ROMAC SERIES 7
STEEL BILL OF MATERIAL

Version 7.1

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OPERATOR'S MANUAL

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Overview

The Romac Series 7 Steel Bill of Material program is designed to manage a material list comprised of items generally used in the steel processing and fabricating industries. Managing of the material list can include keyboard entry of materials, import of material lists from other applications, calculation of weights, calculation of surface areas, grouping similar items, and printing various reports. If the Romac nesting modules are installed, nesting for cutting purposes is also available. The program can be adapted for use by varying types of steel processing and related industries.

Romac Series 7 Steel Bill of Material is a Windows program and is compatible with Windows 95, 98, ME, NT4.0, and 2000. The program must be installed onto each user's workstation. Project data can be shared among users on a network. When used on a network, a lock feature allows only one user to access project data at any one time.

If the Bill of Material program is installed onto a computer that has a licensed copy (or un-expired evaluation copy) of Romac Length Nesting Version 2 and/or Romac Plate Nesting Version 2, the nesting feature will be available within the Bill of Material program.

This documentation was written for version 7.1.0 of Romac Series 7 Steel Bill of Material. Later versions of the program may contain features and functions not included in this documentation or may have different implementation methods. Please contact Romac Computer Services, Inc. or refer to our website www.romacinc.com for information regarding the latest versions of the program and documentation.

Installation

To install, select Run from the Start menu then run BMSetup.exe from the programs CD disk.

The default installation will add this program to a "Romac Applications" menu option in your Windows "Program" menu.

Upon installation, you will have a 30-day evaluation period that gives you access to most program features. If you wish, at any time during or after the evaluation period, you may purchase a program license. A license is required to legally use the software beyond the evaluation period. Information regarding registering and licensing the software is available from the program's "Maintain" menu or by contacting Romac Computer Services, Inc.

Software Purchase and Registration

Upon installation of this software, you will be given a 30-day evaluation period, which gives you, access to most program features.

You may purchase and register the software at any time during or after the evaluation period. Each registration gives you a license to use a single installation of the software in accordance with the Software License Agreement and Limited Warranty.

Each installation will generate a different serial number. This serial number is required for registration. The serial number will be included on the printed registration form (see Maintain | Print Registration Form). The serial number is also available at the Help | About dialog box.

A new registration code may be required if you reformat your hard disk or upgrade to a new computer. Romac Computer Services will transfer your registration to another computer at no charge as long as there is no evidence of violation or abuse of the license agreement.

Once registered, the menu option Maintain | Configure can be used to enter your company name.

The Romac Length Nesting version 2 and Romac Plate Nesting version 2 programs can also be registered from within the Romac Series 7 Bill of Material program. If Length Nesting and/or Plate Nesting are registered for use with the Bill of Material program, the license extends to the stand-alone version of the respective program. Conversely, if the stand-alone version of the nesting program is licensed for a computer, that license allows use of the nesting routine within the bill of material program.

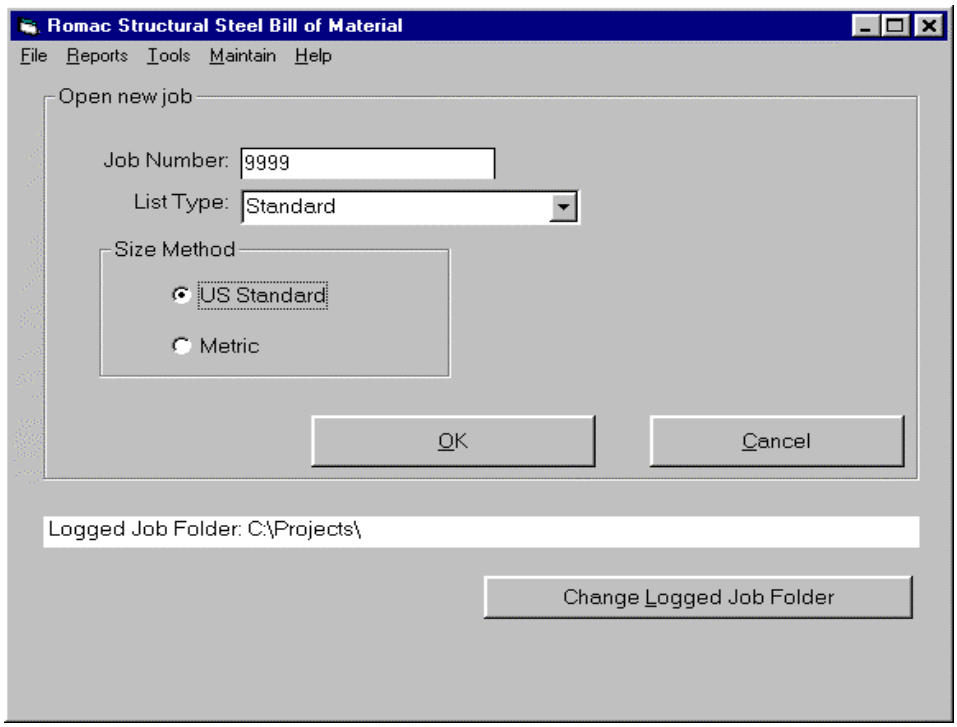
Start Up

If the default installation was used; click the Start button, then click on 'Programs', nest click 'Romac Applications' and finally click 'Romac Bill of Material' to start the program.

Menu Structure

- File
  - New Project
  - Open Project
  - Delete Project
  - Exit
- Reports
  - Extended List
  - Sorted List
- Tools
  - Nesting
  - Import
- Maintain
  - Edit Material Database
  - Display Materials Database
  - Edit Specifications Table
  - Edit Default Specifications
  - Print Registration Form
  - Enter Registration Number
  - Configuration
  - List Type Templates
- Help
  - Contents
  - About

BOM Project



Job Number

Each BOM project is identified by a 6 character Job Number. Alpha/numeric and certain other characters (such as '-' and '_') can be used in the job number. BOM projects are stored as files in the folder shown at 'Logged Job Folder' at the bottom of the window. The 'Change Logged Job Folder' button can be used to change the folder where jobs are stored.

The 'Browse' button will list all Series 7 Bill of Material jobs stored in the current logged job folder.

Whenever a user opens a job, that job is marked as 'in use'. If a user tries to open a job that is marked as 'in use', a message will be displayed warning the user that the job is 'in use'. If the 'in use' warning is received, it will be caused by one of three reasons.

1) Another user has opened the job and could be accessing or updating the data.
2) You have opened the same job in another window on your system.
3) A user had previously opened the job then experienced a program or computer error causing the job to remain marked as 'in use'.

You should never unlock a job if it is locked for reasons 1 or 2. Unlocking a job that is actually in use can cause data corruption that would render the job data useless. If this happens, your only recourse is to delete the job and re-enter the data. The unlock feature should never be used unless the job is locked because of a program error or computer problem.

List Type

When creating a new job, a List Type can be specified. 'List Types' can be configured by the user. See 'List Type Templates' section for additional information regarding List Types.

Size Method

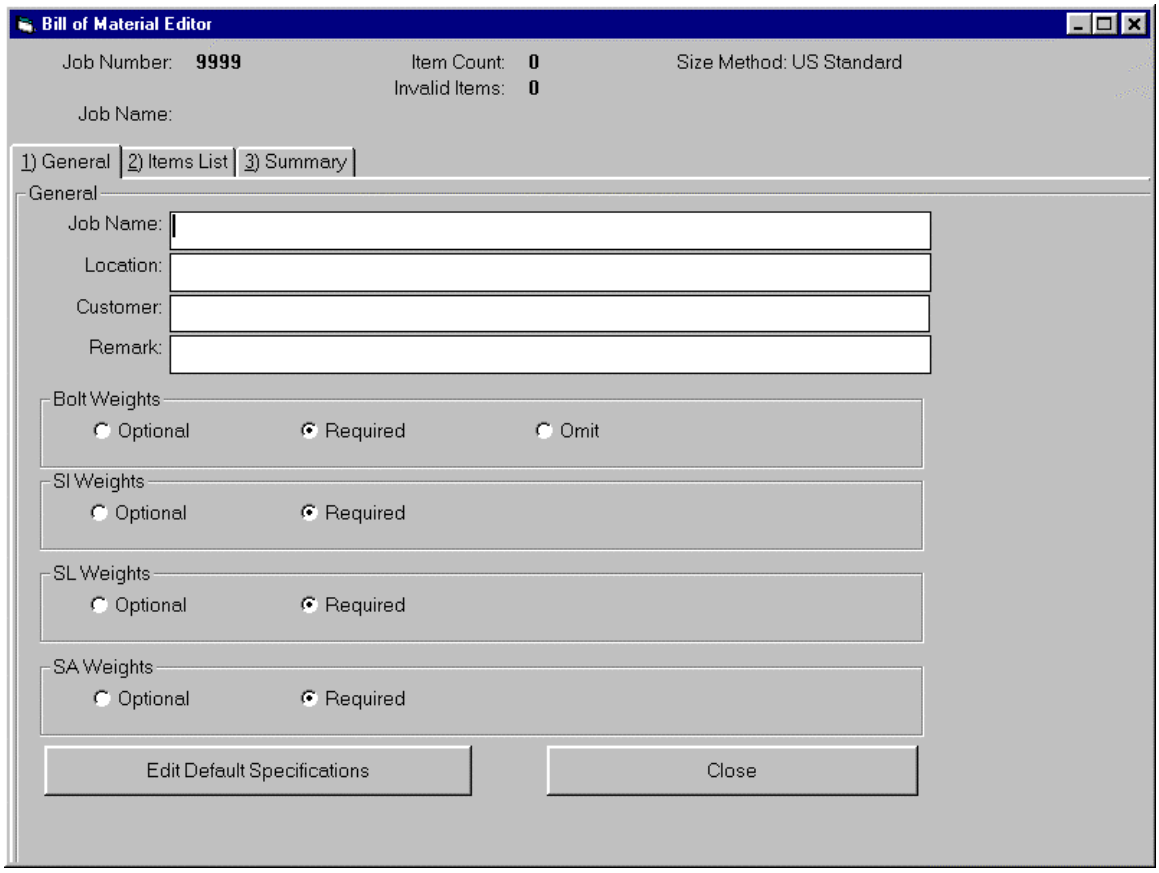
Either US standard or metric units can be used in a BOM project. The selected size method is used for all BOM entries in the job and cannot be changed once the job has been created.

