

## Work Management

### Work Planning Overview

With your building inventory, condition assessment, and functionality data in place, you can begin to truly manage the work in your building using BUILDER's powerful tools. Condition assessment data is used to plan maintenance and repair work at the component-section level, and functionality assessment data is used to plan modernization work at the building or functional area level.

Regardless of the type of work planned, a work item record is generated for each work activity that stores basic information about what work is planned, including the type of work, description, estimated cost, funding year, and quantity. As a group, work items can be [viewed in several useful ways](#), such as a list of all past, present, and future work in the building or in a list filtered by year, status, system, component, and/or component-section.

For section-level, condition-related maintenance and repair work, there are three ways to create work items. Each method is briefly described below. Click on the hyperlink of each method for a detailed description.

- [Manually entering records](#)
- [Using the automatic work generator](#)
- [Copying work items from an IMPACT scenario](#)

Functionality related modernization work at the building or functional area level can be entered manually or created by the automatic work generator. Modernization work is not generated in IMPACT scenarios because FI's are step functions over time, unlike the smooth, continuous functions seen in the condition indices. Because the FI's are not smooth, continuous functions, future FI's 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.

### Manually Entering Work Items

This 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. Aside from 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.

You might also choose to enter work items manually as a basic business practice. Your procedure might follow these steps:

1. Review [BUILDER reports](#) or [create specific GIS themes](#) regarding remaining service life, condition index (CI) trends, functionality index (FI) trends, and performance index (PI) trends to identify possible work requirements.
2. 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.).
3. Compile a list for approval by your chain of command.
  4. Enter each work item as it clears the process.

### **Using the Automatic Work Generator**

BUILDER offers you an [automated process](#) of creating work items for your inventory. This requires you to specifying [condition and functionality standards and policies, along with a policy sequence](#) that describe your decision process in identifying possible work items in your building. Standards set threshold values for key work indicators; CI and remaining service life for condition, and FI and PI for functionality. Policies link different standards to the various component-sections (for condition) and functional areas and buildings (for functionality). The policy sequence pulls the standards and policies together in a way that an automated process can link each component-section, functional area, and building with its respective standard. By comparing the component-section's, functional area's and building's properties with their threshold values in its standard, BUILDER is able to create work items for every component-section, functional area, and building not meeting its standard.

### **Copying Work Items from an IMPACT Scenario**

BUILDER 3.0 offers the use of an [IMPACT scenario](#), or a simulation model integrated with BUILDER's business rules and databases, to create condition-related work items for your inventory. IMPACT 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 your [prioritization scheme](#), and funding work items by priority ranking until all [funding levels](#) have been exhausted. When the scenario is complete, the scenario 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.

As discussed above, IMPACT does not simulate or forecast modernization work at the building or functional area level.

### **Standards, Policies, and Policy Sequences**

#### Standards, Policies, and Policy Sequences Overview

With your building inventory, condition assessment, and functionality data in place, you can begin to truly manage the work in your building using BUILDER's powerful tools. Condition assessment data is used to plan maintenance and repair work at the component-section level, and functionality assessment data is used to plan modernization work at the building and functional area level. Before the assessment data can be used in an [automated process](#) to determine the work requirements in your inventory, both condition and functionality standards, policies, and policy sequences must be created.

### **Condition Standards, Policies, and Policy Sequences**

The condition index (CI) and remaining service life (RSL) properties of a component-section are excellent metrics to consider when planning maintenance, repair, and replacement projects. This section presents concepts for using the CI and RSL measures to help automate the process of identifying which component-sections in your inventory need attention.

Intuitively, when the CI value is high, no work action needs to be taken. When the CI value is low, repair or replacement is necessary. Somewhere between the high and low values of the CI range is a value of the CI that is a threshold, or a point at which your decision would change from no activity to initiating a work item. This threshold value might be the same for all component-sections or it might vary depending upon how critical a particular section is to the overall building. For example a CI of 80 might be the threshold for an air handling unit, while a CI of 65 might be the threshold for an interior door.

Additionally, these thresholds may vary from building to building. A headquarters building might have a threshold CI of 85 for interior doors, while a warehouse might have a threshold CI of 65 for interior doors. Similarly, there is a threshold value for determining whether to repair or replace a section. This threshold value is a ratio of the repair cost to the replacement cost (in BUILDER it is assumed that the cost of repair is variable, increasing as the CI decreases). When the ratio is below the threshold the section will be repaired, and when the ratio is above the threshold the section will be replaced.

When you establish a set of threshold values like those described above, an automated process can use these thresholds to search the entire inventory and identify sections whose metrics indicate where work should be initiated. With this BUILDER-generated list, you can anticipate the location of condition deficiencies and plan to correct them before failure occurs. If condition assessments are completed regularly, the CI trend analysis can estimate when the threshold CI will be reached, several years before it actually happens. This is valuable information for preparing outyear budgets. In addition, because the search of your inventory is exhaustive, no potential problems "fall through the cracks." All of this supports a very proactive management strategy.

The concepts presented in the preceding paragraphs can be implemented using BUILDER's [standards](#), [policies](#), and [policy sequences](#). Essentially, condition standards are sets of threshold values that determine whether or not work is needed when applied to a particular component-section. Condition policies are rules that define by property which component-sections will use which condition standards. When a single component-section is covered by more than one condition policy, a policy sequence establishes the order of precedence for applying policies so that only one condition standard is chosen for each component-section.

Here is a simple example of how condition standards, condition policies, and policy sequences are used to assign thresholds to every component-section:

- Suppose that you have decided that your inventory contains certain sections that you want to maintain at a CI of 80 or above, or that repair is required when the CI falls below 80. Also, you have decided that if the cost of repairing such a section is more than 70% of its replacement cost, then you will replace it rather than repair it. These decisions are represented in a condition

- standard - a set of threshold values. You [create that condition standard](#) and call it "High." Your inventory also contains some sections for which 60 is to be the threshold CI. You create that condition standard and call it "Low."
- To apply these condition standards, you must [create condition policies](#) that link them to specific component-sections. You may 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. You might also 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. Note that a policy may not specify standards for every category, such as in the example of the HVAC condition policy which does nothing to determine condition standards for the other systems in a building.
  - If you want to apply only these two condition policies, several problems arise. You must [create a policy sequence](#) to take care of the problems. First, the two policies mention nothing about the condition standards for training facilities other than the HVAC system. The overall process must be able to determine a condition standard for every component-section. To address this problem, a policy sequence has a default condition standard that is used if none of the selected condition policies apply. The default condition standard is one of the standards you have created, and you designate it as the default.

Second, both condition policies apply to HVAC systems in warehouses. The first sets the condition standard at "Low" and the second sets it at "High." The overall process must be able to select one and only one condition standard for each component-section. To address this problem, the policy sequence lists, in the order of their application, all of the condition policies that are to be used. If the HVAC policy is listed after the warehouse policy, then the HVAC policy prevails and the condition standard will be "High." If the warehouse policy is listed after the HVAC policy, then the warehouse policy prevails and the condition standard will be "Low." That is, the last policy in the list governs the applicable component-sections.

### **Functionality Standards, Policies, and Policy Sequences**

The functionality index (FI) of buildings (BFI), functional areas (FAFI) and of the individual functionality issues are excellent metrics to consider when planning modernization projects. Additionally, the Building Performance Index (BPI) property is an excellent metric to consider when planning for building reconstruction. This section presents concepts for using the FI measures to identify which buildings and functional areas in your inventory need modernization and concepts for using the BPI measure to identify which buildings in your inventory need to be reconstructed.

Intuitively, when the FI's and BPI values are high, no modernization or reconstruction is necessary. When any of these values are low, modernization or reconstruction is necessary. Somewhere between the high and low values of each measure is a value that is a threshold, or a point at which your decision would change from no activity to initiating a work item. This threshold value might be the same for the FI's and BPI, or it could be different for each. For example, 70 might be the threshold value for the BFI and FAFI, but 50 might be the threshold value for the

individual functionality issues and the BPI in the same building. Additionally, these thresholds may vary from building to building. A headquarters building might have a threshold BFI of 80, while a warehouse might have a threshold BFI of 60.

When you establish a set of threshold values like those described above, an [automated process](#) can use these thresholds to search the entire inventory and identify buildings and functional areas whose metrics indicate where modernization or entire building reconstruction should be initiated. With this BUILDER-generated list, you can pinpoint the location of functionality and performance deficiencies and plan to correct them. In addition, because the search of your inventory is exhaustive, no potential problems "fall through the cracks." All of this supports a very proactive management strategy.

The concepts presented in the preceding paragraphs can be implemented using BUILDER's [standards](#), [policies](#), and [policy sequences](#). Essentially, functionality standards are sets of threshold values that determine whether or not work is needed when applied to a particular building and/or functional area. Functionality policies are rules that define by property which buildings and functional areas will use which functionality standards. When a single building or functional area is covered by more than one functionality policy, a policy sequence establishes the order of precedence for applying policies so that only one functionality standard is chosen for each building.

Here is a simple example of how functionality standards, functionality policies, and policy sequences are used to assign thresholds to every building:

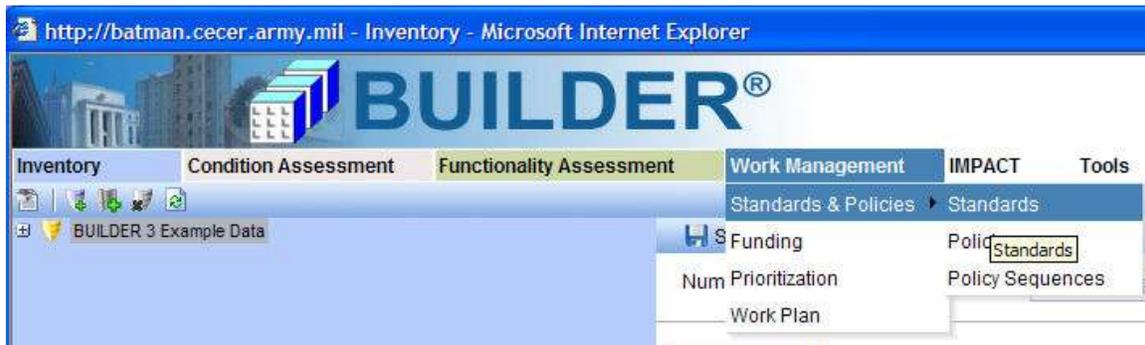
- Suppose that you have decided that your inventory contains certain buildings (with functional areas) that you want to maintain at a BFI, FAFI, and issue FI's of 80 or above, or that modernization is required when any of the FI's fall below 80. Also, you have decided that if the BPI falls below 70, then reconstruction of the building will be required. These decisions are represented in a functionality standard - a set of threshold values. You [create that functionality standard](#) and call it "High". Your inventory also contains some buildings for which 60 is to be the threshold for all the FI's and the BPI. You create that functionality standard and call it "Low".
- To apply these functionality standards, you must [create functionality policies](#) that link them to specific buildings and/or functional areas. You may want administrative buildings (and all functional areas in those buildings) to be maintained under the "High" functionality standard and housing buildings (and all functional areas in those buildings) to be maintained under the "Low" functionality standard. You would create a functionality policy that links the respective standard with the appropriate buildings. You might also want all the display functional areas (in all buildings) to be maintained under the "High" functionality standard. You would create another functionality policy that links the "High" functionality standard with display functional areas. Note that a policy may not specify standards for every category, such as in the example of the display area policy which does nothing to determine functionality standards for the functional areas other than display areas in all buildings.
- If you want to apply only these two functionality policies, several problems arise. You must [create a policy sequence](#) to take care of the problems. First, the two policies mention nothing about the functionality standards for non-

display functional areas in buildings that are not administration or housing. The overall process must be able to determine a functionality standard for every functional area in every building. To address this problem, a policy sequence has a default functionality standard that is used if none of the selected functionality policies apply. The default functionality standard is one of the standards you have created, and you designate it as the default.

