

HiCAMS User Guide

Chapter 2: Contract Maintenance

Section 3: Review Contract BOM (Bill of Materials)

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Revision History

Comments or concerns with this document should be directed to the NCDOT Construction Unit at 919-707-2400.

| Date | Version | Description | Author |
|----------------|----------------|---|---------------------------------------|
| December 1997 | 1.0 | Initial Version | HiCAMS Documentation Specialist |
| November 2002 | 2.0 | Updated Document | Deirdre Warner |
| December 2006 | 3.0 | Revised format and added business information | Marie Novello |
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| | | | |

About the Contract Bill of Materials

The Contract Bill of Materials, or CBOM, is the function that controls what materials are available to be used on an individual contract. It defines how much of each Material is needed based on the amount paid on each line item and its Conversion Factor.

The CBOM contains a list of the **Pay Items** assigned to each contract during its creation. These Pay Items may or may not require Materials. For example, Pay Items such as "Mobilization" or "Construction Surveying" do not require Materials. This type of item is indicated by a check in the Labor Only checkbox.

Most other Pay Items on a Contract will require Materials and the CBOM is where these Materials are listed.

The Contract's Pay Items are drawn from the **Master Pay Item** list. Standard Pay Items can have Materials and Conversion Factors assigned to them on the Master Bill of Materials. These Materials can then be assigned to the corresponding Contract Pay Items on the Contract Bill of Materials when the Contract is Authorized.

If a Contract Pay Item is created from a Generic Master Pay Item, or one that requires a Supplemental Description, the Materials cannot be defaulted.

A Generic Pay Item appears in the Contract's "Itemized Proposal for Contract No. C123456" with a description similar to "Generic Utility Item - 12" DI Restrained Joint, Water Pipe, PC 350". The Sec # is SP. This is your indication that you need to consult the Contract's Project Special Provisions to determine the Materials required for that line item.

A Pay Item which requires a Supplemental Description appears in the Contract's "Itemized Proposal for Contract No. C123456" with a description similar to "12" Gate Valve & Valve Box, ***** WP (200#)". The Sec # may or may not be SP. If the section number is given, consult the appropriate NCDOT Standard Specifications for the Materials to be used. If the Sec # is SP, consult the Contract's Project Special Provisions to determine the Materials required for that line item.

Contract Pay Items that are created from these kinds of Master Pay Items will have the check box in the column Check for Materials checked.

The Contract BOM may also list **Work Items** that have been added by the user to Lump Sum pay items such as Roadway Construction to track materials and work. Again, these Work Items are based on the Master Pay Item list and may or may not have Materials already assigned to them on the Master Bill of Materials. The Work Items listed on the CBOM will also display a check in the Check for Materials box if they are created from Generic Master Pay Item, or one that requires a Supplemental Description and a check in the Labor Only box if they do not require any materials.

Note 1: Pay Items which are not Labor Only and do not have Materials defaulted when the CBOM is built are identified on the CBOM window by having the box in the Check for Materials column checked. These Pay Items should be reviewed and Materials added as necessary in order to facilitate receipt of the Materials on the Project and Project Certification.

Note 2: Contracts that were Authorized prior to September 25, 2006 do not have Pay Items without Materials marked as Check for Materials. Only Generic Pay Items or those with Supplemental Descriptions are marked.

The Contract Bill of Materials can be updated during Contract Activation, and throughout the life of the Contract. Work Items can only be added after Contract Activation so Materials on them must be reviewed after the contract is activated.

The Contract BOM Window

To work with the Contract Bill of Materials window, go to **Functions > Contract Maintenance > Review Contract BOM**. Enter the Contract Number whose Bill of Materials you wish to review.

Note: For information on ways to enter your contract number, see the User Guide "Getting Started" in the User Guides section of the HiCAMS home page.

Below is an example of the Review Contract BOM window for contract C203557.

Contract: C203557 Contractor: FEREBEE CORPORATION Status: Active
 Description (nickname): Meck. Resurfacing 2014/2015 Letting Date: 05/20/2014

| Line Item | Contract Adj | Work Item | Description | Quantity | Unit of Measure | Check for Materials | Labor Only |
|-----------|--------------|-----------|---|------------|-----------------|-------------------------------------|-------------------------------------|
| 1 | | | MOBILIZATION | 1.000 | LS | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2 | | | CLEARING & GRUBBING | 1.000 | LS | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3 | | | BORROW EXCAVATION | 1,258.000 | CY | <input type="checkbox"/> | <input type="checkbox"/> |
| 4 | | | INCIDENTAL STONE BASE | 620.000 | TON | <input type="checkbox"/> | <input type="checkbox"/> |
| 5 | | | SHOULDER CONSTRUCTION | 1.500 | SMI | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 6 | | | SHOULDER RECONSTRUCTION | 15.640 | SMI | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 7 | | | MILL ASP PVMT ***** DTH [(1-1/2")] | 90,706.000 | SY | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 8 | | | MILLN ASPHALT PVMT ***** [(0" TO 1-1/2")] | 2,356.000 | SY | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 9 | | | INCIDENTAL MILLING | 4,697.000 | SY | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 10 | | | ASP CONC BASE CRS B25.0C | 621.000 | TON | <input type="checkbox"/> | <input type="checkbox"/> |
| 11 | | | ASP CONC INTR CRS I19.0C | 138.000 | TON | <input type="checkbox"/> | <input type="checkbox"/> |
| 12 | | | ASP CONC SURF CRS S9.5C | 25,199.000 | TON | <input type="checkbox"/> | <input type="checkbox"/> |
| 13 | | | ASP CONC SURF CRS S9.5C LEVEL | 3,110.000 | TON | <input type="checkbox"/> | <input type="checkbox"/> |

General | MSG | History

| Row | Material | Master Conv Unknown | Incidental Material | Conversion Factor | Substitution Group | Quantity | Unit of Measure |
|-----|---|--------------------------|-------------------------------------|-------------------|--------------------|----------|-----------------|
| 1 | Asphalt Concrete Base Course, Type B 25.0C | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 1.000 | 1 | 621.000 | TON |
| 2 | Asphalt Concrete Base Course, Type RB 25.0C | <input type="checkbox"/> | <input type="checkbox"/> | 1.000 | 1 | 621.000 | TON |

Contract Line Item Number representing a good or service provided.

The lower portion of the window shows the material information for the Line Item row highlighted in the upper grid.

Note: The default Sort Order is Line Item number first, then the Contract Adjustment by Number. Work Items are sorted Numerically by Line Item. The default Sort Order can be changed by clicking on the Sort icon or by selecting **Edit > Sort**. See the User Guide "Getting Started" for more details on working with the Sort function.

Updating the Contract BOM (Bill of Materials)

The primary reason for updating the Contract Bill of Materials is to provide an accurate and complete listing of the materials that are incorporated into the Project. Documenting the Material Received, Accepted, and Paid quantities is critical to Project Certification. If the Materials are not listed, or the conversion factor is set incorrectly, the quantity totals will be incomplete or inaccurate.

The initial Verification of the Contract BOM occurs during the Contract Activation process. Often, required materials cannot be identified until the project is underway, so the contract Bill of Materials can also be updated throughout the project's construction.

To thoroughly verify the Contract BOM, the following tasks should be completed for each Line Item.

1. Confirm that the Material Listing is complete.

The Materials on each line item should be reviewed. Those which are not present should be added, and those which are not needed should be deleted. To determine what materials should be on those Line Items that have the Check for Materials box checked, consult either the Standard Specifications or the Contract's Project Special Provisions.

It is possible that a line item that has the Check for Materials checkbox checked does not need materials. See the Appendix for more information on this.

2. Confirm that the Conversion Factors are appropriate.

The Conversion Factor works in conjunction with the quantity Paid to Date to determine how much of each Material is required to perform that paid amount of work. When the Material Unit of Measure and the Line Item Unit of Measure are the same, the Conversion Factor will usually be 1. When the Material Unit of Measure and the Line Item Unit of Measure are different, the Conversion Factor may be defaulted from the Master Bill of Materials or it may need to be calculated using information specific to the Project and found on the Contract Plans.


The Contract BOM Report is useful for conducting this review, whether a hard copy is printed or it is viewed online. The Report shows the Materials and Conversion Factors assigned to each line item. Corrections can be made and are reflected immediately when the report is regenerated.

The Contract BOM also provides data for the quantities displayed in the Audit Materials function that will contribute to the quality of the Project's Certification.

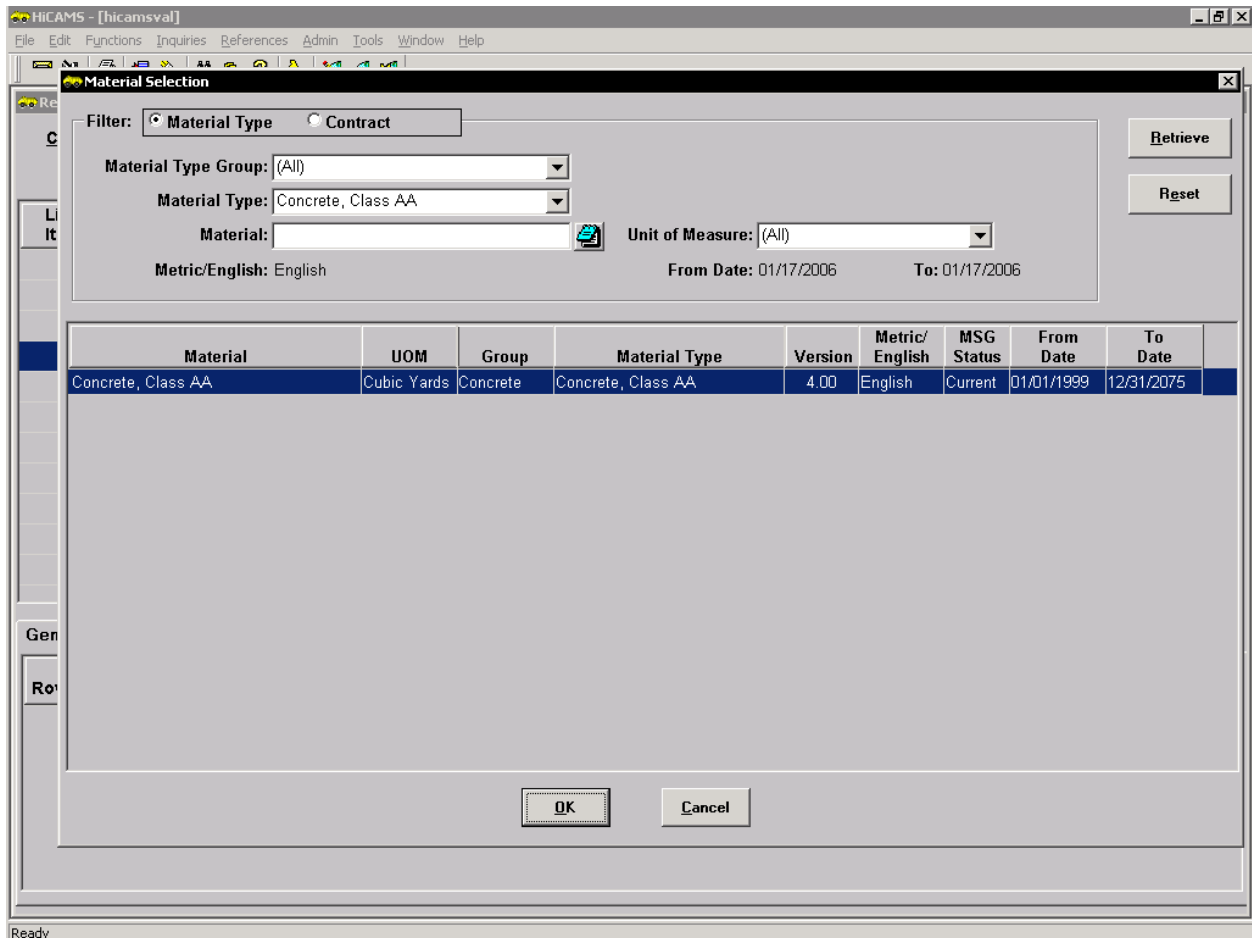
Adding a New Material to a Contract BOM Line Item

The verification of the Line Items indicates that there are no materials assigned to line item 141 (1'-***X*****"CONC PARAPET [(1'-2" X 2'-10")]. The Bill of Material in the Structure plans indicates that Class AA Concrete and Epoxy Coated Reinforcing Steel are used to construct this line item.