Selecting the OK button passes program control to the Bill of Material Editor.

Bill of Material Editor

The Bill of Material Editor window consists of three tabs; General, Items List, and Summary.

General



The General tab allows entering and editing of the Job Name, Location, Customer, and an overall job Remark. This tab is also used to determine how bolt weights and other special item weights are handled for the project. Job default specifications can be changed from this tab.

To calculate bill of material weights, all items on a job must be in the Materials Database with the exception of bolts and special items. The Materials Database is covered in a later section of the

manual. Specifics regarding bolt shapes and special item shapes are also covered in another section.

Bolt and Special Item Weights

Weights for bolts (shapes BTH, BTM, BTN, WHF, WHB, WHL, BTE, BTW, TC, AB, & SC) can be optional, required, or omitted on a given bill of material list. If bolt weights are optional, the weight from the materials database will be used if the bolt is in the materials database or you can enter the weight unit if the bolt is not in the materials database. If required is selected, the weight unit must be supplied either from the materials database or individually entered from the keyboard. If omit is selected, the weight will be ignored even if the bolt is in the materials database.

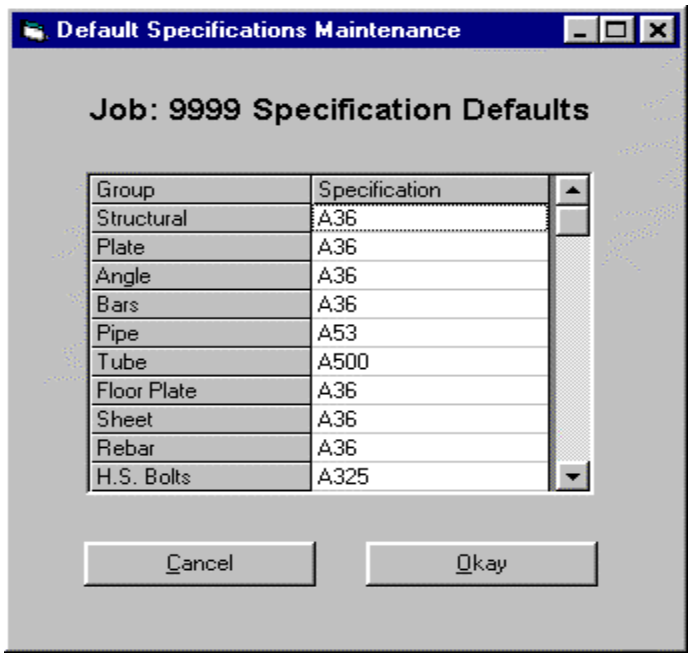
Special item (shapes SI, SL, & SA) weights can be optional or required. If optional, the weight unit in not necessary but will be calculated if found in the materials database or entered from the keyboard. If required, the weight unit must come from the materials database or entered from the keyboard. Manually entered special item weights are not carried from one entry to another. If a special item is entered with a manually entered weight unit then the identical description is used for a later item, you must re-enter the weight unit.

The weight unit for all shapes other than bolts and special items must come from the materials database. You do not have the option to manually enter the weight unit during bill of material data entry.

Edit Default Specifications

The Default Specifications table determines which material specification is assigned to a bill of material item at data entry. The default should be set for the most prevalent material specification used for the shape. You are never locked into the default; the material specification for the item can always be changed as required.

The Edit Default Specifications button allows you to edit the specification defaults table. This table is used by this job only. The master default specification table can be edited elsewhere.

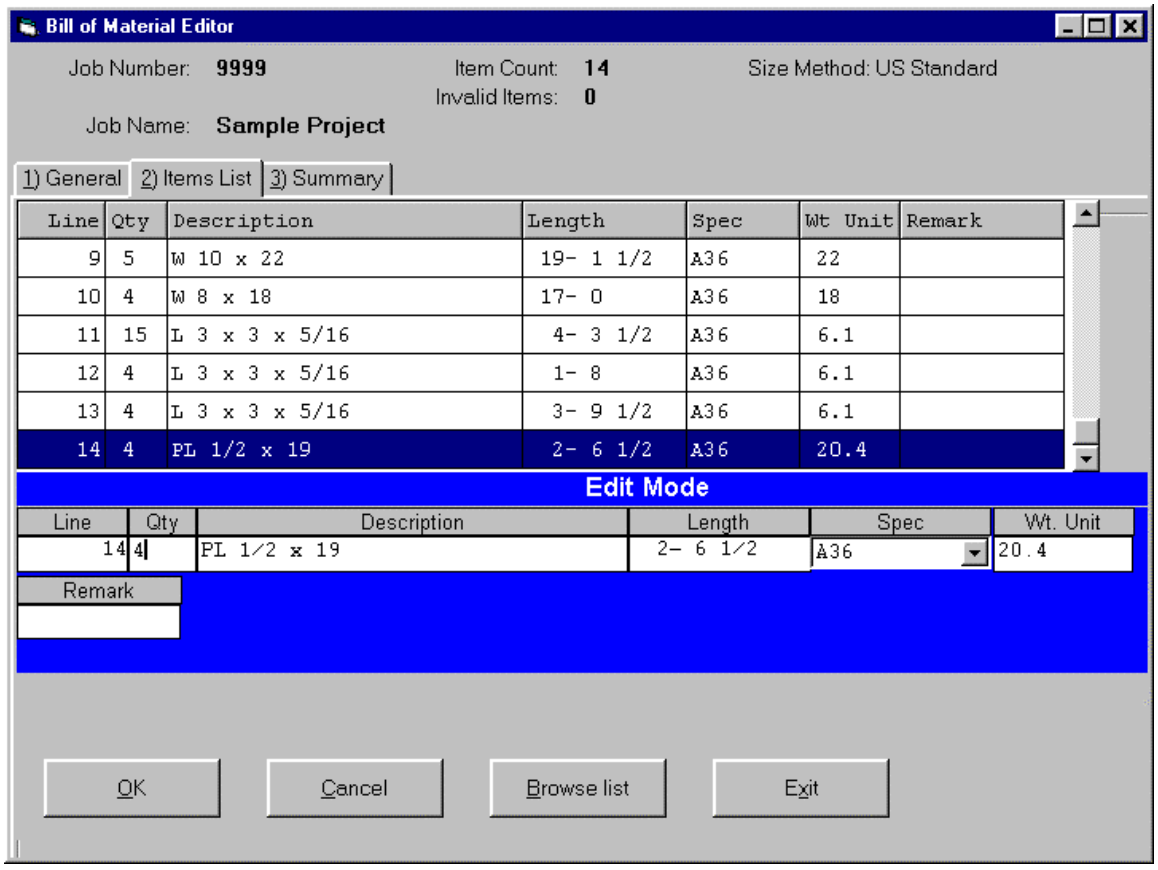


For specification default purposes, the various shapes are grouped as follows:

- Structural – W, WT, HP, S, ST, M, MT, C
- Plate - PL
- Angle – L, BC
- Bars – BR, SQ, RD
- Pipe – PI, PS, PE, PD
- Tube – TS, TO
- Floor Plate – FP
- Sheet – GA
- Rebar – RB
- H.S. Bolts – BTH, BTN, WHF, WHB, WHL, TC
- Mach. Bolts – BTM
- Other Bolts – BTE, BTW, AB, SC
- Other Matls. – SA, SI, SL, FEM, REM, GR

Items List

Select the 'Items List' tab to display, enter, or edit the bill of material data. The material list is displayed in a scrollable grid. Data entry or editing is accomplished in a separate window outside the grid. To add items to the end of the list, select the 'Add to list' button. To edit an existing item, highlight the item then click on the 'Edit' button, press the right arrow key, or press [Alt][E].



Bill of Material Data entry

Line

The Line data is generated by the system. This will be consecutive item numbers or page/line numbers depending on the list type. The Line data cannot be edited and lines cannot be inserted into the list. The bill of material must be entered in sequential order.