Second, both functionality policies apply to display areas in administration and housing buildings. The first sets the functionality standard at "Low" and the second sets it at "High" for housing buildings. The overall process must be able to select one and only one functionality standard for each building. To address this problem, the policy sequence lists, in the order of their application, all of the functionality policies that are to be used. If the housing policy is listed after the display area policy, then the housing policy prevails and the functionality standard will be "Low." If the display area policy is listed after the housing policy, then the display area policy prevails and the functionality standard will be "High." That is, the last policy in the list governs the applicable functional areas and/or buildings.

### Adding and Editing Standards

To add or edit condition or functionality standards, select *Work Planning* -> *Standards and Policies* -> *Standards* from the navigation menu.



The Standards window will appear.



By expanding the tree at the site (or group) level, folders for condition and functionality standards will appear. From these folders, new condition or

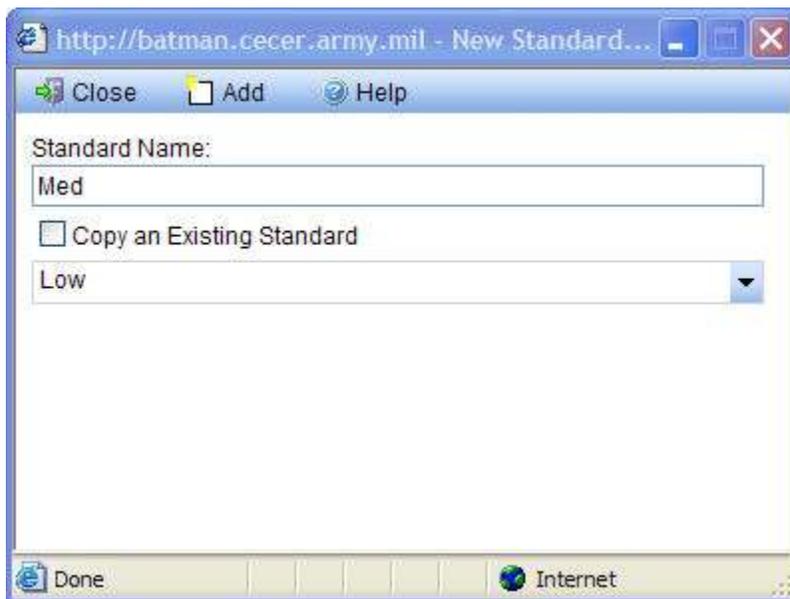
functionality standards can be added and the existing standards can be viewed and edited.

### Toolbar

- CLOSE. Use this button to close the Standards window.
- SAVE. Use this button to save changes made to the standards.
- ADD. Use this button to add a new standard.
- DELETE. Use this button to delete the selected standard.
- HELP. Use this button to launch the help topic associated with standards.

### Adding Condition Standards

To add a condition standard, select the condition standards folder on the tree and click the ADD button in the toolbar. Note that the level on the tree where condition standards are selected and added denotes the level in the inventory where those standards can be applied. The New Standard window will appear.



Enter the new standard's name, mark the COPY AN EXISTING STANDARD button and select an existing standard to copy if you want to copy data from an existing standard to the new one, and click the ADD button in the toolbar. The standards window will open as shown below and data can be input for the standard on the work triggers and inspections scheduling tabs (described below).



## 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.

- **Name.** Enter the condition standard's name, which must be unique and is limited to 50 alphanumeric characters.
- **Minimum CI for repair:** Enter the threshold value for condition index. For sections with a CI above this value, no work item is triggered. For sections with a CI below this value, a work item is triggered.
- **Maximum RSL for replacement:** Enter the threshold value for remaining service life. For sections with a RSL 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 Scheduling Tab

On the Inspection Scheduling tab, additional data can be input to determine when condition assessments should be performed and the type of condition assessment to perform by using the [Knowledge-Based Inspection Scheduling](#) tool.

Standard Name: Med

Work Triggers | Inspection Triggers

Condition Trends

	CI Lower	Max Insp Interval	# Insp's in Zone	Degradation Factor
Zone 1:	90	5	2	2
Zone 2:	80	3	2	2
Zone 3:	65	2	1	1
Zone 4:	50	5	2	2
Zone 5:	0	7		

CI

Zone 1: Preventative Maintenance

Zone 2: Corrective Maintenance

Zone 3: Corrective Work

Zone 4: Missed Opportunity

Zone 5: Failure

Time

The data on this tab should be input for each of the condition zones (see the [Condition Assessment Manual](#) for explanation of each condition zone) and includes:

- **CI Lower.** Enter the lower bound of the CI 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.** 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.

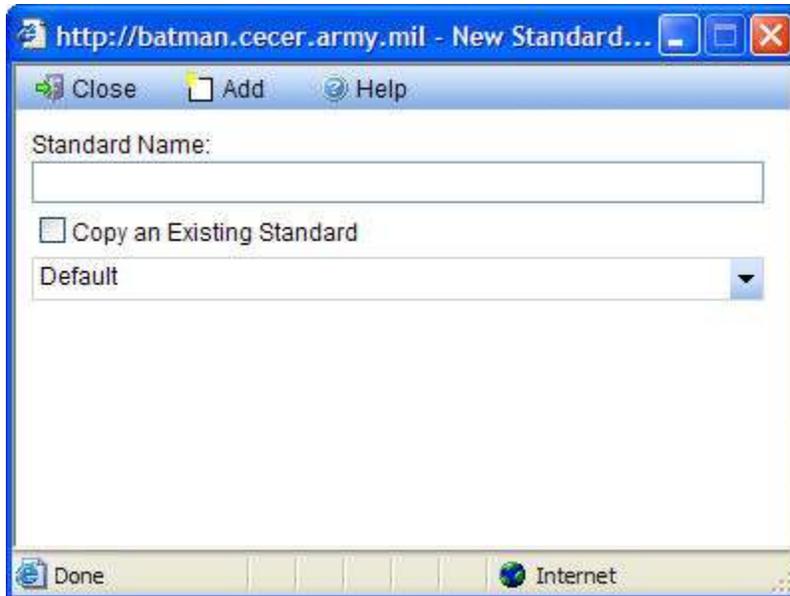
After adding data for a condition standard, make sure to click the SAVE button in the toolbar to save the changes to the condition standard.

### Editing a Condition Standard

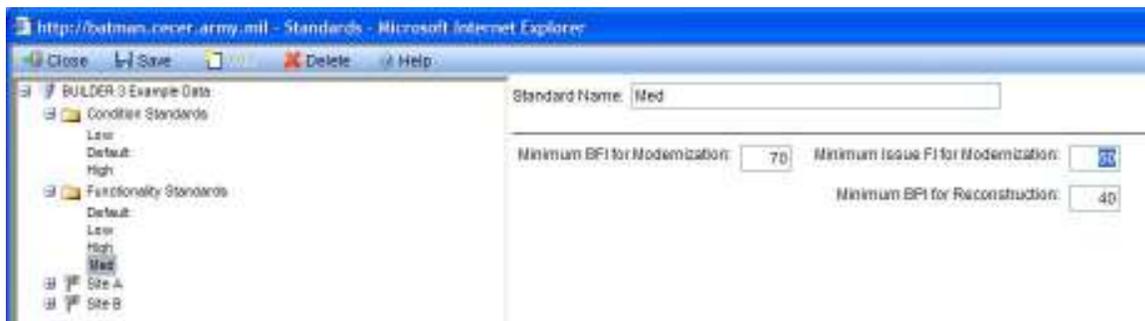
After a condition standard has been added, its data on the work triggers or inspection scheduling tabs can be edited by selecting the standard on the tree. Make sure to click the SAVE button in the toolbar to save any changes made to the condition standard.

## Adding Functionality Standards

To add a functionality standard, select the functionality standards folder on the tree and click the ADD button in the toolbar. The New Standard window will appear.



Enter the standard's name, mark the COPY AN EXISTING STANDARD button and select an existing standard to copy if you want to copy data from an existing standard to the new one, and click the ADD button in the toolbar. The standards window will appear as shown below and data can be input for the standard (described below).



## Required Data

For each functionality standard, you must enter a set of work triggers, or thresholds, to initiate modernization work in your building.

- **Name.** Enter the functionality standard's name, which must be unique and is limited to 50 alphanumeric characters.

- **Minimum BFI for Modernization.** Enter the threshold value for the BFI. For buildings with a BFI above this value, no modernization work is triggered. For buildings with a BFI below this value, modernization work is triggered.
- **Minimum Issue FI for Modernization.** Enter the threshold value for the FI's for each individual functionality issue. For issues in the building with an FI above this value, no modernization work is triggered to correct the issue. For issues in the building with an FI below this value, modernization work is triggered.
- **Minimum BPI for Reconstruction.** Enter the threshold value for the BPI. For buildings with a BPI above this value, no work is triggered. For buildings with a BPI below this value, the building will be scheduled for demolition and reconstruction.

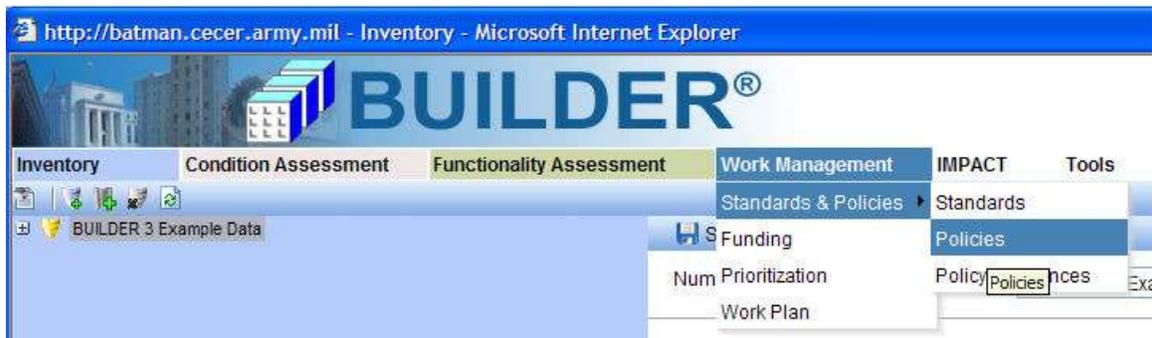
After adding or editing data for a functionality standard, click the SAVE button in the toolbar to save the changes to the functionality standard.

### Editing a Functionality Standard

After a functionality standard has been added, its data can be edited by selecting the standard on the tree. Make sure to click the SAVE button in the toolbar to save changes made to the functionality standard.

### Adding and Editing Policies

To add or edit policies, select *Work Management -> Standards and Policies -> Policies* from the navigation menu.



The Policies window will appear.