Step 1: Go to **Functions > Contract Maintenance > Review Contract BOM**. Enter the Contract Number whose Bill of Materials you wish to review. The Review Contract BOM window opens. Our example uses C201181.

Step 2: Select Line Item 141 on the CBOM listing, and click on the Insert button  or use the Insert key on the keyboard. The Material Selection window opens. To narrow your material search, set the Material Type to Concrete Class AA and click the Retrieve button.

Here is how the Material Selection window will appear after the Retrieve.



| Material | UOM | Group | Material Type | Version | Metric/English | MSG Status | From Date | To Date |
|--------------------|-------------|----------|--------------------|---------|----------------|------------|------------|------------|
| Concrete, Class AA | Cubic Yards | Concrete | Concrete, Class AA | 4.00 | English | Current | 01/01/1999 | 12/31/2075 |

After clicking OK, the Material will be inserted on the General Tab of the CBOM for Line Item 141. The window looks like this:

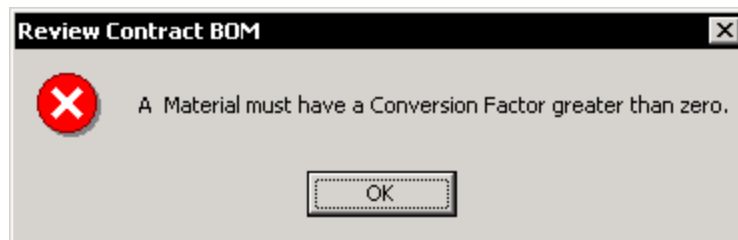
| Row | Material | Master Conv Unknown | Conversion Factor | Substitution Group | Quantity | Unit of Measure | |
|-----|--------------------|--------------------------|-------------------|--------------------|----------|-----------------|--|
| 1 | Concrete, Class AA | <input type="checkbox"/> | .000 | | | CY | |

Ready

Notice that the Conversion Factor is set to 0.00 and the Quantity is blank.

Possible Error:

If you Save now, you will receive the following error message:

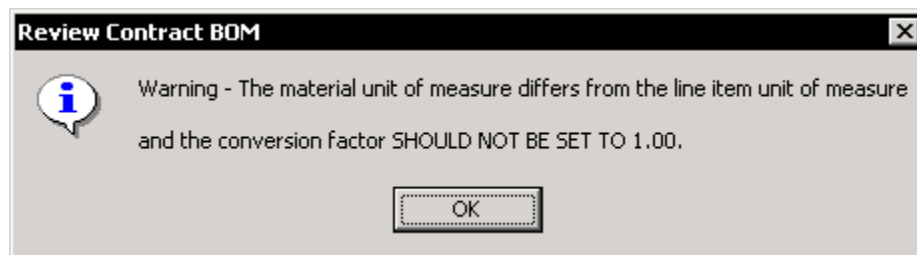


Click OK and enter the correct conversion factor.

Step 3: Enter the Conversion Factor.

Possible Error:

If you enter a one for the conversion factor, and the Line Item UOM is not the same as the Material UOM, you will receive the following warning:



You can still save the record, but the improper conversion factor will cause discrepancy problems with your Materials.

To calculate the Conversion Factor for the Class AA concrete, find the plan quantity on the Bill of Material in the Structure plans. In this example, the quantity of Class AA concrete required for the plan quantity of 192.83 LF of Parapet wall is 24.1 CY. The conversion factor asks the question "How much of this material do I need for each one of the pay item units?" In this case, how many cubic yards of concrete are used in each linear foot of Parapet Wall? The conversion factor is equal to 24.1 CY divided by 192.83 LF = 0.125 CY/LF.

Step 4: Enter 0.125 for the conversion factor. The Material quantity required calculates to 24.104 CY. This is within the margin of error for this calculation.

| Row | Material | Master Conv Unknown | Conversion Factor | Substitution Group | Quantity | Unit of Measure |
|-----|--------------------|--------------------------|-------------------|--------------------|----------|-----------------|
| 1 | Concrete, Class AA | <input type="checkbox"/> | .125 | | 24.104 | CY |

Step 5: Save the record. A green checkmark should appear at the end of the row.

Step 6: Next, add the Epoxy Coated Reinforcing Steel to the same Line Item. Click the Insert button to open the Material Selection Window. Set the Material Type Group filter to Steel and type *epoxy* in the Material filter. This will search for all materials that contain the word epoxy in their description.

Here is how the Material Selection window will appear after the Retrieve.

| Material | UOM | Group | Material Type | Version | Metric/English | MSG Status | From Date | To Date |
|---|--------|-------|----------------------------------|---------|----------------|------------|------------|------------|
| Dowel Assemblies, Epoxy Coated | Each | Steel | Reinforcing Steel, Epoxy Coated, | 8.00 | Both | Current | 01/01/1999 | 12/31/2075 |
| Pavement Dowels, Epoxy Coated | Each | Steel | Reinforcing Steel, Epoxy Coated, | 8.00 | Both | Current | 01/01/1999 | 12/31/2075 |
| Reinforcing Steel, Epoxy Coated | Pounds | Steel | Reinforcing Steel, Epoxy Coated, | 4.00 | English | Current | 01/01/1999 | 12/31/2075 |
| Reinforcing Steel, Epoxy Coated, For Mist | Pounds | Steel | Reinforcing Steel, Epoxy Coated, | 2.00 | English | Current | 01/01/1999 | 12/31/2075 |

Step 7: Select the third row "Reinforcing Steel, Epoxy Coated" and click OK.

To calculate the Conversion Factor for the Epoxy Coated Reinforcing Steel, find the plan quantity on the Bill of Material in the Structure plans. In this example, the quantity of Epoxy Coated Reinforcing Steel required for the plan quantity of 192.83 LF of Parapet wall is 3400 LBS. The conversion factor asks the question "How much of this material do I need for each one of the pay item units?" In this case, how many pounds of reinforcing steel are used in each linear foot of Parapet Wall? The conversion factor is equal to 3400 LB divided by 192.83 LF = 17.632 LB/LF.

Step 8: Enter the conversion factor (17.632). The Material quantity required calculates to 3399.979 LB. This is within the margin of error for this calculation.

The screenshot shows the HICAMS software interface. The main window is titled "Review Contract BOM (C201181)". It displays contract information: Contract: C201181, Contractor: Smith-Rowe, Inc., Status: Activated, Description (nickname): Jamestown, and Letting Date: 01/17/2006. Below this is a table of materials:

| Line Item | Contract Adj | Work Item | Description | Quantity | Unit of Measure | Check for Materials |
|-----------|--------------|-----------|--|-----------|-----------------|-------------------------------------|
| 138 | | | 54" PRESTR CONCRETE GIRDR | 1,334.090 | LF | <input type="checkbox"/> |
| 139 | | | HP12X53 PILES | 650.000 | LF | <input type="checkbox"/> |
| 140 | | | TWO BAR METAL RAIL | 370.670 | LF | <input type="checkbox"/> |
| 141 | | | 1'-***X*****CONC PARAPET [(1'-2" X 2'-10")] | 192.830 | LF | <input checked="" type="checkbox"/> |
| 142 | | | 1'-***X*****CONC PARAPET [(1'-2" X 3'-6 3/4")] | 192.830 | LF | <input checked="" type="checkbox"/> |
| 143 | | | PLAIN RIP RAP II (2'-0") | 750.000 | TON | <input type="checkbox"/> |
| 144 | | | FILTER FABRIC FOR DRAINAGE | 834.000 | SY | <input type="checkbox"/> |
| 145 | | | ELASTOMERIC BEARINGS | 1.000 | LS | <input type="checkbox"/> |
| 146 | | | EVAZOTE JOINT SEALS | 1.000 | LS | <input type="checkbox"/> |
| 147 | | | ELEC CONDUIT SYS ***** [(21+87.50 -L-)] | 1.000 | LS | <input checked="" type="checkbox"/> |
| 148 | | | STR DRN SYS ***** [(21+87.50-L-)] | 1.000 | LS | <input checked="" type="checkbox"/> |


Below the table is a "General" tab with a sub-table:

| Row | Material | Master Conv Unknown | Conversion Factor | Substitution Group | Quantity | Unit of Measure |
|-----|---------------------------------|--------------------------|-------------------|--------------------|-----------|-----------------|
| 1 | Concrete, Class AA | <input type="checkbox"/> | .125 | | 24.104 | CY |
| 2 | Reinforcing Steel, Epoxy Coated | <input type="checkbox"/> | 17.632 | | 3,399.979 | LB |

Note: This screenshot shows the Contract BOM window before the Labor Only indicator was added.

Step 9: If you are entering two or more Materials that can be used in place of each other, a Substitution Group can be established. To do this, enter the same alpha or numeric character in each row.

Step 10: Save the record. A green checkmark should appear at the end of the row.

Note: *Until the record is Saved, Materials can be deleted by using the Delete  button. This method does not create a History record.*

Note: *The Conversion Factor can be changed throughout the life of the project by clicking in the Conversion Factor field and typing in the new number. All Tickets previously created will have the Conversion Factor in effect at that time they were created. The new Conversion Factor will be in effect for any newly Inserted Tickets.*

More information on Conversion Factors can be found in the User Guide "Working with Conversion Factors".

Copying Materials from a Contract BOM Line Item to another Contract BOM Line Item on the Same Contract