Qty

For bill of material items, this is a whole number (decimals not allowed) in the range of 1 – 9999 denoting the item quantity. Control codes 'V' for void line and 'NT' for note can be entered into the quantity field.

Void is used to take an item out of the bill of material. Void is also used if data is not applicable for the line.

Note is used to enter a 24 character note is the description field. Notes are not considered as bill of material data.

Description

The bill of material description is entered into this field. If the item has a width (such as plates), the width would be included in the description field. In most cases, the item length is not entered into the description field but entered into the separate length field. An exception is that bolt lengths are entered into the description field.

The description entry is made by entering the shape code followed by [ENTER] (or the space bar) then the description dimensions. For most entries, if the description contains fractions, the fraction entry is made using re-defined fractions keys. This allows you to make fraction entries using one keystroke. The re-defined fraction keys are:

W=1/16, E=1/8, R=3/16, T=1/4, Y= 5/16,
U=3/8, I=7/16, O=1/2, S=9/16, D=5/8,
F=11/16, G=3/4, H=13/16, J=7/8, K=15/16

The shape codes and corresponding description formats are:

Note, these examples are based on US standard description entry. Metric description entries are similar except fractions are not applicable. Depending upon whether you are updating a US standard or metric item, the appropriate Description Type at the upper right of the window must be checked.

W, WT, C, MC, S, ST, M, MT, & HP - (Structural shapes as per AISC designations). Description is entered by typing in the shape followed by [ENTER] (or space) then the depth, then X, then the weight per foot followed by [ENTER]. Spaces are automatically inserted before and after the 'X'. Use the decimal point where required. Optionally, the '+' key can be used rather than 'X'.

Example: W 10 x 22

L – (Angles). Input is in inches and inch fractions. Description is entered by typing in the shape followed by [ENTER] (or space) then leg 1, then X, then leg 2, then X, then the thickness followed

by [ENTER]. Fractions must be entered using the redefined single key. Spaces are inserted by the computer where required for clarity.

Example: L 3 1/2 x 3 1/2 x 5/16

PL - (Plate). Input is in inches and inch fractions. Description is entered by typing in the shape followed by [ENTER] (or space) then the thickness, then X, then the width followed by [ENTER]. Maximum thickness is 9 15/16". Fractions must be entered using the redefined single key. Spaces are inserted by the computer where required for clarity.

Example: PL 1/2 x 15 3/4

BR - (Flat bar). Input is in inches and inch fractions. Description is entered by typing in the shape followed by [ENTER] (or space) then the thickness, then X, then the width followed by [ENTER]. The maximum width/thickness is 99 15/16".

Example: BR 1/2 x 4

SQ - (Square bar). Entry is in inches and inch fractions. The description is entered by typing in the shape followed by [ENTER] (or space) then the bar dimension followed by [ENTER]. Maximum dimension is 9 15/16". Fractions must be entered using the redefined single key.

Example: SQ 1/2

RD - (Round rod). Entry is in inches and inch fractions. The description is entered by typing in the shape followed by [ENTER] (or space) then the diameter followed by [ENTER]. Maximum diameter is 9 15/16". Fractions must be entered using the redefined single key.

Example: RD 3/4

RB - (Rebar). The description is entered by typing in the shape followed by [ENTER] (or space) then the bar size followed by [ENTER]. Allowed bar sizes are 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 14, and 18.

Example: RB 4

GA - (Gauge material). The description is entered by typing in the shape followed by [ENTER] (or space) then the gauge thickness, then X, then the width followed by [ENTER].

Example: GA 11 x 24

FP - (Floor Plate). Entry is similar to plate (PL).

Example: FP 3/8

TS - (Square and rectangular tube). Entry is similar to Angle. The wall thickness must always be the last entry. If the wall thickness entry is 7 - 28, then a gauge wall thickness is assumed.

Example: TS 4 x 4 x 1/4

TO - (Round tube). Entry format is shape followed by [ENTER] (or space) then the outside diameter in inches and inch fractions), X, then the wall thickness. The wall thickness must always be the last entry. If the wall thickness entry is 7 - 28, then a gauge wall thickness is assumed.

Example TO 4 x 1/2

PI - (Pipe). Schedule pipe can be entered using this Shape code. The entry format is Shape, [ENTER] (or space), diameter, <X>, then the schedule followed by [ENTER].

Example: PI 4 x 40

PS, PE, and PD - (Pipe). Standard (PS), Extra strong (PE), and Double extra strong (PD) pipe can be entered using these Shape codes. The entry format is Shape, [ENTER], then the diameter followed by [ENTER].

Example: PS 4
PE 4
PD 4

CB - (Bar Channel). Entry is similar to Angle.
Example: CB 1 1/2 x 1/2 x 1/8

TB - (Bar Tee). Entry is similar to Angle.
Example: TB 1 1/2 x 1 1/2 x 3/16

BTH - (High strength Bolt). Enter the shape then [ENTER] (or space), diameter, then X, then the length followed by [ENTER]. All entries are in inches and inch fractions.
Example: BTH 3/4 x 2 1/2

BTM - (Machine Bolt). Enter the shape then [ENTER] (or space), diameter, then X, then the length followed by [ENTER]. All entries are in inches and inch fractions.
Example: BTM 3/4 x 2 1/2

BTN - (Nut). Enter the shape then [ENTER] (or space), diameter in inches and inch fractions followed by [ENTER].
Example: BTN 3/4

WHF - (Flat Washer). Enter the shape then [ENTER] (or space), diameter in inches and inch fractions followed by [ENTER].
Example: WHF 3/4

WHB - (Bevel Washer). Enter the shape then [ENTER] (or space), diameter in inches and inch fractions followed by [ENTER].
Example: WHB 3/4

WHL - (Load indicator Washer). Enter the shape then [ENTER] (or space), diameter in inches and inch fractions followed by [ENTER].
Example WHL 3/4

BTE - (Expansion Bolt). Enter the shape then [ENTER] (or space), diameter, then X, then the length followed by [ENTER]. All entries are in inches and inch fractions.
Example: BTE 3/4 x 4

BTW - (Wedge insert). Enter the shape then [ENTER] (or space), diameter in inches and inch fractions followed by [ENTER].
Example: BTW 3/4

AB - (Anchor Bolt). Enter the shape then [ENTER] (or space), diameter, then X, then the length followed by [ENTER]. All entries are in inches and inch fractions.
Example: AB 3/4 x 12

SC -(Shear Connector). Enter the shape then [ENTER] (or space), diameter, then X, then the length followed by [ENTER]. All entries are in inches and inch fractions.
Example: SC 1/2 x 4

GR - (Bar Grating). Enter the shape then [ENTER] (or space) then the bearing bar depth, then X, then the bearing bar thickness, then X, then the thickness followed by [ENTER]. All entries are in inches and inch fractions.
Example: GR 1 1/4 x 3/16 x 24

REM - (Regular Expanded Metal). Enter the shape then [ENTER] (or space) then the diamond SWD, then X, then the gauge thickness, then X, then the thickness followed by [ENTER].
Example: REM 3/4 x 16 x 24

FEM - (Flattened Expanded Metal). Enter the shape then [ENTER] (or space) then the diamond SWD, then X, then the gauge thickness, then X, then the thickness followed by [ENTER].
Example: FEM 3/4 x 16 x 24

SI - (Special item with weight calculated per each or item). Used for entries such as castings where the weight is calculated by the item. SI can also be used for items that do not have a weight. At Shape type SI [ENTER], then a 24 character description followed by [ENTER]. Redefined fraction keys are not available for the description part of this entry.
Example: SI #101 CASTING

SA - (Special item with weight calculated by Area). Used for items such as grating where weight is calculated by area. At Shape type SA [ENTER], then a 15 character description followed by [ENTER] then the width. Redefined fraction keys are not available for the description part of this entry but must be used in the width entry section if applicable.
Example: SA 1/8" PERF. PL x 24

SL - (Special item with weight calculated by Length). Used for items such as extrusions or aluminum sections. At Shape type SL [ENTER], then a 24 character description followed by [ENTER]. Redefined fraction keys are not available for the description part of this entry.
Example: SL #101 EXTRUSION

Length

Length is entered in feet, inches, and inch fractions for US standard jobs and millimeters for metric jobs. Maximum length is 999'11 15/16 for US standard or 99999 mm for metric.

For US standard units the hyphen [-], period [.], or single quote ['] can be used to separate feet and inches. Fractions must be entered using the redefined single key. For metric units, decimal entries are not permitted.

Spec

The spec field will be automatically filled in with the default specification based on the shape. If this is correct, you can tab or enter to the next field. A different spec can be selected from the specifications table or you can enter the material code (1-99) relating to the actual specification. Regardless of which method is used to enter the specification, it must exist in the specifications table.

Wt. Unit

For most items, the wt. unit comes from the materials database through an internal lookup operation. If the item is a bolt or special item and not found in the materials database, you will be prompted to enter a weight unit. Depending on your selections on the General tab screen, the weight unit may or may not be required.