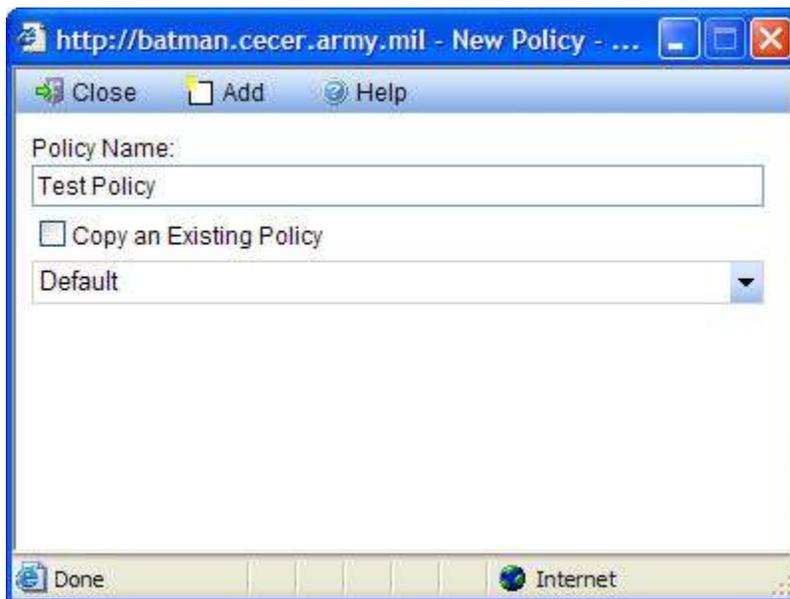
By expanding the tree at the site (or group) level, folders for condition and functionality policies will appear. From these folders, new condition or functionality policies can be added and the existing standards can be viewed and edited.

### Toolbar

- CLOSE. Use this button to close the Policies window.
- SAVE. Use this button to save changes you have made to the policies.
- NEW. Use this button to add a new policy.
- DELETE. Use this button to delete the selected policy.
- HELP. Use this button to launch the help topic associated with policies.

### Adding Condition Policies

To add a condition policy, select the condition policies folder on the tree and click the ADD button in the toolbar. Note that the level selected when adding a policy denotes the level at which that policy can be applied. The New Policy window will appear.



Enter the policy's name, mark the COPY AN EXISTING POLICY button and select an existing policy to copy if you want to copy data from an existing policy to the new one, and click the ADD button in the toolbar. The policy window will open as shown below and data can be input for the policy (described below).

Attributes Used to Define Policy

First Attribute:  Third Attribute:

Second Attribute:  Fourth Attribute:

Policy Name:

Select Standards for all attribute combinations that apply to this policy:

System	Standard
Conveying	
Electrical	High (H)
Exterior Circulation	Low (L)
Exterior Closure	
Fire Suppression	
HVAC	High (H)
Interior Construction	Low (L)
Plumbing	
Roofing	High (H)
Site	Low (L)
Specialties	
Structural	

## Required Data

When you add a new condition policy, you must enter the following data:

- **Name.** Enter the policy's name, which must be unique and is limited to 50 alphanumeric characters.
- **Attributes Used to Define the Policy.** Select between one and four attributes of component-sections to define the condition policy. These are selected consecutively as First, Second, Third, and Fourth Attribute. These attributes are simply field properties in the location/complex/building/system/component/section hierarchy. The grid shown at the bottom of the window will not be visible until the attribute(s) have been selected.
- **Select Standards for all attribute combinations that apply to this policy.** 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. The combinations that do not have a selected condition standard are simply not covered by the condition policy.

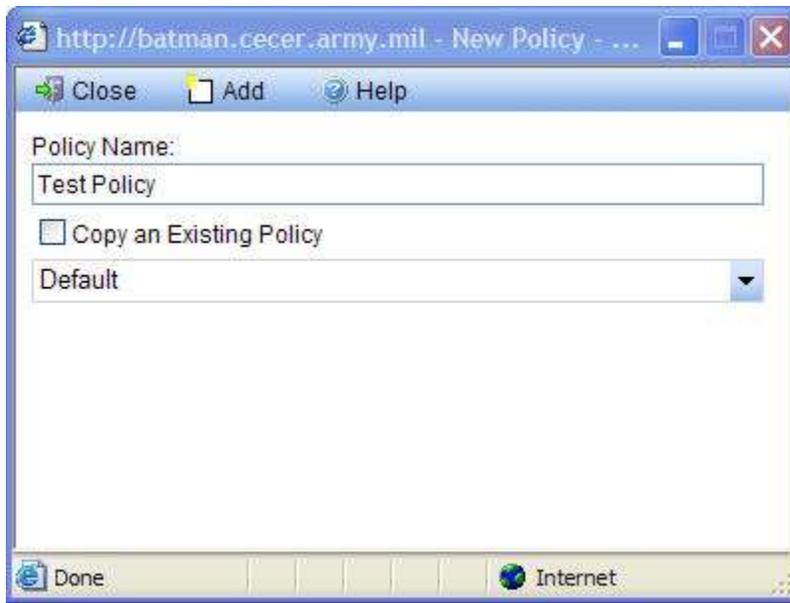
After adding a condition policy, make sure to click the SAVE button in the toolbar to save the changes to the condition policy.

## Editing a Condition Policy

After a condition policy has been added, its data can be edited by selecting the policy on the tree. Make sure to click the SAVE button in the toolbar to save changes made to the condition policy.

## Adding a Functionality Policy

To add a functionality policy, select the functionality policies folder on the tree and click the ADD button in the toolbar. The New Policy window will appear.



Enter the policy's name, mark the COPY AN EXISTING POLICY button and select an existing policy to copy if you want to copy data from an existing policy to the new one, and click the ADD button in the toolbar. The policy window will open as shown below and data can be input for the policy (described below).

Attributes Used to Define Policy

First Attribute: System Third Attribute:

Second Attribute:  Fourth Attribute:

Policy Name: Test Policy

Select Standards for all attribute combinations that apply to this policy.

System	Standard
Conveying	
Electrical	High (1)
Exterior Circulation	Low (2)
Exterior Closure	
Fire Suppression	
HVAC	High (1)
Interior Construction	Low (2)
Plumbing	
Roofing	High (1)
Site	Low (2)
Specialties	
Structural	

## Required Data

When you add a new functionality policy, you must enter the following data:

- **Name.** Enter the policy's name, which must be unique and is limited to 50 alphanumeric characters.
- **Attributes Used to Define the Policy.** Select between one and four attributes of component-sections to define the functionality policy. These are selected consecutively as First, Second, Third, and Fourth Attribute. These attributes are simply building and functional area field properties. The grid shown at the bottom of the window will not be visible until the attribute(s) have been selected.
- **Select Standards for all attribute combinations that apply to this policy.** Assign functionality standards to the various combinations of values of these field properties, so that when a building or functional area 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. The combinations that do not have a selected functionality standard are simply not covered by the functionality policy.

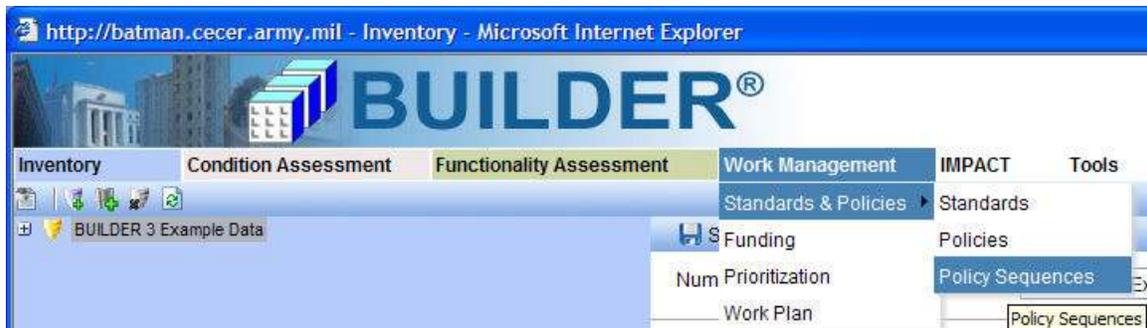
After adding a functionality policy, make sure to click the SAVE button in the toolbar to save the changes to the functionality policy.

### Editing a Functionality Policy

After a functionality policy has been added, its data can be edited by selecting the policy on the tree. Make sure to click the SAVE button in the toolbar to save changes made to the functionality policy.

### Adding and Editing Policy Sequences

To add or edit policy sequences, select *Work Planning -> Standards and Policies -> Policy Sequences* from the navigation menu.



The Policy Sequence window will appear.



To create a new policy sequence, click the ADD button in the toolbar. If you wish to edit a current policy sequence, select the policy sequence you wish to edit from the tree on the left side of the screen.

### Toolbar

- **CLOSE.** Use this button to close the Policy Sequences window.
- **SAVE.** Use this button to save changes you have made to the policy sequences.
- **NEW.** Use this button to add a new policy sequence.
- **DELETE.** Use this button to delete the policy selected sequence.
- **HELP.** Use this button to launch the help file associated with policy sequences.

The screenshot shows the Policy Sequences window with the following configuration:

- Policy Sequence Name: Default
- Default Condition Standard: Default
- Default Functionality Standard: Default

Below the configuration are two tables:

**Available Policies:**

Org Code	Name

**Selected Policies:**

Org Code	Name
BUILDER 3 Example Data	Default
BUILDER 3 Example Data	Default

### Required Information

When you add a new policy sequence or edit an existing policy sequence, you must enter the following data:

- **Name.** Enter the policy sequence's name, which 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 you wish to add to the policy sequence and use the arrow buttons to move them to the Selected Policies list. To change the order of application of a policy in the Selected Policies list, select the policy and use the up and down arrow buttons to move it in the list. Arrange the list so that each succeeding policy in the list overwrites earlier policies in the list. That is, the last policy in the Selected Policy list governs the applicable component-sections, functional areas, and buildings. You may choose to have no selected policies at all, in which case all inventory will use the default standard.

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.

### Work Items

## Viewing 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 work plan, select *Work Planning* -> *Work Plan* from the navigation menu.



The Work Items window will appear.

Name	Description	Type	Status	Time
1000 - Structure 01	Repair Foundation Wall/Grade Wall Concrete	\$100	Budgeted	71.00
1011 - Remodel/Alter/Equip	Replace Roof Surface Roof & Metal Standing Seam	\$230,000	Budgeted	71.00
1017 - Repair/Repaint	Repair Heating Link/Plant Boiler (Black) Gas/Oil (Green) 200	\$25,000	Budgeted	71.00
1017 - Repair/Repaint	Repair Air Handling and Fan Coil (Black) -1, Top	\$15,000	Budgeted	71.00
1011 - Top Station	Repair Heating Link/Plant Boiler (Black) Gas/Oil (Red Green)	\$11,000	Budgeted	71.00
1017 - Remodel/Alter	Repair Generator (Set Fuel Oil)	\$40,000	Budgeted	71.00

## Toolbar

- CLOSE. Use this button to close the Work Item screen.
- 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 [Using the Report Viewer](#).
- GENERATE ITEMS. Use this button to [automatically generate work items](#).
- PRIORITIZE. Use this button to [prioritize the work items](#) for a work plan.
- FUND ITEMS. Use this button to [allocate funding to the work items](#) in a work plan.
- RANKINGS. Use this button to [view the rankings of the work items](#) for a work plan.
- COPY SCENARIO. Use this button to [copy the results of an IMPACT scenario](#) to the current work plan.

## Changing the Work Items View

Initially, the work plan for the current fiscal year for the entire inventory is shown in the Work Items window. To view the work plan for a particular inventory level, [navigate the tree](#) on 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 are able to sort it using the column headings. Click on the column you wish to sort by once to sort in alphabetically/ascending numerical order. Click on the column a second time if you wish to sort in reverse-alphabetic order/descending numerical order. Initially, the work plan is sorted by name in ascending numerical order.

### Viewing Individual Work Item Details

To view the individual work item details, click on the Facility hyperlink associated with a given work item.