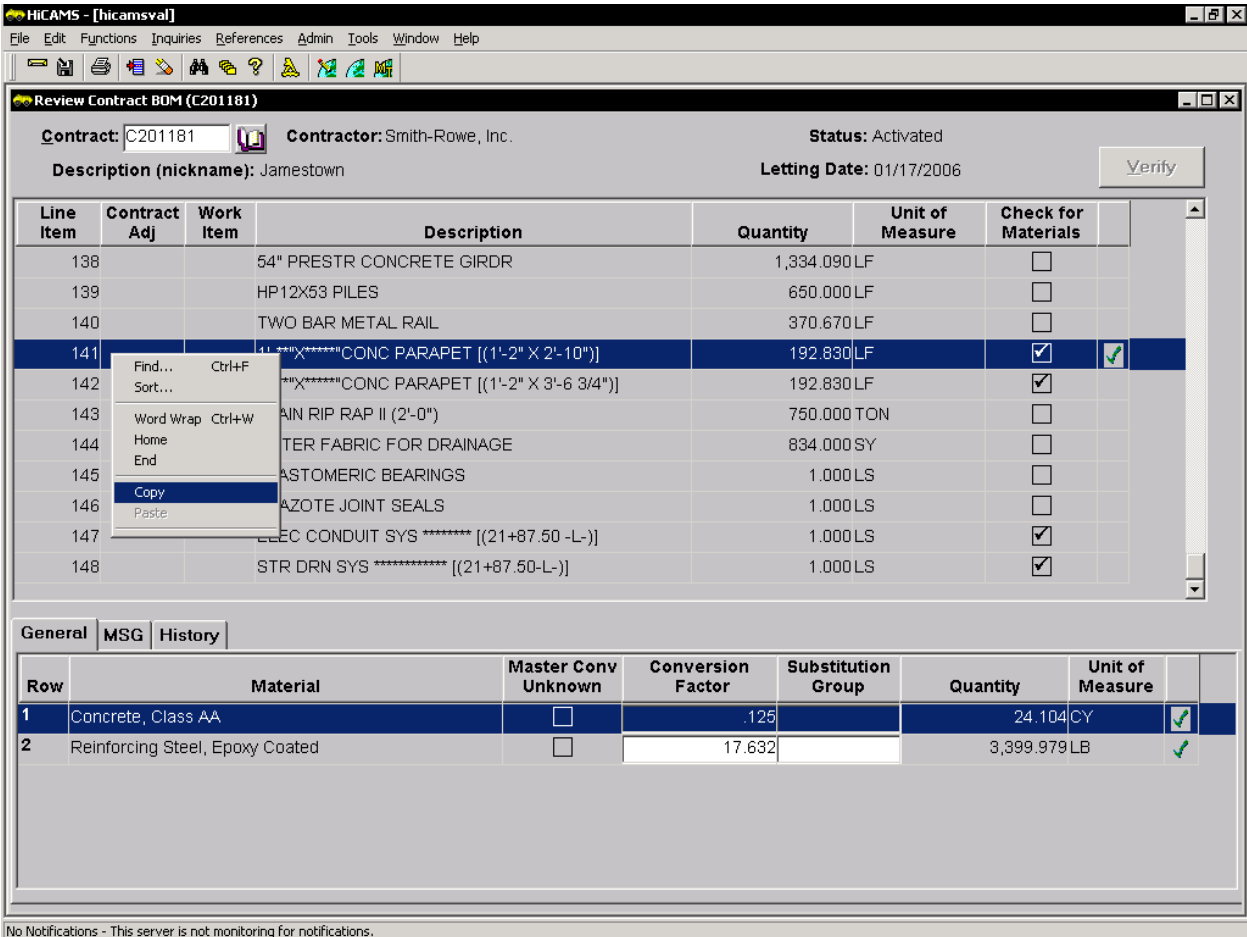
Sometimes there are similar Line Items on a Contract which do not have Materials assigned to them. In this case, Materials can be copied from one line item to another line item. In the case of contract C201181, Line Item 142 is 1'-**"X*****"CONC PARAPET [(1'-2" X 3'-6 3/4")] and it has the same materials as Line Item 141.

There are two methods for copying materials from Line Item 141 to Line Item 142.

Note: The following screenshots show the Contract BOM window before the Labor Only indicator was added.

Method 1:

- Step 1:** Go to **Functions > Contract Maintenance > Review Contract BOM**. Enter the Contract Number whose Bill of Materials you wish to review. The Review Contract BOM window opens.
- Step 2:** Select the Line Item that contains the Materials you wish to copy. In this case, select Line Item 141, then Right-Click. A popup menu is displayed.
- Step 3:** Select Copy from the popup menu.

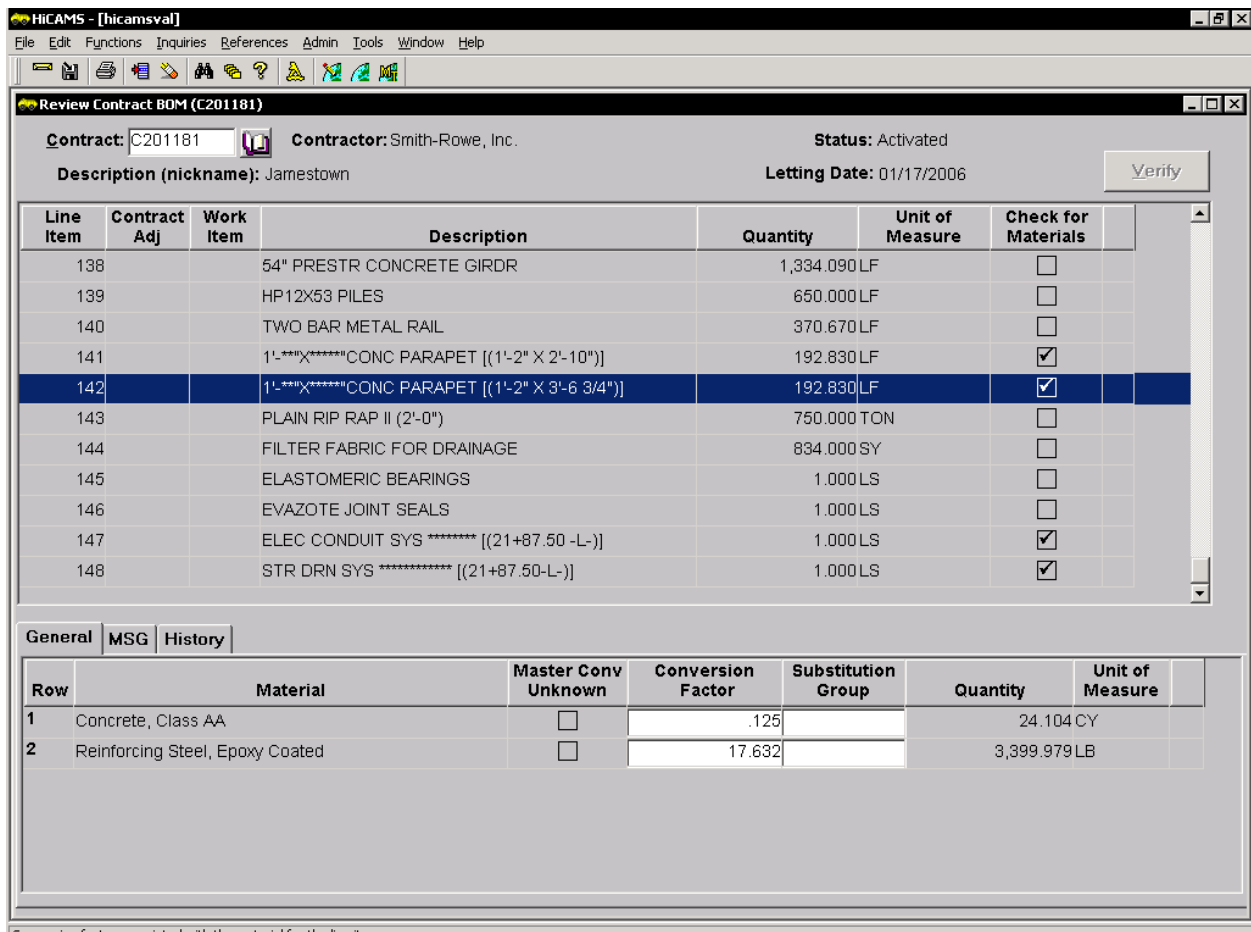


Step 4: Select the Line Item to which the Materials will be copied. In this case, select Line Item 142 and Right-Click. The popup menu opens again. This time, select Paste from the menu.

Here is an example of how the window looks after the Materials are pasted onto the second Line Item.

Possible Error:

The Materials and their associated Conversion Factors are copied. If different quantities of Materials are required for the second line item, the Conversion Factor must be changed.

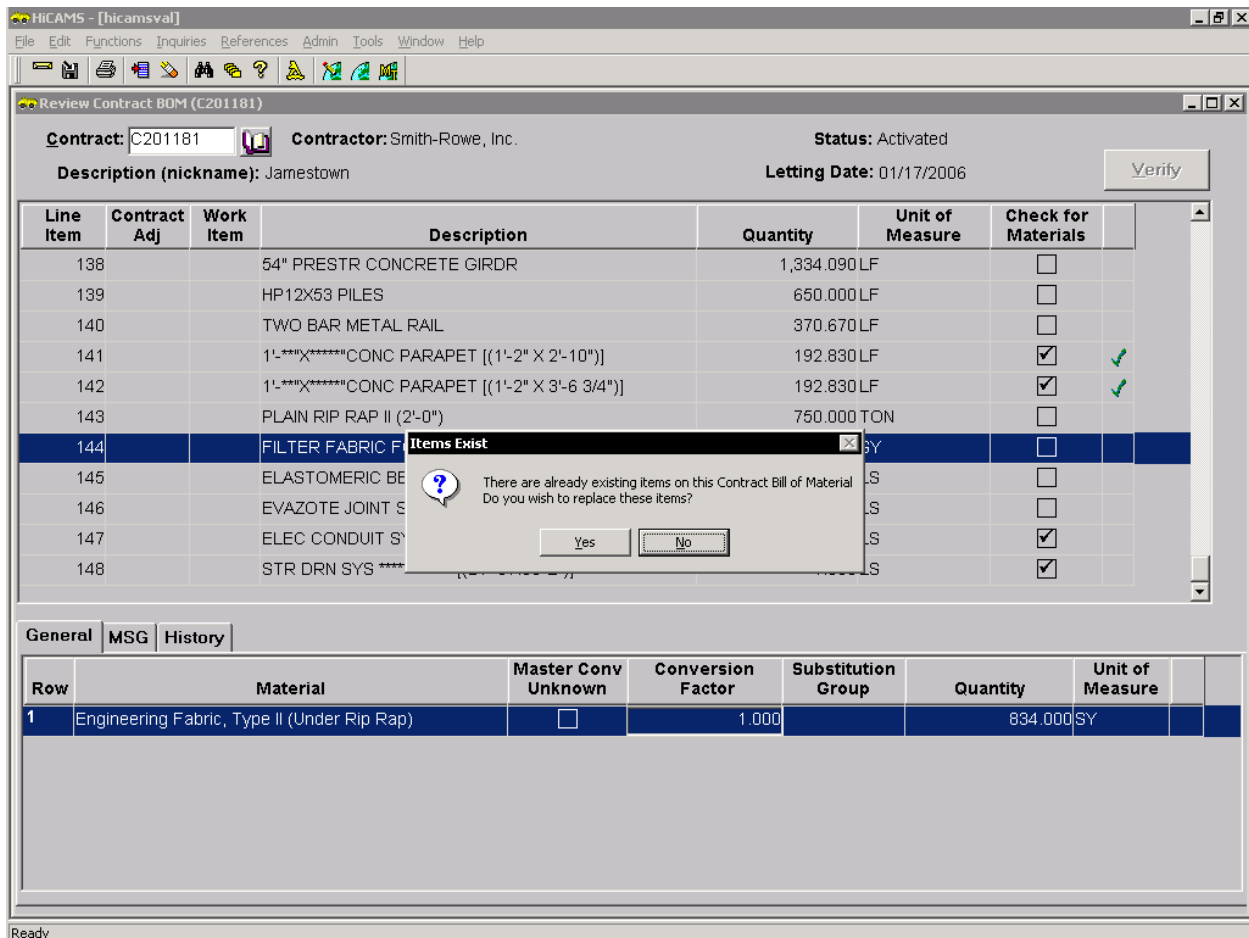


The Structure plans Bill of Materials for this Line Item list 30.2 CY of Class AA Concrete and 4144 LB of Epoxy Coated Reinforcing Steel as being required. The conversion factor for the Concrete is equal to 30.2 CY divided by 192.83 LF or 0.157 CY/LF. The conversion factor for the Reinforcing Steel is equal to 4144 LB divided by 192.83 LF or 21.490 LB/LF.

Step 5: Enter the Conversion Factors and Save the record.

Possible Error:

If Materials already exist on the Line Item to which you are copying Materials, you will receive this message:



Clicking **Yes** will continue with your Paste operation and replace or delete the existing Materials. *Remember that Deletes are prohibited if the Material is already in use in the system.*

Clicking **No** will cancel your Paste operation and allow the existing Materials to remain in place.