Other entry fields

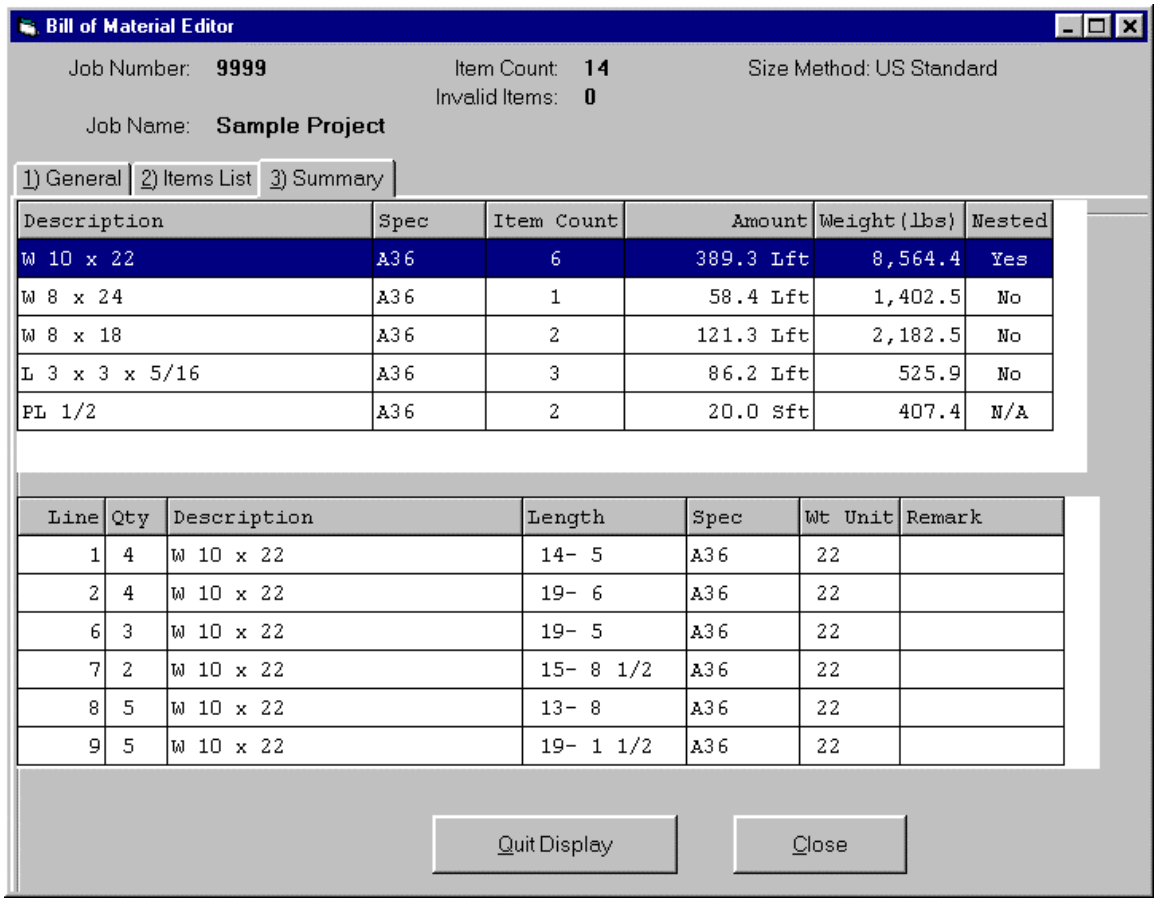
You may be prompted for other entries such as Remark, etc. depending on the list type. In most cases, these entries are optional and may be skipped if not applicable.

Invalid entries

At the end of each line of data entry, you will be prompted if there were any errors. The error message will be descriptive of the error condition. If you choose to not correct the error; the item will be flagged as invalid and an asterisk will be placed in the line number column. Invalid items are not included in weights, summaries, nested lists, etc. A count of invalid items is shown at the top of the Bill of Material Editor window.

The OK button will update the material list with the data just entered or changed. The Cancel button will undo the last line of data entry or change. If you are in Append Mode, the Browse List button will switch control into display/edit mode. The last line of data entry in not saved if the Browse List button is selected. The Exit button will save all data and close the project.

Summary



The Summary tab will display a summary listing of each unique description and spec. The summary listing shows:

Item Count – Number of bill of material line items containing the description/spec.
Amount – Total quantity in lin. ft. (or lin. meters), sq. ft. (or sq. meters), or pieces.
Weight – Total weight in lbs. or kgs.
Nested – Nested status (yes, no, partial, or N/A) of the item.

Bill of material line items with invalid data are not included in the summary. Select the Display button to display the detail for the summarized items. The detail listing is in line number order.

Import Bill of Material

The Tools | Import menu option allows you to import a bill of material from another Romac job or another application. Currently, import routines are available for KISS format data or import from another Romac Series 7 Bill of Material job.

Import from another Romac job

This routine imports the entire bill of material from another Romac Series 7 Bill of Material into the current open job.

Both jobs must reside in the same folder and they must both be of the same 'size method' (US standard or metric).

It is not necessary that they both be the same list type, data fields will be matched based on the fields 'type of data'. Non-matching fields will be skipped or left blank. If the field you are importing into is shorter than the field you are importing from, the data will be truncated to the shorter field length.

A multiplier unit is available to increase the import quantities. If you manufacture standard assemblies and the build them in varying quantities, you can set up separate material lists for each assembly then import the assemblies into a production material list when a production run is made. This would allow you to generate consolidated material and nesting lists for the production run.

You also have the option to add a header note at the beginning of the imported data. Additionally, you have the option to include or omit void lines in the imported data.

Normally, you would not want to change the material specification when importing from one job to another but the import routine will allow you to change material specifications if you wish. If you elect to change the material specification, all instances of the specified specification will be changed. For instance, all occurrences of A572 in the imported data could be changed to A992.

The line number reference from the original job will not be maintained in the imported data. New consecutive line numbering will be generated for the imported.

Import KISS format data

This routine will import data conforming to the KISS Version 1.0 format. Several steel detailing programs and other applications will generate a bill of material data file in the KISS format. Also, third party programs are available to generate KISS format data from AutoCAD drawing files.

The KISS data must have the same size method (US standard or metric) as the Romac job you are importing into. The KISS import file must have the file extension .kss but does not need be in the same folder as the Romac job files.

All bill of material data in the KISS file will be imported into the Romac job. Before an import can continue, all specifications from the KISS file must match or be cross-referenced to a Romac specification. KISS format data does not contain weights or surface areas so all imported data will be verified against the Romac materials database.

A few notes concerning the imported data: It is a good ideal to check the imported data against the source (drawings bill of material, etc.). Standard structural sections (W, WT, C, etc.), angles, plates, bars, etc. can usually be imported without difficulty. The KISS standard is not entirely clear when it comes to bolts, hardware, and miscellaneous items. These types of items should be checked closely to insure that our import routine interpreted the KISS data correctly. In cases where the data is not entirely clear to our import routine, it will be imported as a Romac 'SI' items.

The KISS import will always import the quantity, description, length, and material specification fields. Other data items will be imported if the Romac job's list type contains the following types of data:

The KISS 'Shipping Mark' field will be imported if the Romac job contains a data field denoted as type of data 'Assembly Mark'.

The KISS 'Piece Mark' field will be imported if the Romac job contains a data field denoted as type of data 'Piece Mark'.

The KISS 'Drawing Number' field will be imported if the Romac job contains a data field denoted as type of data 'Drawing No'.

The KISS 'Job Number' field will be imported if the Romac job contains a data field denoted as type of data 'Job No.'.

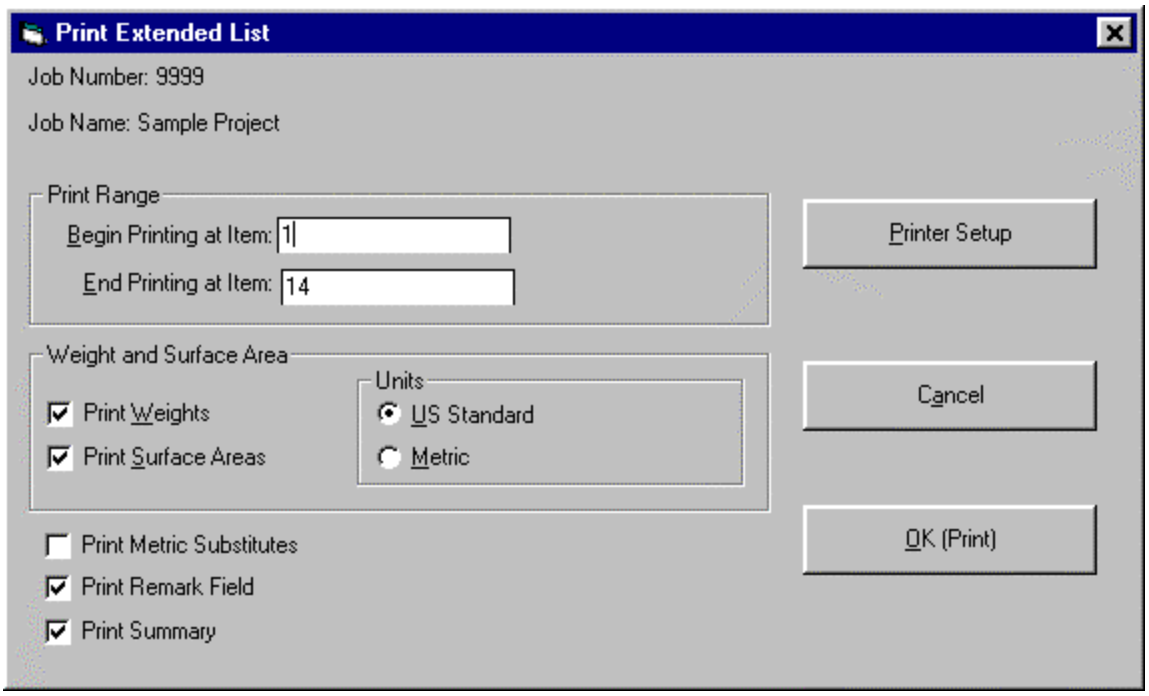
The KISS 'Note' field will be imported if the Romac job contains a data field denoted as type of data 'Remark/Note'.

