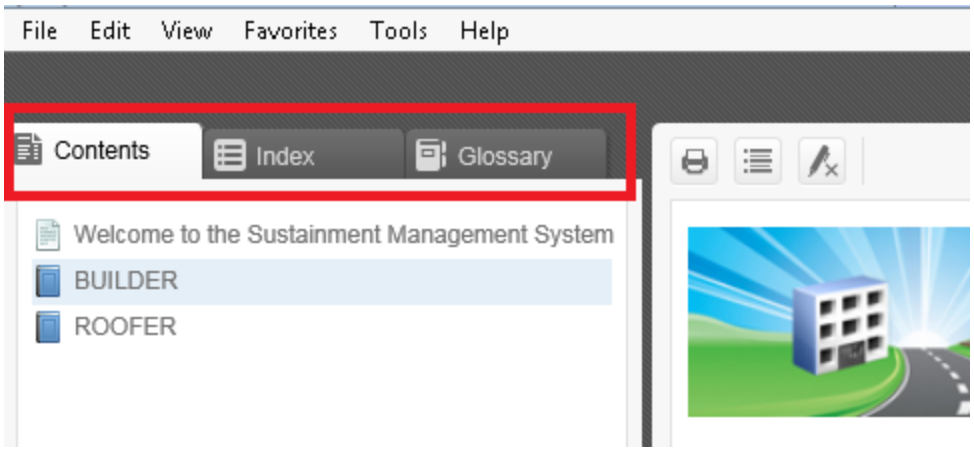
Glossary

To open the Glossary,

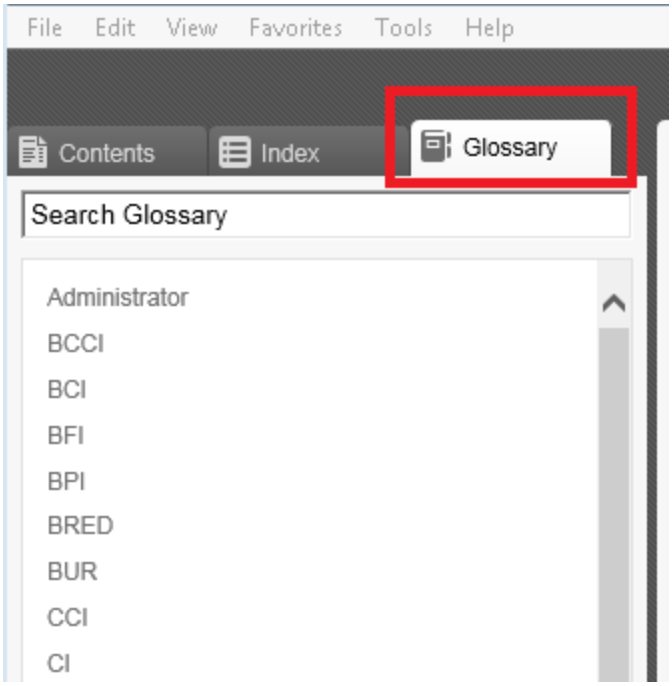
- Activate Help in the User Links area at the upper right of the main screen.
- Select "Index" from the dropdown list.



This will open a Welcome page that has, at the left in the navigation pane, tabs for (1) the online help Contents, (2) the Index, and (3) the Glossary. The Contents tab is open by default.



- To use the Glossary, select the Glossary tab, then enter or select the acronym or term you wish to see defined.



Contact the Help Desk

To send a help request to your SMSSustainment Management System support representative,

- Activate Help in the User Links area at the upper right of the main screen.
- Select "Contact Help" from the dropdown list.

Generally a help request is sent through Microsoft Outlook, but the procedure may vary depending on the support procedures your SMSSustainment Management System provider follows. If you don't have Microsoft Outlook active on your device or computer, a wizard will help you activate it.

See Version Information

To see the version number for your product, and for other "About" information, select the About BUILDER option in the list of Help options. A popup window with the information will appear.

Note: The popup window also provides a link to the SMSSustainment Management System Support website.

To close the popup, activate the OK button.

About BUILDER Permissions Roles

WARNING: The privileges assigned to each user Role tend to change somewhat over time. Therefore, although the capabilities listed below under each Role will be mostly correct, they might not be 100% accurate at this time.

Each user is assigned to one or more Roles. Roles are allowed varying degrees of program access rights in the software system. The possible Roles include:

Administrator

A **BUILDER** Administrator A user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings.can perform the following functions relating to system administration and user management:

- administer users
- assign users to Roles
- change application settings
- design the specifications to be met by user passwords
- clear record locks

To reduce the chance of data loss, the following functions can only be performed by an Administrator: A user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings.

- delete an Organization
- delete a Site
- delete a Complex

In order to perform these deletions, the AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. must also have sufficient non-AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. privileges in order to access the Organization, Site, or Complex to be deleted.

Note: If the Organization, Site, or Complex is empty of contents, it may also be deleted by a Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. with specific permission for the relevant location in inventory.

Inventorior

An InventoriorA user with Inventorior Role can add and edit records below the Building level. can perform the following functions:

- add a Building
- add and delete inventory items at all levels below Building
- input and edit inventory information at the Inventory screens (all levels)
- generate reports

Note: An InventoriorA user with Inventorior Role can add and edit records below the Building level. has no access to either the condition tree or functionality tree.

Note: An inventorior can not check out or import a BREDBUILDER Remote Entry Database (BuilderRED) file; this needs to be done by an Inspection SupervisorA user with Inspection Supervisor Role has all the rights of an Inspector, and can also create inspection schedules or above.

Inspector

In addition to all the rights of an Inventorior,A user with Inventorior Role can add and edit records below the Building level. an InspectorPerson who performs inspections to be input into BUILDER or ROOFER. As a permissions Role, Inspectors can input and edit inventory information in Inventory mode, and can input and edit inspection information from the Condition Assessment screen. can perform the following functions:

- add an inspection
- input and edit inspection information at the Condition Assessment screen
- add a functional area and add inventory to it
- edit a functional area
- delete a functional area
- add, edit, or delete a functional assessment

Note: An inspector can not check out or import a BREDBUILDER Remote Entry Database (BuilderRED) file; this needs to be done by an Inspection SupervisorA user with Inspection Supervisor Role has all the rights of an Inspector, and can also create inspection schedules or above.

Inspection Supervisor

In addition to all the rights of an InspectorPerson who performs inspections to be input into BUILDER or ROOFER. As a permissions Role, Inspectors can input and edit inventory information in Inventory mode, and can input and edit inspection information from the Condition Assessment screen., an Inspection SupervisorA

user with Inspection Supervisor Role has all the rights of an Inspector, and can also create inspection schedules can perform the following functions:

- import and export data to and from BuilderRED
- add inspection schedules
- perform Rapid Inspection

Note: An Inspection SupervisorA user with Inspection Supervisor Role has all the rights of an Inspector, and can also create inspection schedules does not have permission to delete Buildings/facilities.

Work Planner

A Work Planner can perform a large number of functions directly related to work planning, plus some additional privileges. In addition to all the rights of an Inspection SupervisorA user with Inspection Supervisor Role has all the rights of an Inspector, and can also create inspection schedules, a Work Planner can perform the following functions:

- delete a Building
- enter or change **RSL**[1]Remaining Service Life (remaining service life)
- delete an inspection (condition assessment)

Work planning functions that can be done by Work Planner or above are as follows:

- add and edit work plans
- add and edit a scenario
- copy a scenario to a work plan
- add and edit standards
- add and edit policies
- add and edit policy sequences
- add and edit prioritization schemes
- add and edit cost books
- add and edit funding

Master Planner

In addition to all the rights of a Work Planner, a Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. can perform the following functions:

- generate multi-year work plan scenarios
- edit any and all data saved by other users of the program
- add an Organization
- add a Site

---

[1]Remaining service life.

- add a Complex
- delete standards
- delete policies
- delete policy sequences
- delete prioritization schemes
- delete cost books
- delete service life books

Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. is the highest level of non-AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. user privileges.

Inventory

Inventory Overview

This topic provides a brief overview of typical procedures in the initial and ongoing process of ROOFER™ inventory.

There are two primary stages in using ROOFER™:

- Inventory stage
- Maintenance stage.

Entering roofing inventory and other associated elements into ROOFER is the sole focus of the first stage. During the second stage, inventory tasks will still be performed, for example when:

- Information entered during initial inventory needs to be revised.
- Roof sections are repaired or replaced.
- Additional inventory is added.

The Goal of Inventory

During the Inventory Stage

The goal of the inventory stage is to catalog a roofing portfolio in such a way as to produce, in ROOFER, a completed, hierarchical inventory tree where information about each roof section is placed into a manageable, organized structure that is recognizable by the ROOFER program. Once this has been done, then ROOFER can use the information to create valuable outputs for decision making.

During the Maintenance Stage

During the maintenance stage of using ROOFER, the goal of inventory is to keep the inventory current by recording additions to the inventory; roof section repair dates, and roof section replacements, and to upgrade the completeness of inventory properties entered into ROOFER as needed.

About User Roles

After the higher levels of the inventory tree have been established, inventory entry and editing can be done either by someone with a user permissions role limited to those functions useful to the inventory process, or by someone with higher permissions. The Role that is limited to basic inventory procedures is called "InventoriorA user with Inventorior Role can add and edit records below the Building level.." Generally, someone with this permissions role will report either to an Inspection SupervisorA user with Inspection Supervisor Role has all the rights of an Inspector, and can also create inspection schedules, or to the Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan

scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. in charge of planning and implementing initial ROOFER inventory.

User permissions Roles are explained in more detail in Overview of ROOFER Permissions Roles

User Activities

Activities that an InventoriorA user with Inventorior Role can add and edit records below the Building level. will perform are adding records at the Building and roof section levels; adding one or more Complexes, if desired, and moving Building records under the Complex; and editing and updating information in Building and roof section records. It is possible that transfer of real property record information from an existing asset management database will be involved.

Organizations

About Organizations

An Organization is the highest level possible in the hierarchical asset tree. This topic briefly introduces the features of an Organization, and how to use it in organizing roofing inventory. It also provides links to the operations that can be performed at the Organization level.

Organization is the highest level in the asset tree. Tasks performed at the Organization level are generally prioritization, planning, and budgeting, rather than day-to-day management.

The Organization level in the ROOFER hierarchy is an optional level above the Site level, enabling progressive aggregation of information up the inventory tree. Progressive aggregation in possible because unlike other levels in the roofer hierarchy, Organizations can be nested multiple levels deep if desired. This allows the hierarchical structure of the inventory tree to be made as deep as it needs to be to reflect the structure of your company or organization.

The usefulness of an Organization is that if multiple Sites are to be managed, or if it is desired to aggregate ROOFER information across a region or network comprising more than one Site, then Sites can be grouped into one or more Organizations. However, Even though Organization is the highest level available, it is not a required level in the hierarchy. An individual inventory tree may start with either one (and only one) Organization, or one (and only one) Site at the topmost level of that tree.

Note: Organizations must be established before Sites. This task is best assigned to an AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings., once the initial planning stage has been performed (typically by someone with the Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also gen-

erate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. permissions level).

Organization Operations

Operations that can be performed on Organizations are:

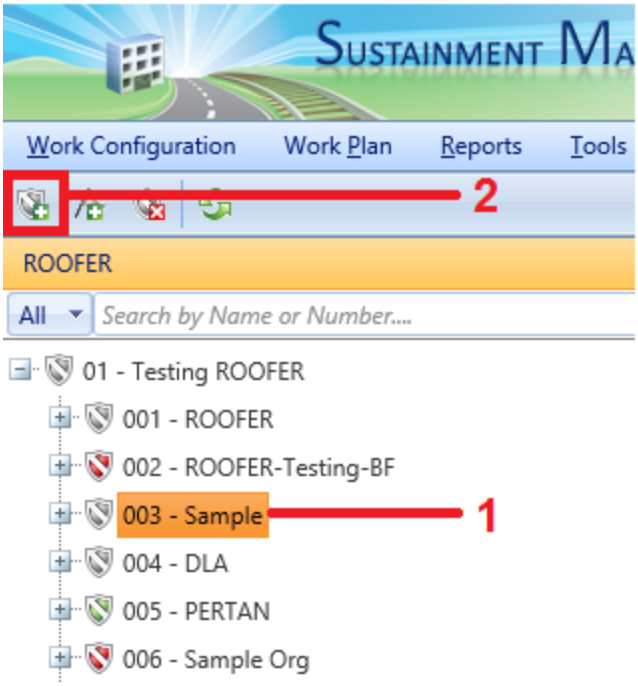
- Add an Organization
- Edit Organization Inventory Data
- Delete an Organization

Add an Organization

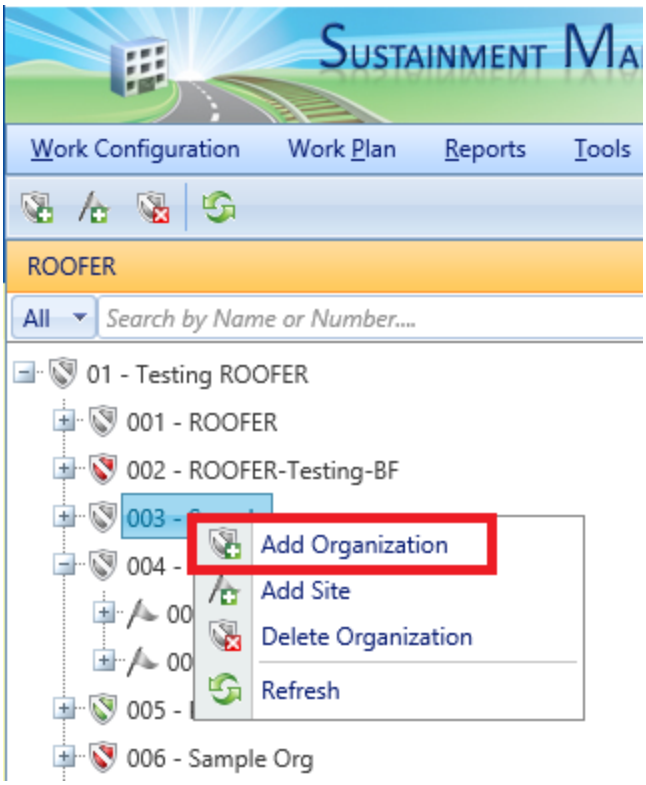
Permissions Note: This action requires Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. or AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. permission for the relevant asset.

To add a new Organization, navigate to the Organization you wish to add the new Organization under, and do one of the following:

a. Select the existing (parent) Organization. Then activate the Add Organization icon on the toolbar above the navigation tree.



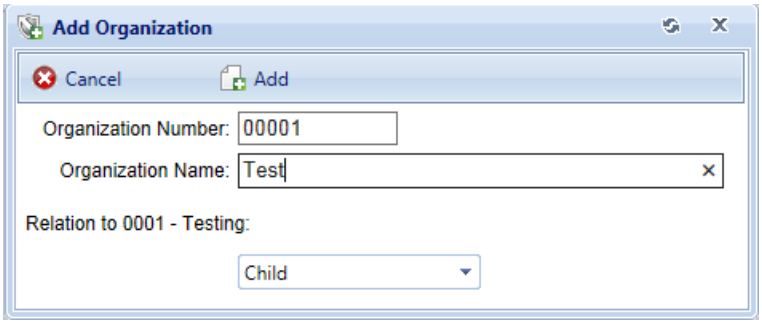
b. Alternatively, right-click the existing (parent) Organization. Then select "Add Organization" from the options.



Enter Required Organization Data

This documentation segment describes the minimum data to be entered when creating a new Organization. Other data that can be entered is described in Edit Organization Inventory Data.

When you add a new Organization, the following popup window will appear:



- Organization ID Number. Enter the identifying number for the Organization. Organization Number may be left blank if you wish to supply only a name. You must enter at least Organization name or an Organization number, and the combination of the two must be unique among the Organizations in the navigation tree.

Specifications: The ID Number is limited to 12 alphanumeric characters.

- Organization Name. Enter the identifying name for this Organization, limited to 50 alphanumeric characters. Organization Name may be left blank if you wish to supply only a number. You must enter at least a Organization name or an Organization number, and the combination of the two must be unique among the Organizations in the navigation tree.

  Specifications: The name is limited to 50 alphanumeric characters.

  Best Practice Recommendation: Avoid using single quotes, double quotes, and ampersands. These characters can interfere with query formation.

- Relation. Specify the relation of the Organization being created to the selected existing Organization or Site on the inventory tree. There are three options for the relation:
  a. Child - The Organization will be placed under the selected Organization. A child Organization can only be created when an Organization is selected in the inventory tree; an Organization cannot be the child of a Site.
  b. Parent - The Organization will be placed above the selected Organization or Site.

     WARNING: Do NOT use the parent relation option without engaging in close advance coordination with a BUILDER support representative.

  c. Sibling - The Organization will be placed at the same level as the selected Organization.

     Note: The top ("root") level Organization is not allowed to have a sibling Organization.

Confirm or Cancel

Once the required minimum Organization data is entered,

a. Activate the Add button to create the Organization.
b. Alternatively, to close the window without creating the Organization, activate the Cancel button.

Login Again To View

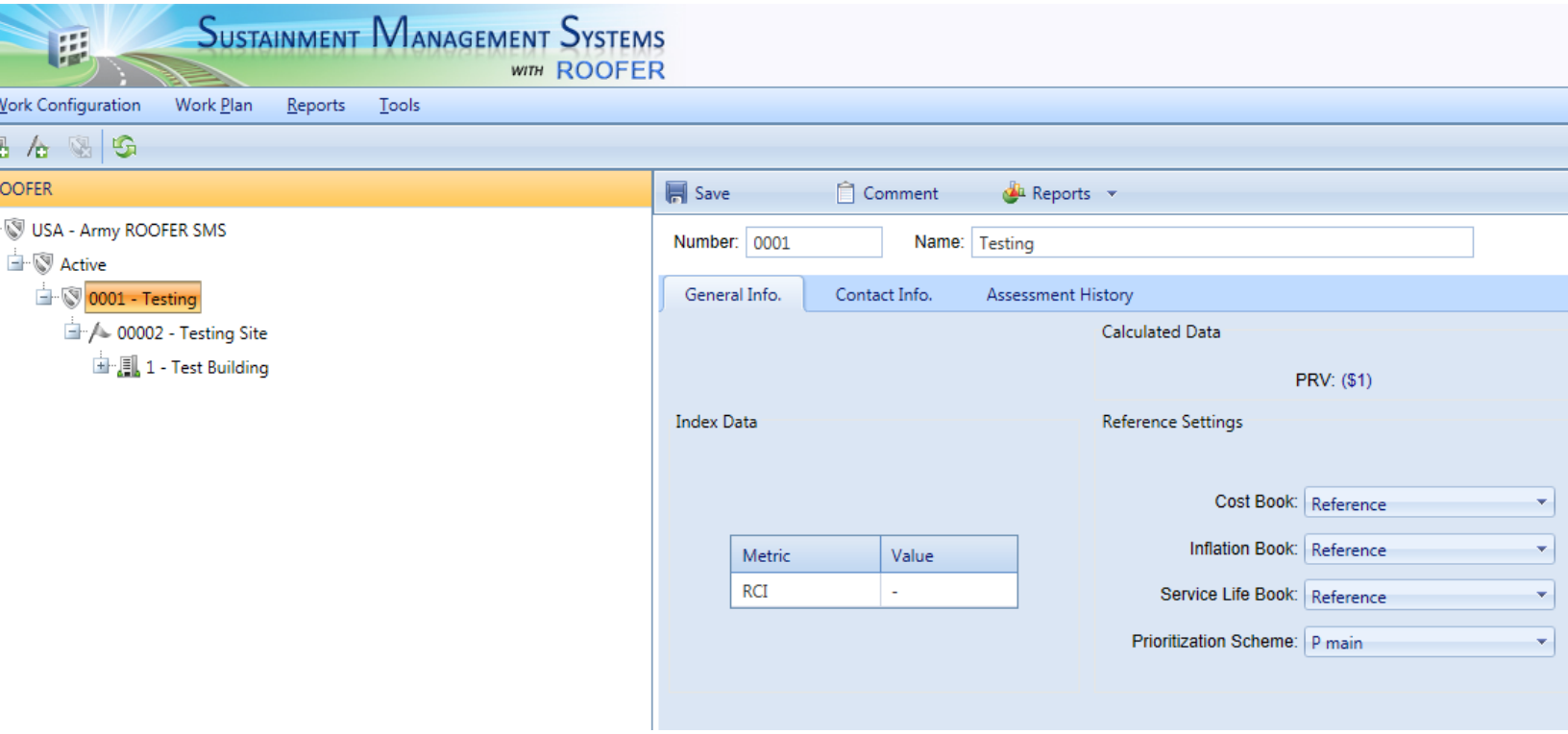
To see the new Organization in the inventory tree, log out of the program and then log back in again. This action is needed only for newly created Organization; other levels of inventory will appear immediately in the tree.

Continue Data Entry

To enter additional details about the Organization, follow the instructions in Edit Organization Inventory Data.

Edit Organization Inventory Data

To edit data for a specific Organization, select the Organization in the inventory tree. This documentation section describes what you will encounter in the content area of the screen.



Toolbar

The following options are available at the content screen toolbar:

- Save. Use this button to save changes made to the Organization data.
- Comment. This button allows you to add, edit, and view comments about the Organization.
- Reports. Use this button to launch the Report Selection tool, which gives you access to a list of standard reports relevant to Organization inventory. See Using the Report Viewer.

ID Line

On the ID line, you can edit the following:

- Organization ID Number. The ID Number is limited to 12 alphanumeric characters.
- Organization Name. Organization Name is allowed 50 characters. For additional specifications, refer to Enter Required Organization Data.

General Information Tab

Initially after an Organization is selected in the inventory tree, the General Info. tab is shown and the following information can be viewed and/or edited:

- Index Data (Read-Only).
  - Roof Condition Index (RCI). The Organization RCI displays the average RCI of the Buildings in the Organization, based on the RCI data for all Buildings and all roof sections in the

database. This metric provides an overall sense of the condition of the Organization as a whole.

- Calculated Data (Read-Only).
  - Plant Replacement Value (**PRV**[1]). The aggregate **PRV**[2] of the Buildings in the Organization.
- Reference Settings.
  - Cost Book. Select the cost book from the dropdown list you wish to use for the entire inventory of the Organization. The cost book selected will provide inventory replacement and defect repair costs for inventory.
  - Inflation Book. Select the inflation book from the dropdown list you wish to use for the entire inventory of the Organization. The inflation book selected provides inflation multipliers per year for the projected replacement costs and defect repair costs for the inventory.
  - Service Life Book. Select the service life book from the dropdown list you wish to use for the entire inventory of the Organization. The service life book selected will estimate the remaining service life of Component-Sections in the inventory on the basis of its life expectancy and condition. Also, the service life is used in estimating a rate of deterioration in the condition index of a Component-Section when no more than one inspection has been recorded.
  - Prioritization Scheme. Select the prioritization scheme from the dropdown list you wish to use for the entire inventory of the Organization. The prioritization scheme selected will prioritize and rank your work plan in a quick, objective, repeatable, and representative method with the touch of a button.

CAUTION: Reference data can be set at the Organization level and at the Site level. If this data is set at both levels, the reference settings at the Site level will override the reference settings at the Organization level. Similarly, reference settings associated with a lower-level Organization will override the reference settings of Organizations above it.

Contact Information Tab

If there is a contact person at the Organization level, the contact information for the Organization can be viewed and edited by selecting the Contact Info. tab.

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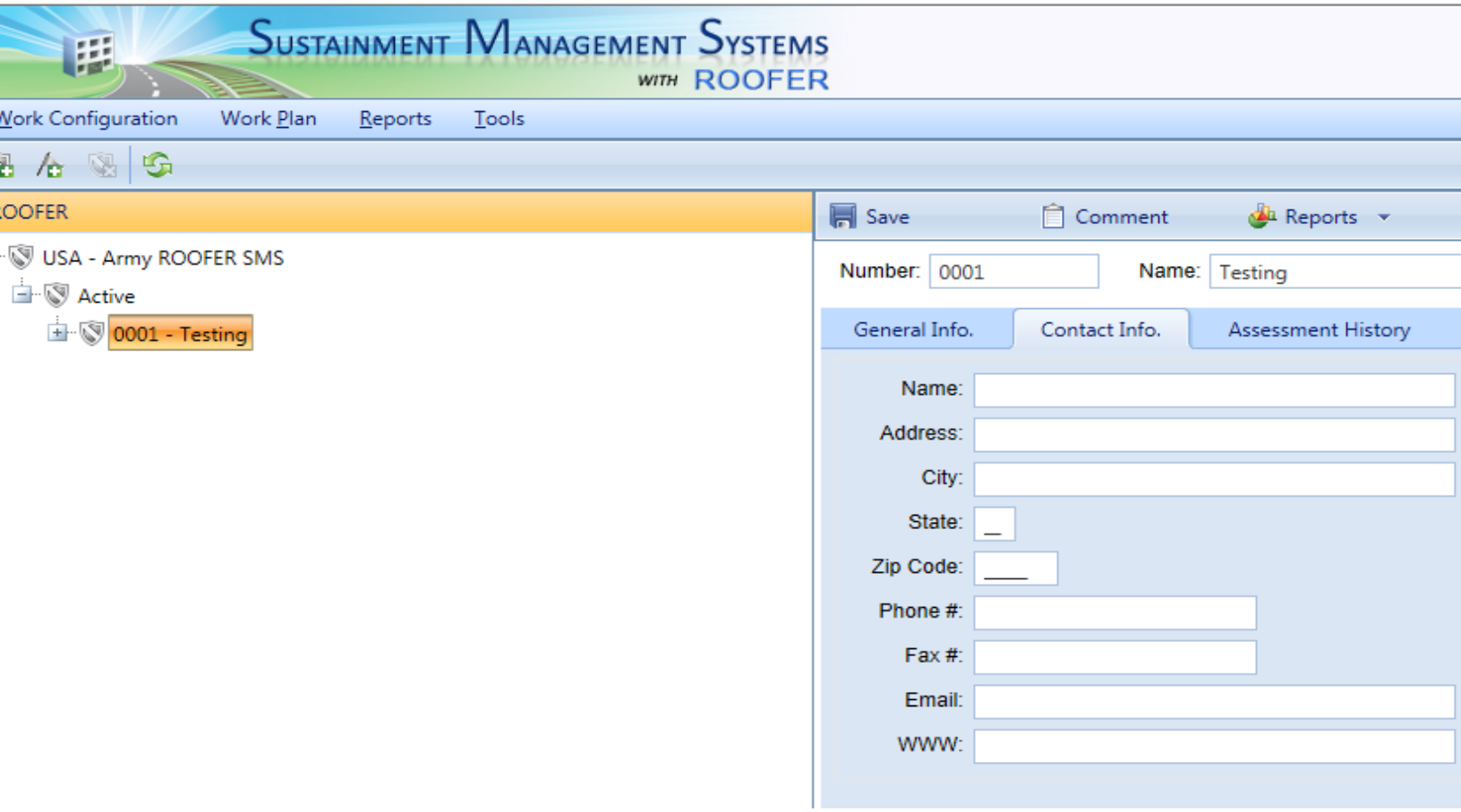
[1]Plant Replacement Value. This number will be the aggregate of the PRV of all inventory items contained within the current inventory item.

[2]Plant Replacement Value. This number will be the aggregate of the PRV of all inventory items contained within the current inventory item.

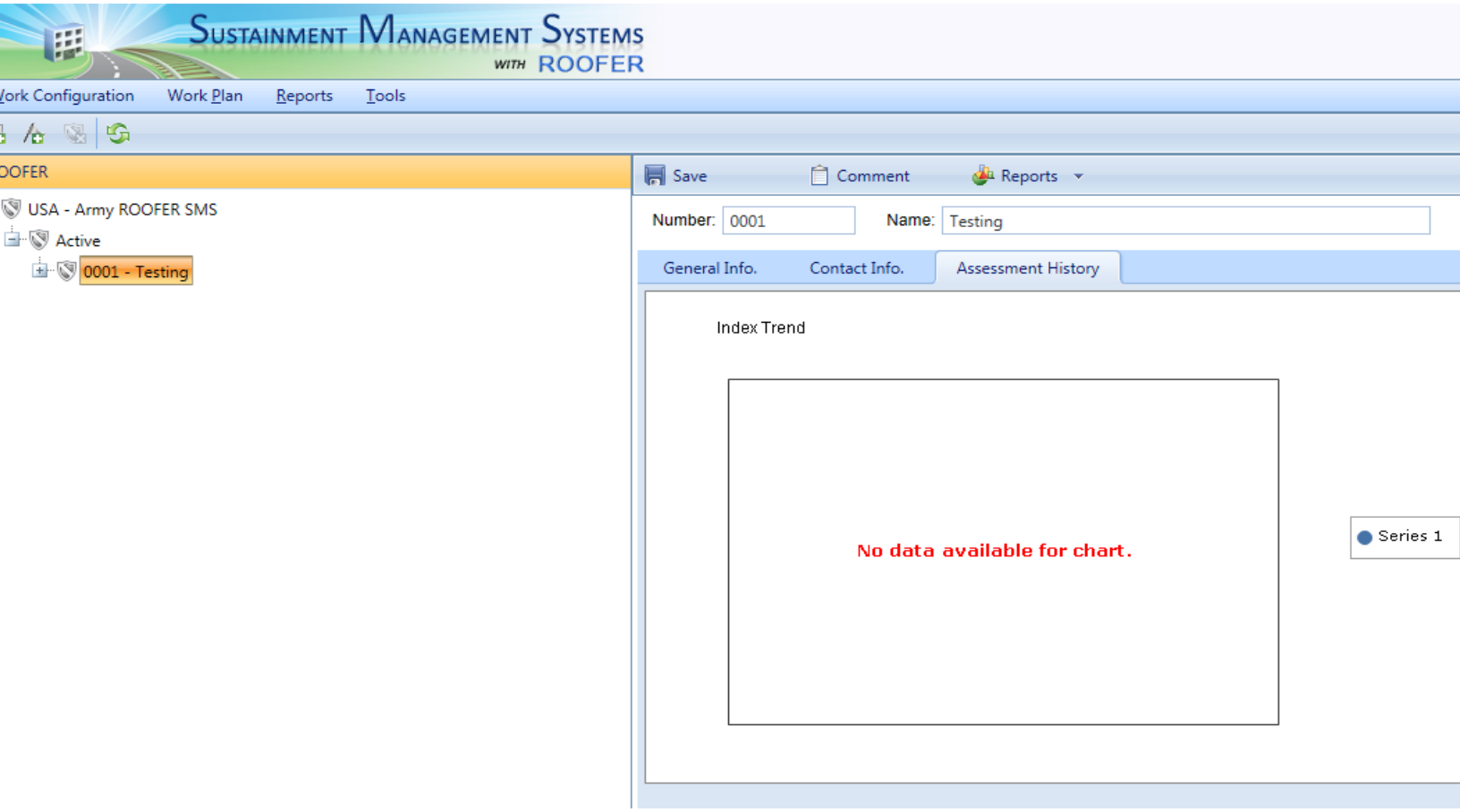


All of the additional Organization information is optional. It includes data regarding the official point of contact (POC) for the Organization:

- Name. Enter the name of the Organization point of contact. Limit: 30 alphanumeric characters.
- Address. Enter the official street address of the Organization. Limit: 30 alphanumeric characters.
- City. Enter the city of the Organization. Limit: 15 alphanumeric characters.
- State. Enter the state of the Organization. Limit: 2 alphanumeric characters.
- Zip Code. Enter the zip code of the Organization. Limit: 10 alphanumeric characters.
- Phone Number. Enter the phone number of the Organization POC. Limit: 20 alphanumeric characters.
- FAX Number. Enter the FAX number of the Organization POC. Limit: 20 alphanumeric characters.
- Email Address. Enter the email address of the Organization POC. Limit: 75 alphanumeric characters.
- WWW. Enter the URL (Web address) for the Organization. Limit: 75 alphanumeric characters.

Assessment History Tab

The Assessment History tab displays a graph of the Roof Condition Index (RCI) over time, providing an RCI history of the Organization.

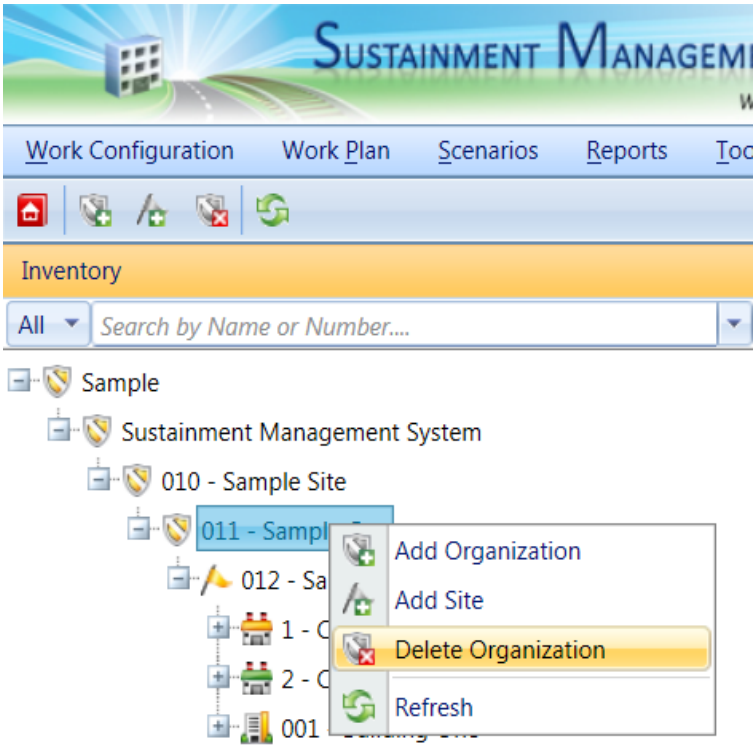


Delete an Organization

Permissions Note: This action requires AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. permission for the relevant location in inventory.

To delete an Organization, navigate to it in the inventory tree and do one of the following:

a. (1) Right-click the Organization, then (2) select "Delete Organization" from the options, as shown below. Or,
b. (1) Select the Organization, then (2) activate the Delete Organization icon on the menu toolbar.



WARNING: Deleting an Organization will also delete all inventory (Complexes, Buildings, and roof sections) in that Organization. This is a significant step to take and should only be done when you are certain that you wish to clear the entire inventory of the Organization you have selected.

Best Practice Recommendation: Making frequent backups of the inventory database will protect you from significant data losses if an unintended deletion is performed.

Sites

About Sites

A Site is the level in the asset tree that ties roofing inventory to a physical location. This topic briefly introduces the features of a Site and how to use it in organizing roofing inventory. It also provides links to the operations that can be performed at the Site level.

Your ROOFER inventory can contain Buildings or facilities at a number of different geographic locations (Sites). If this is the case, then multiple Sites will be needed in the inventory tree structure, one for each geographic location. Alternatively, if all Buildings or facilities to be managed (or to be gleaned for information) are in the same geographic location, one Site will usually suffice.

The Importance of Geography to the Site Level

Knowing the geographic location of a Building is extremely important; therefore it is necessary to create a Site record for each geographic location before Buildings can be added to the database.

When creating a Site, keep in mind that the Site level in the hierarchy is not simply a method for subdividing inventory. It is the level where geographic factors are incorporated into ROOFER calculations, and therefore a Site needs to be confined to a relatively limited geographic area. A larger area can be covered by an Organization made up of multiple Sites.

Site-Level Properties

Several properties of Buildings and their roof sections are determined or affected by the Building's geographic location, most critically the Area Cost FactorA multiplier that adjusts national average labor/material/equipment costs to better reflect local costs. For example, in a remote area with high shipping costs and a tight labor market, the Area Cost Factor might be 1.3. The Area Cost Factor is generally a number between 0.8 and 1.2 for continental U.S. locations, but it can be even greater than 2.0 in high-cost geographic locations., a multiplier that adjusts national average labor/material/equipment costs to local costs.

In BUILDER, the following properties are also affected by a Building's geographic location:

- HVAC zone
- seismic zone.

Other factors set at the Site level are:

- Prioritization scheme(s).
- Selections for the cost book, inflation book, and service life book.

Property Inheritance

The Area Cost FactorA multiplier that adjusts national average labor/material/equipment costs to better reflect local costs. For example, in a remote area with high shipping costs and a tight labor market, the Area Cost Factor might be 1.3. The Area Cost Factor is generally a number between 0.8 and 1.2 for continental U.S. locations, but it can be even greater than 2.0 in high-cost geographic locations., prioritization schemes, and selections for the cost book, inflation book, and service life book can also be set at the Organization level. If the Site and Organization values differ, then the Site level settings take priority.

Site Operations

Operations that can be performed on Sites are:

Add a Site
Edit Site Inventory Data
Delete a Site

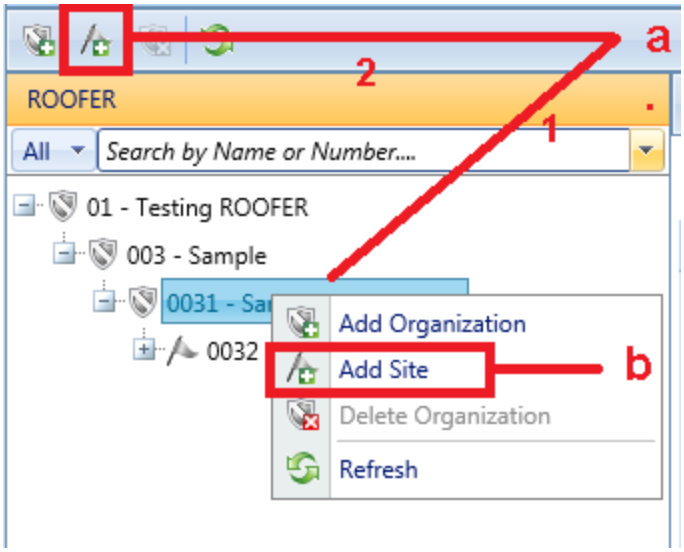
Add a Site

Permissions Note: This action requires Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. or AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. permission for the relevant asset.

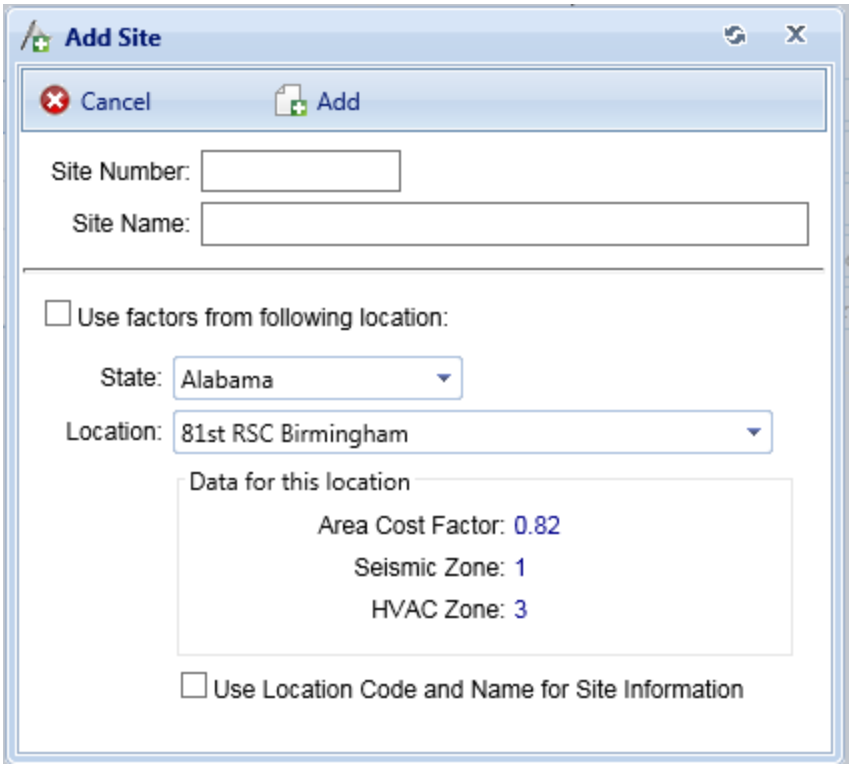
Remember that Sites should be location-specific (namely, confined to a relatively limited geographic area), because ROOFER inputs pertaining to location are stored at the Site level.

To add a new Site to an Organization, navigate to that Organization and do one of the following:

a. Select the Organization, then activate the Add Site icon on the main toolbar.
b. Or, right-click the Organization, then select "Add Site" from the options.



The "Add Site" popup window will appear:



Enter Required Site Information

This documentation segment describes the minimum data to be entered when creating a new Site. Other data that can be entered is described in Edit Site Inventory Data.

In the popup window shown above, enter the following data:

- Site Number -Enter the identifying number for the Site. The Site Number field may be left blank if you wish to supply only a name. You must enter at least a Site name or a Site number, and the combination of the two must be unique in the navigation tree.

  Specifications: The Site The ID Number is limited to 12 alphanumeric characters.

- Site Name -Enter the identifying name for this Site. The Site Name field may be left blank if you wish to supply only a number. You must enter at least a Site name or Site number, and the combination of the two must be unique in the navigation tree.

  Specifications: The name is limited to 50 alphanumeric characters. Best Practice Recommendation: Avoid using single quotes, double quotes, and ampersands. These characters can interfere with query formation.

Copy Factors from a Listed Location (Optional)

In the popup window, you are also given the opportunity to copy Site location factors (Area Cost FactorA multiplier that adjusts national average labor/material/equipment costs to better reflect local costs. For example, in a remote area with high shipping costs and a tight labor market, the Area Cost Factor might be 1.3. The Area Cost Factor is generally a number between 0.8 and 1.2 for continental U.S. locations, but it can be even greater than 2.0 in high-cost geographic locations., seismic zone, and HVAC zone) from an existing location. The ROOFER database contains this data for most major cities in the United States as well as Department of Defense installations. To copy factors, mark the Use factors from following location checkbox and select a location from the dropdown lists.

Copying factors from an existing location can also be done later by selecting Lookup Location from the Site toolbar.

Note: Until you set location factors, they will all be set by default to 1.

CAUTION: Selecting the checkbox Use Location Code and Name for Site Information will overwrite the Site information with that of the location that you are copying factors from.

Confirm or Cancel

Once the required minimum Site data is entered,

a. Activate the Add button on the popup toolbar to create the Site. Additional Site details can then be added as described in Edit Site Inventory Data
b. Alternatively, to close the popup window without creating the Site, activate the Cancel button.

Continue Data Entry

To enter additional details about the Site, follow the instructions in Edit Site Inventory Data.

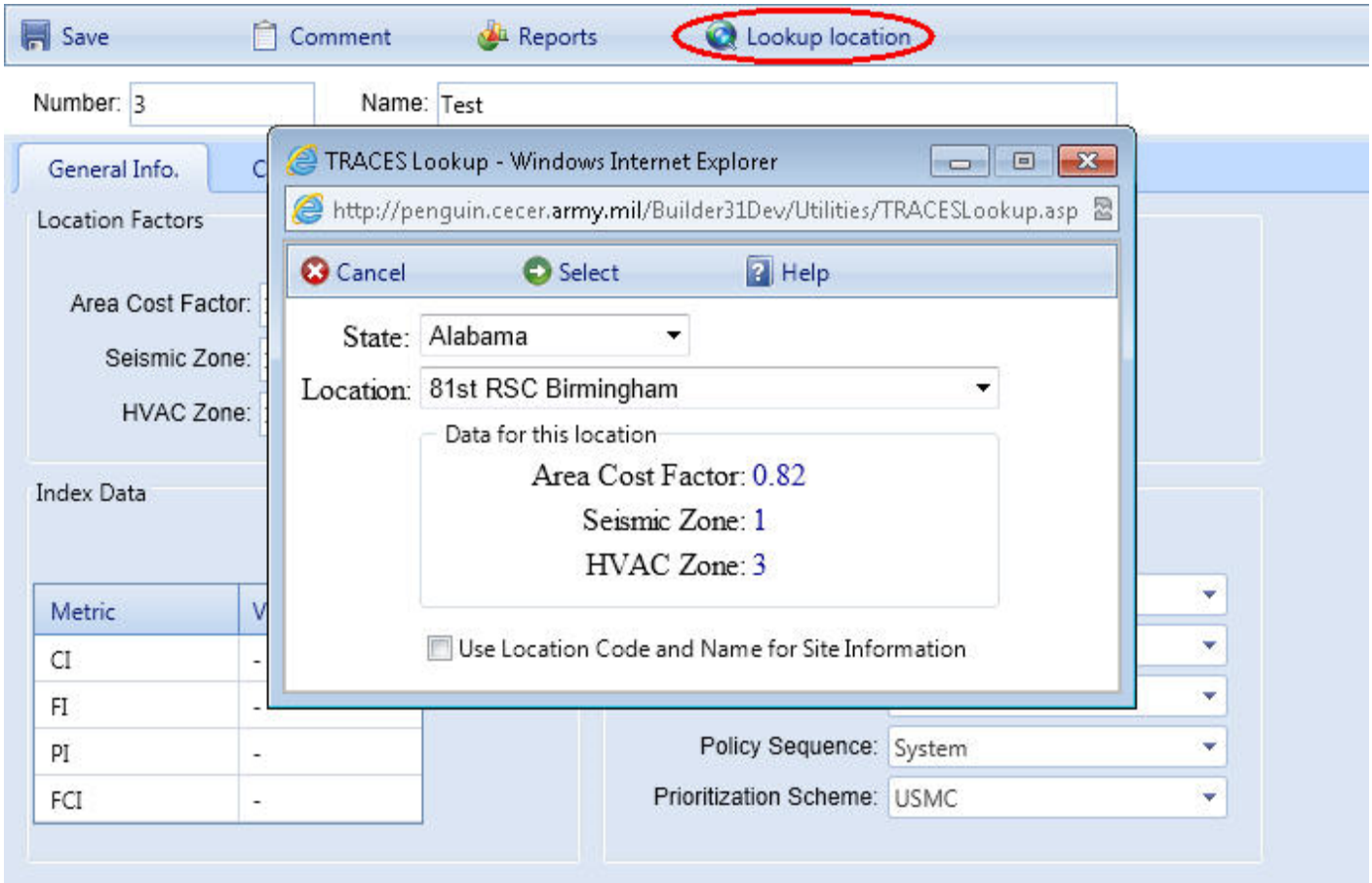
Edit Site Inventory Data

To edit the data for a specific Site, first select the Site in the inventory tree. The following sections describe information that can be obtained and actions that can be performed on the Site.

Toolbar

The following options are available at the content screen toolbar:

- Save - Use this button to save changes made to the Site data.
- Comment - This button allows you to add, edit, and view comments about the Site.
- Reports - Use this button to launch the Report Selection tool, which gives you access to a list of standard reports relevant to Site inventory. See Using the Report Viewer.
- Lookup Location - Use this button to launch the site selection window, where you can adopt location factors (Area Cost FactorA multiplier that adjusts national average labor/material/equipment costs to better reflect local costs. For example, in a remote area with high shipping costs and a tight labor market, the Area Cost Factor might be 1.3. The Area Cost Factor is generally a number between 0.8 and 1.2 for continental U.S. locations, but it can be even greater than 2.0 in high-cost geographic locations., seismic zone, and HVAC zone) from an existing location:



How to Use the Lookup Location Button to Set Site Location Factors

Select the state and then the location within that state where the Site is. The location list includes Department of Defense installations and most major cities in the United States. After the state and location are selected, activate the Select (Proceed) button to automatically fill in the factor data fields at the Site's General Information tab. If you activate the Cancel button, you will be returned to the Site content screen without the changes being made.

Note: If the location of your particular Site is not listed, choose a location close to your Site.

If you mark the Use Location Code and Name for Site Information checkbox, the location from the lookup list will be used as the name of the Site. If you leave that checkbox unmarked, the designated Site Number and Site Name will be preserved. If you mark the checkbox unintentionally, you can rename your Site at the ID line in the Site content pane.

ID Line

On the ID line, you can edit the following:

- Site ID Number. The ID Number is limited to 12 alphanumeric characters.
- Site Name. The Name is allowed 50 characters. For additional specifications, refer to Enter Required Site Information.

General Information Tab (Site Level)

Initially after a Site is selected in the inventory tree, the General Information tab (abbreviated General Info.) is shown with the following information:

Location Factors:

- Area Cost Factor. The Area Cost FactorA multiplier that adjusts national average labor/material/equipment costs to better reflect local costs. For example, in a remote area with high shipping costs and a tight labor market, the Area Cost Factor might be 1.3. The Area Cost Factor is generally a number between 0.8 and 1.2 for continental U.S. locations, but it can be even greater than 2.0 in high-cost geographic locations. is a multiplier used to adjust national average cost for labor/materials/equipment to local costs. It is generally a number between 0.8 and 1.2 for continental U.S. locations, but it can be even greater than 2.0 in high-cost geographic locations.
- Seismic Zone. The seismic zone is an integer from 1 to 7 following the Federal Emergency Management Agency's (FEMAFederal Emergency Management Agency) U.S. seismic zoning. Determine the Site's seismic zone by consulting the seismic map of the U.S. seismic zones, which can be accessed by activating the Map button next to the Seismic Zone dropdown selection box.
- HVAC Zone. The HVAC zone is an integer from 1 to 11. The Site's HVAC zone can be set as follows:
  - Activate the Lookup Location button on the toolbar.
  - Selecting "State" and "Location" from the dropdown lists in the popup window.
  - Activate the Select button on the toolbar in the popup.

  Alternatively, you can consult the map of the U.S. HVAC zones, which can be accessed by activating

the Map button next to the HVAC Zone text box.

Index Data (Read-Only):

- Roof Condition Index (RCIRoof Condition Index). The Site RCIRoof Condition Index metric displays the average RCIRoof Condition Index of the Buildings in the Site, weighted by replacement cost. This metric provides an overall sense of the condition of roofing at the Site as a whole.

Calculated Data (Read-Only):

- **Number of Facilities**. Displays the number of Buildings included in the Site inventory.
- **PRV[1]Plant Replacement Value. For an inventory item above the Building level, this number will be the aggregate of the PRV of all Buildings included in that item.**. Displays the aggregate PRV[2]Plant Replacement Value. For an inventory item above the Building level, this number will be the aggregate of the PRV of all Buildings included in that item. of the Buildings at the Site, computed by adding the individual Building replacement costs.

Reference Settings:

- Cost Book. From the dropdown list, select the cost book to be used for the entire inventory of the Organization. The cost book selected will provide inventory replacement and defect repair costs for inventory.
- Inflation Book. From the dropdown list, select the inflation book to be used for the entire inventory of the Organization. The inflation book selected provides inflation multipliers per year for the projected replacement costs and defect repair costs for the inventory.
- Service Life Book. From the dropdown list, select the service life book to be used for the entire inventory of the Organization. The service life book selected will estimate the remaining service life of Component-Sections in the inventory on the basis of its life expectancy and condition. Also, the service life is used in estimating a rate of deterioration in the condition index of a Component-Section when no more than one inspection has been recorded.
- Prioritization Scheme. From the dropdown list, select the prioritization scheme to be used for the entire inventory of the Organization. The prioritization scheme selected will prioritize and rank your work plan in a quick, objective, repeatable, and representative method with the touch of a button.

CAUTION: Reference data can be set at the Organization level and at the Site level. If this data is set at both levels, the reference settings at the Site level will override the reference settings at the Organization level.

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[1]Plant Replacement Value. This number will be the aggregate of the PRV of all inventory items contained within the current inventory item.
[2]Plant Replacement Value. This number will be the aggregate of the PRV of all inventory items contained within the current inventory item.

Additional Site Data

In addition to data available at the General Information tab, further Site information is displayed and can be edited at the tabs listed below.

All of the additional Site information listed below is optional, or else generated by ROOFER.

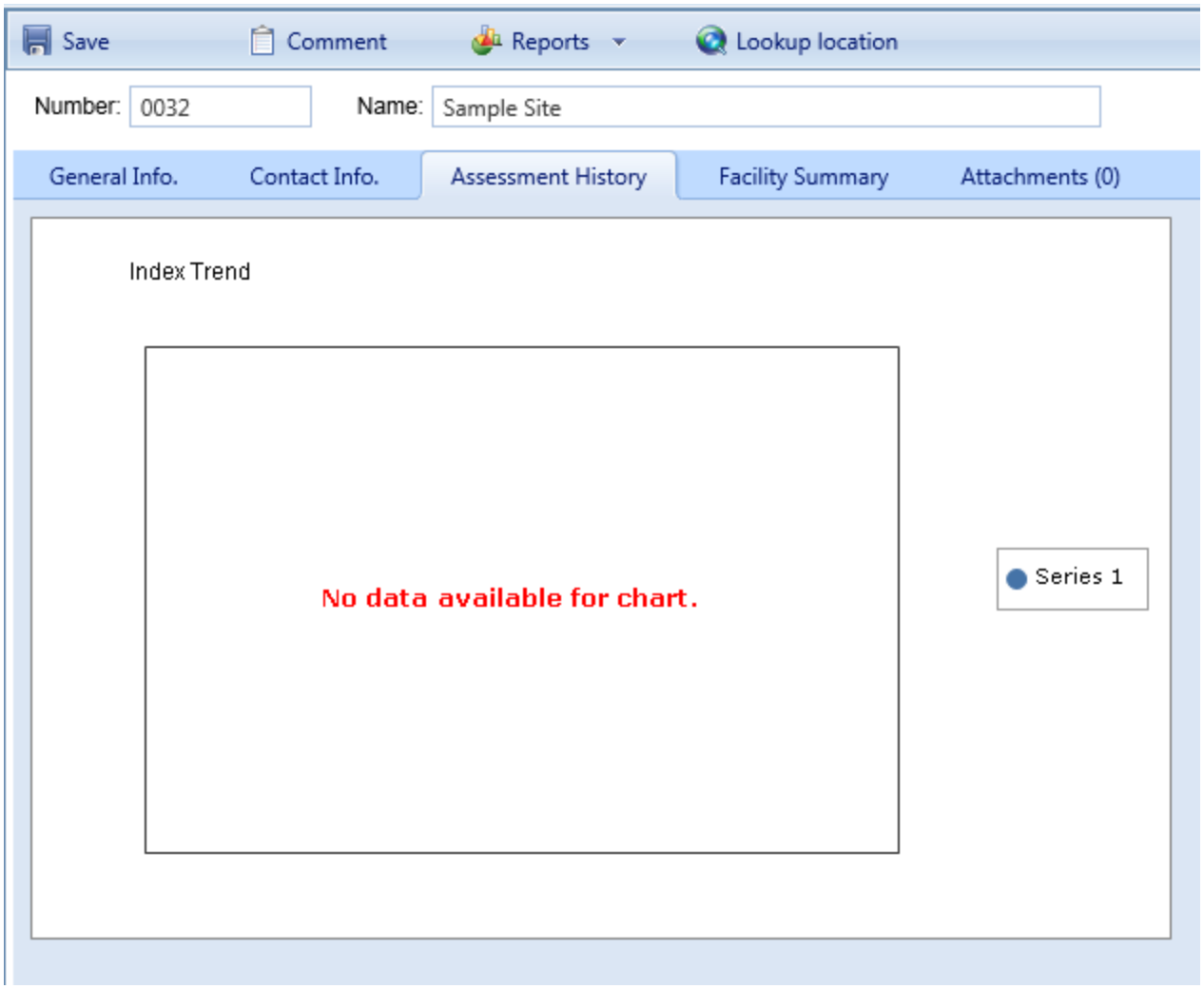
Contact Information Tab

Point of contact (POC) information for the Site (optional) may be viewed and edited by selecting the Contact Info. tab. The available fields are as follows:

- Name. Enter the name of the Complex point of contact. Limit: 30 alphanumeric characters.
- Address. Enter the official street address of the Complex. Limit: 30 alphanumeric characters.
- City. Enter the city where the Complex is located. Limit: 15 alphanumeric characters.
- State. Enter the state where the Complex is located. Limit: 2 alphanumeric characters.
- Zip Code. Enter the zip code of the Complex. Limit: 10 alphanumeric characters.
- Phone Number. Enter the phone number of the Complex POC. Limit: 20 alphanumeric characters.
- FAX Number. Enter the FAX number of the Complex POC. Limit: 20 alphanumeric characters.
- Email. Enter the email address of the Complex POC. Limit: 75 alphanumeric characters.
- WWW. Enter the URL (Web address) for this Complex. Limit: 75 alphanumeric characters.

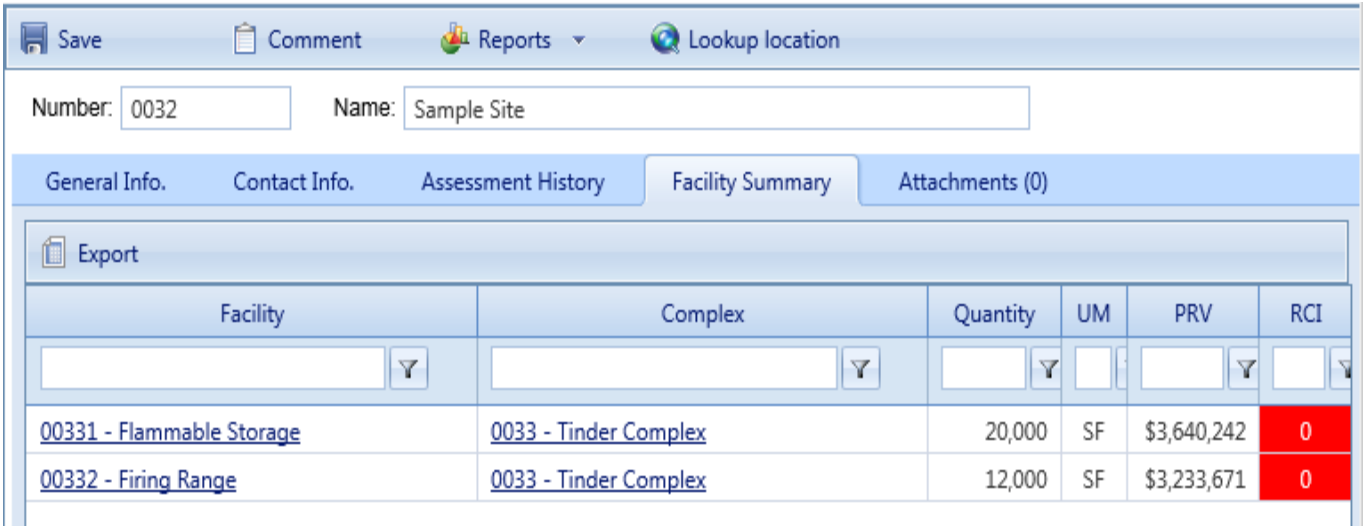
Assessment History Tab

The Assessment History (Assess. History) tab provides a graph of the Roof Condition Index (RCIRoof Condition Index) over time.



Facility Summary Tab

Basic information regarding Buildings at the Site is available under the Facility Summary tab. All of the data shown at this tab is read-only; however, which information is displayed can be influenced using the search filters provided. Each column shown at the Facility Summary tab is described below.



- Facility. Displays the Building number and name of each facility at the Site.
- Complex. Displays the Complex that the Building is part of, if applicable.
- Quantity. This is the primary measure of the size of the facility. For Buildings, it will usually be square feet, if the User Preferences (UMUnit of Measure. Examples: Each; LF (linear feet)) selected at User Preferences is "English."
- Unit of Measure (UMUnit of Measure. Examples: Each; LF (linear feet)). Displays the unit of measure in use.
- Plant Replacement Value (**PRV**[1]Plant Replacement Value. For an inventory item above the Building level, this number will be the aggregate of the PRV of all Buildings included in that item.). Displays the aggregate **PRV**[2]Plant Replacement Value. For an inventory item above the Building level, this number will be the aggregate of the PRV of all Buildings included in that item. of the Buildings at the Site.
- Roof Condition Index (RCIRoof Condition Index). Displays the current RCIRoof Condition Index for each Building at the Site.

How to Export Information from the Facility Summary Tab

All the information at the Facility Summary tab can be exported to a Microsoft Excel spreadsheet by activating the Export button, located below "Number" on the ID line.

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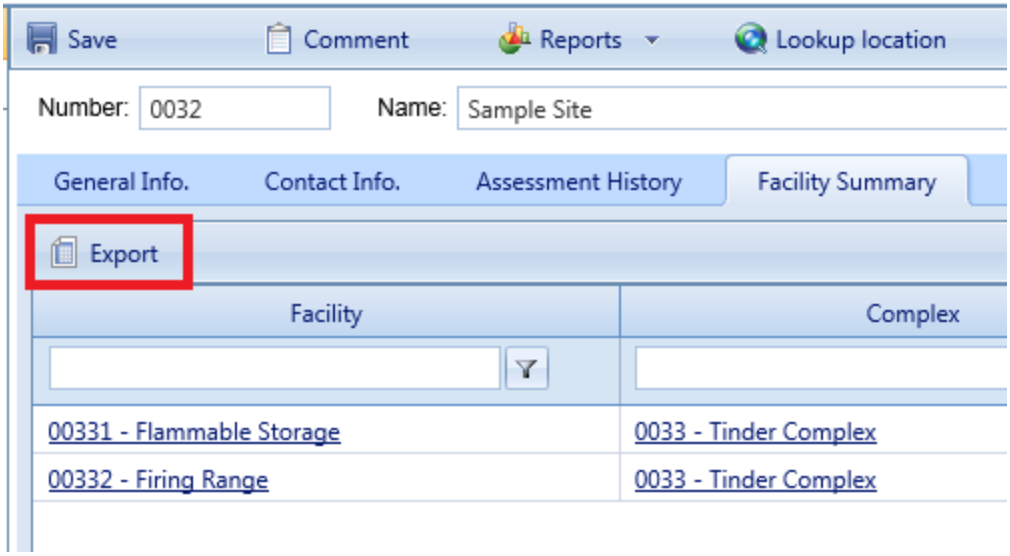
[1]Plant Replacement Value. This number will be the aggregate of the PRV of all inventory items contained within the current inventory item.
[2]Plant Replacement Value. This number will be the aggregate of the PRV of all inventory items contained within the current inventory item.



Attachments Tab

The Attachments Tab allows files such as an image file to be attached to the Site's record. An image might be a picture of the Building, or it could be an electronic image of written notes or diagrams made during inventory.

The attachment may be in any of the following formats:

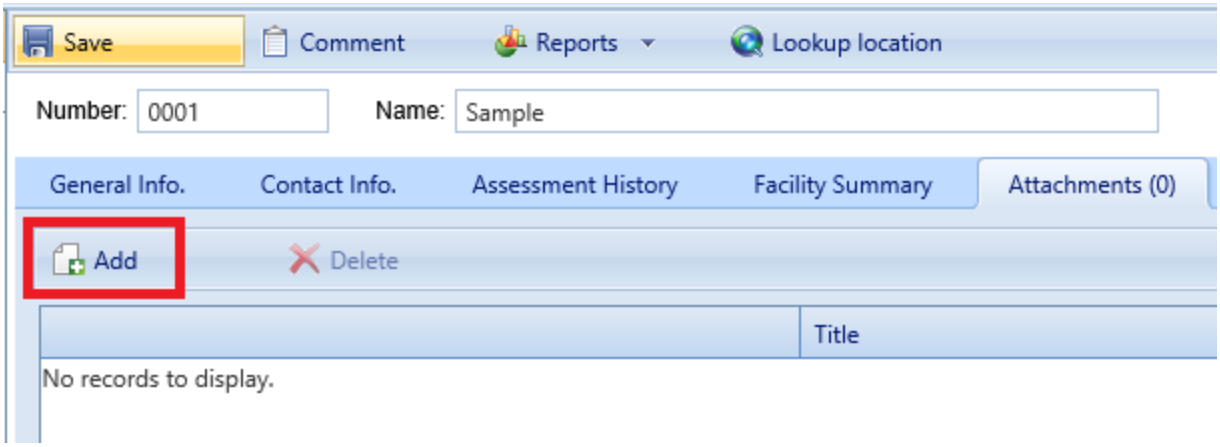
- .jpg
- .jpeg
- .png
- .zip
- .doc
- .pdf

Note: As of January 31, 2022, .doc format is allowed, but not .docx.

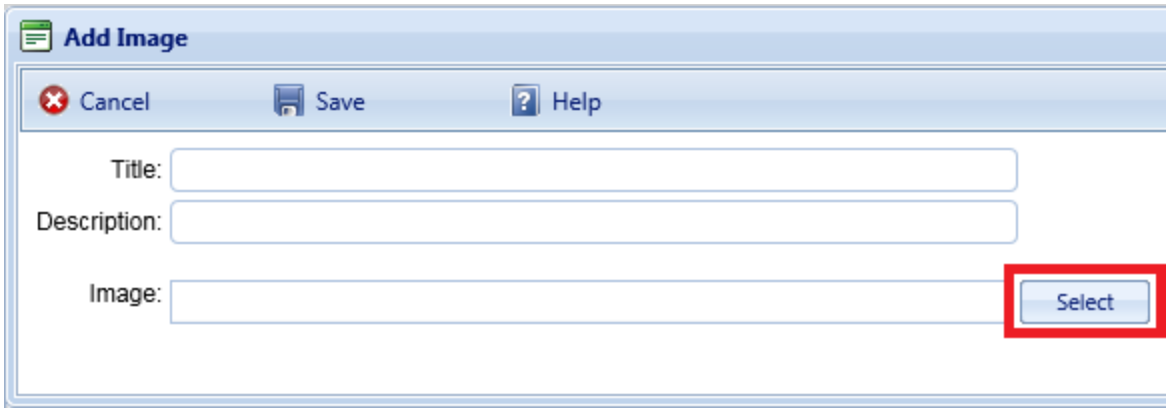
Attach a File

To attach a file,

- At the Attachments tab, activate the Add button in the toolbar below the row of tabs.



This will open the "Add Image" popup window:



- Enter Title and Description information for the attachment.
- Activate the Select button to the right of the "Image" field to browse to the desired image or other file.
- If you are adding an attachment at the Building level, use the Image Type radio buttons to indicate whether the attachment is a Key Plan, a Section Plan, or "Other."
- Once the required attachment data is entered, activate the Save button on the popup toolbar. Alternatively, to close the popup window without attaching the selected file or image, activate the Cancel button.

Delete a Site

Permissions Note: This action requires AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. permission for the relevant location in inventory.

To delete a Site, navigate to it in the inventory tree and do one of the following:

a. (1) Right-click the Site, then (2) select "Delete Site" from the options. Or,
b. (1) Select the Site, then (2) activate the Delete Site icon on the menu toolbar.

WARNING: Deleting a Site deletes all inventory (Complexes, Buildings, Systems, Components, and Sections) in that Site. This is a significant step to take and should only be done when certain that you wish to clear the entire inventory of the selected Site.

Best Practice Recommendation: Making frequent backups of the inventory database will protect you from significant data losses if an unintended deletion is performed.

Complexes

About Complexes

A Complex is an optional level in the asset tree, used to group Buildings/facilities together into one management unit. This topic briefly introduces the features of a Complex is and how to use it in organizing roofing inventory. It also provides links to the operations that can be performed at the Complex level.

A Complex is an optional organizational level between Site and Building. ROOFER allows multiple Buildings at a Site to be grouped into a Complex. This is especially useful if the inventory has a large number of Buildings at a single location.

Each Building may belong to at most one Complex, but it is not required for a Building to be in a Complex at all. Three alternative strategies are possible:

a. Do not use Complexes at all, in which case Buildings will be listed directly under their Site in the inventory tree.
b. Group all Buildings in the inventory into various Complexes.
c. Create Complexes to group some but not all of the Buildings. In this case, you may choose either to list unassigned Buildings directly under their Site, or to create a Complex named "Unassigned" which will contain all Buildings not assigned to another Complex.

Operations that can be performed on Complexes are:

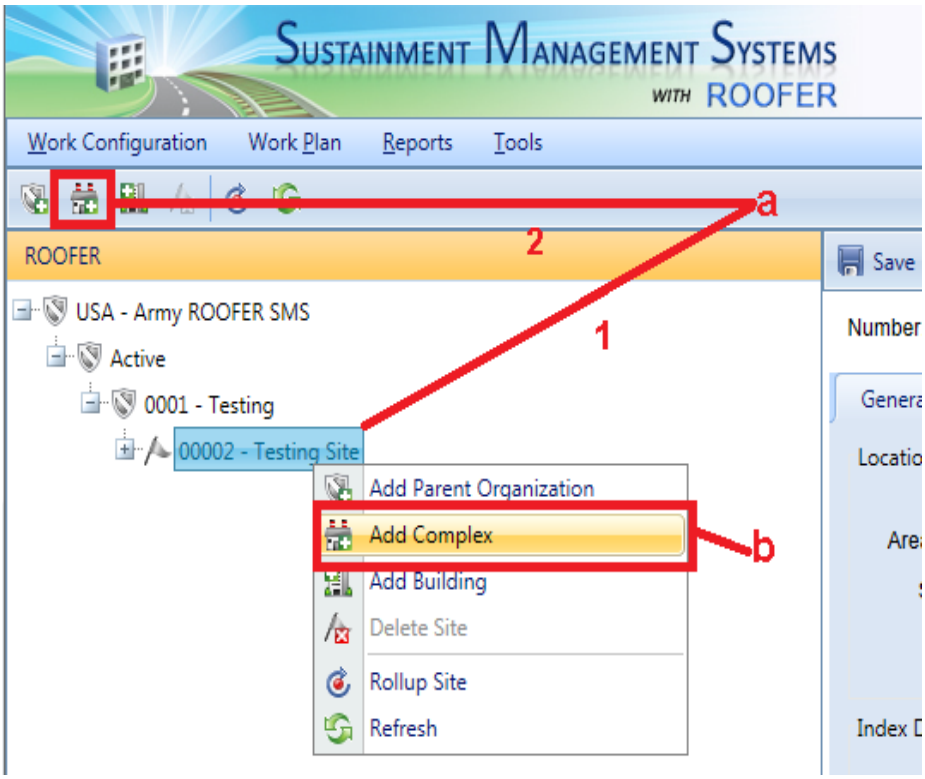
Add a Complex
Edit Complex Inventory Data
Delete a Complex

Add a Complex

Permissions Note: This action requires Work Planner permission or above for the relevant location in inventory.