Method 2:

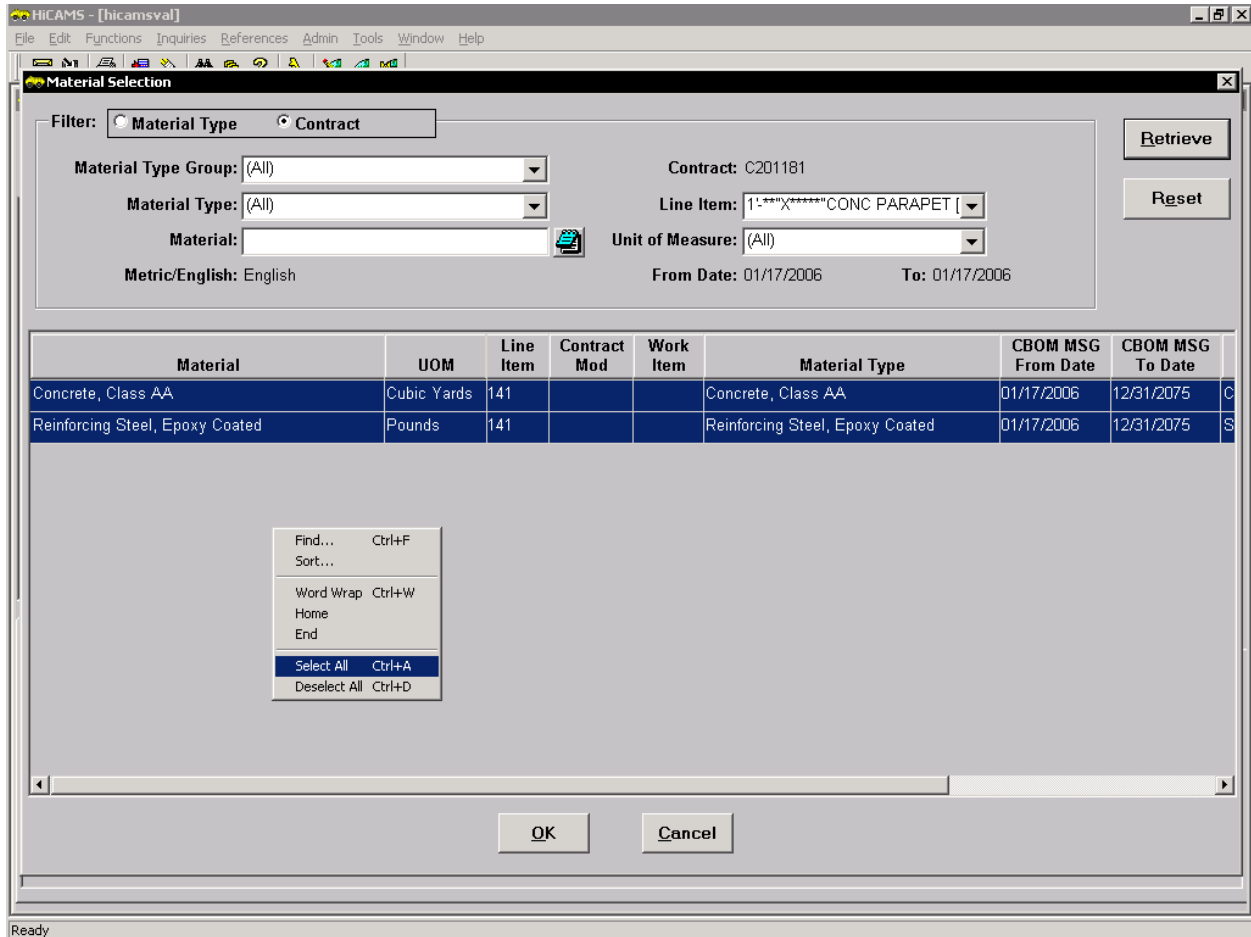
- Step 1:** Go to **Functions > Contract Maintenance > Review Contract BOM**. Enter the Contract Number whose Bill of Materials you wish to review. The Review Contract BOM window opens.
- Step 2:** Select the Line Item to which the Materials need to be copied. In this case, select Line Item 142. Click Insert. The Material Selection window opens.
- Step 3:** Change the Filter selection from Material Type to Contract. The Contract Line Item filter appears.
- Step 4:** Set the Line Item filter to Line Item 141. This is the Line Item that contains the Materials we wish to copy.

Possible Error:

If the Line Item you want to use does not have any Materials currently assigned to it, it will not appear in the Line Item filter.

Step 5: Click the Retrieve button. The Materials that are assigned to Line Item 141 appear in the drop down.

Step 6: Right Click and pick Select All from the Popup menu.



Step 7: Click OK.

Here is an example of how the window looks after the Materials are inserted onto the second Line Item.

The screenshot shows the HICAMS software interface. The main window is titled "Review Contract BOM (C201181)". It displays contract information: Contract: C201181, Contractor: Smith-Rowe, Inc., Status: Activated, Description (nickname): Jamestown, and Letting Date: 01/17/2006. A "Verify" button is visible.

| Line Item | Contract Adj | Work Item | Description | Quantity | Unit of Measure | Check for Materials |
|-----------|--------------|-----------|--|------------|-----------------|-------------------------------------|
| 136 | | | REINF STEEL (BRIDGE) | 43,558.000 | LB | <input type="checkbox"/> |
| 137 | | | SPIRAL COL REINF STL BRG | 6,498.000 | LB | <input type="checkbox"/> |
| 138 | | | 54" PRESTR CONCRETE GIRDR | 1,334.090 | LF | <input type="checkbox"/> |
| 139 | | | HP12X53 PILES | 650.000 | LF | <input type="checkbox"/> |
| 140 | | | TWO BAR METAL RAIL | 370.670 | LF | <input type="checkbox"/> |
| 141 | | | 1'-***X*****CONC PARAPET [(1'-2" X 2'-10")] | 192.830 | LF | <input checked="" type="checkbox"/> |
| 142 | | | 1'-***X*****CONC PARAPET [(1'-2" X 3'-6 3/4")] | 192.830 | LF | <input checked="" type="checkbox"/> |
| 143 | | | PLAIN RIP RAP II (2'-0") | 750.000 | TON | <input type="checkbox"/> |
| 144 | | | FILTER FABRIC FOR DRAINAGE | 834.000 | SY | <input type="checkbox"/> |
| 145 | | | ELASTOMERIC BEARINGS | 1.000 | LS | <input type="checkbox"/> |
| 146 | | | EVAZOTE JOINT SEALS | 1.000 | LS | <input type="checkbox"/> |

Below the main table, there are tabs for "General", "MSG", and "History". The "General" tab is active, showing a table with conversion factors:

| Row | Material | Master Conv Unknown | Conversion Factor | Substitution Group | Quantity | Unit of Measure |
|-----|---------------------------------|--------------------------|-------------------|--------------------|----------|-----------------|
| 1 | Concrete, Class AA | <input type="checkbox"/> | .000 | | | CY |
| 2 | Reinforcing Steel, Epoxy Coated | <input type="checkbox"/> | .000 | | | LB |

The status bar at the bottom left shows "Ready".

Notice that in this case, only the Materials are copied, not the Conversion Factors.

Step 8: Enter the correct Conversion Factors and Save.

Removing Materials from a Contract BOM Line Item

There are several reasons that Materials may need to be deleted from your Contract BOM.

1. Materials are created on the Contract BOM Line Items during the Authorization process by defaulting the corresponding Materials from the Master BOM Pay Items. The Master BOM attempts to be complete for any Line Item used so Materials not appropriate to your location may be defaulted to your Contract even if they are not going to be used on your Contract. The removal of these Materials is part of the Verification process for the Contract Bill of Materials.
2. Substitutable Materials that are not used should be removed. For instance, the Materials defaulted to the Pay Item "MASONRY DRAINAGE STRUCTURES" are:

- Brick, Clay
- Brick, Concrete
- Concrete, Class B
- Masonry Drainage Structures, Steps for
- Precast Concrete Units
- Reinforcing Steel, Plain, For Miscellaneous Use
- Block, Concrete

If your contractor has already told you that only Precast Concrete Units will be used, the Materials for the Brick and Block can be deleted.

3. The Pay Item was eliminated from the Contract work so no Materials were used.
4. The Material was added to the wrong Line Item.

To remove a Material from the Contract BOM, follow these steps:

Step 1: Go to **Functions > Contract Maintenance > Review Contract BOM**. Enter the Contract Number whose Bill of Materials you wish to review. The Review Contract BOM window opens.

Step 2: Select the Line item that has Materials that need to be deleted. In our example, that is Line Item 25.

Here is how the window looks after the line item is selected:

Contract: C201912 **Contractor:** PLT CONSTRUCTION CO., INC. **Status:** Activated
Description (nickname): SUNSET AVENUE SR-1770 **Letting Date:** 12/18/2007


| Line Item | Contract Adj | Work Item | Description | Quantity | Unit of Measure | Check for Materials | Labor Only |
|-----------|--------------|-----------|------------------------------|-----------|-----------------|-------------------------------------|--------------------------|
| 24 | | | PIPE PLUGS | 200 | CY | <input type="checkbox"/> | <input type="checkbox"/> |
| 25 | | | MASNRY DRAINAGE STRUCT | 69.000 | EA | <input type="checkbox"/> | <input type="checkbox"/> |
| 26 | | | MASNRY DRAINAGE STRUCT | 4.000 | LF | <input type="checkbox"/> | <input type="checkbox"/> |
| 27 | | | FRAME W/2GRTS 840.16 STD | 13.000 | EA | <input type="checkbox"/> | <input type="checkbox"/> |
| 28 | | | FRAME W/2GRTS 840.24 STD | 3.000 | EA | <input type="checkbox"/> | <input type="checkbox"/> |
| 29 | | | FRAME-GRT-HD 840.03 ** [(E)] | 8.000 | EA | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 30 | | | FRAME-GRT-HD 840.03 ** [(F)] | 20.000 | EA | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 31 | | | FRAME-GRT-HD 840.03 ** [(G)] | 20.000 | EA | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 32 | | | FRAME W/COVER STD 840.54 | 2.000 | EA | <input type="checkbox"/> | <input type="checkbox"/> |
| 33 | | | DRY DETENTION BASIN | 1.000 | LS | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 34 | | | 2'-6"CONC CURB & GUTTER | 9,775.000 | LF | <input type="checkbox"/> | <input type="checkbox"/> |

General | MSG | History

| Row | Material | Master Conv Unknown | Conversion Factor | Substitution Group | Quantity | Unit of Measure |
|-----|--|-------------------------------------|-------------------|--------------------|----------|-----------------|
| 1 | Block, Concrete | <input type="checkbox"/> | .000 | 1 | 0.000 | EA |
| 2 | Brick, Clay | <input type="checkbox"/> | .000 | 1 | 0.000 | EA |
| 3 | Brick, Concrete | <input type="checkbox"/> | .000 | 1 | 0.000 | EA |
| 4 | Concrete, Class B | <input checked="" type="checkbox"/> | .000 | 1 | | CY |
| 5 | Masonry Drainage Structures, Steps for | <input type="checkbox"/> | .000 | | 0.000 | EA |
| 6 | Precast Concrete Units | <input type="checkbox"/> | 1.000 | 1 | 69.000 | EA |

A description of a unit of work for a contract.

Notice the number 1 in the Substitution Group column. This is an indication that this group of Materials can be used in place of each other. In our example, we know that the contractor will not be using the Brick and Block so they must be deleted.

Step 3: Select the Material that you want to delete and click on the Delete button  in the Toolbar. The Material is removed from the display.