The KISS 'Finish' field will be imported if the Romac job contains a data field denoted as type of data 'Finish'.

The KISS 'ABOM reference' field will be imported if the Romac job contains a data field denoted as type of data 'ABOM Ref'. Note, the KISS standard allows more than one ABOM reference to be associated with a single bill of material line item. If this occurs in the KISS data, note records will be added to the Romac file listing these additional ABOM references.

The KISS 'Sequence' field will be imported if the Romac job contains a data field denoted as type of data 'Sequence'. The import will handle multiple sequences for a single bill of material item. Romac Series 7 Bill of Material imports sequences for the shipping mark only and does carry the sequence information to the related detail material items. If your bill of material needs require sequence information for detail material, you should investigate our production control software which is better equipped to handle sequencing on a shop bill of material.

Reports



Two different printed report listings are available. The extended list prints the bill of material in the order that it was entered. The sorted list prints the bill of material with similar items grouped together. The following criterion can be selected for a printed report:

Print Range – Available for the extended list only, this selection allows you to specify the beginning and ending line item numbers for the printed report. Initial default is set to print the entire bill of material list.

Weight and Surface Area – Check boxes are provided to allow printing of line item weights and surface areas. Additionally, you have the option to print weight and surface areas in US standard or metric units.

Print Metric/US Standard Substitutes – This option will print an equivalent or substitute description (if available from the materials database) and length. The additional description will be printed below the items description and length and will be printed in italics to help distinguish from the original description. Empty parentheses will be printed if an equivalent or substitute description is not available.

Print Remark Field – You have the option to include or omit any additional fields from the report. The actual field names will vary depending upon the list type.

Print Summary – The summary is a listing of weights and surface areas broken down by material specification.

Printer Setup – The report will print to the default printer. Selecting the Printer Setup button allows you to change the printer and printer properties used for the report. Any changes made using this option will make these the default settings for any other reports printed from other applications. If it is not your intention to make changes to the default printer settings, you must return to this screen and change the settings to the desired default after the report is completed.

Nesting

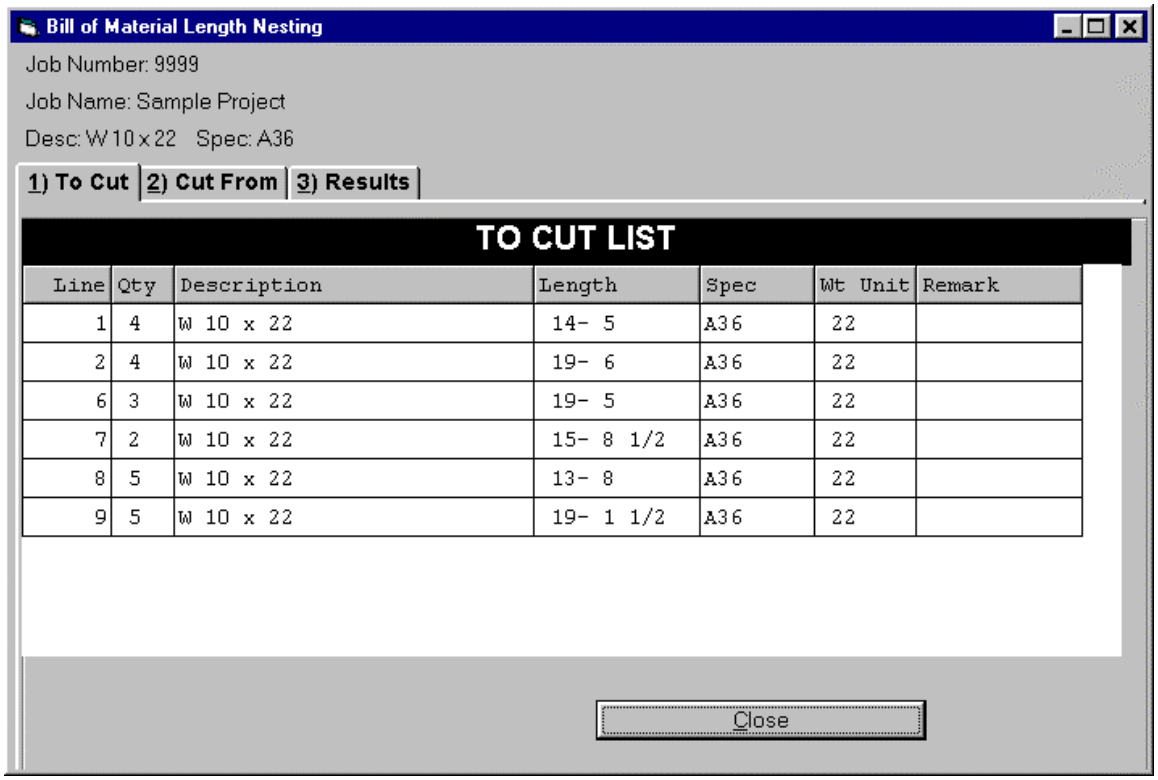
The nesting option is available if a licensed copy (or un-expired evaluation copy) of Romac Length Nesting version 2 and/or Romac Plate Nesting version 2 is installed onto the same computer that the Steel Bill of Material is installed.

The first nesting screen shows a summary display similar to the summary from the Bill of Material Editor. The nested statuses are:

No – The item has not been nested or has been revised since nesting.
Yes – The item has been nested.
Partial – The item has been through the nesting process but all pieces were not nested.
N/A – Nesting is not applicable for the item type or a Romac nesting license was not found on the computer.
>nnn – The line item count for the item exceeds the capacity of the nesting routine. For length nesting, the capacity is 300 line items. For plate nesting, the capacity is 160 line items.

The Display button will list the item's detail and allow you to do the nesting operations. The Nesting window consists of three tabs; 'To Cut', 'Cut From', and 'Results'.

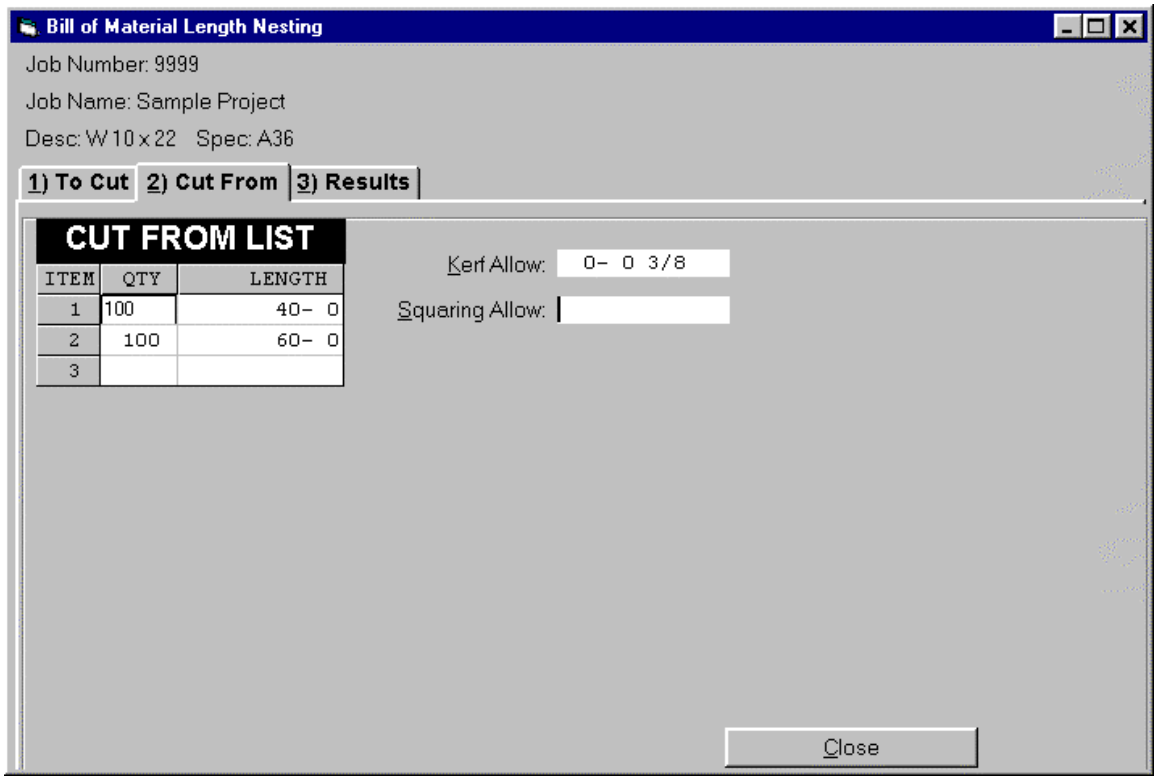
To Cut



Line	Qty	Description	Length	Spec	Wt Unit	Remark
1	4	W 10 x 22	14- 5	A36	22	
2	4	W 10 x 22	19- 6	A36	22	
6	3	W 10 x 22	19- 5	A36	22	
7	2	W 10 x 22	15- 8 1/2	A36	22	
8	5	W 10 x 22	13- 8	A36	22	
9	5	W 10 x 22	19- 1 1/2	A36	22	

The ‘To Cut’ tab lists the bill of material items (or To Cut List). These items come from the bill of material and cannot be edited from this screen. Use the Bill of Material Editor screen if changes to the ‘To Cut’ list are required.