To add a new Complex to a Site, navigate to that Site and do one of the following:

a. Select the Site, then activate the Add Complex icon on the main toolbar. Or,
b. Alternatively, right-click the Site. Then select "Add Complex" from the option list.



Enter Required Complex Data

This documentation segment describes the minimum data to be entered when creating a new Site. Other data that can be entered is described in Edit Complex Inventory Data

In the popup window shown above, enter the following required data for the Complex:

- Complex Number -Enter the identifying number for the Complex. The Complex Number field may be left blank if you wish to supply only a name. You must enter at least a Complex name or a Complex number, and the combination of the two must be unique within the Site.

  Specifications: The Complex The ID Number is limited to 12 alphanumeric characters.

- Complex Name -Enter the identifying name for this Complex. The Complex Name field may be left blank if you wish to supply only a number. You must enter at least a Complex name or a Complex number, and the combination of the two must be unique within the Site.

  Specifications: The name is limited to 50 alphanumeric characters.

  Best Practice Recommendation: Avoid using single quotes, double quotes, and ampersands. These characters can interfere with query formation.

Confirm or Cancel

Once the required minimum Complex data is entered,

a. Activate the Add button on the popup toolbar to create the Complex. Additional Complex details can then be added as described in Edit Complex Inventory Data
b. Alternatively, to close the window without creating the Complex, activate the Cancel button.

Assign a Building to a Complex (Optional)

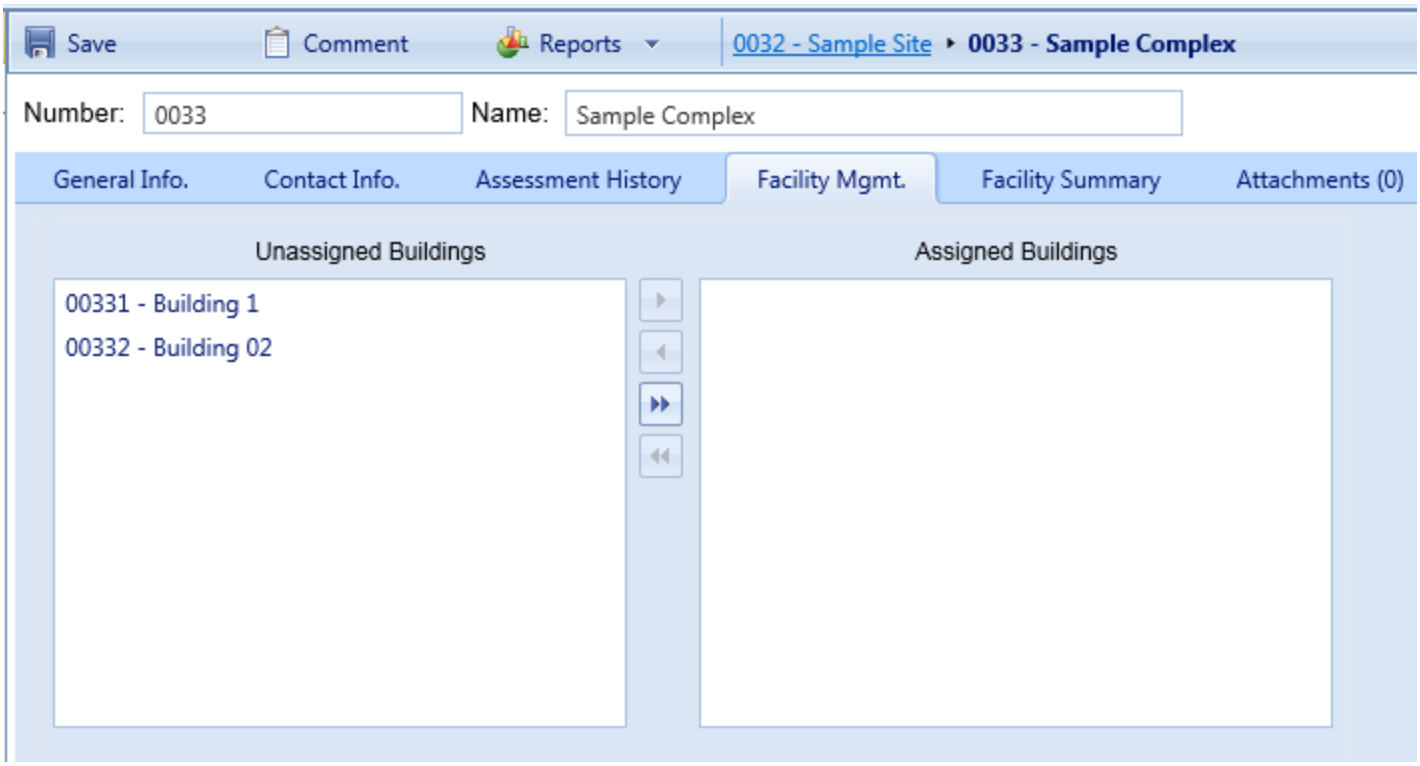
Complexes can be used to group similar Buildings, but assigning a Building to a Complex is optional. The steps below outline how to assign (move) or unassign (remove) a Building to/from a Complex.

To prepare for assigning Buildings to a Complex, first navigate to the Complex in the inventory tree and select it.

In the content area (illustrated below), select the Facility Mgmt. tab. This will bring up two columns:

- Unassigned Buildings (the column on the left) lists Buildings available to be assigned to a Complex.
- Assigned Buildings (the column on the right) lists Buildings already assigned to the selected Complex.

Note: The Buildings and the Complex must be in the same Site.



Move Buildings into a Complex

To move one or more Buildings from the Unassigned Buildings column into the Complex, use the arrow keys located between the two columns as described below.

To move all of the Buildings into the Complex,

- Activate the button with double right-pointing arrows.
- Use the Save button on the content area toolbar to lock in your change.

To move one Building into the Complex,

- Select the Building in the Unassigned Buildings column.
- Activate the single right-pointing arrow.
- Use the Save button on the content area toolbar to lock in your change.

To move multiple Buildings into the Complex,

- Select the Buildings in the Unassigned Buildings column, using the Shift and/or Ctrl keys as needed.
- Activate the single right-pointing arrow.

  Note: In the Assigned Buildings column, newly assigned Buildings will show on a green background until you save.

- Use the Save button on the content area toolbar to lock in your change.

Remove Buildings from a Complex

To move one or more Buildings from the Complex back into the Unassigned Buildings column, use the arrow keys located between the two columns as described below.

To move all of the Buildings,

- Activate the button with double left-pointing arrows.
- Use the Save button on the content area toolbar to lock in your change.

To move one Building,

- Select the Building in the Assigned Buildings column.
- Activate the single left-pointing arrow.
- Use the Save button on the content area toolbar to lock in your change.

To move multiple Buildings,

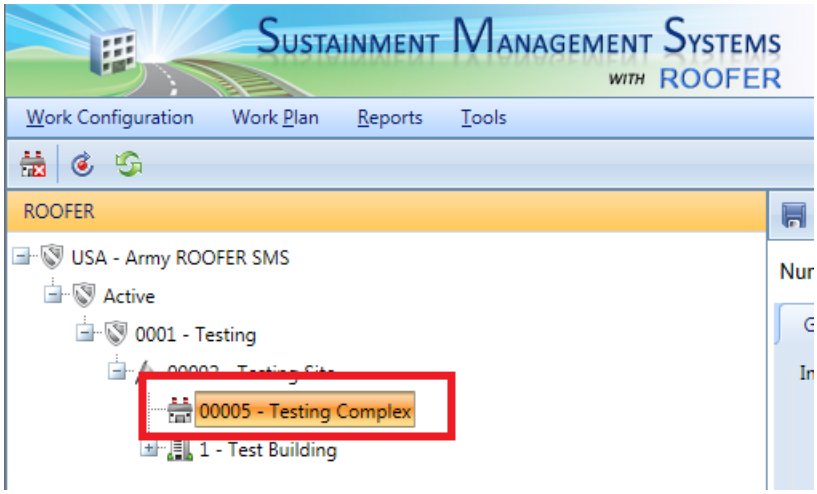
- Select the Buildings in the Assigned Buildings column, using the Shift and Ctrl keys as needed.
- Activate the single left-pointing arrow.
- Use the Save button on the content area toolbar to lock in your change.

Move Buildings from one Complex to Another

To move a Building from one Complex to a different one, you must first navigate to the Complex it is assigned to and unassign it (see Remove Buildings from a Complex, immediately above). Then navigate to the destination Complex and follow the instructions in Move Buildings into a Complex, above).

Edit Complex Inventory Data

To edit the data for a specific Complex, select the Complex in the inventory tree.



Toolbar

The following buttons and information are available at the content screen toolbar:

- Save. Saves changes made to the Complex data.
- Comment. Allows you to add, edit, and view comments about the Complex.
- Reports. Launches the Report Selection tool, which gives you access to a list of standard reports relevant to Complex inventory. See Using the Report Viewer.
- Breadcrumbs. The breadcrumbs shown on the toolbar provide both orientation and an alternative method of navigation:

ID Line

On the ID line, you can edit the following:

- Complex ID Number. The ID Number is limited to 12 alphanumeric characters.
- Complex Name. Complex Name is allowed 50 characters. For additional specifications, refer to Enter Required Complex Data.

General Complex Information - General Info. Tab

Initially after a Complex is selected in the inventory tree, the General Information tab (abbreviated General Info.) is shown with the following information:

- Index Data (Read-Only).
  - Roof Condition Index (RCIRoof Condition Index) -The Complex RCIRoof Condition Index metric displays the average RCIRoof Condition Index of the Buildings in the Complex, weighted by replacement cost. This metric provides an overall sense of the condition of roofing at the Complex as a whole.
- Calculated Data (Read-Only.
  - Number of Facilities. Displays the number of Buildings included in the Complex inventory.
  - **PRV**[1]Plant Replacement Value. For an inventory item above the Building level, this number will be the aggregate of the PRV of all Buildings included in that item.. Displays the aggregate Plant Replacement Value of the buildings at the Complex, computed by adding the individual building replacement costs.

Additional Complex Data

In addition to data available at the General Information tab, further Complex information is displayed and can be edited at the tabs listed below.

All of the additional Complex information is optional, or else generated by ROOFER.

Contact Information Tab

Point of contact (POC) information for the Complex may be viewed and edited by selecting the Contact Information (Contact Info.) tab. The available fields are as follows:

- Name. Enter the name of the Complex point of contact. Limit: 30 alphanumeric characters.
- Address. Enter the official street address of the Complex. Limit: 30 alphanumeric characters.
- City. Enter the city where the Complex is located. Limit: 15 alphanumeric characters.
- State. Enter the state where the Complex is located. Limit: 2 alphanumeric characters.
- Zip Code. Enter the zip code of the Complex. Limit: 10 alphanumeric characters.
- Phone Number. Enter the phone number of the Complex POC. Limit: 20 alphanumeric characters.
- FAX Number. Enter the FAX number of the Complex POC. Limit: 20 alphanumeric characters.
- Email Address. Enter the email address of the Complex POC. Limit: 75 alphanumeric characters.
- WWW. Enter the World Wide Web (WWW) URL address for this Complex. Limit: 75 alphanumeric characters.

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[1]Plant Replacement Value. This number will be the aggregate of the PRV of all inventory items contained within the current inventory item.

Assessment History Tab

The Assessment History tab provides a graph of the condition, functionality, performance and **FCI**[1] history of the Complex, displaying the Complex CIComplex Condition Index - a condition rating for the target Complex. The Complex **CI**[2] is computed by taking the average of the BCIs of each Building in the Complex, weighted by replacement cost., Complex **FI**[3]Functionality Index, Complex **PI**[4]Performance Index. See also: BPI. The Performance Index is a weighted combination of the **CI**[5] value and the **FI**[6] value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. and Complex **FCI**[7] over time.

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[1]Facility Condition Index.

[2]Condition Index

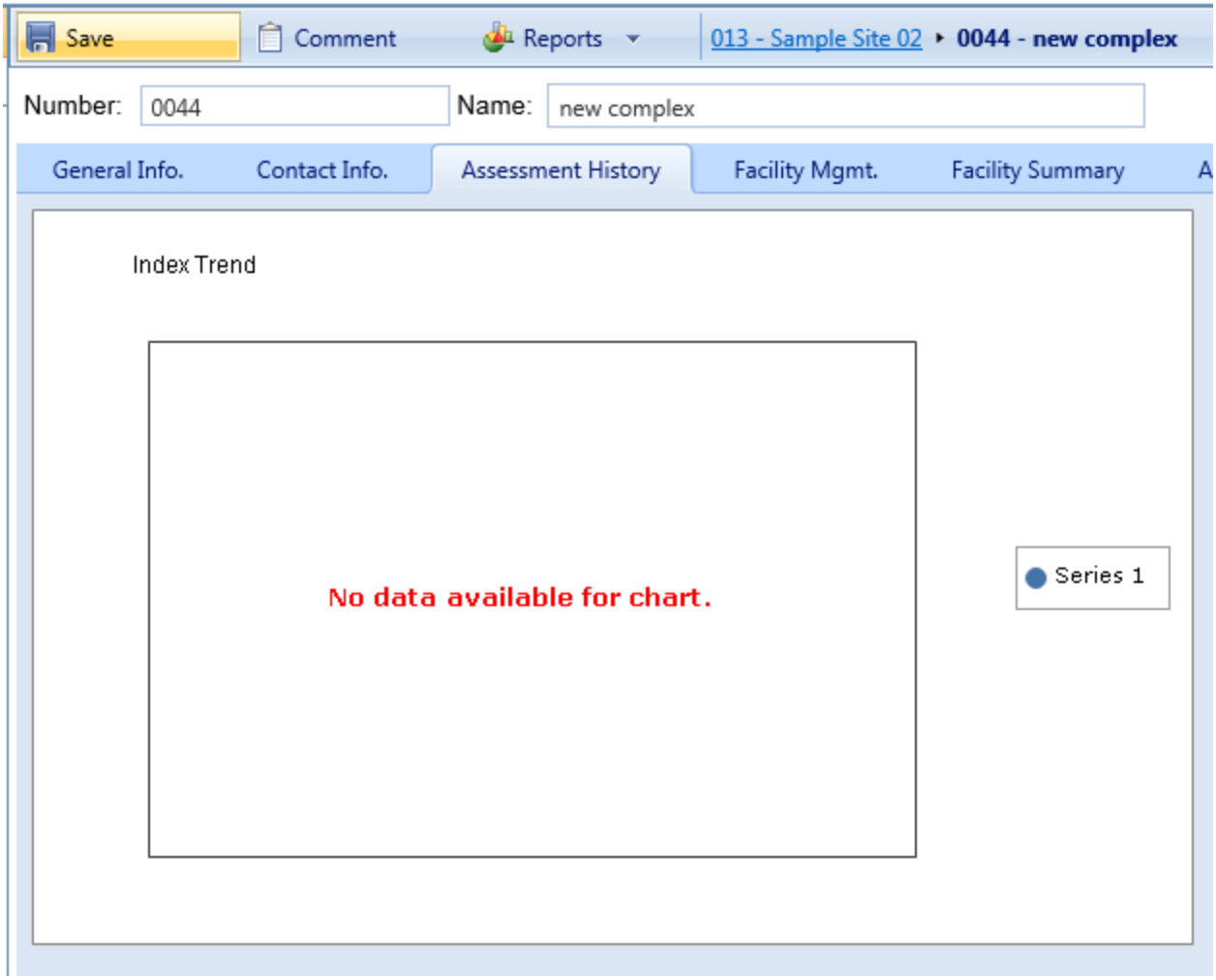
[3]Functionality Index.

[4]Performance Index. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. If no functional assessment has been performed, the FI is assigned a value of 100.

[5]Condition Index

[6]Functionality Index.

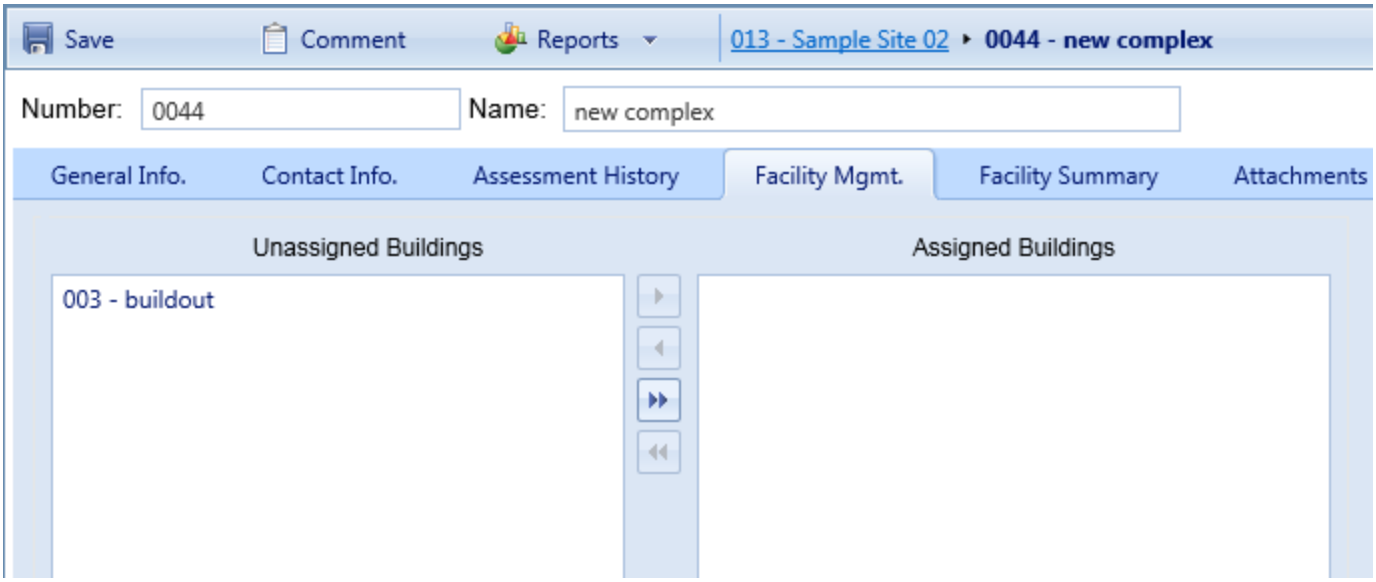
[7]Facility Condition Index.



Facility Management Tab

The Facility Management (Facility Mgmt.) tab lists the Buildings currently assigned to the Complex. Buildings can be assigned to or removed from the Complex at this tab. The Buildings are separated into two columns:

- Unassigned Buildings. Lists the Buildings at the Site that are not assigned to a Complex.
- Assigned Buildings. Lists the Buildings assigned to the current Complex.

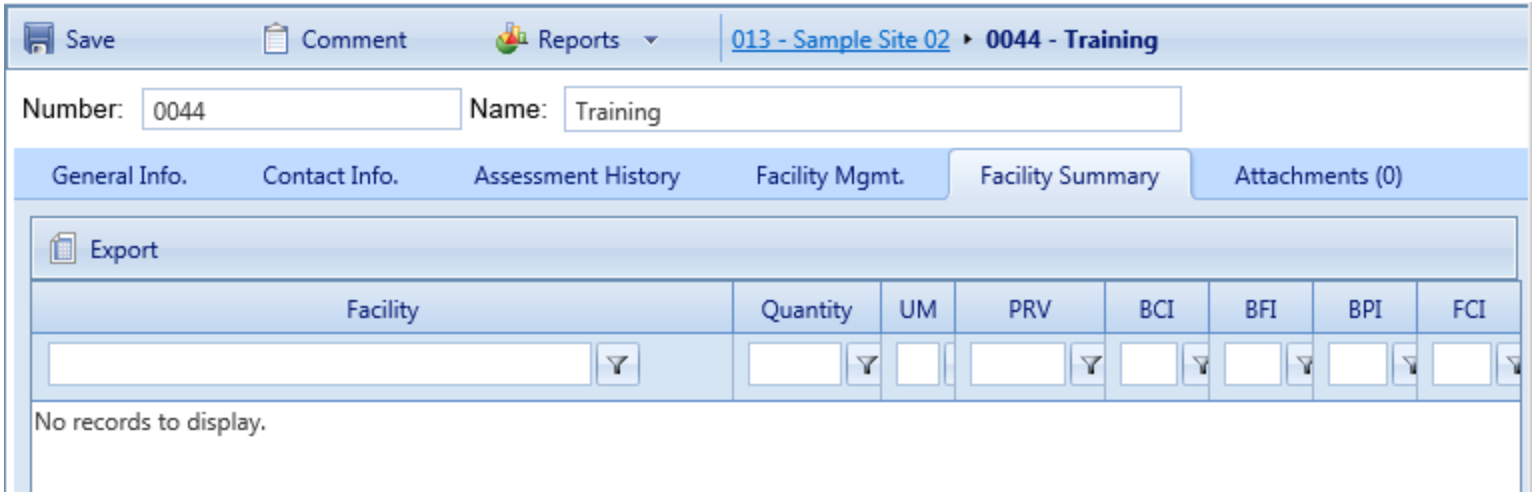


Select the desired Building and use the arrow keys to move unassigned Buildings onto the assigned list or to remove Buildings from the assigned list to the unassigned list. Only Buildings that are not assigned to a Complex will appear in the list on the left. If you wish to move a Building from one Complex to another, you must remove it from the first Complex before you can add it to the second.

For a detailed step-by-step description, see Assign Buildings to a Complex.

Facility Summary Tab

Basic information regarding Buildings at the Complex is available under the Facility Summary tab. All of the data shown at this tab is read-only; however, which information is displayed can be influenced using the search filters provided. Each column shown at the Facility Summary tab is described below.



- Facility. Displays the number and name of each Building in the Complex.
- Quantity. This is the primary measure of the size of the facility. For buildings, it will usually be square feet, if the User Preferences (UMUnit of Measure. Examples: Each; LF (linear feet)) selected at User Preferences is "English."
- Unit of Measure (UMUnit of Measure. Examples: Each; LF (linear feet)). Displays the unit of measure in use.
- Plant Replacement Value (**PRV**[1]Plant Replacement Value. For an inventory item above the Building level, this number will be the aggregate of the PRV of all Buildings included in that item.). Displays the aggregate **PRV**[2]Plant Replacement Value. For an inventory item above the Building level, this number will be the aggregate of the PRV of all Buildings included in that item. of the Buildings in the Complex.
- Building Condition Index (BCIA user with Inspection Supervisor Role has all the rights of an Inspector, and can also create inspection schedules). Displays the current **CI**[3]Condition Index of each Building in the Complex.
- Building Functionality Index (BFICorrective Maintenance). Displays the current **FI**[4]Functionality Index of each Building in the Complex.
- Building Performance Index (BPIFacility Condition Assessment). Displays the current **PI**[5]Performance Index. See also: BPI. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. of each Building in the Complex.
- Facility Condition Index (**FCI**[6]Functional Area Functionality Index). Displays the current **FCI**[7] of each Building in the Complex.

Additionally, the Complex CIComplex Condition Index - a condition rating for the target Complex. The Complex CI is computed by taking the average of the BCIs of each Building in the Complex, weighted by replacement cost., Complex **FI**[8]Functionality Index Complex **PI**[9]Performance Index. See also: BPI. The

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[1]Plant Replacement Value. This number will be the aggregate of the PRV of all inventory items contained within the current inventory item.

[2]Plant Replacement Value. This number will be the aggregate of the PRV of all inventory items contained within the current inventory item.

[3]Condition Index

[4]Functionality Index.

[5]Performance Index. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. If no functional assessment has been performed, the FI is assigned a value of 100.

[6]Facility Condition Index.

[7]Facility Condition Index.

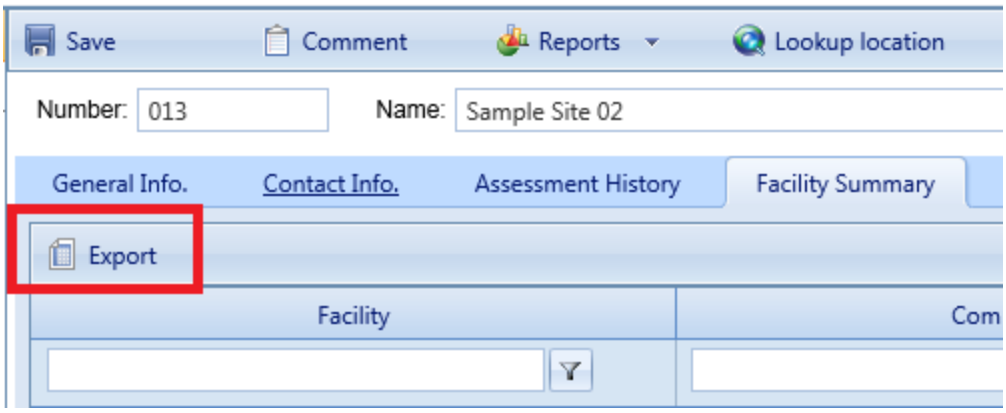
[8]Functionality Index.

[9]Performance Index. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. If no functional assessment has been performed, the FI is assigned a value of 100.

Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. and Complex **FCI**[1] are shown at the top of the tab, which are the average of each index of the Buildings in the Complex weighted by replacement cost.

Export Information from the Facility Summary Tab

All the information at the Facility Summary tab can be exported to a Microsoft Excel spreadsheet by activating the Export button, located below "Number" on the ID line.



Attachments Tab

The Attachments Tab allows files such as an image file to be attached to the Complex's record. An image might be a photograph, or it could be an electronic image of written notes or diagrams made during inventory.

The attachment may be in any of the following formats:

- .jpg
- .jpeg
- .png
- .zip
- .doc
- .pdf

Note: As of January 31, 2022, .doc format is allowed, but not .docx.

Attach a file

To attach a file,

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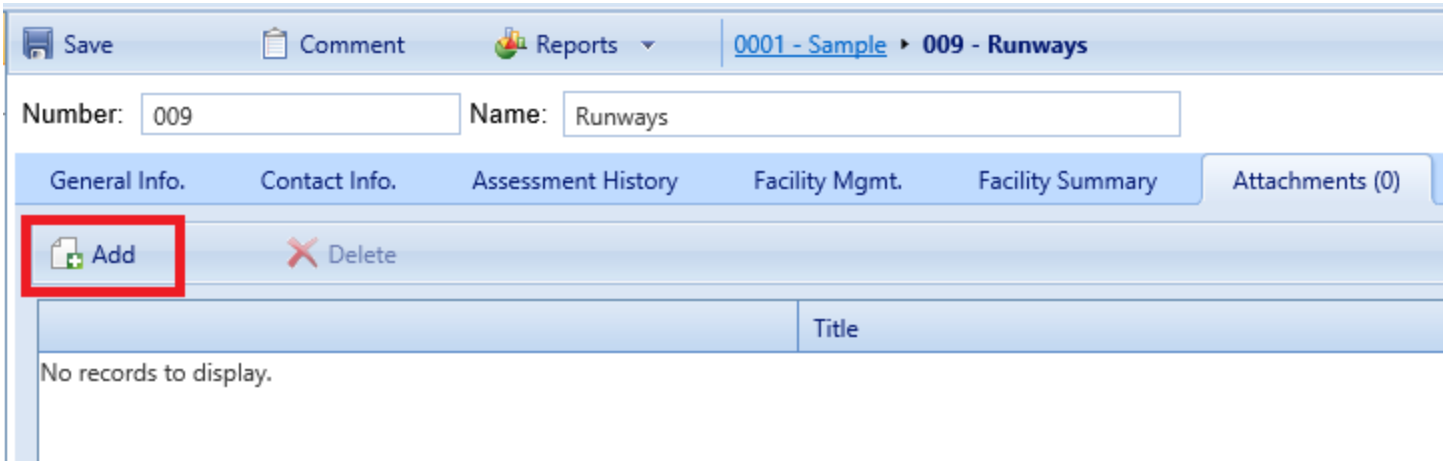
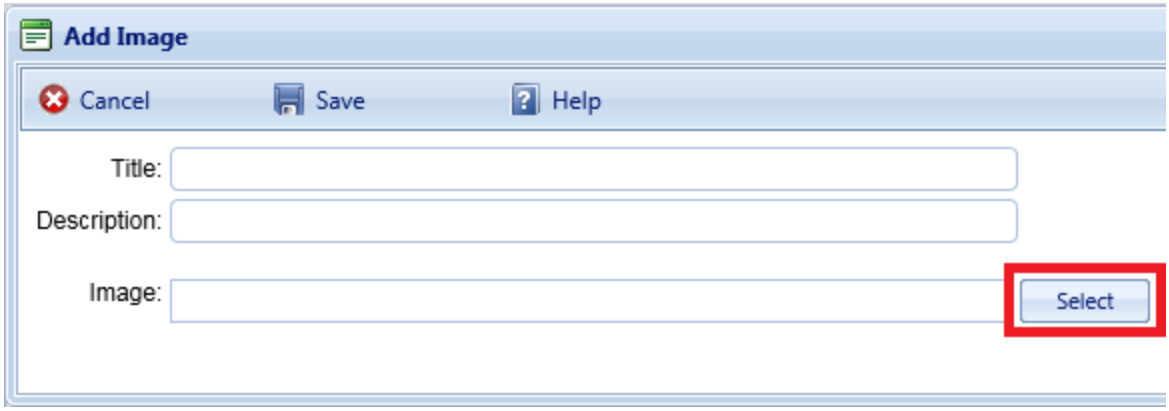
[1]Facility Condition Index.

- At the Attachments tab, activate the Add button in the toolbar below the row of tabs.



This will open the "Add Image" popup window:



- Enter Title and Description information for the attachment.
- Activate the Select button to the right of the "Image" field to browse to the desired image or other file.
- If you are adding an attachment at the Building level, use the Image Type radio buttons to indicate whether the attachment is a Key Plan, a Section Plan, or "Other."
- Once the required attachment data is entered, activate the Save button on the popup toolbar. Alternatively, to close the popup window without attaching the selected file or image, activate the Cancel button.

Delete a Complex

Delete a Complex

Permissions Note: This action requires AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. permission for the relevant location in inventory.

To delete a Complex, navigate to it in the inventory tree and do one of the following:

a. (1) Right-click the Complex, then (2) select "Delete Complex" from the options. Or,
b. (1) Select the Complex, then (2) activate the Delete Complex icon on the menu toolbar.

WARNING: Deleting a Complex deletes all inventory (Buildings, Systems, Components, and roof sections) in the Complex. This is a significant step to take and should only be done when you are certain that you wish to clear the entire inventory of the Complex you have selected.

Best Practice Recommendation: Making frequent backups of your inventory database will protect you from significant data losses if mistakes in deleting are made.

Buildings

About Buildings

A large amount of information is stored at the Building level of the asset tree. This topic describes what a Building is and how to use it in organizing roofing inventory. It also provides links to the operations that can be performed at the Building level.

Note: Because a Building record is almost always larger and more complex than any other hierarchical record, it will take longer for a Building record to process and appear on the screen than it will for records at other levels in the hierarchy.

The Building level is the lowest level in the SMSSustainment Management System hierarchy that is shared by both BUILDER and ROOFER. Below the Building level, ROOFER has just one more hierarchical level, the roof section.

Operations that can be performed on Buildings are:

Add a Building
Edit Building General Information
Edit Additional Building Inventory Data
Delete a Building

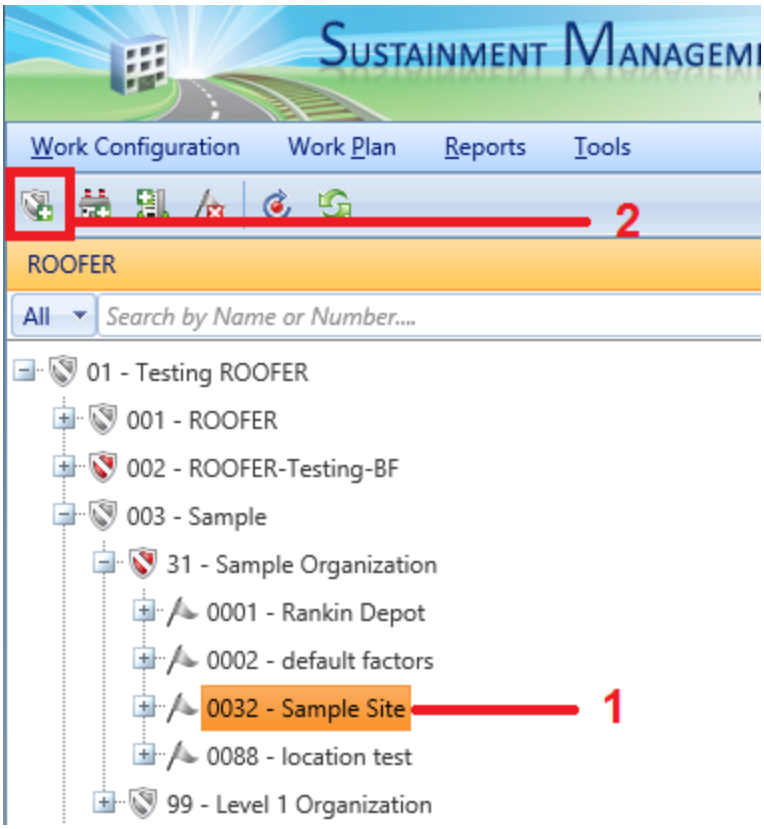
Information is also available on using the Current Status property of a Building. Available status options are Active; Demolished; to be acquired; to be built; to be demolished; to be transferred; Transferred; and Vacant.

How to Use a Building's Current Status Property
Use Current Status to Track Non-Current Inventory

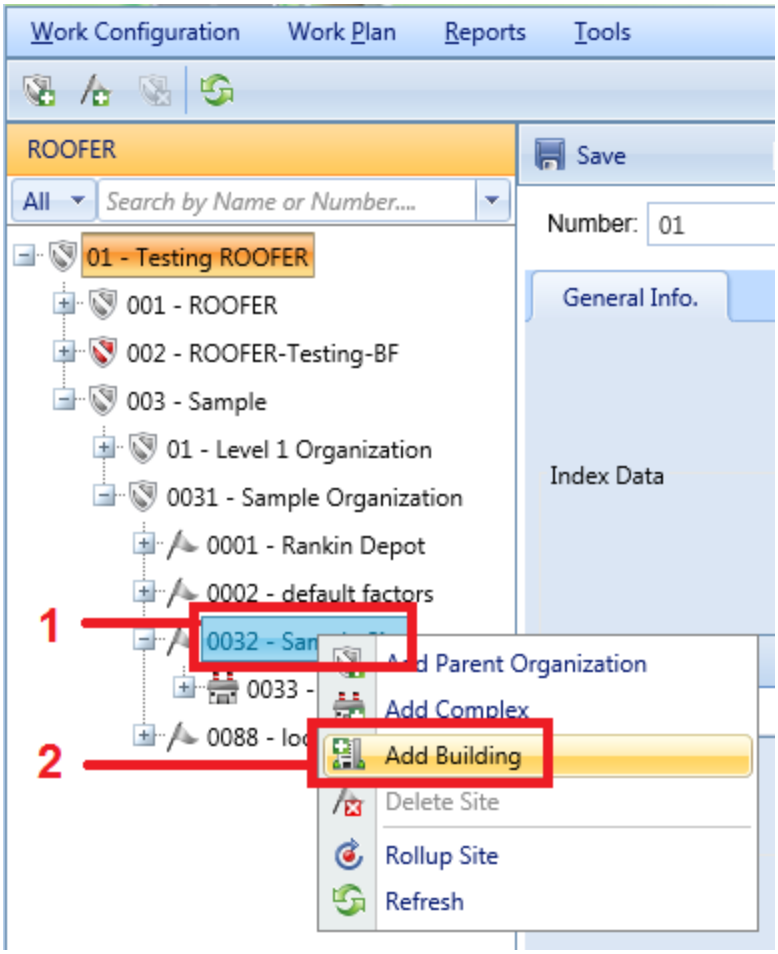
Add a Building

After a Site has been created, you can add the Buildings (facilities) to your inventory. To add a new Building to a Site, navigate to that Site and do one of the following:

a. Select the Site. Then activate the Add Building icon on the main toolbar.



b. Or, right-click the Site. Then select "Add Building" from the options.

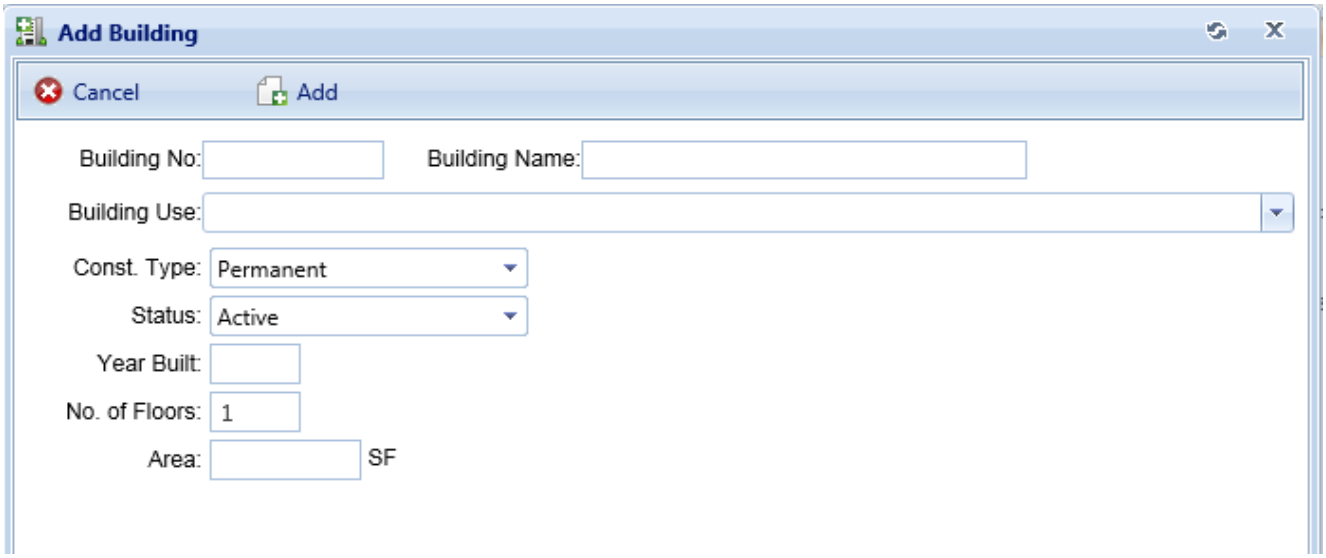


The "Add Building" popup window should appear.

Enter Required Building Information

IMPORTANT: It is vital to ensure that the data contained at the Facility/Building level is accurate. Much of the data contained at this level directly affects calculations of the repair/replace ratio and the condition indexes.

In the fields on the "Add Building" popup window, enter the minimum required information for the Building Each of the requirements is described at the headings below.



Building Number

Enter the identifying number for the Building. For DoD applications, the RPUID (Real Property Unique Identifier) is helpful here.

The Building Number field may be left blank if you wish to supply only a Building name. You must enter at least a Building name or a Building number, and the combination of the two must be unique within the Site.

Specifications: The Building The ID Number is limited to 12 alphanumeric characters.

Best Practice Recommendation: Because the Building number is alphanumeric instead of numeric, the alphabetic ordering of Buildings in a list will follow character order rather than number order: for example, Building number 10 will be listed before Building number 2.

To avoid this situation, use the correct number of leading zeros (for example, use 02 or 002 or 0002 instead of 2), depending on the maximum number of digits used in numbering Buildings.

Building Name

Enter the identifying name for this Building. The Building Name field may be left blank if you wish to supply only a number. You must enter at least a Building name or a Building number, and the combination of the two must be unique within the Site.

Specifications: The name is limited to 50 alphanumeric characters.

Best Practice Recommendation: Avoid using single quotes, double quotes, and ampersands. These characters can interfere with query formation.

Building Use

From the dropdown list, select the Building Use category that most closely matches the Building's use. For a Department of Defense activity, ROOFER should display familiar category codes for your service.

Construction Type

From the dropdown list, select the construction type that best matches the Building. The construction type options are:

- Leased
- Permanent
- Semipermanent
- Temporary

Status

From the dropdown list, select the appropriate (Current) Status. The default status is "Active." See How to Use a Building's Current Status Property for more information and a full list of the options. In addition to Active, Demolished, Transferred, and Vacant, the status option can be set to various "pending" actions. See below for advice on use of some of the options.

To Be Acquired, To Be Built.

These status options allow you to enter future Buildings into the inventory even though they are not presently owned. Along with Transferred and Demolished, these options allow you to keep information about the Building in the database without the data on these Buildings affecting current condition indices.

Transferred, Demolished

These Current Status options allow you to keep records for Buildings that are no longer in the physical inventory. Such records are ignored in processes that should only consider current Buildings, such as condition rollups and work planning.

Year Built

Enter the year that construction of the Building was completed. This data element determines the age of the Building, which is a critical factor in ROOFER's decision-making processes.

Number of Floors

Enter the number of floors of the Building. This data element is used to estimate the size of the Building's footprint by dividing the area by the number of floors.

Area

Enter the gross area of the Building.

Confirm or Cancel

Once the required minimum Building data is entered,

a. Activate the Add button on the popup toolbar to create the Building. The Building Summary window will open to allow you to immediately edit or add to the Building data at the various tabs. These tabs are described in Edit Building General Information and Edit Additional Building Inventory Data.
b. Alternatively, to close the window without creating the new Building, activate the Cancel button.

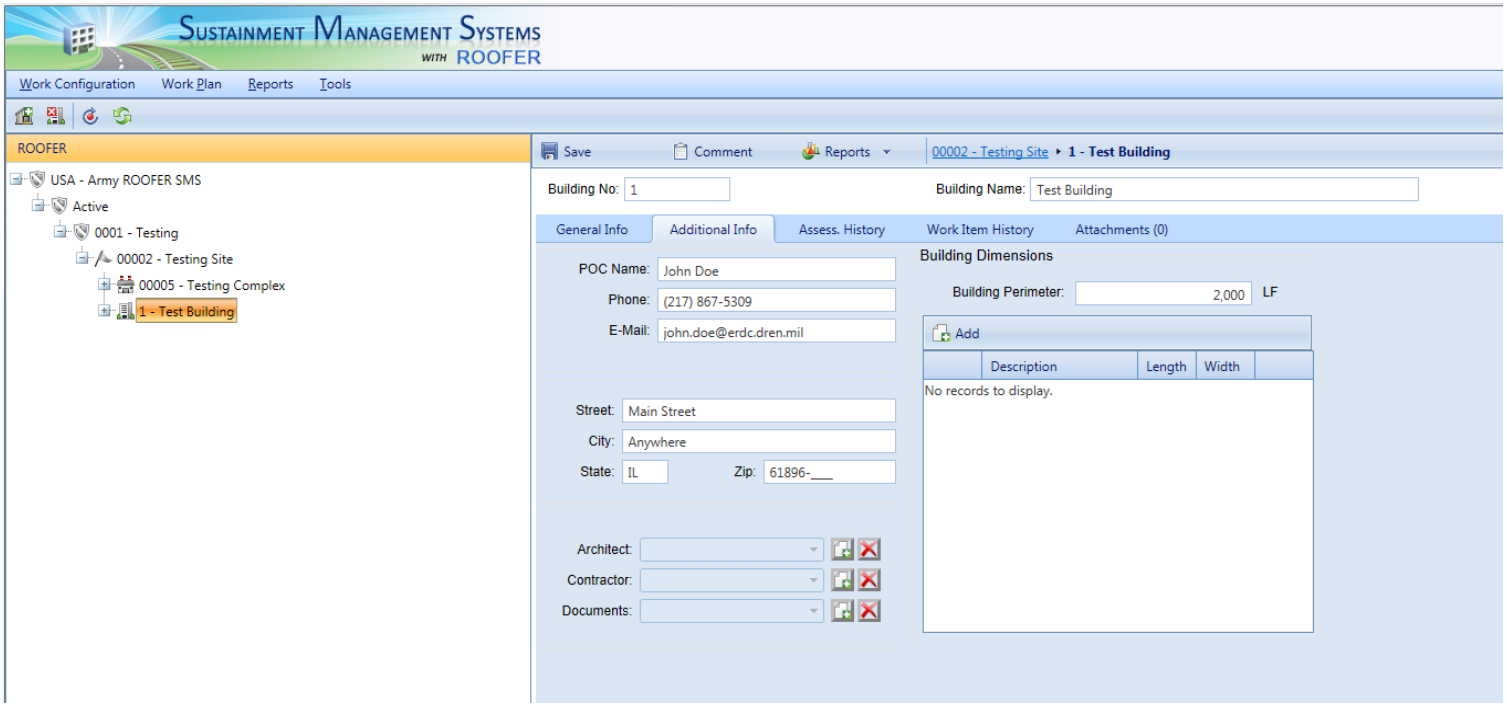
Edit Additional Building Inventory Data

In addition to data available at the General Information tab, further Building information is displayed and can be edited at the tabs listed below.

Note: All of the additional Site information is optional, or else generated by ROOFER.

Additional Information Tab

The additional Building information is accessed from the general Building information screen by selecting the Additional Info tab:



All of the additional Building information is optional, and includes:

Contact Information

Point of contact (POC) information for the Site may be viewed and edited by selecting the Contact Information (Contact Info.) tab. The available fields are as follows:

- Name. Enter the name of the Site point of contact. Limit: 30 alphanumeric characters.
- Phone Number. Enter the phone number of the Site POC. Limit: 20 alphanumeric characters.
- Email Address. Enter the email address of the Site POC. Limit: 75 alphanumeric characters.
- Street. Enter the official street address of the Site. Limit: 30 alphanumeric characters).
- City. Enter the city where the Site is located. Limit: 15 alphanumeric characters.
- State. Enter the state where the Site is located. Limit: 2 alphanumeric characters.
- Zip Code. Enter the zip code of the Site. Limit: 10 alphanumeric characters.

Building Design

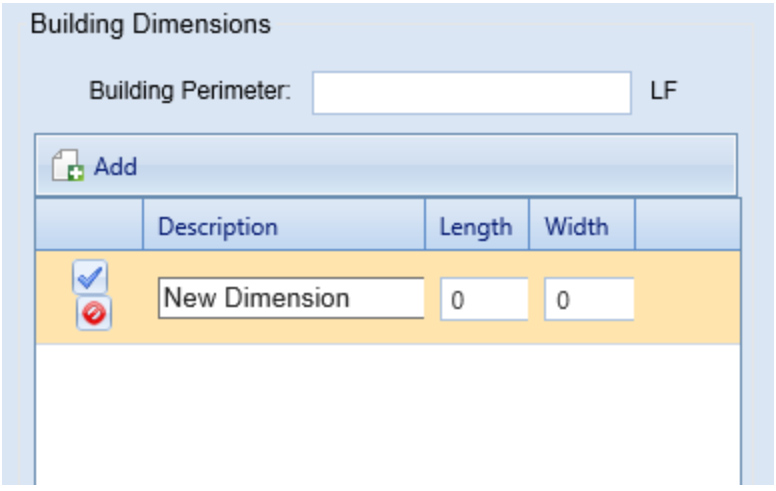
- Architect. Lists the architects of the Building. Add and delete names by using the adjacent buttons. Each architect's name is limited to 30 characters.
- Contractor. Lists the contractors of the Building. Add and delete names by using the adjacent buttons. Each contractor's name is limited to 30 characters.
- Documents. Lists the documents related to the Building. Add and delete document names by using the adjacent buttons. Each document's name is limited to 24 characters.

Building Dimensions

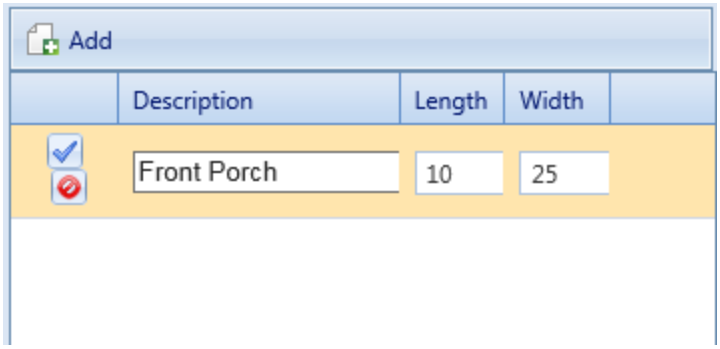
- Building Perimeter. Enter the linear measure of the perimeter of the Building.
- Description (Table). Enter a description of the distinct areas of the Building that you wish to add dimensions for. For example, you may list "East Wing/West Wing," or "Offices/Library/Warehouse," or "Public Areas/Secure Areas." Each description is limited to 50 characters. Use the Add Dimension and Delete Dimension buttons to add and delete items from the list.

  To make entries in the dimension description table, follow these steps:
  - Activate the Add icon.
  - Activate the pencil icon to the left of the dimension you wish to add or edit.

    The table will change to look like this:



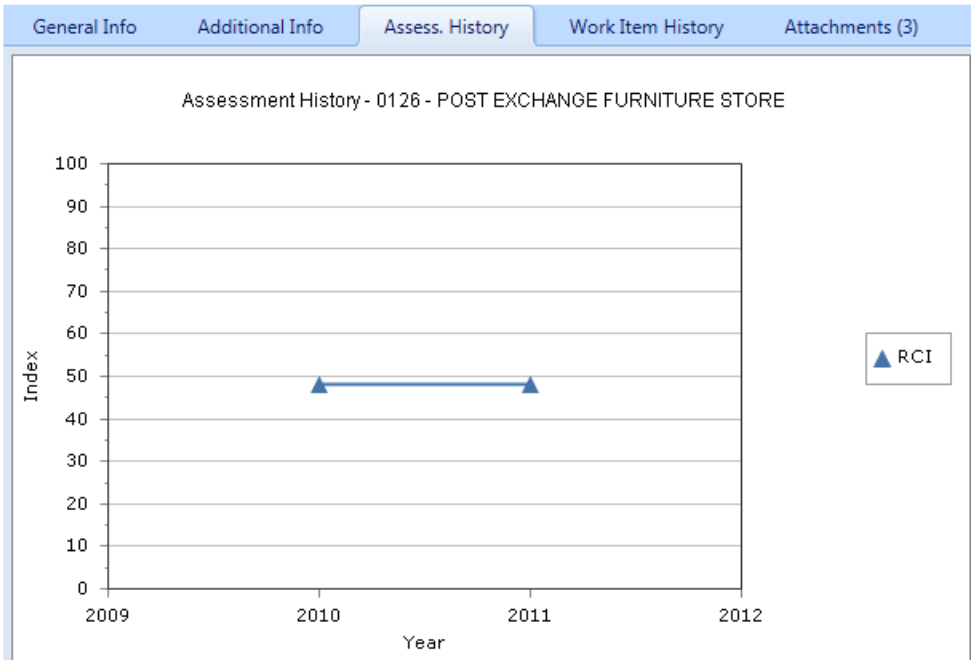
- Highlight "New Dimension" or whatever other text is in the Description column, and add the text describing the area you are providing dimensions for.
- Next, enter its dimensions in the Length and Width columns. For example:



- Confirm your entry by activating the check mark button in the leftmost column. Alternatively, you may cancel the entry by activating the red button below the checkmark.
- Repeat from Step 1 as desired to add dimensions for other areas.

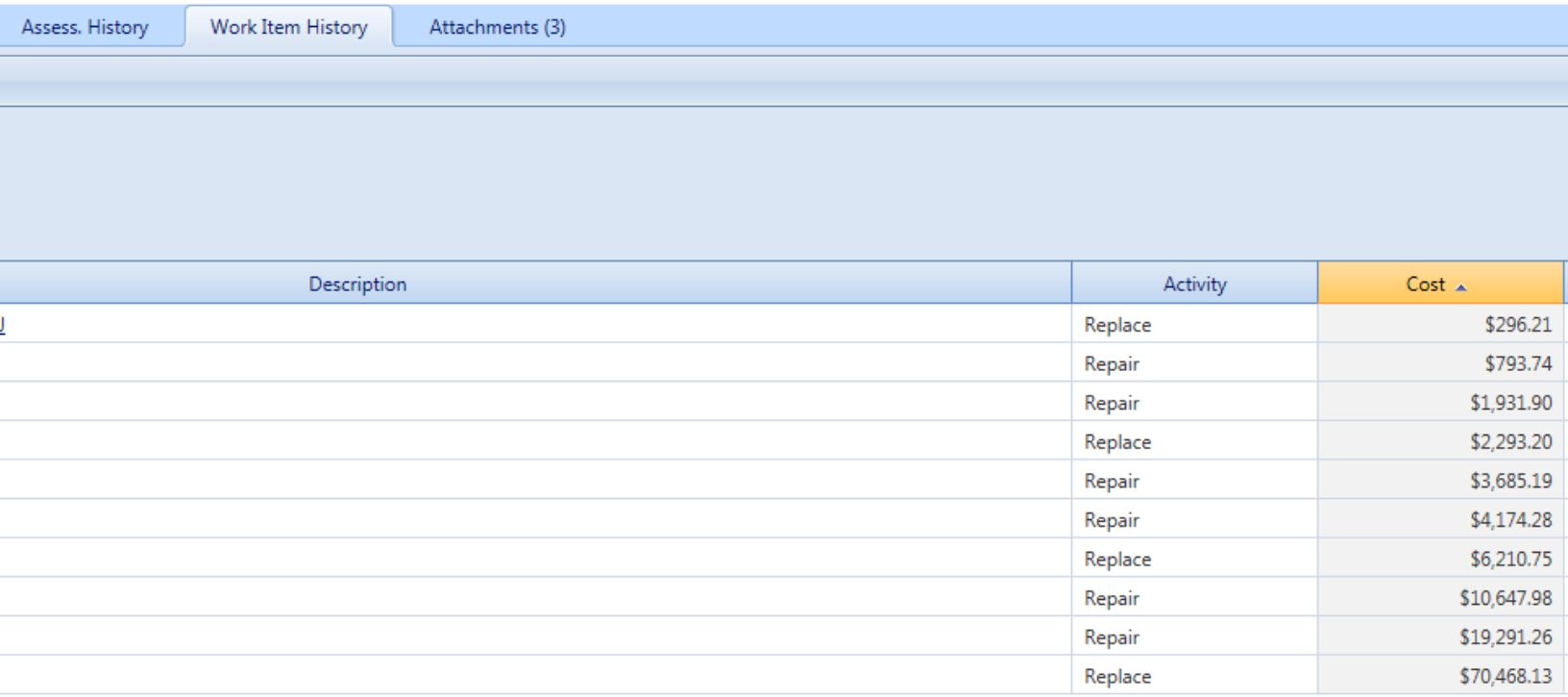
Assessment History Tab

The Assessment History Trends tab displays a graph showing how the Roofing Condition Index has changed over time. The graph displays the RCIRoof Condition Index from the year the Building was constructed to the current fiscal year.



Work Item History Tab

The Work ItemA discrete work activity applied to a single managed object such as a Component-Section, intended to improve its life cycle performance. History tab shows a list of the work items that have been performed and/or are scheduled to be performed in the Building. The work items can be filtered by fiscal year (FY), Status, Cost, or Activity using the drop down lists on the screen. For more information on work items, see the Work Planning Overview.



Description	Activity	Cost ▲
	Replace	$296.21
	Repair	$793.74
	Repair	$1,931.90
	Replace	$2,293.20
	Repair	$3,685.19
	Repair	$4,174.28
	Replace	$6,210.75
	Repair	$10,647.98
	Repair	$19,291.26
	Replace	$70,468.13

Attachments Tab

The Attachments tab allows files such as an image file to be attached to the Building's record. An image might be a picture of the Building, or it could be an electronic image of written notes or diagrams made during inventory.

The attachment may be in any of the following formats:

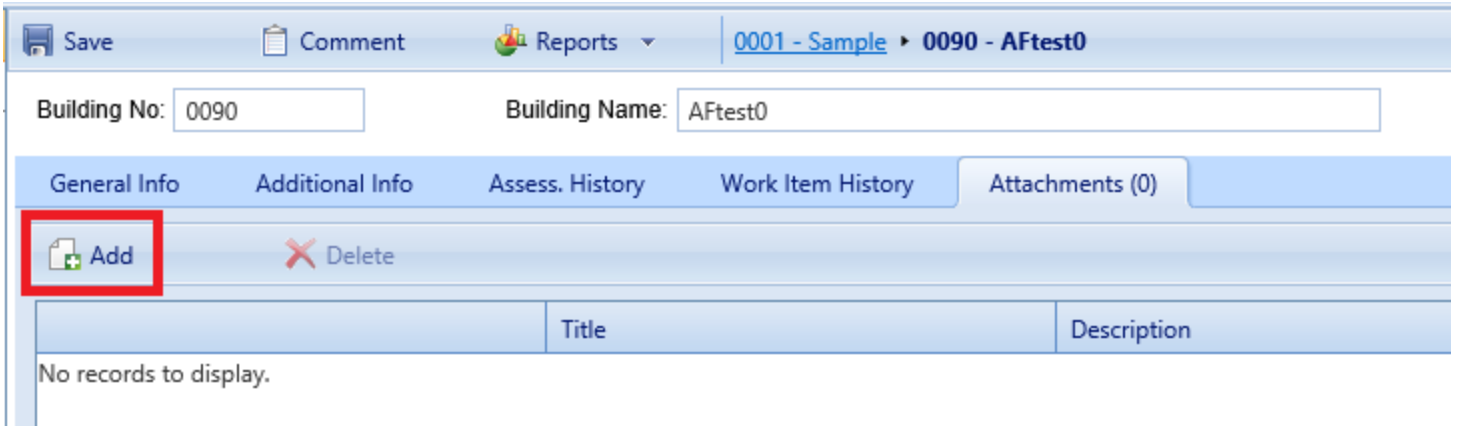
- .jpg
- .jpeg
- .png
- .zip
- .doc
- .pdf

Note: As of January 31, 2022, .doc format is allowed, but not .docx.

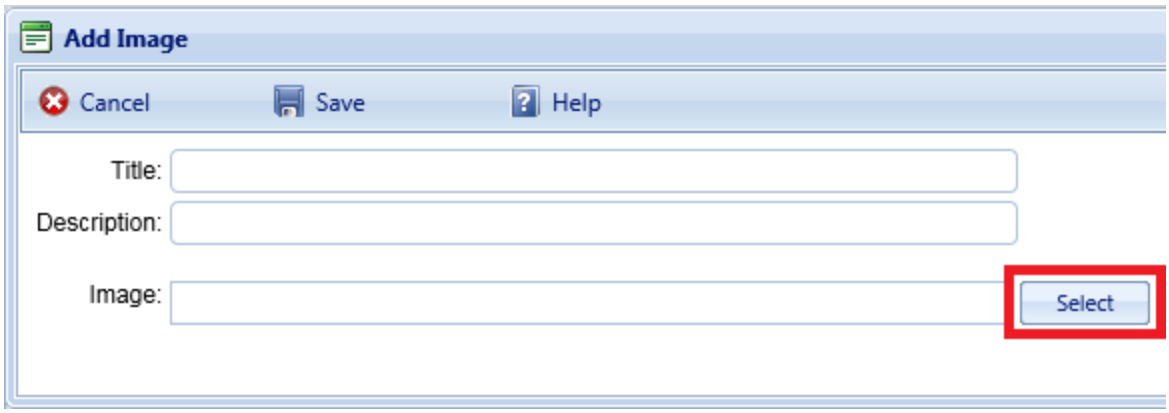
Attach a File

To attach a file,

- At the Attachments tab, activate the Add button in the toolbar below the row of tabs.



This will open the "Add Image" popup window:

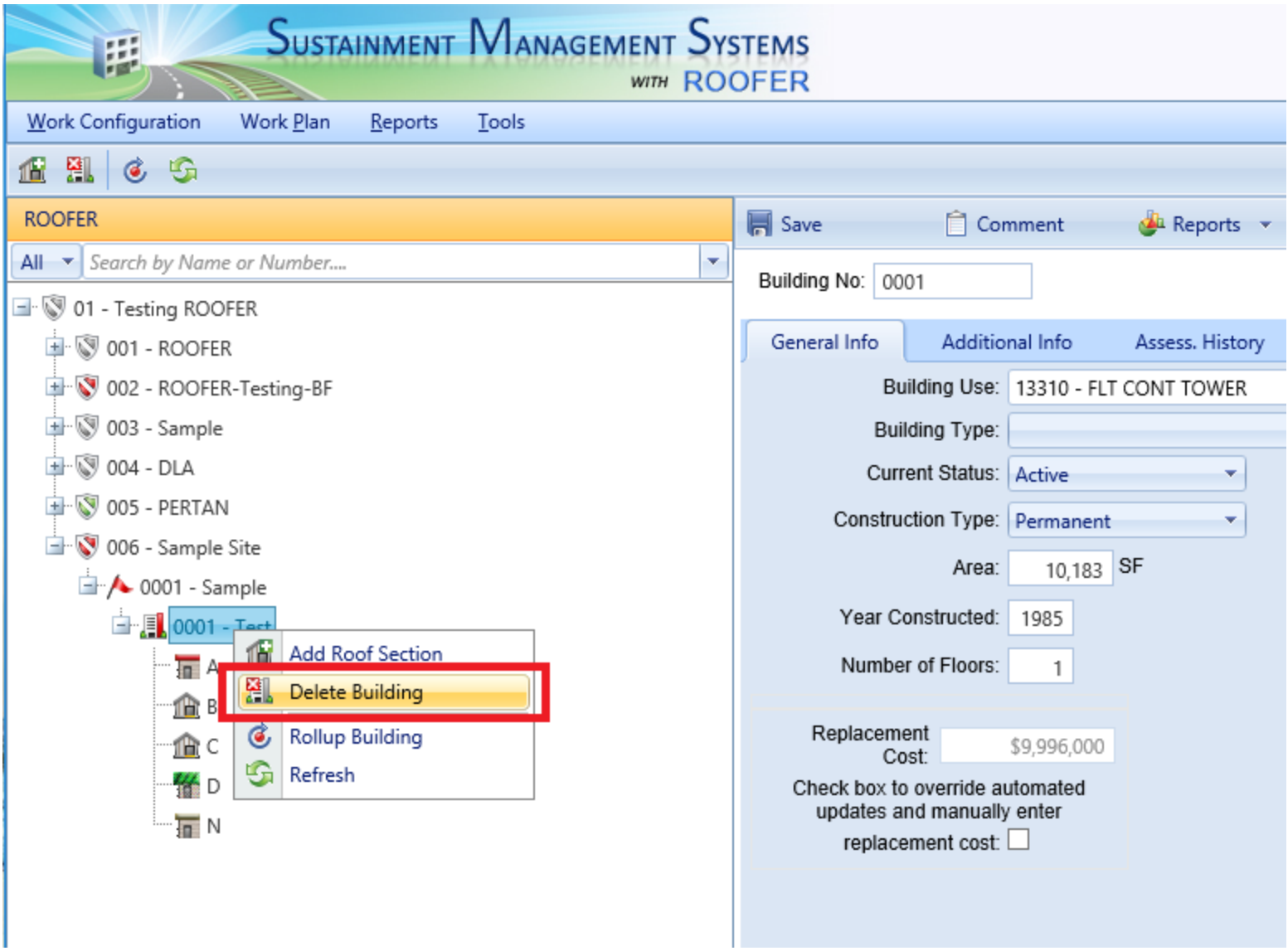


- Enter Title and Description information for the attachment.
- Activate the Select button to the right of the "Image" field to browse to the desired image or other file.
- If you are adding an attachment at the Building level, use the Image Type radio buttons to indicate whether the attachment is a Key Plan, a Section Plan, or "Other."
- Once the required attachment data is entered, activate the Save button on the popup toolbar. Alternatively, to close the popup window without attaching the selected file or image, activate the Cancel button.

Delete a Building

To delete a Building, navigate to it in the inventory tree and do one of the following:

a. Select the Building, then activate the Delete Building icon on the menu toolbar.
b. Alternatively, right-click the Building, then select "Delete Building" from the options, as shown below.



WARNING: Deleting a Building deletes all the roof section associated with the Building. This is a significant step to take and should only be done when you are certain that you wish to clear the entire inventory of roof sections in the Building you have selected.

Best Practice Recommendation: Instead of deleting a Building, you can use the Current Status property to mark Buildings that have been demolished or transferred to another owner. With this method, the Building's records remain in the database, but the Building is ignored in processes that should only consider current Buildings. See Use Current Status to Track Non-Current Inventory.

Backups: Making frequent backups of your inventory database will protect you from significant data losses if mistakes in deleting are made.

How to Use a Building's Current Status Property

The Current Status property allows you to maintain database records for Buildings that are not currently in your physical inventory, whether for historical purposes or future planning. A Building's Current Status is used in the decision processes of both ROOFER and BUILDER, and it is the basis for a number of useful capabilities, including allowing you to enter inventory for Buildings not yet built, or inventory and inspections for Buildings not yet acquired.

Set the Current Status Property

The Current Status property is set when you Add a Building. The default status in the "Add Building" popup is "Active."

Note: in the "Add Building" popup window, the Current Status property is labeled simply "Status."

You can change this default value either by using the dropdown list of status options at the time of adding the Building, or when you Edit Building General Information at the Building-level General Information screen.

Current Status can have any one of the following values:

- Active. This is the default status. Use this status for Buildings that are currently in use. This status is the end status for Buildings with status "To be built" or "To be acquired."
- Vacant. Use this status for Buildings that are currently in your physical inventory but not in use.

  Note: Currently there is no way to make ROOFER treat Buildings with this status differently from "Active" Buildings.

- To be transferred. Use this status for Buildings that will be transferred to another owner in the future. The effective year of this status is the year in which the transfer will take place.

  Note: Currently there is no way to make ROOFER treat Buildings with this status differently from "Active" Buildings.

- To be demolished. Use this status for Buildings that will be demolished in the future. The effective year of this status is the year in which the Building is to be demolished.

  Note: In the future it may be possible to assign lower prioritization to work items associated with a Building having this status, but currently there is no way to make ROOFER treat Buildings with this status differently from "Active" Buildings.

- To be acquired. Use this status to enter inventory records for an existing Building prior to its acquisition. The effective year of this status is the year in which the Building is expected to be acquired.

You will be able to edit the Building and inspection data for this type of Building, and ROOFER's condition and remaining service life predictions will be applied based on the inspection data entered. In this way, you will be able to estimate the maintenance requirements of such a Building prior to its acquisition. For more information, see "To Be Acquired" below.

- To be built. Use this status to enter inventory records for a new Building prior to its commissioning for occupancy. The effective year of this status is the year in which the Building is expected to be recognized as part of your physical inventory.

  In ROOFER, you will be able to edit the Building data on the Building Summary screen but will not be able to add inspection records until the Current Status changes to "Active." For more information, see "To Be Built" below.

- Transferred. Use this status to force ROOFER's automated processes for condition/service life assessment and work planning to skip the Building but leave the inventory and inspection records intact. The effective year for this status is the year in which the transfer takes place. "Transferred" the end status of the "To be transferred" status. For more information, see Keep Records of Past Buildings (Demolished, Transferred) below.
- Demolished. Use this status to remove a Building from ROOFER's automated processes for condition/service life assessment and work planning but leave the inventory and inspection records intact. The effective year for this status is the year in which the Building is demolished. "Demolished" is the end status of the "To be demolished" status. For more information, see Keep Records of Past Buildings (Demolished, Transferred) below.

Review of Current Status Options:

The last four of these values indicate that the designated Building is not currently part of the inventory, and two others ("To be transferred" and "To be demolished") indicate that the Building will be removed from the inventory in the future. In essence, one of the things that the Current Status property allows you to do is to enter future Buildings into the inventory and to plan for their maintenance even though they are not presently owned. In addition, the Current Status property allows you to keep records for Buildings that are no longer in the physical inventory. Such records are ignored in processes that should only consider current Buildings, such as condition rollups and work planning.

Currently ROOFER treats the "Active" and "Vacant" status options in the same way.

The following sections provide tips on how current status property settings other than "Active" can be profitably used to avoid losing records and to track non-current inventory.

Use the Current Status Property to Avoid Losing Records

When you Delete a Building from ROOFER, this removes all database records associated with that Building. If you wish to keep the records, whether for historical purposes, analysis, or possible transfer to another

ROOFER database (perhaps the Building is being transferred from one property book to another), you should simply set the Current Status property to an appropriate value instead, such as "Transferred" or "Demolished."

Add Future Buildings

Using the Current Status property, it is possible to enter Buildings into the database before they are actually in the physical inventory. This includes Buildings under construction (designated with status "To be built") and existing Buildings being considered for acquisition from another owner (designated with status "To be acquired").