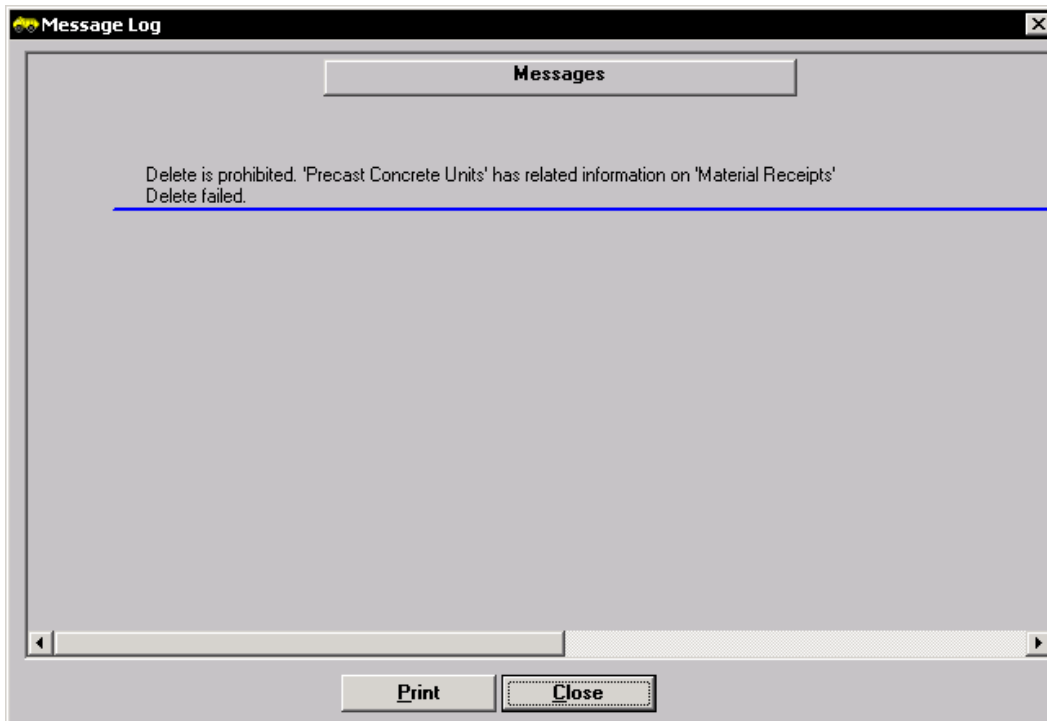
Step 4: Save the record. If the Material is not in use on the contract, it will be deleted and a History record will be created.

Step 5: Continue selecting and deleting the unneeded materials from your list.

Note: To select several consecutive line items at once, press and hold down your Shift key and click the first line item, click the last line item, then release the Shift key. To select several non-consecutive line items at once, press and hold down your Ctrl key, click on each line item, then release the Ctrl key.

Possible Error:

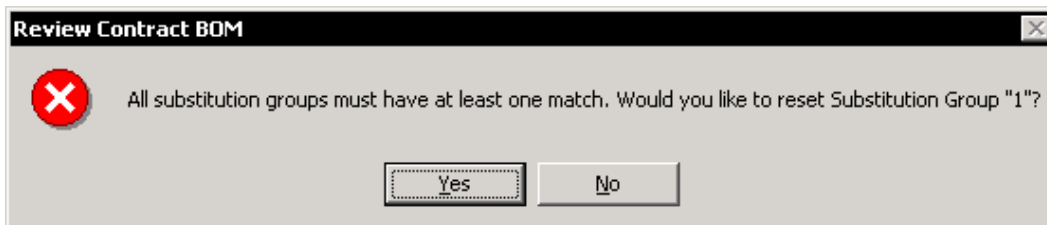
If the material you are trying to delete is in use, you will receive an error message similar to this when you Save:



When you click Close, the Material will appear back in the display with a green check mark.

Possible Error:

If you delete all but one of a set of Materials that are part of a Substitution Group, you will receive the following message:



In most cases, you want to Click Yes. You should click No if the remaining Materials can be substituted for each other. The Materials will be restored to the list, and you can modify the substitution group values before saving.

Minimum Sampling Guide Versioning and the CBOM

In HiCAMS Version 6.1, the Minimum Sampling Guide (MSG) was redesigned to incorporate **Version Control**. This means that when MSG Material Types are changed, the changed version will affect future contracts and not be retroactive to all current contracts as it has been in the past. An example would be if the MSG sample frequency requirements are changed from being 1 sample per 5,000 tons to being 1 sample per 2,000 tons. The new frequency would be applied to all new contracts but would generally remain at the old rate for existing contracts.

A look at the MSG tab of this Contract shows that there are three different versions of this Material Type on this contract, Versions 3.00, 3.01, and 3.02. Each version has an Effective Date and an Expired On Contract date displayed. The Material Type in effect on the date of a Material Receipt, Ticket, Sample, etc. is the one that will control the Acceptance of the material quantity.

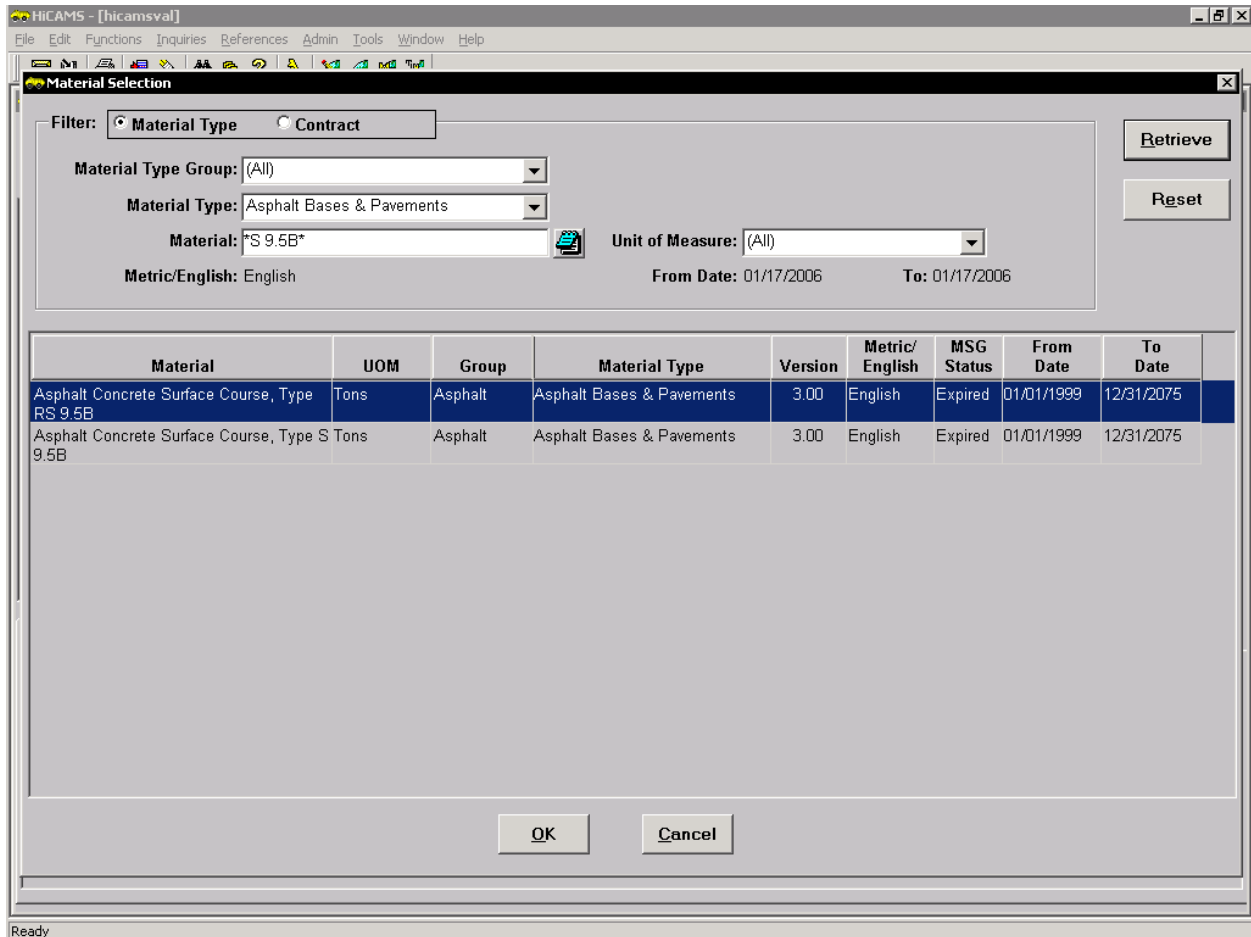
The screenshot displays the HiCAMS software interface. The main window is titled "Review Contract BOM (C201181)". It shows contract details: Contract: C201181, Contractor: SMITH-ROWE, INC., Status: Activated, Description (nickname): Jamestown, and Letting Date: 01/17/2006. Below this is a table of line items with columns for Line Item, Contract Adj, Work Item, Description, Quantity, Unit of Measure, Check for Materials, and Labor Only. Line item 25 is highlighted in blue.

At the bottom of the window, there are tabs for "General", "MSG", and "History". The "MSG" tab is selected, showing a table of material versions:

| Material | Material Type | Version | Effective Date | Expired on Contract | Criticality | How Received |
|---|---------------------------|---------|----------------|---------------------|-------------|--------------|
| Asphalt Concrete Surface Course, Type RS 9.5B | Asphalt Bases & Pavements | 3.00 | 01/17/2006 | 09/21/2006 | Critical | Ticket |
| Asphalt Concrete Surface Course, Type RS 9.5B | Asphalt Bases & Pavements | 3.01 | 09/22/2006 | 11/08/2006 | Critical | Ticket |
| Asphalt Concrete Surface Course, Type RS 9.5B | Asphalt Bases & Pavements | 3.02 | 11/09/2006 | 12/31/2075 | Critical | Ticket |

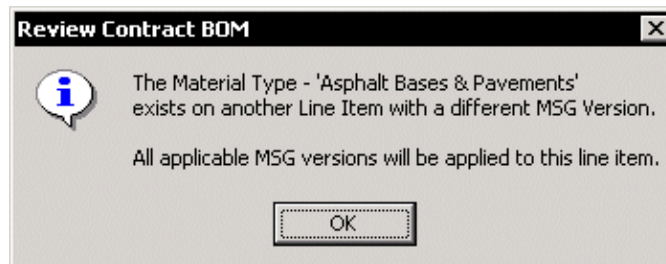
When the Material Selection window opens, the version of the Material's Material Type displayed is the one that was in effect on the Contract's Letting Date. However, if revisions have been made to the Material Type since the Letting Date and they have

been applied to the contract, those updated versions also need to be assigned to the contract.



Note: Do not be alarmed if the MSG status is Expired. This status refers to the current status of the Material Type. It is still available for your contract because it was Current on your Contract's Letting Date.

When you select this material, you may get the following pop-up message:



This message indicates that all the revised Material Type versions in use on your contract will be assigned automatically to this line item when OK is clicked.

Here is how the MSG tab of will appear after clicking OK, assigning a Conversion Factor, and Saving the record:

General **MSG** History

| Material | Material Type | Version | Effective Date | Expired on Contract | Criticality | How Received |
|---|---------------------------|---------|----------------|---------------------|-------------|--------------|
| Asphalt Concrete Surface Course, Type RS 9.5B | Asphalt Bases & Pavements | 3.01 | 09/22/2006 | 11/08/2006 | Critical | Ticket |
| Asphalt Concrete Surface Course, Type RS 9.5B | Asphalt Bases & Pavements | 3.02 | 11/09/2006 | 12/31/2075 | Critical | Ticket |
| Asphalt Concrete Surface Course, Type S 9.5B | Asphalt Bases & Pavements | 3.00 | 01/17/2006 | 09/21/2006 | Critical | Ticket |
| Asphalt Concrete Surface Course, Type S 9.5B | Asphalt Bases & Pavements | 3.01 | 09/22/2006 | 11/08/2006 | Critical | Ticket |
| Asphalt Concrete Surface Course, Type S 9.5B | Asphalt Bases & Pavements | 3.02 | 11/09/2006 | 12/31/2075 | Critical | Ticket |

Ready

Printing the Contract BOM

It is sometimes helpful to have a hard copy of the Contract BOM to review or distribute to the field Inspectors. There are two ways to generate the report.