Cut From



The Cut From List, kerf allowance, squaring allowance, etc. is entered or edited from this tab.

For length nesting, up to 40 cut from entries can be made. Lengths are in feet, inches and fractions if the job size method is US standard or millimeters if the job size method is metric.

For plate nesting, up to 10 cut from entries can be made. Both a cut from width and length are entered. Dimensions are in inches and fractions for US standard jobs and millimeters for metric jobs.

The **Kerf Allowance** is the amount of material taken out by the cutting operation. Typically, this would be the width of a saw blade for instance.

For length nesting, the **Squaring Allowance** is the amount of material taken from each end of the cut from piece. Generally, this would be material taken off to square the stock piece. The squaring allowance does not include kerf.

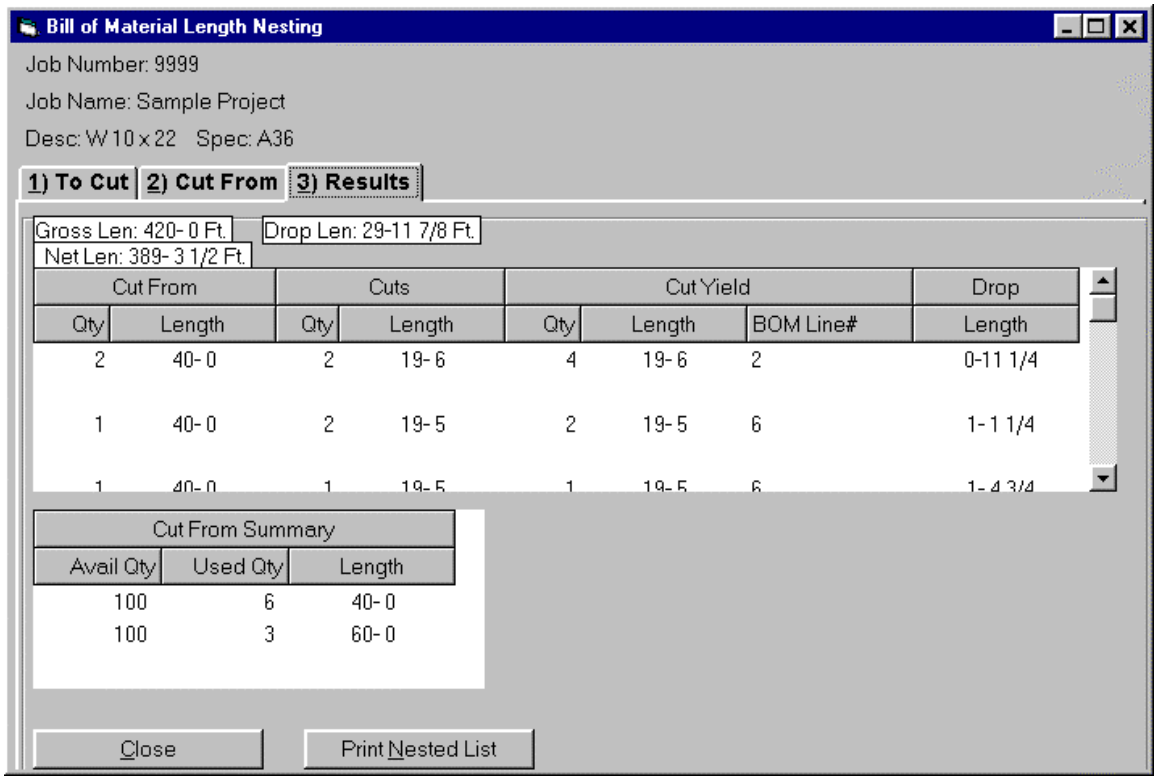
For plate nesting, the **Squaring Allowance** is the amount of material taken from each edge of the cut from piece. This includes the left and right edge and the top and bottom edge. The squaring allowance does not include kerf.

The **Maximum Shearable Length** is applicable to plate nesting only. This is the cut length that can be made. For instance, if you are cutting from a 72" x 144" plate on a 96" shear, entering a maximum shearable length of 96" will prevent the program from cutting in the 144" direction. For a burning or sawing operation where you can always cut the full width of length of the piece, enter 0 for the maximum shearable length.

Rotate Allowed denotes whether the 'To Cut' piece can be rotated to improve cut optimization. If the program rotates a plate, "R" will follow the piece reference number on the plot. Unless a pattern or grain direction must be maintained, allowing the program to rotate plates will sometimes result in more optimum cutting patterns.

Cut from entries are saved for each group but are not carried from group to group.

Results



The Process button on the Results tab sends the data to the nesting engine. Once processed, the nested results are displayed on the Results tab.

A 'Print Nested List' button is available to send the nesting to a printed report. The printed report is similar to the report produced from within the stand-alone nesting products. For plate nesting, printing of the layout plot can be suppressed by un-checking the 'Print Layout Plot' box. You may want to do this to save paper if the nesting plot is simple. The nesting results will still be printed - only the plot will be omitted.

Important note - the nesting procedures used by this program are designed to yield a minimal drop in a minimal amount of processing time. In some situations, a given material list can be optimized beyond the result obtained by this computer program. There is no guarantee the program will return the absolute optimum nesting sequence for all material lists.

The 'Close' button on either of the tabs will save the data and take you back to the summary display screen where you can select another group.

List Type Templates

Different 'List Types' can be created and maintained by the user. You may have one list type for estimates, another for advance bill of material, another for shop bill of material, etc. Up to eight templates for list types can be maintained. The menu option Maintain | List Type Templates can be used to add or edit list types.

Every bill of material list contains the basic quantity, description, length, and material specification data items. With list types you can add additional data fields such as remark, piece ID, etc. Each list type template contains the following information:

List Type Name
Up to 12 character to identify the list type.

Line Item Method
Denotes whether the list uses line numbers only or page/line to reference each line.

With line numbers only, item numbering starts at 1 and increments upward.

With page / line numbers, you specify a fixed number of lines per page, item numbering starts at 1/1 with the line number incrementing until lines per page is reached where the page number then increments and the line number starts over at 1. Page / line numbers are often used for advance bill of material lists in the structural steel industry.

Data Fields
Each list type can contain up to 6 data fields. Data fields are used to enter bill of material information such as remark or piece ID.

Each data field is given its own title, field length, data type, and report line location.

The length specified for a data field can be 1 to 64 with a combined maximum length of 64 characters for all data fields. To delete a data field, change the length to 0. The field title can be up to 12 characters in length but if the field length is shorter that the title, the title will be abbreviated on the reports.

The 'type of data' is used to designate the type of data that the field will contain. Currently, 'type of data' does not matter when manually entering data into the bill of material or for any bill of material report or calculation functions. 'Type of data' is used when importing data from selected other applications or when importing data from another Romac Series 7 Bill of Material. Data fields are matched by 'type of data' rather than field title. Currently available data types are: N/A, Remark/Note, Piece Mark, Assembly Mark, Drawing No., Job No., Sequence, Finish, ABOM Ref., User 1, User 2, User 3, and User 4. See the import section for additional information on data types.

Report Line No. allows you to specify which line number (1 or 2) the data will be listed on the printed reports. This permits you to design a printed report that is not excessively wide.

Revisions to the list type template do not affect any previously created jobs.