Name	Description	Cost	Status	Score	Date Completed
<a href="#">1004 - Quarters Q</a>	Repair Foundation Wall/Grade Wall Concrete	\$430	Budgeted	73.00	
<a href="#">4911 - Consolidated Ckts</a>	Replace Roof Surface Roof A Metal Standing-Seam	\$146,000	Budgeted	73.00	
<a href="#">4571 - Dining Hall</a>	Repair Heating Unit/Plant Boiler (Steel) Gas/Oil (Steam) 308	\$26,000	Budgeted	73.00	
<a href="#">4377 - Senior NCO Barracks</a>	Repair Air Handling Unit Fan Coil (dual) +/- 1 Ton	\$16,000	Budgeted	73.00	
<a href="#">1621 - Fire Station</a>	Repair Heating Unit/Plant Boiler (Steel) Gas/Oil (Hot Water)	\$11,500	Budgeted	73.00	
<a href="#">1617 - Security Office</a>	Repair Generator Set Fuel Oil	\$10,500	Budgeted	73.00	
<a href="#">4009 - Fitness Center</a>	Repair Distribution Electrical Category 6	\$10,500	Budgeted	73.00	
<a href="#">4371 - Dining Hall</a>	Repair Roof Surface Roof A Metal Standing-Seam	\$9,900	Budgeted	73.00	

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

To add a work item to the current work plan, click the ADD ITEM button. Work items can be added at the [section-level](#), [building-level](#), or as a [project](#). Additionally, work items can be added using [BUILDER's automatic work generator](#) or [copying the results of an IMPACT scenario](#). To delete a work item from the current work plan, select the work item on the grid and click the DELETE ITEM button.

### Exporting the Work Plan to Excel

The current work plan can be exported to an Microsoft Excel spreadsheet using the EXPORT TO EXCEL button. After clicking this button, you must choose to either open or save the Excel spreadsheet. If you choose to save, you must specify the location and name to save the exported spreadsheet.

### Creating and Editing a Section-Level Work Item

A section-level work item is an individual record of maintenance, repair, or revitalization work on a component-section in your inventory. The information stored with the work item is what was or is to be done, when it was or is to be done, its cost, its funding source, and its importance relative to the other work items vying for the same resources at the same time.

In BUILDER, section-level work items can be created three ways, each of which is discussed in detail further below.

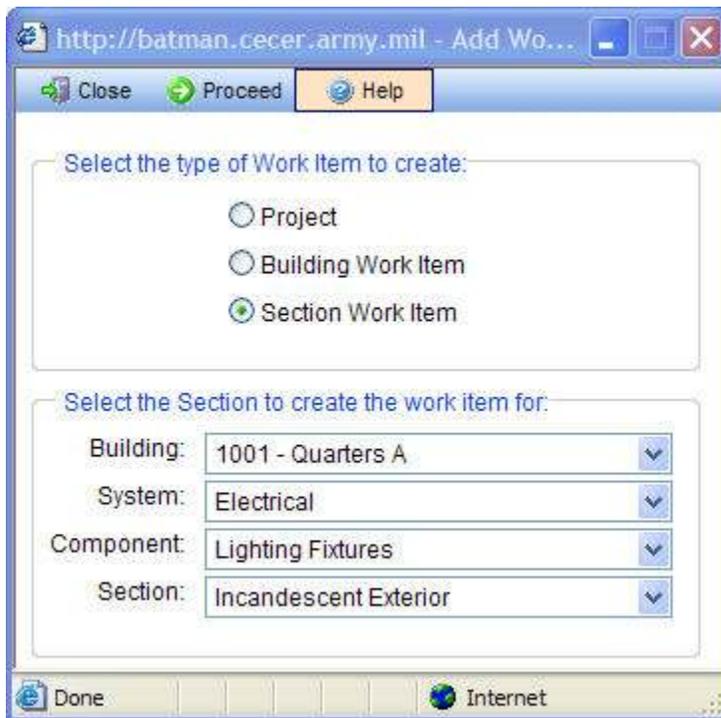
- **Manual Input** - Allows you to create individual work items manually from the Work Items window.
- **BUILDER Generated Work Items** - Allows you to use the automated work generation feature in BUILDER to create an entire work plan if you have defined [standards, policies, and policy sequences](#).
- **IMPACT Scenario Generated Work Items**- Allows you to [copy the results of IMPACT scenario](#) and create a multi-year work plan.

### Creating a Work Item Manually

To create a section-level work item manually, click the ADD ITEM button on the Work Item screen.



The New Work Item window will appear.



Select the Section Work Item option, along with the building, system, component, and section for the work item, and click the PROCEED button. The Component Section Work Item window will appear.

Component-Section Work Item - Microsoft Internet Explorer

Close Save Help

Section Description: Interior Wall Finish/Covering - Wood Paneling      Quantity: 2,210 SF

Details      Cost Analysis      Calculate

\*Projected CI: 63      \*Projected RSL: 4

Current Type: Wood Paneling

Description: Repair Interior Wall Finish/Covering Wood Paneling

Work Request ID:      Status: Awaiting Funds

Funding FY: 2007       Must complete as planned

Work FY: 2007      Fund Source:      Estimated Cost: \$2,750

Score: 56.000       Override automatic cost estimate

Work Code: Sustainment      Modernization Year:      Actual Cost: \$2,750

Activity: Repair      Quantity: 2,210 SF      CostBook: Reference

**ROI Information**

Return: \$2,800      ROI: 102%

\* Projected values are estimated based on the Work FY.

On this screen, the following data for the section-level work item is displayed and can be edited:

- **Section Description** (Read-Only). Displays the description component-section of the work item.
- **Quantity** (Read-Only). Displays the actual inventory quantity for this component-section.
- **Projected CI** (Read-Only). Displays the projected Condition Index (CI) for the section in the funding FY. If the funding FY changes, BUILDER will recalculate the projected CI for the new funding FY.
- **Projected RSL** (Read-Only). Displays the projected Remaining Service Life (RSL) for the section in the funding FY. If the funding FY changes, BUILDER will recalculate the projected RSL for the new funding FY.
- **Current Type** (Read-Only). Displays the material/equipment type and component subtype of the section.
- **New Type**. If the work item activity is Replace, then you will have the option of replacing the current component-section type with another. The default is to replace in kind. Select a different type and material/equipment type from the dropdown list of available options if you wish to change the type. If the work item activity is not Replace, this item is not visible.
- **Description of Work Item**. Enter a description of the work item, limited to 255 alphanumeric characters.
- **Work Request ID**. Enter your agency's work request number, limited to 50 alphanumeric characters. This item of data is not used by BUILDER in any analyses.

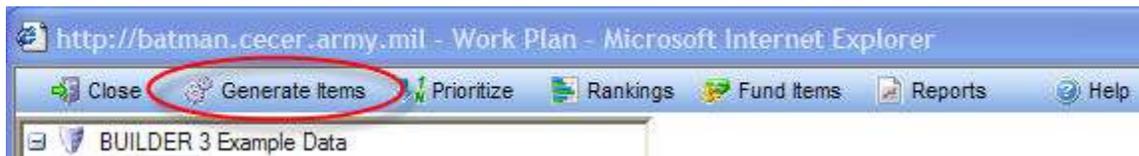
- **Status.** Select the current status of the work item from the dropdown list of choices. The status will change over time as the work item moves from planning to completion. The values of status are:
  - Awaiting Contract Award
  - Awaiting Funds
  - Awaiting Funds (Special Project)
  - Budgeted
  - Canceled
  - Completed
  - Deferred
  - Funded
  - Funded (Service Call)
  - Funded (Special Project)
  - In Design
  - In Progress
  - On hold
  
- **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. 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 IMPACT scenarios.
- **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 from the created fund sources.
- **Date Completed.** Enter the date the work item was completed.
- **Estimated Cost.** Enter the estimated cost of the work item. BUILDER 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.
- **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.
- **Override Automatic Cost Estimate.** Mark this checkbox if you wish to override the cost estimated using the ESTIMATE 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 work activity associated with this work item from the dropdown list. The work activities are:
  - Add/Install
  - Alter
  - Paint
  - Remove
  - Repair
  - Replace

- **Actual Cost.** Enter the actual cost of the work item after completion.
- **Quantity.** Enter the quantity of section involved with the work item. The Quantity listed at the top of the window is the actual component-section quantity, but the quantity of the work item may be different. For example, you may replace only 5 of the 10 doors in a component-section.
- **Cost Book.** Select the [cost book](#) to be used from the dropdown list.
- **ROI Information (Read-Only).** Displays the return and return on investment for the work item calculated on the [Cost Analysis tab](#).

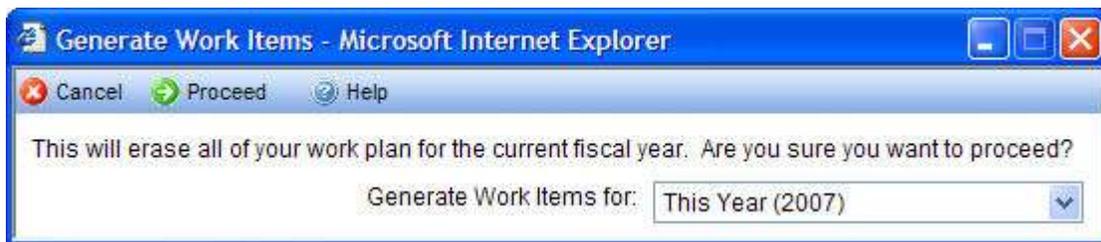
After entering the data for the work item, click the SAVE button in the toolbar to save the changes to the work item. If you do not wish to save the changes made to the work item, click the CANCEL button on the toolbar.

### Generating 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 WORK ITEMS button to create a work plan for the current year.



After clicking the GENERATE WORK ITEM button, the Generate Work Items window will appear.



Click PROCEED to generate the work items. It is important to note that by clicking the PROCEED button, all of the work items in the work plan for the current fiscal year will be deleted. Using the [policy sequence](#) defined in the [site data](#), each component-section's, functional area's, and building's properties with its standard's threshold values to determine where and what type of work should be done. Additionally, the estimated cost of each work item is computed using the [default cost book](#). 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.

Note that 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.

### Creating Work Items Using an IMPACT Scenario

If you have run an [IMPACT scenario](#), you may use the COPY SCENARIO button to use the results of the scenario to create a work plan for the current and future years.

(Screen Shot)

See [Creating a Work Plan from a Scenario](#) for more information on using this tool.

### Editing Section-Level Work Items

To edit a section-level work item, click on the DETAILS button next to desired section-level work item on the Work Items screen.

Name	Description	Cost	Status	Score	Date Completed
1006 - Quarters B	Repair Foundation Wall/Grade Wall Concrete	\$430	Budgeted	75.00	
4914 - Consolidated Club	Replace Roof Surface Roof A Metal Standing Seam	\$146,000	Budgeted	73.00	
4574 - Ochoa Hall	Repair Heating Unit/Plant Boiler (Steel) Gas/Oil (Steam) 388	\$26,000	Budgeted	73.00	
4577 - Senior NCO Barracks	Repair Air Handling Unit Fan Coil (dual) <1 Ton	\$18,000	Budgeted	73.00	
1621 - Fire Station	Repair Heating Unit/Plant Boiler (Steel) Gas/Oil (Hot Water)	\$11,500	Budgeted	73.00	
1617 - Security Office	Repair Generator Set Fuel Oil	\$10,500	Budgeted	73.00	

The Component Section Work Item screen will appear and all of the [data described above](#) can be edited as desired.

### Creating and Editing a Building-Level Work Item

BUILDER 3.0 provides a feature to create work items at both the building-level and section-level. The building-level work items are currently limited to one work activity: demolish the building. The building-level work item allows you to schedule and track demolition in your work plan and to account for its cost in your overall budget. Since you will be entering, updating, and tracking such work manually, the new type of work item will be relatively trouble-free in BUILDER. The automated processes in IMPACT, however, will require some help from you to model funding and completion of this type of work item.