"To Be Acquired"

By setting the Current Status property to "To be acquired" and entering data in advance, you will be able to anticipate short-term work requirements for existing Buildings about to be acquired.

Enter Inventory Records

Use this status to enter inventory records for a new Building prior to its acquisition.

Record Inspection Results

Once you have entered inventory records for a Building with status "To be acquired," you may record inspection results prior to acquisition. The ROOFER processes that determine remaining service life and condition prediction will track the condition of the Building's roof section after the Building is first entered and prior to its acquisition.

Generate a Work Plan

With inspection results, ROOFER will be able to generate a work plan for the Building to upgrade its roofing to your established standards. Such information could be invaluable in planning for the load such a Building will place on both short and long term budgets.

"To Be Built"

Enter Inventory Records

Use this status to enter inventory records for a new Building prior to its commissioning for occupancy.

No Recording of Inspection Results

If you enter a Building with status "To be built," you may not record new inspections until the status changes to "Active." The ROOFER processes that determine remaining service life and condition prediction will skip such a Building under the assumption that quality assurance during the construction process will force all roof sections to an RCIRoof Condition Index of 100 prior to commissioning.

Use Scenarios to Simulate "Active" Status

The advantage of entering the Building before it is built is that you may include it in Scenarios to measure its long-term effects on work plans and budgets That is, the scenario can change the status of a new Building to "Active" at a scheduled time and begin treating it as a normal Building with predictable deterioration rates and work requirements.

Keep Records of Past Buildings (Demolished, Transferred)

In earlier versions of ROOFER, the only way to eliminate a Building from the automated assessment and planning processes used by ROOFER was to delete the Building. With this approach, all records related to the Building were actually deleted from the database.

Now, the Current Status property gives you another option.

If you have records in the ROOFER database for a Building which is to be demolished or transferred to another owner, you can keep the inventory, inspection, and work history records in the ROOFER database, while at the same time making the Building invisible to ROOFER's automated processes, simply by changing the Building's status to "Demolished" or "Transferred."

Best Practice Recommendation: When you delete a Building, you actually remove all database records associated with that Building. If you wish to keep the records, whether for historical purposes, analysis, or possible transfer to another ROOFER database (perhaps the Building is being transferred from one property book to another), then you should simply set the Current Status property to the appropriate value, either "Demolished" or "Transferred."

Below is a summary of what happens when a Building has the status of either "Demolished" or "Transferred":

- Inventory records are locked. You will be unable to change the Building's data properties or its composition.
- Condition and Functionality Assessment records are locked. You will be unable to change existing records or to add new records.
- Work Planning records are locked. You will be unable to change existing records or to add new records.
- Cost data is not updated. The Building's cost data will not be affected by annual cost updates at the beginning of the calendar year.
- The Building will not be considered during automatic work generation.
- The Building will not appear in Scenarios simulations.
- If the Building's status is changed to "Demolished" or "Transferred" during a Scenarios simulation, it will have records for the years prior to its status change and then after that date in the scenario, it will be treated as above. That is, there will be no further updates of data, no new inspections, no changes in condition or service life, etc.

Use Current Status to Track Non-Current Inventory

The Building-level Current Status property allows you to have records in your database for Buildings that are not currently in your physical inventory. This is useful for Buildings at both ends of the facecloth. You may keep records for Buildings that have been demolished or transferred, and you may add Buildings planned for future construction or acquisition.

Add Future Buildings

Using the Current Status property, it is possible to enter Buildings into the database before they are actually in the physical inventory. This includes Buildings under construction (designated with status "To be built") and existing Buildings being considered for acquisition from another owner (designated with status "To be acquired").

"To Be Acquired"

By setting the Current Status property to "To be acquired" and entering data in advance, you will be able to anticipate short-term work requirements for existing Buildings about to be acquired.

Enter Inventory Records

Use this status to enter inventory records for a new Building prior to its acquisition.

Record Inspection Results

Once you have entered inventory records for a Building with status "To be acquired," you may record inspection results prior to acquisition. The processes that determine remaining service life and condition prediction will track the condition of the Building and its roof sections after the Building is first entered and prior to its acquisition.

Generate a Work Plan

With inspection results, ROOFER will be able to generate a work plan for the Building to upgradeits roofing to your established standards. Such information could be invaluable in planning for the load such a Building will place on both short and long term budgets.

"To Be Built"

Enter Inventory Records

Use this status to enter inventory records for a new Building prior to its commissioning for occupancy.

No Recording of Inspection Results

If you enter a Building with status "To be built," you may not record new inspections until the status changes to "Active." The ROOFER processes that determine remaining service life and condition prediction will skip such a Building under the assumption that quality assurance during the construction process will force all roof sections to an RCIRoof Condition Index of 100 prior to commissioning.

Keep Records of Past Buildings (Demolished, Transferred)

In earlier versions of ROOFER, the only way to eliminate a Building from the automated assessment and planning processes used by ROOFER was to delete the Building. With this approach, all records related to the Building were actually deleted from the database.

Now, the Current Status property gives you another option.

If you have records in the ROOFER database for a Building which is to be demolished or transferred to another owner, you can keep the inventory, inspection, and work history records in the database, while at the same time making the Building invisible to ROOFER's automated processes, simply by changing the Building's status to "Demolished" or "Transferred."

Best Practice Recommendation: When you delete a Building, you actually remove all database records associated with that Building. If you wish to keep the records, whether for historical purposes, analysis, or possible transfer to another ROOFER database (perhaps the Building is being transferred from one property book to another), then you should simply set the Current Status property to the appropriate value, either "Demolished" or "Transferred."

Below is a summary of what happens when a Building has the status of either "Demolished" or "Transferred":

- Inventory records are locked. You will be unable to change the Building's data properties or its composition.
- Condition records are locked. You will be unable to change existing records or to add new records.
- Work Planning records are locked. You will be unable to change existing records or to add new records.
- Cost data is not updated. The Building's cost data will not be affected by annual cost updates at the beginning of the calendar year.
- The **RSL**[1]Remaining Service Life and **CI**[2]Condition Index or RCIRoof Condition Index values will not be updated for the Building and its roof sections.
- The Building will not be considered during automatic work generation.

Roof Sections

About Roof Sections

A roof section is the final and most detailed level in the ROOFER asset tree. This topic briefly explains by what criteria a Building's roof should be divided into different conceptual sections, and introduces some of the

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[1]Remaining service life.

[2]Condition Index

features of a roof section record. It also provides links to the operations that can be performed at the roof section level.

Once a Building is in place in the ROOFER database, one or more roof section records can be added to the Building. Areas of roof that differ from each other in age (including the age of replacements or added layers), type, or composition should be described in separate roof sections.

Inventory operations you can perform on Roof Sections are:

Add a Roof Section
Edit Roof Section Inventory Data
Delete a Roof Section

At the roof section level in the ROOFER inventory hierarchy is where the constituent components of the RCIRoof Condition Index are shown for the types of roof available in ROOFER:

Membrane

- MCI - the Membrane Condition Index
- **FCI**[1] - the Flashing Condition Index
- ICI - the Insulation Condition Index.

Metal Panel

- PCI - the Panel Condition Index
- **FCI**[2] - the Flashing Condition Index
- ICI- the Insulation Condition Index.

Steep Roof: Non-Metal

- SCI - the Substrate Condition Index
- **FCI**[3] - the Flashing Condition Index
- ICI - the Insulation Condition Index.

Note: In ROOFER, the abbreviation **FCI**[4]Flashing Condition Index. In ROOFER the FCI, as determined by inspection and/or algorithm, is used in the calculation of the Roof Condition Index (RCI) stands for Flashing Condition Index. In the BUILDER SMS module, **FCI**[5] stands for Facility Condition Index.

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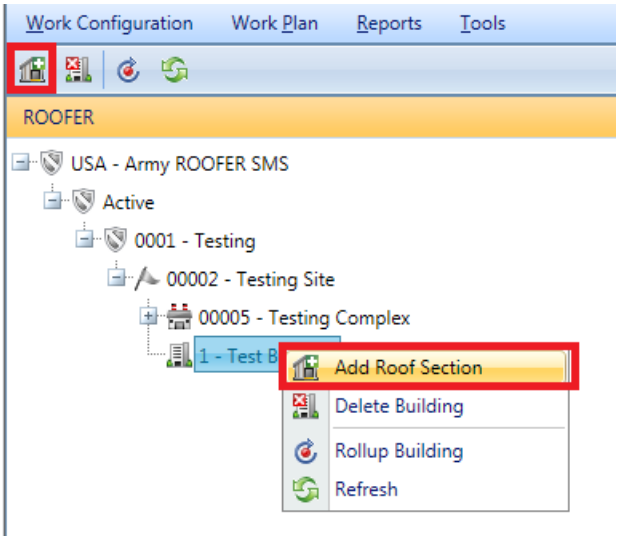
[1]Facility Condition Index.
[2]Facility Condition Index.
[3]Facility Condition Index.
[4]Facility Condition Index.
[5]Facility Condition Index.

Add a Roof Section

To add a new roof section to an existing Building, navigate to the Building in the inventory tree, then do one of the following:

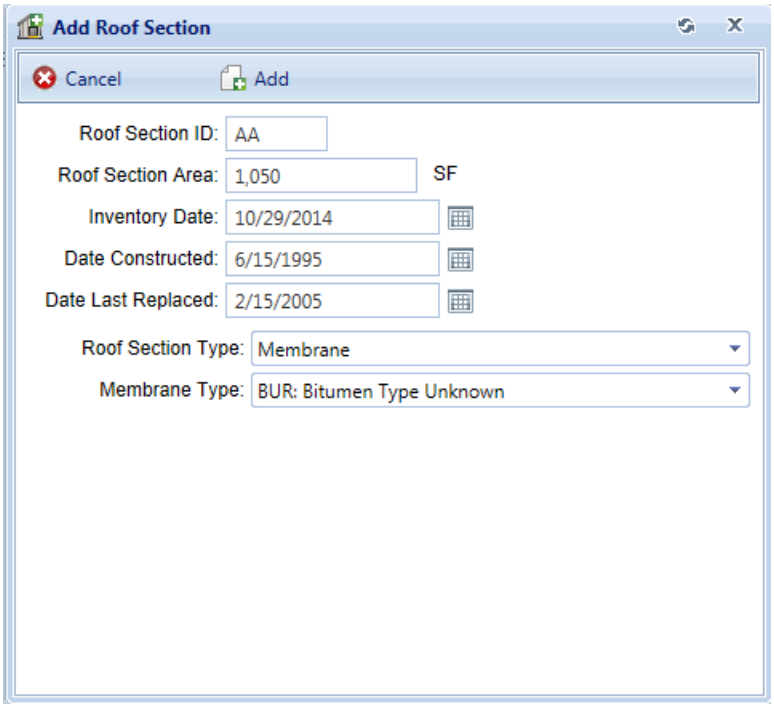
a. Select the Building. Then activate the Add Roof Section icon in the main toolbar.



b. Or, right-click the Building, then select "Add Roof Section" from the options.

The "Add Roof Section" popup will appear.

Note: The last field (belowRoof Section Type) will vary, depending on the type of roof selected in the field above it.



Enter Required Roof Section Information

This documentation segment describes the minimum data to be entered when creating a new roof section. Other data that can be entered is described in Edit Roof Section Data.

In the popup window shown above, enter the following required data:

- Roof Section ID. Enter the ID of the roof section. The ID is limited to one or two alphabetic characters, which must be capitalized.

  Note: A roof section is described by a combination of (1) its ID, (2) its roof section type, and (3) its membrane type or roof covering type (depending on the roof section type). You may have multiple sections of the same roof section type and membrane/roof covering type, but each such roof section must have a unique ID.

- Roof Section Area. Enter the area of the roof section you are adding.
- Inventory Date (Read-Only). This date is populated with the date on which the roof section was added into ROOFER.
- Date Constructed. Enter the date that the roof section was constructed.
- Date Last Replaced. Enter the date that the roof section was last replaced, if applicable.
- Roof Section Type. From the dropdown list, choose the correct roof section type.
- Membrane/Roof Covering Type. From the dropdown list, choose the correct roof membrane or roof covering type.

Note: the Membrane/Roof Covering Type field will not appear until after the Roof Section Type has been selected from the dropdown list.

Confirm or Cancel

Once the required minimum roof section data is entered,

a. Activate the Add button on the popup toolbar to create the roof section. Additional details can then be added as described in Edit Roof Section Inventory Data
b. Alternatively, to close the window without creating the roof section, activate the Cancel button.

Edit Roof Section Inventory Data

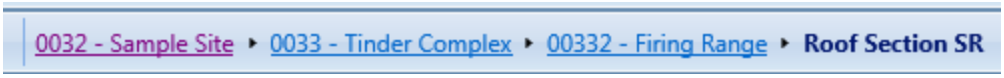
Edit Roof Section Data

Data for a given roof section can be viewed and edited by selecting the roof section in the inventory tree.

Toolbar

The following buttons and information are available at the content screen toolbar:

- **Save**. Saves changes made.
- **Comment**. Allows you to add, edit, and view comments about the section.
- **Reports**. Launches the Report Selection tool, which gives you access to a list of standard reports relevant to section inventory. See Using the Report Viewer.
- **Breadcrumbs**. The breadcrumbs shown on the toolbar provide both orientation and an alternative method of navigation:



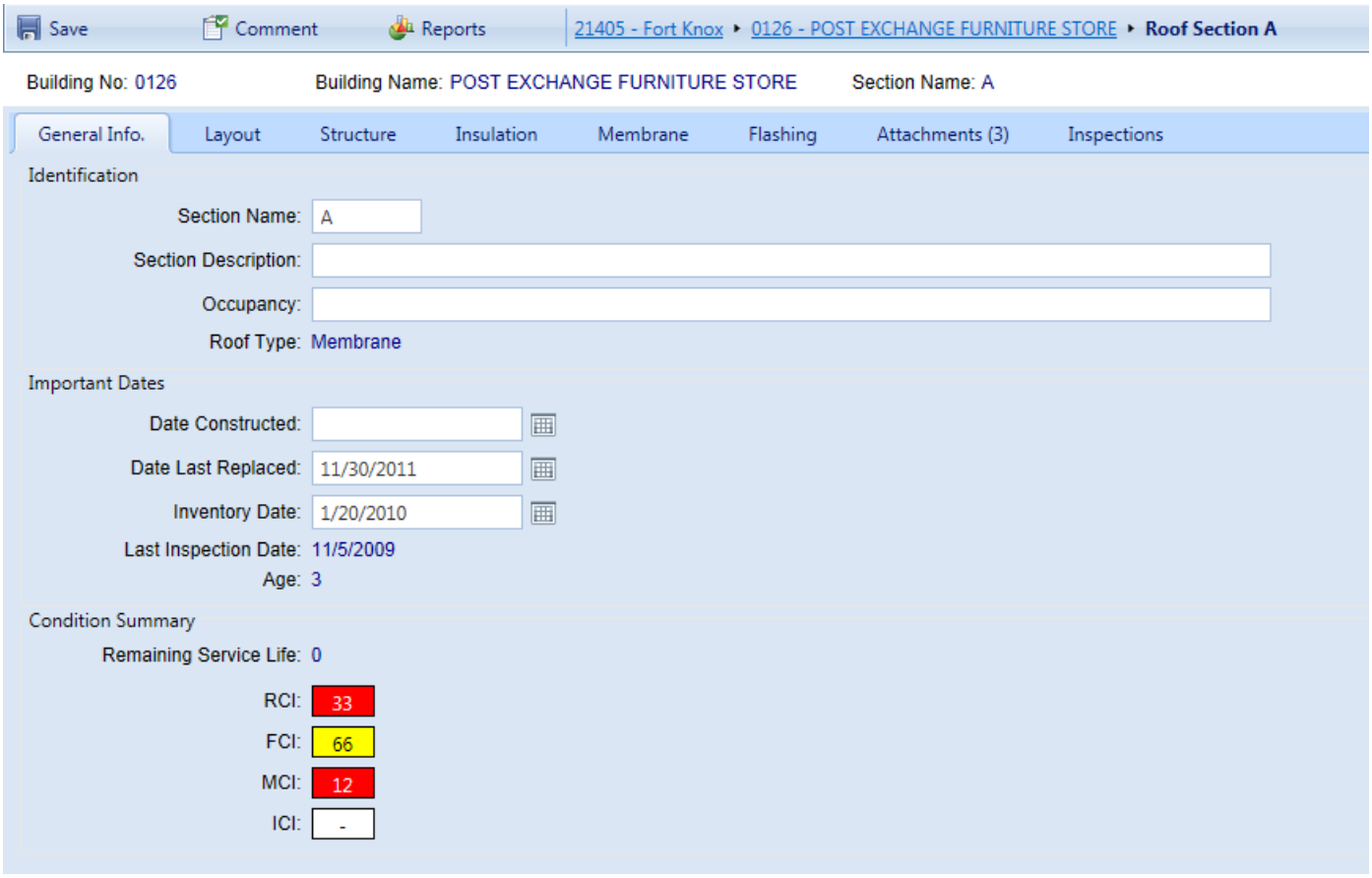
ID Line

On the roof section ID line you can view, but not edit, the following:

- **Building Number**.
- **Building Name**.
- **Section Name**.

General Roof Section Information - General Info. Tab

When you select a roof section in the inventory navigation tree, the **General Information** tab (abbreviated **General Info.**) is shown:



To edit the information, type the updated information into the available fields, then activate **Save** on the content pane toolbar. The fields are as follows:

Identification:

- **Section Name.** This is the same as the **Roof Section ID.** The ID/name of the roof section is limited to one or two alphabetic characters, which must be capitalized.
- **Section Description.** Here you can give a more extensive description of the roof section.
- **Occupancy.** The IBC occupancy classification type may be entered here as historical information, if desired, but it is not a requirement to produce outputs from ROOFER.
- **Roof Type (Read-Only).** This field displays the roof type: (a) Membrane; (b) Metal Panel; or (c) Steep Roof: Non-metal.

Important Dates:

- Date Constructed.
- Date Last Replaced.
- Inventory Date.
- Last Inspection Date (Read-Only).
- Age (Read-Only). This is calculated by subtracting the Date Last Replaced from the current date.

Condition Summary (Read-Only):

- **Remaining Service Life.** The expected remaining service life is calculated using the Date Last Replaced, the current date, and the Service Life Book selected at the Site or Organization level.
- **Roof Condition Index (**RCI**).** The RCI for the roof section is calculated using the values of the indexes listed below.
- **Flashing Condition Index (FCI[1]).**
- MCI / PCI / SCI - a condition rating for a Building System. For each System, the SCI is computed by taking the average of its Components' CIs, weighted by replacement cost.. Depending on the roof type, either the Membrane Condition Index, Panel Condition Index, or Substrate Condition Index will be displayed.
- **Insulation Condition Index (**ICI**).** This index results from the insulation inspection, which is a core sample inspection of the roof section's insulation.

Roofing Details Tabs

In addition to data available at the General Information tab, further roof section information is displayed and can be edited at the tabs listed below.

Layout Tab

- **Roof Dimension**. In the Area field, enter the area of the roof. The unit of measure is shown to the right of the Area field.
- **Perimeter (Membrane Roof).** In the fields provided, enter the length of each applicable perimeter type for the roof section. The unit of measure is shown to the right of each of the fields. The perimeter types for a membrane roof are as follows:
  - Parapet.
  - Roof Edge.
  - Adjacent Wall.
  - Expansion Joint.
  - Area Divider.
  - Other. Use this category for any perimeter type not listed above.
- **Perimeter (Steep Roof: Non-metal).** In the fields provided, enter the length of each applicable perimeter type. The unit of measure is shown to the right of each of the fields. The perimeter types for a metal panel roof are as follows:
  - Parapet.
  - Roof Edge.
  - Adjacent Wall.
  - Fire Wall.
  - Hip.
  - Valley.

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[1]Facility Condition Index.

    - Ridge.
    - Other. Use this category for any perimeter type not listed above.
- **Roof Access.** From the dropdown list, select the method by which the roof section is accessed.
- **Adjacent Sections.** The other roof sections for the Building are listed here. Mark the checkbox for any of them that are adjacent to the current roof section.
- **Roof Types.** Check all that apply. Does not apply to membrane roofs.

Structure Tab

Here you can enter or view the following information:

- **Structural Frame Type.** Select from the dropdown list.
- **Roof/Structural Deck Type.** Select from the dropdown list.
- **Attachment Surface.** Select from the dropdown list. Does not apply to membrane roofs.
- **Roof Slope.** Select from the dropdown list.
- **Drainage Types.** Mark the checkbox for each option that applies.
- **Vapor Retarder Type (Membrane Roof Only).** Select from the dropdown list.

Insulation Tab (Membrane Roof Only)

- **Insulation Types.** Check all that apply. Then, if there is Board Stock, fill in the number of layers and total thickness; also, use the radio button to indicate whether or not it is tapered.
- **Total R-Value**. Fill in the R-value of the insulation.
- **Attachment.** From the dropdown list, select the method of attachment for the insulation.

Membrane Tab (Membrane Roof Only)

At this tab, the fields for Manufacturer, Spec. No., Description, Warranty, and Warranty Expiration are for reference and information storage; they are not used by ROOFER for calculations.

- **Manufacturer.** Enter the manufacturer name.
- **Spec No.** Enter either (a) the UNIFORMAT specification number or (b) the Unified Facilities Guide Specifications (UFGS) specification number that the roof section was built to.
- **Description**. Enter a descriptive phrase or sentence for the roof section.
- **Protected**.
- **Warranty.** Enter warranty information such as warranty terms, deductible, and dollar limit. It is a good practice to attach an electronic copy of the warranty (at the roof section's **Attachments** TAB, not at the "Attachment" field at the Membrane tab).
- **Warranty Expiration.** Enter the expiration date for the warranty.
- **Type.** Select from the dropdown list.
- **Attachment.** From the dropdown list, select the method of attachment for the membrane.
- **Reinforcement.** Select from the dropdown list.
- **Surfacing.** Select from the dropdown list.
- **Walkways.** Check all that apply.

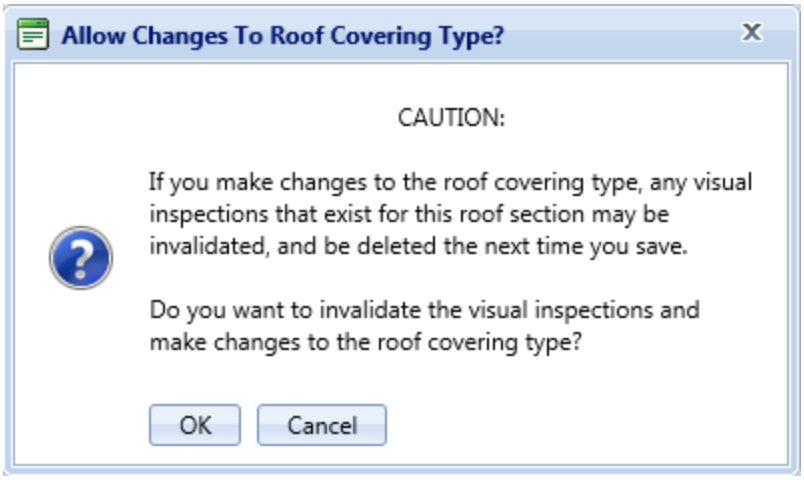
Flashing Tab (Membrane Roof Only)

- **Base**. Check all that apply.
- **Adhesive**. Select from the dropdown list.
- **Counter-Flashing**. Check all that apply.
- **Flashing Types**. Check all that apply.

Covering & Flashing Tab (Steep Roof and Metal Panel Roof Only)

Here you can enter or view the following information:

- **Underlayment Type(s).** Check all that apply.
- **Roof Covering Type.** Select from the dropdown list. For steep roof, this field will be locked.If you activate the lock icon, the following message will display in a popup:



- **Shingle Reinforcement (Steep Roof Only).** Select from the dropdown list.
- **Base Metal Type (Metal Panel Roof Only).** Select from the dropdown list.
- **Panel Finish (Metal Panel Roof Only).** Select from the dropdown list.
- **Attachment**. Select from the dropdown list.
- **Flashings/Flashing Types.** Do one of the following:
    a. For metal panel roof: Fill in the linear measure of each flashing type that applies.
    b. For steep roof: Mark the checkbox for each flashing type that applies.

Miscellaneous Tab (Steep Roof and Metal Panel Roof Only)

At the **Misc** tab, you can enter or view the following information:

- **Accessories**. Check all that apply.
- **Roof Overlaid.**
    - Select the **Yes** or **No** radio button.
    - If **Yes**, enter the number of layers in the "Layers" field to the right.

Attachments Tab

The **Attachments** Tab allows files such as an image file to be attached to the roof section's record. An image might be a picture of the roof section, or it could be an electronic image of written notes or diagrams made during inventory.

The attachment may be in any of the following formats:

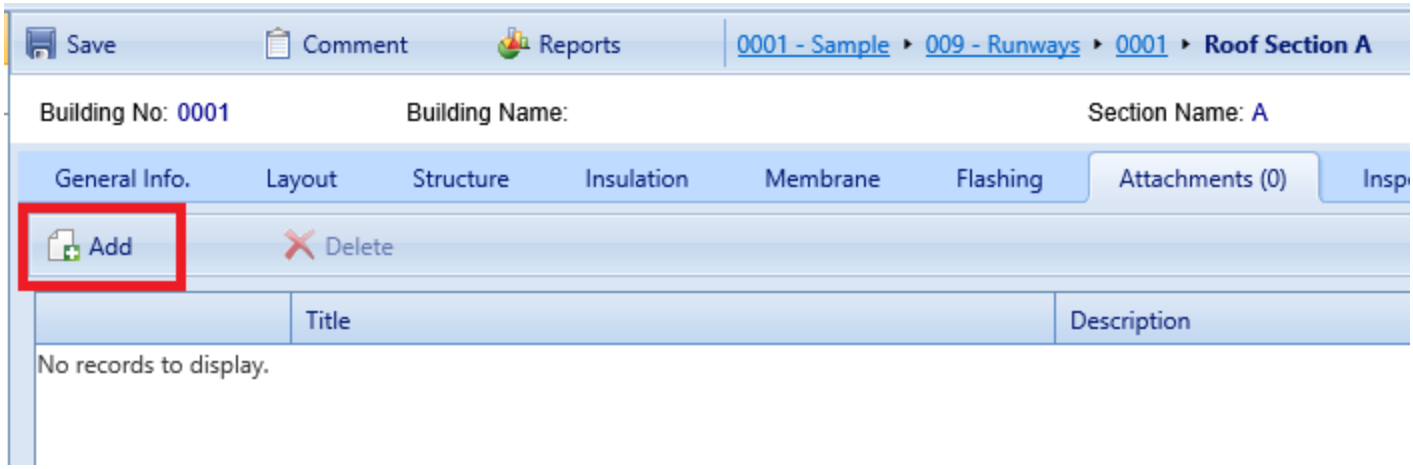
- .jpg
- .jpeg
- .png
- .zip
- .doc
- .pdf

Note: As of January 31, 2022, .doc format is allowed, but not .docx.

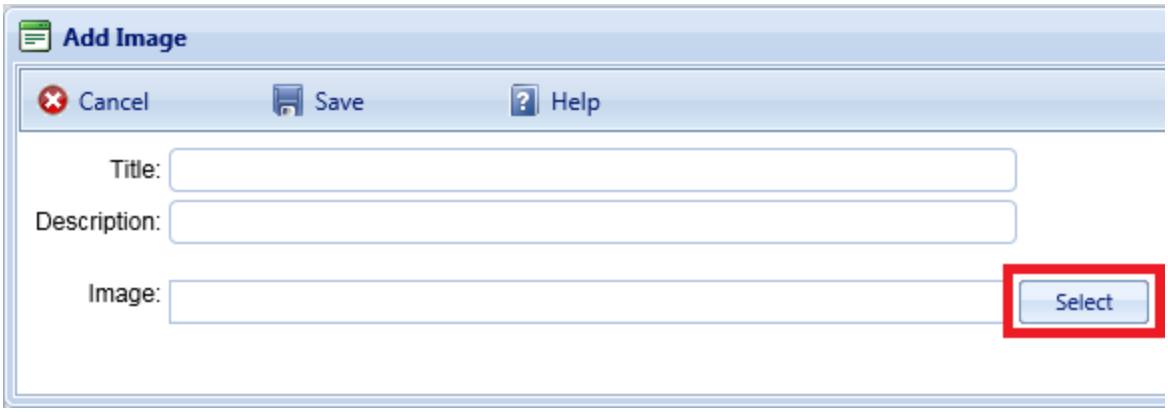
Attach a File

To attach a file,

- At the **Attachments** tab, activate the Add button in the toolbar below the row of tabs.

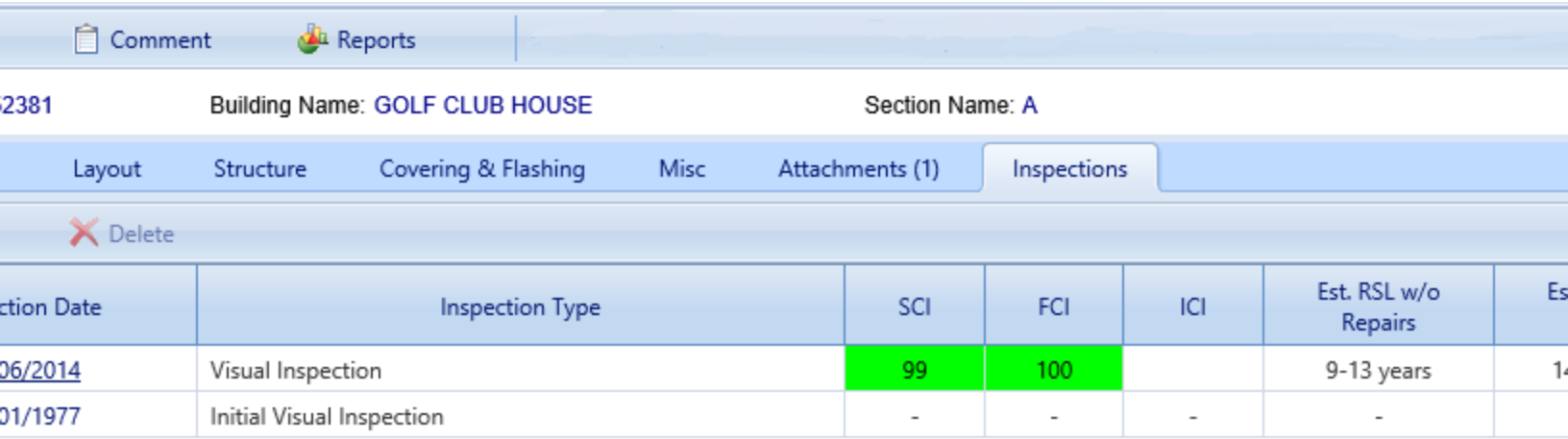


This will open the "Add Image" popup window:



- Enter Title and Description information for the attachment.
- Activate the **Select** button to the right of the "Image" field to browse to the desired image or other file.
- If you are adding an attachment at the Building level, use the **Image Type** radio buttons to indicate whether the attachment is a Key Plan, a Section Plan, or "Other."
- Once the required attachment data is entered, activate the **Save** button on the popup toolbar. Alternatively, to close the popup window without attaching the selected file or image, activate the **Cancel** button.

Inspections Tab



At the Roof Section display screen, the Inspections tab provides the following information for each inspection performed:

- **Inspection Date (Read-Only)**.
- **Inspection Type (Read-Only)**. This is a read-only field that reflects the type of inspection: Initial, Visual, or Insulation. Inspection types are discussed in the Roof Section Condition Assessment section in Roof Inspection Types.

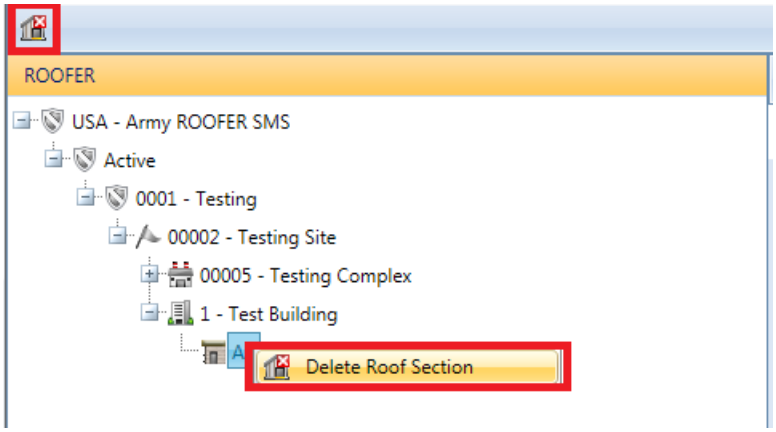
- MCI (Read-Only). This field displays the calculated Membrane Condition Index for the selected roof section.
- **FCI**[1]. In ROOFER the FCI, as determined by inspection and/or algorithm, is used in the calculation of the Roof Condition Index (RCI). (Read-Only). This field displays the calculated Flashing Condition Index for the selected roof section.
- ICI (Read-Only). This field displays the calculated Insulation Condition Index for the selected roof section.
- Est. **RSL**[2] (ERSL) w/o Repair(Read-Only). This field displays the Estimated Remaining Service Life without Repairs.
- Est. **RSL**[3] (ERSL) with Repairs(Read-Only). This field displays the Estimated Service Life with Repairs.

The **Inspections** tab at the roof section screen is also where you add an inspection or open an existing one. For how to perform a roof inspection in ROOFER, see Performing Roof Condition Assessments.

Delete a Roof Section

To delete a roof section, navigate to it in the inventory tree and do one of the following:

a. (1) Right-click the roof section, then (2) select "Delete Roof Section." Or,
b. (1) Select the roof section, then (2) activate the Delete Roof Section icon on the menu toolbar.



WARNING: This is a significant step to take and should only be done when you are certain that you wish to clear the roof section you have selected from the inventory in the Building.

Backups: Making frequent backups of your inventory database will protect you from significant data losses if mistakes in deleting are made.

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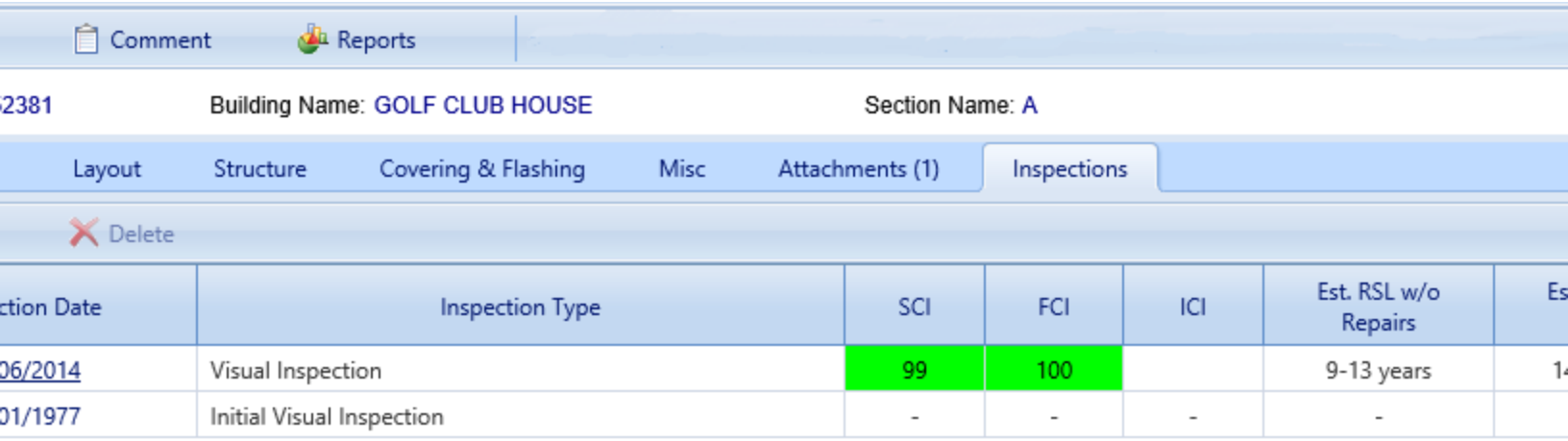
[1]Facility Condition Index.
[2]Remaining service life.
[3]Remaining service life.

Assessments

Condition Assessments

Performing Roof Condition Assessments

In ROOFER, condition assessments are performed at the roof section level. To initiate a new condition assessment (inspection), you will start at the **Inspections** tab at the roof section level of ROOFER inventory.



ction Date	Inspection Type	SCI	FCI	ICI	Est. RSL w/o Repairs	Es
06/2014	Visual Inspection	99	100		9-13 years	1
01/1977	Initial Visual Inspection	-	-	-	-	

The screen at this tab provides a quick overview of past inspections for the selected roof section. To see details about what is included, refer to the header "Inspections Tab" in Edit Roof Section Inventory Data.

Overview of the Inspection/Assessment Process

The roof inspection process will consist of the following steps:

- Navigate in the ROOFER hierarchy tree to the roof section to be inspected.
- Select the roof section.
- Activate the **Inspections** tab at the screen for that roof section.
- Add a new roof inspection. This process is described in Add a Roof Inspection.
- Enter inspection data. This process is described in Roof Inspection Data and Add Roof Distresses.

Roof Inspection Types

The two types of inspection that you might perform are:

- Visual Inspection. For a visual inspection, you enter roofing distresses from options provided, along with their severity and density. Performing a visual inspection is described in Edit Roof Inspection Data at Visual Inspection, and in Add Roof Distresses.

- Insulation Inspection. Insulation inspection is done for membrane roofs only. Performing an insulation inspection is described in Edit Roof Inspection Data at Insulation Inspection.

Non-Inspectable Roof Types

If the **Add** button above the table listing inspections is grayed out, that means that roof section type is non-inspectable.

As of May 4, 2016, the roof types listed below do not have inspection criteria or distresses entered into ROOFER. Visual Inspection is not selectable for these roof types.

Steep Roof, Non-Metal: Non-Inspectable Types

Non-inspectable types of non-metal steep roof are as follows:

- Asphalt Rolled
- Synthetic roofing: Plastic
- Synthetic roofing: Wood Fiber
- Synthetic roofing: Metal Shingles
- Synthetic roofing: Fiber Cement
- Wood Shakes
- Wood Shingles
- Slate
- Metal panel (this metal panel covered steep roof type is different from the metal panel roof type)
- Concrete Tile: Pan and Cover
- Concrete Tile: S Shape
- Concrete Tile: Flat
- Clay Tile: Pan and Cover
- Clay Tile: S Shape
- Clay Tile: Flat
- Other

Metal Panel: Non-Inspectable Types

Non-inspectable types of metal panel roof are as follows:

- Metal Panel - Shingles
- Flat Soldered Seam
- Other

Membrane: Non-Inspectable Types

Non-inspectable types of membrane roof are as follows:

- Liquid Application: Neoprene/Hypalon
- Liquid Application: Acrylic Elastomer
- Liquid Application: Butyl

- Liquid Application: Polysulfide
- Liquid Application: Urethane
- Liquid Application: Silicone
- Liquid Application: Type Unknown
- PUF: Silicone
- PUF: Urethane
- PUF: Catal. Urethane
- PUF: Acrylic
- PUF: Coating Unknown

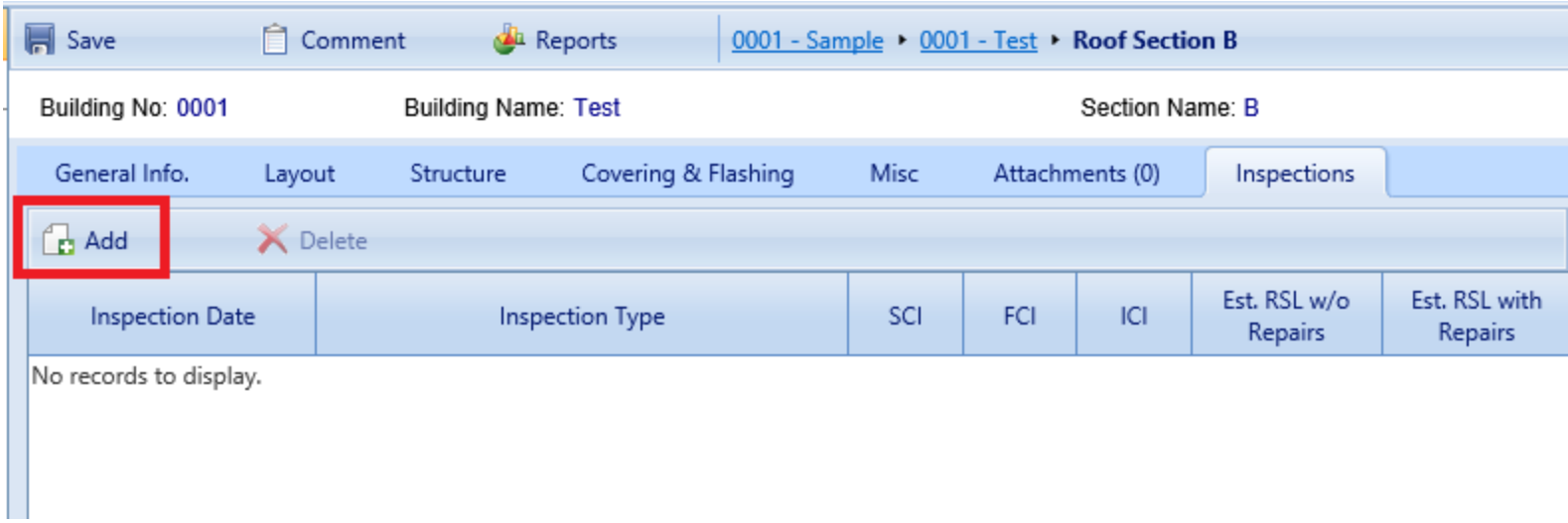
Add a Roof Inspection

This topic covers how to add a new roof inspection and enter the minimum identifying data required.

Create a New Inspection

To add a new inspection,

- Navigate to the desired roof section on the inventory tree.
- Activate the **Inspections** tab in the content area. At the Inspections tab, basic information will be displayed about past inspections, for example the **FCI**[1]Flashing Condition Index. In ROOFER the FCI, as determined by inspection and/or algorithm, is used in the calculation of the Roof Condition Index (RCI). and ICIInsulation Condition Index.
- Activate the **Add** button (above the **Inspection Date** column header).



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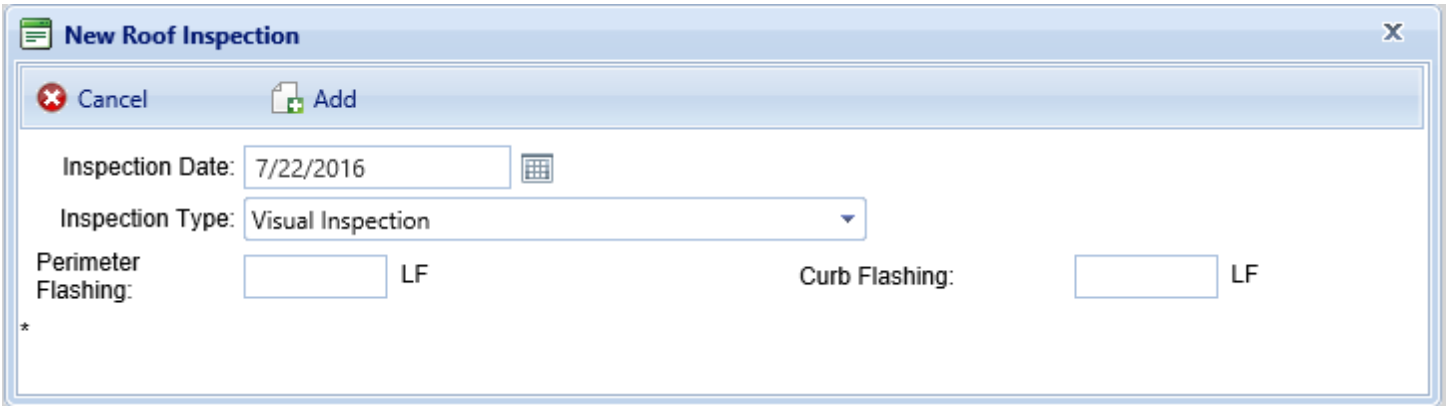
[1]Facility Condition Index.

The "New Roof Inspection" popup window will appear:



Enter Required Information about the Inspection

In the "New Roof Inspection" popup window shown above,

- Enter the inspection date by doing one of the following:
  a. Enter the date of the inspection in the **Inspection Date** field. **ROOFER** will accept a variety of different date entry formats.
  b. Alternatively, you can use the calendar button to select the date.
- Identify the **Inspection Type** by selecting from the dropdown list. This will be either a Visual Inspection or an Insulation Inspection.

  Note: Insulation Inspection will not be available for some roof section types.

- The additional fields that need to be filled in at the time you create the new inspection will vary, depending on the roof section type.

Confirm or Cancel

Once the required minimum roof inspection data is entered,

a. Activate the **Add** button on the popup toolbar. *This will add the inspection to the roof section. The popup window should disappear, and you will be returned to the Inspections tab for the roof section.*
b. Alternatively, activate **Cancel** to close the popup window without adding a new inspection.

Continue Data Entry

To begin data entry of inspection results, follow the instructions in Edit Roof Inspection Data.

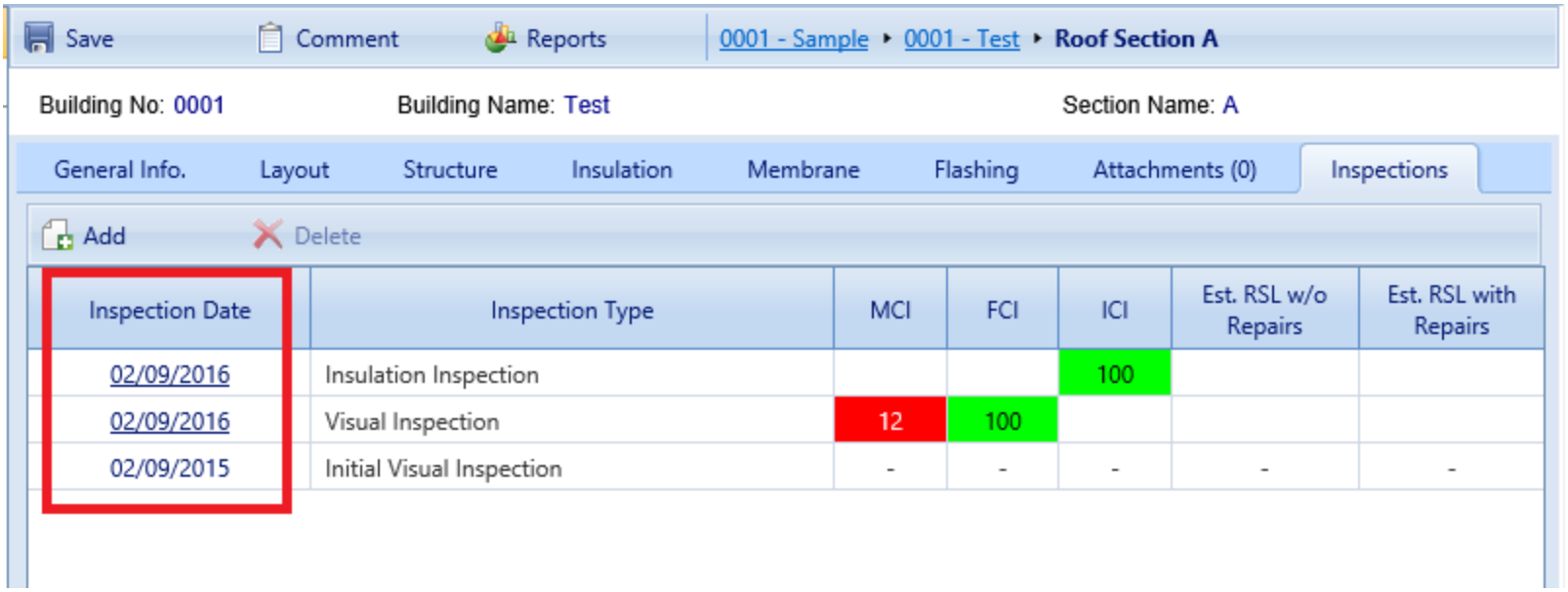
Edit Roof Inspection Data

This topic covers how to access an existing roof inspection, and explains the data that can be added or edited.

Access an Existing Inspection

To add or edit data in an existing inspection, including one that has just been created, first access the inspection as follows:

- Navigate to the **Inspections** tab of the roof section.
- Activate the date of the inspection in the **Inspection Date** column.



Next, follow instructions in Roof Inspection Data.

Roof Inspection Data

The list of inspections for a given roof section will indicate not only the date of the inspection, but also the inspection type, which will be one of the following:

- Initial Visual Inspection
- Visual Inspection
- Insulation Inspection (This option is not displayed for some roof section types.)

When you select an inspection by its date, a screen will appear that has two tabs: an **Inspection** tab and an **Attachments** tab. The **Attachments** tab will indicate the number of attachments associated with the inspection. Each inspection type and the **Attachments** tab are discussed below.

Inspection Tab

The appearance of the **Inspection** tab screen will vary depending on the type of inspection. Information at the headers below will describe how to enter inspection data.

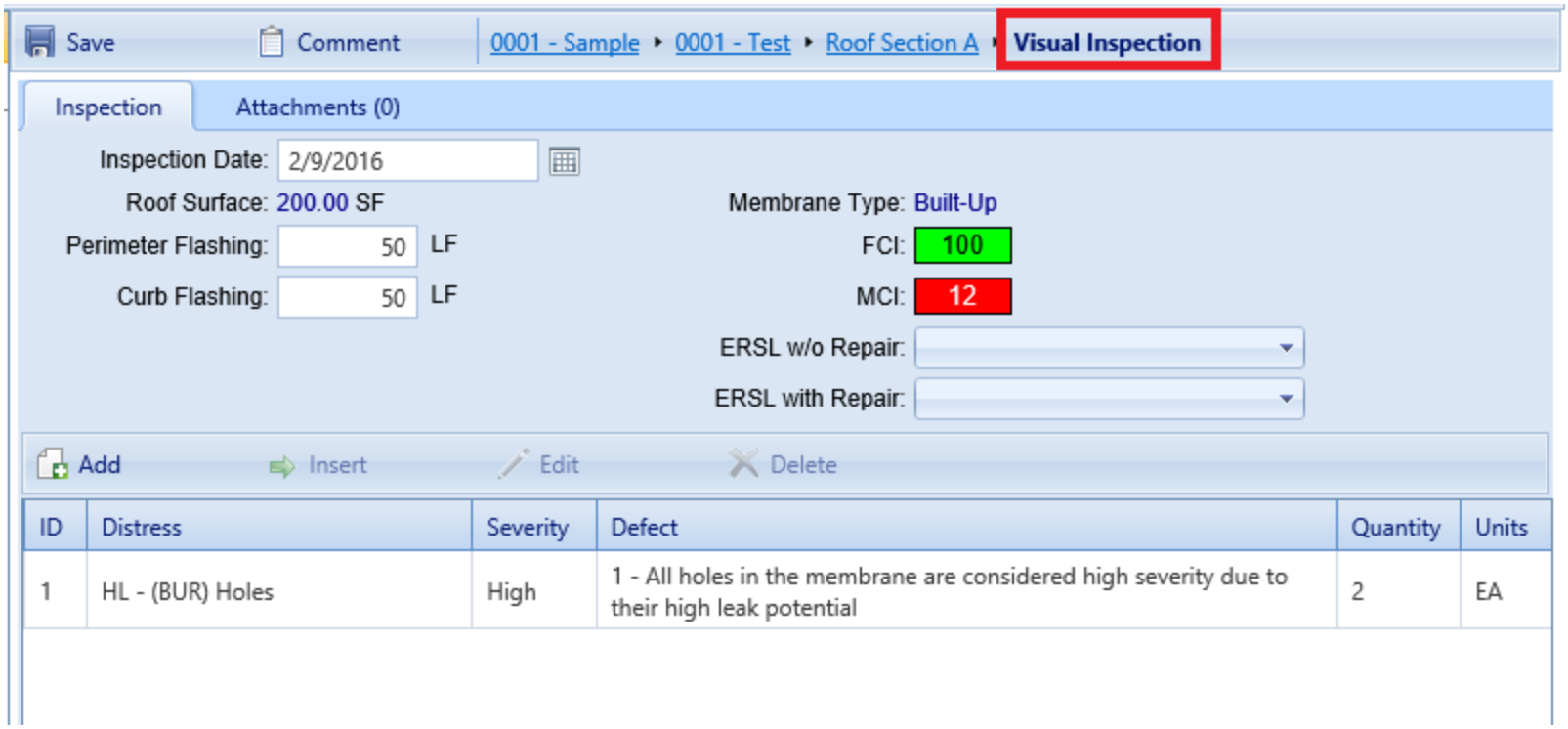
Initial Visual Inspection

This inspection entry is automatically created by **ROOFER** for the date last replaced, or for the date of construction if the roof has not been replaced. It is not generally accessible.

Visual Inspection

Note: There are certain roof types for which Visual Inspections are not allowed in ROOFER. For a listing of these types, see Non-Inspectable Roof Types.

The **Inspection** tab for a visual inspection presents selected inspection and roof section data, then below that it contains a table where you add distresses found during the section condition assessment. Note that "Visual Inspection" will appear in the breadcrumb list at the top of the content area.



The following inspection data appears at the **Inspection** tab:

- **Inspection Date.** This field is initially set to the current date. However, you can change the date either by activating the field (the date will highlight) and changing the date, or by using the calendar button with scroll arrows to select from the calendar.
- **Roof Surface (Read-Only)**. The area of the roof section's surface is listed here.

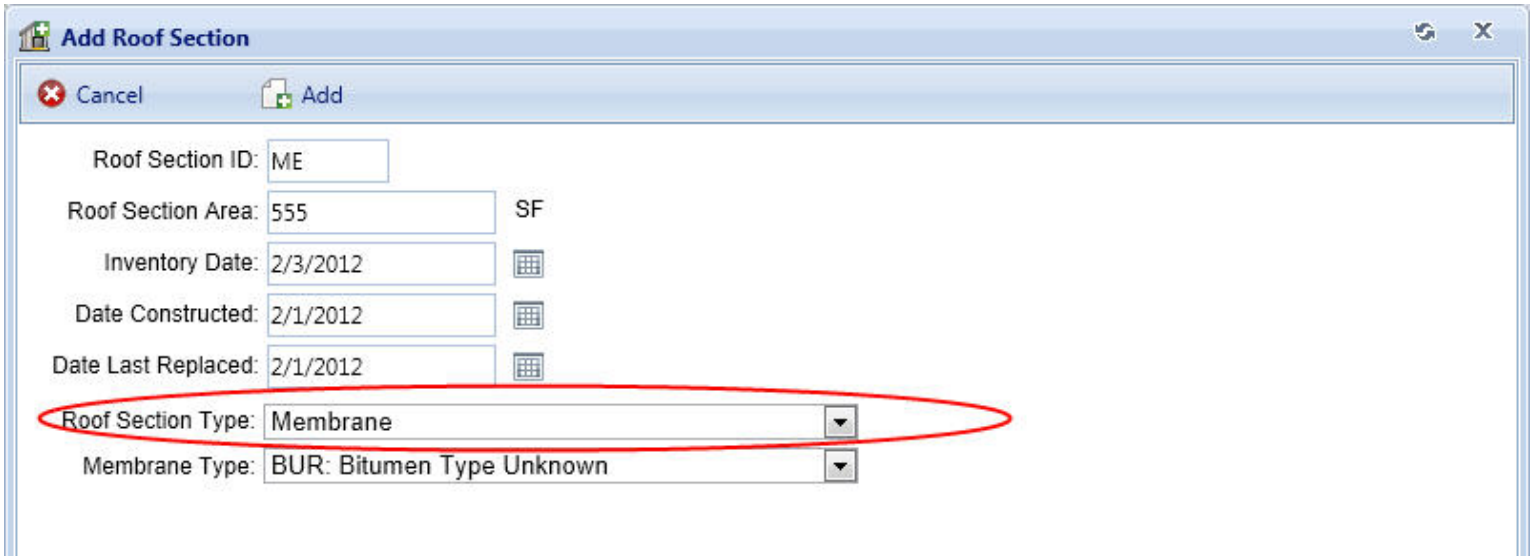
- **Roof Data** such as Perimeter Flashing, Curb Flashing, and Membrane Type or Roof Covering Type. The data types will vary according to the type of roof section inspected.
- **FCI**[1] **(Read-Only)**. This field displays the calculated Flashing Condition Index for the selected roof section.
- MCI (Read-Only). For a membrane roof, this field will appear and display the calculated Membrane Condition Index for the selected roof section.
- SCI - a condition rating for a Building System. For each System, the SCI is computed by taking the average of its Components' CIs, weighted by replacement cost. (Read-Only). For a shingle roof, this field will appear and display the calculated Shingle Condition Index for the selected roof section.
- **PCI (Read-Only)**. For a metal roof, this field will appear and display the calculated Shingle Condition Index for the selected roof section.
- Est. **RSL**[2] (ERSL) w/o Repair (Read-Only). This field displays the estimated remaining service life without repairs.
- Est. **RSL**[3] (ERSL) with Repairs(Read-Only). This field displays the estimated remaining service life with repairs.

Insulation Inspection

Note: Insulation inspections apply only to membrane roofs.

The **Inspection** tab for an insulation inspection displays the number of test cores obtained; then for each of the cores it lists the wet area and percent water.

The following roof section will be used as an example to illustrate an insulation inspection:



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[1]Facility Condition Index.

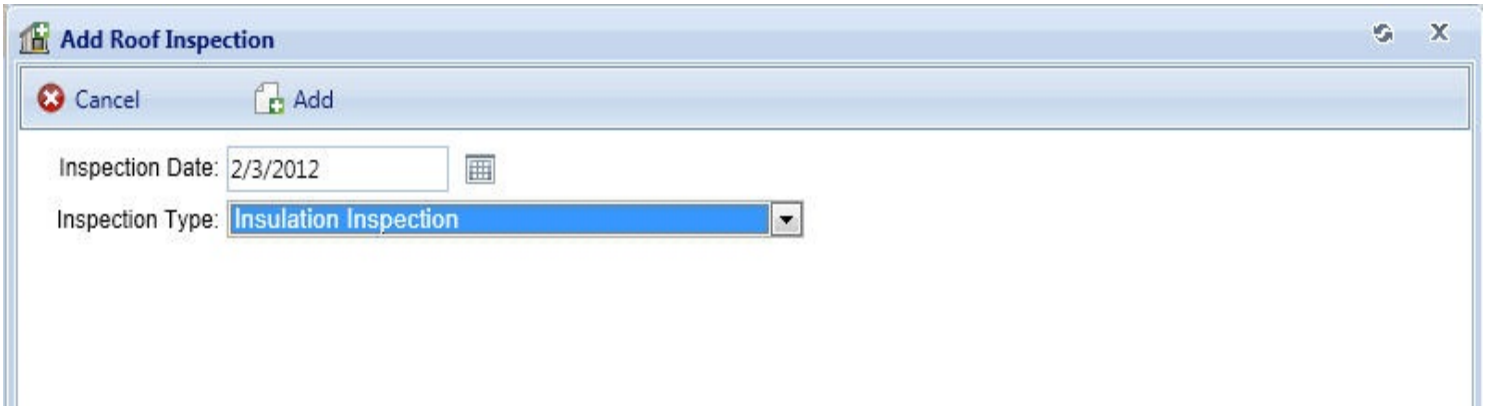
[2]Remaining service life.

[3]Remaining service life.

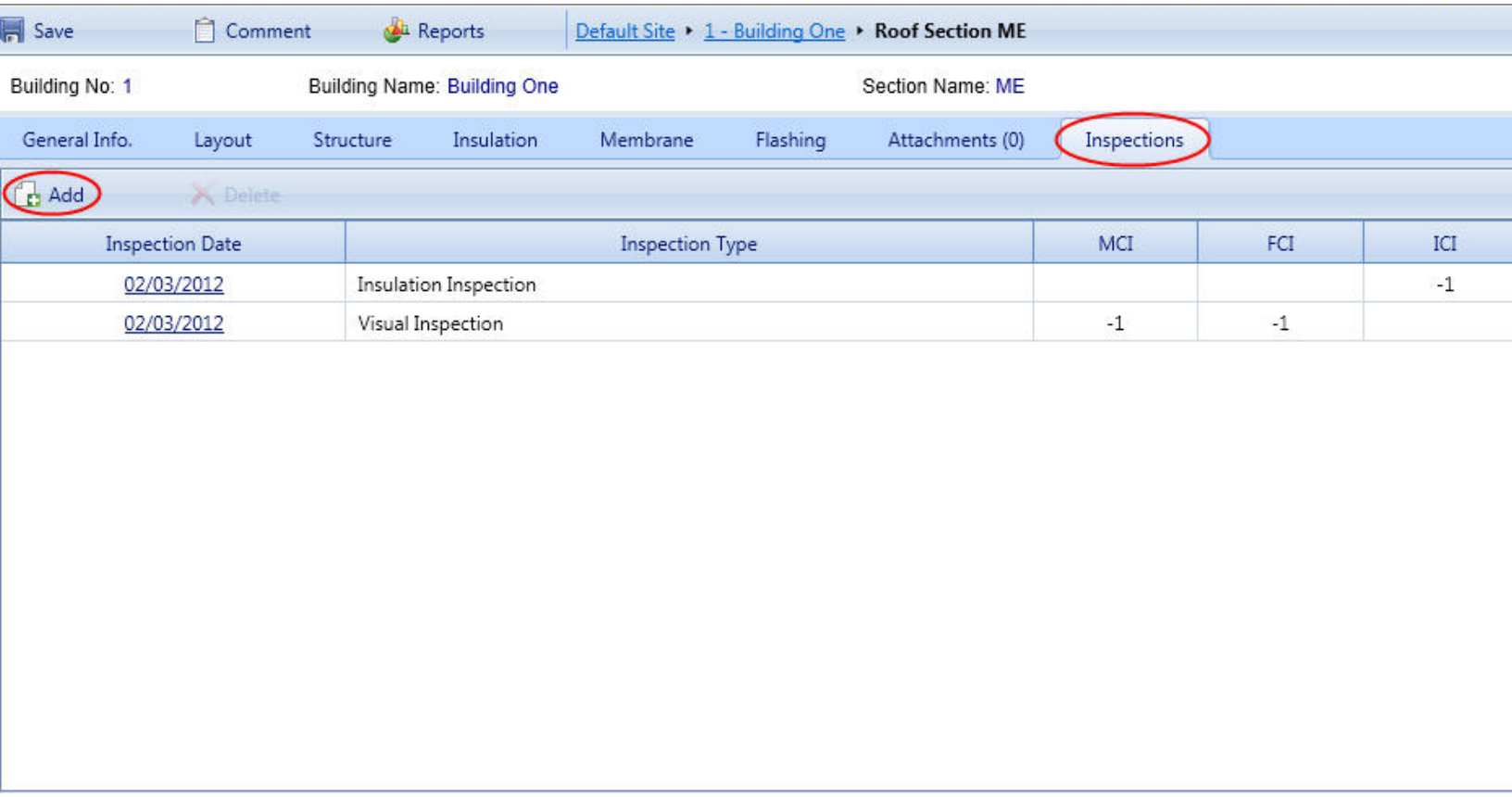
Selecting the **Inspections** tab for the roof section, then **Add**, causes the "New Roof Inspection" popup to open (formerly named "Add Roof Inspection").

Tip: Before attempting an insulation inspection, make sure that an insulation type has been checkmarked at the **Insulation** tab for the roof section. If no insulation type has been selected, you will not be given the option in the dropdown list to select an insulation inspection.

From the **Inspection Type** dropdown, select "Insulation Inspection."



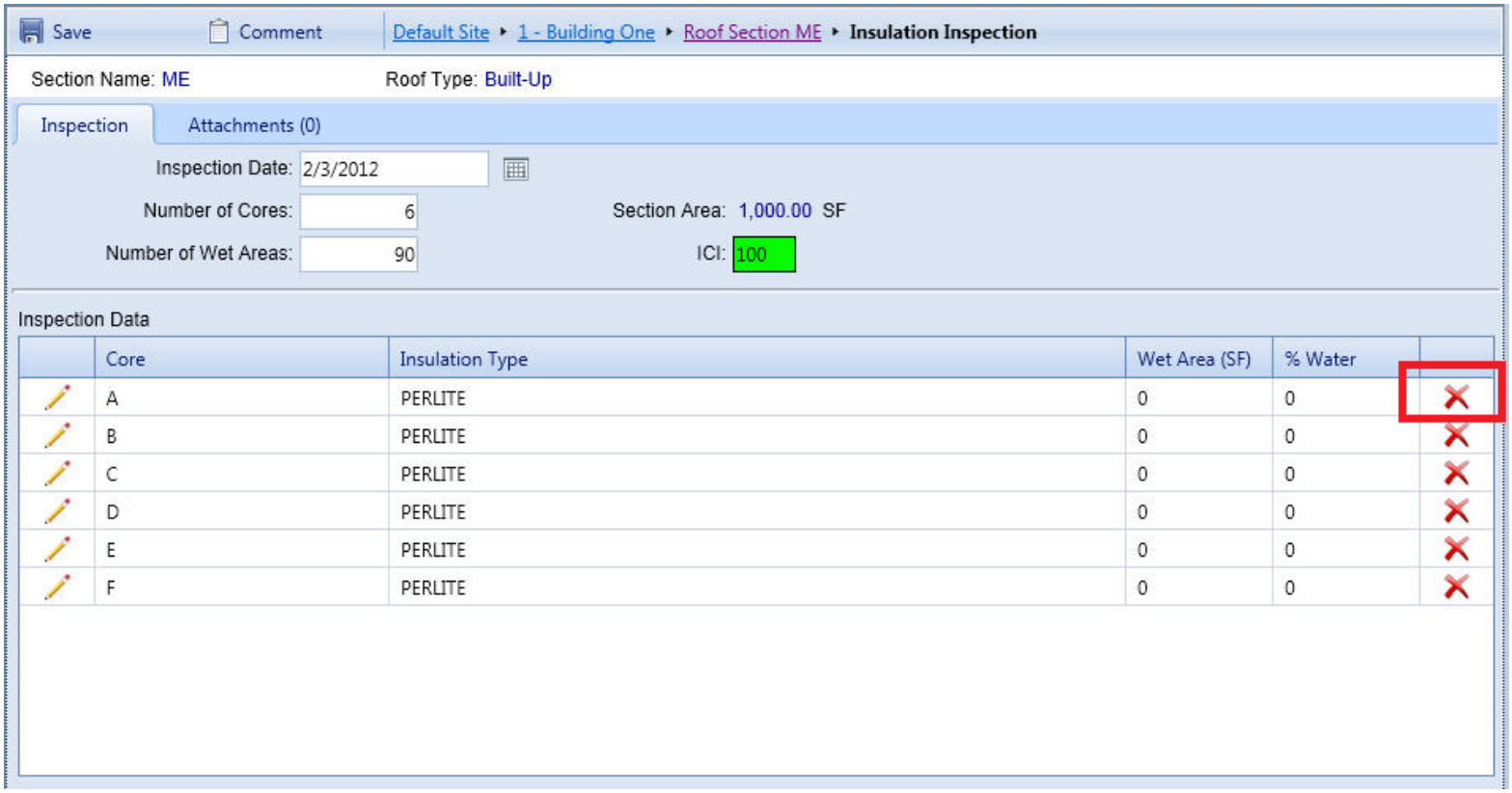
The next screen shows that both a Visual Inspection and an Insulation Inspection were added on the same date.



The **Inspection** tab contains the relevant inspection data. The following inspection data appears when Insulation Inspection is selected:

- **Inspection Date.**This field is initially set to the current date. However, it can be changed by activating the field (the date will highlight) and using the calendar button with scroll arrows to select from the calendar the date for the new inspection.
- **Number of Cores.** Enter the number of cores take during the inspection
- **Section Area (Read-Only)**. This is a read-only field that reflects the specified area of the selected roof section.
- **Number of Wet Areas** (Read-Only). This is a read-only field that shows the number of wet areas entered for the inspection. The wet areas are entered in the inspection data table.
- ICI (Read-Only). This field displays the calculated Insulation Condition Index for the selected roof section.