Printing the Contract BOM report from the Standard Reports window

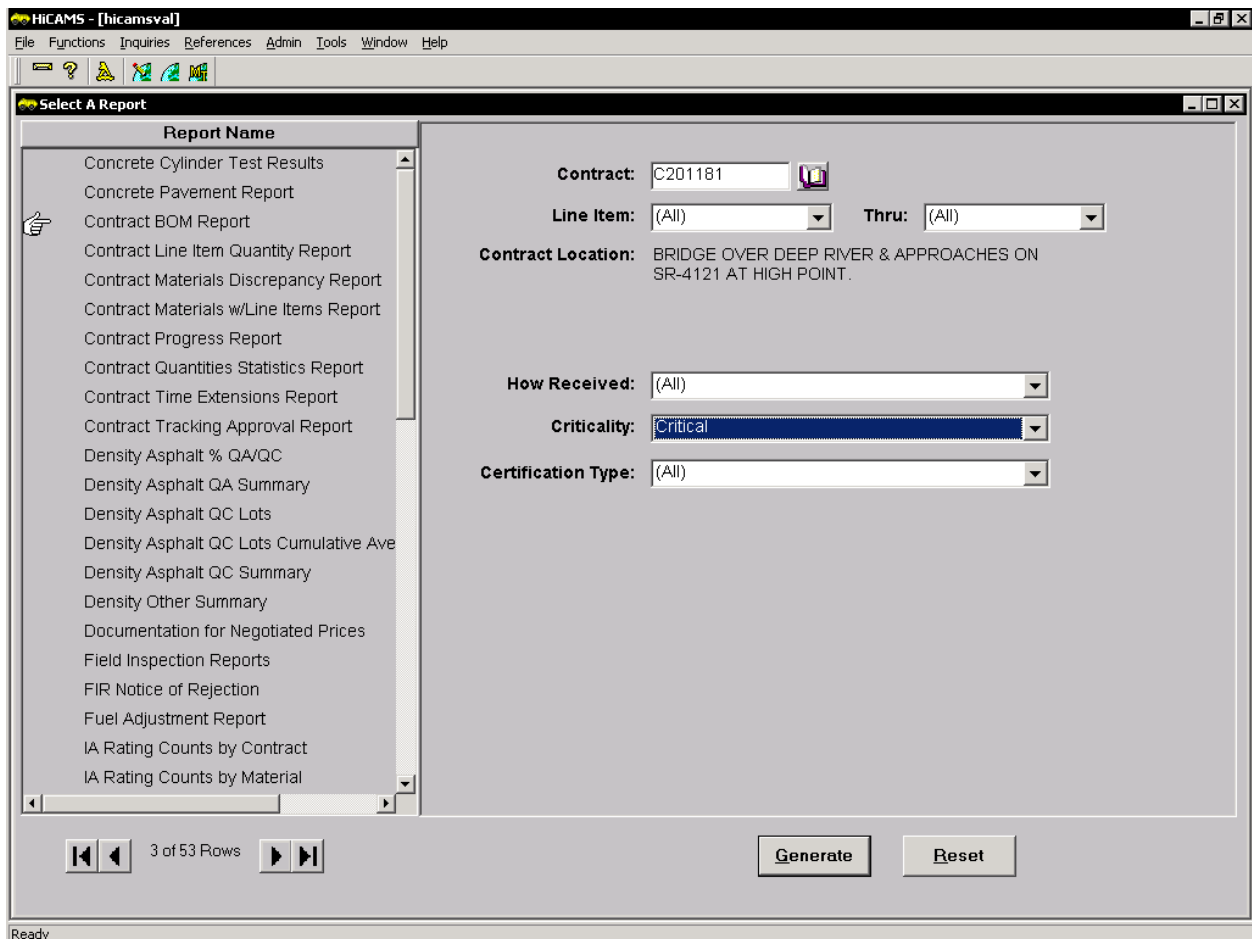
Step 6: Go to **Inquiries > Standard Reports**. The Select A Report window opens.

Step 7: Find "Contract BOM Report" in the list, and select it. The Report filters will display. Enter the Contract number for which you require the Report and Tab out of the field.

Possible Error:

If you enter your Contract Number and hit the Enter key instead of the Tab key, you will not have the chance to set the other filters before the report is generated.

Here is an example of the Select A Report window after the Contract Number has been entered and the Criticality filter has been set to Critical.



The Line Item filter allows only for a consecutive listing of Line Items. To select non-consecutive Line Items, generate this report from the Review Contract BOM window.

The dropdown filters refer to the same fields on the Minimum Sampling Guide and can be used to narrow the output of the Report.

Step 8: After the filters have been set, click the Generate button. The Contract Bill of Materials Report preview opens.

Here is an example of the CBOM report preview window.

North Carolina Department of Transportation
NCDOT Contract Bill of Materials Report

Contract Number: C201181
 Contract Location: BRIDGE OVER DEEP RIVER & APPROACHES ON SR-4121 AT HIGH POINT.
 Line Item: (All) Criticality: Critical How Received: (All) Certification Type: (All)


| Line Item No. | Cont Adj | Work Item | Line Item Description | Line Item UOM | Line Item Quantity | Criticality | Material Description | Required Cert Types | Mstr Conv Factor Unknown | Conv Factor | Sub. Group | Material Quantity | Mtl UOM | How Received |
|---------------|----------|-----------|----------------------------|---------------|--------------------|-------------|---|---------------------|--------------------------|-------------|------------|-------------------|---------|------------------|
| 6 | | | GRADING | LS | 1.000 | Critical | Field Density - Embankment | | N | 1.000 | | 1.000 | CY | Not Received |
| | | | | | | Critical | Field Density - Subgrade - Aggregate Stabilized | | N | 1.000 | | 1.000 | SY | Not Received |
| | | | | | | Critical | Field Density - Subgrade - Cement Treated | | N | 1.000 | | 1.000 | SY | Not Received |
| | | | | | | Critical | Field Density - Subgrade - Lime Stabilized | | N | 1.000 | | 1.000 | SY | Not Received |
| | | | | | | Critical | Field Density - Subgrade - Limestone Stabilized | | N | 1.000 | | 1.000 | SY | Not Received |
| 8 | | | BORROW EXCAVATION | CY | 9,300.000 | Critical | Borrow Excavation | | N | 1.000 | | 9,300.000 | CY | Not Received |
| 13 | | | FND CONDIR MATL MINOR STRS | TON | 99.000 | Critical | Borrow Excavation | | Y | 0.000 | 1 | 0.000 | CY | Not Received |
| 14 | | | 15" RC PIPE CULV III | LF | 248.000 | Critical | Reinforced Concrete Pipe Culvert, Class III, 15 in. | | N | 1.000 | | 248.000 | LF | Material Receipt |
| 15 | | | 18" RC PIPE CULV III | LF | 76.000 | Critical | Reinforced Concrete Pipe Culvert, Class III, 18 in. | | N | 1.000 | | 76.000 | LF | Material Receipt |
| 16 | | | 15" BCCSP B 0.064" | LF | 56.000 | Critical | Bituminous Coated | | N | 1.000 | | 56.000 | LF | Material Receipt |

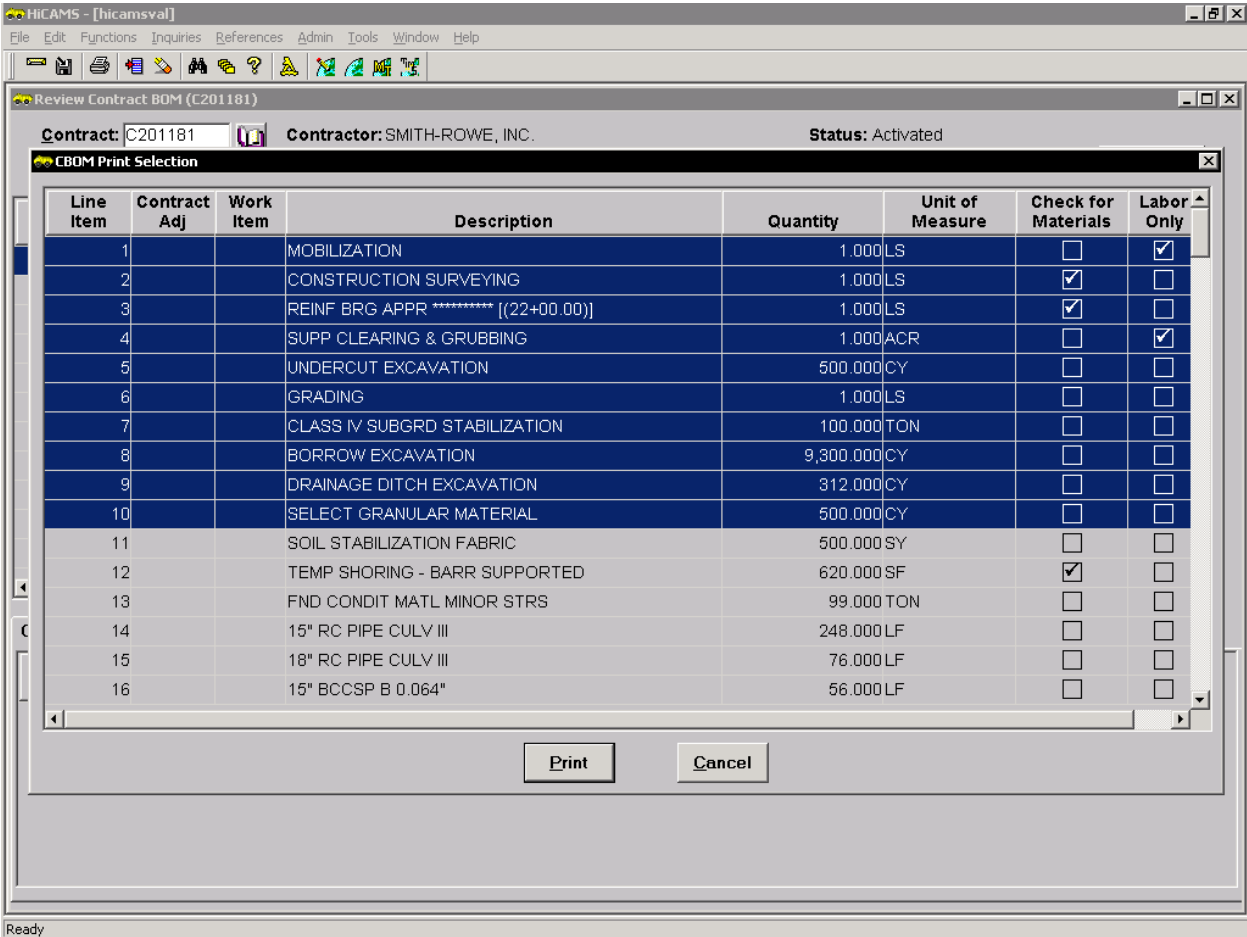
Zoom: 100 Page 1 of 5

Notice that the report begins with Line Item 6. This indicates that Line Item 6 is the first Line Item to have Critical Materials assigned to it. Remember that the Criticality filter can be set to All if the entire list of Materials for the contract is desired.

Step 9: To print a hard copy of the Report, click on the Printer button. The standard Print dialogue box opens. Continue Printing as usual.

Printing the Contract BOM report from the Review Contract BOM window

- Step 1:** Go to **Functions > Contract Maintenance > Review Contract BOM**. Enter the Contract Number whose Bill of Materials you wish to review. The Review Contract BOM window opens.
- Step 2:** In the Toolbar, go to **File > Print** or click on the Printer button  or use the keyboard shortcut CTRL-P. The CBOM Print Selection window opens. The selection window is simply a relisting of the Contract BOM window with the capacity for selecting more than one row at a time. An example of the window with Line Items 1-10 selected is shown below.