A work item to demolish a building affects all sections of the building, but the effect is counter to the logic associated with prioritizing M&R work, which focuses on valuing work that protects and preserves the various sections of a building. For that reason, the [prioritization schemes](#) in BUILDER/IMPACT do not compute a priority score for building-level work items (the score will be 0.00). In order for such a work item to be funded for completion, there must be a funding source for which it qualifies and sufficient funds in that source to meet the cost of the work item and all other qualified work items. Here are two examples of ways to handle this:

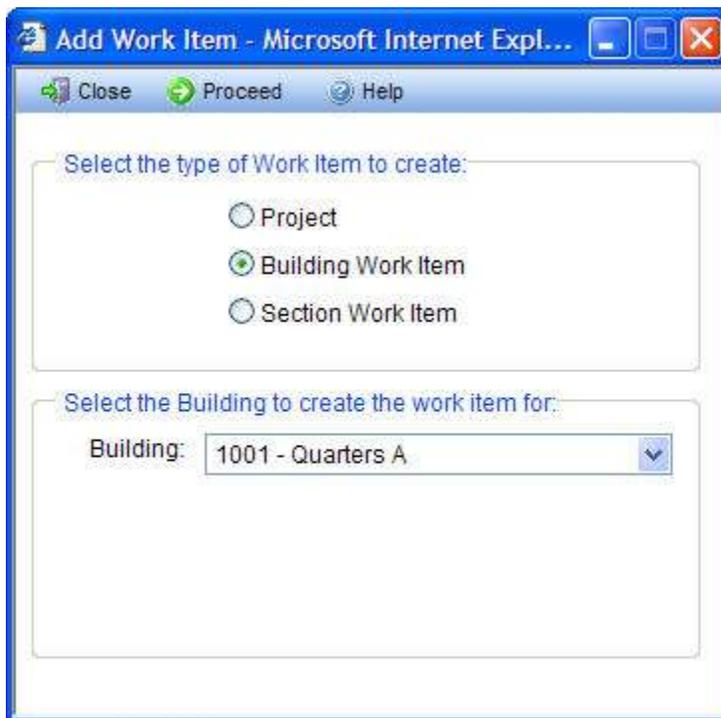
- Create a specific funding source with a criteria that it must be used only for the building that is to be demolished. Set aside sufficient funds in that source for the fiscal year of the work item to cover the cost of the demolition.
- Check the "Must do as planned" property of the work item. That will force the demolition work to be funded before all other competing work items that are not marked as "Must do."

### Creating a Building-Level Work Item

To create a building-level work item, click the ADD ITEM button on the Work Item screen.



The New Work Item window will appear.



Select the Building Work Item option, select the building of the work item, and click the PROCEED button. The Building Work Item window will appear:

The screenshot shows a web browser window titled "Work Item for 1001 - Quarters A - Microsoft Internet Explorer". The form contains the following fields and values:

- Description: Modernize 1001 - Quarters A
- Work Request ID: (empty)
- Funding FY: 2007
- Work FY: 2007
- Score: 0.000
- Work Code: Modernization
- Activity: Modernize
- Status: Awaiting Funds
- Must complete as planned:
- Fund Source: (empty)
- Estimated Cost: \$0
- Override automatic cost estimate:
- Actual Cost: \$0
- CostBook: Reference

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, limited to 255 alphanumeric characters.
- **Work Request ID.** Enter your agency's work request number for this work item, limited to 50 alphanumeric characters. This item of data is not used by BUILDER in any analyses.
- **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
  - 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. BUILDER provides a means of estimating the initial cost once you have chosen the Cost Book using the ESTIMATE button next to this field.

- **Score.** Work items to demolish buildings are not scored by prioritization schemes in BUILDER, so the score is defaulted to 0.000. Special steps to ensure the work item is completed are discussed above.
- **Override Automatic Cost Estimate.** Check this box if you wish to override the cost estimated using the ESTIMATE 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. Currently, the only available work activity at the building level is "Demolish."
- **Actual Cost.** Enter the actual cost of the work item after completion.
- **Cost Book.** Select the [cost book](#) from the dropdown 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, click 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, click the CANCEL button on the toolbar.

### Editing a Building-Level Work Item

To edit a building-level work item, click on the DETAILS button next to the building-level work item on the Work Items screen.

Name	Description	Cost	Status	Score	Date Completed
1001 - Quarters A	Demolish 1001 - Quarters A	\$35,000	Awaiting Funds	0.00	
1131 - Administration Building	Paint Awning/Canopy Metal Cantilever	\$60	Awaiting Funds	38.00	
7230 - DPW Shops	Paint Awning/Canopy Metal Cantilever	\$600	Awaiting Funds	35.00	
1328 - Personnel Office	Paint Awning/Canopy Metal Supported	\$195	Awaiting Funds	38.00	
1497 - Community Building	Paint Awning/Canopy North Metal Supported	\$220	Awaiting Funds	47.00	
7918 - Public Works Center Admin	Paint Awning/Canopy Unknown Wood Cantilever	\$60	Awaiting Funds	35.00	

The Building Work Item window will appear and the data described above can be edited as desired.

### Creating and Editing a Project

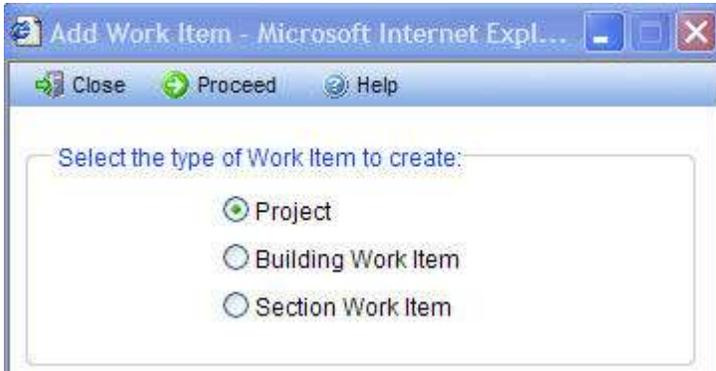
The concept of a M&R work project was added to BUILDER with the release of version 2.2. Projects allow you to group work items together to manage them as a single work effort that is prioritized and funded as a whole. The work items in a project may span different systems in a single building, as in a renovation effort. They 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.

### Creating a Project

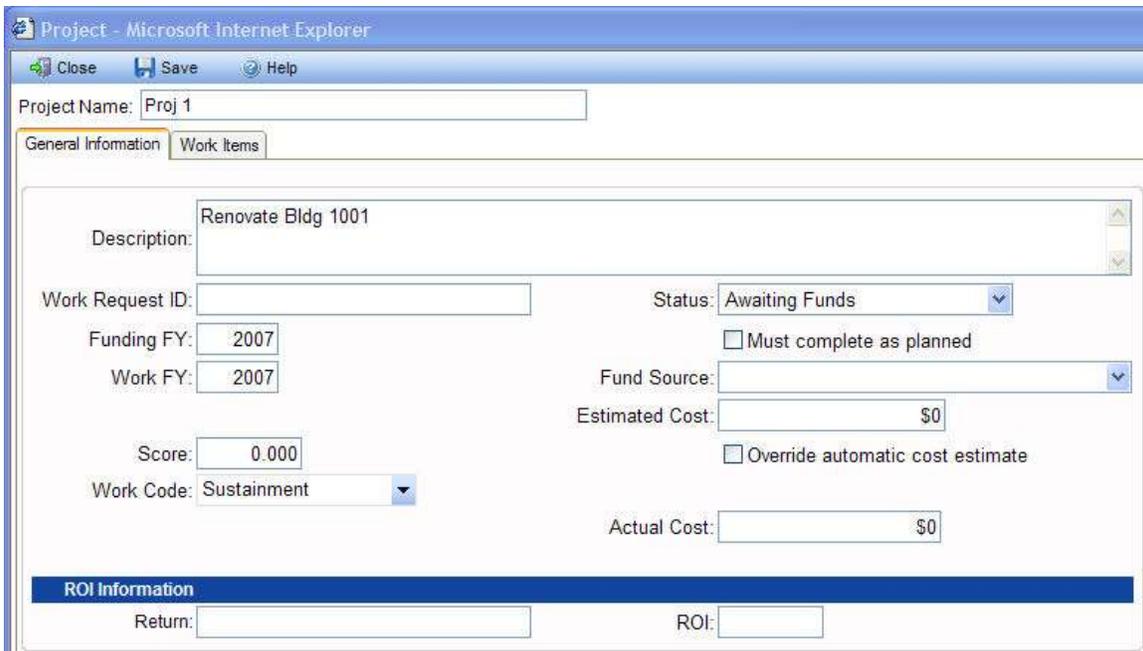
To create a project, click the ADD ITEM button on the Work Item screen.



The New Work Item window will appear.



Select the Project option and click the PROCEED button. The Projects window will appear opened to the General Information tab.



### General Information Tab

On the general information tab, the following general data for the project can be recorded:

- **Project Name.** Enter the name of the project, limited to 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, limited to 255 alphanumeric characters.
- **Work Request ID.** Enter your agency's work request number for the project, limited to 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 IMPACT 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 ESTIMATE 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 ESTIMATE 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 [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 chosen, 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 it on the bottom grid and use the UP arrow to move the selected work item to the project list. To remove a work item from the project, select it on the top grid and use the DOWN arrow to remove it from the project list.

Project - Microsoft Internet Explorer

Project Name: Proj 1

General Information | **Work Items**

Work Items In Project:

Facility	Description	Actual Cost	Status	FY	Return	ROI
1001 - Quarters A	Repair Ductwork Non-Insulated (Aluminum) Residential C	\$1,450	Budgeted	2007	\$3,600	248%
1001 - Quarters A	Repair Roof Surface Fiberglass Shingles	\$495	Budgeted	2007	\$900	182%
1001 - Quarters A	Repair Cooling Unit/Plant Heat Pump Air-to-Air <2.5 Tons	\$470	Budgeted	2007	\$1,100	234%
1001 - Quarters A	Replace Lighting Fixtures Incandescent Interior	\$5,500	Awaiting Funds	2007	\$5,500	100%
1001 - Quarters A	Repair Plumbing Fixtures Toilet Ceramic	\$500	Awaiting Funds	2007	\$520	104%
1001 - Quarters A	Repair Other Plumbing Equipment Water Heater Residen	\$210	Awaiting Funds	2007	\$425	202%
1001 - Quarters A	Replace Interior Stair/Step Wood Full-Set	\$2,350	Awaiting Funds	2007	\$2,350	100%
1001 - Quarters A	Repair Flashing (LF) Coated Metal Base Flashing	\$970	Awaiting Funds	2007	\$1,300	134%
1001 - Quarters A	Repair Lighting Fixtures Incandescent Exterior	\$700	Awaiting Funds	2007	\$840	120%
1001 - Quarters A	Repair Exterior Wall Finish/Covering Wood Clapboard	\$1,180	Awaiting Funds	2007	\$1,350	117%

Work Items not currently assigned to any Project:

Facility	Description	Actual Cost	Status	FY	Return	ROI
1001 - Quarters A	Repair Interior Wall Finish/Covering Clapboard	\$1,250	Awaiting Funds	2007	\$2,000	160%
1001 - Quarters A	Water Column Deck Water Pump	\$1,350	Awaiting Funds	2007	\$2,300	170%
1001 - Quarters A	Repair Caulking Damaged Plastic	\$120	Awaiting Funds	2007	\$270	225%
1001 - Quarters A	Repair Interior Deck Finish/Covering Clapboard	\$450	Awaiting Funds	2007	\$1,500	333%
1001 - Quarters A	Water Roof Drainage Head Fixing	\$1,350	Awaiting Funds	2007	\$1,350	100%
1001 - Quarters A	Replace Roof Deck Wood	\$14,000	Budgeted	2007	\$14,000	100%
1001 - Quarters A	Replace Soffit Wood	\$1,400	Awaiting Funds	2007	\$1,400	100%
1001 - Quarters A	Repair Heating Unit/Plant Furnace Gas <45 MBH	\$450	Awaiting Funds	2007	\$650	122%

After entering the data for the project on the General Information and Work Items tabs, click the SAVE button in the toolbar to save the changes to the project. If you do not wish to save the changes made to the project, click the CANCEL button on the toolbar.