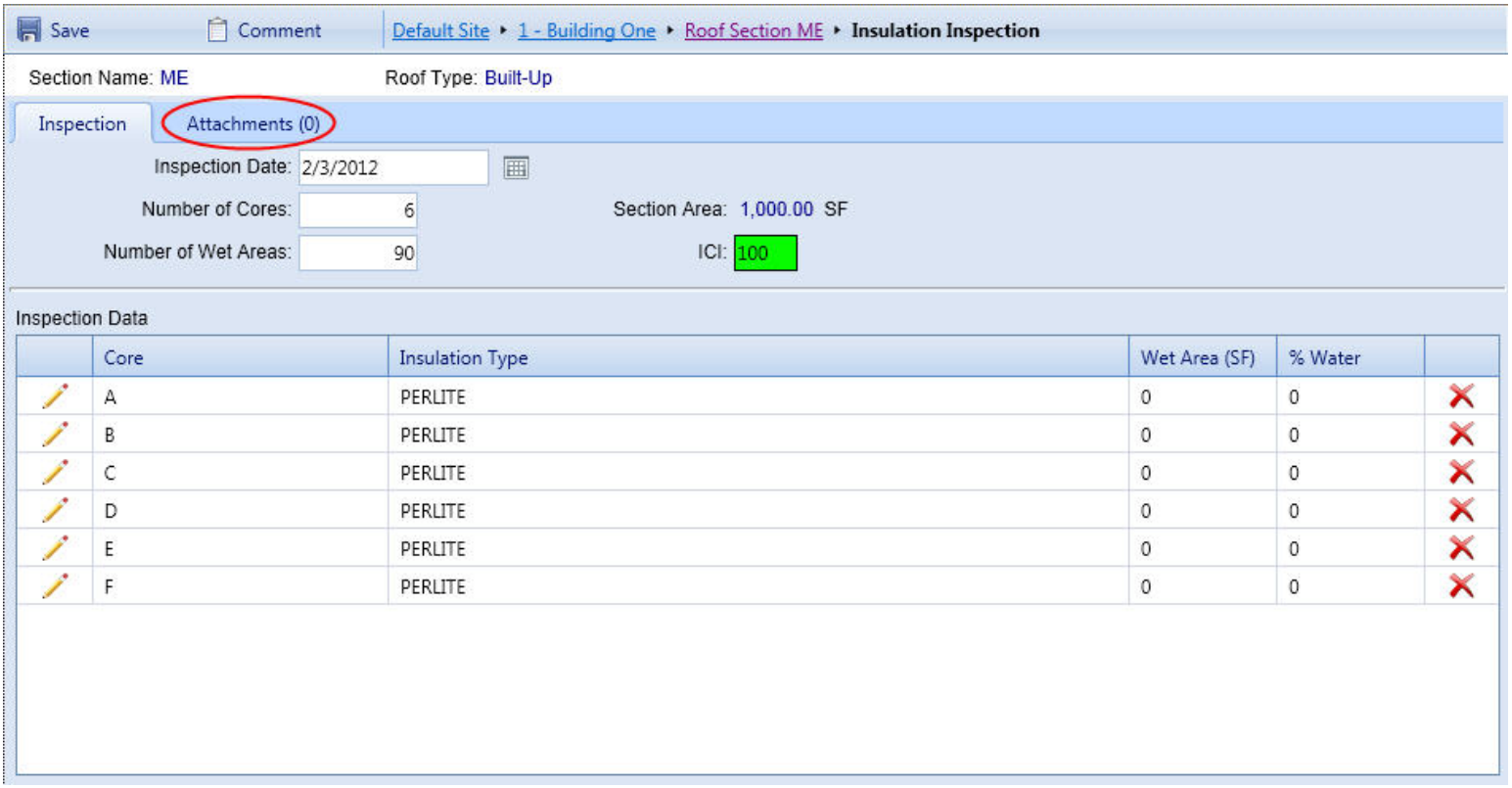
The Inspection Data table appears in the lower half of the content area once the Number of Cores is entered. Select a core and edit the Wet Area and the % Water values for that core.



Once the inspection is saved by activating the **Save** button at the top of the content area, ROOFER will calculate the Insulation Condition Index (ICI) and display it in a color-coded field on the inspection screen. The color will be red, yellow, or green depending on the value of the condition index.

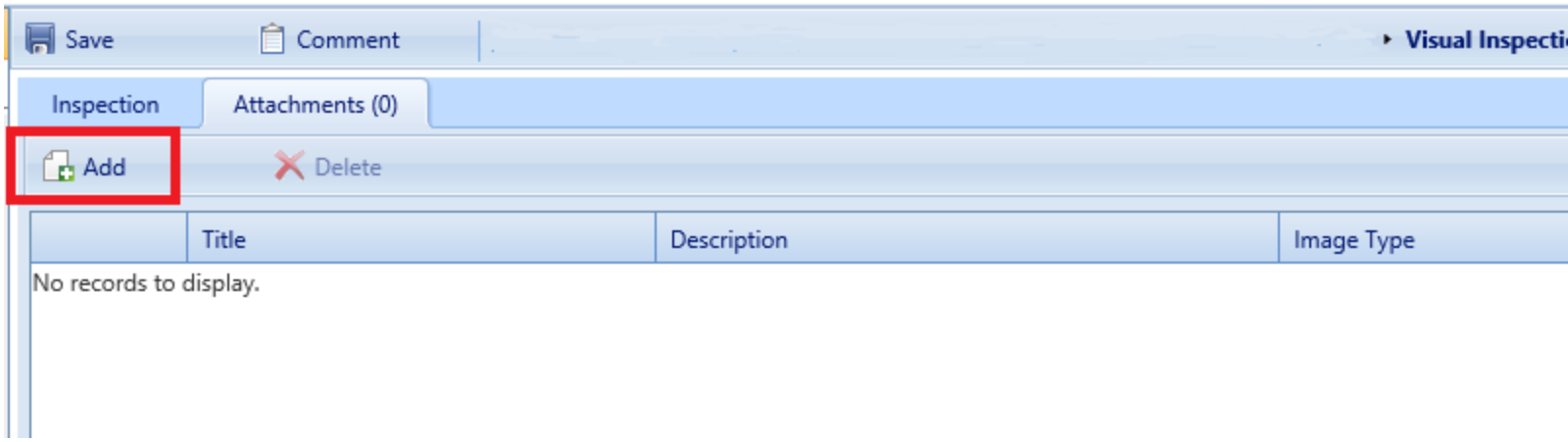
Attachments Tab

The **Attachments** tab allows files such as an inspection worksheet or an image file to be attached to the inspection record.

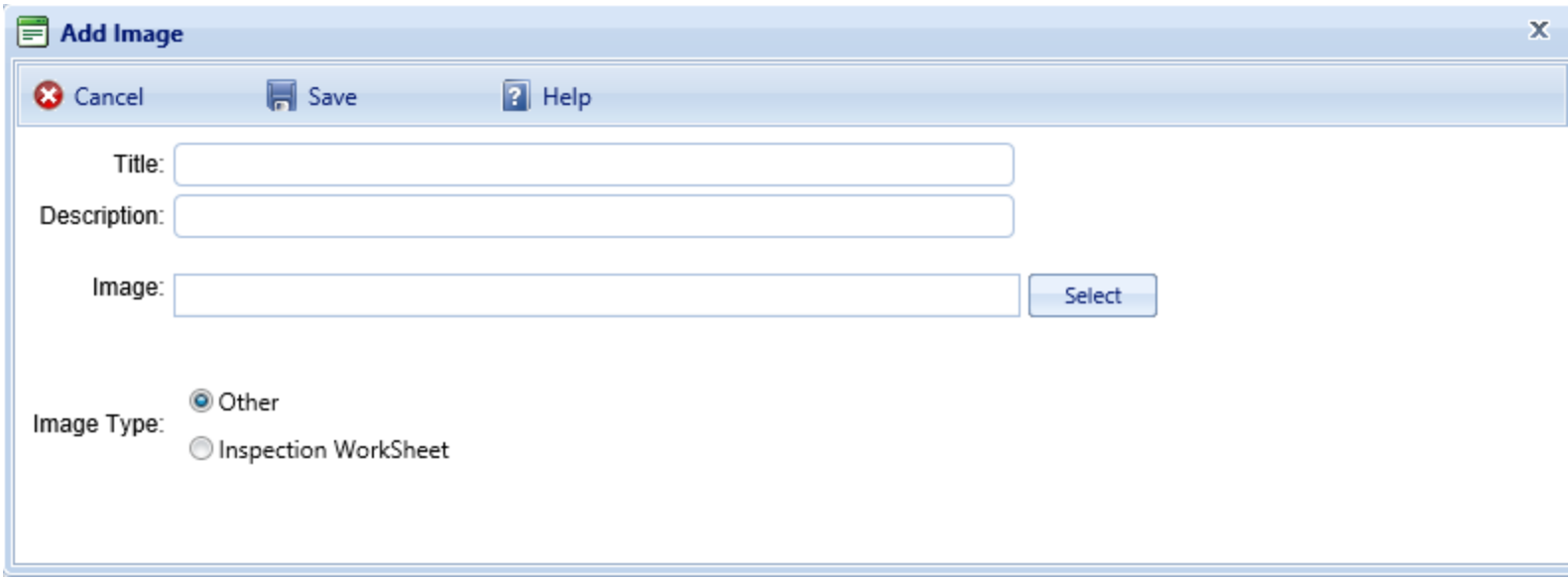


To add an attachment,

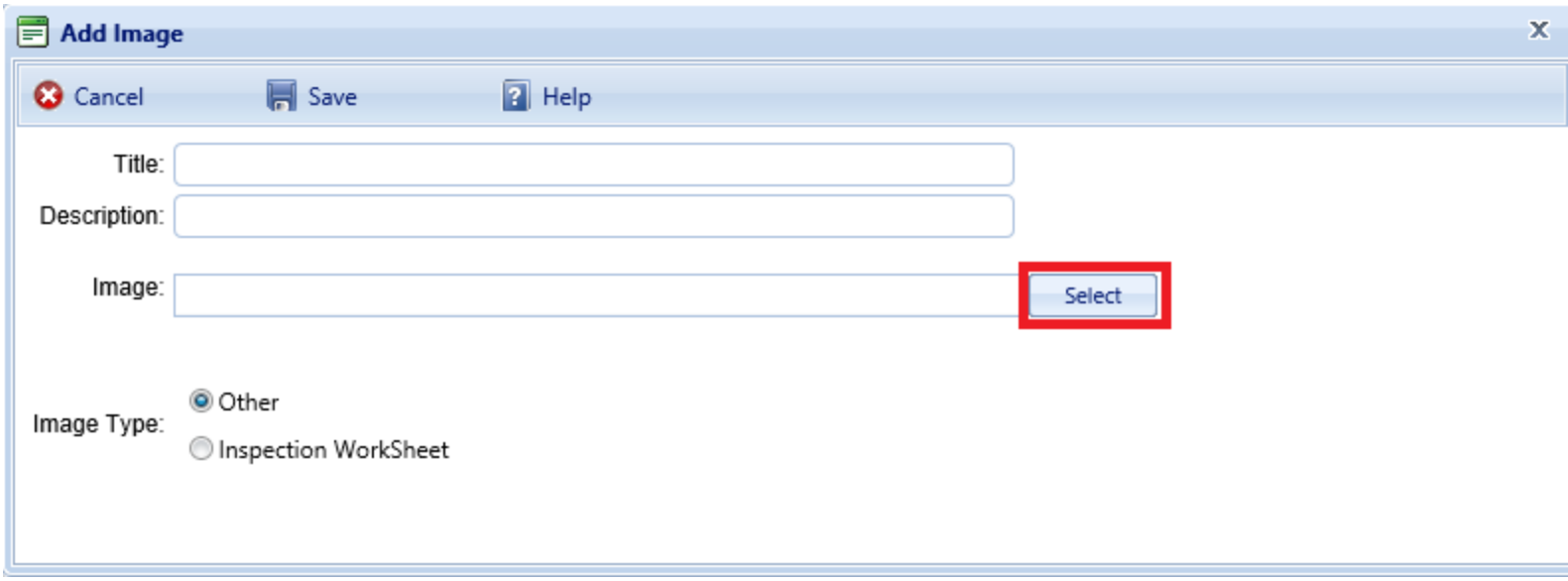
- Activate the **Add** button in the toolbar. *The "Add Image" popup window will appear.*



- In the popup window, enter a Title and Description for the image you will attach. Also, use the radio buttons to designate whether the image is an inspection worksheet.



- Next, activate the **Select** button.



- Browse to the file to be attached, and either (a) double-click it, or (b) select it and activate the **Open** button.

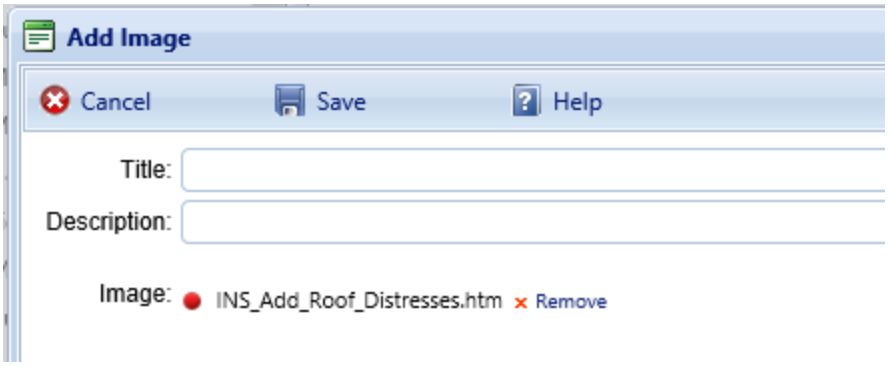
The attachment may be in any of the following formats:

- .jpg
- .jpeg
- .png
- .zip

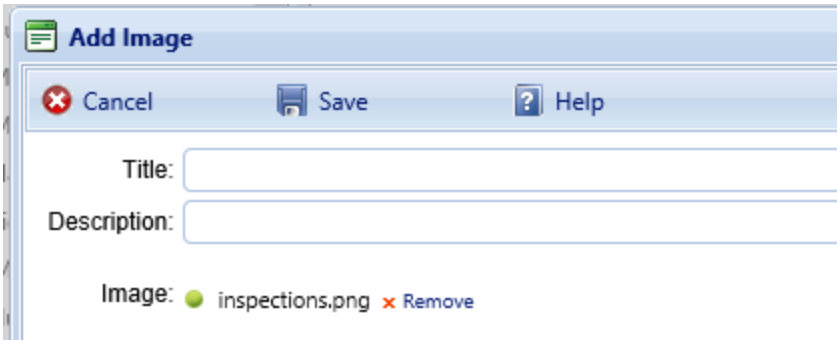
- .doc
- .pdf

Note: As of January 31, 2022, .doc format is allowed, but not .docx.

- If you select a file with a nonsupported format, you will see a red dot. Activate "x Remove" and try again.



- If you select a file with a supported format, you will see a green dot.



- Once you have a valid file selected, activate **Save** on the toolbar.
- Alternatively, if you activate **Cancel**, the file will not be attached and the popup window will close.

Add a Roof Inspection

This topic covers how to add a new roof inspection and enter the minimum identifying data required.

Create a New Inspection

To add a new inspection,

- Navigate to the desired roof section on the inventory tree.
- Activate the **Inspections** tab in the content area. At the Inspections tab, basic information will be displayed about past inspections, for example the **FCI**[1] Flashing Condition Index. In ROOFER the FCI, as

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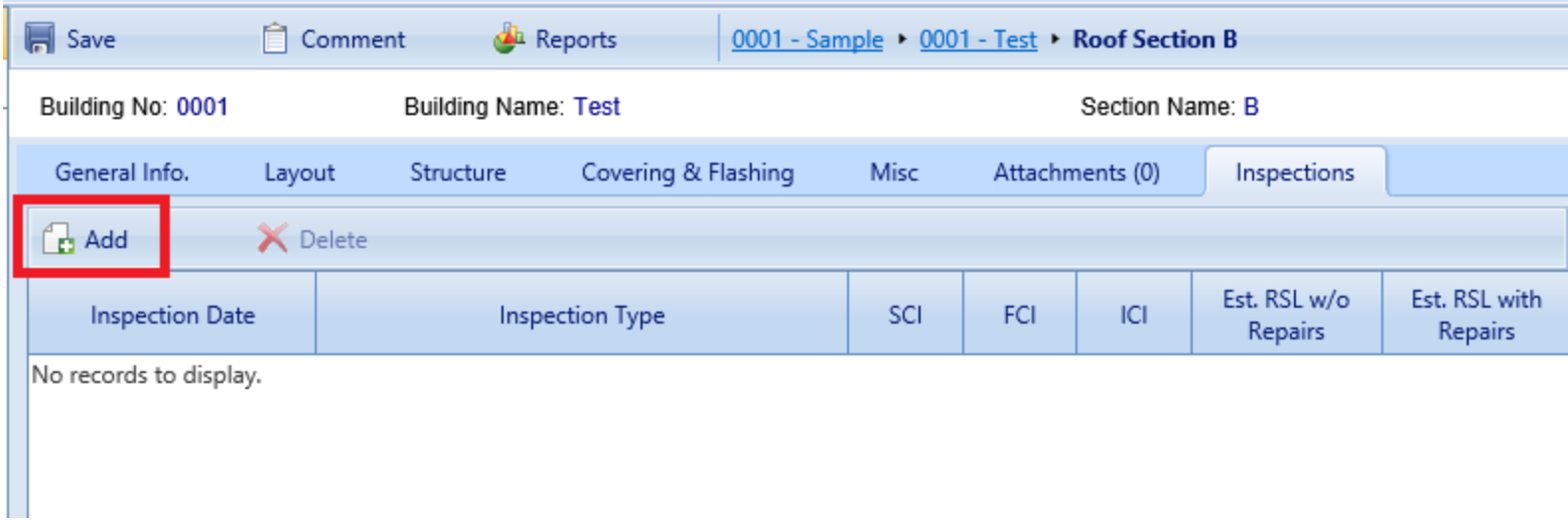
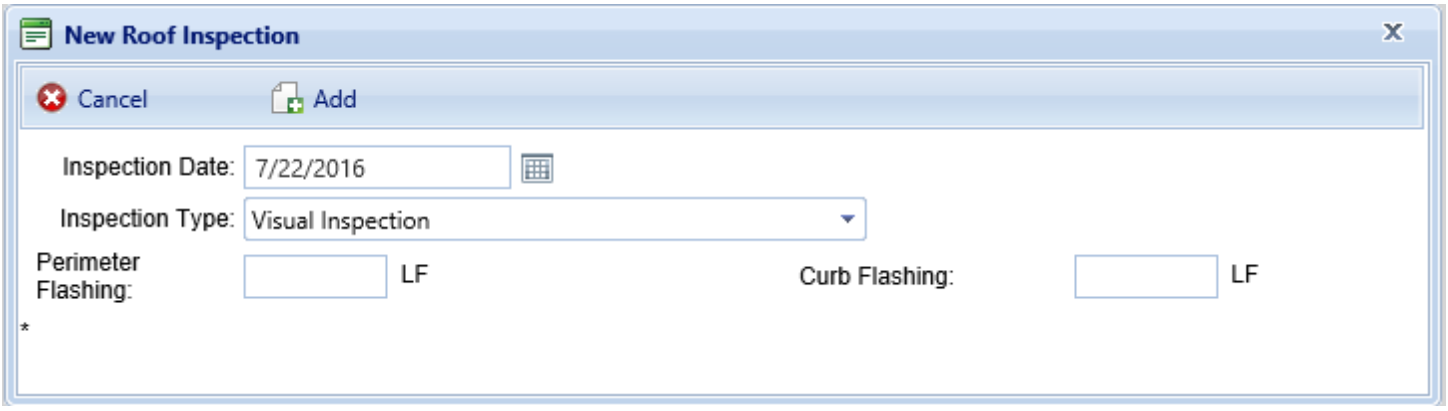
[1] Facility Condition Index.

determined by inspection and/or algorithm, is used in the calculation of the Roof Condition Index (RCI). and ICIInsulation Condition Index.

- Activate the **Add** button (above the **Inspection Date** column header).



The "New Roof Inspection" popup window will appear:



Enter Required Information about the Inspection

In the "New Roof Inspection" popup window shown above,

- Enter the inspection date by doing one of the following:
  a. Enter the date of the inspection in the **Inspection Date** field. **ROOFER** will accept a variety of different date entry formats.
  b. Alternatively, you can use the calendar button to select the date.
- Identify the **Inspection Type** by selecting from the dropdown list. This will be either a Visual Inspection or an Insulation Inspection.

  Note: Insulation Inspection will not be available for some roof section types.

- The additional fields that need to be filled in at the time you create the new inspection will vary, depending on the roof section type.

Confirm or Cancel

Once the required minimum roof inspection data is entered,

a. Activate the **Add** button on the popup toolbar. *This will add the inspection to the roof section. The popup window should disappear, and you will be returned to the Inspections tab for the roof section.*
b. Alternatively, activate **Cancel** to close the popup window without adding a new inspection.

Continue Data Entry

To begin data entry of inspection results, follow the instructions in Edit Roof Inspection Data.

Condition Assessment Manual for Roofing Components

Appendix_B: - Built-Up Roofing Distress Survey Definitions

APPENDIX B – BUILT-UP ROOFING DISTRESS SURVEY DEFINITIONS

General Notes

- These definitions are applicable to built-up roofing (BURBuilt-up Roofing) surfaces and flashing components.
- Where multiple severity levels are present for a given distress record each separately.
- Distress quantities or distress density may be recorded. If distress quantities are recorded, density ranges will be computed in BUILDER/BREDCoating Condition Index. If distress densities are recorded, distress quantities will be blank in BUILDER/BREDCoating Condition Index.
- If during the course of the inspection additional occurrences are found of distress-severity combinations, adjust the quantity or density as necessary.
- To estimate density when distress quantities are not recorded, follow the density definitions for the individual distresses. However, for use in BUILDER, density may be estimated since density ranges are used, not the precise density value. Generalized visual cues are offered below in Table B-1, but may not be applicable for certain distresses.
- These distress definitions are reproduced from Membrane and Flashing Condition Indexes for BuiltUp Roofs, Volume II: Inspection and Distress Manual, USACERL Technical Report M-87/13 by Shahin, Bailey, and Brotherson. This report can be downloaded from the ROOFER section of the SMSSustainment Management System support site at https://support.sms.erdc.dren.mil/downloads/roofer.

Table B-1. Built-up Roofing Distress Density Estimation Visual Cues

Density (%)	Visual Cue (when applicable)
>0-0.1%	Difficult to notice, even by careful observation; especially if spotty. (up to about 1" x 12" in a 8' x 10' area; ⅛" in a 10' length)
>0.1-1%	Somewhat noticeable, but easily missed by casual observation, especially if spotty. Careful observation usually needed, if spotty. (up to about 10" x 12" in a 8' x 10' area; 1¼" in a 10' length)
>1-5%	Noticeable, even by casual observation, but still only a mere fraction. (up to about 1' x 4' in a 8' x 10' area; 6" in 10' length)
>5-10%	Easily noticeable even if spotty, more than a mere fraction. (up to about 1' x 8' in a 8' x 10' area; 1' in a 10' length)
>10-25%	Readily noticeable, but less than ¼ of area or length.
>25-50%	Very noticeable, but less than ½ of area or length.
>50-<100%	Overwhelmingly noticeable; greater than ½ of area or length.
100%	Entire area or length.

Built-up Roofing (BUR) Distress Summary Listing

- (BUR) Base Flashing
- (BUR) Metal Cap Flashing
- (BUR) Embedded Edge Metal
- (BUR) Flashed Penetrations
- (BUR) Pitch Pans
- (BUR) Interior Drains and Roof Level Scuppers
- (BUR) Blisters
- (BUR) Ridges
- (BUR) Splits
- (BUR) Holes
- (BUR) Surface Deterioration
- (BUR) Slippage
- (BUR) Patching
- (BUR) Debris and Vegetation
- (BUR) Improper Equipment Supports
- (BUR) Ponding

Built-Up Roofing: Base Flashing

Definition:

Base flashing is one or more piles of material extend from the roof surface up onto vertical or inclined surface providing a watertight termination of the membrane.

Severity Levels:

Low - Any of the following conditions:

- Loss of surfacing on mineral-surfaced sheets or other poor appearance (including patching) but no apparent deterioration of felts.
- Top of base flashing is less than 6 in above the roof surface.
- Flashing has permanent repairs.

Medium - Any of the following conditions:

- Slippage, wrinkling, blistering, or pulling of base flashing material.
- Loss of surfacing with some deterioration of felts but no holes, splits, or tears.
- Grease, solvent, or oil drippings on the base flashing but no deterioration of felts.
- Flashing has temporary repairs.

High - Any of the following conditions:

- Holes, split tears in flashing caused by deterioration or physical damage.
- Exposed gaps at the top of the base flashing which are not covered by counter-flashing or open side laps in the flashing which allow water to channel behind them.
- Grease, solvent, or oil drippings on the base flashing with deterioration of the felts.

Measurement:

Measure lineal feet of base flashing having the above conditions. Holes, open side laps, and seams count as 1 ft each. If an area of the base flashing is at medium severity and holes are closer than 6 in., count that entire length of distressed base flashing as high severity.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of base flashing defects (ft)

B = total length of flashed perimeter of roof section being rated including flashings for penthouses, courtyards, and curbed projections (ft)

Built-Up Roofing: Blisters

Definition:

Blisters are round or elongated raised areas of the membrane which are filled with air.

Notes: Blisters and ridges are difficult to differentiate at the low and medium severity levels. The rating error will be insignificant because of the similarity in the deduct curves. At high severity, however, it is important to distinguish between the two distresses due to their different leak potentials.

Severity Levels:

Low - The raised areas are noticeable by vision or feel. The surfacing is still in place and the felts are not exposed.

Medium - The felts are exposed or show deterioration.

High - The blisters are broken.

Measurement:

Measure the length and width of the blister in lineal feet and calculate the area (length times width). If the distance between individual blisters is less than 5 ft., measure the entire affected area in sq ft.

Note: When large quantities of this problem are present (especially on large roofs,), the representative sampling technique can be used.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total area of membrane blisters (sq ft)

B = total area of roof section being rated (sq ft)

Built-Up Roofing: Debris And Vegetation

Definition:

Foreign objects on the roof which could damage or puncture the membrane, the growth of vegetation on the roof, and/or the accumulation of solvent and oil drippings on the roof.

Severity Levels:

Medium - Any of the following conditions:

- The collection of foreign objects which are not removed from the roof during the inspection.
- Grease, solvent, or oil drippings on the roof which is causing degradation of the roof membrane.
- Evidence of vegetation, but not penetrating the felts.

High - Any of the following conditions:

- Grease, solvent, or oil drippings on the roof which is causing degradation to the roofing system.
- Vegetation roots that have penetrated the felts.

Measurement:

Measure square feet of affected area. Each isolated case of debris and vegetation of less than 1 sq ft in area should be counted as 1 sq ft.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total area of debris and vegetation (sq ft)

B = total area of roof section being rated (sq ft)

Built-Up Roofing: Embedded Edge Metal

Definition:

Formed strip of metal at the roof edge which continues down the vertical part of the wall to form a fascia or drip. This stripped-in flashing provides a finished termination for the roofing membrane. A formed vertical projection (gravel stop) may be incorporated to prevent loose aggregate from rolling or washing off the roof.

Exterior and interior gutter in a built-in trough of metal or other material which collects water from the roof and carries it to a downspout.

Notes: A raised roof edge which is not stripped in, is rated as metal cap flashing and not embedded edge metal.

Severity Levels:

Low -The entire length of embedded edge metal flashings is rated low severity as a minimum due to the maintenance problems associated with it.

Medium - Any of the following conditions:

- The joints in embedded edge metal flashings are rated medium severity as minimum due to the maintenance problems associated with them.
- Nails under the stripping felts are backing out.
- Corrosion of the metal.
- Loose or lifted metal flange without deterioration of the stripping felts.
- The entire length of interior gutter is rated medium severity as a minimum due to the maintenance problems and high potential for leak damage associated with its presence.

High - Any of the following conditions:

- Stripping felts are missing or loose.
- Splits in the stripping felts above the metal joints.
- Holes have occurred through the metal.
- Loose or lifted metal flange with deterioration of the stripping felts.
- Holes or joint movement is present in the interior gutter.

Measurement:

Measure lineal feet of embedded edge metal flashing having the above conditions. Each split above a joint is counted as one foot. As a method of sampling the joints, determine to total number of joints by dividing the total length of embedded edge metal flashing by the length of edge metal sections (normally 10 ft). Every fourth joint should be inspected for splits in the stripping felts. Count the number of inspected joints that are high severity and multiply by 4 to determine the total lineal feet of high severity joints. All other joints are rated medium severity. Multiply the number of inspected joints not rated high severity by 4 to determine the total lineal feet of medium severity joints.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of embedded edge metal flashing defects (ft)

B = total length of flashed perimeter of roof section being rated (including flashings for penthouses, courtyards and curbed projections (ft)

Built-Up Roofing: Flashed Penetrations

Definition:

Open pipes, plumbing vent stacks, flues, ducts, continuous pipes, guy wires, drain sumps, and other penetrations through the roof membrane (excluding pitch pans but including metal curbing for hatches and ventilators, where the flange is stripped into the membrane).

Severity Levels:

Low - Any of the following conditions:

- Flashing sleeve is deformed.
- Opening in the penetration or flashing is less than 6 in. above the roof surface.

Medium - Any of the following conditions:

- Edge of stripping felts is exposed but there is no apparent felt deterioration.
- Top of flashing sleeve is not sealed or has not been rolled down into an existing plumbing vent stack.
- The sleeve or umbrella is open or no umbrella is present (where required).
- Metal is corroded.

High - Any of the following conditions:

- Flashing sleeve or metal curb has been installed with no stripping felts
- Flashing sleeve or metal curb is cracked, broken, or corroded through.
- No flashing sleeve is present.
- Penetration is not sealed at the membrane level.

Measurement:

Count each distressed flashed penetration as one linear ft at the highest severity level which exists. For metal curbs and ducts with greater than 1 ft of perimeter, count the actual length (in feet) of distressed perimeter.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = lineal feet of distressed flashed penetrations

B = total length of flashed perimeter of roof section being rated (including flashings for penthouses, courtyards and curbed projections)

Built-Up Roofing: Holes

Description:

A membrane hole is any visible opening which extends through all membrane layers. Holes can be of various sizes and shapes, and can be located anywhere on the roof surface.

Severity Levels:

High - All holes in the membrane are considered high severity due to their high leak potential.

Measurement:

Count the total number of holes in the membrane. If the distance between two holes is less than 1 ft., count them as one hole.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = number of membrane holes

B = total area of roof section being rated (sq ft)

Built-Up Roofing: Improper Equipment Supports

Definition:

Improper equipment supports or pipes, conduits, and mechanical equipment supports (wood sleepers, channels, etc) that are placed directly on the membrane below the equipment. Repairing this distress may require replacing the surrounding insulation and membrane.

Severity Levels:

Low -All improper equipment supports are rated low severity as a minimum due to the maintenance problems associated with them.

Medium - Any of the following defects:

- Movement of the support has displaced the membrane, but has not cut or punctured it.
- Equipment is bolted through the membrane but the membrane is sealed and watertight.

High - Any of the following defects:

- Movement of the support has cut or punctured the roof membrane.
- The equipment is bolted through the membrane and the membrane is not sealed, allowing water to penetrate.

Measurement:

Measure square feet of each improper equipment support. The minimum dimensions for the length and width of a support shall be 1 ft.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total area of improper equipment supports (sq ft)

B = total area of roof section being rated (sq ft)

Built-Up Roofing: Interior Drains And Roof Level Scuppers

Definition:

A drain is a penetration at the roof membrane which allows water to flow from the roof surface into a piped drainage system. The drain fixture at the roof has a flange and/or clamping arrangement to which the roofing membrane is attached. A roof level scupper is a channel through a parapet or raised roof edge which is designed for peripheral drainage of the roof.

Notes: Stripping felts around scuppers should be carefully inspected for holes at corners.

Severity Levels:

Low - Bitumen has flowed into the drain leader but the drain is not clogged.

Medium - Any of the following conditions:

- Stripping felts are exposed but there is no apparent deterioration of felts.
- Strainer is broken or missing.
- Scupper shows loss of paint or protective coating or start of metal corrosion.

High - Any of the following conditions:

- Stripping felts have holes or are deteriorated.
- Clamping ring is loose or missing from drain body or bolts are missing.
- Drain is clogged.
- Scupper metal is broken or holes have occurred through the metal.

Measurement:

Each distressed drain and scupper should be counted once at the highest severity level which exists.

Density:

$\frac{A}{B}$ x 100= Problem Density

A = number of distressed interior drains and roof level scuppers

B = total length of flashed perimeter of roof section being rated (including flashings for penthouses, courtyards and curbed projections)

Built-Up Roofing: Metal Cap Flashing

Definition:

Metal cap flashing includes counterflashing and any sheet metal coping cap which serves as part of the counterflashing or the cover over a detail such as a roof area divider, equipment curb, raised roof edge, or an expansion joint (including the rubber bellows of an expansion joint).

Notes: Counterflashing is the material, usually sheet metal, which protects the top termination of base flashing and sheds water away from it. Counterflashing should be free to expand and contract.

Severity Levels:

Low - Any of the following conditions:

- Loss of paint or protective coating or start of metal corrosion.
- Metal coping cap is deformed and allows water to pond on the top.
- Counterflashing is deformed but still performing its function.
- Counterflashing has been sealed to the base flashing.

Medium - Any of the following conditions:

- Corrosion holes have occurred through the metal on a vertical Surface.
- Metal coping cap has loose fasteners, failure of soldered or sealed joints, open joints, or loss of attachment.
- Sealant at reglet or top of counterflashing is missing or no longer functioning, allowing water to channel behind counterflashing.
- Counterflashing is loose at the top, allowing water to channel behind it.
- Counterflashing does not extend over top of base flashing.

High - Any of the following conditions:

- Metal coping cap or counterflashing is missing or displaced from its original position.
- Corrosion holes have occurred through the metal on a horizontal surface.
- Metal coping cap has mission joint covers where joint covers were originally installed.

Measurement:

Measure lineal feet of metal cap flashing having the above conditions. For individual defects (i.e., joints, holes) count as one foot minimum.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of metal cap flashing defects (ft)

B = total length of flashed perimeter of roof section being rated (including flashings for penthouses, court-yards, and curbed projections)

Built-Up Roofing: Patching

Description:

Patching is a localized temporary or permanent repair of the membrane using dissimilar materials. Repairs made with similar materials are not counted as patches; distresses associated with these repairs should be recorded in the appropriate category and not as patching distresses.

Severity Levels:

Low - All patches that are not made with similar materials as that of the original construction are rated as low severity as a minimum.

Medium - All patches made with temporary materials (i.e., duct tape, caulking, and sealants) are rated medium severity as a minimum.

High - Other distresses of high severity are present within the patched area (count as patching distress only).

Measurement:

- Measure square feet of each patch having the above conditions.
- When large quantities of this problem are present, the representative sampling technique may be used.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total area of patching (sq ft)

B = total area of roof section being rated (sq ft)

Built-Up Roofing: Pitch Pans

Definition:

A pitch pan is a flanged metal sleeve placed around a roof-penetrating element and filled with a sealer.

Severity Levels

Low - Pitch pans are rated low severity as a minimum due to the maintenance problems associated with them.

High - Any of the following conditions:

- Metal corrosion.
- Sealing material is below metal rim.
- Stripping felts are exposed or deteriorated.
- Sealing material has cracked or separated from pan or penetration.

Measurement:

Each distressed pitch pan should be counted once at the highest severity level which exists.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = number of distressed pitch pans

B = total length of flashed perimeter of roof section being rated (including flashings for penthouses, court-yards, and curbed projections)

Built-Up Roofing: Ponding

Definition:

Standing water is present or there is evidence of ponding by the presence of staining. Water which remains after 48 hr is considered ponded water.

Severity Levels:

Low - Ponding is rated low severity due to the maintenance problems associated with it.

Measurement:

Measure square feet of affected area.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total area of ponding (sq ft)

B = total area of roof section being rated (sq ft)

Built-Up Roofing: Ridges

Definition:

Ridges are long, narrow (usually less than 3 in.), raised portions of the roof membrane. Their maximum height is about 2 in. Usually ridges occur directly above the insulation board joints and run perpendicular or parallel to the felts. They include all the plies and therefore are generally stiffer than blisters.

Notes: Blisters and ridges are difficult to differentiate at the low and medium severity. The rating error will be insignificant because of the similarity in the deduct curves. However at the high severity, it is important to distinguish between the two distresses due to their different leak potentials.

Severity Levels:

Low - The ridges are noticeable but the felts are not exposed.

Medium - The ridges are raised and clearly visible. The surfacing on the ridge is gone and the top felt is exposed.

High - Either of the following conditions:

- Open breaks have developed in the ridge.
- Felt deterioration has progressed through the top ply. exposing underlying plies.

Measurement:

Measure lineal feet of ridges running in all directions.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total length of membrane ridges (ft)

B = total area of roof section being rated (sq ft)

Built-Up Roofing: Slippage

Description:

Slippage is a downslope lateral movement of felt plies. Slippage usually occurs on roofs with slopes greater than ¼ in/ft.

Severity Levels:

Low - Less than 2 in. of slippage has occurred, evidenced by the presence of narrow bare strips perpendicular to the slope.

Note: Low severity slippage requires inspection at 6 month intervals.

High - More than 2 in. of slippage has occurred. There is evidence of humping and wrinkling.

Measurement:

Measure square feet of affected roof area. The affected area extends from the high point on the slope where bare felts are noticeable, down to the low point of the slope or the area where humping and wrinkling are noticeable.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total affected area of roof (sq ft)

B = total area of roof section being rated (sq ft)

Built-Up Roofing: Splits

Definition:

Splits are tears that extend through all membrane felts. They vary in length from a few feet to the length of the roof and in width from a hair-line crack to more than 1 in Splits generally occur directly above the joints between the long sides of insulation boards and run in the direction the felts were installed.

Severity Levels:

High - An unrepaired split or a repaired split which has started to re-open.

Measurement:

Measure lineal feet of split.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total length of membrane splits (ft)

B = total area of roof section being rated (sq ft)

Built-Up Roofing: Surface Deterioration

Description:

A built-up roofing membrane will generally have one of the following types of surfacing: Aggregate surface, mineral surface-cap or smooth surface-coated. The membrane surface may show any of the following distressed condition:

- Lack of top surface or coating.
- Alligator cracking (interconnected hairline cracks that resemble alligator hide).
- Lack of adhesion between the membrane plies

Notes: Walkways are treated as part of the membrane surfacing.

Severity Levels:

Low - Any of the following conditions:

- On aggregate surfaced roofs, the aggregate is not embedded or is poorly embedded but the felts remain covered with aggregate.
- Open edge laps or fishmouths.
- On smooth surfaced roofs, there is evidence of crazing of top surface with hairline cracks (alligator-ing).
- Walkways shows loss of surfacing, loss of adhesion, cracks, blistering or cracked coating.

Medium - Any of the following conditions:

- On aggregate surfaced roofs, the aggregate is displaced and the top coat of bitumen is exposed.
- On mineral surfaced-cap sheet roofs, the mineral granules have come off the cap sheet, exposing the underlying felt.
- On smooth surfaced roofs, no surface coating exists or there is a loss of surface coating.
- On smooth surfaced roofs, alligator cracks extend down through the bitumen to the top felt.

High - Any of the following conditions:

- On aggregate surfaced roofs, the aggregate cover has been displaced and the bitumen pour coat is deteriorated, leaving the underlying felts exposed. The felts may be deteriorated.
- On mineral surfaced-cap sheet roofs, the cap sheet felt is deteriorated.
- On smooth surfaced roofs, alligator cracks extend down through one or more plies.
- Shrinking of the walkway has torn the membrane below it.

Measurement:

Measure square feet of each affected area and rate at highest severity level which exists.

Note: When large quantities of this problem are present (especially on large roofs), the representative sampling technique can be used.

Density:

$\frac{A}{B}$ x 100 = Problem Density

Where: A = total area of surface deterioration (sq ft)

B = total area of roof section being rated (sq ft)

Appendix_C: - Single Ply Roofing Distress Survey Definitions

APPENDIX C – SINGLE PLY ROOFING DISTRESS SURVEY DEFINITIONS

General Notes

- These definitions are applicable to Single Ply (SPSingle Ply) roofing surfaces and flashing components.
- Where multiple severity levels are present for a given distress record each separately.
- Distress quantities or distress density may be recorded. If distress quantities are recorded, density ranges will be computed in BUILDER/BREDBUILDER Remote Entry Database (BuilderRED). If distress densities are recorded, distress quantities will be blank in BUILDER/BREDBUILDER Remote Entry Database (BuilderRED).
- If during the course of the inspection additional occurrences are found of distress-severity combinations, adjust the quantity or density as necessary.
- To estimate density when distress quantities are not recorded, follow the density definitions for the individual distresses. However, for use in BUILDER, density may be estimated since density ranges are used, not the precise density value. Generalized visual cues are offered below in Table C-1, but may not be applicable for certain distresses.
- These distress definitions are reproduced from Membrane and Flashing Condition Indexes for Single-Ply Membrane Roofs-Inspection and Distress Manual, USACERL Technical Report FM-93/11 by Bailey, Brotherson, Tobiasson, Foltz, and Knehans, published at https://apps.dtic.mil/dtic/tr/fulltext/u2/a272573.pdf. This report can also be downloaded at https://support.sms.erdc.dren.mil/downloads/erdc-cerl-technical-publications.

Table C-1. Single Ply Roofing Distress Density Estimation Visual Clues

Density (%)	Visual Cue (when applicable)
>0 - 0.1%	Difficult to notice even by careful observation, especially if spotty. (up to about 1" x 12" in a 8' x 10' area; 1/8" in 10' length)
>0.1 - 1%	Somewhat noticeable, but easily missed by casual observation, especially if spotty; Careful observation usually needed, if spotty. (up to about 10" x 12" in a 8' x 10' area; 1-1/4" in 10' length)
>1 - 5%	Noticeable, even by casual observation, but still only a mere fraction. (up to about 1' x 4' in a 8' x 10' area; 6" in 10' length)
>5 - 10%	Easily noticeable even if spotty; more than a mere fraction. (up to about 1' x 8' in a 8' x 10' area; 1' in 10' length)
>10 - 25%	Readily noticeable, but less than 1/4 of area or length.
>25 - 50%	Very noticeable, but less than 1/2 of area or length.
>50 - <100%	Overwhelmingly noticeable; greater than 1/2 of area or length.
100%	Entire area or length.

Single Ply (SP) Roofing Distress Summary Listing

- (SP) Base Flashing-Membrane Material
- (SP) Base Flashing-Coated Metal
- (SP) Metal Cap Flashing
- (SP) Embedded Edge Metal
- (SP) Flashed Penetrations
- (SP) Pitch Pans
- (SP) Interior Drains and Roof Level Scuppers
- (SP) Splits
- (SP) Ridges
- (SP) Holes, Cuts, and Abrasions
- (SP) Defective Seams
- (SP) Surface Coating Deterioration
- (SP) Membrane Deterioration
- (SP) System Securement Deficiencies
- (SP) Membrane Support Deficiencies
- (SP) Patching
- (SP) Debris and Vegetation
- (SP) Improper Equipment Supports
- (SP) Ponding

Single-Ply Roofing: Base Flashing-Coated Metal

Definition:

Base flashing material is composed of membrane-coated metal. The metal extends from the roof surface upwards above the plane of the membrane providing a watertight termination of the membrane.

Severity Levels:

Low - Any of the following defects:

- Loss of protective coating or light corrosion.
- Distortion of joint covers.
- Top of flashing is less than 6 in above the roof surface.
- Exposed fasteners.

Medium - Any of the following defects:

- Joint cover is unbonded to metal base flashing, but does not allow water to penetrate.
- Coated metal base flashing fasteners are loose.
- Coated metal base flashing has pulled away from the wall or curb or has lifted up but top termination is watertight.
- Crazing or eroding of the joint cover material that has not worn through and does not allow water to

penetrate.
- Coated metal base flashing has repairs made with dissimilar materials.

High - Any of the following conditions:

- Holes in metal base flashing.
- Hole in joint cover or unbonding of joint cover from metal base flashing, allowing water to penetrate.
- Exposed gaps at top termination of the base flashing.
- Coated metal base flashing has pulled away from the wall or curb or has lifted up, allowing water to penetrate (rate full section of metal, normally a 10 ft length).

Measurement:

Measure length (ft) of base flashing having the above conditions. Holes, open side laps, and seams count as 1 ft each. Each joint cover having a hole is counted as 1 ft. As a method of sampling the joint covers for ballasted systems, determine the total number of existing joints by dividing the total length of coated metal base flashing by the length of metal sections (usually 10 ft). Every fourth joint should be inspected for defects in the cover strip. Count the number of inspected joints having a specific defect and multiply by 4 to determine the total length of the defect.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of base flashing defects (ft)

B = total length of flashed perimeter of roof section being rated (including perimeter flashings and flashings for penthouses, courtyards, and curbed projections)

Single-Ply Roofing: Base Flashing-Membrane Material

Definition:

Base flashing is composed of membrane material or other flexible material. The base flashing extends from the roof surface upward above the plane of the membrane to provide a watertight termination of the membrane.

Severity Levels:

Low - Any of the following defects:

- Light crazing or eroding of the base flashing.
- Top of the base flashing is less than 6 in. above the membrane
- Nailing strip or flashing batten with exposed fasteners is less than 6 in above the roof surface.
- Seam or side lap is open less than ½ in.
- Flashing has repairs with compatible materials.

Medium - Any of the following defects:

- Crazing or eroding of the base flashing that has worn through to a reinforcement or scrim sheet or down to another layer of different color, or has resulted in obvious loss of sheet thickness.
- Slippage, wrinkling, blistering, pulling, unbonding, or bridging of base flashing material that does not allow water to penetrate.
- The presence of solvents, oil, or other chemicals with deterioration of the base flashing but does not allow water to penetrate.
- Flashing has repairs made with dissimilar materials.
- Seam or side lap is open more than ½ in. but does not allow water to penetrate the flashing.
- Loose or missing termination bar where no counterflashing is used.
- Loose or missing nailing strip.

High - Any of the following defects:

- Crazing or eroding of the base flashing that has worn through the flashing allowing water to penetrate.
- Holes, splits, or tears in base flashing, allowing water to penetrate.
- Exposed gaps at top of the base flashing.
- Seam or side lap is open through its entire width, allowing water to penetrate the flashing.
- Holes through the base flashing caused by solvent, oil, or other chemicals.

Measurement:

Measure length (ft) or base flashing having the above conditions. Holes, open side laps, and seams count as 1 ft each.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of base flashing defects (ft)

B = total length of flashed perimeter of roof section being rated (including perimeter flashings and flashings for penthouses, courtyards, and curbed projections)

Single-Ply Roofing: Debris and Vegetation

Description:

Debris and vegetation includes the presence of foreign objects, vegetation, fungal growth, solvents, oils, or other chemicals that could damage, puncture, or degrade the membrane.

Notes:

- Accumulation of oils and grease can present a significant fire hazard and should be reported immediately.

- Do not rip out vegetation that is growing into the waterproofing systems, as that may allow water to penetrate.

Severity Levels:

Medium - Any of the following defects:

- Vegetation that has not penetrated the membrane.
- Degradation of the membrane caused by solvents, oil, or other chemicals.
- Foreign materials that are not removed from the roof during the inspection.

High - Any of the following defects:

- Vegetation that has penetrated the membrane.
- Degradation of the membrane caused by solvent, oils, or other chemicals allowing water to penetrate.

Measurement:

Measure square feet of debris and vegetation having the above conditions.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total area of debris and vegetation (sq ft)

B = total area of roof section being rated (sq ft)

Single-Ply Roofing: Defective Seams

Definition:

Defective seams include incomplete, damaged, or weak seams that join two sheets of a membrane.

Notes: For EDPM and polyvinyl chloride (PVC) membranes, all field seams should have lap sealant at the edges. All other membranes should have lap sealant at cut edges of seams that have exposed reinforcement material.

Severity Levels:

Low - Any of the following defects:

- Missing lap sealant at field seam (EPDM and PVC membranes only).
- Missing lap sealant at field seam which has exposed reinforcement material at seam edge (usually at end laps and field-cut edges of sheets).
- Seam is open less than ½ in.
- Wrinkling at seam that is watertight.

- Seam intersections (e.g., T-joints) on EPDM that do not have a patch covering them.
- Blisters within the seam.

Medium - Any of the following defects:

- Seam is open ½ in. or more, but does not allow water to penetrate the membrane.
- Pinch wrinkle at seam.

High - Any of the following conditions:

- Seam is open through entire depth, allowing water to penetrate.
- Fishmouths, wrinkles, or bunches at the seam that allow water to penetrate.

Measurement:

For exposed membranes (no overlying ballast), inspect all seams visually.

For ballasted roofs, check field seams at five different locations on the roof section. Clear ballast from 5 ft of the seam at each location that clean the exposed seam with a whisk broom. If all checked seams are without defects, assume the remaining field seams are satisfactory. If any defects are found, use the following sampling technique.

- For roof sections with sheet widths of 10 ft or less, inspect 2 percent of the total length of field seams (2 ft every 100 ft of seam). For roof sections having sheet widths greater than 10 ft, inspect 4 percent of the total length of field seams (2 ft every 50 ft of seam). Measure length of each specific seam defect found.
- Extrapolate to determine the total length of seam defects for the entire roof section from the total length of defect found. When 2 percent of the seams are inspected, multiply the actual defect length by 50 to compute total length of defect. When 4 percent of the seams are inspected, multiply actual defect length by 25 to compute total length of defect.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total length of defective seams (ft)

B = total area of roof section being rated (sq ft).

Single-Ply Roofing: Embedded Edge Metal

Definition:

Embedded edge metal is a formed strip of metal at the edge of the roof that continues down the vertical part of the wall to form a fascia or drip edge. This stripped-in flashing provides a finished termination for the roofing membrane. On all but coated-metal flashing systems, the metal is placed on top of the membrane, and

fastened to the deck through it. To make the area watertight, the metal is covered with membrane or flashing material (i.e., it is stripped in). Coated metal systems have their edge metal placed before the membrane. The membrane is adhered to the top of the coated metal, thereby eliminating the need to have it stripped in. A formed vertical projection (gravel stop) may be incorporated to prevent ballast from rolling or washing off the roof. Exterior and interior gutters, which are embedded in the membrane, are considered embedded edge metal. (An interior gutter is a built-in trough of metal or other material that collects water from the roof and carries it to a drain or downspout.)

Severity Levels:

Low - Any of the following defects:

- Loss of protective coating or light corrosion.
- Termination battens have exposed fasteners.
- Stripping material is open less than ½ in.
- Distortion of joint covers.
- For coated metal edge flashings that are not stripped in, membrane is open less than ½ in.

Medium - Any of the following defects:

- Joint cover is unbonded to embedded edge metal, but does not allow water to penetrate.
- Nails under stripping material are backing out.
- Stripping material is crazing, checked, or cracked.
- Stripping material is open more than ½ in., but edge metal fasteners are not exposed.
- Loose or lifted metal with deterioration of the stripping material.
- Embrittled joint stripping material.
- The entire length of interior gutter is rated medium as a minimum due to the potential for leak damage.
- For coated metal edge flashing that is not stripped in, membrane is open more that ½ in. but does not allow water to penetrate.

High - Any of the following conditions:

- The stripping material is missing or open and edge metal fasteners are exposed, or stripping material has holes, cuts or tears, allowing water to penetrate.
- Hole in joint cover or unbonding of joint cover from embedded edge metal, allowing water to penetrate.
- Holes through the metal.
- Holes associated with loose or lifted embedded edge metal.
- Holes in interior gutter.
- For coated metal edge flashing that are not stripped in, membrane is open allowing water to penetrate.

Measurement:

Each split above a joint is counted as 1 ft. As a method of sampling the embedded edge metal joints for ballasted systems, determine the number of joints by dividing the total length of embedded edge metal flashing by the length of the edge metal sections (often 10 ft). Gravel should be moved at every fourth joint and the stripping material inspected for splits. Count the number of inspected joints having a specific defect and multiply by four to determine the total length of the defect.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of embedded edge metal flashing defects (ft)

B = total length of flashing on roof section being rated (including perimeter flashings and flashings for penthouses, courtyards, and curbed projections)

Single-Ply Roofing: Flashed Penetrations

Definition:

This category includes pipes, plumbing vent stacks, flues, ducts, conduits, guy wires, drain sumps, and other penetrations through the roof membrane (excluding pitch pans but including metal curbing for hatches and ventilators, where the metal flange is stripped into the membrane or, in the case of some coated metal flashing systems, the membrane is adhered to the top of the coated metal flange, thereby eliminating the need to have it stripped in).

Severity Levels:

Low - Any of the following defects:

- Flashing sleeve is deformed.
- Stripping material, boot, or membrane (for coated metal flashing sleeves) is open less than ½ in.
- Top of flashing is less than 6 in. above the membrane.

Medium - Any of the following defects:

- Stripping material is crazing, checked, or cracked.
- Stripping material, boot, or membrane (for coated metal flashing sleeves) is open more than ½ in. but does not allow water to penetrate the flashing.
- Top of flashing sleeve or boot is not sealed or is not rolled down into the existing plumbing vent stack.
- Clamping band is loose or missing (where required).
- Umbrella is open or no umbrella is present (where required).
- Corrosion of metal or delimitation of coating.

High - Any of the following conditions:

- Stripping material has holes, cuts, or tears.
- Stripping material, boot, or membrane (for coated metal flashing sleeves) is open, allowing water to penetrate.
- Holes, cuts, or tears in flashing sleeve or metal curb.
- No flashing sleeve present.
- Incompatible flashing material has been used.

Measurement:

Count each small distressed flashed penetration as 1 ft at the highest severity level present. For metal curbs and ducts with more than 1 ft of perimeter, measure the length (in ft) of the distressed perimeter.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of distressed flashed penetration (ft)

B = total length of flashed perimeter of roof section being rated (including perimeter flashings and flashings for penthouses, courtyards, and curbed projections)

Single-Ply Roofing: Holes, Cuts, and Abrasions

Definition:

Holes and cuts are membrane distresses caused by physical abuse from tools, traffic, debris, gravel, wind, etc., or manufacturing defects such as pinholes. Holes and cuts can be of various shapes and sizes. Abrasion is physical damage that has roughened or worn the membrane surface.

Severity Levels:

Low - Surface scratches or abrasions with no significant loss of membrane thickness.

Medium - Cuts, gouges, or abrasions with loss of membrane thickness but not fully penetrating the membrane.

High - Any of the following defects:

- Holes, cuts, gouges, or abrasions that penetrate the membrane.
- Holes, through the membrane caused by underlying mechanical fasteners.

Measurement:

- Count the total number of scratches, gouges, holes, and cuts in the membrane. If the distance between distresses is less than 1 ft, count the distresses as one. If the distress is longer than 1 ft, measure the length. Measure area of abrasion in square feet.

- When large quantities of this problem are present, the representative sampling technique may be used.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total number and/or length of membrane scratches, gouges, holes, and cuts (ft) or total area of abrasion (sq ft).

B = total area or roof section being rated (sq ft).

Single-Ply Roofing: Improper Equipment Supports

Definition:

Improper equipment supports or pipes, conduits, and mechanical equipment supports (wood sleepers, channels, etc) that are placed directly on the membrane below the equipment. Repairing this distress may require replacing the surrounding insulation and membrane.

Severity Levels:

Low - All improper equipment supports are rated low severity as a minimum due to the maintenance problems associated with them.

Medium - Any of the following defects:

- Movement of the support has displaced the membrane, but has not cut or punctured it.
- Equipment is bolted through the membrane but the membrane is sealed and watertight.

High - Any of the following defects:

- Movement of the support has cut or punctured the roof membrane.
- The equipment is bolted through the membrane and the membrane is not sealed, allowing water to penetrate.

Measurement:

Measure square feet of each improper equipment support. The minimum dimensions for the length and width of a support shall be 1 ft.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total area of improper equipment supports (sq ft)

B = total area of roof section being rated (sq ft)

Single-Ply Roofing: Interior Drains and Roof Level Scuppers

Definition:

A drain is a penetration of the roof membrane that allows water to flow into a piped drainage system. The drain fixture at the roof has a flange and/or clamping arrangement to which the roofing membrane is attached. A scupper is a channel through a parapet or raised roof edge that is designed to drain the roof. Roof-level scuppers are for primary drainage. Elevated (overflow) scuppers are for emergency drainage.

Notes: Most single-ply roofing systems do not require stripping material around the drain.

Severity Levels:

Low - Any of the following defects:

- Field seam within 1 ft of a drain or roof-level scupper.
- Stripping material or membrane is open less than ½ in.

Medium - Any of the following defects:

- Crazing material is crazing, checked, or cracked.
- Stripping material or membrane is open ½ in. or more, but does not allow water to penetrate.
- Strainer is broken or missing
- Scupper shows loss of protective coating or start of metal corrosion.
- Drain has a field seam in the clamming ring.

High - Any of the following conditions:

- Stripping material has holes, cuts or tears, allowing water to penetrate.
- Stripping material or membrane is open, allowing water to penetrate.
- Clamping ring is loose or missing from drain or bolts are missing.
- Drain is clogged.
- Scupper is broken or contains holes.
- Holes, cuts, tears, or abrasions through the membrane within 2 ft of the drain or scupper.

Measurement:

Each distressed drain and scupper should be counted once at the highest severity level present.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = number of distressed interior drains and scuppers (ft)

B = total length of flashing on roof section being rated (including perimeter flashings and flashings for penthouses, courtyards, and curbed projections)

Single-Ply Roofing: Membrane Deterioration

Definition:

This category includes erosion or crazing or the membrane. Erosion is the wearing away of the membrane surface creating a rough texture. Crazing is hairline cracking of the membrane.

Severity Levels:

Low - Light crazing of the membrane surface.

Medium - Crazing or eroding of the membrane surface that has worn through to a reinforcement or scrim sheet or down to another layer of different color, or has resulted in obvious loss of sheet thickness.

High - Crazing or eroding of the membrane surface that has worn through the membrane allowing water to penetrate.

Measurement:

- Measure the square feet of each affected area and rate at the highest severity level present.
- When large quantities of this problem are present, the representative sampling technique may be used.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total area of membrane deterioration (ft)

B = total area of roof section being rated.

Single-Ply Roofing: Membrane Support Deficiencies

Definition:

The surface on which the membrane rests may not be smooth and continuous. For fully adhered membranes, partially adhered membranes, partially adhered membranes, and mechanically attached membranes, this category includes warping, bowing, or shrinking of insulation boards. For ballasted membranes, it includes displaced insulation boards. Localized absence of membrane support may be due to missing components below.

Notes: Mechanical fasteners and loose insulation boards are rated as System Securement Deficiencies.

Severity Levels:

Low - Any of the following defects:

- Membrane tension caused by warping or bowing of substrate.
- Uneven joints or gaps more than ½ in. wide, but less than 2 in. between insulation boards.

Medium - Any of the following defects:

- Uneven joints or gaps more than 2 in. wide between insulation boards or absence of substrate support for width of 2 in. or more.
- For ballasted systems, insulation boards have been displaced.
- Lumps indicating presence of foreign material between membrane and substrate.

Measurement:

- Measure square feet of membrane having the above conditions.
- When many of these deficiencies are present, the representative sampling technique may be used.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total area of membrane support distress (ft)

B = total area of roof section being rated (sq ft).

Single-Ply Roofing: Metal Cap Flashing

Definition:

Metal cap flashing includes any sheet metal that serves to counterflash or cover a detail such as a parapet, firewall, roof area divider, equipment curb, raised roof edge, or an expansion joint, protecting the top termination of the base flashing and shedding water away from it. The metal cap flashing should be free to expand and contract.

Notes: Note all single plys are installed with counterflashing to protect the top of the base flashing

Severity Levels:

Low - Any of the following defects:

- Loss of protective coating or corrosion without holes.
- Top of counterflashing or metal coping is deformed and allows water to pond on the top.
- Metal cap flashing is deformed but still performing its function.
- Metal cap flashing has been sealed to base flashing.

Medium - Any of the following defects:

- Corrosion has caused holes in the metal on a sloping or vertical surface.
- Metal cap flashing has loose fasteners, failure or soldered or sealed joints, or loss of attachment.
- Metal cap flashing has rough edges that are in contact with the base flashing.

High - Any of the following conditions:

- Metal cap flashing is missing or displaced from its original position.
- Corrosion has caused holes in the metal on a horizontal surface.
- Metal cap flashing has open joints or missing joint covers where covers were originally installed.
- Sealant at reglet or top of counterflashing is missing or no longer functional, allowing water to channel behind it.
- Counterflashing is loose at the top allowing water to channel behind it.
- Metal cap flashing does not extend over top of the base flashing.

Measurement:

Measure length (ft) or metal cap flashing having the above conditions. Individual defects (i.e., joints, holes) count as 1 ft minimum.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of metal cap flashing defects (ft)

B = total length of flashed perimeter of roof section being rated (including perimeter flashings and flashings for penthouses, courtyards, and curbed projections)

Single-Ply Roofing: Patching

Description:

Patching is a localized temporary or permanent repair of the membrane using dissimilar materials. Repairs made with similar materials are not counted as patches; distresses associated with these repairs should be recorded in the appropriate category and not as patching distresses.

Severity Levels:

Low - All patches that are not made with similar materials as that of the original construction are rated as low severity as a minimum.

Medium - All patches made with temporary materials (i.e., duct tape, caulking, and sealants) are rated medium severity as a minimum.

High - Other distresses of high severity are present within the patched area (count as patching distress only).

Measurement:

- Measure square feet of each patch having the above conditions.
- When large quantities of this problem are present, the representative sampling technique may be used.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total area of patching (sq ft)

B = total area of roof section being rated (sq ft)

Single-Ply Roofing: Pitch Pans

Definition:

A pitch pan is a flanged metal sleeve placed around a roof penetration element and filled with a sealer. For pitch pans on ethylene-propylene-diene monomer (EPDM) and Hypalon roofing systems, stripping materials should cover the sides of the metal pan and terminate within the pan below the sealer.

Severity Levels:

Low - All pitch pans are low severity at a minimum due to maintenance requirements.

Medium - Any of the following defects:

- Stripping material is crazing, checked, or cracked.
- Stripping material or membrane (on coated metal pitch pans) is open more than ½ in. but does not allow water to penetrate the flashing.
- Loss of protective coating or corrosion of metal.
- For EPDM and Hypalon, stripping material is not covering the top of the metal pan or does not terminate below the sealer.

High - Any of the following conditions:

- Stripping material has holes, cuts, or tears, allowing water to penetrate through.
- Edge of stripping material or membrane (on coated metal pitch pans) is open, allowing water to penetrate.
- Sealer is below the metal rim, allowing ponding in the pan.
- Sealer has cracked or separated from the pan or penetration.
- Corrosion through the metal pan.

Measurement:

Each distressed pitch pan should be counted once at the highest severity level present.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = number of distressed pitch pans (ft)

B = total length of flashing on roof section being rated (including perimeter flashings and flashings for pent-houses, courtyards, and curbed projections)

Single-Ply Roofing: Ponding

Definition:

Ponding includes standing water or evidence of standing water by the presence of staining or accumulation of debris. Water that remains longer than 48 hr is considered ponded water.

Severity Levels:

Low - General Ponding is rated low severity.

Medium - Any of the following defects:

- Ponding caused by wrinkles or folds in the membrane that blocks drainage.
- Ponding caused by warping or bowing of the substrate beneath the membrane.

Measurement:

Measure square feet of affected area.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total area of ponding (sq ft)

B = total area of roof section being rated (sq ft)

Single-Ply Roofing: Ridges

Definition:

Ridges are long, narrow (usually less than 3 in.), raised portions of the roof membrane. Usually ridges occur directly above the insulation board joints.

Severity Levels:

Low - All ridges are rated low severity as a minimum.

High - Open breaks have developed in the ridge allowing water to penetrate.

Measurement:

Measure length of ridges running in all directions. When many ridges are present, the representative sampling technique may be used.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total length of membrane ridges (ft).

B = total area or roof section being rated (sq ft).

Single-Ply Roofing: Splits

Definition:

Splits are cracks or tears that extend through the membrane. They vary in length from a few inches to the length of the roof and in width from hair-line to more than 1 in.

Severity Levels:

High - All splits in the membrane are considered high severity due to their leak potential.

Measurement:

Measure length of split.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total length of membrane splits (ft).

B = total area or roof section being rated (sq ft).

Single-Ply Roofing: Surface Coating Deterioration

Definition:

Surface coating deterioration includes wear, blistering, or peeling of any surface coating applied for fire protection (such as adhesive coating and sand on an EPDM membrane) or solar reflectivity, but not waterproofing.

Severity Levels:

Low - Color of underlying membrane can be seen through the coating or membrane has lost protection (for membrane with coating protection that does not have sand or mineral matter embedded).

Medium - Membrane area has lost the sand or mineral matter portion of the coating protection (for membrane with coating protection that has sand or mineral matter embedded).

Measurement:

- Measure the square feet of each affected area and rate at the highest severity level present.
- When large quantities of this problem are present, the representative sampling technique may be used.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total area of surface coating deterioration (ft)

B = total area of roof section being rated.

Single-Ply Roofing: System Securement Deficiencies

Definition:

For fully adhered membranes, system securement deficiencies include membrane areas (including blisters) that are unattached to the substrate. For mechanically attached membranes, this category includes failed mechanical fasteners. For partially adhered membranes, the category includes membrane that is not adhered at points of attachment. For ballasted membranes, the membrane has areas where ballast is missing or displaced.

Notes:

- Holes in the membrane caused by mechanical fasteners are rated as Holes.
- If ballast is redistributed by the inspector to cover bare areas, these areas should not be counted as defects.
- For defect definitions, “building perimeter” is area within 10 ft of a roof edge. These areas experience high wind uplift pressures.

Severity Levels:

Low - Any of the following defects:

- For fully adhered systems, an area of unattached membrane substrate of 2 sq ft or less.
- For ballasted systems, a bare area of 4 sq ft or less.

Medium - Any of the following defects:

- For fully adhered systems, an area of unattached membrane substrate of greater than 2 sq ft but less than 100 sq ft (less than 25 sq ft at building perimeter).
- For mechanically attached systems, an isolated mechanical fastener that has lost its attachment capability or backed out causing bridging of the membrane.
- For partially adhered systems, an isolated point of attachment that has lost adherence.
- For ballasted systems, a bare area of greater than 4 but less than 100 sq ft (less than 25 sq ft at building perimeter).

High - Any of the following conditions:

- For fully adhered systems, an area of unattached membrane or substrate 100 sq ft of greater (25 sq ft at building perimeter).
- For mechanically attached systems, adjacent mechanical fasteners that have lost their attachment capability or backed out causing bridging of the membrane.
- For partially adhered systems, adjacent points of attachment that have lost adherence.
- For ballasted systems, a bare area of 100 sq ft or greater (25 sq ft at building perimeter).

Measurement:

- Measure square feet of membrane having the above conditions. For mechanically fastened and partially adhered systems, count the effective area of unattached membrane.
- When large quantities of this problem are present, the representative sampling technique may be used.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total area of attachment defects (ft)

B = total area of roof section being rated (sq ft).

Appendix_D: - Shingle Roofing Distress Survey Definitions

APPENDIX D – SHINGLE ROOFING (SR) DISTRESS SURVEY DEFINITIONS

General Notes

- These definitions are applicable to shingled roofing (SRShingle Roofing) surfaces and flashing components.
- Where multiple severity levels are present for a given distress record each separately.
- Distress quantities or distress density may be recorded. If distress quantities are recorded, density ranges will be computed in BUILDER/BREDCoating Condition Index. If distress densities are recorded, distress quantities will be blank in BUILDER/BREDCoating Condition Index.

- If during the course of the inspection additional occurrences are found of distress-severity combinations, adjust the quantity or density as necessary.
- To estimate density when distress quantities are not recorded, follow the density definitions for the individual distresses. However, for use in BUILDER, density may be estimated since density ranges are used, not the precise density value. Generalized visual cues are offered below in Table D-1, but may not be applicable for certain distresses.
- These distress definitions are reproduced from ROOFER™: Steep Roofing Inventory Procedures and Inspection and Distress Manual for Asphalt Shingle Roofs, CERL Technical Report 99/100, by David M. Bailey. This document can be found at the SMSSustainment Management System Support site.

Table D-1. Shingle Roofing (SRShingle Roofing) Distress Density Estimation Visual Clues

Density (%)	Visual Cue (when applicable)
>0-0.1%	Difficult to notice even by careful observation, especially if spotty. (up to about 1" x 12" in a 8' x 10' area; 1/8" in 10' length)
>0.1-1%	Somewhat noticeable, but easily missed by casual observation, especially if spotty; Careful observation usually needed, if spotty. (up to about 10" x 12" in a 8' x 10' area; 1-1/4" in 10' length)
>1-5%	Noticeable, even by casual observation, but still only a mere fraction. (up to about 1' x 4' in a 8' x 10' area; 6" in 10' length)
>5-10%	Easily noticeable even if spotty; more than a mere fraction. (up to about 1' x 8' in a 8' x 10' area; 1' in 10' length)
>10-25%	Readily noticeable, but less than 1/4 of area or length.
>25-50%	Very noticeable, but less than 1/2 of area or length.
>50-<100%	Overwhelmingly noticeable; greater than 1/2 of area or length.
100%	Entire area or length.

Distress Summary Listing

- (SR) Step Flashing
- (SR) Metal Cap Flashing
- (SR) Edge Metal
- (SR) Valley Flashing
- (SR) Ridge/Hip Shingles
- (SR) Metal Apron Flashing
- (SR) Flashed Penetrations
- (SR) Ridge/Hip Vents
- (SR) Pitch Pans
- (SR) Interior Gutters
- (SR) Age Deterioration
- (SR) Holes/Splits/Missing Shingles
- (SR) Unsealed/Unlocked Tabs
- (SR) Lumps/Ridges/Sags

- (SR) Exposed Fasteners
- (SR) Stains/Rust/Fungus/Mildew
- (SR) Debris and Vegetation
- (SR) Patching
- (SR) Improper Equipment Supports

Shingle Roofing: Debris and Vegetation

Definition:

This category includes any of the following items:

- Foreign objects on the roof that could cause damage or puncture the shingles or flashing.
- The growth of vegetation on the roof.
- Accumulation of solvent or oil drippings on the roof.