Note: To select several consecutive line items at once, press and hold down your Shift key and click the first line item, click the last line item, then release the Shift key. To select several non-consecutive line items at once, press and hold down your Ctrl key, click on each line item, then release the Ctrl key.

- Step 3:** After the Line Items for the Report have been selected, click on the Print button at the bottom of the window. The Contract Bill of Materials Report

preview opens. An example of the window for Contract Line Items 1 through 10 is below.

North Carolina Department of Transportation
NCDOT Contract Bill of Materials Report

Contract Number: C201181
 Contract Location: BRIDGE OVER DEEP RIVER & APPROACHES ON SR-4121 AT HIGH POINT.

Line Item: 1 Thru: 10 Criticality: (All) How Received: (All) Certification Type: (All)

| Line Item No. | Cont Adj | Work Item | Line Item Description | Line Item UOM | Line Item Quantity | Criticality | Material Description | Required Cert Types | Mstr Conv Factor Unknown | Conv Factor | Sub. Group | Material Quantity | MI UOM | How Received |
|---------------|----------|-----------|--------------------------------------|---------------|--------------------|--------------|---|---------------------|--------------------------|-------------|------------|-------------------|--------|------------------|
| 3 | | | REINF BRG APPR ***** (/22+00.001) | LS | 1.000 | Non-Critical | Engineering Fabric, Type II (Under Rim Ran) | 1, 2, 4 | Y | 0.000 | | 0.000 | SY | Material Receipt |
| | | | | | | Non-Critical | Geomembrane | 1, 2, 4 | N | 0.000 | | 0.000 | SY | Material Receipt |
| | | | | | | Minor | Select Material, Class III, Type 1 | | Y | 0.000 | 1 | 0.000 | TON | Ticket |
| | | | | | | Minor | Select Material, Class III, Type 2 | | Y | 0.000 | 1 | 0.000 | TON | Ticket |
| | | | Select Material, Class V | | Y | 0.000 | 1 | 0.000 | TON | Ticket | | | | |
| 5 | | | UNDERCUT EXCAVATION | CY | 500.000 | Minor | Undercut Excavation | | N | 1.000 | | 500.000 | CY | Not Received |
| 6 | | | GRADING | LS | 1.000 | Critical | Field Density - Embankment | | N | 1.000 | | 1.000 | CY | Not Received |
| | | | | | | Critical | Field Density - Subgrade - Aggregate Stabilized | | N | 1.000 | | 1.000 | SY | Not Received |
| | | | | | | Critical | Field Density - Subgrade - Cement Treated | | N | 1.000 | | 1.000 | SY | Not Received |
| | | | | | | Critical | Field Density - Subgrade - Lime Stabilized | | N | 1.000 | | 1.000 | SY | Not Received |
| | | | | | | Critical | Field Density - Subgrade | | N | 1.000 | | 1.000 | SY | Not Received |

Zoom: 100 Page 1 of 2

Notice that although Line Items 1 through 10 were selected, Line Items 1 (Mobilization), 2 (Construction Surveying), and 4 (Supplemental Clearing and Grubbing) do not appear on the report. This is because there are currently no Materials associated with those Line Items. These Line Items also have either the Check for Materials box checked or they have the Labor Only indicator checked. In addition, this report displays all Criticality Codes. If you want to view only Critical Materials, generate the report from the Standard Reports window.

Step 4: To print a hard copy of the Report, click on the Printer button again. The standard Print dialogue box opens. Continue Printing as usual.

Remember

1. Materials must be listed on the Contract BOM before they are available for selection in the Material Receipts, Tickets, Material Prepayments, Field Inspection Reports, and Sample windows.
2. Care should be taken when entering the Conversion Factor. Unless the Units of Measure for the Line Item and the Material are the same, the Conversion Factor is probably not 1.000. For additional information on conversion factors, see the HiCAMS User Guide "Working with Conversion Factors"
3. For specific help with calculating conversion factors for your project, please contact your M&T Area Engineer, the Materials and Test Unit (Francine Moody or Randy Pace Phone 919-733-7091), or the Construction Unit (919-707-2400).

Appendix: Window Definitions

The Contract BOM Window

To work with the Contract Bill of Materials window, go to **Functions > Contract Maintenance > Review Contract BOM**. Enter the Contract Number whose Bill of Materials you wish to review.

Note: For information on ways to enter your contract number, see the User Guide "Getting Started" in the User Guides section of the HiCAMS home page.

Below is an example of the Review Contract BOM window for contract C201277. A Work Item added to Line Item 1 is highlighted and shows the Materials assigned to the Work Item, the same as Materials are assigned to a Pay Item. You can also see an example of a line item with the Check for Materials checkbox checked and a Labor Only Work Item.

Review Contract BOM (C201277)

Contract: C201277 Contractor: TAYLOR & MURPHY CONSTRUCTION CO, Status: Activated
 Description (nickname): DESIGN-BUILD I-40 Exit 44 Letting Date: 04/14/2005

| Line Item | Contract Adj | Work Item | Description | Quantity | Unit of Measure | Check for Materials | Labor Only |
|-----------|--------------|-----------|----------------------------|------------|-----------------|-------------------------------------|-------------------------------------|
| 1 | | 26 | ASP CONC SURF CRS S9.5B | 1,330.000 | TON | <input type="checkbox"/> | <input type="checkbox"/> |
| 1 | | 27 | ASP CONC SURF CRS S9.5C | 6,670.000 | TON | <input type="checkbox"/> | <input type="checkbox"/> |
| 1 | | 28 | ASP CONC SURF CRS S12.5D | 10,875.000 | TON | <input type="checkbox"/> | <input type="checkbox"/> |
| 1 | | 29 | ASP FOR PLANT MIX PG64-22 | 2,695.000 | TON | <input type="checkbox"/> | <input type="checkbox"/> |
| 1 | | 30 | ASP FOR PLANT MIX PG70-22 | 555.000 | TON | <input type="checkbox"/> | <input type="checkbox"/> |
| 1 | | 31 | ASP FOR PLANT MIX PG 76-22 | 522.000 | TON | <input type="checkbox"/> | <input type="checkbox"/> |
| 1 | | 32 | MILLED RUMBLE STRIPS | 4,600.000 | LF | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 1 | | 33 | 14" PCC PVMT MISC | 565.000 | SY | <input type="checkbox"/> | <input type="checkbox"/> |
| 1 | | 34 | SURF TEST CONC PAVEMENT | 1.000 | LS | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 1 | | 35 | FIELD LAB RENTAL, PCCP | 1.000 | LS | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 1 | | 36 | ENDWALLS | 15.000 | CY | <input type="checkbox"/> | <input type="checkbox"/> |

| Row | Material | Master Conv Unknown | Conversion Factor | Substitution Group | Quantity | Unit of Measure |
|-----|---|--------------------------|-------------------|--------------------|-----------|-----------------|
| 1 | Asphalt Concrete Surface Course, Type RS 9.5B | <input type="checkbox"/> | 1.000 | 1 | 1,330.000 | TON |
| 2 | Asphalt Concrete Surface Course, Type S 9.5B | <input type="checkbox"/> | 1.000 | 1 | 1,330.000 | TON |

A description of a unit of work for a contract.

Note: The default Sort Order is Line Item number first, then the Contract Adjustment by Number. Work Items are sorted Numerically by Line Item. The default Sort Order can be changed by clicking on the Sort icon or by selecting **Edit > Sort**. See the User Guide "Getting Started" for more details on working with the Sort function.

Column Definitions for the Review Contract BOM Window

Line Item: The Line Number for the Pay Item in the Contract's Itemized Proposal.

Contract Adj: If the Line Item was added by a Contract Adjustment, the type of adjustment with its number will appear in this column. Line items are added by Supplemental Agreement (SA), Force Account (FA), Leftover Materials (LOM), Eliminated Contract Items (ECI), Claims (C), and manually by the Construction Unit (OTH). Generally, only Line Items added by SA or OTH will have materials associated with them.

Work Item: The Work Item number. Work Items are used on Lump Sum pay items to track materials and work. For more information about Work Items, see the User Guides "Review Work Items" and "Review Work Accomplished".

Description: The Pay Item description. This is the same description that is found in the Standard Specifications.

Quantity: The Contract Quantity for the Line Item.

Unit of Measure: This is the Unit of Measure or UOM associated with the Line Item. It may or may not be the same as the Unit of Measure for the Materials used on the Line Item.

Check For Materials: This box is checked if the Labor Only indicator is unchecked, and one of these three cases exists:

1. No materials exist for the line item on the Master Bill of Materials OR
2. The Pay Item was created from a Generic Master Pay Item OR
3. The Pay Item required a Supplemental Description. Some Line Items requiring a Supplemental Description have materials but not conversion factors assigned to them. These pay items will still be checked to indicate that they need to be reviewed.

Note: *These Pay Items should be reviewed and Materials added as necessary in order to facilitate receipt of the Materials on the Project. Some of these Line Items are Labor Only but because they are created from Generic Line Items, that check box cannot be checked, nor can the Check for Materials box be unchecked.*

Information about the Review Contract BOM Tabs

General Tab Column Definitions:

Contract: C201277 **Contractor:** TAYLOR & MURPHY CONSTRUCTION CO, **Status:** Activated
Description (nickname): DESIGN-BUILD I-40 Exit 44 **Letting Date:** 04/14/2005 Verify

| Line Item | Contract Adj | Work Item | Description | Quantity | Unit of Measure | Check for Materials | Labor Only |
|-----------|--------------|-----------|------------------------------|------------|-----------------|--------------------------|-------------------------------------|
| 1 | | | 19 AGGREGATE BASE COURSE | 7,775.000 | TON | <input type="checkbox"/> | <input type="checkbox"/> |
| 1 | | | 20 MILL ASP PVMT 3.0" DTH | 30,715.000 | SY | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 1 | | | 21 MILL ASP PVMT 4.5" DTH | 18,240.000 | SY | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 1 | | | 22 ASP CONC BASE CRS B25.0B | 26,950.000 | TON | <input type="checkbox"/> | <input type="checkbox"/> |
| 1 | | | 23 ASP CONC BASE CRS B25.0C | 20,710.000 | TON | <input type="checkbox"/> | <input type="checkbox"/> |
| 1 | | | 24 ASP CONC INTR CRS I19.0C | 12,025.000 | TON | <input type="checkbox"/> | <input type="checkbox"/> |
| 1 | | | 25 ASP CONC INTR CRS I19.0D | 3,295.000 | TON | <input type="checkbox"/> | <input type="checkbox"/> |
| 1 | | | 26 ASP CONC SURF CRS S9.5B | 1,330.000 | TON | <input type="checkbox"/> | <input type="checkbox"/> |
| 1 | | | 27 ASP CONC SURF CRS S9.5C | 6,670.000 | TON | <input type="checkbox"/> | <input type="checkbox"/> |
| 1 | | | 28 ASP CONC SURF CRS S12.5D | 10,875.000 | TON | <input type="checkbox"/> | <input type="checkbox"/> |
| 1 | | | 29 ASP FOR PLANT MIX PG64-22 | 2,695.000 | TON | <input type="checkbox"/> | <input type="checkbox"/> |

| Row | Material | Master Conv Unknown | Conversion Factor | Substitution Group | Quantity | Unit of Measure |
|-----|---|--------------------------|-------------------|--------------------|-----------|-----------------|
| 1 | Asphalt Concrete Surface Course, Type RS 9.5B | <input type="checkbox"/> | 1.000 | 1 | 1,330.000 | TON |
| 2 | Asphalt Concrete Surface Course, Type S 9.5B | <input type="checkbox"/> | 1.000 | 1 | 1,330.000 | TON |

A description of a unit of work for a contract.

Row: A number assigned by HiCAMS. Used to identify the rows that cannot be saved.

Material: The various substances assigned to this Contract Line Item to be incorporated into the Project during its construction.