### Editing a Project

To edit a project, click on the DETAILS button next to the project on the Work Items screen.

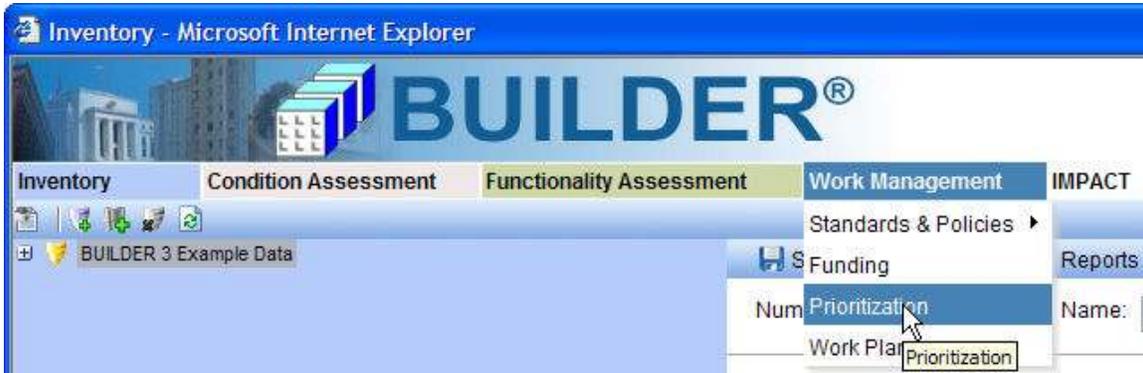
Name	Description	Cost	Status	Score	Date Completed
<a href="#">Bldg 1001</a>	Bldg 1001 Renovation	\$35,507	Awaiting Funds	58.00	
<a href="#">1001 - Quarters A</a>	Demolish 1001 - Quarters A	\$26,000	Awaiting Funds	0.00	
<a href="#">1121 - Administration Building</a>	Paint Awning/Canopy Metal Cantilever	\$55	Awaiting Funds	38.00	
<a href="#">1270 - DPW Shops</a>	Paint Awning/Canopy Metal Cantilever	\$60	Awaiting Funds	35.00	
<a href="#">1329 - Seasonal Office</a>	Paint Awning/Canopy Metal Supported	\$195	Awaiting Funds	38.00	
<a href="#">1357 - Community Building</a>	Paint Awning/Canopy North Metal Supported	\$220	Awaiting Funds	47.00	
<a href="#">2918 - Public Works Center Admin</a>	Paint Awning/Canopy Unknown Wood Cantilever	\$65	Awaiting Funds	35.00	

The Projects window will appear and the data on the General Information and Work Items tabs can be edited as desired.

### Creating a Work Prioritization Scheme

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. 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. 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 Planning -> Work Prioritization* from the navigation menu.



The Prioritization Schemes window 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.

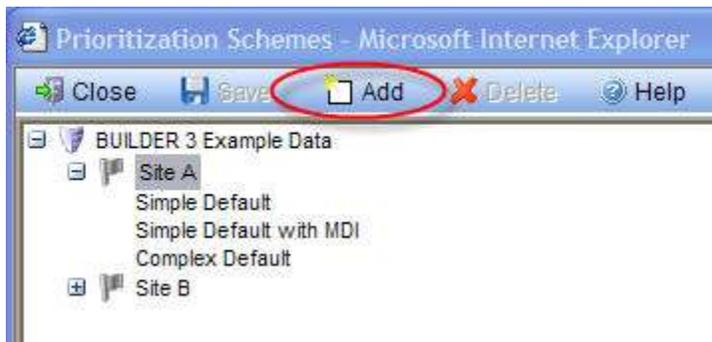
## Toolbar

- CLOSE. 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.

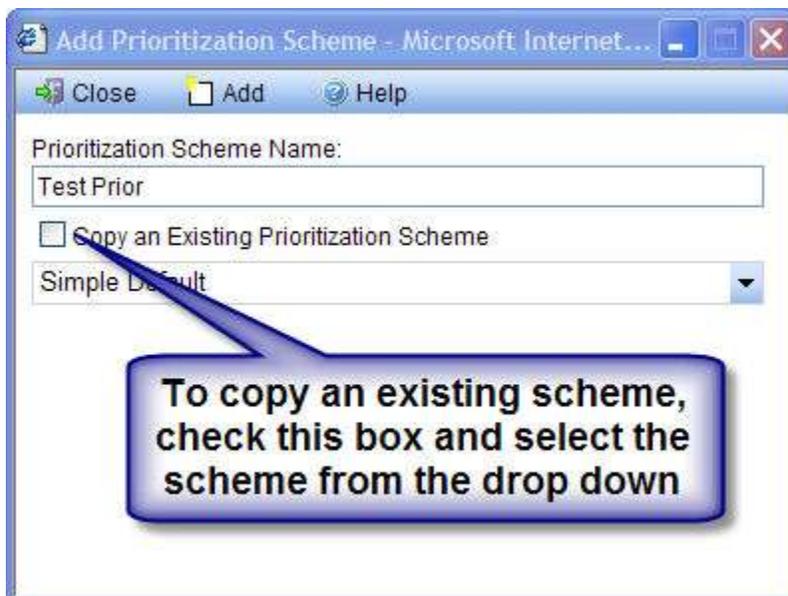
## Creating a Prioritization Scheme

You can create as many prioritization schemes as you like. When you are ready to prioritize a work plan, you will simply choose the scheme you wish to use in the [site data](#). You may, in fact, wish to use several different schemes and then compare the resulting prioritized lists.

To create a new prioritization scheme, click the ADD button in the window toolbar.



The New Prioritization Scheme window will appear.



Enter a unique name for the new scheme, which is limited to 50 alphanumeric characters, and click the ADD button in the toolbar. Initially after creating a

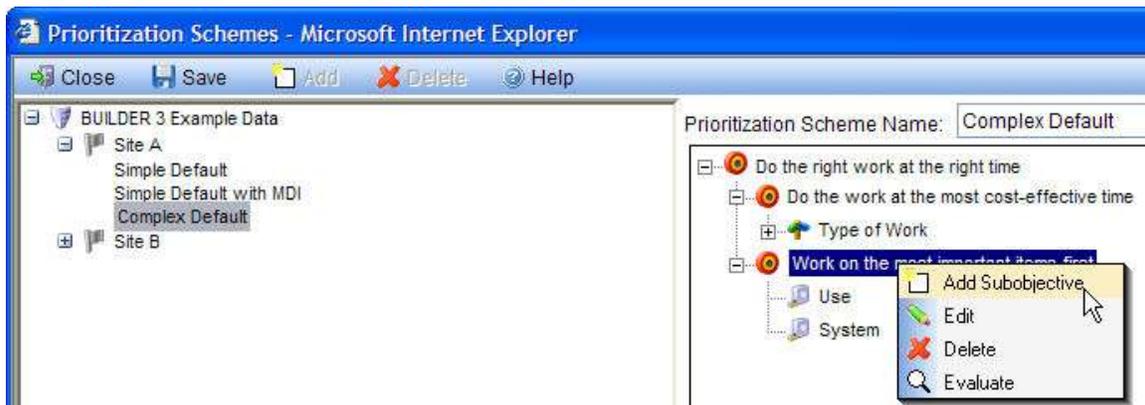
prioritization scheme, only the main objective will appear in the scheme. The main objective can be reworded (see **Editing an Objective** below) and subobjectives can be added to it (See **Adding a Subobjective** below).

Note that when you are creating a new prioritization scheme you are able 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 click 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.

### Adding an Subobjective

To add a subobjective to an objective on the tree, select the objective, right-click it, and select *Add Subobjective*.



The New Objective window will appear.

The screenshot shows a web-based form titled "Objective" within a Microsoft Internet Explorer window. The form includes a "Node Name" input field at the top. Below it is a "Measure Type" section with three radio button options: "Fundamental Objective", "Measure", and "Category Split", with "Category Split" being the selected option. To the right of these options are two dropdown menus: "Available split categories" (currently showing "Building") and "Available Measures" (currently showing "Building Type"). At the bottom of the form is a large "Description" text area.

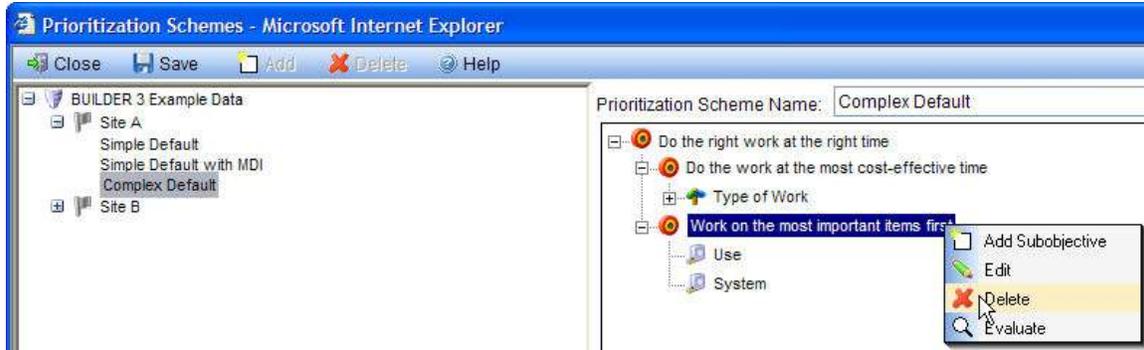
To create the subobjective, the following data must be recorded:

- **Node name.** Enter the name of the objective that will appear in the tree.
- **Measure Type.** Choose the type of objective is 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 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 chosen as the measure type, this field will not appear.
- **Available Measures.** If you select Measure or Split as the type for this objective, then you will also have to choose the measure to associate the measure or split. The available measures in the dropdown list depends on the Measure/Split category chosen. If a fundamental objective is chosen 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, click the PROCEED button to create the objective. If you do not wish to create the objective, click the CANCEL button.

### Deleting an Object from the Tree

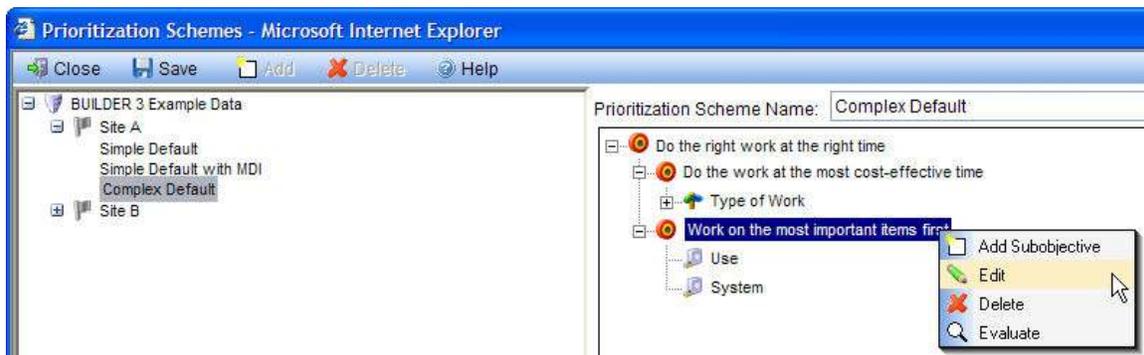
If you want to delete an objective from the tree, select it on the tree, right-click it, and select *Delete*.