Severity Levels:

Medium - Any of the following defects:

- Collection of foreign objects or vegetation on the field of the roof.
- Grease, solvent, or oil drippings on the roof but no apparent degradation or the roofing system.
- Evidence of branches making contact with the roof shingles.

High - Any of the following defects:

- Grease, solvent, or oil drippings on the roof that have caused degradation of the roofing shingles.
- Vegetation roots that have penetrated the roof shingles.

Measurement:

Measure the exposed area (sq ft) of shingles having the above conditions.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total exposed area of shingles (sq ft) debris and vegetation defects.

B = total area of roof section being rated (sq ft).

Shingle Roofing: Age Deterioration

Definition:

Age deterioration includes clawing and curling of the shingles, and exposure of the shingle felt/mat due to excessive loss of granules, all of which indicate brittleness. Normally, these are not localized problems but are general conditions found on large areas of the roof, such as individual roof exposures, or the entire roof.

The occurrence of these problems indicate aging and reduced service life. Clawing is the turning under of the tab corners of the shingle and curling is the turning up of the tab corners.

Severity Levels:

Low - Any of the following defects:

- Loss of granular surfacing on shingle, but the reinforcement felt or mat is not exposed.
- Erosion of material around the edge of the shingle, normally found less than 1/4 inch from the edge.

Medium - Any of the following defects:

- Corners of the shingle are turned under or up (that is, clawing or curling).
- Loss of granular surfacing on shingle that results in bare spots and exposes reinforcing felt or mat.
- Loss or delamination of foil on foil-surfaced shingle.

Measurement:

Measure the exposed area (sq ft) of shingles having the above conditions.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total exposed area of shingles (sq ft) having age deterioration defects.

B = total area of roof section being rated (sq ft).

Shingle Roofing: Edge Metal

Definition:

Formed edge of metal, often referred to as drip edge, placed along eaves and rakes and covered by shingles. The edge metal allows water to drip way from the vertical surfaces and protects underlying building components.

Notes: In some cases edge metal may not have been installed. If no edge metal exists for the roof section and there is no evidence that the edge metal was originally installed, do not count its absences as a distress.

Severity Levels:

Medium - Missing or displaced section of edge metal (where originally installed).

Measurement:

Measure length (ft) of edge metal flashing having the conditions described above. Individual defects count as 1 ft minimum. If the distance between distresses is less than 1 ft, count the distresses as one.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of edge metal defects (ft)

B = total length of flashing on roof section being rated (including perimeter flashings such as flashing, edge metal, ridge and hip shingles, and valley flashings; and curb flashings around large penetrations such as dormers and skylights).

Shingle Roofing: Exposed Fasteners

Definition:

Shingle fasteners are visible in the field of the roof.

Notes: If a shingle fastener has backed out, count it as a hole

Severity Levels:

Medium - A fastener is exposed but not backed out.

Measurement:

Measure the number of exposed fasteners. Individual exposed fasteners count as 1 sq ft minimum. If more than one exposed fastener is found in an area of 1 sq ft, count the distressed area as 1 sq ft.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total area of exposed fasteners (sq ft) having defects.

B = total area of roof section being rated (sq ft).

Shingle Roofing: Flashed Penetrations

Definition:

Flashing for open pipes, plumbing vent stacks, attic vents, flues, ducts, continuous pipes, guy wires, and other roof penetrations that require a deck flange integrated into the shingles.

Severity Levels:

Low - Any of the following defects:

- Loss of protective coating or corrosion
- Flashing sleeve is deformed.
- Top of flue is less than 5 in. above the roof surface on the upslope side.

Medium - Any of the following defects:

- Exposed fastener in flashing.
- The sleeve or umbrella is open or no umbrella is present (where required).

High - Any of the following defects:

- Edge of deck flange on upslope side of penetration is exposed or visible.
- Edge of deck flange on downslope side of penetration is not overlapping shingles or is sealed to underlying shingles.
- Top of flashing sleeve is not sealed or has not been rolled down into existing plumbing vent stack.
- Flashing sleeve is cracked, broken, or corroded through.
- No flashing sleeve is present.

Measurement:

Count each distressed flashed penetration as 1 ft at the highest severity level present.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of flashed penetrations defects (ft)

B = total length of flashing on roof section being rated (including perimeter flashings such as flashing, edge metal, ridge and hip shingles, and valley flashings; and curb flashings around large penetrations such as dormers and skylights).

Shingle Roofing: Holes/Splits/Missing Shingles

Definition:

This category of distresses is characterized by holes, splits, cracks, or visible tears in the shingle reinforcing felt or mat, or missing shingles or tabs.

Severity Levels:

Medium - Any of the following defects:

- Holes, splits, or cracks that do not extend down to the underlayment or substrate.
- Misaligned shingle resulting in partial loss of coverage but no exposed underlayment or substrate.
- Missing shingle, but no exposed underlayment or substrate.

High - Any of the following defects:

- Holes or splits that extend down to the underlayment or substrate.
- Misaligned shingle, resulting in exposed underlayment or substrate.

- Missing shingle, resulting in exposed underlayment or substrate.
- Exposed fastener that has backed out. (Note: if fastener has not backed out, count as exposed fastener distress, not a hole).

Measurement:

Measure the exposed area (sq ft) of shingles having the above conditions.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total exposed area of shingles (sq ft) having holes/splits/missing shingle defects.

B = total area of roof section being rated (sq ft).

Shingle Roofing: Improper Equipment Supports

Definition:

This distress category includes pipe, conduit, and mechanical equipment supports (wood sleepers, channels, etc.) that are placed directly on the roof surface with no protective pad or placed at an insufficient height to allow for maintaining the roofing system below the equipment. Repairing this type of distress may require replacing the surrounding roofing system.

Notes: Termination for guy wires are to be rated as flashed penetration distresses.

Severity Levels:

Medium - The equipment is bolted through the shingles and the bolts appear to be sealed.

High - Any of the following defects:

- The support has caused movement or damage to the shingles.
- The equipment is bolted through the shingles and the bolts do not appear to be sealed.

Measurement:

Measure square feet of each improper equipment support. The minimum dimension for length and width of a support shall be 1 foot.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total area of improper equipment supports (sq ft).

B = total area of roof section being rated (sq ft).

Shingle Roofing: Interior Gutters

Definition:

An interior gutter is a built-in trough of metal or other material that collects water from the roof and carries it to a drain or downspout.

Severity Levels:

Low - Entire length of interior gutter is rated low severity, as a minimum, due to the maintenance problems and high potential for leak damage associated with its presence.

High - Any of the following defects:

- Clogged gutter or drain.
- Holes or open seams in interior gutter.

Measurement:

Measure entire length of gutter having the conditions described above. For clogged gutters, count lineal feet of clogging material. For clogged drain, count as 1 ft. Individual defects count as 1 ft minimum. If the distance between distresses is less than 1 ft, count the distresses as one.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of gutter defects (ft)

B = total length of flashing on roof section being rated (including perimeter flashings such as flashing, edge metal, ridge and hip shingles, and valley flashings; and curb flashings around large penetrations such as dormers and skylights).

Shingle Roofing: Lumps/Ridges/Sags

Definition:

Lumps, ridges, or sags are present on the surface of the roof.

Notes: If other problems exist in the areas that exhibit lumping, sagging, or ridging, record them under the appropriate distresses.

Severity Levels:

Medium - Any of the following defects:

- Lumps or ridges that do not appear to be caused by unevenness in the supporting substrate or underlying flashing component (i.e., wrinkles in the underlying felt).

- Lumps, ridges, or sags caused by unevenness in the supporting substrate or underlying flashing component.

Measurement:

Measure the exposed area (sq ft) of shingles having the above conditions.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total exposed area of shingles (sq ft) having lumps/ridges/sags defects.

B = total area of roof section being rated (sq ft).

Shingle Roofing: Metal Apron Flashing

Definition:

Roof-to-wall sheet metal flashing used at the upslope and downslope sides of chimneys, dormers, curbs, and other projections. Apron flashing should be placed at the downslope side of the projection with the edge of the deck flange exposed. The metal apron at the upslope side of the projection should have the edge of the deck flange covered by overlaying shingles. A projection that is wider than 2 ft should have a saddle-shaped cricket that diverts water around the projection.

Severity Levels:

Low - Any of the following defects:

- Loss of protective coating or corrosion.
- Vertical height is less than 4 in high.

Medium - Any of the following defects:

- Absence of cricket on upslope side of penetration that is wider than 2 ft.
- Exposed fastener in flashing.

High - Any of the following defects:

- Edge of deck flange on upslope side of penetration is exposed or visible.
- Edge of deck flange on downslope side of penetration is not overlapping shingles or is sealed to underlying shingles.
- Holes, splits, or cracks in metal flashing.
- Metal flashing is open at vertical corner.
- No apron flashing exists.

Measurement:

Measure length (ft) of metal apron flashing having the conditions described above. Individual defects count as 1 ft minimum. If the distance between distresses is less than 1 ft, count the distresses as one.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of flashing defects (ft)

B = total length of flashing on roof section being rated (including perimeter flashings such as flashing, edge metal, ridge and hip shingles, and valley flashings; and curb flashings around large penetrations such as dormers and skylights).

Shingle Roofing: Metal Cap Flashing

Definition:

Metal cap flashing includes counterflashing and any sheet metal coping cap that serves as part of the counterflashing or cover over a detail such as roof area divider, equipment curb, expansion joint, step flashing, ridge, or hip. Metal cap flashing protects the top termination of the vertical flashing (step flashing or metal apron flashing) and sheds waters away from it. It should be free to expand and contract. Properly lapped exterior siding or cladding can perform the function of metal cap flashing.

Severity Levels:

Low - Any of the following defects:

- Loss of protective coating or corrosion.
- Metal coping cap is deformed, allowing water to pond on the top.
- Counterflashing is deformed but still functioning.
- Counterflashing has been sealed to the step flashing.
- Exposed fasteners on horizontal surfaces of metal cap flashing.

Medium - Any of the following defects:

- Corrosion holes are present in the metal on a vertical surface.
- Metal coping cap has loose fasteners, failure of soldered or sealed joints, open joints, or loss of attachment.

High - Any of the following defects:

- Metal coping cap or counter flashing was not installed, or is missing or displaced from its original position, allowing water to channel behind it.
- Corrosion holes are present in the metal on a horizontal surface.
- Metal coping cap has missing joint covers (where originally installed).

- Sealant at reglet or top of counterflashing is missing or no longer functioning, allowing water to channel behind counterflashing.
- Counterflashing, exterior siding, or cladding does not extend over the top of the step flashing or apron flashing.

Measurement:

Measure length (ft) of metal cap flashing having the conditions described above. Individual defects count as 1 ft minimum. If the distance between distresses is less than 1 ft, count the distresses as one.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of metal cap flashing defects (ft)

B = total length of flashing on roof section being rated (including perimeter flashings such as flashing, edge metal, ridge and hip shingles, and valley flashings; and curb flashings around large penetrations such as dormers and skylights).

Shingle Roofing: Patching

Definition:

Roof repairs were previously made using dissimilar materials such as mastics or shingles of a different color or design.

Severity Levels:

Low - Replacement shingle does not match appearance or composition of original adjacent shingles.

Medium - Shingle replacement patch is composed of dissimilar materials such as mastic, roofing felts, or coatings.

High - Shingle replacement patch composed of dissimilar materials, that have other high severity distresses (i.e., holes, splits, and cracks).

Measurement:

Measure the exposed area (sq ft) of shingles having the above conditions.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total exposed area of shingles (sq ft) having patching defects.

B = total area of roof section being rated (sq ft).

Shingle Roofing: Pitch Pans

Definition:

A pitch pan is a flanged sleeve with an open bottom that is placed around a roof penetration and filled with a bituminous, polymeric, or grout sealant to seal the area around the penetration.

Severity Levels:

Medium - Top rim of pitch pan is not level on all sides.

High - Any of the following defects:

- Holes, splits, or cracks in metal.
- Sealing material is below metal rim.
- Sealing material has cracked or separated from pan or penetration.
- Edge of deck flange on upslope side of penetration is exposed.
- Edge of deck flange on downslope side of penetration is not overlapping shingles or is sealed to underlying shingles.

Measurement:

Count each distressed pitch pan once at the highest severity level present.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = number of distressed pitch pans (ft)

B = total length of flashing on roof section being rated (including perimeter flashings such as flashing, edge metal, ridge and hip shingles, and valley flashings; and curb flashings around large penetrations such as dormers and skylights).

Shingle Roofing: Ridge/Hip Shingles

Definition:

Portions of shingles (usually one tab width) that are cut from a full 3-tab shingle and laid perpendicular to the hip or ridge, providing a finished water-shedding cap. Note: Ridge and Hip Shingles are treated as flashings because they provide protection of the roofing system at the termination of adjoining roof planes.

Severity Levels:

Medium - Any of the following defects:

- Holes, splits, or cracks not extending down to the underlayment or substrate.
- Misaligned shingle resulting in partial loss of coverage but no exposed underlayment or substrate.
- Missing shingle, but no exposed underlayment or substrate.
- Exposed fasteners that have not backed out.

High - Any of the following defects:

- Holes or splits that extend down to the underlayment or substrate.
- Misaligned shingle resulting in exposed underlayment or substrate.
- Missing shingle resulting in exposed underlayment or substrate.
- Exposed fastened that has backed out.

Measurement:

Measure lineal feet of exposure of ridge or hip shingle tabs having the conditions described above. Round total quantity to next higher whole foot. Individual defects count as 1 ft minimum. If the distance between distresses is less than 1 ft, count the distresses as one.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of ridge or hip shingles having defects (ft)

B = total length of flashing on roof section being rated (including perimeter flashings such as flashing, edge metal, ridge and hip shingles, and valley flashings; and curb flashings around large penetrations such as dormers and skylights).

Shingle Roofing: Ridge/Hip Vents

Definition:

Any device installed on and along the roof ridge or hip for the purpose of ventilating the underside of the roof deck.

Severity Levels:

Medium - Missing component of vent assembly (i.e., end caps, baffles, etc.).

High - Any of the following defects:

- Missing or loose section of ridge or hip vent.
- Holes, splits, or cracks in ridge or hip vent.
- Missing cap shingle on roof vent.

Measurement:

Measure length (ft) of ridge/hip vent flashing having the conditions described above. Individual defects count as 1 ft minimum. If the distance between distresses is less than 1 ft, count the distresses as one.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of ridge/hip vent flashing defects (ft)

B = total length of flashing on roof section being rated (including perimeter flashings such as flashing, edge metal, ridge and hip shingles, and valley flashings; and curb flashings around large penetrations such as dormers and skylights).

Shingle Roofing: Stains/Rust/Fungus/Mildew

Definition:

The shingle surface shows evidence of stains, rust, fungus, or mildew.

Notes: If the appearance is unacceptable, corrective treatments can be applied, such as cleaning with tris-odium hypochlorate or installing zine strips.

Severity Levels:

Low - Evidence of stains, rust, fungus, or mildew.

Measurement:

Measure the exposed area (sq ft) of shingles having the above conditions.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total exposed area of shingles (sq ft) having stains/rust/fungus/mildew defects.

B = total area of roof section being rated (sq ft).

Shingle Roofing: Step Flashing

Definition:

Individual pieces of metal flashing material used to flash vertical walls, chimneys, dormers, and other pro-jections. The pieces range from 7 to 10 in. long and have a 90-degree bend with a horizontal and a vertical leg. The pieces are individually placed at the end of each course of shingles where the roof meets a vertical surface. They are overlapped and "stepped up" the slope, and are fastened through the horizontal surface to

the deck. Step flashing should be used only to flash a vertical surface that runs up a slope, and not across the slope.

Severity Levels:

Low - Any of the following defects:

- Loss of protective coating or corrosion of step flashing.
- Overlay roof system shingles are not step flashed.
- Coverages of less than one step flashing unit per shingle course exists.

Medium - Any of the following defects:

- Vertical leg of step flashing is less than in. high.
- Bent, deformed, or wide gaps in vertical leg of step flashing.
- Loose or displaced step flashing
- Vertical joints between step flashing pieces have been sealed closed.
- Continuous “L” flashing exists instead of incremental step flashing.

High - Any of the following defects:

- Holes exists in the step flashing.
- No vertical flashing exists.
- Top edge of step flashing is exposed, allowing water to penetrate behind flashing.

Measurement:

Measure length (ft) of step flashing having the conditions described above. Individual defects count as 1 ft minimum. If the distance between distresses is less than 1 ft, count the distresses as one.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of step flashing defects (ft)

B = total length of flashing on roof section being rated (including perimeter flashings such as flashing, edge metal, ridge and hip shingles, and valley flashings; and curb flashings around large penetrations such as dormers and skylights).

Shingle Roofing: Unsealed/Unlocked Tab

Definition:

For a seal-down shingle, a lack of adhesion between the tab of a shingle and underlying shingles indicates an unsealed condition. Displacement or damage to a lock-down shingle that results in the loss of its interlocking mechanism indicates an unlocked condition.

Notes: For seal-down shingles, use a trowel or fingers and gently try to lift tab. Any adherence of the shingle tab to underlying shingles should be judged as adequate. Test several adjacent shingles in three or four randomly selected areas of the roof. If any shingles are found to be unsealed, use the sampling method to determine the quantity of the affected area.

Severity Levels:

Medium - Any of the following defects:

- The tab of a shingle, which is designed to be sealed down, is unsealed.
- A lock-down shingle is not interlocked.

Measurement:

Measure the exposed area (sq ft) of shingles having the above conditions.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = total exposed area of shingles (sq ft) unsealed/unlocked defects.

B = total area of roof section being rated (sq ft).

Shingle Roofing: Valley Flashing

Definition:

Roof valley flashings are formed when two sloping sections intersect to form a "V." Water from both sections of roof runs through the valley, making it especially vulnerable to deterioration and leakage. Valley flashings for asphalt shingles may be of three types: (1) open valleys lined with sheet metal or mineral-surfaced asphalt roll (composition) material, (2) closed cut valleys having shingles on one side of the valley cut on an angle parallel with the valley, and (3) woven valleys lined with interwoven asphalt shingles form the adjoining roof sections. All three types of valley flashings should have underlying asphalt roll material.

Severity Levels:

Low - Any of the following defects:

- Loss of protective coating or corrosion on metal open valley flashing.
- No fabricated “V” crimp (vertical ridge) in center of metal open valley flashing.

Medium - Any of the following defects:

- Loss of surfacing with exposure of felts in valley flashing.
- Unsealed laps in open composition valley flashing.
- Holes, splits, or cracks in valley flashing not extending down to the underlay.

- Loose or missing valley shingles with no underlay or substrate exposed.
- Edges of valley shingles are sealed (in open or closed valleys).
- Exposed fasteners within 12 in of centerline of closed or woven valley.

High - Any of the following defects:

- Holes or splits in valley flashing with underlay or substrate exposed.
- Loose or missing valley shingles with underlay or substrate exposed.
- Exposed fastener within 12 in of centerline of open valley.

Measurement:

Measure length (ft) of valley flashing having the conditions described above. Individual defects count as 1 ft minimum. If the distance between distresses is less than 1 ft, count the distresses as one.

Density:

$\frac{A}{B}$ x 100 = Problem Density

A = length of valley flashing defects (ft)

B = total length of flashing on roof section being rated (including perimeter flashings such as flashing, edge metal, ridge and hip shingles, and valley flashings; and curb flashings around large penetrations such as dormers and skylights).

Work Configuration

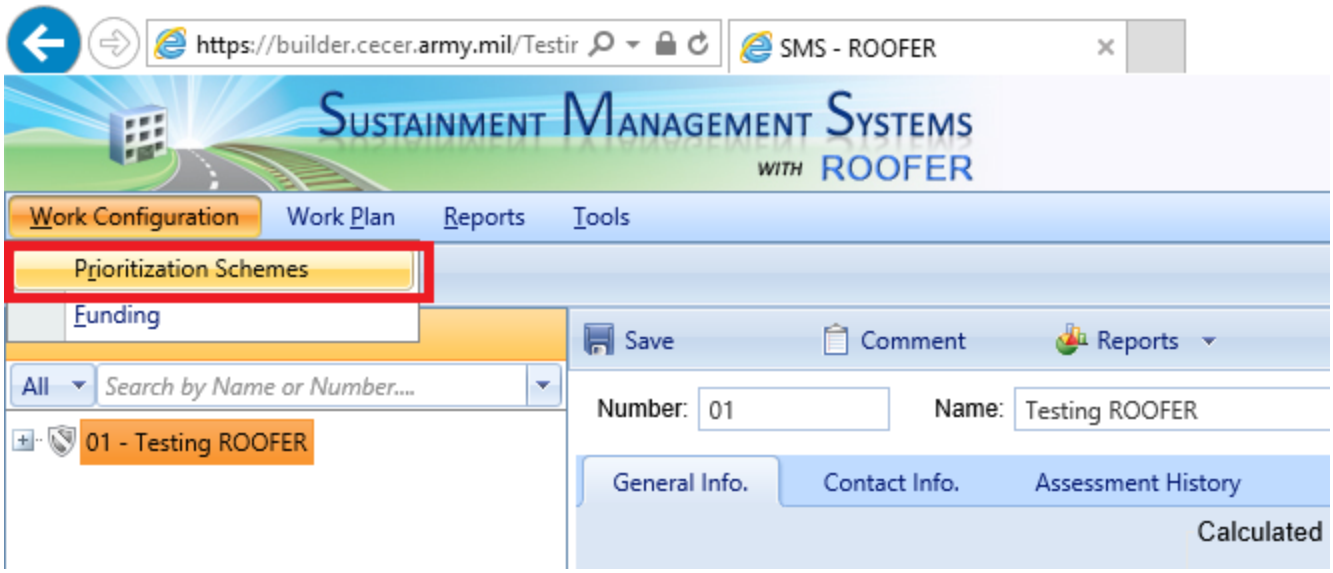
Work Prioritization Schemes

Add a Work Prioritization Scheme

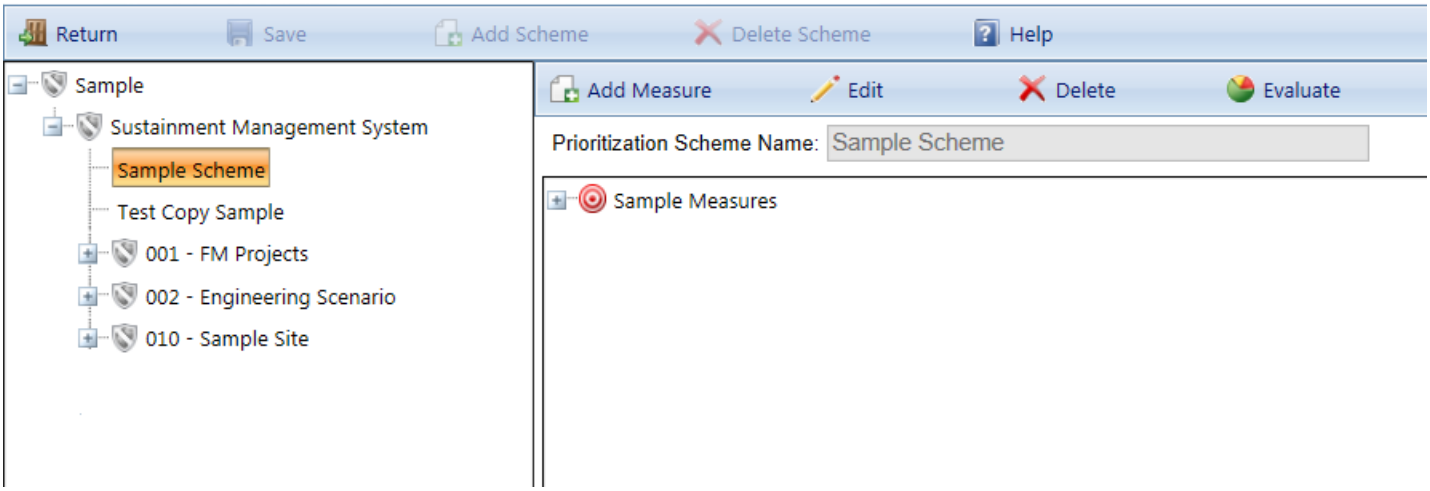
Note: In addition to setting work priorities using one or more prioritization schemes, there is another option available that can be used in addition to prioritization schemes. Namely, in the work plan table at the Work Plan **Items** tab, you can mark the checkbox in the **Must Do** column. This forces the corresponding work activity to be funded before all other competing work items that are not marked as "Must do."

If you have constructed a Work Plan for a given year, you will need to prioritize it so that your planning efforts and funding allocations can be directed to the most important items. **ROOFER** allows you to do this using a work prioritization scheme. The **ROOFER** work prioritization method uses a simple additive utility function to calculate a score for each work item and to rank the work items from highest score (most important) to lowest (least important). It does this by allowing you to outline and weight your objectives and to identify specific properties of the work item that can be used as measures of how well a work item meets a particular objective. With a work prioritization scheme that you have tested and calibrated, you will be able to prioritize and rank your work plan in a quick, objective, repeatable, and representative method with the touch of a button.

To create or edit a prioritization scheme, select **Work Configuration > Prioritization Schemes** starting at the main menu.



The Prioritization Schemes screen will appear.



For a description of the prioritization scheme shown above, see the Prioritization Example. The prioritization example also includes an example scoring of a work item using the example shown.

Toolbar

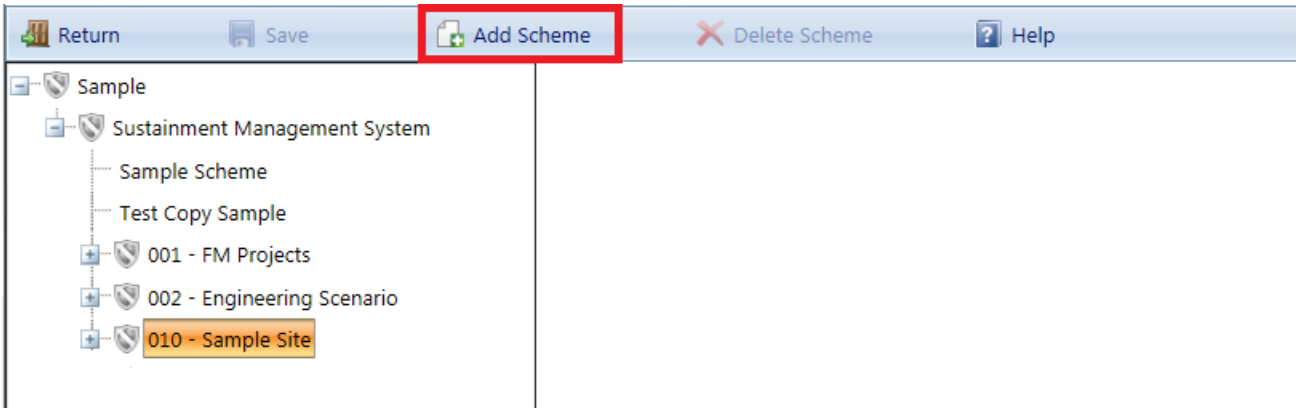
- **Return**. Use this button to close the Prioritization Scheme window.
- **Save**. Use this button to save changes you have made to the prioritization schemes.

- **Add**. Use this button to add a new prioritization scheme.
- **Delete**. Use this button to delete the selected prioritization scheme.

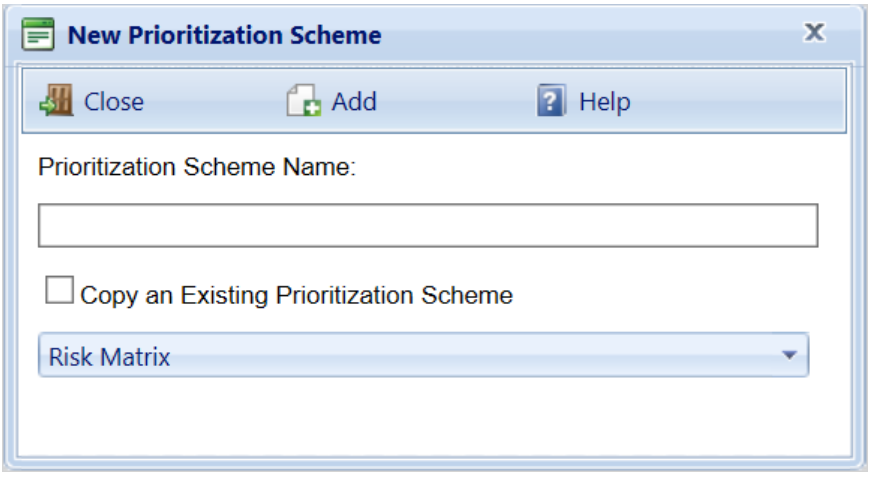
Add a Prioritization Scheme

You can create as many prioritization schemes as you like. When you are ready to prioritize a work plan, you will simply select, in the Reference Settings area at the Site or Organization's **General Information** tab, the prioritization scheme you wish to use. You may, in fact, wish to try out several different schemes and then compare the resulting prioritized lists.

To create a new prioritization scheme, activate the **Add Scheme** button in the window toolbar.



The "New Prioritization Scheme" popup window will appear:



Enter a unique name for the new scheme, which is limited to 50 alphanumeric characters, and activate the **Add** button in the toolbar. Initially after creating a prioritization scheme, only the main objective will appear in the scheme. The main objective can be reworded (see **Editing an Objective** below) and subobjectives can be added to it (See **Adding a Subobjective** below).

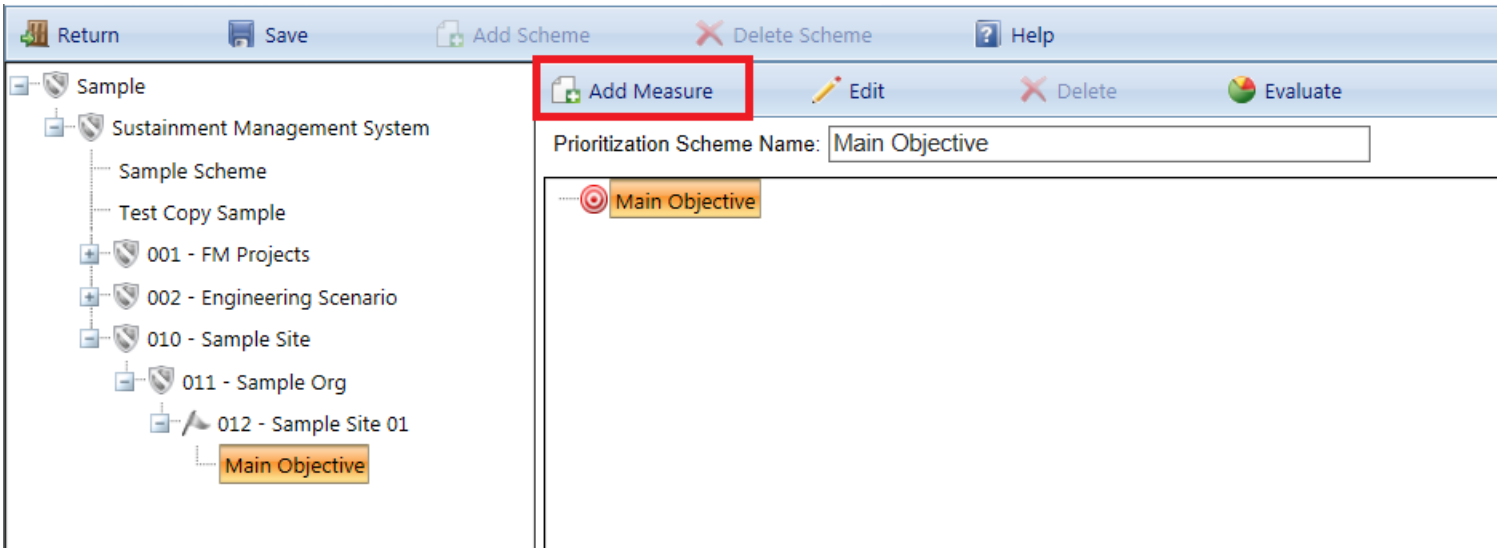
Note that when you are creating a new prioritization scheme you have the option to copy an existing scheme. If you have a prioritization scheme that you have fine tuned and accept as the standard scheme to use, then the ability to copy it can be very useful. If you want to experiment with recalibration of the weights and measures, you can do so with a copy and not destroy your original values. To copy an existing scheme, mark the **Copy an Existing Prioritization Scheme** checkbox, select the scheme to copy from the dropdown list, and activate the **Add** button in the toolbar.

Additionally, there is no way to cancel changes for prioritization schemes. Changes are saved to the database when they are made, and the changes overwrite previous data. A safe way to experiment with a particular prioritization scheme is to copy it by creating an entirely new scheme and then edit with the copy and leave the original alone.

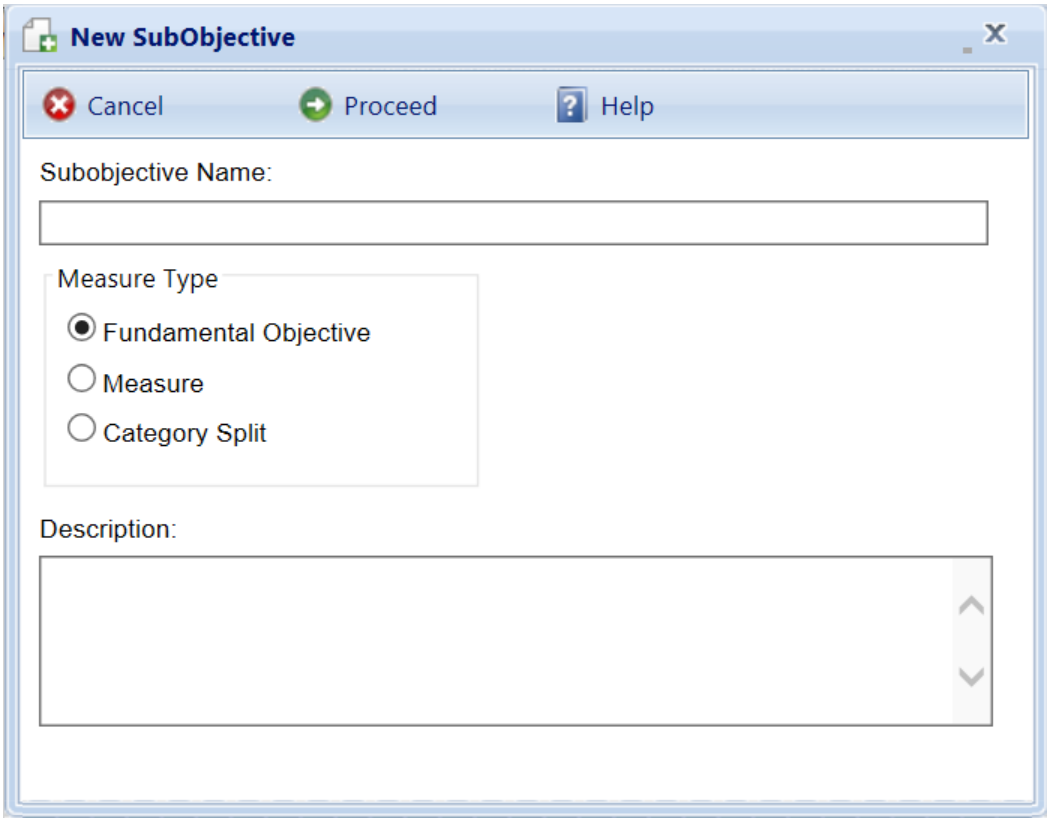
Add a Subobjective

To add a subobjective to an objective on the tree,

- Select the objective.
- Activate the **Add Measure** button on the content screen toolbar.



The "New Subobjective" popup window will appear:



To create the subobjective, the following data must be recorded:

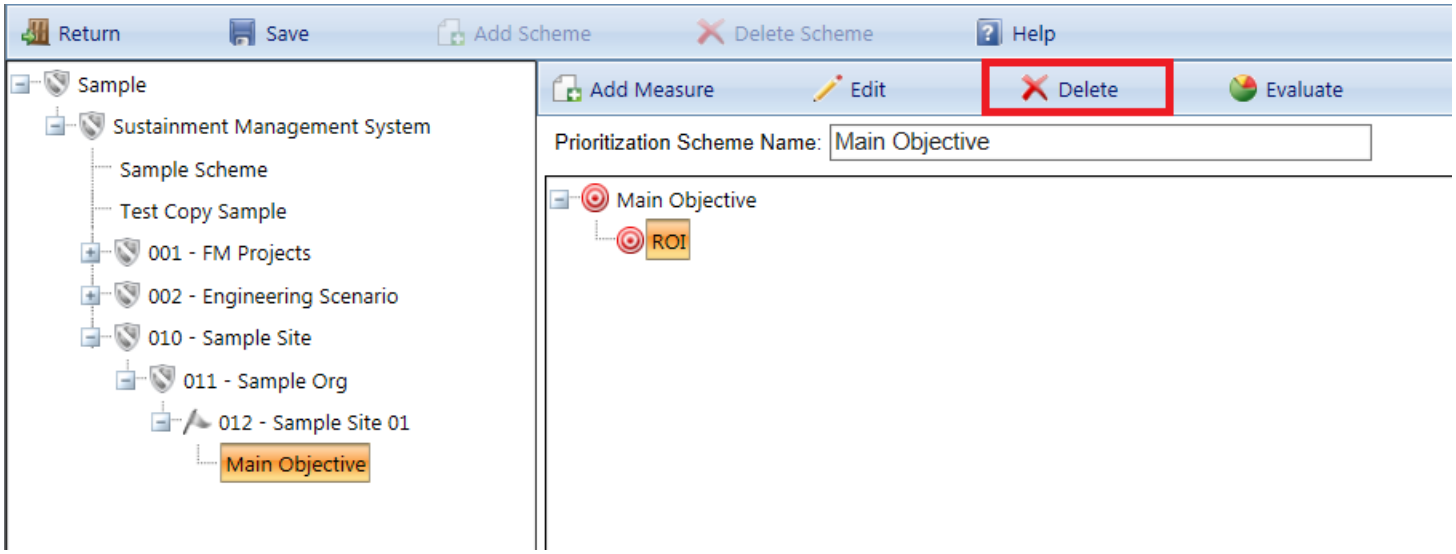
- **Node name.** Enter the name of the objective that will appear in the tree.
- **Measure Type.** Select the type of objective to be created from the three available types:
  - **Fundamental Objective.** This is a statement of one of the things you are trying to accomplish with the work plan. It is primarily used to help you outline your thoughts so that you eventually are able to identify properties (measures) in your inventory that you will consider when prioritizing the individual work items.
  - **Measure.** A measure is a property of the work item or of the inventory hierarchy of the work item's Component-Section. A work item's overall score in the prioritization scheme is fundamentally determined by the values of the work item's properties that are used as measures in the scheme, the point values assigned to those particular values, and the relative weights of the objectives.
  - **Category Split**. See Using Category Splits below for a further description of category splits.
- **Measure/Split Category**. If you select "Measure" or "Category Split" as the type of objective, select the category to associate with the measure or split, either Building or General. If a fundamental objective is selected as the measure type, this field will not appear.
- **Available Measures**. If you select "Measure" or "Category Split" as the type for this objective, then you will also have to select the measure to associate the measure or split. The available measures in the dropdown list depends on the Category Split or Measure category selected. If a fundamental objective is selected as the measure type, this field will not appear.

In addition to this required data, you have the option to add a Description of the new objective, which is limited to 255 alphanumeric characters. When all of the information has been entered, activate the **Proceed** button to create the objective. If you do not wish to create the objective, activate the **Cancel** button.

Delete an Objective

To delete an objective from the tree:

- Select the objective on the tree.
- Activate the **Delete** button.

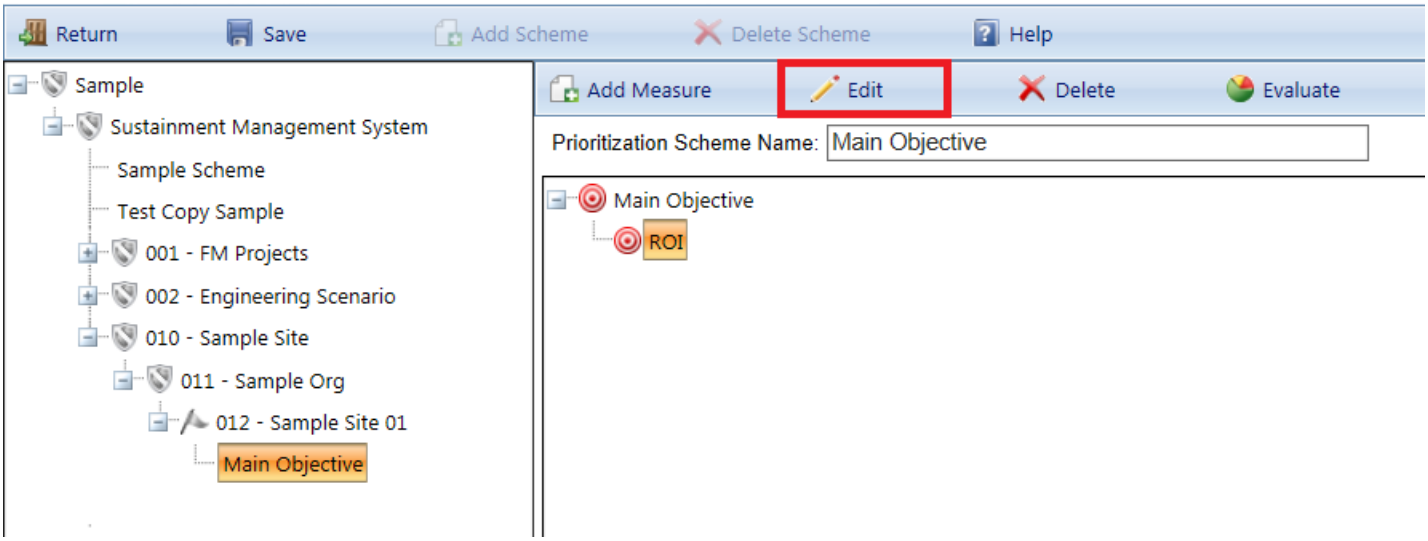


It is important to note that if you delete an objective, the entire subtree under the objective will be deleted as well.

Edit an Objective

To edit the name or description of an objective:

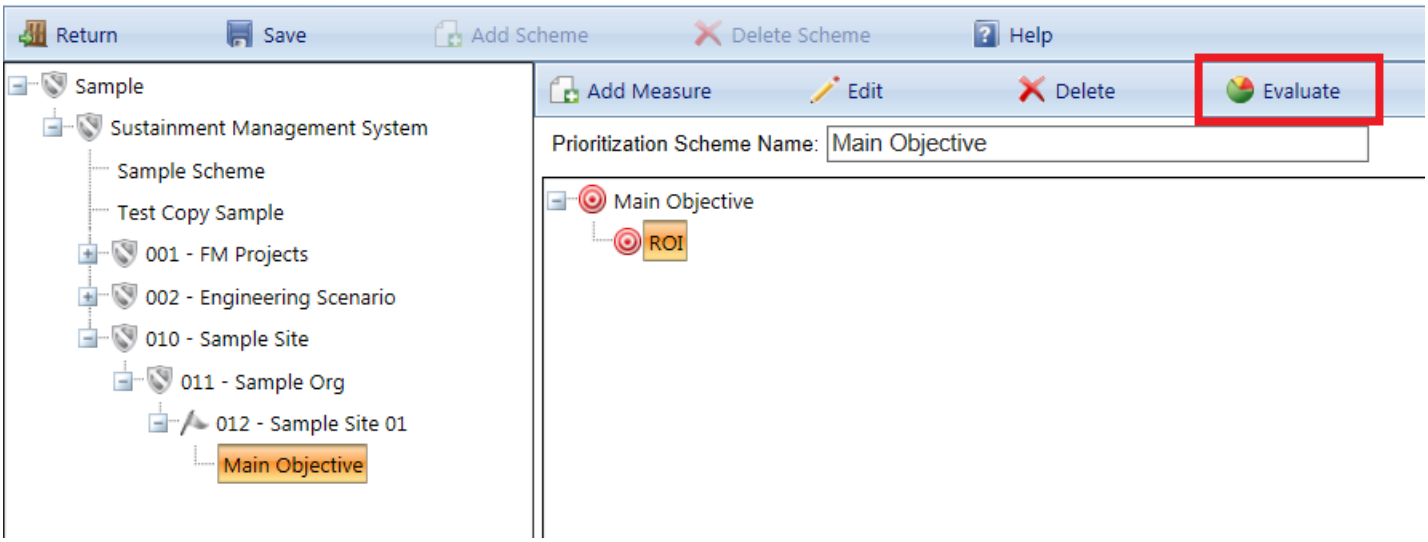
- Select the objective on the tree.
- Activate the **Edit** button.



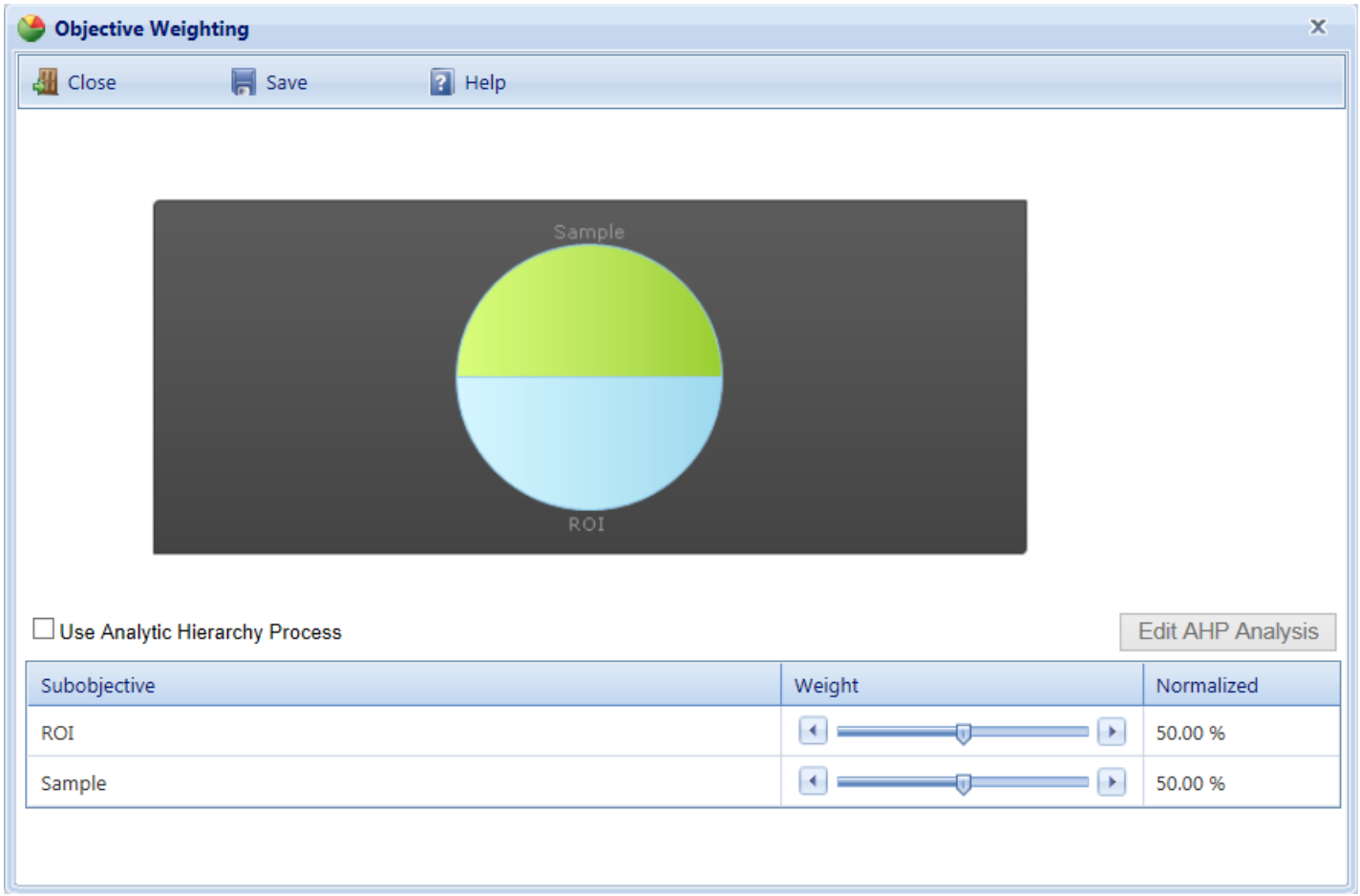
It is important to note that once an objective is created, you may not change the measure type, category, or measure itself, but you can change the node name.

Evaluate a Fundamental Objective

To record the relative weights of the children of an fundamental objective, select the fundamental objective, select it, and activate the **Evaluate** button.



The "Objective Weighting" popup window will appear:



The children of the fundamental objective will be listed in a grid along with their weight. The default setting for the **Weight** is 100 for all children. That is, all children are equally important to the parent. You may adjust the weights by doing one of the following:

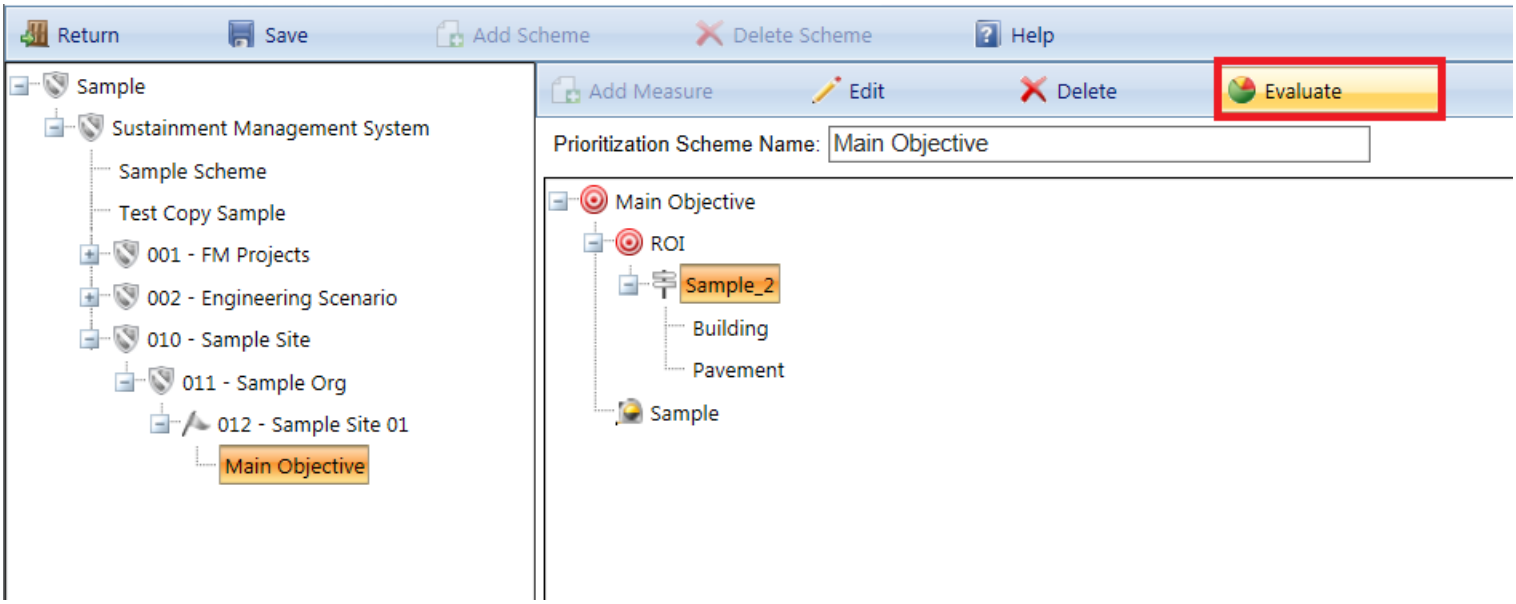
a. Enter a number between 0 and 100 in the **Weight** column.
b. Or, mark the "Use Analytic Hierarchy Process" checkbox, then activate the **Edit AHP Analysis** button. The AHP process allows you to establish the weights by doing a binary comparison of the field values. See Using the Analytic Hierarchy Process for a description of this method.

Make sure to activate the **Save** button to save changes.

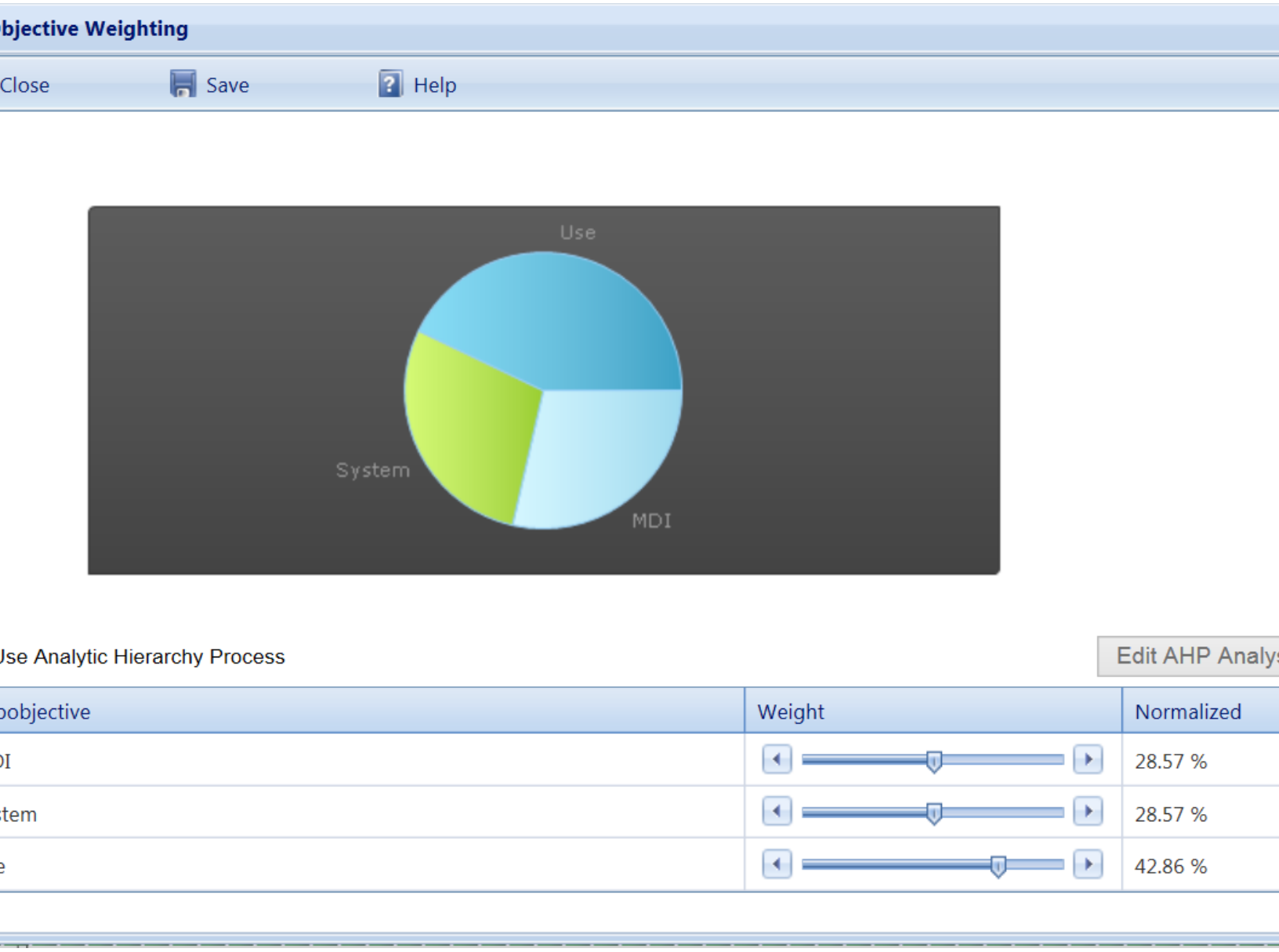
Note: Each of these methods results in a normalized weight (which cannot be edited) that is calculated so that the sum of the weights is 100%. This is done by dividing each of the individual weights by the sum of all of the weights.

Evaluate a Measure

To assign points to the various values of a measure, select the measure, and then activate the **Evaluate** button.



The Measure Evaluation popup window will appear:



The possible field values for the measure will be listed in a grid, along with their assigned Point Value. The default point value is 100 for all field values. That is, initially they are equally important. You can edit the point value to adjust the weights by doing one of the following:

a. Enter a number between 0 and 100 in the **Weight** column.
b. Alternatively, mark the "Use Analytic Hierarchy Process" checkbox, then activate the **Edit AHP Analysis** button. The AHP process allows you to establish the weights by doing a binary comparison of the field values. See Using the Analytic Hierarchy Process for a description of this method.

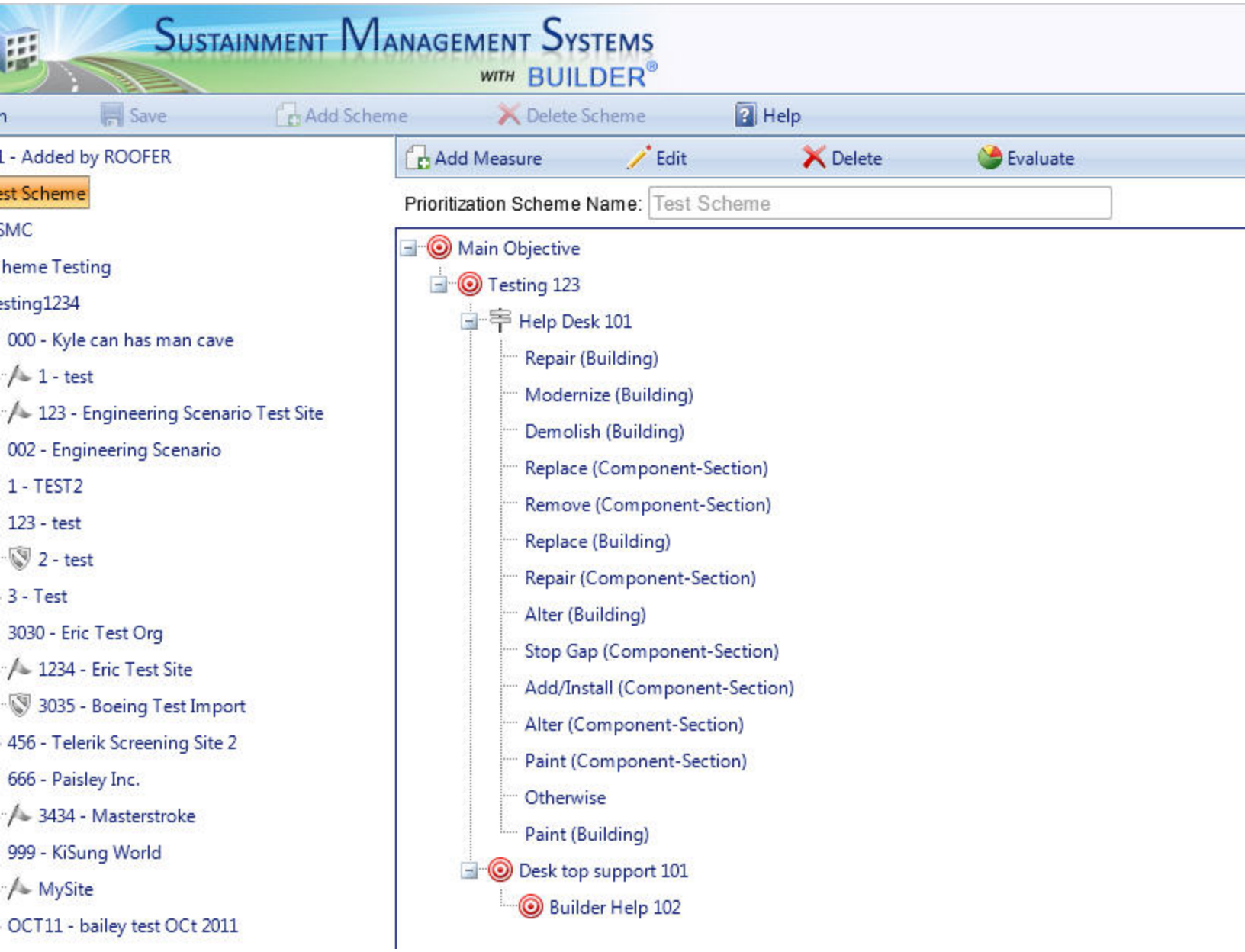
Use the **Save** button to save changes or the **Cancel** button to return to the previously saved weights.

Note: Each of these methods results in a normalized weight (which cannot be edited) that is calculated so that the sum of the weights is 100%. This is done by dividing each of the individual weights by the sum of all of the weights.

About Using Category Splits

A category split, denoted by the icon in the Objectives Tree, is associated with a field property in the work item hierarchy and is used when you want to vary how the priority score is computed based on the work item's value for this field property. The subobjectives of a split can only be the various values of the field property.

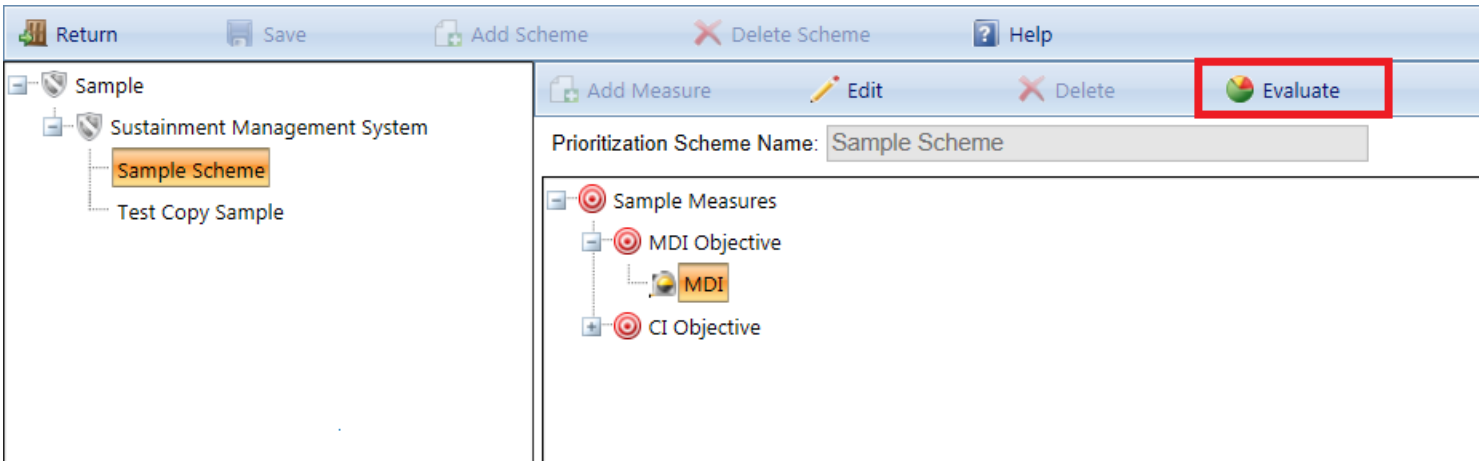
The subobjectives of a split are called categories. The categories identify which subtree will be used based on the associated field's property value. When the algorithm that calculates the score comes to a split, only the single branch of the tree under the split corresponding to the work item's property value as a category will be used. The screen below shows an example of a split in a prioritization scheme:



The category split in this example is Type of Work. The associated field is work activity, which has 6 possible values: "Repair," "Replace," "Paint," "Remove," "Add/Install," and "Alter." A category split generally has an added category named "Otherwise," which is the branch of the tree used if the value of the field differs from all of the other listed values. In this case, "Remove," "Add/Install," and "Alter" will use the "Otherwise" category. When you first create a split, all of the possible values of the field are listed as categories under it. If you delete a category, then items with that field property value will use the "Otherwise" category.

In the example above, the work item's **CI**[1] and **RSL**[2] are used as the measures for both "Repair" and "Replace." However, the point values assigned to the fields varies by type of work. To replace a Component-Section, the most cost-effective time would be indicated by a very low **CI**[3] and little or no remaining service life. To repair a Component-Section, the most cost-effective time would be indicated by a mid-range **CI**[4] and a long remaining service life. The Type of Work split allows the computation of the score to proceed selectively. Since only one of the categories will be used, the relative weights of the categories under a split are calculated differently from other types of objectives.

To assign points to the various values of a split, navigate to the split on the tree, select it, and activate the **Evaluate** button.



The "Measure Scores" popup window will appear:

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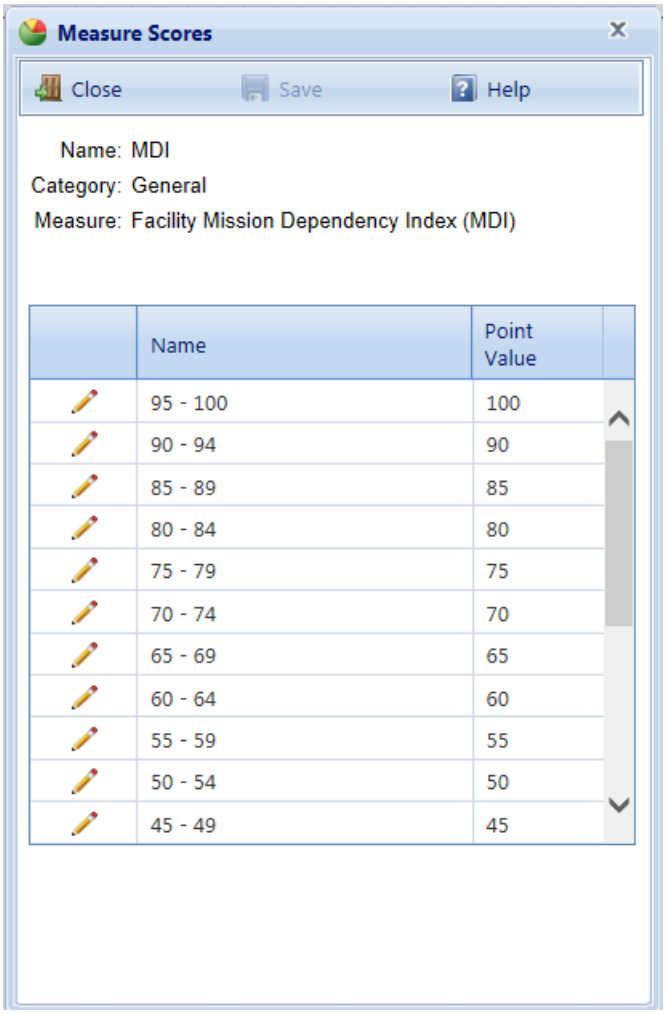
[1]Condition Index

[2]Remaining service life.

[3]Condition Index

[4]Condition Index



The possible field values for the measure will be listed in a grid, along with their assigned Point Value. The default point value is 50 for all field values. That is, initially they are equally important. You can edit the point value to adjust the weights by doing one of the following:

a. Enter a number between 0 and 100 in the **Weight** column.
b. Alternatively, if the number of field values is less than 25, mark the "Use Analytic Hierarchy Process" checkbox, then activate the **Edit AHP Analysis** button. The AHP process allows you to establish the weights by doing a binary comparison of the field values. See Using the Analytic Hierarchy Process for a description of this method.

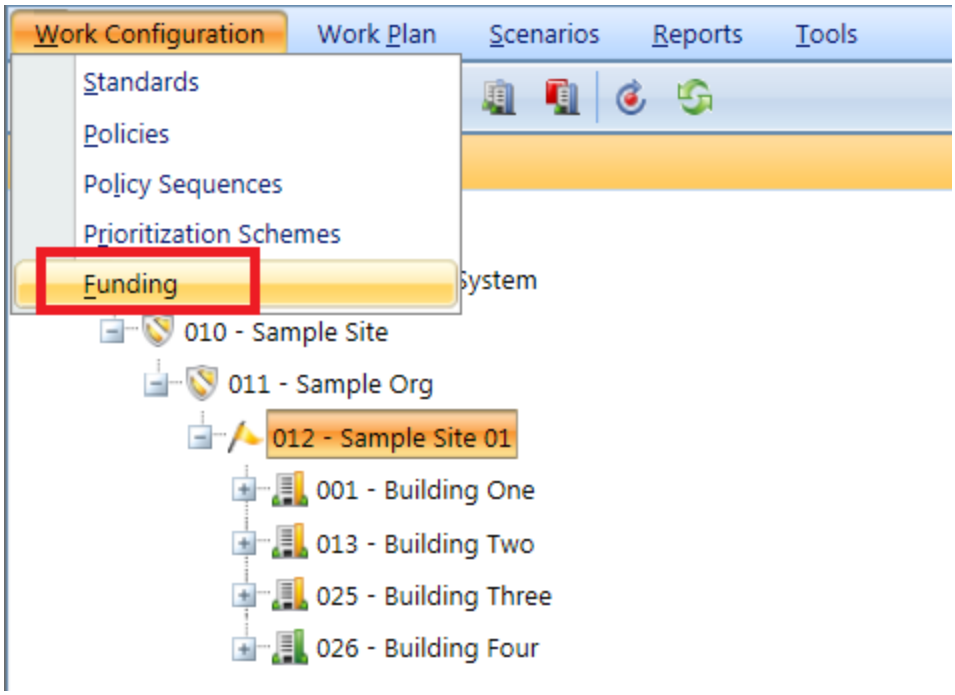
Use the **Save** button to save changes or the **Cancel** button to return to the previously saved weights.