Master Conv Unknown: If this check box is checked, it indicates that the Master Bill of Materials cannot set the Conversion Factor for this Material. It must be entered by the user based on Contract Specific information.

Conversion Factor: Displays the current Conversion factor. The conversion factor defines how many Material Units are required for each Line Item Unit. In this example above, where the Material UOM matches the Line Item UOM, the conversion factor is set to 1.000 because each payment of one ton requires one ton of Material. When the Material UOM does not match the Line Item UOM, the Conversion Factor is generally not set to 1.000. For more information on conversion factors, see the User Guide "Working with Conversion Factors".

Substitution Group: Identifies Materials that can be used in place of each other. When several materials can be used for the same purpose on a Line Item, a Substitution Group is created. In this example, either Asphalt Concrete Surface Course Type S9.5B or RS9.5B can be used for this line item. Substitution Groups are denoted by entering the same number or letter into the Substitution Group column for the Materials. In this case, the ones could be replaced with upper or lower case letters, or other numbers. The Substitution Group will enter into Project Certification calculations at a future date.

Quantity: The quantity column displays the calculated quantity of Material needed if the Bid Quantity amount of work is done. In this case, 700 tons payment on the Line Item would require 700 tons of the Material.

Unit of Measure: This is the Unit of Measure associated with the Material. It may or may not be the same as the Line Item Unit of Measure.

MSG Tab Column Definitions:

| General MSG History | | | | | | | |
|---|---------------------------|---------|----------------|---------------------|-------------|--------------|--|
| Material | Material Type | Version | Effective Date | Expired on Contract | Criticality | How Recieved | |
| Asphalt Concrete Surface Course, Type RS 9.5B | Asphalt Bases & Pavements | 3.00 | 01/17/2006 | 09/12/2006 | Critical | Ticket | |
| Asphalt Concrete Surface Course, Type RS 9.5B | Asphalt Bases & Pavements | 3.01 | 09/13/2006 | 12/31/2075 | Critical | Ticket | |
| Asphalt Concrete Surface Course, Type S 9.5B | Asphalt Bases & Pavements | 3.00 | 01/17/2006 | 09/12/2006 | Critical | Ticket | |
| Asphalt Concrete Surface Course, Type S 9.5B | Asphalt Bases & Pavements | 3.01 | 09/13/2006 | 12/31/2075 | Critical | Ticket | |

Ready

Material: The various substances assigned to this Contract Line Item to be incorporated into the Project during its construction.

Material Type: The MSG Material classification that contains the Acceptance and Testing Requirements for this Material.

Version: The MSG Version of the Material Type in use on this contract. Contracts may have different Material MSG version numbers depending on when they were let, the unit of measure in use, and special provisions which define a testing requirement just for that contract.

Effective Date: The start date for when this Material Type and Material combination can be used on the contract. For the original contact materials that are defaulted by the Master Bill of Materials during Authorization, the Effective Date is the same as the Letting Date. When changes are made to an MSG Material Type, they may be applied to existing contracts or just to newly let contracts. If the change has been applied to your contract, the new MSG version will show on the MSG tab. The original Material Type's Expired on Contract date will be one day less than the Effective Date of the updated MSG Material Type.

Expired on Contract: The last date that the Material Type and Material combination can be used on Contract Records. In most cases, the Expired on Contract date will be 12/31/2075. If a Material's MSG Type has been modified and replaced on the Contract, the Expired on Contract date will reflect the last date that those MSG requirements will be applied to the Material quantities.

Criticality: The Minimum Sampling Guide Project Certification Criticality code. The MSG Project Certification Criticality Codes are Critical, Non-Critical and Minor.

How Received: The Contract Tracking function that updates the Received Quantity for Project Certification. Possible functions include Material Receipt, Ticket, or Not Received.

***Note:** The How Received code may change from version to version of the MSG for the same Material Type. It is possible for the material listed to be received by Material Receipt when the project begins and be changed to Not Received at sometime during the life of the project.*

It is also possible to view the complete MSG information for a Material Type by Right-Clicking on the Tab. Select MSG from the popup menu and the Minimum Sampling Guide information for that version will display.

| General | | MSG | History | | | | | |
|---|---------------------------|---------|----------------|---------------------|-------------|--------------|--|--|
| Material | Material Type | Version | Effective Date | Expired on Contract | Criticality | How Received | | |
| Asphalt Concrete Surface Course, Type RS 9.5B | Asphalt Bases & Pavements | 3.00 | 01/17/2006 | 09/12/2006 | Critical | Ticket | | |
| Asphalt Concrete Surface Course, 9.5B | Bases & Pavements | 3.01 | 09/13/2006 | 12/31/2075 | Critical | Ticket | | |
| Asphalt Concrete Surface Course, | Bases & Pavements | 3.00 | 01/17/2006 | 09/12/2006 | Critical | Ticket | | |
| Asphalt Concrete Surface Course, | Bases & Pavements | 3.01 | 09/13/2006 | 12/31/2075 | Critical | Ticket | | |

Ready

History Tab Column Definitions:

| General | | MSG | History | | | | |
|---|--------|------------------------|-------------------|--------------------|------------------|--|--|
| Material | Action | Action Date | Conversion Factor | Substitution Group | Who | | |
| Asphalt Concrete Surface Course, Type RS 9.5B | Create | 02/28/2006 01:03:00 PM | 1.00 | 1 | Novello, Marie B | | |
| Asphalt Concrete Surface Course, Type S 9.5B | Create | 02/28/2006 01:03:00 PM | 1.00 | 1 | Novello, Marie B | | |

Ready

***Note:** In this example, the Right Click menu has been used to turn Word Wrap on so that the entire Material Description is displayed.*

Material: The various substances assigned to this Contract Line Item to be incorporated into the Project during its construction.

Action: Displays what has happened to each Material. The possible actions are Create, Modify, or Delete.

***Note:** All Materials defaulted from the Master Bill of Materials will have a Create Record with an Action Date set to the date and time the Contract was Authorized, and Who set to the name of the person who Authorized it.*

Action Date: When the Action took place. The Default sort order for the tab is by Material, then Action Date (most recent first).

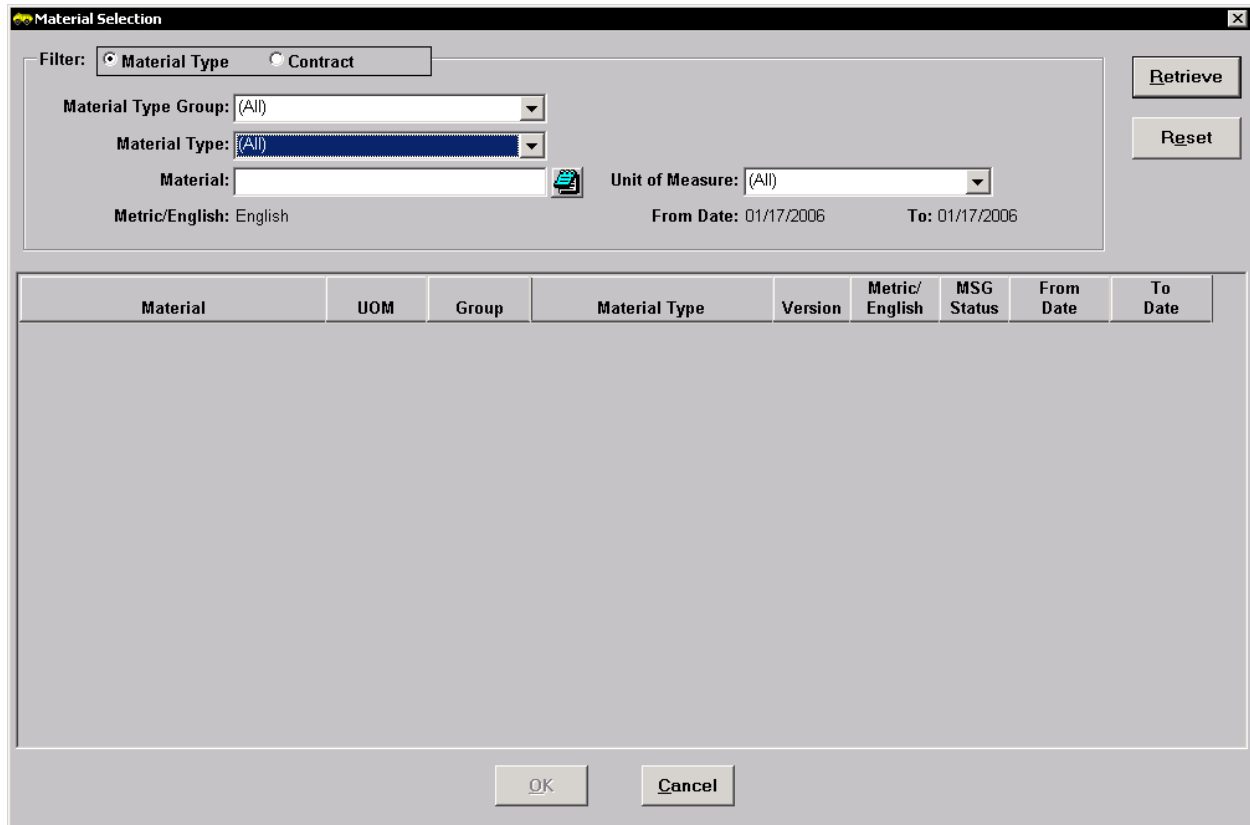
Conversion Factor: Displays the conversion factor for the Material when the Action occurred.

Substitution Group: Displays the Substitution Group for the Material when the Action occurred.

Who: Displays the name of the person who performed the Action.

The Material Selection Window

The Material Selection window was redesigned for Version 6.1. An example of that window is shown below.



The screenshot shows the 'Material Selection' window with the following fields and controls:

- Filter:** Radio buttons for 'Material Type' (selected) and 'Contract'.
- Material Type Group:** A dropdown menu currently set to '(All)'.
- Material Type:** A dropdown menu currently set to '(All)'.
- Material:** A text input field with a search icon to its right.
- Unit of Measure:** A dropdown menu currently set to '(All)'.
- Metric/English:** A text field containing 'English'.
- From Date:** A text field containing '01/17/2006'.
- To:** A text field containing '01/17/2006'.
- Buttons:** 'Retrieve', 'Reset', 'OK', and 'Cancel' buttons.

Below the filter fields is a table with the following header:

| Material | UOM | Group | Material Type | Version | Metric/ English | MSG Status | From Date | To Date |
|----------|-----|-------|---------------|---------|--------------------|---------------|--------------|------------|
|----------|-----|-------|---------------|---------|--------------------|---------------|--------------|------------|

Information about the Material Selection Window filters

Material Type or Contract Filter: The default setting for this filter is to the Material Type. This is the same as in previous HiCAMS versions.

The following filters are available when Material Type is selected:

Material Type Group: A new, higher level category called Material Type Group has been added to the window. These groups can be used to apply an initial filtering to the Material Type List.

Material Type: The Material Type filter provides a listing of all the MSG Material Types.

Material: This field functions as a Find tool. If you want to identify all the Materials that start with the word "steel", you would type *steel* into the Material field and click on Retrieve. If you want to identify all the Materials which contain the word "steel", you would type **steel** into the Material field and click on Retrieve.

Metric/English: The Material unit of measure system is defaulted from the Contract.

Unit of Measure: A listing of the possible material Units of Measure.

From Date/To Date: Defaults to the Contract's Letting Date.

The following additional filter is available when Contract is selected.

Line Item: A listing of all the Line Items that currently have Materials assigned to them. This filter is useful if you have the same Line Item repeated on the contract several times and none of them have any materials defaulted by the Master BOM. For instance, "Supports for Overhead DMS Structures at STA *****", has no Materials associated with it on the Master BOM. Once you have added the Materials to the Line Item, you are able to copy the same materials to the remaining ones.