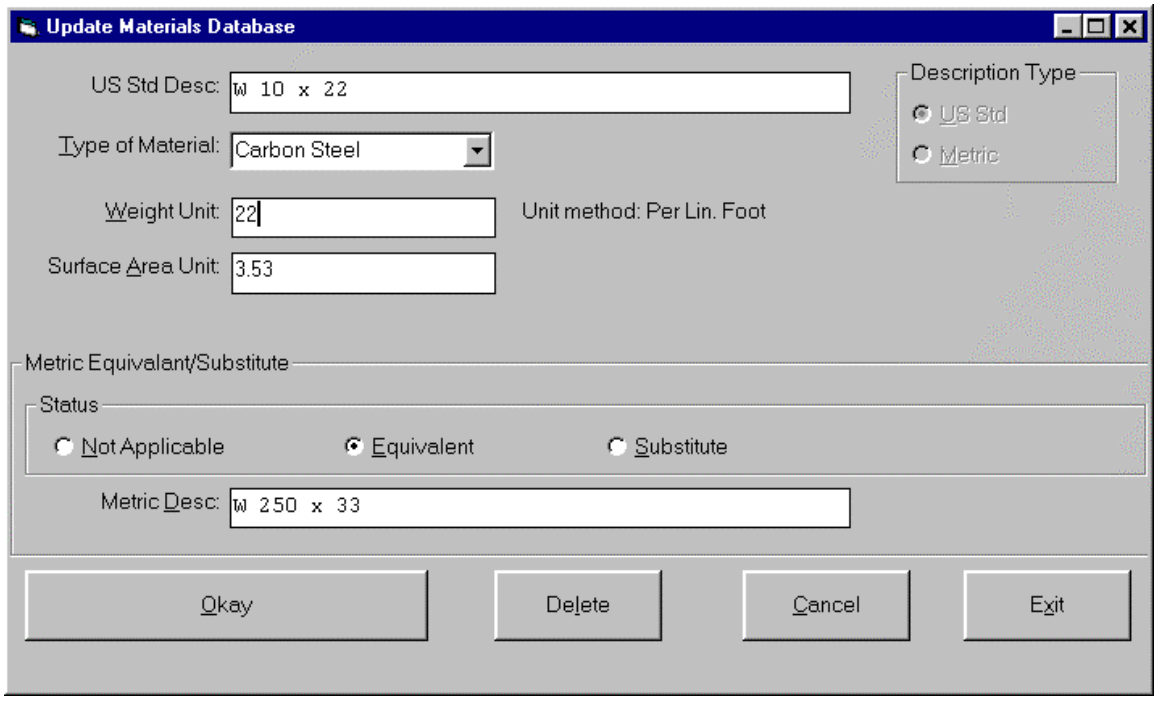
Materials Database

The Materials Database is used by the Romac Series 7 applications to lookup weights and surface areas. U. S. standard (imperial) and metric items can be entered into the database.

Each database record consists of; item description, type of material (Carbon Steel, Stainless, Aluminum, etc.), weight unit, surface area unit, and an option equivalent or substitute description in metric (or US standard) dimensions.

The supplied database contains most steel items listed in the AISC Manual of Steel Construction, Ninth Edition. The database also contains metric equivalents as listed in the AISC Metric Properties of Structural Shapes publication dated 1992. The database is supplied as is and Romac Computer Services, Inc. assumes no liability regarding the completeness or accuracy of the database.

Database records can be added, revised, or deleted using the Maintain | Update Materials Database option.



Material Description

The material description entry is made by entering the shape code followed by [ENTER] (or the space bar) then the description. For most entries, if the description contains fractions, the fraction entry is made using re-defined fractions keys. This allows you to make fraction entries using one keystroke. The re-defined fraction keys are:

W=1/16, E=1/8, R=3/16, T=1/4, Y= 5/16,

U=3/8, I=7/16, O=1/2, S=9/16, D=5/8,
F=11/16, G=3/4, H=13/16, J=7/8, K=15/16

The shape codes and corresponding description formats are:

Note, these examples are based on US standard description entry. Metric description entries are similar except fractions are not applicable. Depending upon whether you are updating a US standard or metric item, the appropriate Description Type at the upper right of the window must be checked.

W, WT, C, MC, S, ST, M, MT, & HP - (Structural shapes as per AISC designations). Description is entered by typing in the shape followed by [ENTER] (or space) then the depth, then X, then the weight per foot followed by [ENTER]. Spaces are automatically inserted before and after the 'X'. Use the decimal point where required. Optionally, the '+' key can be used rather than 'X'.

Example: W 10 x 22

L – (Angles). Input is in inches and inch fractions. Description is entered by typing in the shape followed by [ENTER] (or space) then leg 1, then X, then leg 2, then X, then the thickness followed by [ENTER]. Fractions must be entered using the redefined single key. Spaces are inserted by the computer where required for clarity.

Example: L 3 1/2 x 3 1/2 x 5/16

PL - (Plate). Input is in inches and inch fractions. Description is entered by typing in the shape followed by [ENTER] (or space) then the thickness followed by [ENTER]. Maximum thickness is 9 15/16". Fractions must be entered using the redefined single key.
Spaces are inserted by the computer where required for clarity.

Example: PL 1/2

BR - (Flat bar). Input is in inches and inch fractions. Description is entered by typing in the shape followed by [ENTER] (or space) then the thickness, then X, then the width followed by [ENTER]. The maximum width/thickness is 99 15/16".

Example: BR 1/2 x 4

SQ - (Square bar). Entry is in inches and inch fractions. The description is entered by typing in the shape followed by [ENTER] (or space) then the bar dimension followed by [ENTER].
Maximum dimension is 9 15/16". Fractions must be entered using the redefined single key.

Example: SQ 1/2

RD - (Round rod). Entry is in inches and inch fractions. The description is entered by typing in the shape followed by [ENTER] (or space) then the diameter followed by [ENTER].
Maximum diameter is 9 15/16". Fractions must be entered using the redefined single key.

Example: RD 3/4

RB - (Rebar). The description is entered by typing in the shape followed by [ENTER] (or space) then the bar size followed by [ENTER]. Allowed bar sizes are 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 14, and 18.

Example: RB 4

GA - (Gauge material). The description is entered by typing in the shape followed by [ENTER] (or space) then the gauge thickness followed by [ENTER].

Example: GA 11

FP - (Floor Plate). Entry is similar to plate (PL).
Example: FP 3/8

TS - (Square and rectangular tube). Entry is similar to Angle. The wall thickness must always be the last entry. If the wall thickness entry is 7 - 28, then a gauge wall thickness is assumed.
Example: TS 4 x 4 x 1/4

TO - (Round tube). Entry format is shape followed by [ENTER] (or space) then the outside diameter in inches and inch fractions), X, then the wall thickness. The wall thickness must always be the last entry. If the wall thickness entry is 7 - 28, then a gauge wall thickness is assumed.
Example TO 4 x 1/2

PI - (Pipe). Schedule pipe can be entered using this Shape code. The entry format is Shape, [ENTER] (or space), diameter, <X>, then the schedule followed by [ENTER].
Example: PI 4 x 40

PS, PE, and PD - (Pipe). Standard (PS), Extra strong (PE), and Double extra strong (PD) pipe can be entered using these Shape codes. The entry format is Shape, [ENTER], then the diameter followed by [ENTER].
Example: PS 4
PE 4
PD 4

CB - (Bar Channel). Entry is similar to Angle.
Example: CB 1 1/2 x 1/2 x 1/8

TB - (Bar Tee). Entry is similar to Angle.
Example: TB 1 1/2 x 1 1/2 x 3/16

BTH - (High strength Bolt). Enter the shape then [ENTER] (or space), diameter, then X, then the length followed by [ENTER]. All entries are in inches and inch fractions.
Example: BTH 3/4 x 2 1/2

BTM - (Machine Bolt). Enter the shape then [ENTER] (or space), diameter, then X, then the length followed by [ENTER]. All entries are in inches and inch fractions.
Example: BTM 3/4 x 2 1/2

BTN - (Nut). Enter the shape then [ENTER] (or space), diameter in inches and inch fractions followed by [ENTER].
Example: BTN 3/4

WHF - (Flat Washer). Enter the shape then [ENTER] (or space), diameter in inches and inch fractions followed by [ENTER].
Example: WHF 3/4

WHB - (Bevel Washer). Enter the shape then [ENTER] (or space), diameter in inches and inch fractions followed by [ENTER].
Example: WHB 3/4

WHL - (Load indicator Washer). Enter the shape then [ENTER] (or space), diameter in inches and inch fractions followed by [ENTER].
Example WHL 3/4

BTE - (Expansion Bolt). Enter the shape then [ENTER] (or space), diameter, then X, then the length followed by [ENTER]. All entries are in inches and inch fractions.
Example: BTE 3/4 x 4

BTW - (Wedge insert). Enter the shape then [ENTER] (or space), diameter in inches and inch fractions followed by [ENTER].
Example: BTW 3/4

AB - (Anchor Bolt). Enter the shape then [ENTER] (or space), diameter, then X, then the length followed by [ENTER]. All entries are in inches and inch fractions.
Example: AB 3/4 x 12

SC -(Shear Connector). Enter the shape then [ENTER] (or space), diameter, then X, then the length followed by [ENTER]. All entries are in inches and inch fractions.
Example: SC 1/2 x 4

GR - (Bar Grating). Enter the shape then [ENTER] (or space) then the bearing bar depth, then X, then the bearing bar thickness followed by [ENTER]. All entries are in inches and inch fractions.
Example: GR 1 1/4 x 3/16

REM - (Regular Expanded Metal). Enter the shape then [ENTER] (or space) then the diamond SWD, then X, then the gauge thickness followed by [ENTER].
Example: REM 3/4 x 16

FEM - (Flattened Expanded Metal). Enter the shape then [ENTER] (or space) then the diamond SWD, then X, then the gauge thickness followed by [ENTER].
Example: FEM 3/4 x 16

SI - (Special item with weight calculated per each or item). Used for entries such as castings where the weight is calculated by the item. SI can also be used for items that do not have a weight. At Shape type SI [ENTER], then a 24 character description followed by [ENTER]. Redefined fraction keys are not available for the description part of this entry.
Example: SI #101 CASTING

SA - (Special item with weight calculated by Area). Used for items such as grating where weight is calculated by area. At Shape type SA [ENTER], then a 15 character description followed by [ENTER]. Redefined fraction keys are not available for the description part of this entry.
Example: SA 1/8" PERF. PL

SL - (Special item with weight calculated by Length). Used for items such as extrusions or aluminum sections. At Shape type SL [ENTER], then a 24 character description followed by [ENTER]. Redefined fraction keys are not available for the description part of this entry.
Example: SL #101 EXTRUSION

Type of Material

Type of Material is used to tie Material Specifications to the Materials Database. For instance, a W 10 x 22 could be listed in the Materials Database as ‘Carbon Steel’. Specifications A36, A572/50, and A992 could be listed in the Material Specifications table as ‘Carbon Steel’. These three specifications would be tied to the W 10 x 22 through the common Material Type ‘Carbon Steel’.