Note: Each of these methods results in a normalized weight (which cannot be edited) that is calculated so that the sum of the weights is 100%. This is done by dividing each of the individual weights by the sum of all of the weights.

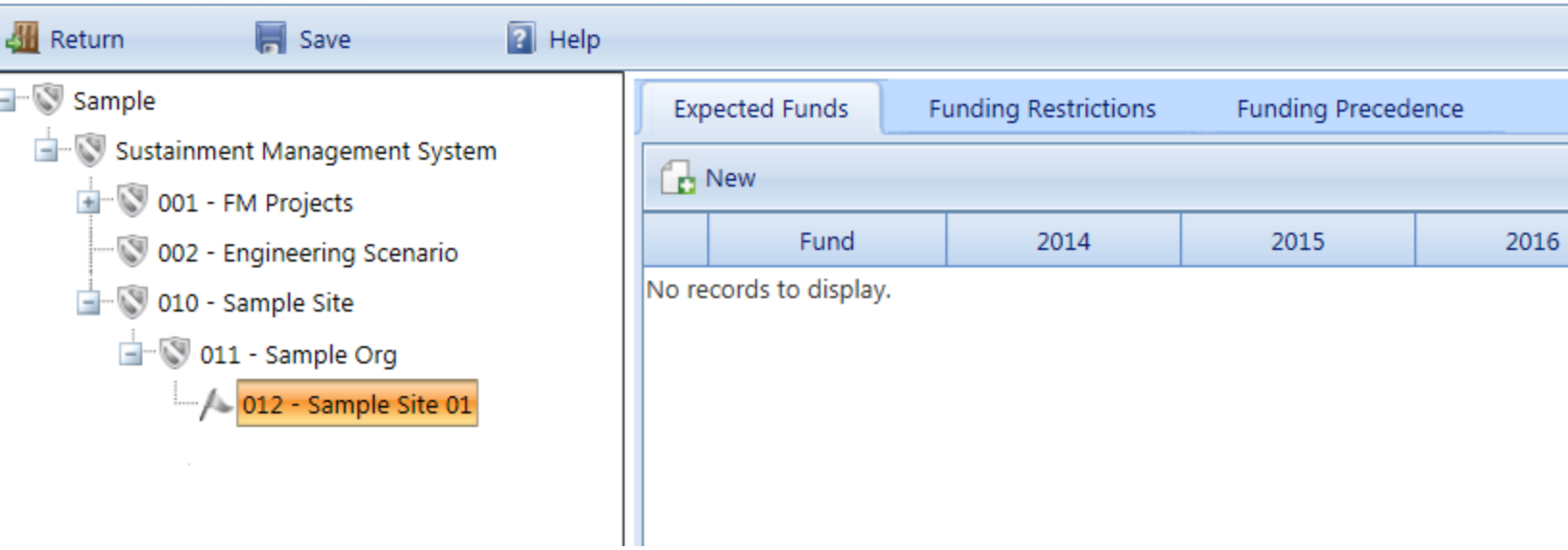
Funding Streams

Enter or Edit Anticipated Funding Levels

To add, enter, or edit funding levels, select **Work Configuration > Funding** starting at the main menu.



The Funding window will appear.

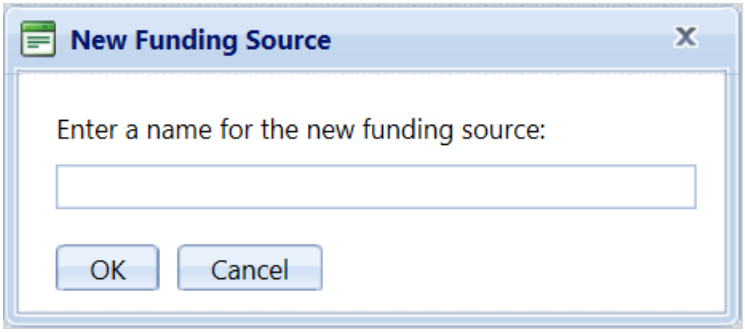


Navigate the tree on the left of the screen to the Site you wish to edit the funding options for. Once a Site has been chosen in the tree, the funding levels, funding restrictions, and funding precedence can be set from the different tabs. Further descriptions of each tab is provided below.

Note: Anticipated funding levels only need to be input if you are planning to use Scenarios for multi-year work planning constrained by budget. The funding sources and amounts you enter here will be used as the initial defaults for each scenario you create. You may, of course, edit the amounts in the scenario itself, but you will not be able to add new funding sources, change their restrictions, or change their precedence order in a scenario. For more information about Scenarios, begin with About Scenarios.

Toolbar Options

- **Return**. Closes the Funding window.
- **Save**. Saves changes made to the funding levels, restrictions, or precedence.
- **New**. This button is at the Expected Funds tab rather than on the main toolbar. Use this button to create a new funding source. *When **New** is activated, the "New Funding Source" popup window will appear*.

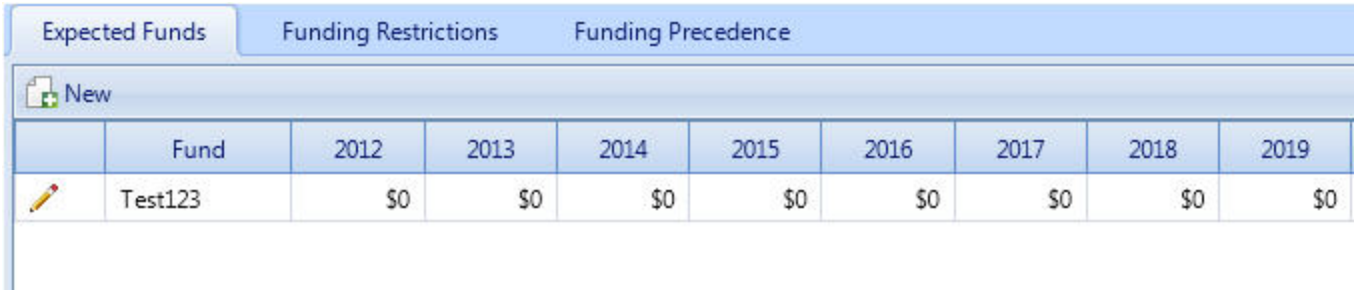


Enter the name of the funding source you wish to add. The name is limited to 50 alphanumeric characters and must be unique.

- **Delete**. Deletes the selected funding source. Note that a funding source can only be deleted from the **Expected Funds** tab. The selected funding source is identified in this tab by the arrow in the left column of the grid.
- **Help**. Launches the help topic associated with funding.

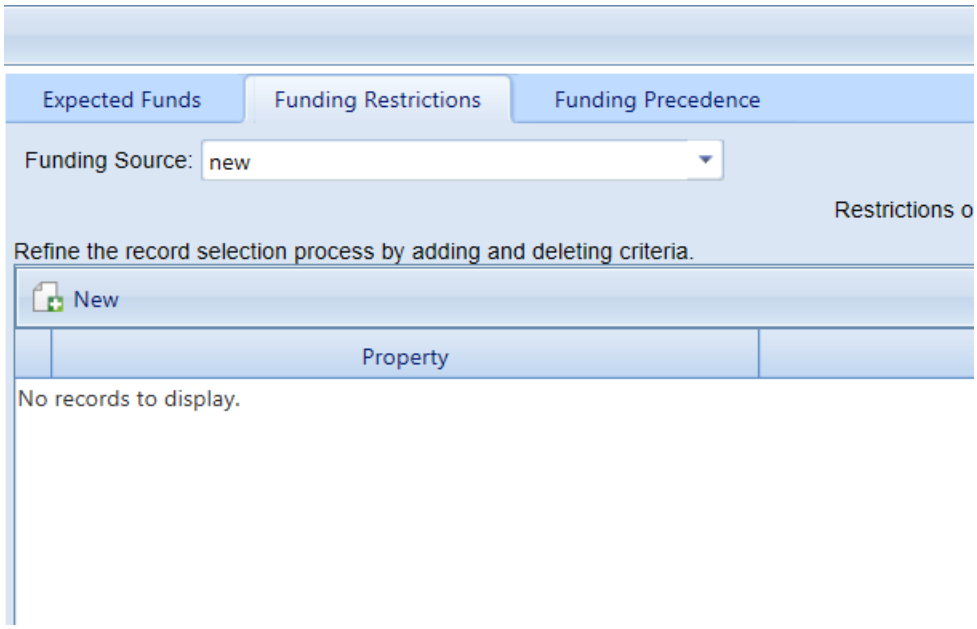
Expected Funds Tab

The **Expected Funds** tab provides an editable list of funding sources and amounts for the next ten years. To edit a funding source level for a particular year, activate the pencil icon on the left side of the grid and enter the expected funds for the next 10 years. After completing the funds, activate the checkmark icon to accept the changes made.



Funding Restrictions Tab

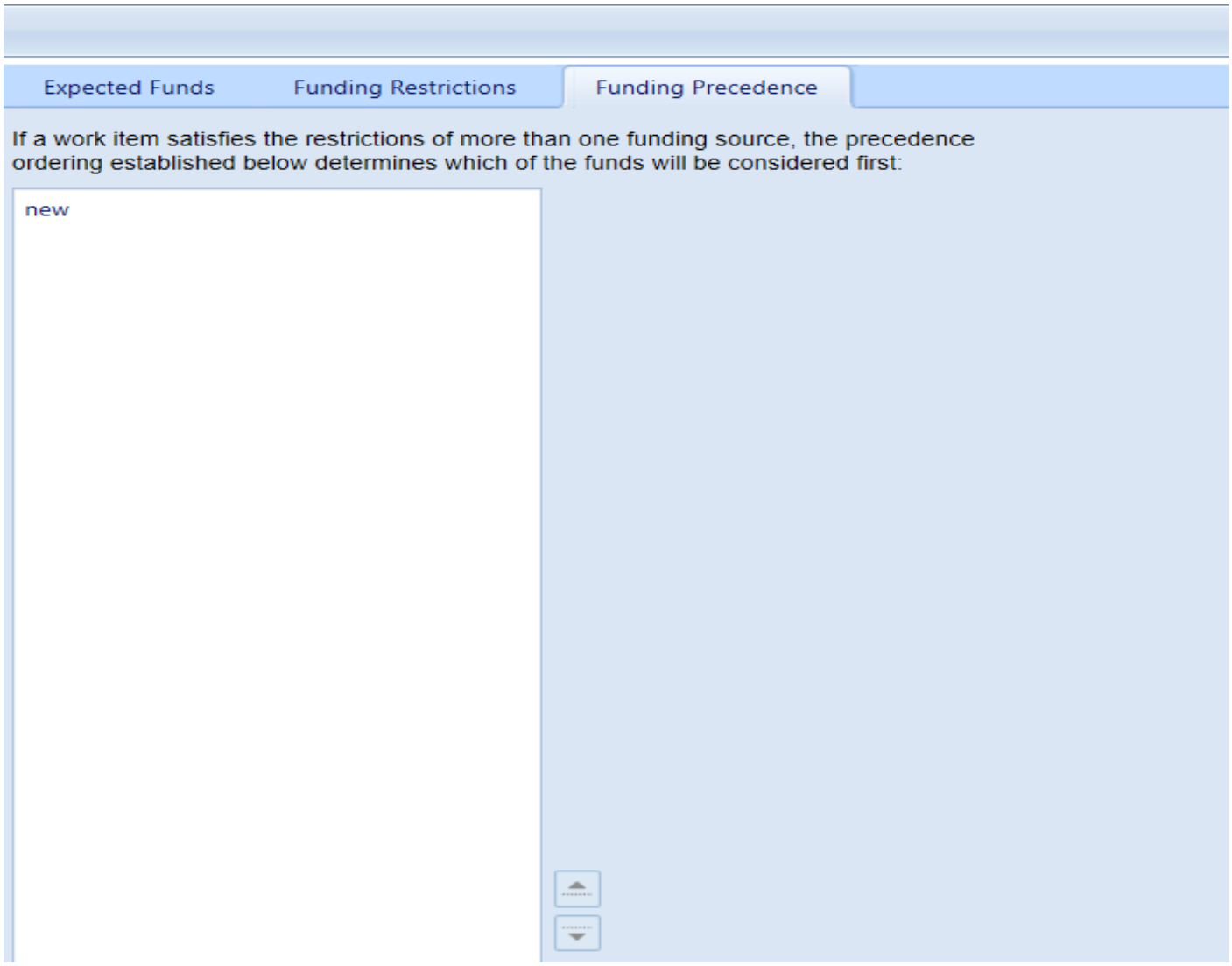
The **Funding Restrictions** tab provides a means of establishing selection criteria that determines whether or not a particular funding source can be used for a particular work item. This tab allows you to identify properties that a work item must have in order to use the selected funding source. To add a funding restriction, select the funding source from the drop down list, activate the **Add** button, and the enter the data regarding the restriction (selection criteria) in the grid.



Funding Precedence Tab

BUILDER allocates funds algorithmically when it is processing a prioritized list of work items. After the funding sources, the amounts, and the criteria for using sources are set, the only further requirement is to specify how the automated process will determine which funding source to use if a work item satisfies the restrictions (selection criteria) of more than one funding source. The **Funding Precedence** tab provides a means of establishing an order of precedence among the funding sources for a work item. To change the order of the funding sources, select a source and use the up and down arrows to move it in the list. When funds are alloc-

ated, the first funding source listed will be checked first, then the second, and so on until funding is found or the list is exhausted.



Related Links

Add a Funding Stream
Edit a Funding Stream
Delete a Funding Stream
About Funding Streams

Work Planning Overview

After inventory is completed, roof section condition assessments data are in place, and appropriate work configuration has been performed, you can begin to truly manage the work using ROOFER's work planning tools.

Regardless of the type of work planned, a work item record is generated for each work activity. A work item stores basic information about what work is planned, including the type of work; description; estimated cost; funding year; and quantity. Groups of work items can be viewed in several useful ways, such as a list of all past, present, and future work, or in a list filtered by aspects such as year or status.

Adding Work Items

There are two ways to create work items. Each method is briefly described here at the headers below, and a link is provided to further information about how to use the automatic work generator in ROOFER.

Using the Automatic Work Item Generator

ROOFER provides an automated process that creates work items for your inventory. For best results, this requires you to specify one or more prioritization schemes in order to rank the work items by score. See Generate ROOFER Work Items Automatically (Option A) in the Add or Edit a ROOFER Work Item topic for instruction on using the automatic work generator.

Manually Entering Work Items

Currently in ROOFER, manual entry is available only for Building-level work items. Building-level work items concern modernization, demolition, or replacement of a Building.

Add or Edit a ROOFER Work Item

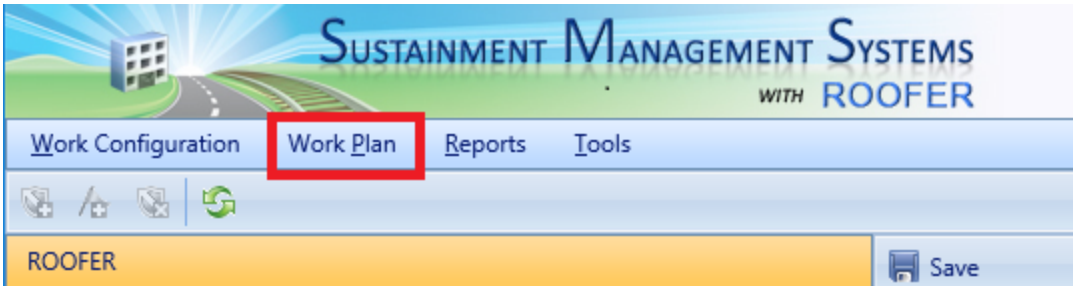
In ROOFER, work items automatically generated at either the Site or Building level. Work items can also be entered manually; however, automatic work item generation must always be done first.

Add a ROOFER Work Item

Generate ROOFER Work Items Automatically (Option A)

To automatically generate work items,

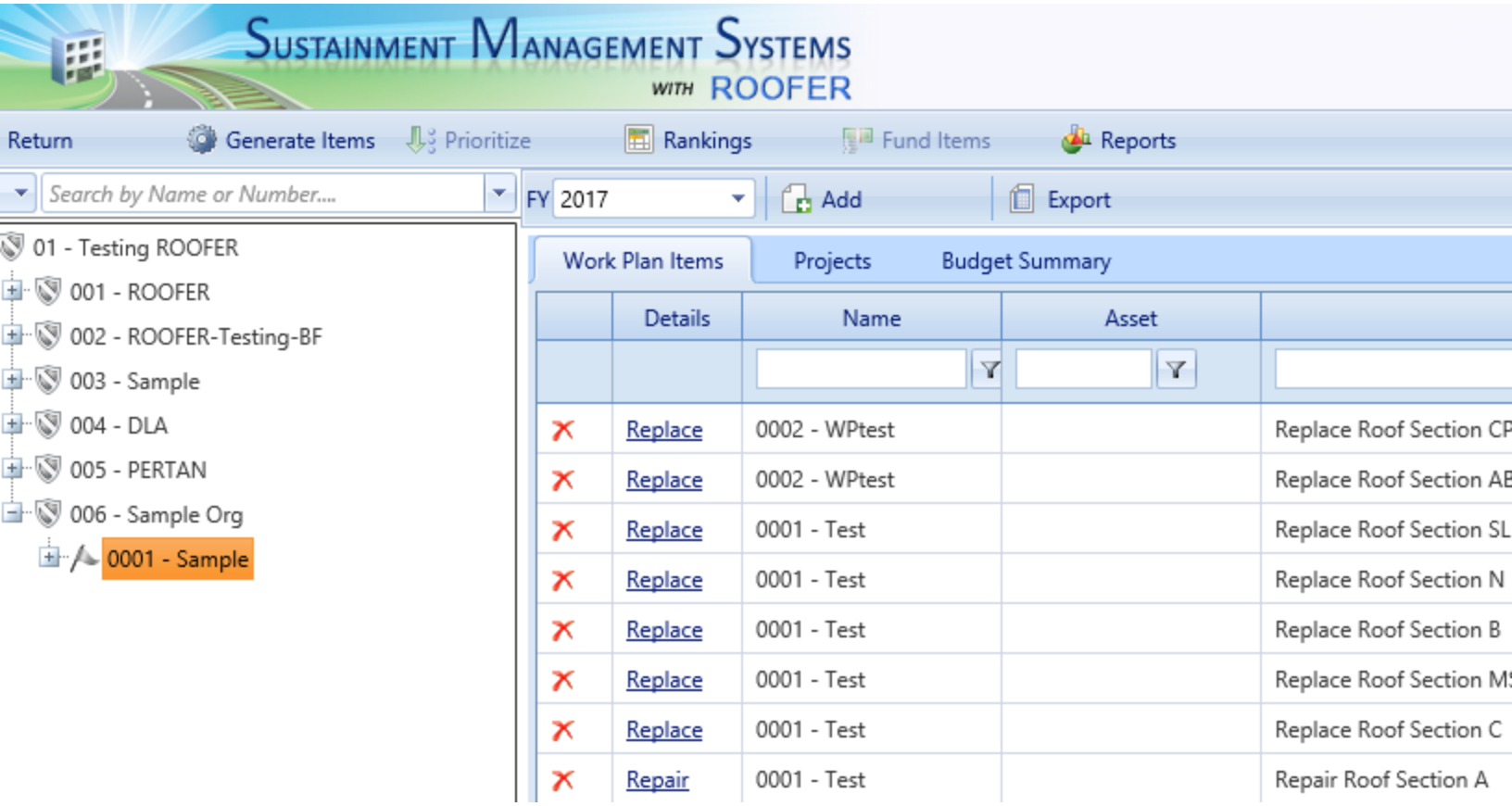
- Navigate to the work plan by selecting Work PlanA multi-year collection of work items and/or projects planned for a Site or Organization. from the main toolbar.



- Next, depending on the scope of work items to be generated (for a Building, or for a Site), navigate to the Building or Site containing the roof section(s) that work items are to be generated for.
- On the main toolbar, activate **Generate Items**.

- In the "Generate" popup box, after reading the warning, activate the Proceed button. You will then be at the Work Plan **Items** tab.

When generation is complete, you will be at the Work Plan **Items** tab, and see that ROOFER has made designations as to which roof sections should be replaced, and which should be repaired.

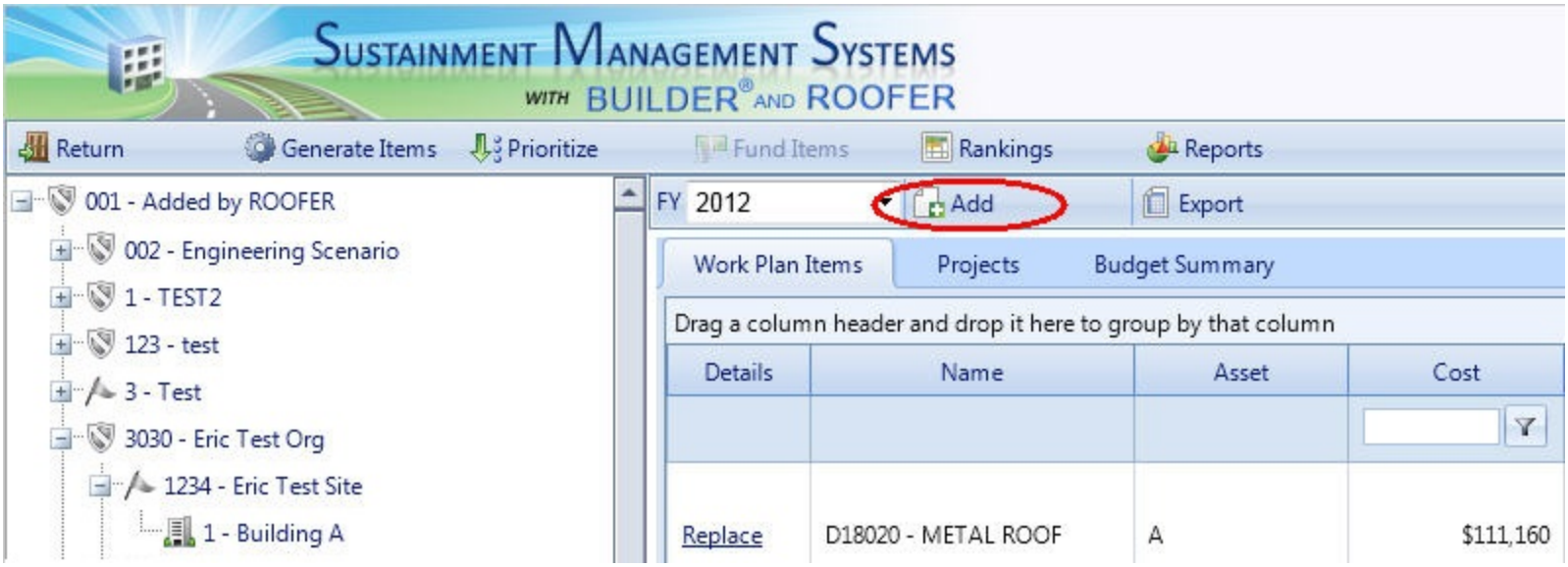


Add a ROOFER Work Item Manually (Option B)

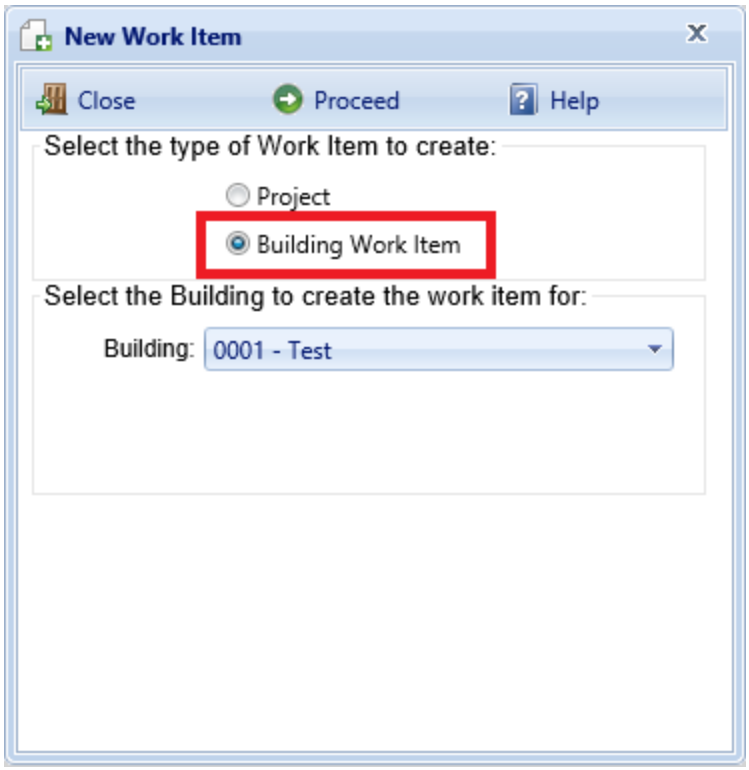
Currently in ROOFER, manual entry is available only for Building-level work items. Building-level work items concern modernization, demolition, or replacement of a Building.

To manually create a Building-level work item,

- Activate the **Add** button on the Work Item screen.

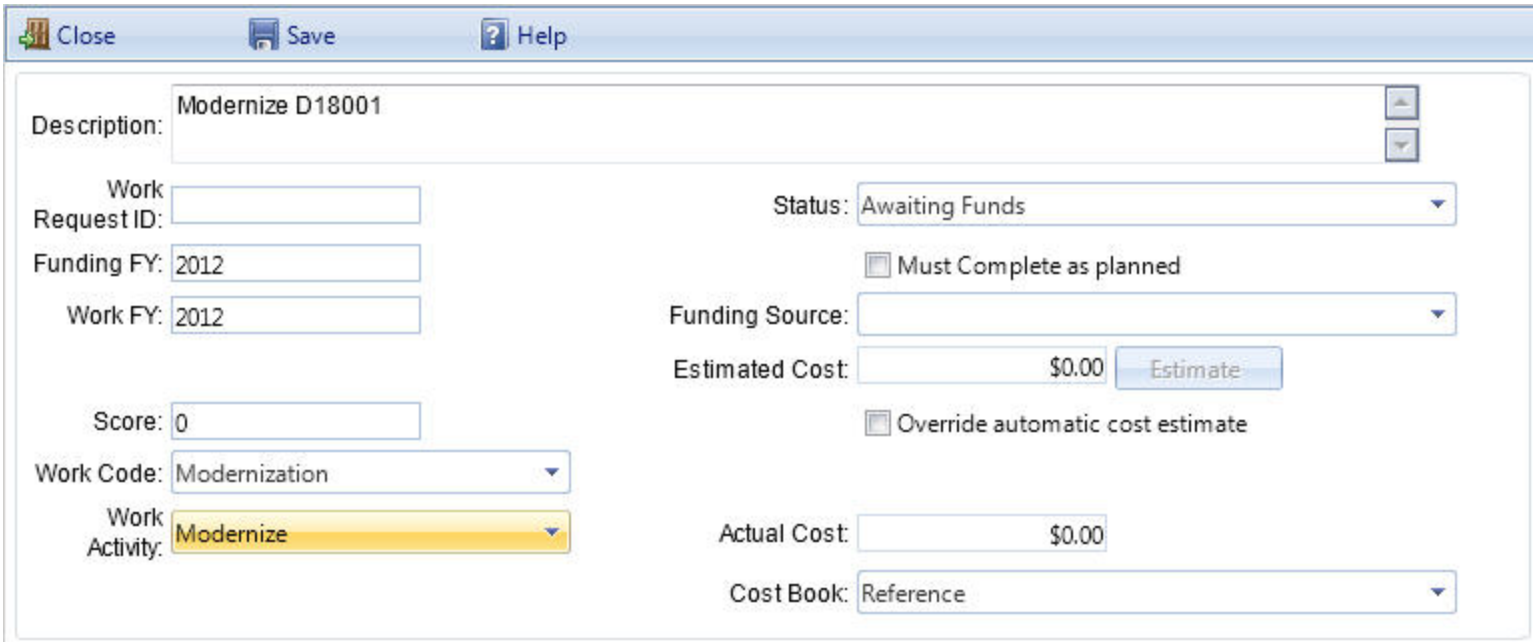


The "New Work Item*" popup window will appear:*



- Select the **Building** Work Item radio button option.
- Select, from the dropdown provided, the Building associated with the work item.
- Activate the **Proceed** button.

The Building Work Item window will appear:



On this screen, the following data for the Building-level work item can be recorded:

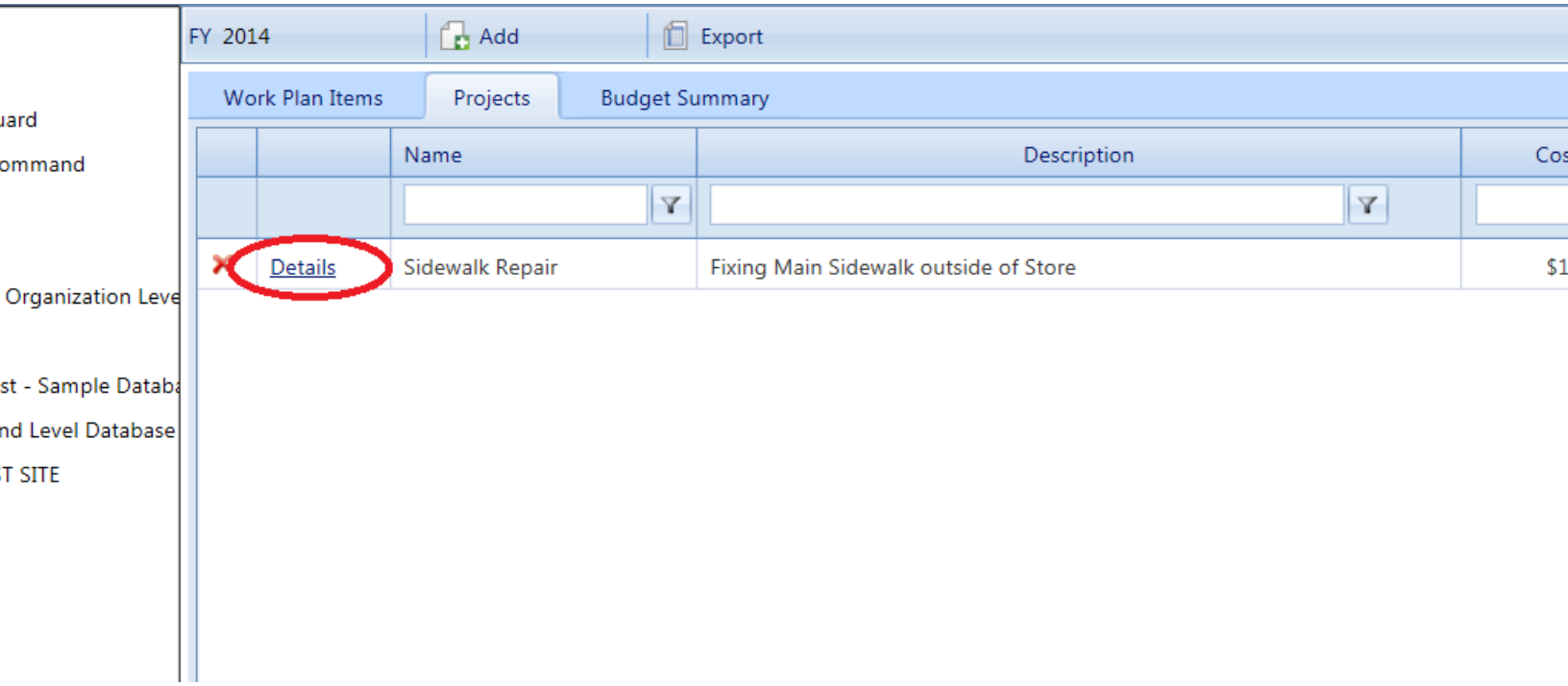
- **Description of** Work Item. Enter a description of the work item. Limit: 255 alphanumeric characters.
- **Work Request ID**. Enter your agency's work request number for this work item. Limit: 50 alpha-numeric characters. This item of data is not used by ROOFER in any analysis.
- **Status**. Select the current status of the work item from the drop-down list of choices. The status will change over time as the work item moves from planning to completion. The values of status are:
  - Awaiting Contract Award
  - Awaiting Funds
  - Budgeted
  - Canceled
  - Completed
  - Deferred
  - Funded
  - In Design
  - In Progress
  - On hold
- **Funding FY**. Enter the four-digit fiscal year that the work item was or will be funded.
- **Must Complete as Planned**. Check this box if the work item falls into the "must do" category. As discussed above, using this checkbox is one of the ways to ensure the work items is funded and completed.
- **Completion FY**. Enter the four-digit fiscal year that the work item was or will be completed.
- **Fund Source**. Select the funding source to be used for this work item.
- **Date Completed**. Enter the date the work item was completed.

- **Estimated Cost**. Enter the estimated cost of the work item. **ROOFER** provides a means of estimating the initial cost once you have chosen the Cost Book using the **Calculate** button next to this field.
- **Score**. Work items to demolish buildings are not scored by prioritization schemes in **ROOFER**, so the score is defaulted to 0.000. Special steps to ensure the work item is completed are discussed above at "Must Complete as Planned."
- **Override Automatic Cost Estimate**. Check this box if you wish to override the cost estimated using the **Calculate** button and enter your own estimated cost of the work item.
- **Work Code**. Select the work code of the work item. The available work codes are:
    - Sustainment
    - Modernization
    - Demolition
    - New Footprint
- **Activity**. Select the activity of the work item from the dropdown list. The available activities are Demolish, Modernize, and Replace.
- **Actual Cost**. Enter the actual cost of the work item after completion.
- **Cost Book**. Select the cost book from the drop down list to be used in estimating the cost of the work item.
- **ROI Information**. Displays information from the cost analysis tab. For more information see Work Item Cost Analysis.

After entering the data for the work item, activate the **Save** button in the toolbar to save the changes to the work item. If you do not wish to save the changes made to the work item, activate the **Cancel** button on the toolbar.

Edit a ROOFER Work Item

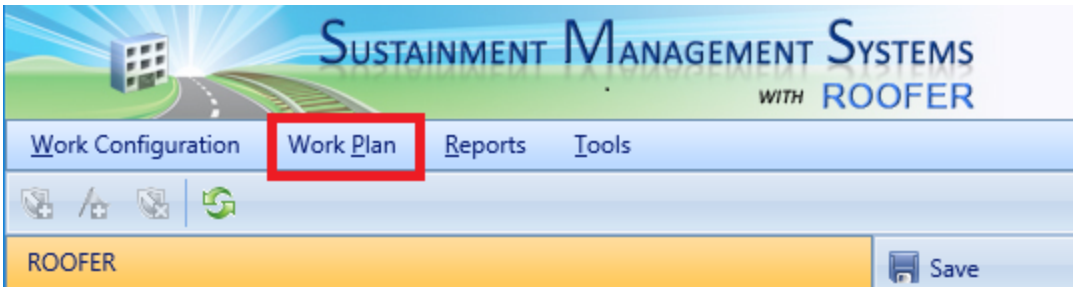
To edit a Building-level work item, activate either the **Repair** or **Replace** link next to the work item, or the **Details** link next to a Building-level work item on the Work Items screen.



The Building Work Items window will appear and the data described above can be edited as desired.

View Work Items

The individual work item records, when grouped by fiscal year, become an annual work plan that can be viewed in the Work Items window. To view a work plan, first select Work Plan from the main menu.



The Work Items window will appear, initially showing just the top level Organization.

Navigating the Work Items

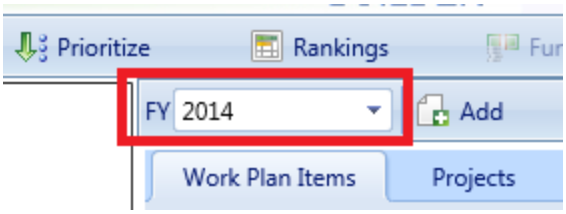
Toolbar

- **Return**. Use this button to close the Work Item screen.
- **Generate Items**. Use this button to automatically generate work items.
- **Prioritize**. Use this button to prioritize the work items for a work plan.

- **Rankings**. Use this button to view the rankings of the work items for a work plan.
- **Fund Items**. Use this button to allocate funding to the work items in a work plan.
- **Reports**. Use this button to launch the Report Selection tool, which gives you access to a list of standard reports relevant to the work items. See How to Use the Report Viewer.

Changing the Work Items View

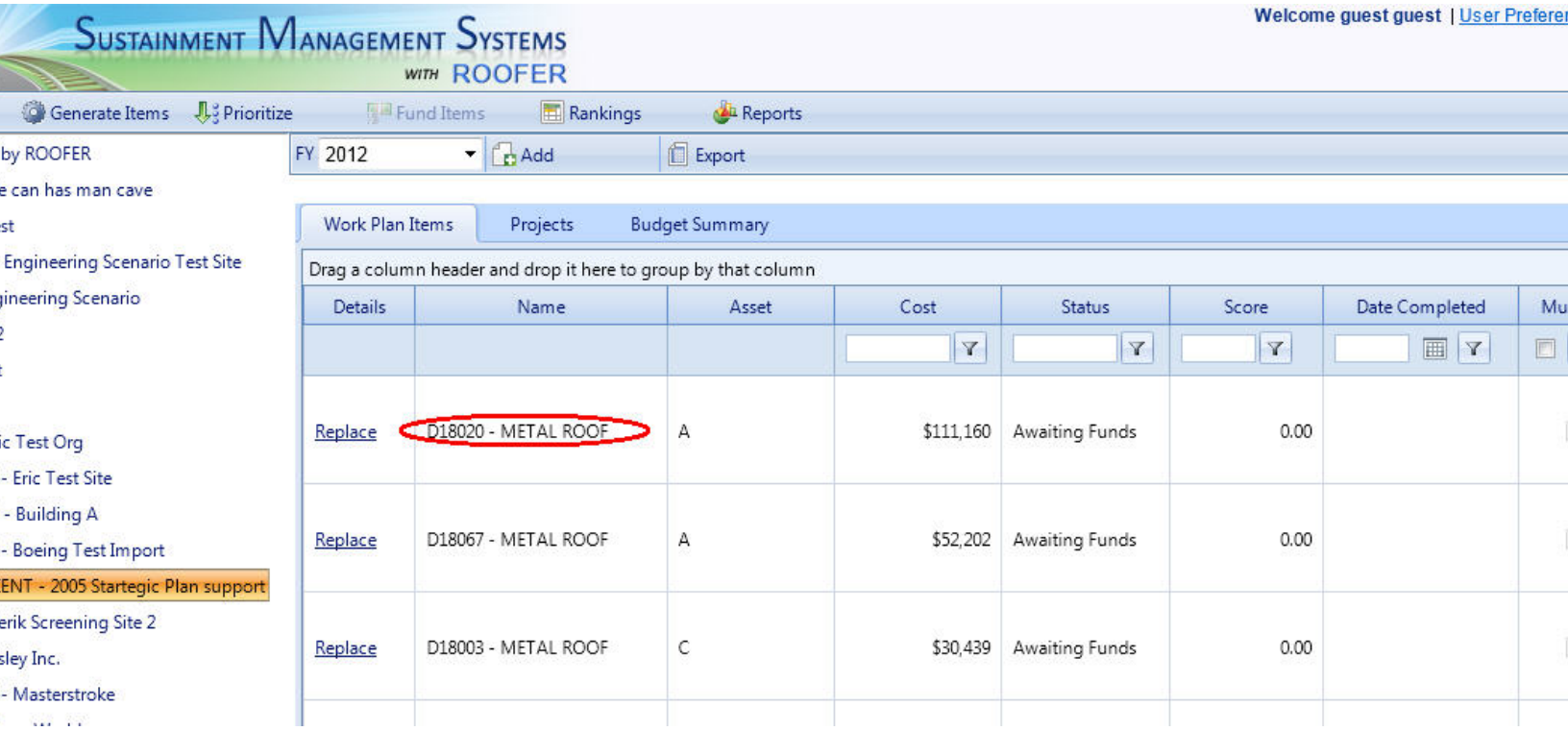
Initially, what is shown in the Work Items window is the work plan for the current fiscal year for the entire inventory. To view the work plan for a particular inventory level, navigate the tree at the left side of the window to the desired level. The work plan for the selected inventory level will be shown for the current fiscal year. To view the work plan for past or future fiscal years, select the desired fiscal year from the dropdown list at the top of the window:



Once the desired work plan is shown, you can sort it using the column headings. To sort in alphabetic or ascending numeric order, click one time on the column you wish to sort by. once to sort in alphabetic numerical order. To sort in reverse-alphabetic order or descending numerical order, click on the column a second time. Initially, the work plan is sorted by name in ascending numerical order.

Viewing Individual Work Item Details

To view the individual work item details, activate the **Details** hyperlink associated with a given work item.



If the work item is a Section-level work item, you will see the Section-Level Work Item Details. If the work item is a Building-level work item, you will see the Building-Level Work Item Details. If the work item is a project, you will see the Project Details for that project.

Adding and Deleting Work Items

Adding a Work Item

To add a work item to the current work plan, activate the **Add** button while the "Work Plan Items" tab is selected. For further directions, see Add a Work Item.

Deleting a Work Item

To delete a work item from the current work plan, activate the red "**X**" button to the left of the work item record.

Exporting the Work Plan to Excel

The current work plan can be exported to an Microsoft Excel spreadsheet using the **Export** button. After activating this button, you must choose either to open or to save the Excel spreadsheet. If you choose to save, you must specify the location and name to save the exported spreadsheet.

Add a Work Item

The information stored with a ROOFER work item shows the following information:

- What work was or is to be done.
- When it was or is to be done.
- Its cost.
- Its funding source.
- Its importance relative to the other work items vying for the same resources at the same time.

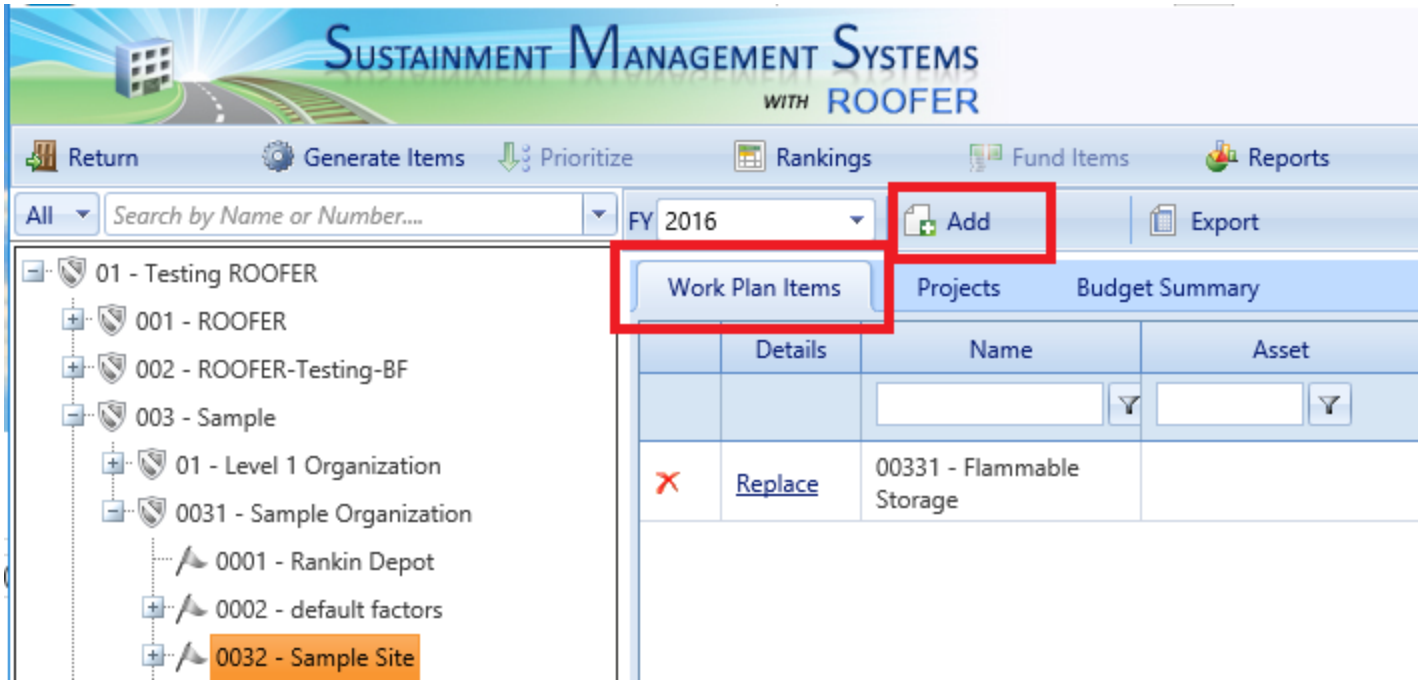
In ROOFER, roof section-level work items can be created two ways, each of which is discussed in detail further below.

- Manual Input - This option allows you to create individual work items manually from the work plan screen.
- Generated Work Items - This option allows you to use the automated work generation feature in ROOFER to create an entire work plan.

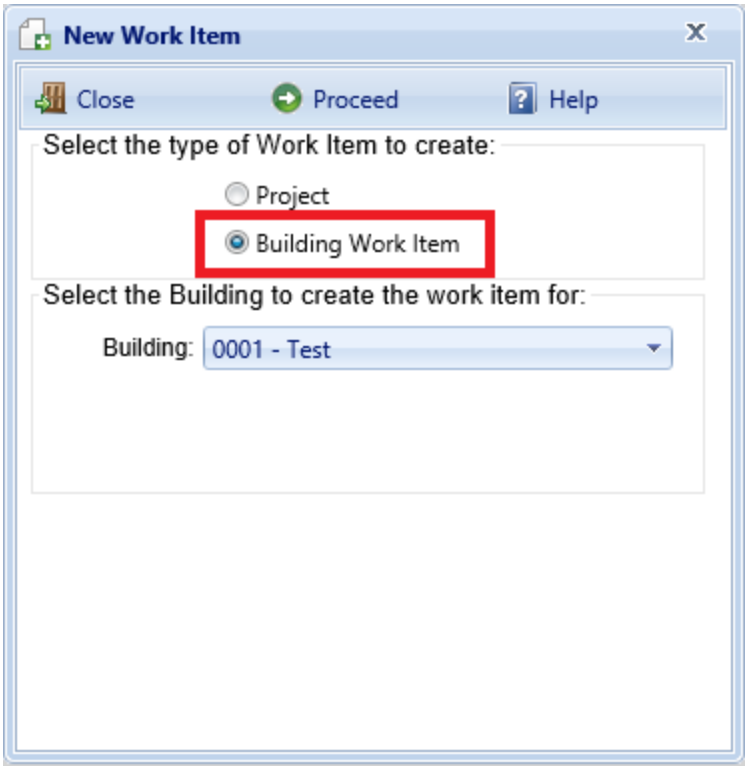
Create a Work Item Manually

To create a work item manually,

- Activate the Add button at the Work Plan Items tab.

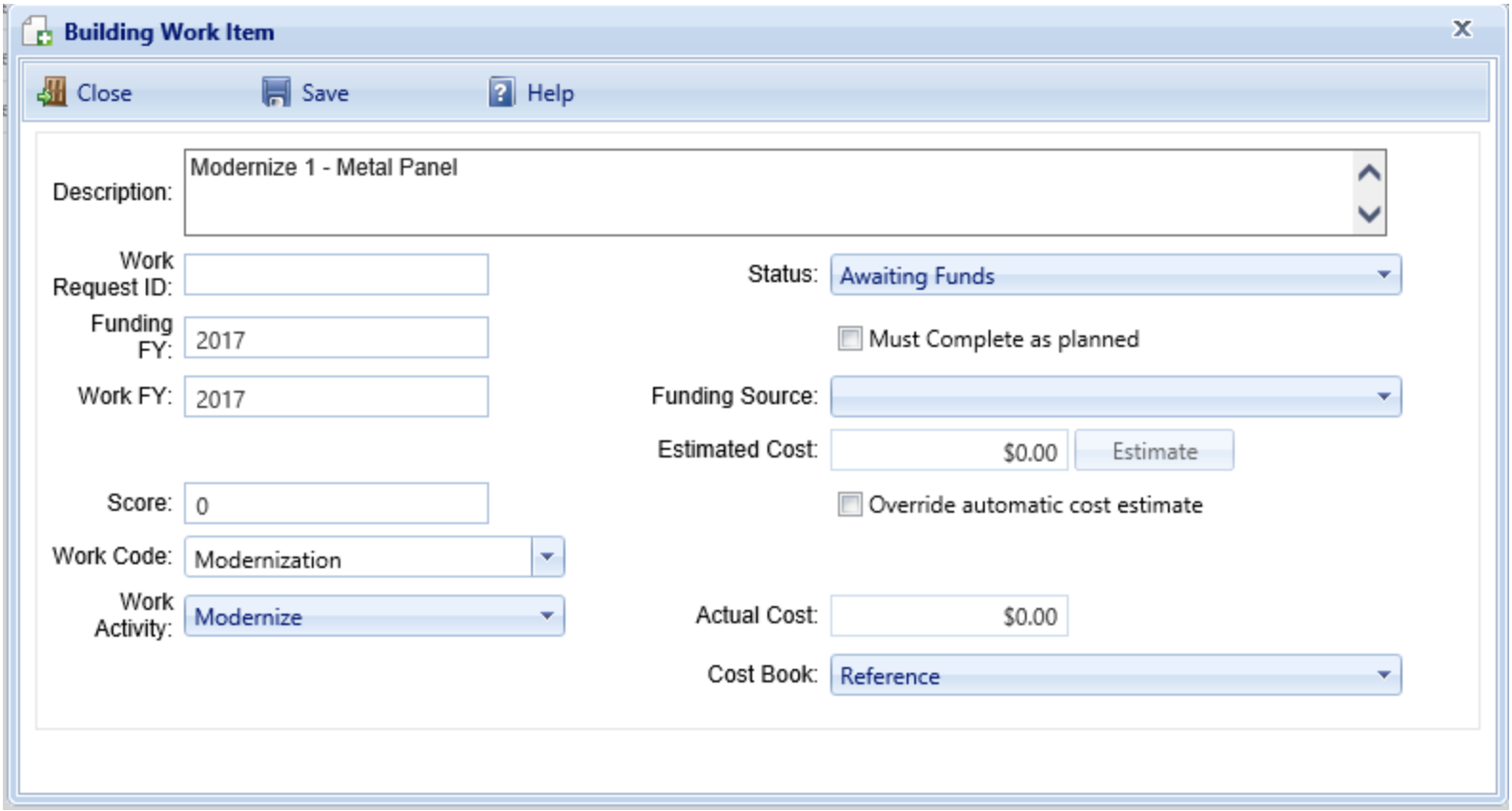


- Select the Building Work Item radio button option in the "New Work Item" popup window that appears. *A dropdown list will appear.*



- From the dropdown that appears after you make your radio button selection, select the Building associated with the work item(s) to be entered.
- Activate the **Proceed** button on the popup toolbar.

The "Building Work Item *" popup window will appear:*



On this screen, the following data for the Section-level work item is displayed and can be edited. The descriptions below start with items in the left-hand column, then proceed to describing items in the right-hand column.

- **Description**(Read-Only). Displays the description Component-Section of the work item.
- **Work Request ID**. Enter your agency's work request number. Limit: 50 alphanumeric characters. This item of data is not used by **ROOFER** in any analyses.
- **Funding FY**. Enter the four-digit fiscal year that the work item was or will be funded.
- **Work FY**. Enter the four-digit fiscal year that the work item was or will be completed.
- **Date Completed**. Enter the date the work item was completed. (Appears only if work has been completed.)
- **Score**(Read Only). If you have prioritized the work items, then this work item's score will be displayed here. The default value is 0.000, indicating that the work items have not been prioritized.
- **Work Code**. Select the work code of the work item. The available work codes are:
  - Sustainment
  - Modernization
  - Demolition
  - New Footprint
- **Work Activity**. Select the work activity associated with this work item from the dropdown list. The work activities are:

    - Add/Install
    - Alter
    - Paint
    - Remove
    - Repair
    - Replace
- **Status**. Select the current status of the work item from the dropdown list of choices. The status will change over time as the work item moves from planning to completion. The values of status are:
    - Awaiting Contract Award
    - Awaiting Funds
    - Awaiting Funds (Special Project)
    - Budgeted
    - Canceled
    - Completed
    - Deferred
    - Funded
    - Funded (Service Call)
    - Funded (Special Project)
    - In Design
    - In Progress
    - On hold
- **Must Complete as Planned**. Check this box if the work item falls into the "must do" category. Marking this checkbox will force the work item to be funded before all other competing work items that are not marked as "must do" in the Scenarios module.
- **Funding Source**. Select the funding source to be used for this work item from the created fund sources.
- **Estimated Cost**. Enter the estimated cost of the work item. **ROOFER** provides a means of estimating the initial cost once you have entered the Fund FY, Activity, Cost Book, and Quantity using the Estimate button. Note that the cost module is unable to estimate the cost of activities to Add/Install and Alter, so the **Estimate** button is grayed out for those work activities.
- **Override Automatic Cost Estimate**. Mark this checkbox if you wish to override the cost estimated using the **Calculate** button and enter your own estimated cost of the work item.
- **Actual Cost**. Enter the actual cost of the work item after completion.
- **Cost Book**. Select the cost book to be used from the dropdown list.

After entering the data for the work item, activate the Save button in the popup window toolbar to save the work item, then activate **Close** when you are ready to return to the Work Plan Items tab.

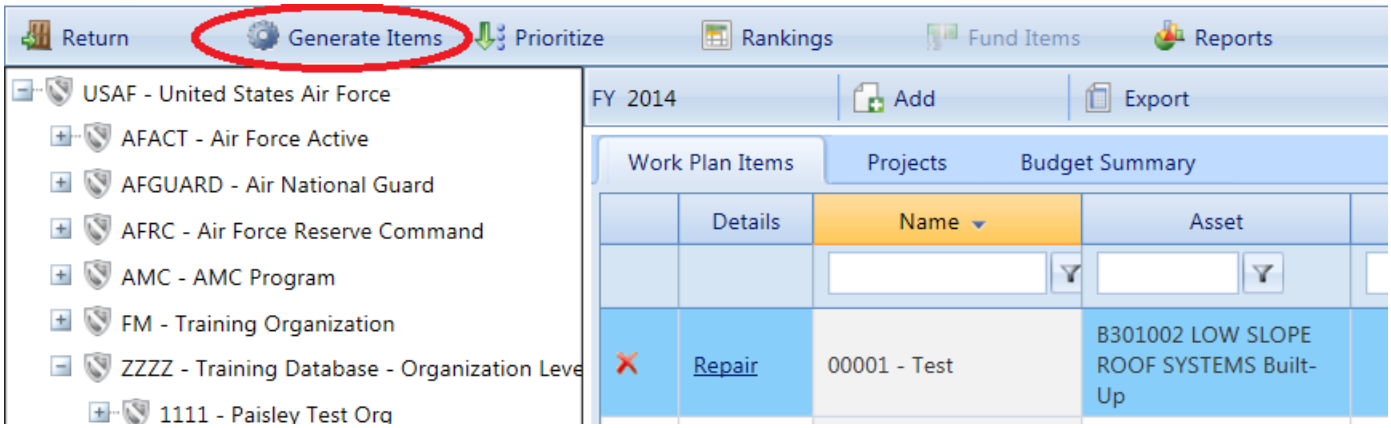
Alternatively, if you do not wish to save the work item, or the most recent changes made to it, just activate the Close button on the popup window toolbar.

WARNING: If you close before saving, you will lose your work.

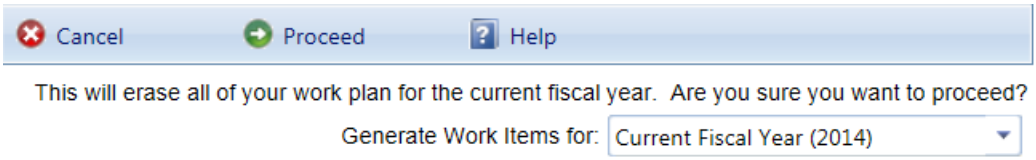
At the Work Plan Items tab, your new work item(s) will appear in italic type, and have the Status of "Awaiting Funds."

Generating Work Items in ROOFER Automatically

As an alternative to manual generation of work plan items, you may use the **Generate Items** button to create a work plan for the current year.



After activating the **Generate Items** button, the Generate Work Items window will appear.



Activate **Proceed** to generate the work items.

WARNING: Activating the **Proceed** button will cause all of the currently existing work items in the work plan for the current fiscal year to be deleted.

ROOFER will determine where and what type of work should be done. Additionally, the estimated cost of each work item is computed using the cost book assigned to the Site in the Site General Information tab. When the process is complete, the work plan will appear in the Work Plan Items window, displaying all of the newly generated work items. All of the newly generated work items will have the status "Awaiting Funds." You may then refine the work item list as you wish.

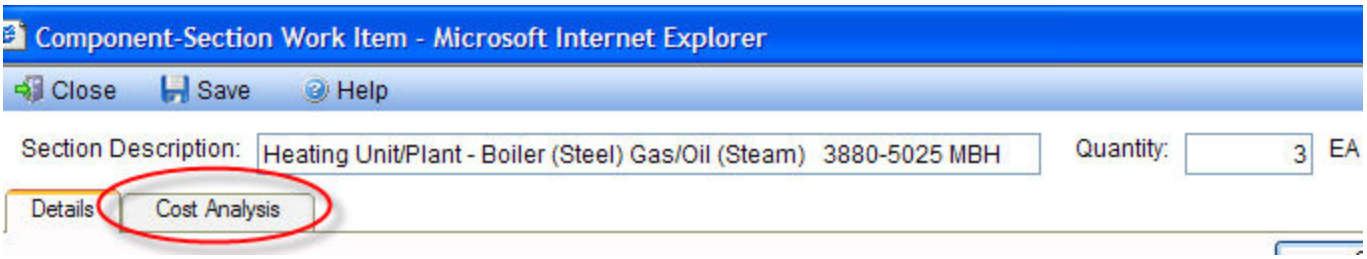
Note that **ROOFER**'s work generation algorithms are still primitive in the sense that they are unable to detect work conflicts and precedences. For example, they may generate a need to repair a roof deck without a concurrent effort to repair the roof surface. Your own manual processing of the work item list must address such problems.

Export the Work Plan to Excel

The current work plan can be exported to a Microsoft Excel spreadsheet using the **Export** button. After activating this button, you must choose either to open or to save the Excel spreadsheet. If you choose to save, you must specify the location and name to save the exported spreadsheet.

Work Item Cost Analysis

BUILDER allows you to perform a cost analysis on any given work item. This analysis can show the benefits of repair versus replacement, as well as the consequences of deferring work for a given item. The cost analysis feature is available by clicking the Cost Analysis tab on the work item details screen.



The Cost analysis screen is displayed as shown. The Cost Analysis module uses projected deterioration information about a particular asset to display different work Scenarios. This deterioration information is based on the expected life of the asset, and calibrated based on past condition assessments performed throughout the life cycle. In this analysis, four different life cycle curves are presented:

Current. This curve represents the projected deterioration of the asset from the year it was installed to its projected failure point (at a Terminal **CI**[1] value of 40). This is the expected path of the condition if no intervening work action is performed. If the asset reaches the terminal **CI**[2] value, replacement is required. This "run to failure" option is viable only if component failure does not have a significant impact on mission.

Stop Gap. This curve represents the projected deterioration of the asset if stop gap measures are employed at some point. These stop gap measures are assumed to hold the condition of the asset constant for one year. This allows for repair or replacement to be planned in a future year without further degradation occurring. This is applicable for some Components where advancing degradation is evident and measures can be taken to slow or halt this degradation for some finite amount of time. These measures are limited in scope and do not improve or restore condition, but they can prevent the Component from degrading below some minimum performance requirement until a more permanent solution can be accomplished. Stop gap repairs are usually less attractive from an economic perspective, because they do not improve condition and only defer larger major repairs or replacement for a short amount of time, but may be needed due to a lack of funds for a permanent solution.

---

[1] Condition Index

[2] Condition Index

Repair. This curve represents the projected deterioration of the asset if major repair is accomplished at some point. This repair is considered significant enough to improve the condition index of the asset to 95 out of 100. In addition to an improvement in condition, this results in some extended life for the asset. This additional service life, brought on by repair, defers the capital cost of replacement due from impending failure. Therefore, the monetary benefit of a repair can be calculated by taking the additional service life generated by the repair multiplied by the amortized expenditure of Component replacement. This monetary benefit, divided by the cost of the repair, determined the return on the investment (ROI). The repair of a Component also has benefits due to improved operational performance and reliability which are more difficult to quantify in monetary terms.

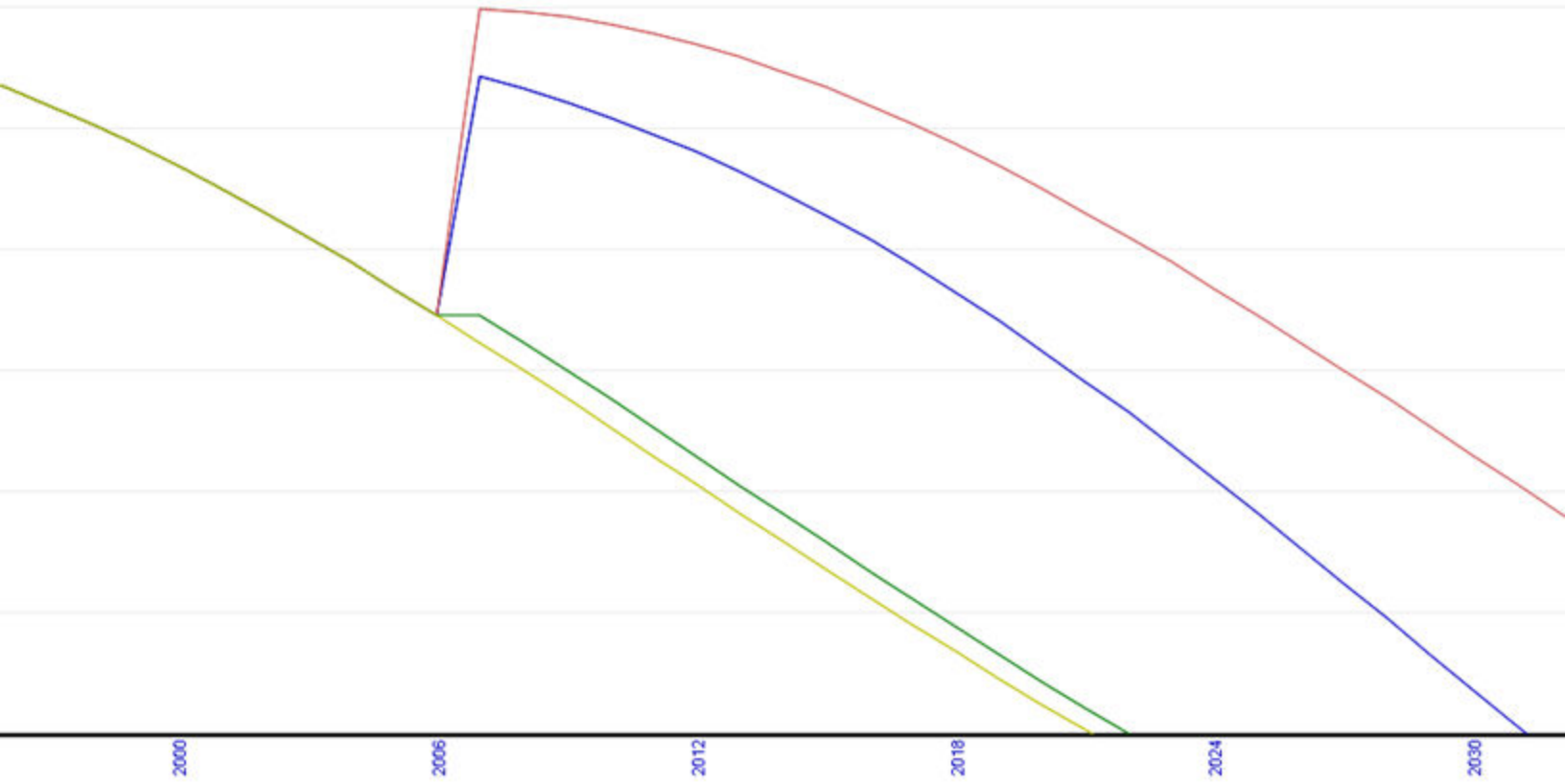
Replacement. This curve represents the life cycle of the asset if total replacement is performed. In this case, the Condition index is restored to a maximum of 100, and deterioration clock is reset with a remaining service life equal to the original design service life. Since replacement does not defer capital expense, its return of investment ratio based on the logic described for repair is essentially 1. However, replacement of a Component may involve some modernization, potentially resolving obsolescence issues. This, in turn, can lead to benefits of efficiency and lower maintenance, operations, or energy costs, which should be accounted for in any ROI calculation

nternet Explorer

Steel) Gas/Oil (Steam) 3880-5025 MBH Quantity: 3 EA

Component Info

Year Installed: 1988 Designed SL: 30 Modified SL: 33.9 Replace Cost: $146,000 Repair Cost Factor: 2.2



Current CI	RSL
72	14.2

	Hold CI @	ASL	RSL	$ Generated	Work Cost
	72	0.8	15.0	$4,000	$4,550

Overwrite Estimate

	Repair To	ASL	RSL	$ Generated	Work Cost
	95	10.1	24.3	$49,500	$26,000

rnization project in year:

Overwrite Estimate

	ASL	RSL	$ Generated	Replace Cost
	30.0	30.0	$206,000	$146,000

nal/Maintenance costs by: $2,000

Overwrite Estimate

In addition to seeing the graphical representation of the asset life cycle for different corrective work options, the Cost Analysis module also displays the alternatives in economic metrics, to be measured by the Return on Investment (ROI). Each work option results in some extension in service life, which defers the capital expenditure of a total replacement of the asset. The monetary return of any work action is thus calculated as the amortized capital cost of the asset multiplied by the number of years capital expenditure is deferred. The investment is simply just the estimated cost of performing the work.

The year a stop gap, repair, or replace action is to be performed can be adjusted by the user. In addition, the user can overwrite the estimated cost of any work action, after which clicking the **Calculate** button will adjust the analysis accordingly. Note that for the Replacement option, an additional benefit in terms of return can be generated if the new assets results in more efficiency and lower operational/maintenance costs. If this savings is known, the user can input this information into the analysis to account for that. Finally, all calculations account for inflation and discount rate of money (discount rate is assumed at 3%).

After a user has determined the strategy to pursue for that Component from the cost analysis, they can activate the **Select** button for that work alternative and the results will be copied back to the work item details tab.

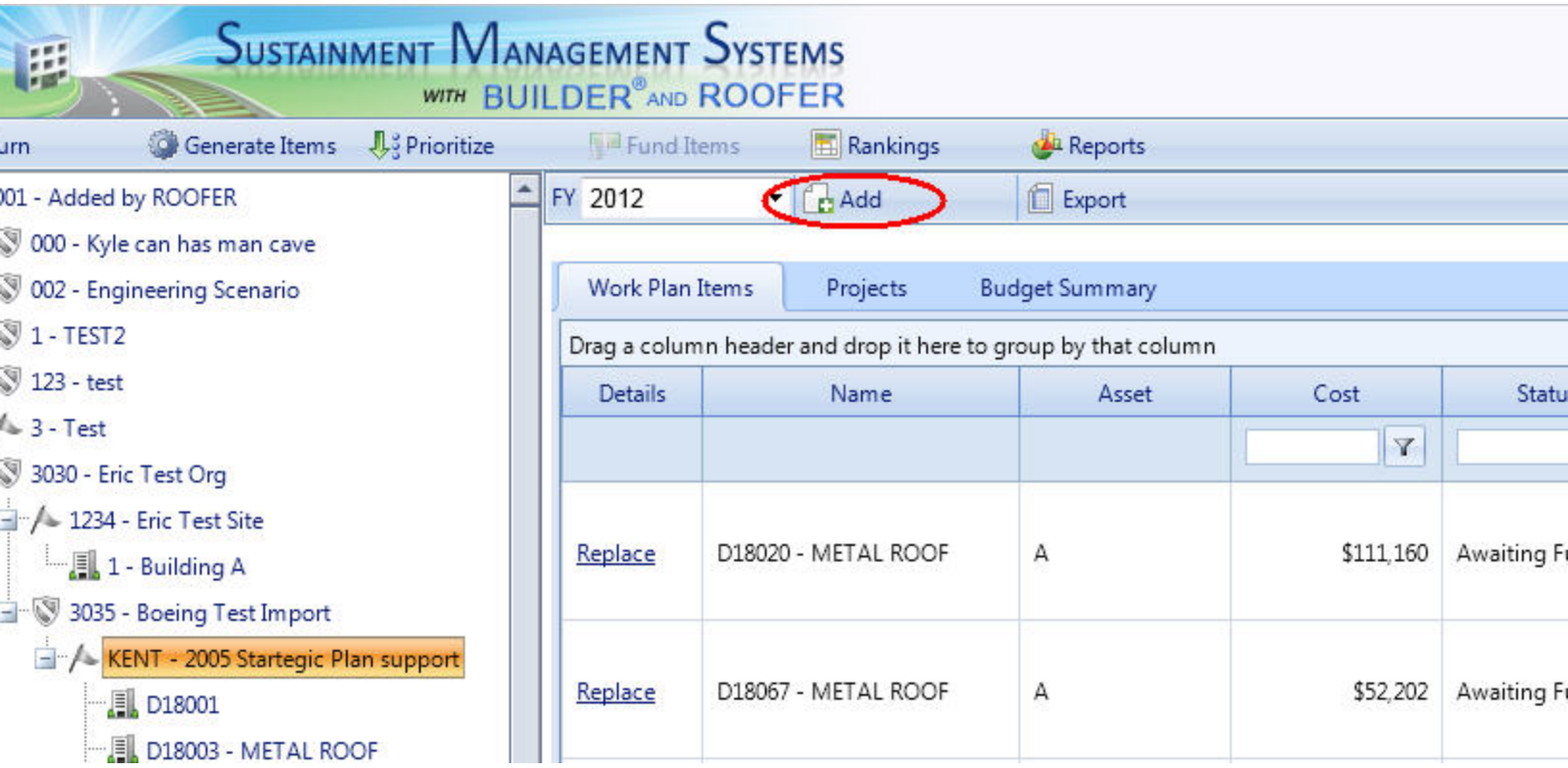
Organize Work Items into a Project

Note: The ability to move work items into a project is not functioning in ROOFER Versions 3.3.9 and 3.3.10.