It is important to note that if you delete an objective, the entire subtree under the objective will be deleted as well.

### Editing an Objective

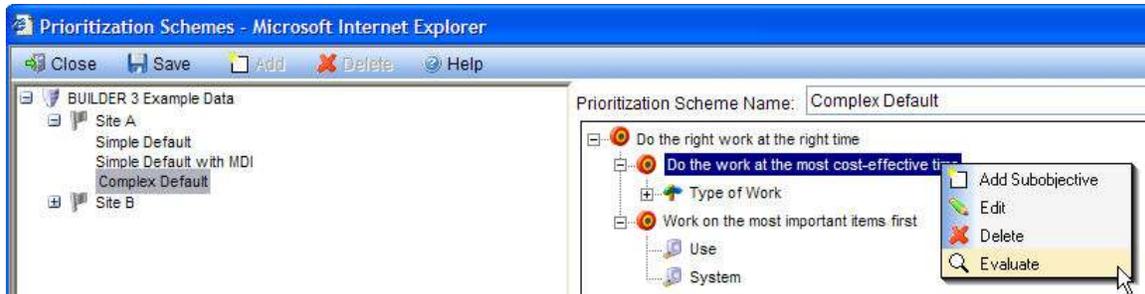
If you want to edit the name or description of an objective, select it on the tree, right-click it, and select *Edit*.



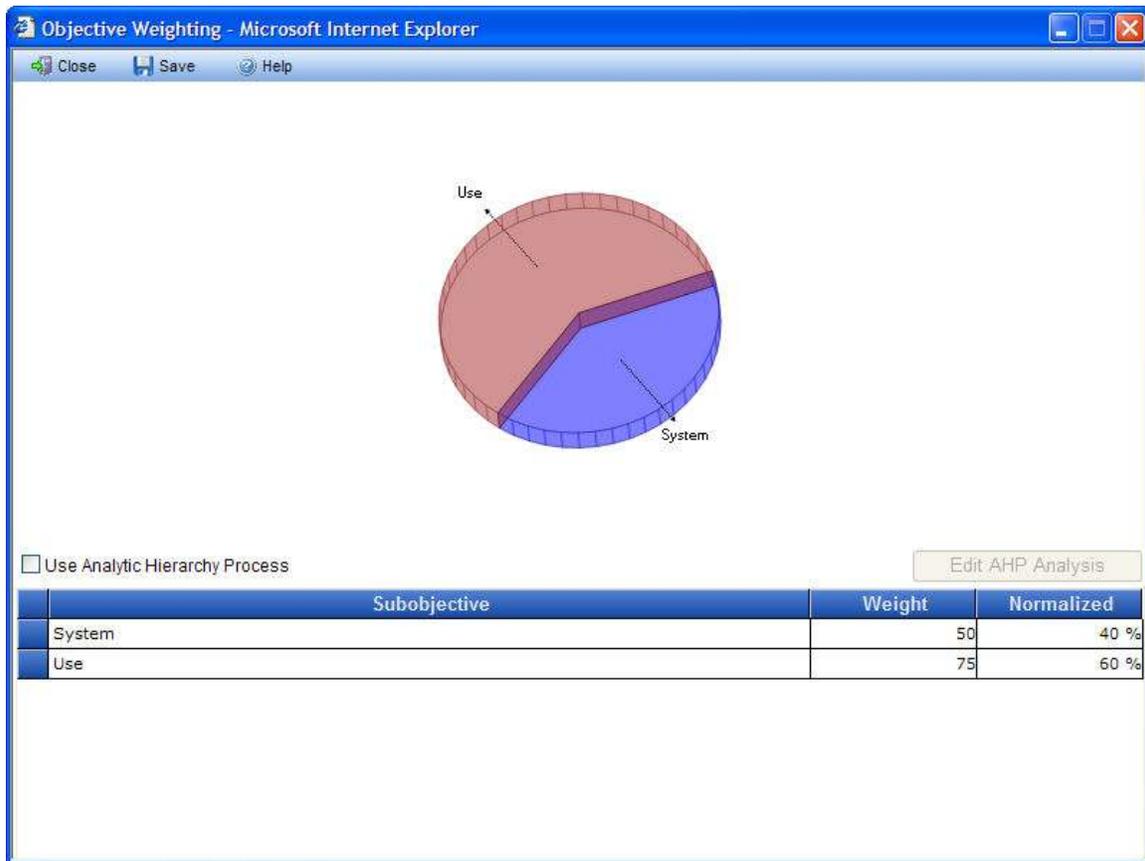
It is important to note that once an objective is created, you may not change the measure type, category, or measure itself, but you can change the node name.

### Evaluating a Fundamental Objective

To record the relative weights of the children of an fundamental objective, select the fundamental objective, right click it, and select the *Evaluate* option.



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 either:

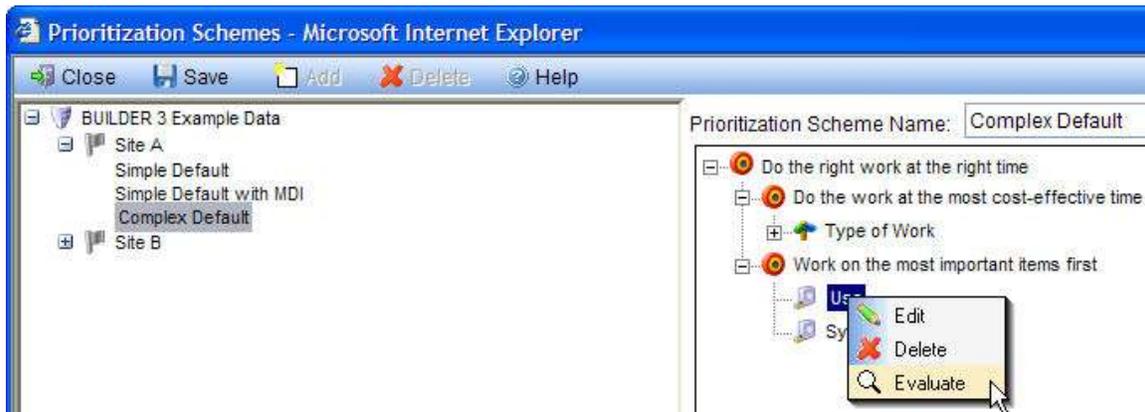
- Entering a number between 0 and 100 in the Weight column.
- Marking the Use [Analytic Hierarchy Process](#) checkbox and clicking the EDIT AHP ANALYSIS button. The AHP process allows you to establish the weights by doing a binary comparison of the field values. See Using the Analytic Hierarchy Process for a description of this method.

Note that 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. Click the SAVE button to save changes.

### Evaluating a Measure

To assign points to the various values of a measure, select the measure, right-click it, and select the *Evaluate* option.



The Measure Evaluation window will appear:

Name	Point Value
Administrative Facilities	70
Community Facilities	80
Family Housing	100
Hospital/Medical Facilities	90
Maintenance/Production Facilities	60
Operational/Training Facilities	80
Research/Development Facilities	40
Supply/Storage Facilities	40
Unaccompanied Personnel Housing	100

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, they are equally important initially. You can edit the point value by either:

- Entering a number between 0 and 100 in the Point Value column.
- If the number of field values is less than 25, marking the Use [Analytic Hierarchy Process](#) checkbox and clicking the EDIT AHP ANALYSIS button. The

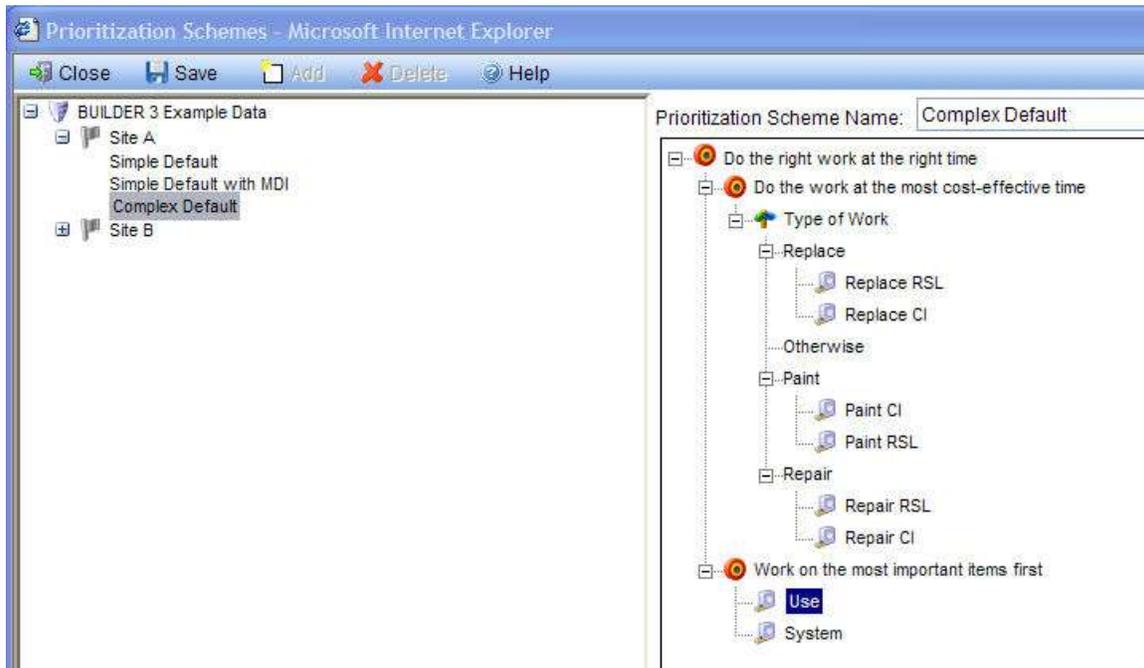
AHP process allows you to establish the points by doing a binary comparison of the field values.

Use the SAVE button to save changes or the CANCEL button to return to the previously saved weights.

### 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. In 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:

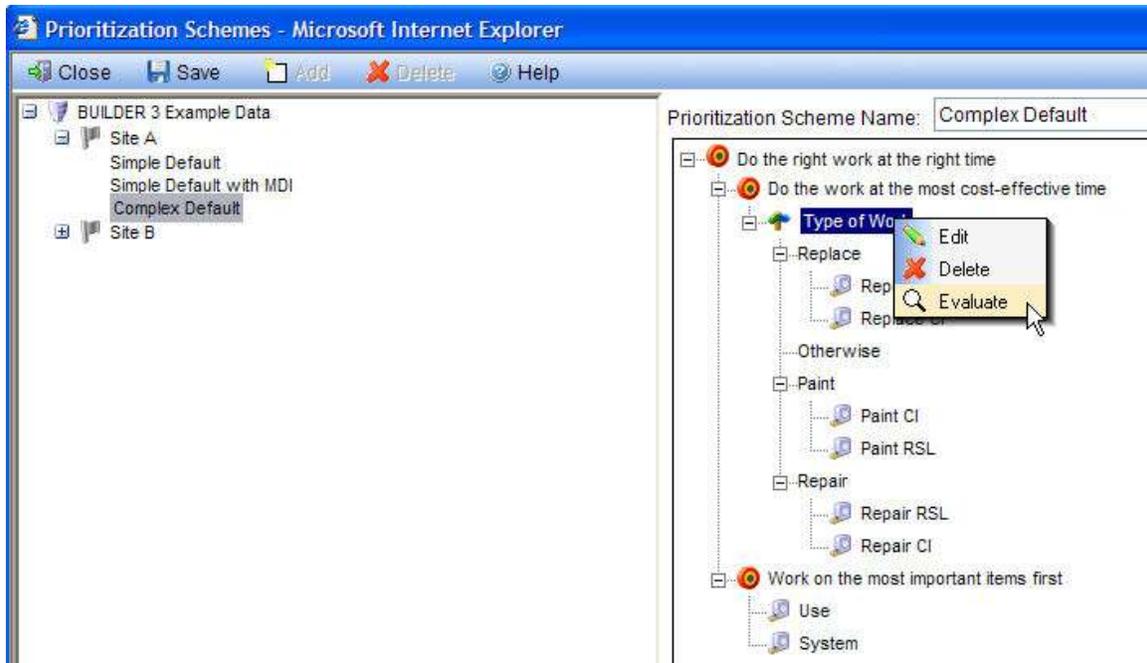


The category split in this example is Type of Work. The associated field is work activity, which has 6 possible values: Repair, Replace, Paint, Remove, Add/Install, and Alter. A category split generally has an added category named Otherwise, which is the branch of the tree used if the value of the field 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.