Additionally, the same material description can be entered into the Materials Database with different Material Types. You could have L 3 x 3 x 5/16 listed as ‘Carbon Steel’, a second entry

as ‘Stainless’, and a third entry as ‘Aluminum’. Each entry would have a different weight unit and would be tied to the appropriate Material Specification by the Material Type.

Available Material Types are:

- Carbon Steel
- Stainless
- Aluminum
- Brass
- Bronze
- Copper
- Steel Bolt
- Plastic
- Not Appl.

The user cannot modify the above Material Types. If you need additional Material Types, please contact the program vendor, Romac Computer Services.

Weight Unit

The weight unit entry is in pounds (lbs.) or kilograms (kgs.) depending upon the record item’s Description Type (US standard or Metric).

Weight units are per each for all bolt shapes (BTH, BTM, TC, BTN, WHF, WHB, WHL, BTE, BTW, AB, SC) and SI shapes.

Weight units are per area (square foot or square meter) for PL, GA, FP, GR, REM, and FEM shapes.

Weight units are per length (foot or meter) for all other shapes.

Surface Area Unit

The surface area unit entry is in square feet or meters depending upon the record item’s Description Type.

Surface Area units are per each for all bolt shapes (BTH, BTM, TC, BTN, WHF, WHB, WHL, BTE, BTW, AB, SC) and SI shapes.

Surface Area units are per area (square foot or square meter) for PL, GA, FP, GR, REM, and FEM shapes. For most area items, the unit would be 2 square units of surface area for each square unit of the item. For items such as grating or expanded metal, the exact surface area unit would need to be calculated.

Surface Area units are per length (foot or meter) for all other shapes. For hollow sections such as pipe or tube, the surface area units in the database supplied by Romac Computer Services are for outside surfaces only. The surface area would need to be approximately doubled to include the inside surface (such as calculations for hot dipped galvanized areas).

Equivalent / Substitute Description

For certain shapes, a soft conversion exists between US standard and metric dimensions. If an item has a US standard nomenclature and a metric nomenclature that refer to the same item then the items would have Equivalent status. In these cases the database would have two entries. The first entry would be the US standard with the metric equivalent; the second entry would be the metric description with the US standard description as the equivalent.

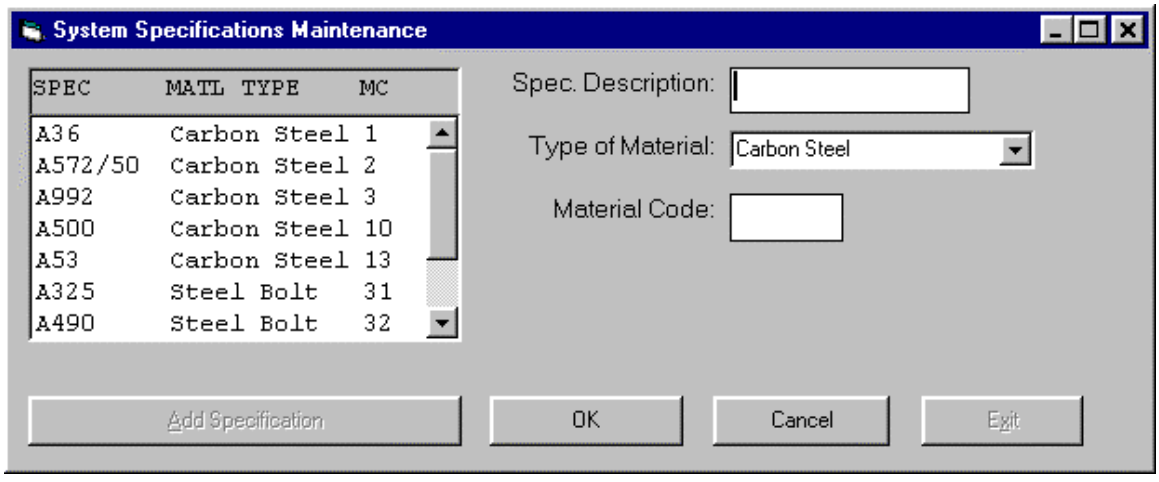
Substitute status would apply when you could use a US standard item in place of a metric item but could not use the same metric item in place of a US standard item. This might be applicable for plates where the US standard inch fraction thickness does not convert to a common mm thickness. For instance, you might substitute a thicker US standard plate for a specified metric thickness but could not substitute the thinner metric thickness for the specified US standard. The database supplied by Romac Computer Services does not contain any substitute entries.

Display Materials Database

The Menu option Maintain | Display Materials Database gives you a scrollable screen listing of all items in the Materials Database.

Edit Specifications Table

The Specifications Table is a listing of all materials specifications used by the Romac Series 7 applications. The table is referenced whenever a steel material item is entered into a Romac Series 7 bill of material or other application. The table consists of the specification description, a material type, and an optional material code and can be accessed using menu option Maintain | Edit Specifications Table.



The Specification Description is an alpha/numeric entry of up to 8 characters. Typical descriptions would be as defined by ASTM or other standards organizations. Once entered into the system, the specification description cannot be deleted.

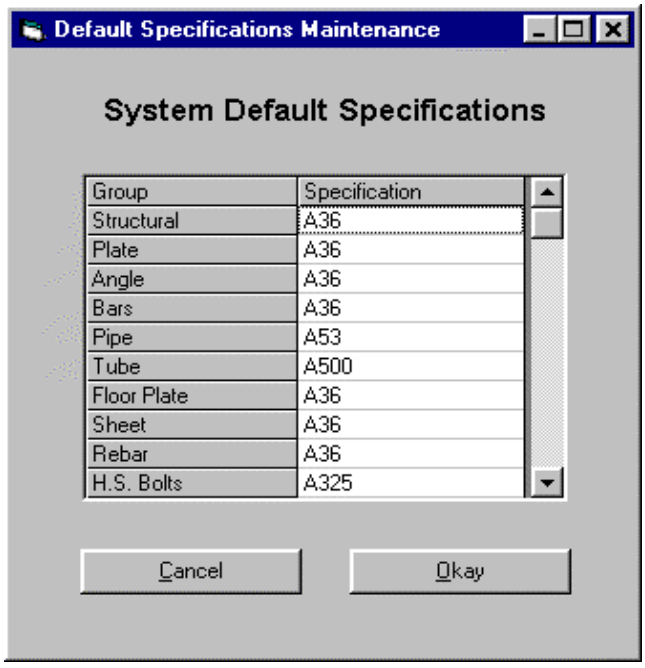
The Type of Material is one of the fixed material types as described in the materials database section. The material type ties a specification description to items in the Materials Database. The material type can be changed but the change does not affect any data previously entered into the system. If you had previously entered a specification with material type 'Aluminum' then entered bill of material into a job with weights calculated with the aluminum weights, changing the specification in this table to material type 'Carbon Steel' would not change the weights on the previously enter items.

The Material Code is an optional numeric entry in the range of 1 to 99. The material code is provided for data entry operators who have previously used DOS versions of Romac applications and is not required in Romac Series 7 applications. The numeric codes can be used as a shortcut at data entry (enter the numeric code rather then entering or selecting the actual specification description).

Edit Default Specifications

The Specifications Defaults table determines which material specification is assigned to a bill of material item at data entry. The default should be set for the most prevalent material specification in use for the shape. You are never locked into the default; the material specification for the item entry can always be changed as required.

The menu option Maintain | Edit Default Specifications allows you to edit the master defaults specifications table. This table is used by Romac Series 7 Inventory Control and Purchase Order applications and is also the initial default table for bill of material applications. A separate table is created for each job and can be edited elsewhere.



For default specification purposes, the various shapes are grouped as follows:

- Structural – W, WT, HP, S, ST, M, MT, C
- Plate - PL
- Angle – L, BC
- Bars – BR, SQ, RD
- Pipe – PI, PS, PE, PD
- Tube – TS, TO
- Floor Plate – FP
- Sheet – GA
- Rebar – RB
- H.S. Bolts – BTH, BTN, WHF, WHB, WHL, TC
- Mach. Bolts – BTM
- Other Bolts – BTE, BTW, AB, SC
- Other Matls. – SA, SI, SL, FEM, REM, GR