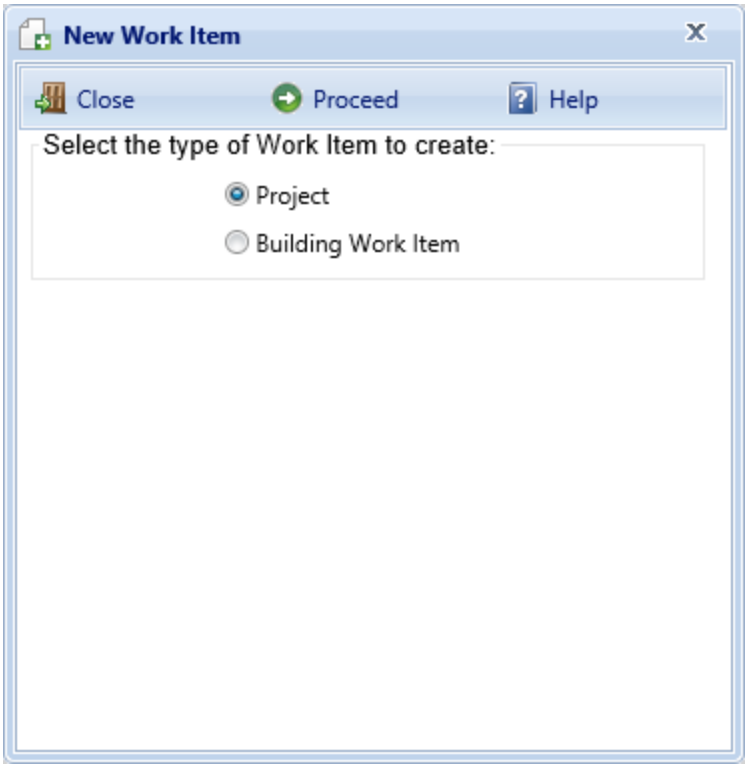
A Maintenance and Rehabilitation (M&R) work *project* allows you to group work items together to manage them as a single work effort that is prioritized and funded as a whole. The work items in a project may span different Systems (BUILDER) or roof sections (ROOFER) in a single Building, as in a renovation effort. A project may also span multiple Buildings, as when roofing is replaced on several Buildings under one contract. In general, a project is a collection of any work items grouped together in an "all or nothing" work unit with a single funding source and a single work year.

Add a Project

To add a project, activate the **Add** button on the Work Item screen.



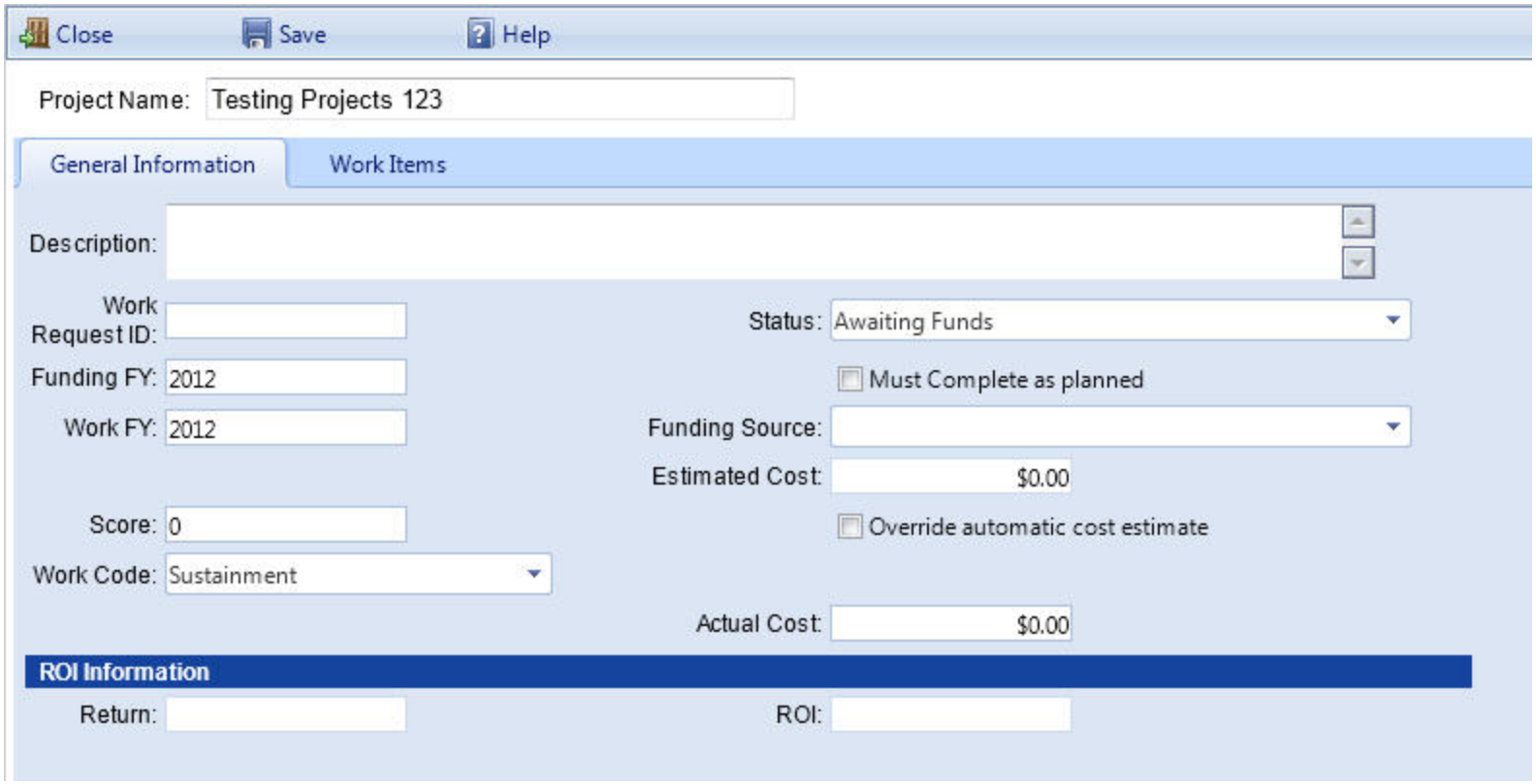
The "New Work Item" window will appear. Whereas BUILDER offers three options for work items, ROOFER offers two:



In the popup window,

- Select the **Project** radio button option.
- Activate the **Proceed** button in the toolbar.

*The "Project" popup window will appear, opened to the **General Information** tab.*



General Information Tab

At the **General Information** tab, the following general data for the project can be recorded:

- **Project Name**. Enter the name of the project. Limit: 30 alphanumeric characters. The project name will be used for selecting, tracking and reporting.
- **Description of Work Item**. Enter a description of the work item. Limit: 255 alphanumeric characters.
- **Work Request ID**. Enter your agency's work request number for the project. Limit: 50 alphanumeric characters. This item of data is not used by BUILDER in any analyses.
- **Status**. Select the current status of the project from the dropdown list of choices. The status will change over time as the project moves from planning to completion. The values of status are:
  - Awaiting Contract Award
  - Awaiting Funds
  - Budgeted
  - Canceled
  - Completed
  - Deferred
  - Funded
  - In Design
  - In Progress
  - On hold

- **Funding FY**. Enter the four-digit fiscal year that the project was or will be funded.
- **Must Complete as Planned**. Mark this box if the project falls into the "must do" category. Marking this checkbox will force the work items in the project to be funded before all other competing work items that are not marked as "Must do" in Scenarios.
- **Completion FY**. Enter the four-digit fiscal year that the project was or will be completed.
- **Fund Source**. Select the funding source to be used for the project.
- **Date Completed**. Enter the date the project was completed.
- **Estimated Cost**. Enter the estimated cost of the project. BUILDER provides a means of estimating the initial cost using the **Calculate** button next to this field once you have chosen the work items in the project under the **Work Items** tab.
- **Score**. If you have prioritized the work items, then this project's score will be displayed here. The score for a project is computed as the average of its work items' scores weighted by their estimated cost. The default value is 0.000, indicating that the work items in the project have not been prioritized.
- **Override Automatic Cost Estimate**. Mark this box if you wish to override the cost estimated using the **Calculate** button and enter your own estimated cost of the project.
- **Work Code**. Select the work code of the work item. The available work codes are:
  - Sustainment
  - Modernization
  - Demolition
  - New Footprint
- **Actual Cost**. Enter the actual cost of the project after completion.
- **ROI Information**. Displays information from About Work Item Cost Analysis for the work items in the project.

Work Items Tab

The **Work Items** tab is used to build the list of work items for a project. The top grid on this tab displays the list of work items in the project and the bottom grid lists the work items not currently assigned to a project that can be added to the project. Note that work items from all fiscal years are available for selection to the project. If a work item from a different fiscal year is selected, its fiscal year will be changed to the project's fiscal year before the project is saved.

To add a work item to the Project, select the check box next to the work item. To remove a work item from the Project, un-check the check box next to the work item. If you are returning to add more work items to the Project, unmark the **Only Show Selected Project Work Items** checkbox to see all work items for the Site.

Help

ility	Description	Cost	Status

y Project:

o group by that column

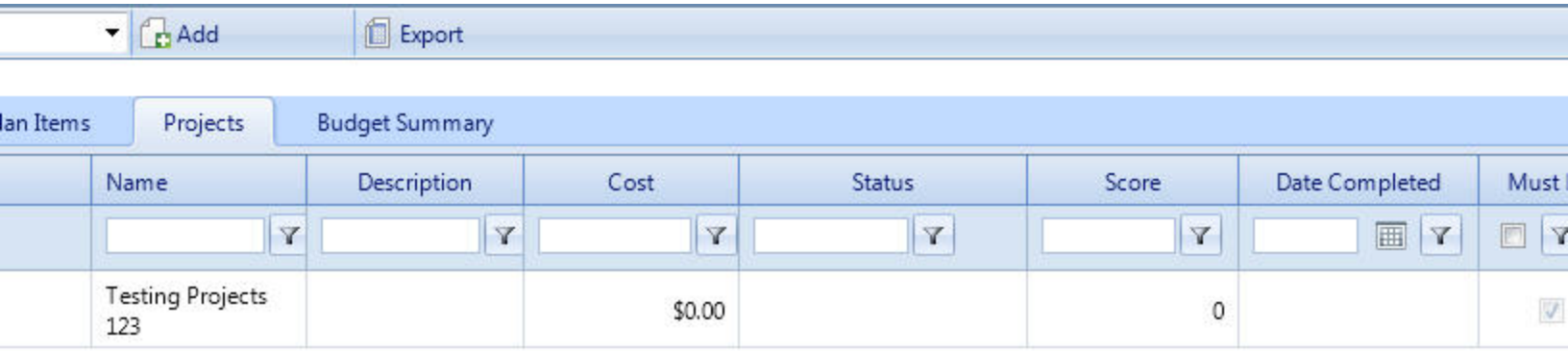
ility	Description	Cost	Status
F	Replace Roof Section A	$111,160	Awaiting Fun
F	Replace Roof Section A	$52,202	Awaiting Fun
	Projected Replacement of Roof Section A	$14,146	Awaiting Fun
	Projected Replacement of Roof Section B	$2,417	Awaiting Fun
F	Replace Roof Section C	$30,439	Awaiting Fun
F	Replace Roof Section B	$216,245	Awaiting Fun
F	Replace Roof Section A	$216,245	Awaiting Fun
	Projected Replacement of Roof Section E	$1,949	Awaiting Fun
	Projected Replacement of Roof Section B	$278,025	Awaiting Fun
	Projected Replacement of Roof Section C	$82,855	Awaiting Fun
	Repair Roof Section A	$11,555	Awaiting Fun

After entering the data for the project on the **General Information** and **Work Items** tabs, activate the **Save** button on the toolbar to save the changes to the project.

Alternatively, if you do not wish to save the changes made to the project, activate the **Close** button on the toolbar.

Edit a Project

To edit a project, activate the **Details** hyperlink next to the project on the Work Items screen.



A popup window will appear, and the data at the **General Information** and **Work Items** tabs can be edited as desired.

Work Planning

Work Planning Overview

After inventory is completed, roof section condition assessments data are in place, and appropriate work configuration has been performed, you can begin to truly manage the work using ROOFER's work planning tools.

Regardless of the type of work planned, a work item record is generated for each work activity. A work item stores basic information about what work is planned, including the type of work; description; estimated cost; funding year; and quantity. Groups of work items can be viewed in several useful ways, such as a list of all past, present, and future work, or in a list filtered by aspects such as year or status.

Adding Work Items

There are two ways to create work items. Each method is briefly described here at the headers below, and a link is provided to further information about how to use the automatic work generator in ROOFER.

Using the Automatic Work Item Generator

ROOFER provides an automated process that creates work items for your inventory. For best results, this requires you to specify one or more prioritization schemes in order to rank the work items by score. See Generate ROOFER Work Items Automatically (Option A) in the Add or Edit a ROOFER Work Item topic for instruction on using the automatic work generator.

Manually Entering Work Items

Currently in ROOFER, manual entry is available only for Building-level work items. Building-level work items concern modernization, demolition, or replacement of a Building.

Prioritizing Work Items

Prioritize Work Items in a Work Plan

This topic shows how to prioritize Section-level work items, and suggests when to prioritize. It also explains how prioritizing can be used to calibrate a prioritization scheme.

After you prioritize, you can View Work Item Rankings.

Note: Prioritizing work items in your wok plan can only be done if a prioritization scheme that applies to the area of the tree you are working in has been established as part of work configuration.

If a prioritization scheme has been created for the area of the tree you are working in, you can prioritize the work items in your work plan using the **Prioritize** button on the toolbar of the work plan screen. This will generate a **priority score** for each work item or work project in the plan, with the exception of Building-level work items.

Building-Level Work Items

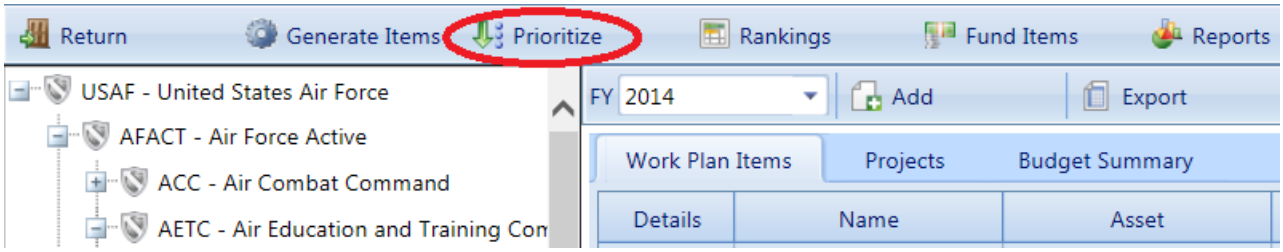
Building-level work items, such as a Building-level Modernization, do not participate in prioritization; their scores will remain at zero. However, you can cause a Building-level work item to be completed in Scenarios by marking it "Must do as planned" and providing a fund source with a criteria the work item can satisfy.

Note: Scenarios capability is provided with the **BUILDER** module only.

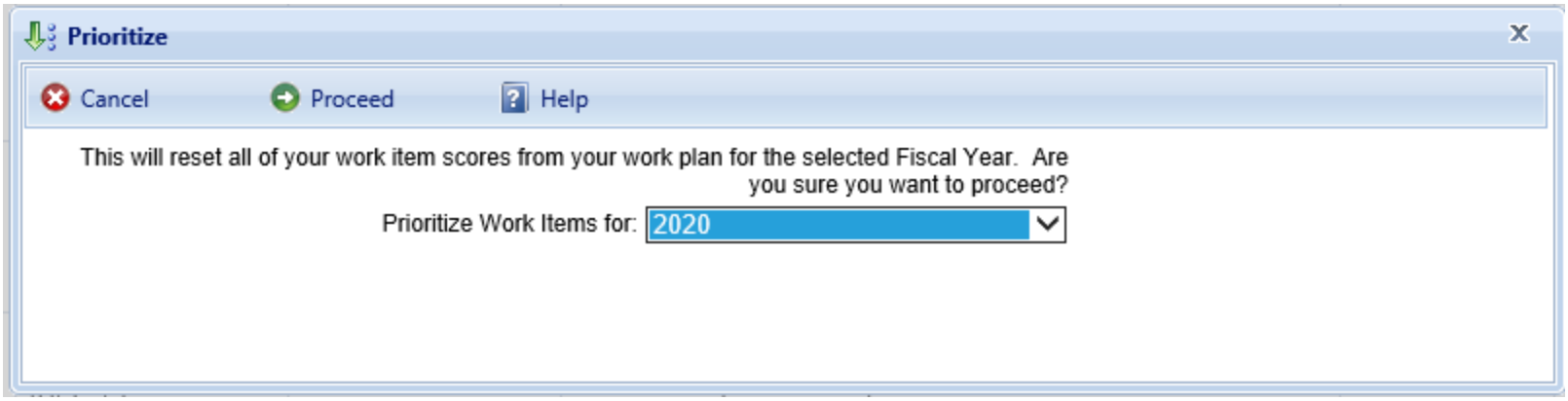
Section-Level work Items

To prioritize Section-level work items,

- With the Work Plan tab selected, activate Prioritize on the toolbar.



A popup warning box will appear, stating that all current work item scores from your work plan for the selected fiscal year will be reset if you continue.



- **IMPORTANT:** Select the desired fiscal year in the "Prioritize Work Items for" field (see screenshot above).
- Activate **Proceed** on the popup toolbar if you still wish to delete the current scores for the for Section-level work items and recompute new prioritization scores. The prioritization scores will be computed using the prioritization scheme selected in the Reference Settings area at the Site or Organization's **General Information** tab. (Alternatively, activate the **Cancel** button if you do not wish to perform these actions; you will be returned to the work plan.)

Result:

After a priority score has been computed for each work item, all work items will be shown in the work plan ranked from highest score to lowest. Project priority scores are computed by averaging the priority scores of the work items in the project, weighted by cost.

Projects

Project priority scores are computed by averaging the priority scores of the work items in the project, weighted by cost.

When to Prioritize

You can prioritize the work plan as often as you wish. Listed below are situations where prioritizing is recommended.

When Adding New Work Items

If you add new work items, you should re-prioritize to include the new items.

To Calibrate a Prioritization Scheme

You may also want to evaluate a prioritized work plan in order to calibrate the weights and points you have assigned in a particular prioritization scheme. To calibrate,

- Prioritize the work plan.
- Consider the order in which work items have been ranked, and their scores.
- When you see ordering discrepancies or score differences from your expert judgment, this might allow you to identify measures that should carry more relative weight, or measure values that warrant higher points such that the order of the work items will come out correct.
- Adjust measures and re-prioritize so that the order of the work items is acceptable.

The goal of a prioritization scheme, which is established as part of Work Configuration, is to rank work items by algorithmic calculation into the same order that expert facility managers at your agency would rank them by following sound engineering principles.

Related Links

To learn about grouping work items into projects, start with the topic About Work Projects. Or, for information about work plans, start with the topic About Work Plans.

Work Item Tasks

View a Work Item
Add a Work Item
Edit a Work Item
Section-Level Work Item Data
Building-Level Work Item Data
Fund Work Items
View Work Item Rankings
Export Work Items
Delete a Work Item

Instructional Links

About Work Items
About Work Item Cost Analysis
Work Planning Overview

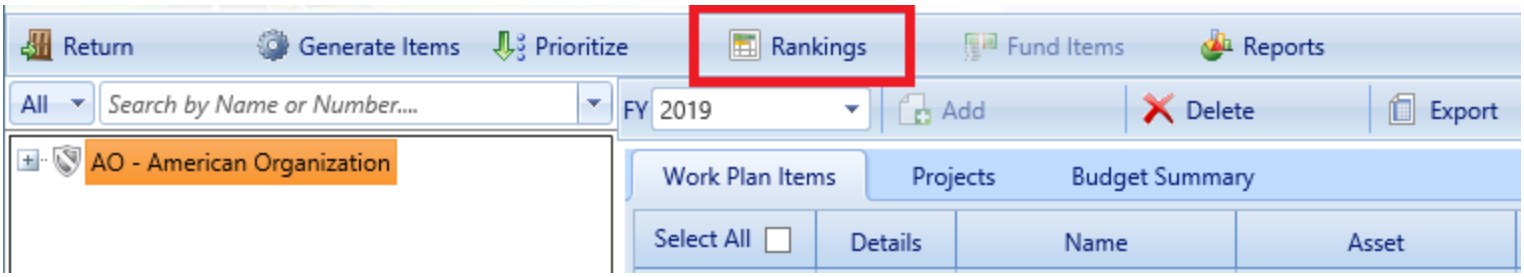
View Work Item Rankings

If you have created a prioritized work plan, you can view the rankings of the work items in your work plan, broken down into the constituent scores for each measure used in the prioritization scheme. This topic shows the steps for viewing the rankings and briefly explains the results.

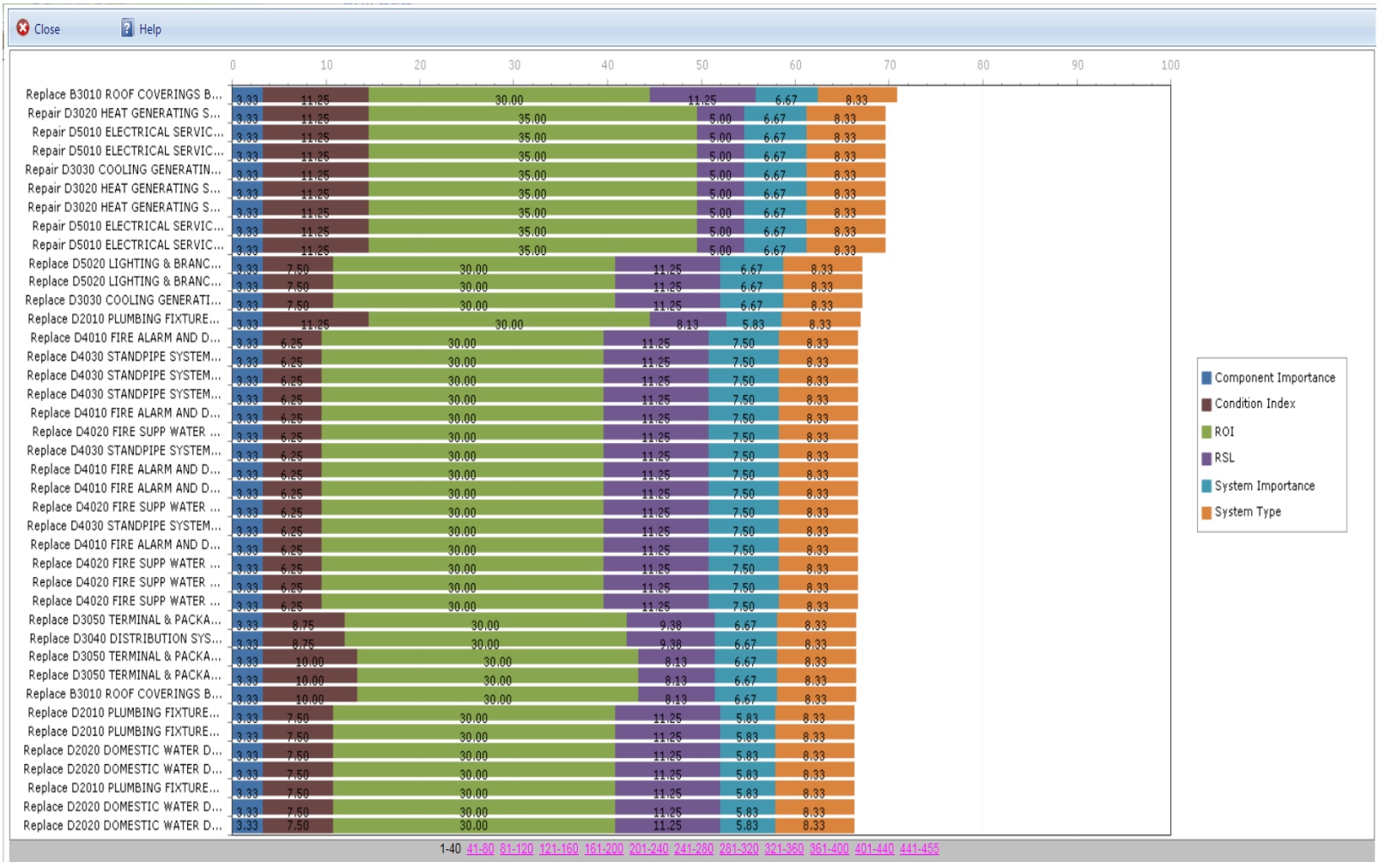
Note: This can only be done if a prioritization scheme that applies to the area of the tree you are working in has been established as part of work configuration.

To rank work items,

- At the work plan screen, navigate to or search-select the desired Organization or Site. This sets the scope for the ranking.
- Activate **Rankings** on the toolbar.



The Rankings window will appear.



Result:

The rankings of each Section-level work item will be shown from highest priority score to lowest. The score for each work item will be broken down into the constituent scores for each measure used in the **prioritization scheme** established in Work Configuration. A legend will be displayed, correlating the colors to their respective measures.

Related Links

To learn about grouping work items into projects, start with the topic About Work Projects. Or, for information about work plans, start with the topic About Work Plans.

Work Item Tasks

View a Work Item
Add a Work Item
Edit a Work Item
Section-Level Work Item Data
Building-Level Work Item Data
Fund Work Items
Prioritize Work Items in a Work Plan
Export Work Items
Delete a Work Item

Instructional Links

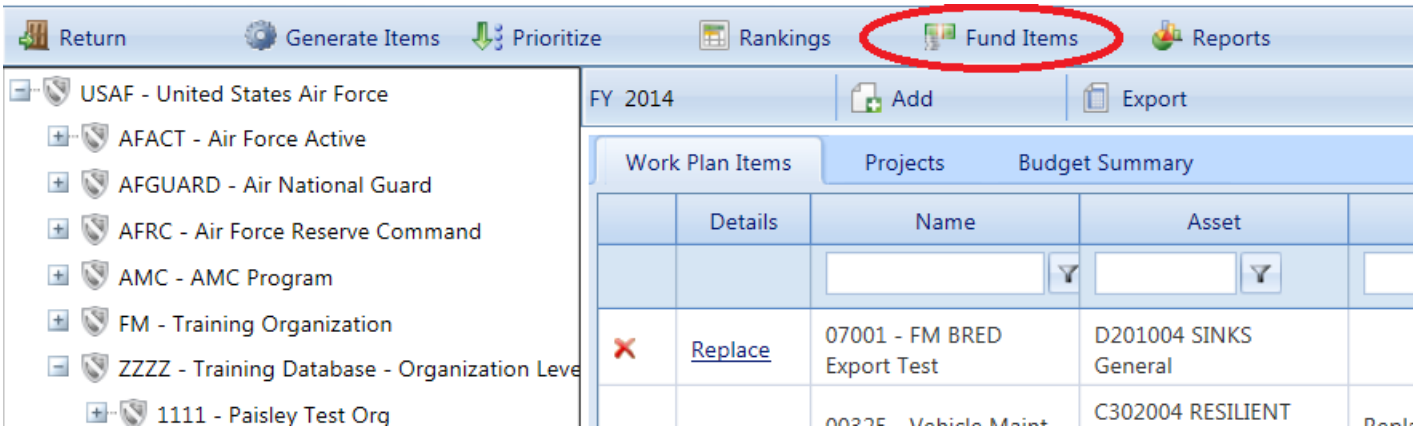
About Work Items
About Work Item Cost Analysis
Work Planning Overview

Funding Work Items

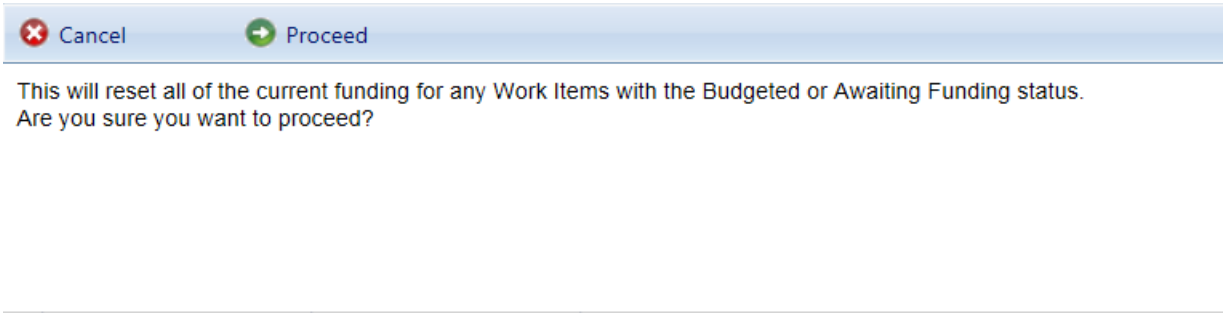
Fund Work Items

ROOFER™ gives you the ability to automatically fund work items based on their priority scores and the available fund sources. If you choose to use this tool, the work items with the highest priority scores will have their status changed to "budgeted" until all of the funds are exhausted. All remaining work items that are not budgeted will have their status changed to "Awaiting Funding." It is important to note that the funding sources are subject to all the restrictions and precedences that are set in the funding screen.

To fund the work items in a work plan, activate the **Fund Items** button on the Work PlanA multi-year collection of work items and/or projects planned for a Site or Organization. toolbar.



The Fund Work Items screen will appear.



From this window, you have the option of funding the work items for the current or next fiscal year. Select the year you wish to fund the work items in and activate the **Proceed** button. After completion, the work items with the highest priority scores will be marked as "Budgeted" until all applicable sources are allocated. The remaining work items will be marked as "Awaiting Funds." If you do not wish to fund the work items, simply activate the **Cancel** button in the window to be returned to the Work Items window.

Tools

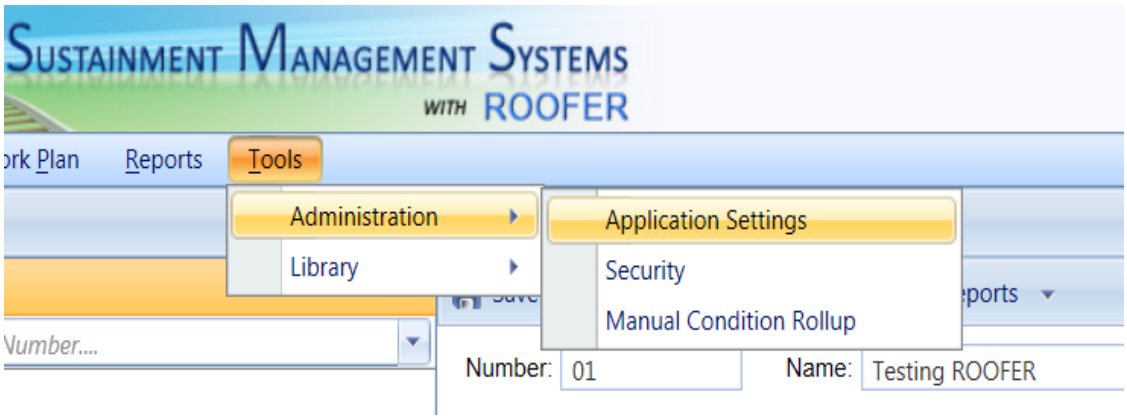
Administration

Manage ROOFER Application Settings

Permissions Note: Only a user with AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. privileges can change the application settings.

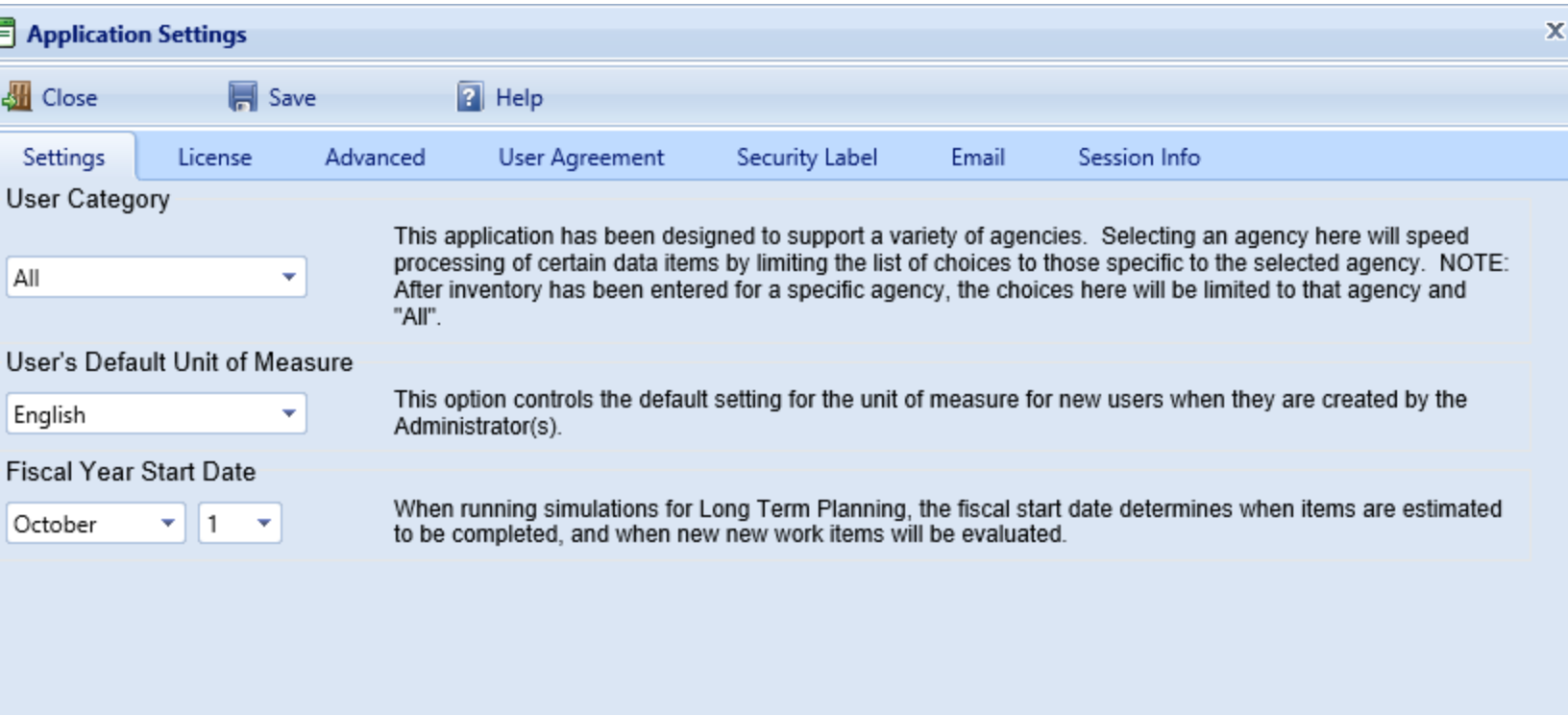
When you create a new inventory database, you should set the preferences in the Application Settings window before proceeding with any additions to inventory.

To edit the application settings, select **Tools > Administration > Application Settings** starting at the main menu.



The "Application Settings" popup window will appear. Subsequent sections explain each tab in the Application Settings window.

Settings Tab



Tip: If you do not see a screen similar to the one above, try selecting a different tab and then coming back to the **Settings** tab.

At the **Settings** tab, you can set the following preferences for your database:

User Category

After you designate a user category, **ROOFER** will present an agency-specific list of Building Use categories when inventory is being added.

Selecting the **All** category allows you to enter Building Use categories across multiple categories.

Note: Once your inventory contains Buildings from more than one category, the only choice here is **All**.

User's Default Unit of Measure

Here is where you select the default unit of measure (English or Metric) to be used for the inventory for all users. This is the unit of measure that will initially be shown for all users, but each user can change his or her units of measure at any time with the User Preferences tool when they are logged in.

Fiscal Year Start Date

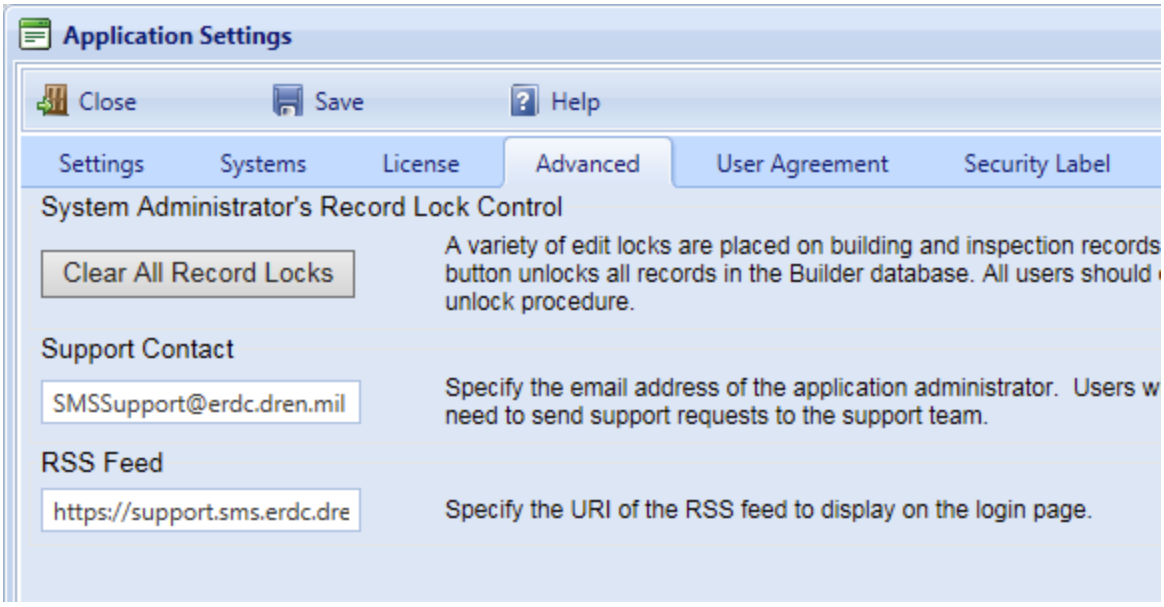
At this tab, enter the fiscal year start date. When running simulations using Scenarios, the fiscal start date determines:

- When items are estimated to be completed.
- When new work items will be evaluated.

License Tab

(This is a pending capability) The **License** Tab provides a location where you can copy and paste your security key.

Advanced Tab



At the Advanced tab you can do any of the following:

- Designate an email address for support administration.
- Designate the URI of the RSS feed to display on the login page.

Support Contact

Here is where you enter the email address of the **ROOFER** AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings.. This is the email address users will see if they activate the **Help** link and then choose **Contact Help** on the login page.

If you have your own instance of the program that you market to customers, enter the email address of your support department.

If you are a military installation using centralized **ROOFER** support, enter the email address shown in the screen shot above.

RSS Feed

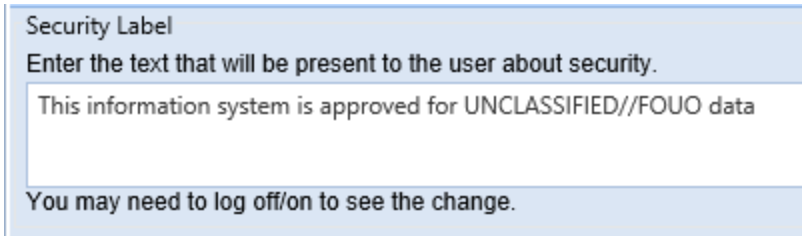
Here is where you enter the URI of the RSS feed to display on the login page.

User Agreement Tab

At the **User Agreement** tab is the text of the User Agreement that will be displayed to the user at login.

Security Label Tab

At the **Security Label** tab is the text about security level designation that is displayed on the user's login screen. For example,



Email Tab

At the **Email** tab are options that configure automated response to users who have difficulty logging in and activate the request to change their password or to have their account unlocked.

The large text box is the location where you input the text to be sent in automated email to the user. Variables that can be used in the text are as follows:

- <%ApplicationName%> = name of the application (BUILDER or ROOFER)
- <%Url%> = link for the user to follow to complete the password action
- <%SupportEmail%> = email address of the application support representative

Session Information Tab

At the **Session Information** tab (abbreviated **Session Info**), you can see session information such as number of users logged in.

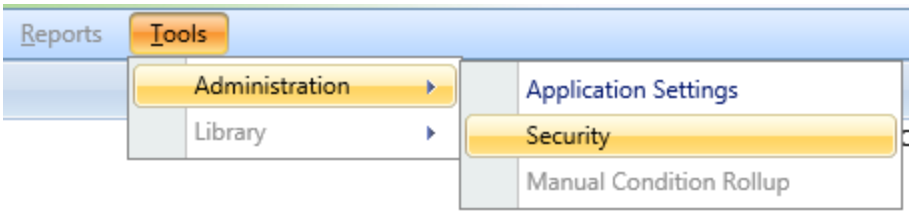
Manage ROOFER Security Features

The Security window allows the AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. to:

- Set password parameters
- Administer users and Roles.

You must be logged in as an AdministratorA user with BUILDER or ROOFER Administrator Role can administer users, assign users to Roles, and change software configuration settings. to access this screen.

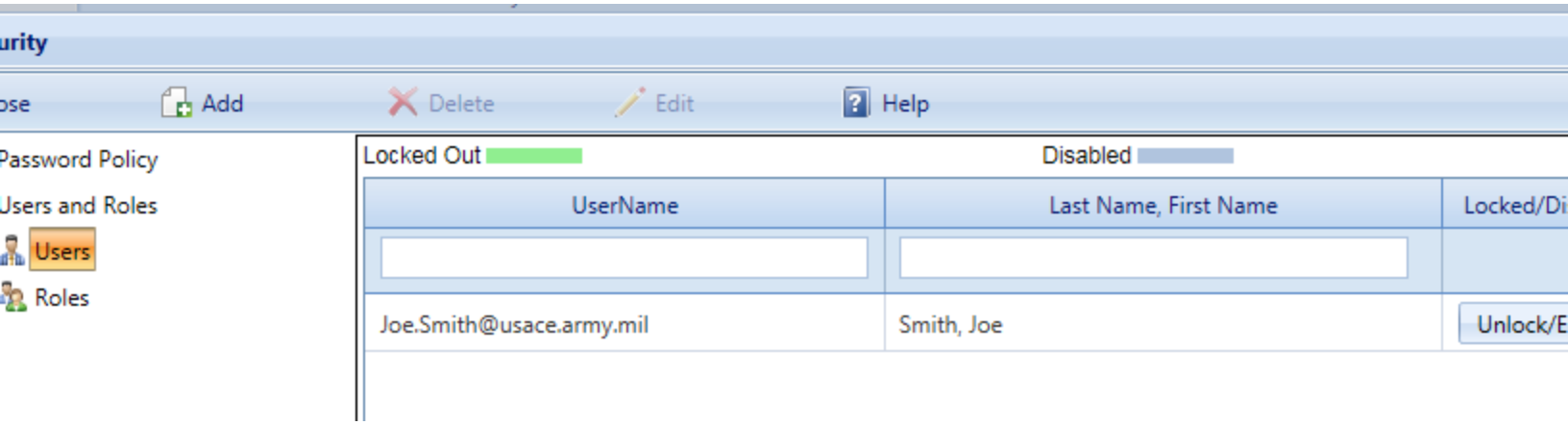
To edit **ROOFER**'s security features, select **Tools > Administration > Security** starting at the main menu.



*The "Security" popup window will appear as seen below under **Password Policy**, because Password Policy is selected by default.*

Password Policy

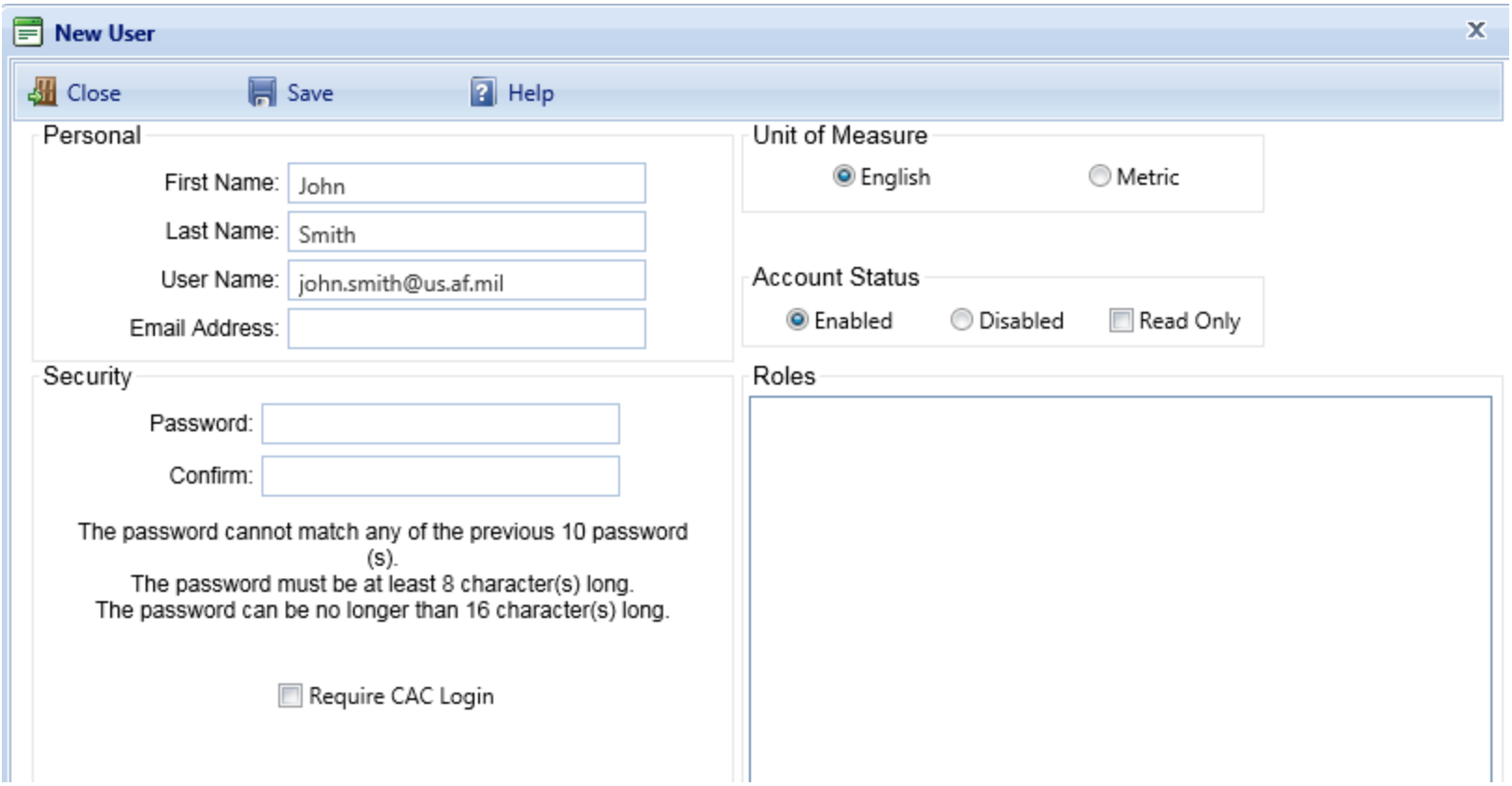
The Password Policy view in the Security window lists settings relating to user login to **ROOFER**; for example, number of bad logins allowed, maximum password length, etc. The Password Policy options allow the administrator to set password parameters for users.



Administering Users

Under **Users and Roles**, the **Users** option lists the available users who have or can be given a login to **ROOFER**. This allows each system user to log into their own account, which has associated rights and privileges based on the Role they are assigned to.

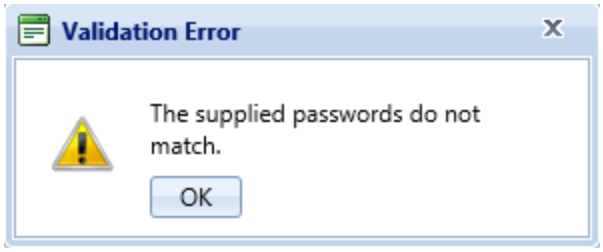
Select **Users** in the tree at the left to see the user screen, similar to the one shown below:



Add a User

To add a new user record:

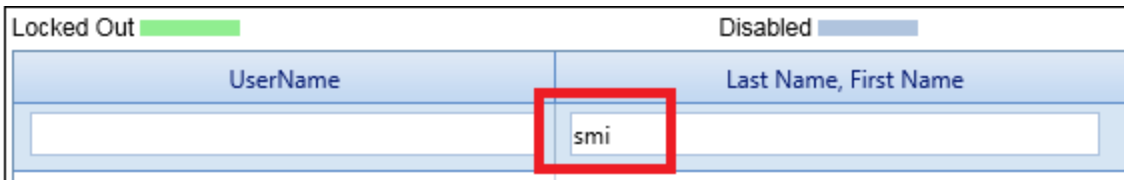
- Activate **Add** on the toolbar. *(The "New User" popup window will appear.)*
- Complete the information for First Name, Last Name, User Name, and Email Address in the "Personal" area.
- To set the initial password, type it into the "Password" and "Confirm" fields in the "Security" area.



- If applicable, mark the **Require CAC Login** checkbox.
- If desired, change the Unit of Measure.
- If desired. mark the **Read Only** checkbox in the "Account Status" area.
- Activate **Save** on the toolbar.

  Note: After a successful **Save**, the password boxes will be cleared and a button that reads **Change Password** will appear below them. This is normal. It is also normal for the password rules to remain on the screen.

- If you make an error in password entry, you will receive a popup message such as the one shown below. Redo password entry if necessary.



- Activate **Close** on the toolbar to return to the list of users.

Edit User Properties

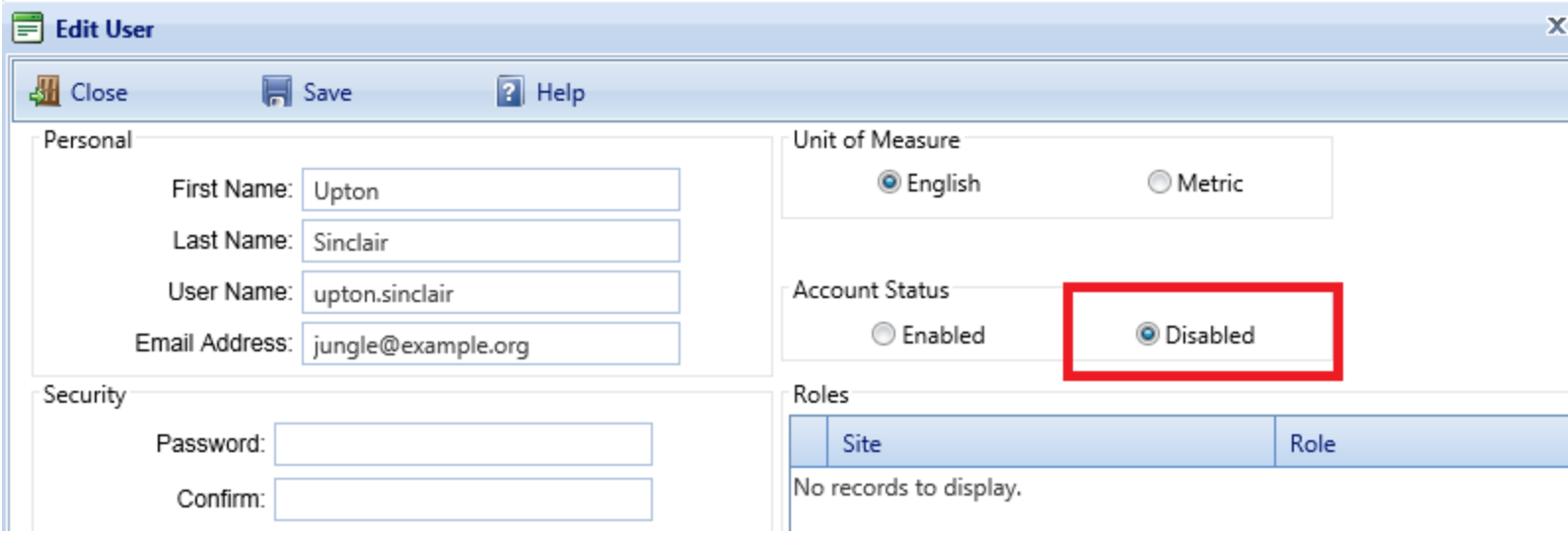
To edit user properties:

- Select the name from the list of users.

  Note: If the list is long, you can narrow down the number of entries by using a filter as follows:

  a. Fill in either (1) all or part of the User Name in the blank field directly under **UserName**, or (2) all or part of the user's First Name or Last Name in the blank field directly under **Last Name, First**

Name.
   b. Press the **Enter** key on your keyboard.
   c. If multiple names still appear in the list, click once on the desired user name.
- Activate the **Edit** button on the toolbar. *(The "Edit User" popup window will appear. If it does not, check to make sure that you have a user name selected.)*
- Change the desired properties.
- Activate **Save** on the toolbar.
- Activate **Close** on the toolbar. To see the full list of users, you might need to delete text that remains in the filter fields (see illustration below), then press the **Enter** key on your keyboard.



Disable a User

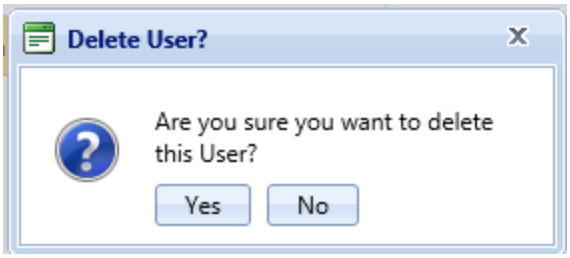
Disabling a user takes place at the "Edit User" screen. To disable a user:

- Select the name from the list of users.

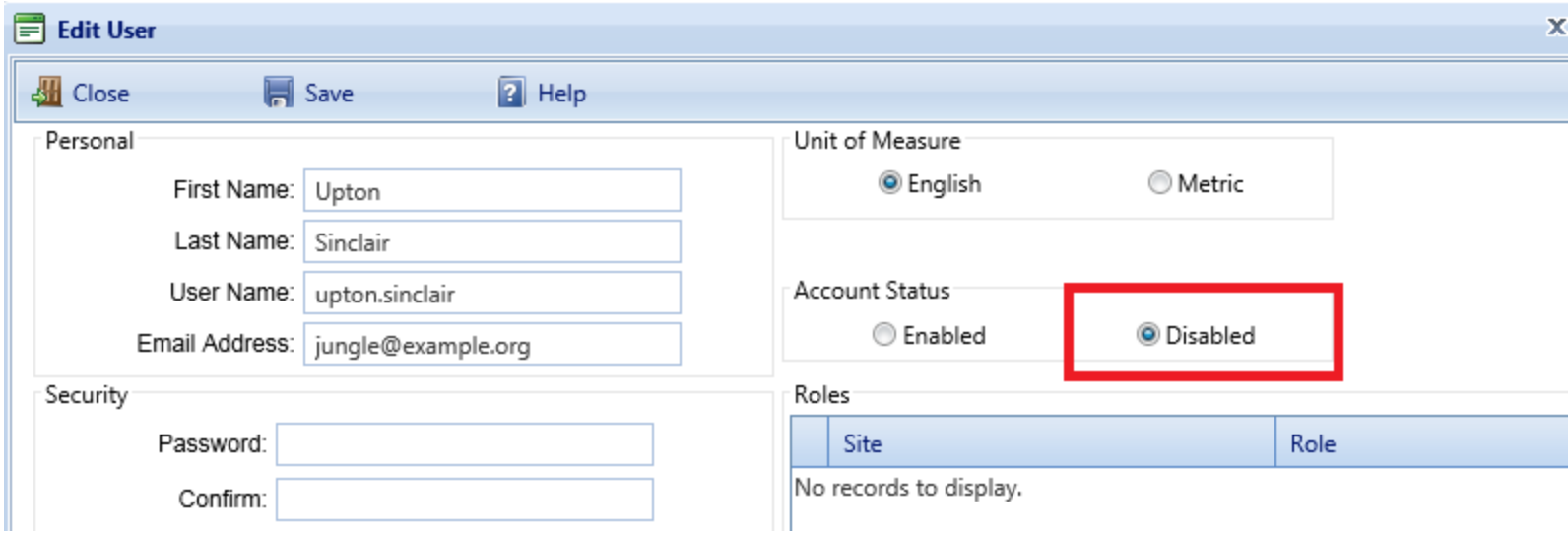
  Note: If the list is long, you can narrow down the number of entries by using a filter as follows:

   a. Fill in either (1) all or part of the User Name in the blank field directly under **UserName**, or (2) all or part of the user's First Name or Last Name in the blank field directly under **Last Name, First Name**.
   b. Press the **Enter** key on your keyboard.
   c. If multiple names still appear in the list, click once on the desired user name.

- Activate the **Edit** button on the toolbar. *(The "Edit User" popup window will appear. If it does not, check to make sure that you have a user name selected.)*
- Select the **Disabled** radio button in the "Account Status" area, as shown.



- Activate **Save** on the toolbar.
- Activate **Close** on the toolbar. To see the full list of users, you might need to delete text that remains in the filter fields (see illustration below), then press the **Enter** key on your keyboard.



- When finished, you should see that the horizontal bar containing the username and name of the disabled user has been colored in to indicate that this user has been disabled.

Delete a User

WARNING: If there any inspections that were performed by the user you wish to delete, those inspections will become inaccessible if the user is deleted!
Best Practice Recommendation: A better option in this case is to disable, rather than delete, this user. (See Disable a User, above.)

If you choose to delete, follow these steps:

- Select the name from the list of users.

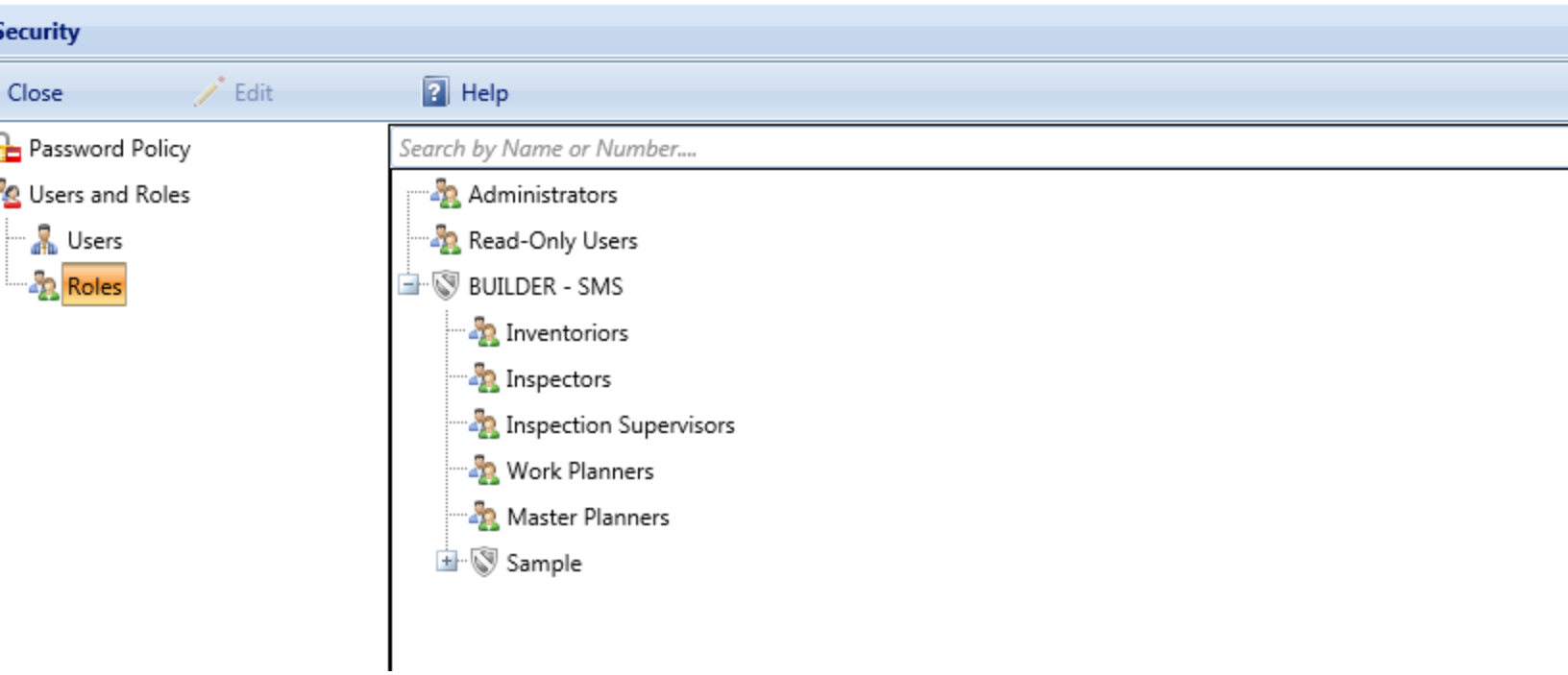
  Note: If the list is long, you can narrow down the number of entries by using a filter as follows:

  a. Fill in either (1) all or part of the User Name in the blank field directly under **UserName**, or (2) all or part of the user's First Name or Last Name in the blank field directly under **Last Name, First**

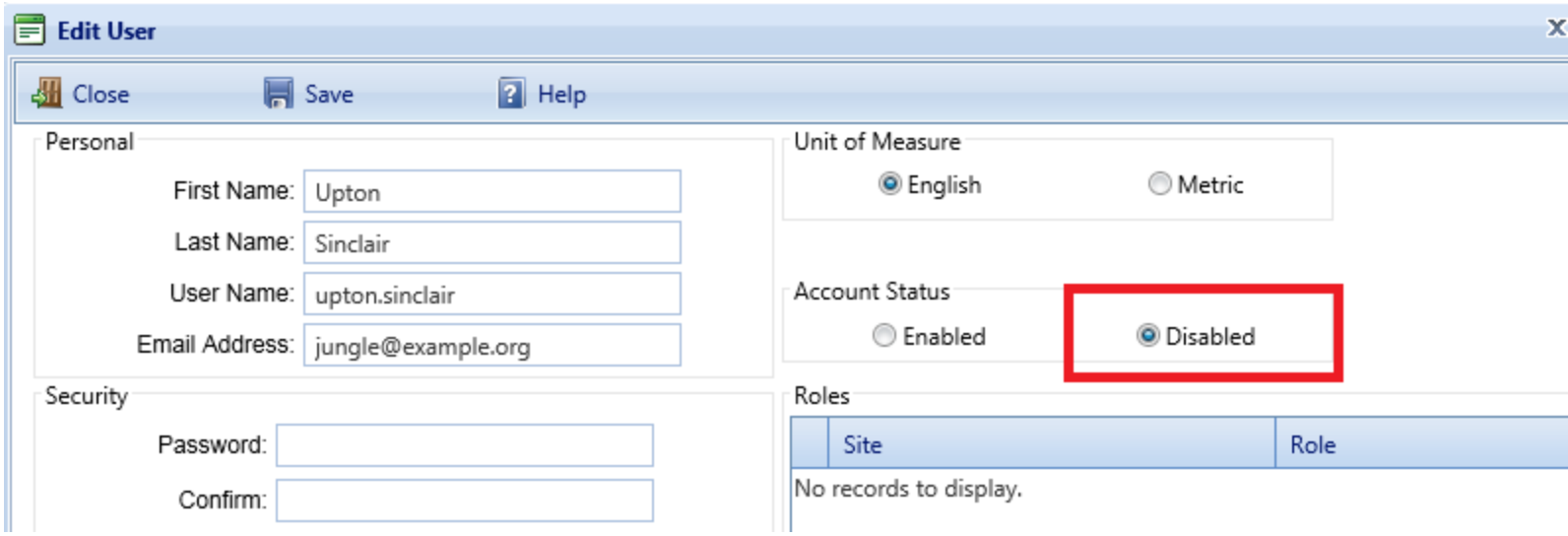
Name.

b. Press the **Enter** key on your keyboard.
c. If multiple names still appear in the list, click once on the desired user name.

- Activate the **Delete** button on the toolbar. You will be asked for confirmation:



- Select **Yes**.
- Activate **Close** on the toolbar. To see the full list of users, you might need to delete text that remains in the filter fields (see illustration below), then press the **Enter** key on your keyboard.



Administering Roles

Brief List of Roles

Once users have been created, they can be assigned to Roles. The Roles are allowed varying degrees of program access rights under the system. The different Roles in **ROOFER** include:

- **Administrators** - can administer users, assign users to Roles, and change **ROOFER** application settings.
- **Inventoriors** - can input and edit inventory information from the Inventory screen
- **Inspectors** - have all the rights of **Inventoriors**, and can input and edit inspection information from the Condition Assessment screen
- **Inspection Supervisors** - have all the rights of **Inspectors**, and can create inspection schedules
- **Work Planners** - have all the rights of **Inspection Supervisors**, and can also create and edit work plans, prioritization schemes, and **RSL**[1]**Remaining Service Life** and cost books.
- **Master Planners** - have all the rights of **Work Planners**, and can also edit any and all data saved by other users of the program. Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. is the highest level of user privileges.

For more detail about the privileges associated with each user Role, see Overview of ROOFER Permissions Roles.

[1]Remaining service life.

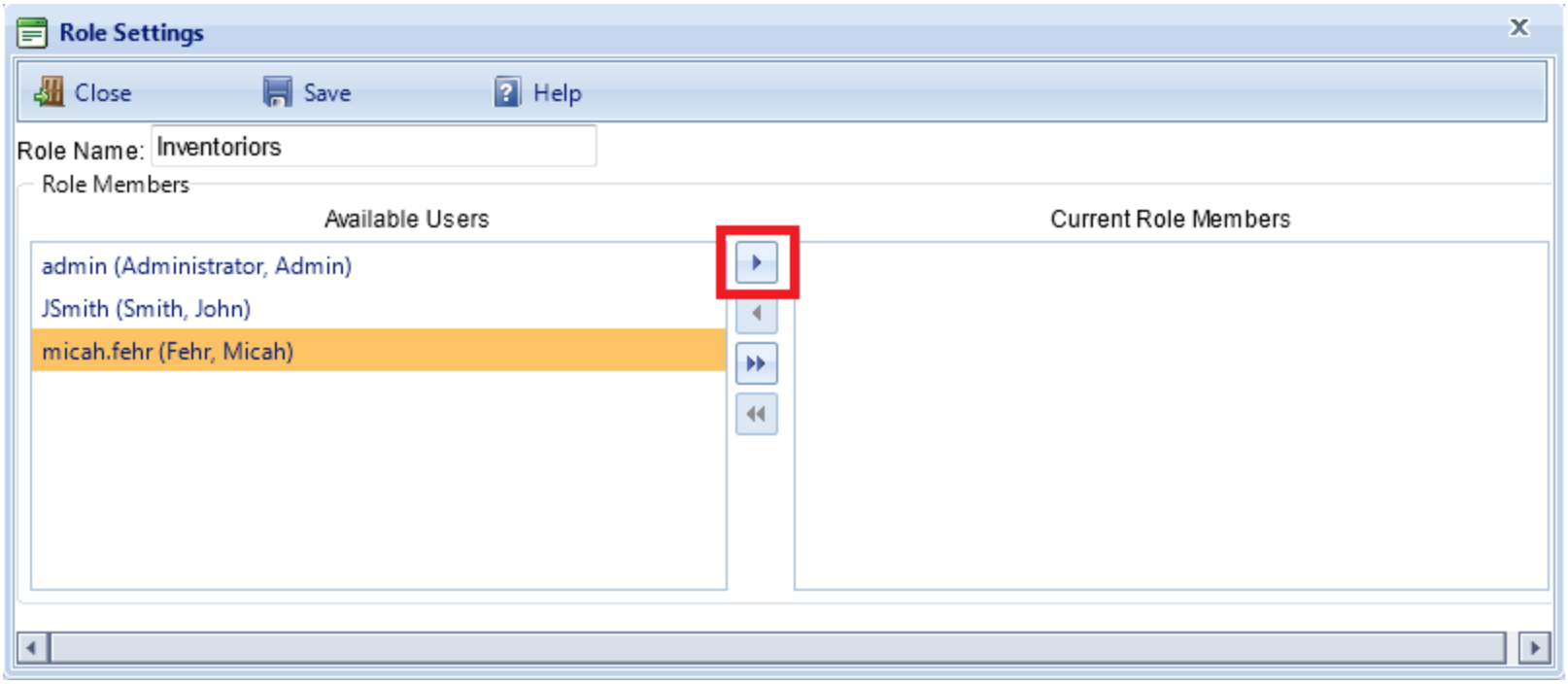
Scope of Role Assignment

In **ROOFER**, each user's Role privileges can be assigned and restricted to the appropriate hierarchical level (Organization, Site, Building, etc.). For example, a user can be assigned as a Work Planner either to the entire database globally, or, alternatively, to one or more Sites or Organizations only.