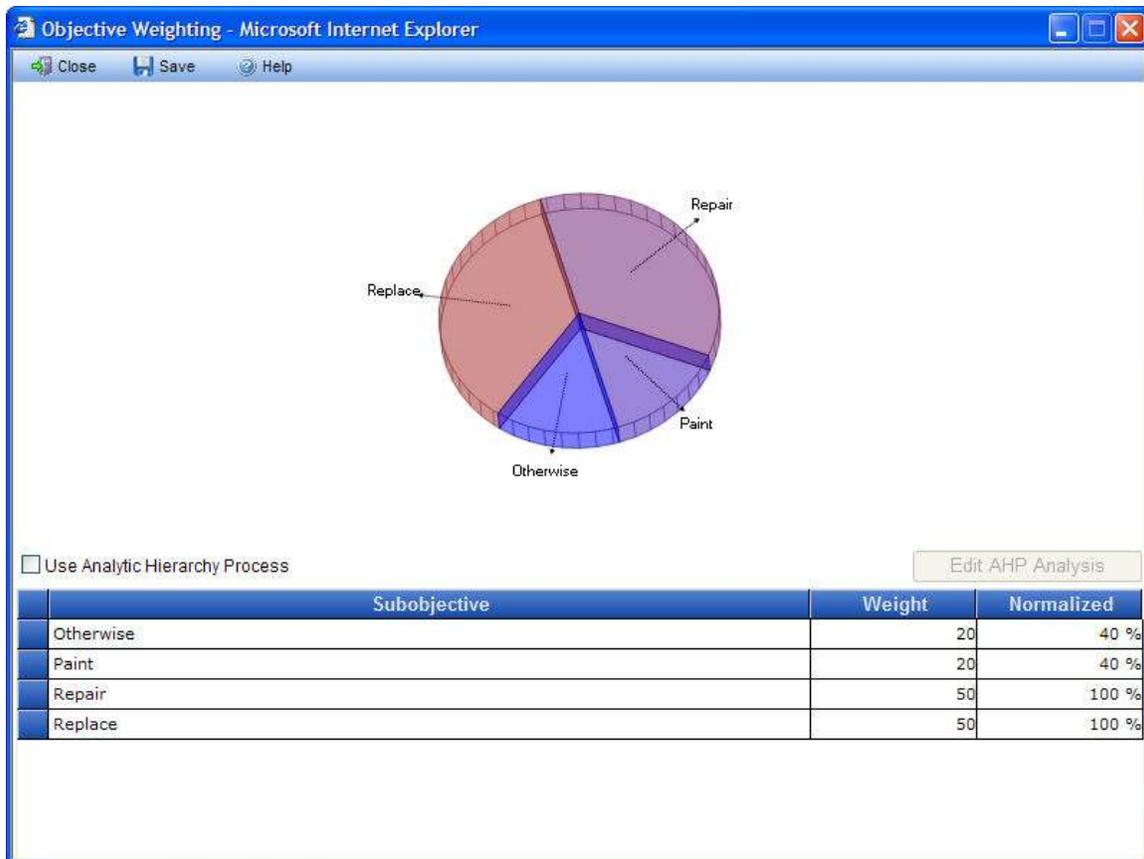
In the example above, the work item's CI and RSL are used as the measures for both Repair and Replace. However, the point values assigned to the fields varies by type

of work. To replace a component-section, the most cost-effective time would be indicated by a very low CI 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 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 select the split on the tree, right-click it, and select the *Evaluate* option.



The Objective 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 50 for all field values. That is, they are equally important initially. You can edit the point value by either:

- Entering a number between 0 and 100 in the Point Value column.
- If the number of field values is less than 25, marking the Use [Analytic Hierarchy Process](#) check box and clicking the EDIT AHP ANALYSIS button. The AHP process allows you to establish the points by doing a binary comparison of the field values.

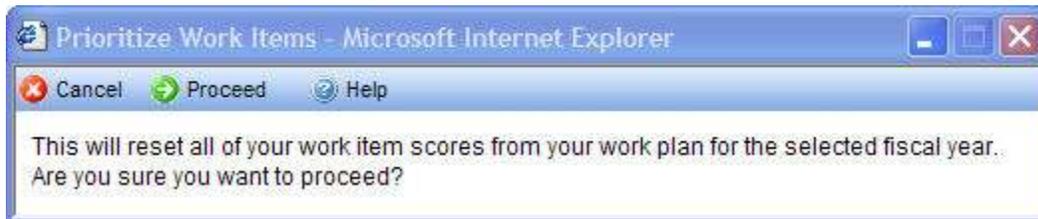
For the Normalized Weight of a category, its Weight is divided by the maximum Weight of the categories in the split. When first created, all of the categories of a split have the same weight and all have normalized weight of 100%. Note that the normalized weight is read-only.

## Prioritizing Work Items

If you have created a [Prioritization Scheme](#), you may prioritize your work plan using the PRIORITIZE button on the Work Items window. Click the PRIORITIZE button on the toolbar to initiate the process.



A warning stating that all current work item scores from your work plan for the selected fiscal year will be reset if you continue will appear.



Click the PROCEED button if still wish to delete the current scores for the for section-level work items and recompute new prioritization scores using the prioritization scheme selected in the [site information](#). 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. Click the CANCEL button on the warning screen if you do not wish to perform these actions and return to the work plan.

You can prioritize the work plan as often as you wish. If you add new work items, you should re-prioritize to include the new items. You may also want to use a work plan to calibrate the weights and points you have assigned in a particular prioritization scheme. By considering the order in which work items are ranked and viewing their scores, you may identify measures that should carry more relative weight or measure values that warrant higher points so that the order of the work items is acceptable. The goal of a prioritization scheme 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.

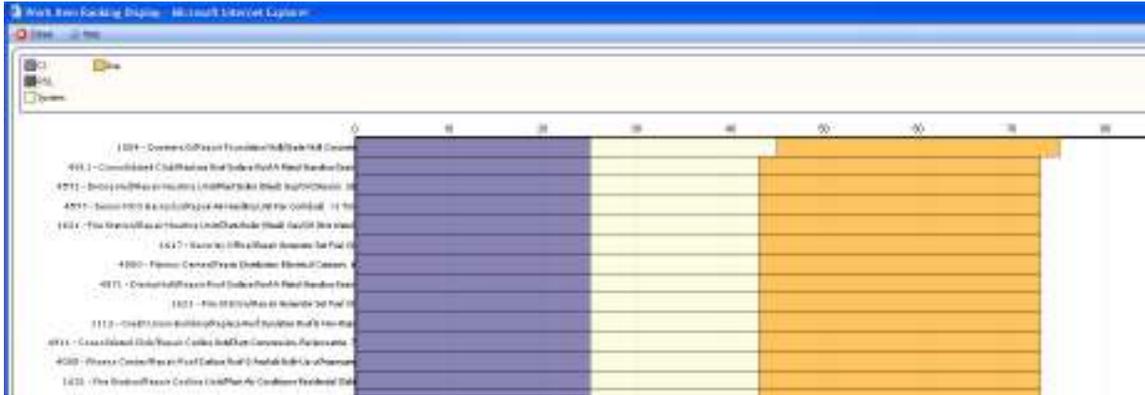
Note that [building-level work items](#) are not scored in the prioritization scheme. The score for a building-level work items will be 0.000. In order to have this type of work item completed in IMPACT, mark the work item as "Must do as planned" and provide a fund source with a criteria the work item can satisfy.

## Ranking Work Items

If you have created a [prioritized your work plan](#), you may view the rankings of the work items in your work plan using the RANKINGS button on the Work Items window. Click the RANKINGS button on the toolbar to initiate the process.



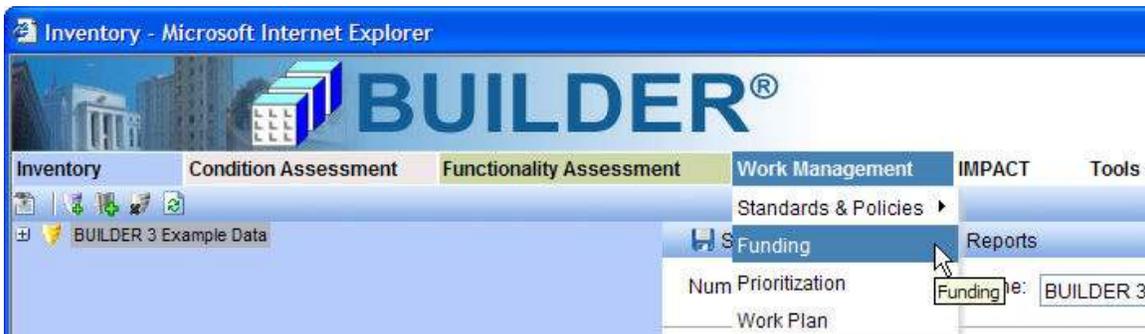
The Rankings window will appear.



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. A legend appears at the top of the window correlating the colors to their respective measures.

### Entering Anticipated Funding Levels

To add, enter, or edit funding levels, select *Work Management -> Funding* from the navigation menu.



The Funding window will appear.

The screenshot shows the 'Funding - Microsoft Internet Explorer' window. The table displays funding levels for O&M across four years (2007-2010). The table has tabs for 'Expected Funds', 'Funding Restrictions', and 'Funding Precedence'. The 'Expected Funds' tab is active.

Fund	2007	2008	2009	2010
O&M	\$ 750,000	\$ 700,000	\$ 650,000	\$ 600,

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. It is important to note that the anticipated funding levels only need to be input if you are planning to use the IMPACT feature 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 see [Scenario Management](#).

### Toolbar

- CLOSE. Use this button to close the Funding window.
- SAVE. Use this button to save the changes you have made the funding levels, restrictions, or precedence.
- NEW. Use this button to Create a new funding source. After clicking this button, the New Funding Source 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. Use this button to delete 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. Use this button to launch 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, click on the desired cell in the grid and enter the expected funds for that year. Remember that you must move from a cell or strike the Enter key to register the change.

Fund	2007	2008	2009	2010	2011	2012	2013
OSM	\$ 750,000	\$ 700,000	\$ 650,000	\$ 600,000	\$ 550,000	\$ 500,000	\$ 500,000

### 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 dropdown list, click the ADD button, and then enter the data regarding the restriction (selection criteria) in the grid.



### Funding Precedence Tab

The IMPACT scenario needs to allocate 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.