Note: Users are typically assigned their permissions Role at the Site level.

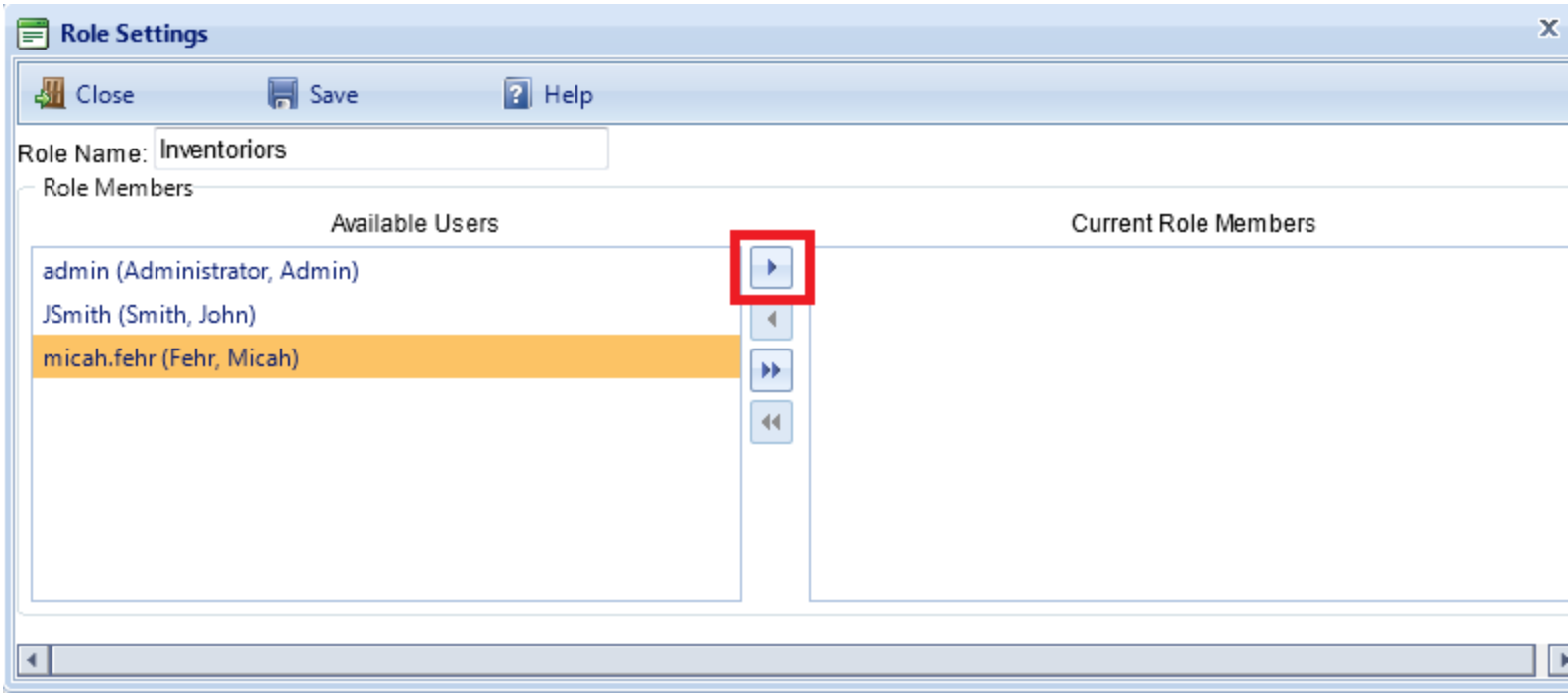
Assigning Roles to Users

The screen below shows the list of Roles available.



To assign a user to a given Role and level,

- In the navigation tree shown above, navigate to the desired node (such as "Sample") to which the permissions will be applied.
- Activate the "+" to make the list of Roles appear below the node.
- Select the permissions level desired, under the node.
- Activate the **Edit** button on the toolbar. *The following screen will appear*:



- Select the user from the "Available Users" list on the left.
- Activate the single right arrow button to move that user over to the "Current Role Members" list.

Perform Manual Condition Rollup

The About Condition Assessments topic contains a description of **ROOFER**'s process for calculating current **CI**[1]**Condition Index** values for all levels of its inventory. The process "rolls up" the condition index values from one level of the inventory hierarchy to the next in a methodical manner, beginning with roof sections and ending with the Site (or parent Organization if one is included in the inventory). **ROOFER** is designed to perform the rollup recalculation on your command. You should perform this rollup calculation frequently, but especially when:

- You have not performed the rollup within the last 6 months
- You have entered a large number of new condition assessments
- You need the most current condition index measures to develop a new work plan.

To initiate the manual rollup process, select **Tools > Administration > Manual Condition Rollup** from the main menu.

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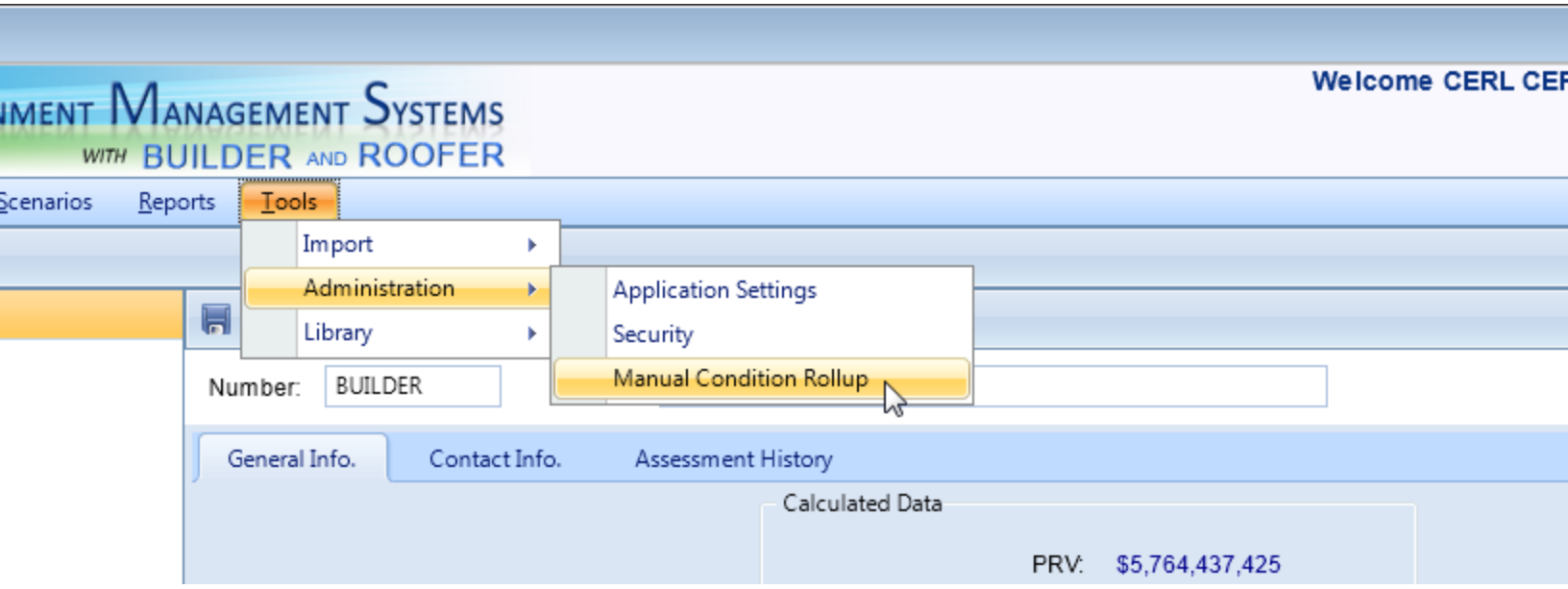
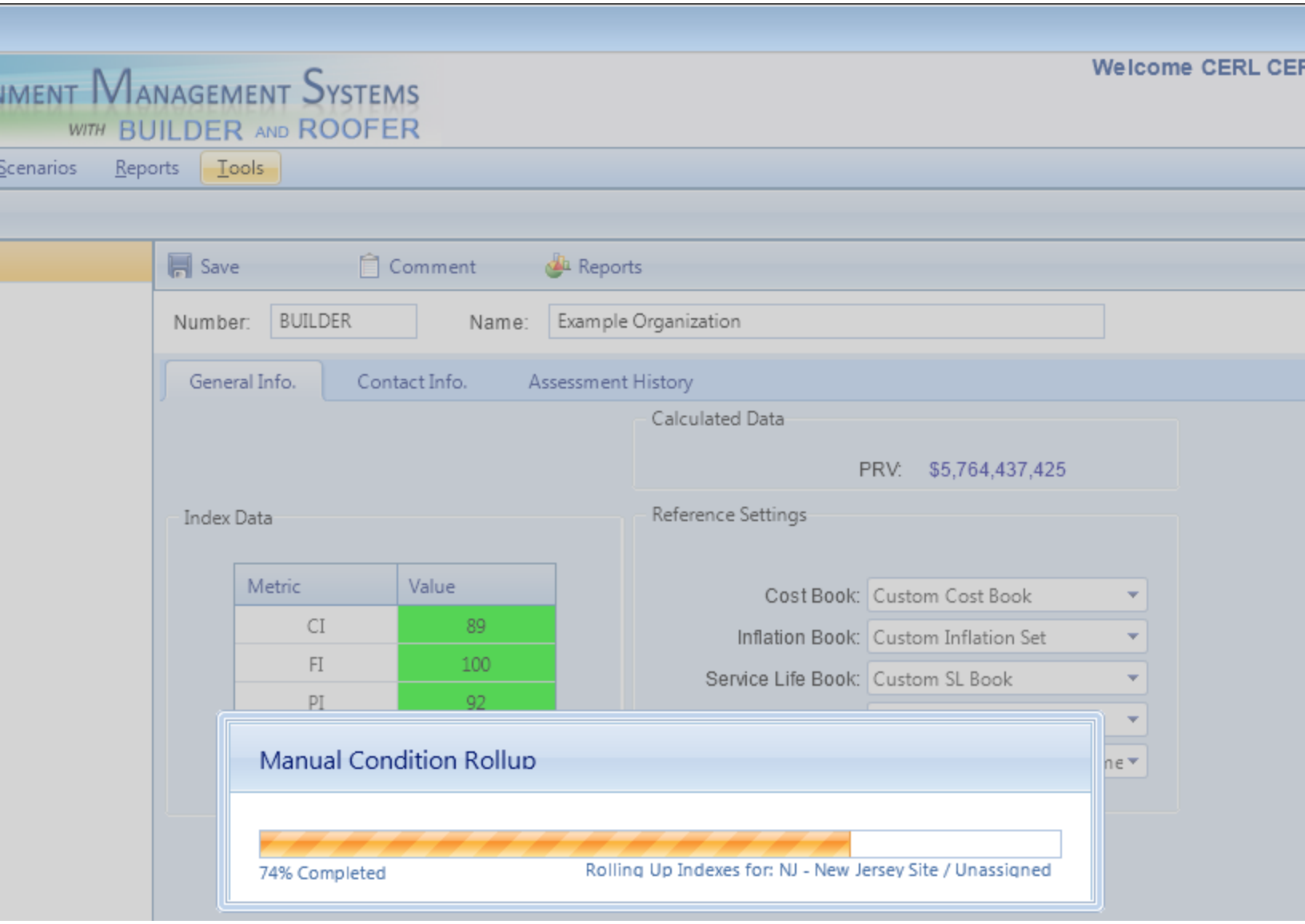
[1]Condition Index



The rollup process will begin for all inventory in the database and the Progress window will appear.



The following processes will occur during the rollup:

- Retrieve the latest condition assessment records and estimate a current condition index for all roof sections.
- Estimate the current remaining service life (**RSL**[1]Remaining Service Life) for all roof sections. The **RSL**[2]Remaining Service Life is adjusted by the rate of deterioration in the condition indices.
- Estimate the current condition index for all Buildings by calculating the average of their roof sections' condition indices weighted by replacement cost.

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[1]Remaining service life.

[2]Remaining service life.

- Estimate the current condition index for all Complexes, Sites, and Organizations by calculating the average of their Buildings' condition indices weighted by replacement cost.

After the rollup process completes, the Progress window will close and you will be returned to the main ROOFER screen. Building inventory windows will display recalculated current condition indices for all elements.

Library

About Cost Books

BUILDER has an embedded cost module, used in the critical areas of work planning and condition assessment, that assigns replacement values to inventory. The data used by the cost module is contained in one or more **cost books**.

A default cost book is provided for the asset tree as a whole and is all that is required. Optionally, a customized inflation book can be used in place of the default, or multiple customized cost books can be associated with different Organizations or Sites in the tree. This topic explains how to do this.

Permissions Note: Depending on the operation (e.g., adding vs. deleting a book), configuring reference data requires either Work Planner or Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. permission for the Organization or Site that the reference book applies to. The ability to assign a custom reference book to an Organization or Site depends on your permissions for that Organization or Site.

BUILDER's embedded cost module contributes to multiple **BUILDER** functions:

- Inventory: Provides inventory replacement costs for all levels of the BUILDER hierarchy.
- Condition index calculations: Replacement costs are used as weighting factors in rolling up CIs in the inventory hierarchy.
- Work planning: For work planning, the cost module provides initial programming cost estimates for proposed maintenance, repair, and rehabilitation projects

The replacement cost data used by the cost module is contained in one or more **cost books**. Multiple cost books can be associated with different Organizations or Sites in the tree, as desired.

Cost Calculations

How costs are calculated is described in About Replacement Cost Calculation.

If you are interested in more information about the formulas used in generating reference data, see the References training module in the **BUILDER** training at https://training.sms.erdc.dren.mil/.

Replacement Cost Data

The replacement cost data used by **BUILDER**'s cost module is contained in one or more cost books. Multiple cost books can be associated with different Organizations or Sites in the tree, as desired (see Assign a Cost Book to an Organization or Site).

Default Cost Book

The one default cost book provided with **BUILDER** is named "Reference." It cannot be edited, and it is associated with the top level of the asset tree. The scope of its data, therefore, is the entire asset tree.

You can choose to depend exclusively on the data in Reference, or you can create one or more custom cost books.

Custom Cost Book(s)

You can manage cost data by using custom cost books. To create custom cost data, you can either

a. Edit an existing cost book (except for Reference), or
b. Create one or more new cost books. You can use Reference, or another existing cost book, as the starting point for the new cost book.

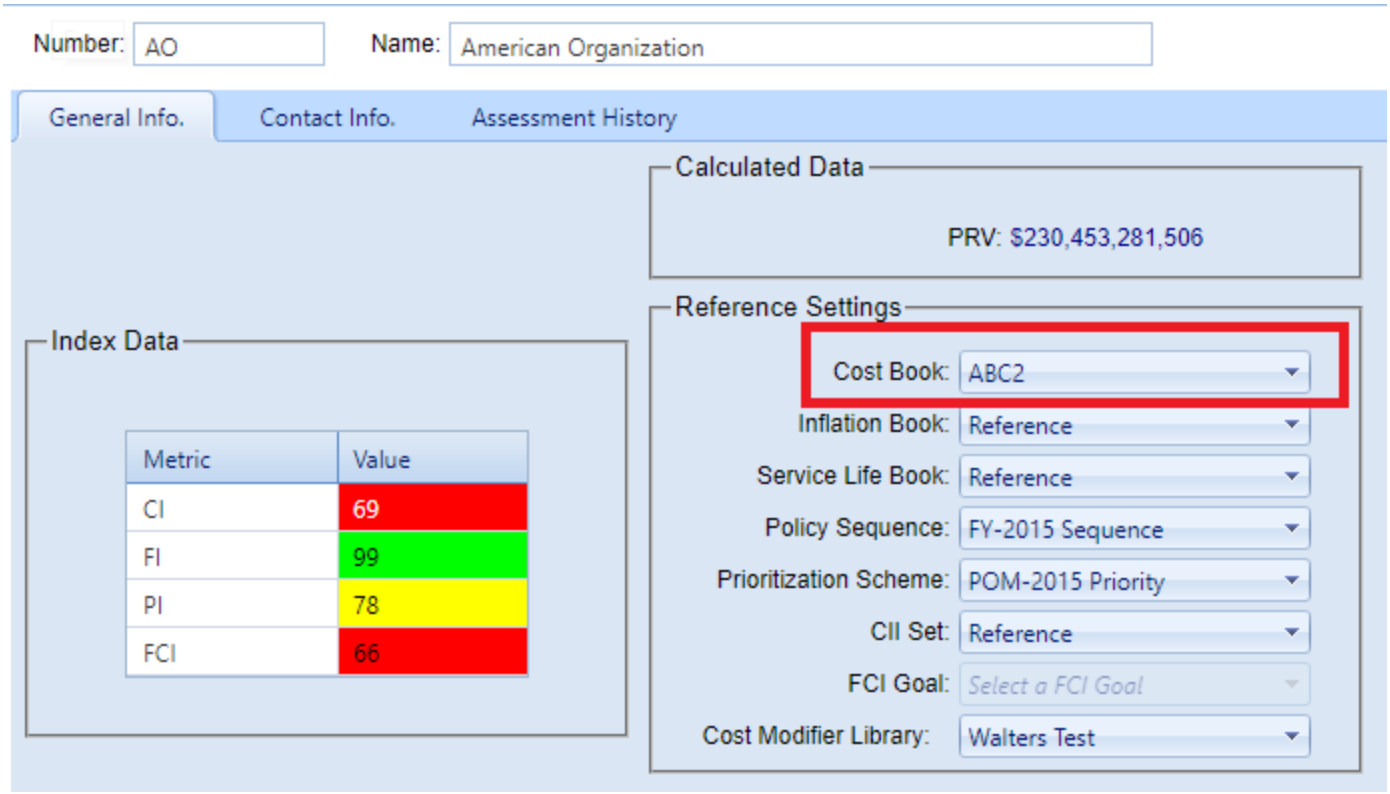
By assigning a custom cost book to an Organization or Site, you can control the scope of that cost book, applying custom values to either all or part of the asset tree.

Note: The only data that you can change in the cost book is the replacement cost.

Assign a Cost Book to an Organization or Site

You can create multiple cost books, and assign a separate book to any Organization or Site within your permissions scope, as desired. This is done as follows:

- In Inventory mode, navigate to and select the Organization or Site to assign the cost book to.
- At the **General Information** tab, select the cost book from the dropdown menu in the **Reference Settings** section (requires elevated permissions).



- Activate **Save** on the content area toolbar.

Cost Book Tasks

Tasks you can perform are to

View a Cost Book
Add a Cost Book
Edit Cost Book Data (unit costs, general multiplier, or specific multipliers)
Delete a Cost Book
Assign a Cost Book to an Organization or Site

Other Related Links

About Replacement Cost Calculation

Manage Inflation Rate Data Using Inflation Books

When costs are computed by the **BUILDER** cost module, an adjustment is made to account for inflation.

The inflation data used by the cost module is contained in one or more **inflation books**. A default inflation book is provided and is all that is required. Optionally, multiple customized inflation books can be associated with different Organizations or Sites in the tree; this topic will explain how to do this.

For more information about the cost module, start with the topic About Cost Books.

Permissions Note: Creating an inflation book or editing an inflation book requires Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. permission for the Organization or Site that the inflation book applies to. The ability to assign a custom inflation book to an Organization or Site depends on your permissions for that Organization or Site.

About Inflation Books

The inflation assumptions used by the cost module are contained in one or more inflation books. Multiple inflation books can be associated with different Organizations or Sites in the tree, as desired.

Default

The default inflation book provided with **BUILDER** is named "Reference." It cannot be edited, and it is associated with the top level of the asset tree. The scope of its data, therefore, is the entire asset tree.

The data in the Reference set matches the inflation rates used by the Department of Defense for operations and maintenance costs. As time goes on and the economy's ups and downs yield different forecasts of inflation, you should create new inflation sets to more accurately predict out-year costs.

Custom

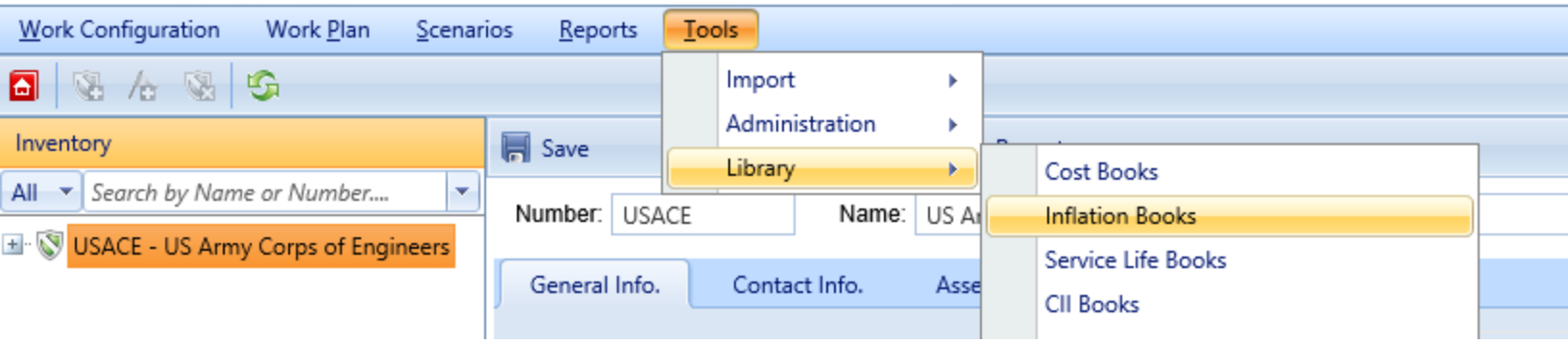
To use different inflation data than what is provided in the Reference module, you can create one or more custom inflation books. A new inflation book can be based on Reference, or based on another existing inflation book. Another option for using different inflation data is to edit an existing inflation book (except for Reference).

Depending on the scope you designate for an inflation book when you assign it to an Organization or Site, you can apply custom values to either all or part of the asset tree.

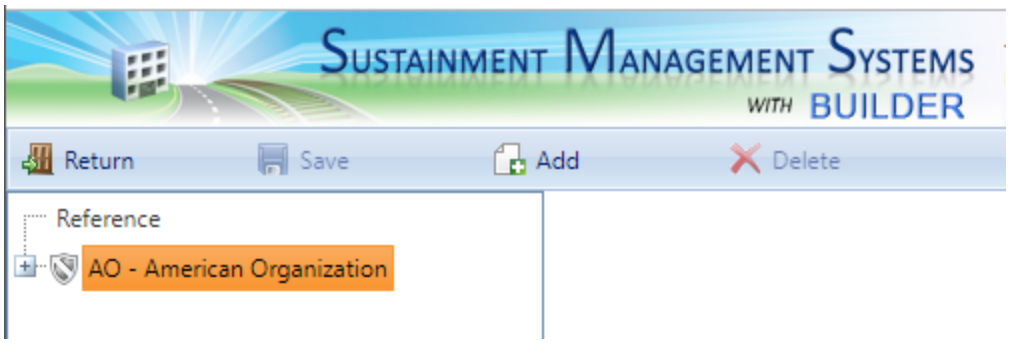
Add an Inflation Book

To add an inflation book,

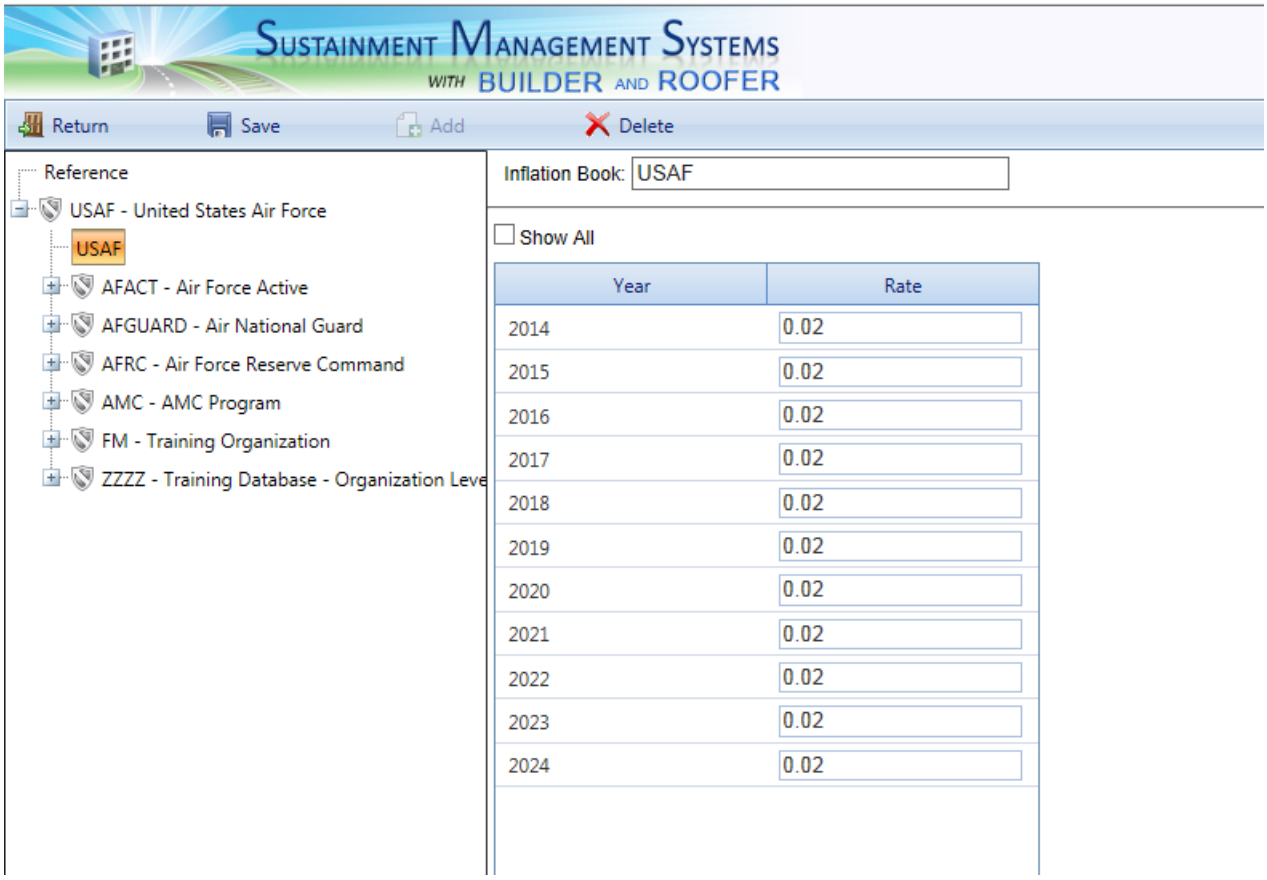
- Starting at the main menu, select **Tools > Library > Cost Books**.



The Inflation Management window will open, showing just the top level of the asset tree.



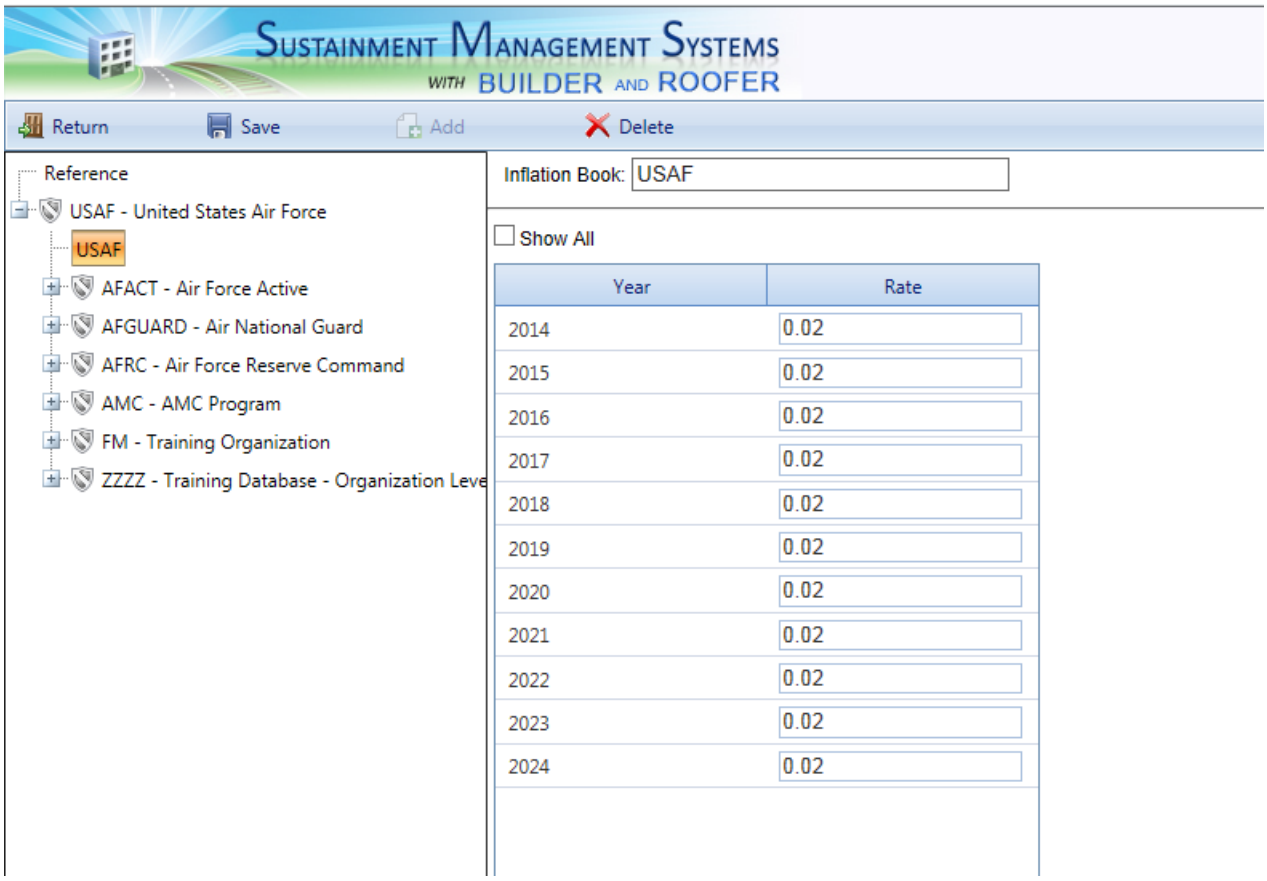
- **Note:** Initially, only one inflation book, Reference, is available. The Reference inflation book cannot be deleted or edited. It is the foundation of all other inflation books you create.



Managing Inflation Rates

To manage the inflation rates, select **Tools > Library > Inflation Books** starting at the main menu.

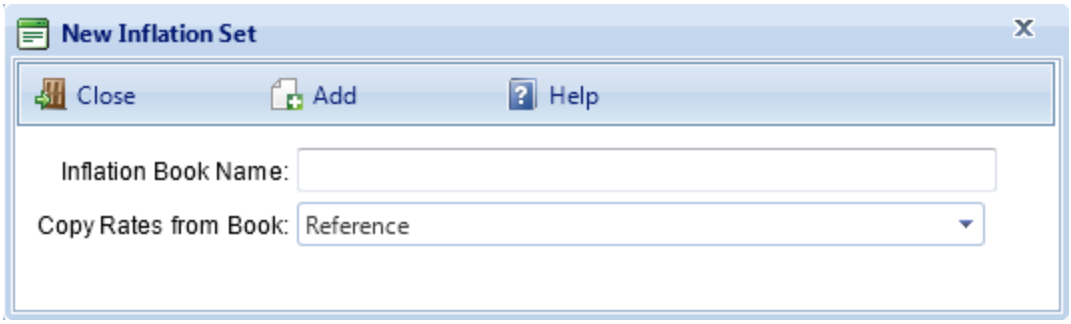
The Inflation Set Management window will appear.



Expand the tree in the left portion of the window to show the available inflation sets in the database. As stated above, only the References inflation set is available initially. The Reference inflation set cannot be deleted or edited and serves as the foundation for all other inflation sets you create. You are free to use the Reference inflation set if you like and not add any data of your own.

Adding and Editing Inflation Rates

If you would like to edit the inflation rates, you must add your own data set first. To do so, choose the Organization or Site where it applies from the tree, then activate the **Add** button on the toolbar. The New Inflation Set window will appear:



Enter the name of the new inflation set, choose the set to copy inflation rates from, and activate **Add**. You will be returned to the Inflation Set Management window, the name of the new book will appear in the Inflation Set dropdown list, and you will see the data corresponding to the book you copied from. You may know edit the inflation rates on a year-by-year basis for the new set in the grid. To edit different inflation sets in your inventory, select them in the tree and their data will appear in the grid.

Choosing the Default Inflation Rate Data Set

After a new inflation set is created, it is available from the inventory screen to use for a given Site, region, or Organization.

Manage Service Life Data Using Service Life Books

Service life data included with **BUILDER** allows it to estimate rates of deterioration. Additionally, when combined with current condition, service life data is used to estimate remaining service life for Component-Sections.

The service life data used by **BUILDER** is contained in one or more **service life books**. A default service life book is provided and is all that is required. Optionally, multiple customized service life books can be associated with different Organizations or Sites in the tree; this topic will explain how to do this.

Permissions Note: Creating a service life book or editing a service life book requires Master PlannerA user with Master Planner Role has all the rights of a Work Planners, and can also generate multi-year work plan scenarios, and edit any and all data saved by other users of the program. Master Planner is the highest level of user privileges. permission for the Organization or Site that the service life book applies to. The ability to assign a custom service life book to an Organization or Site depends on your permissions for that Organization or Site.

About Service Life Books

BUILDER comes equipped with data regarding the service life expectancy, in years, of all types of Building Component-Sections. It uses the expected service life data in multiple ways:

- First and foremost, **BUILDER** estimates the remaining service life of a Component-Section on the basis of its life expectancy and condition.
- Second, the expected service life is used in estimating a rate of deterioration in the condition index of a Component-Section when no more than one inspection has been recorded.

More detail about how **BUILDER**'s default service life data was obtained is located below at Addendum: Reference Service Life Data.

Default

The default service life book provided with **BUILDER** is named "Reference." It cannot be edited, and it is associated with the top level of the asset tree. The scope of its data, therefore, is the entire asset tree.

The service life data in **BUILDER**'s Reference set was derived from data collected during many years of research at ERDC-CERLU.S. Army Engineer Research and Development Center, Construction Engineering Research Laboratory, both during the **BUILDER** project and by an earlier study that resulted in the Maintenance Resource Prediction Model (MRPM), which has served as the foundation for a number of facility maintenance models.

You can choose to depend exclusively on the data in Reference, or you can create one or more custom service life books.

Custom

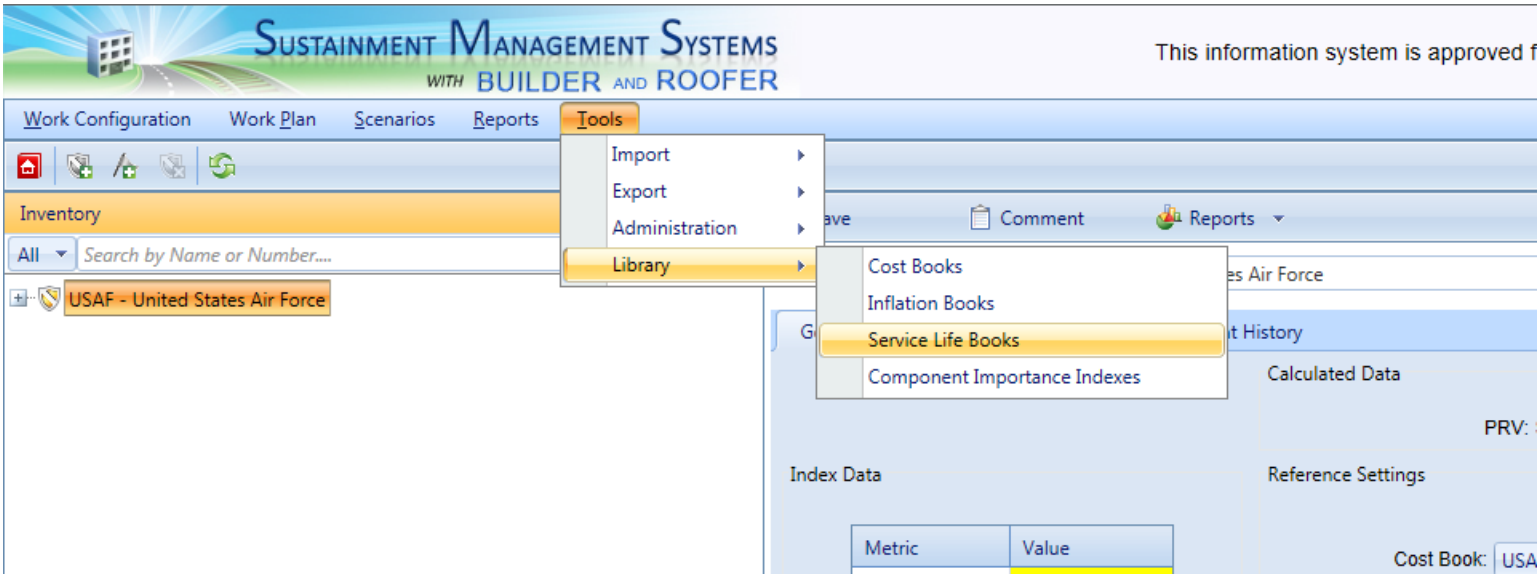
Compared to the Reference data, your experience may be different in terms of how long items last in your Buildings. For example, your Buildings may be in a very wet, windy climate and the roof surfaces may need to be replaced more often; paint may need to be applied more often, and wood windows may need to be replaced sooner than the data indicates. **BUILDER** allows you to create one or more alternate service life books and to edit the service life data to reflect your knowledge and experience with the various Building Components you manage.

To use different service life data than what is provided in the Reference module, you can create one or more new service life books. Another option for using different service life data is to edit an existing service life book (except for Reference).

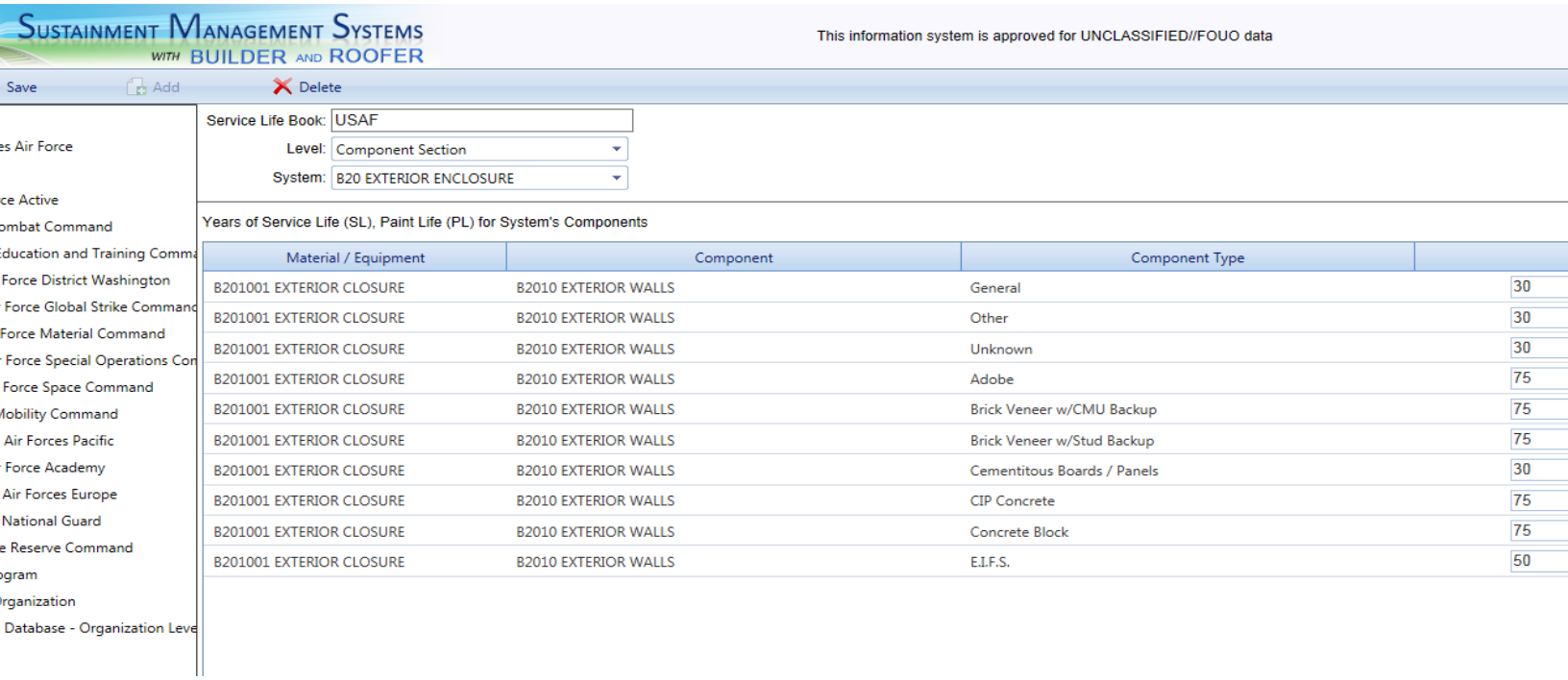
Depending on the scope you designate for a service life book when you assign it to an Organization or Site, you can apply custom values to either all or part of the asset tree.

Creating and Editing Service Life Data

To manage the service life data, select **Tools > Library > Service Life Data** starting at the main menu.



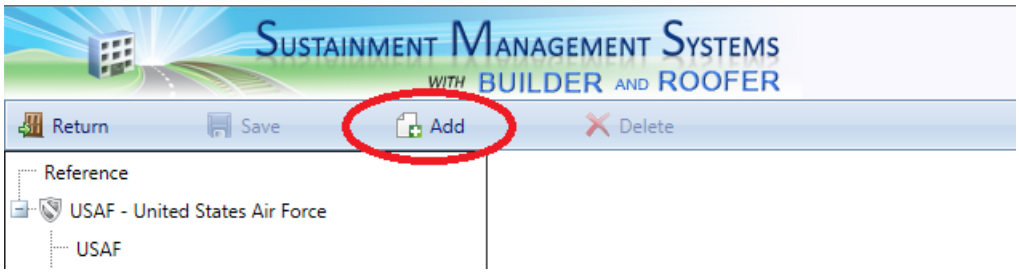
The Service Life Management window will appear when you activate Reference on the left hand side.



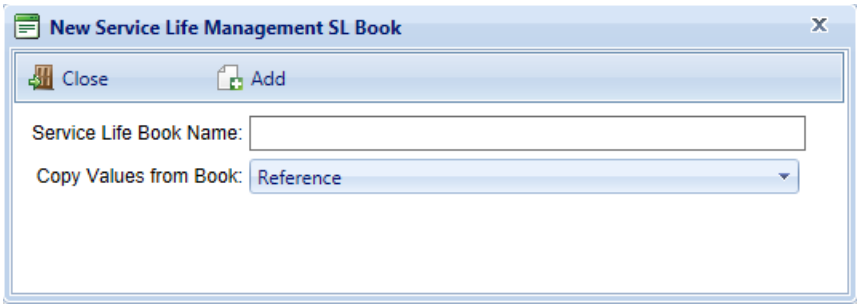
Expand the tree in the left portion of the window to show the available service life data sets. Initially, only one service life data set, Reference, is available. The Reference data set cannot be deleted or edited, and serves as the foundation of all other service life data sets you create. You are free to use the Reference service life data set if you like and not add any data of your own.

Editing Service Life Data

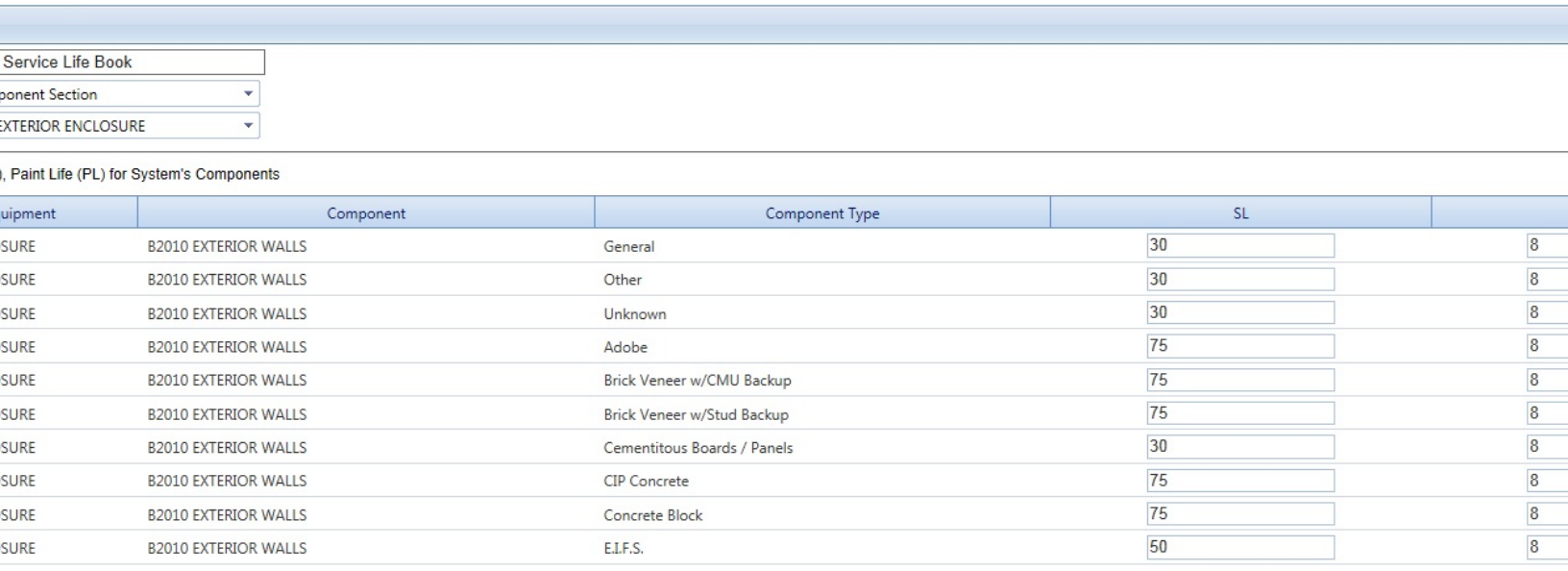
If you would like to edit the service life data, you must create your own data set first. To do so, activate the **Add** button on the toolbar.



The Service Life Management window will appear.



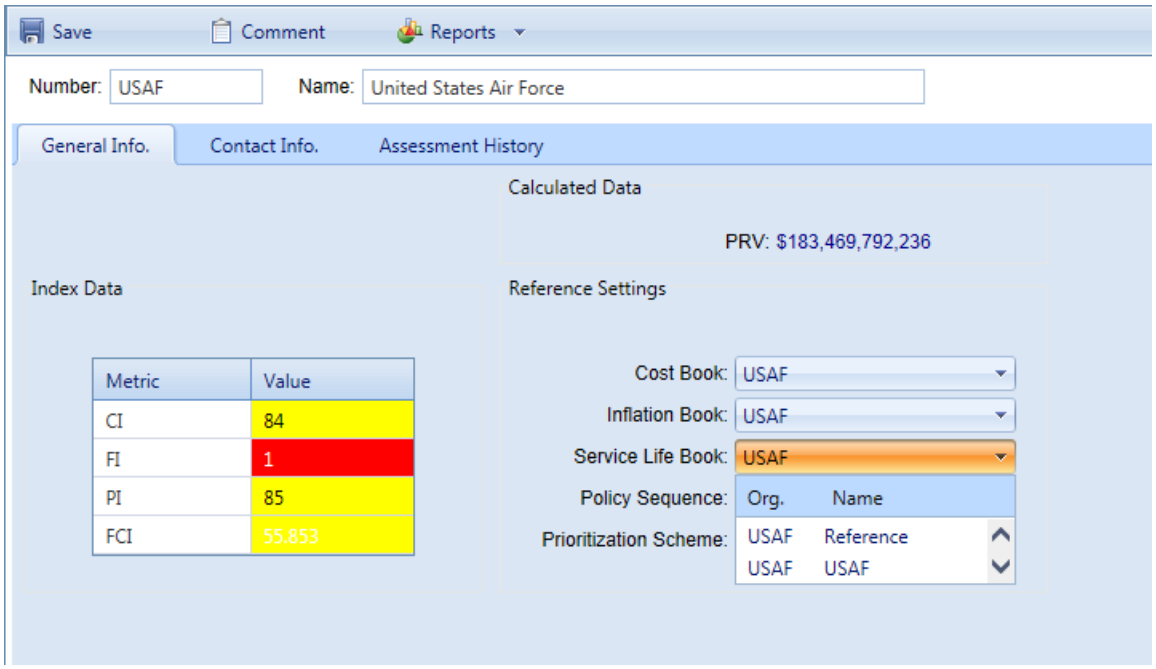
Enter the name of the new service life book, choose the book to copy service life data from, and activate **Add**. You will be returned to the Service Life Management window, the name of the new book will appear in the Service Life Set field, and you will see the data corresponding to the book you copied from. You may now edit the service life (SL) and paint life (PL) for the Sections in the grid, which is filtered by System. To edit different service life sets in your inventory, select them in the tree and their data will appear in the grid.



uipment	Component	Component Type	SL	
SURE	B2010 EXTERIOR WALLS	General	30	8
SURE	B2010 EXTERIOR WALLS	Other	30	8
SURE	B2010 EXTERIOR WALLS	Unknown	30	8
SURE	B2010 EXTERIOR WALLS	Adobe	75	8
SURE	B2010 EXTERIOR WALLS	Brick Veneer w/CMU Backup	75	8
SURE	B2010 EXTERIOR WALLS	Brick Veneer w/Stud Backup	75	8
SURE	B2010 EXTERIOR WALLS	Cementitous Boards / Panels	30	8
SURE	B2010 EXTERIOR WALLS	CIP Concrete	75	8
SURE	B2010 EXTERIOR WALLS	Concrete Block	75	8
SURE	B2010 EXTERIOR WALLS	E.I.F.S.	50	8

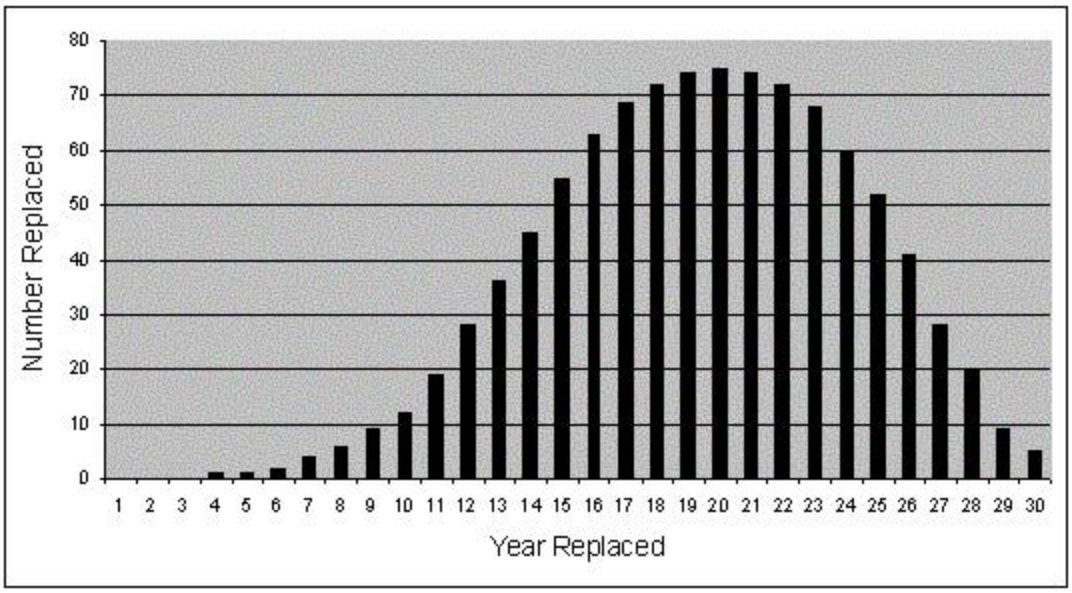
Assigning Service Life Books

You can create multiple Service Life books, and assign separate ones to each Organization or Site. This is done in the Inventory mode by selecting the Organization or Site to assign the Service Life book to, and selecting the Service Life book from the drop down menu in the Reference Settings.



Addendum: Reference Service Life Data

An example of how service life data is gathered and used may be helpful. Suppose the **BUILDER** service life data indicates that a heavy grade carpet under moderate traffic levels has a life expectancy of 20 years. The 20 years is obviously an average of some sort, and you should know that the average is determined more by the experiences and judgment of multiple facility managers than by statistically accurate field data. Gathering statistically valid data is virtually impossible, even for the manufacturer of a specific carpet type, but especially for the **BUILDER** database which must match service life with a very generic Component-Section type. If you installed a heavy grade carpet into a thousand Buildings where the traffic level would be classified as moderate, and you tracked how many years each carpet remained in the Building before it was replaced, the graph of your data might look something like shown below (keep in mind that this is simply a conceptual picture and does not represent actual data.).



You can see from this simple graph that by year 20, the majority of the carpet in the 1000 Buildings has been replaced. You can also see that all along the way, some of the carpet is being replaced sooner than 20 years and some later than 20 years. What makes the difference? Many factors may affect how long a particular carpet may be in use: level of daily and periodic cleaning, climate, actual quality of the carpet and of its installation, mission requirements of the tenant, etc. For those factors which affect the condition of the carpet, **BUILDER** attempts to relate an estimated remaining service life for a specific carpet Component-Section with the condition index of that Section. The **CI**[1] of the carpet at any given age gives a good indication of whether the carpet will last less than or more than the average life span. When you perform the process of rolling up CIs for your inventory, one of the computations in the series is to recompute the remaining service life of the Component-Section based on its current **CI**[2], its rate of deterioration during the time between its last two condition assessments, and the expected service life of the item.

As you can see, the expected service life is a key component in determining two important measures of how well a particular Component-Section is doing. The other key component is the Component-Section's current condition index. Service life is used to determine an expected deterioration rate in estimating current condition in the absence of sequential condition assessment data. It is also used in the models that compute remaining service life on the basis of current **CI**[3] and rate of deterioration.

The service life data in **BUILDER**'s Reference set was derived from data collected during many years of research at ERDC-CERLU.S. Army Engineer Research and Development Center, Construction Engineering Research Laboratory, both during the **BUILDER** project and by an earlier study that resulted in the

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[1]Condition Index

[2]Condition Index

[3]Condition Index

Maintenance Resource Prediction Model (MRPM), which has served as the foundation for a number of facility maintenance models.

Your experience, however, may be different in terms of how long items last in your Buildings. For example, your Buildings may be in a very wet, windy climate and the roof surfaces may need to be replaced more often, paint may need to be applied more often, wood windows may need to be replaced sooner than the data indicates. **BUILDER** allows you to edit the service life data to reflect your knowledge and experience with the various Building Components you manage.

Reports

ROOFER Reports

ROOFER offers a number of standard reports. These reports can be viewed, printed, or exported to electronic files of several formats.

Generate and View a Report

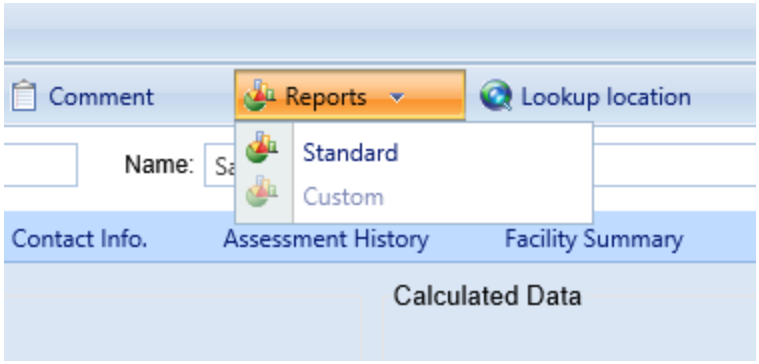
Generate a Report Using the Content Area Menu Method

To use the content area menu method of generating a report on the screen, follow these instructions:

- In the navigation tree, navigate to and select the node for which you want to generate a report.

  Note: The selection of reports will differ depending on the hierarchical level you are calling the report from.

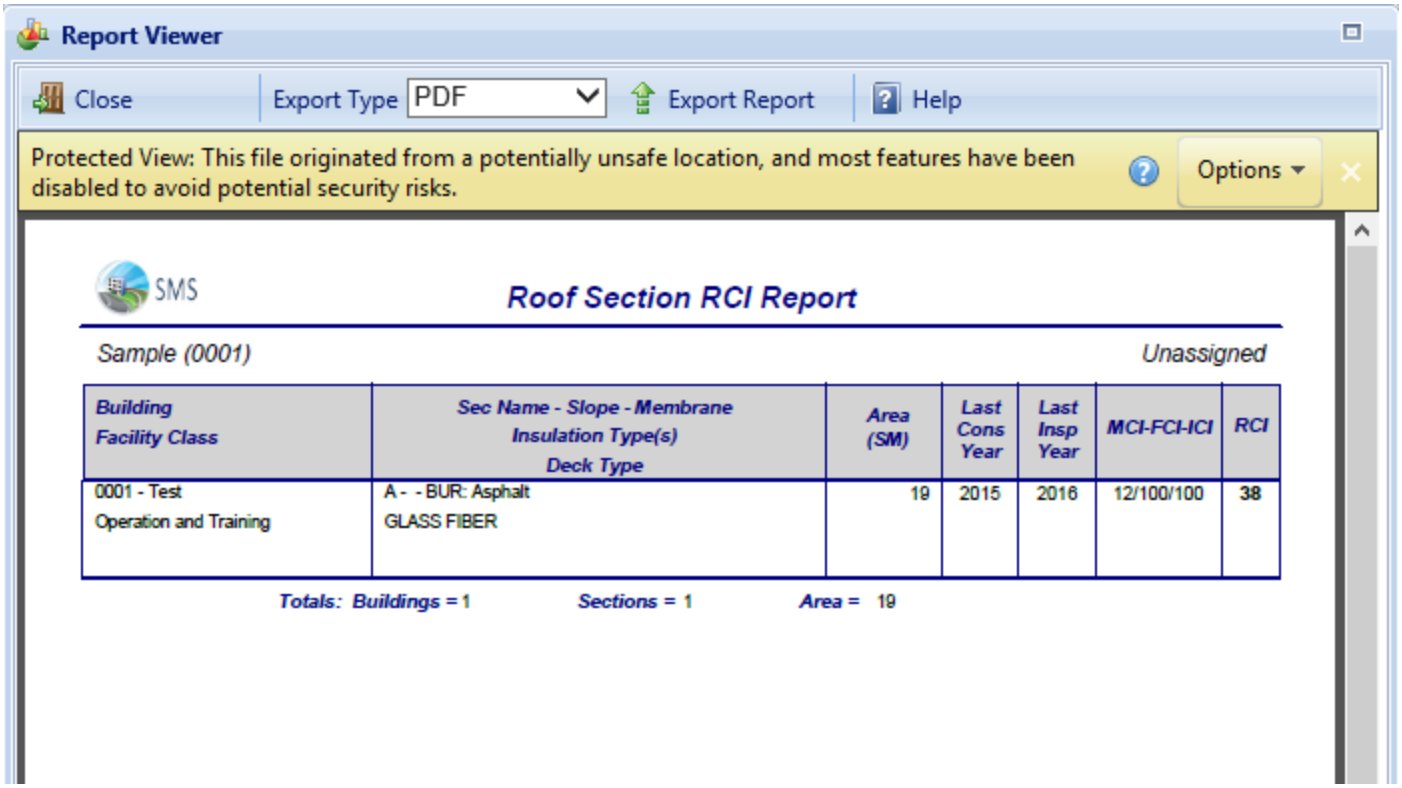
- Activate the Reports button in the local toolbar.



- Select either Standard or Custom (where available) reports. A popup window will appear.
- Activate the dropdown arrow at "Select a Report," and choose the desired report from the dropdown list. (Only reports applicable to the current hierarchical level will appear.)

- After the desired report name appears in the selection bar, activate the View Report button in the tool-bar.

  The selected report will launch in the Report Viewer window. The image below shows a sample report in the Report Viewer:



Main Menu Method

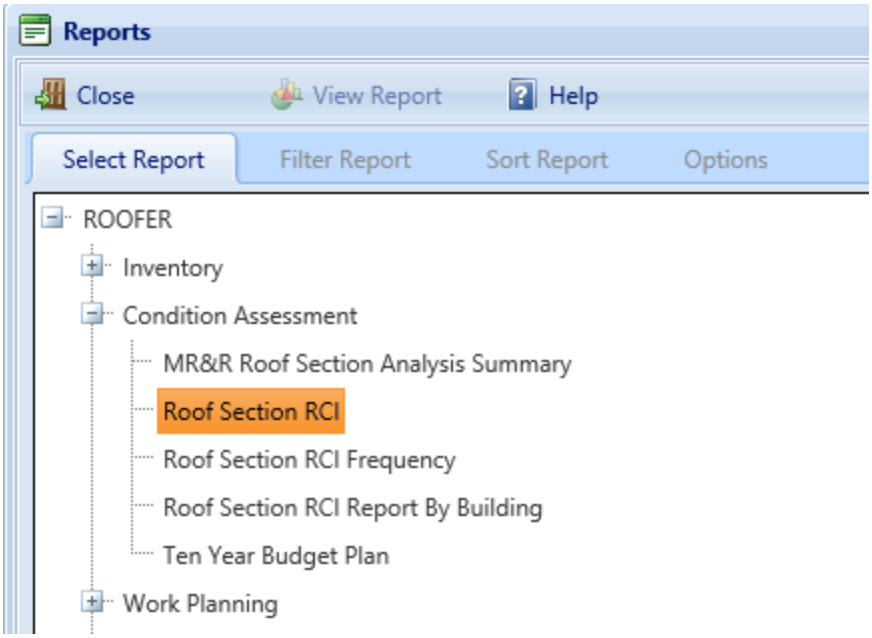
To use the main menu method of generating a report on the screen, follow these instructions:

- In the navigation tree, navigate to and select the node for which you want to generate a report.

  Note: The selection of reports will differ depending on the hierarchical level you are calling the report from.

- Activate the Reports button on the main toolbar and then expand the selection tree in the "Reports" win-dow. .

- Select the desired report.



- Activate the View Report button in the toolbar. After generation, the report should appear in the "Report Viewer" popup window.

How To Export a Standard Report

To export a standard report, first follow the steps above in Generate a Report. Then

- In the Report Viewer toolbar, select the Export Type: PDF, Excel, or Word (RTF).

  CAUTION: Not all reports have been adapted to the Excel format.

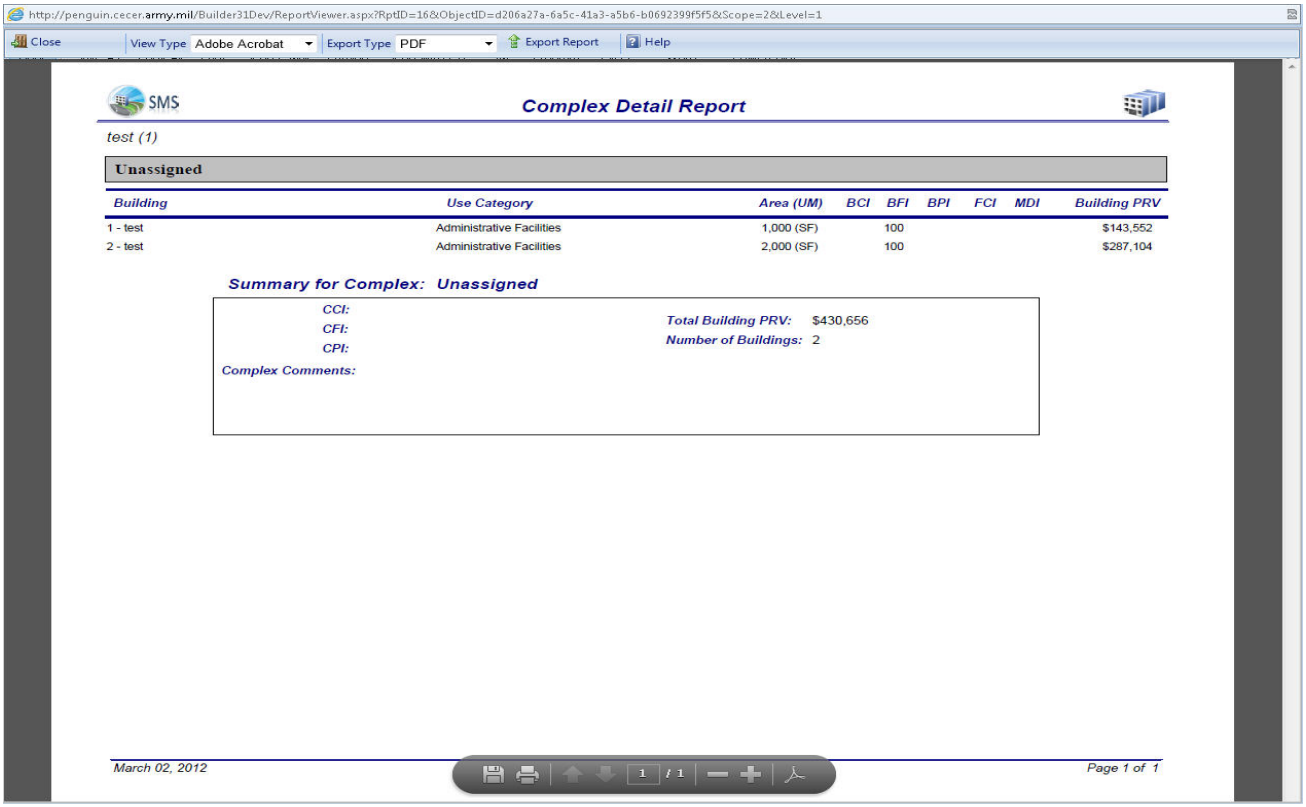
- In the Report Viewer toolbar, activate Export Report.
- At the bottom of the screen, you will be queried whether you want to save the report:

- Activate the down arrow to the right of the Save button.
- Select Save as.
- In the Save As popup window, browse to the desired location where you wish to save the report.
- Name the report in the File name: bar; then activate Save (lower right).
- After the download is complete, the bar at the bottom of the screen with give you the option to open the report you just saved, to open the folder, or view downloads. If none of these are needed, activate the "x" at the right side of the query bar.

- If you want to open the report to view it, select Open. When you close the viewing window, you will be back at the Report Viewer window.
- Activate Close to close the Report Viewer window.

How to Use the Report Viewer

The Report Viewer provided with the SMS offers a number of powerful capabilities for working with BUILDER and ROOFER's standard reports. It allows you to view reports in a variety of formats, to print the reports, and to export the reports to an electronic file. Shown below is the general appearance of the report viewer:



Toolbar Options

- **Close**. Closes the report viewer window.
- **Export Type**. Allows you to select the view type of the report from the dropdown list. You can view it in Adobe Acrobat (PDF), Excel, or Word (RTF)

Note: In BUILDER, one report, "Work Plan for Export to MS Excel," was designed specifically to be used with Microsoft Excel and not to be viewed and printed as it appears in the Report Viewer. By choosing to export this report to Excel, you can format, sort, eliminate columns, add your own columns, etc. as you wish to build your own work plan reports.

- **Export Report**. Initiates report export. See Export a Report for steps involved in exporting a report.
- **Help**. Launches the help topic associated with viewing reports.

Glossary

A

ASTM
American Society for Testing and Materials

C

CI
Condition Index

.csv
Comma-separated values

F

FCI
Facility Condition Index.

FI
Functionality Index.

Fieldset
In a form to be filled out, a fieldset is a grouping of entry fields; it is set apart from the rest of the form by a border. An identifying label is usually displayed at the top of the fieldset.

M

MDI
Mission Dependency Index

P

PI
Performance Index. The Performance Index is a weighted combination of the CI value and the FI value, with the lower of the two values being given two-thirds of the weight and the higher of the two values being given one-third of the weight. If no functional assessment has been performed, the FI is assigned a value of 100.

PRV

Plant Replacement Value. This number will be the aggregate of the PRV of all inventory items contained within the current inventory item.

R

RPUID

Real Property Unique Identifier. This is a facility-level property, described in JIRB 2004-07-19, Department of Defense Real Property Inventory (RPI) Initiative, dated July 19, 2004.

RSL

Remaining service life.

U

UFC

Unified Facilities Criteria

User Menu

The menu farthest right on the Enterprise SMS Web main menu bar, labeled "Hello, {user name}!"