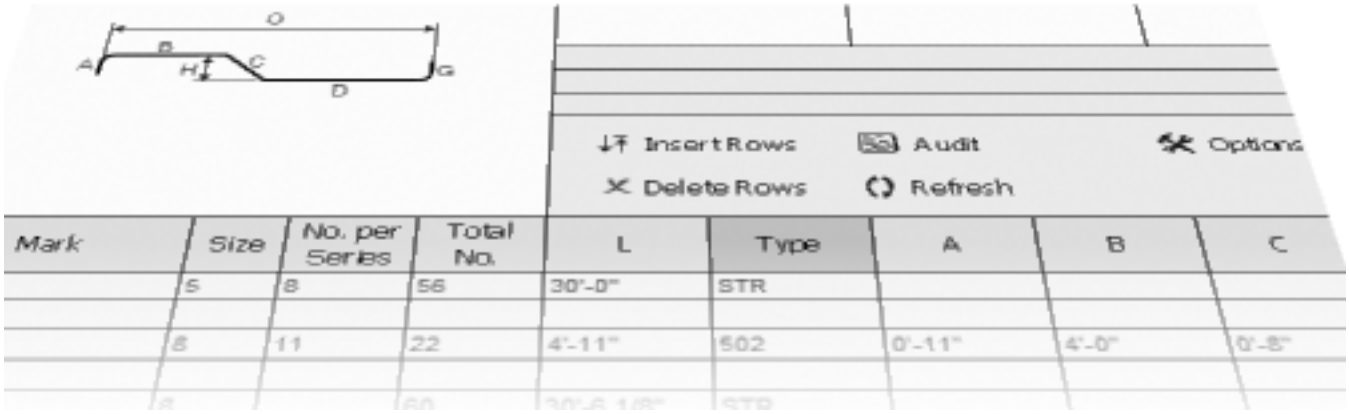
Bar Schedule Excel Spreadsheet



Reference Guide

Contents

Introduction

The Bar Schedule Spreadsheet is an Excel form designed for an easy and efficient way to create reinforcement bar schedules and deploy them together with rebar bends in a CADD application such as AutoCad and MicroStation via an AutoCad DXF file.

The core of the Bar Schedule Spreadsheet is a provision for auto-types. The auto-types are the rebar types that are imported from the Rebar Type Editor spreadsheet (ak-sdt.com). In addition to the bending diagram graphics, the auto-types carry data records that may include a rebar class, dimensions, length formula, and dimension constrains. Each schedule form can maintain up to 400 auto-types sorted out in ten rebar type sets. Different schedule forms can have auto-types imported from the different copies of the Rebar Type Editor spreadsheet.

The Bar Schedule Spreadsheet works with both US Customary (Feet-Inches) and Metric units. Built-in rebar properties include CRSI (US Customary and Metric) and RSIC (Canada) reinforcement bar properties. With CRSI properties, the bar schedules can be converted from US Customary to Metric units and vise versa. There is also a provision for user-defined metric properties as well.

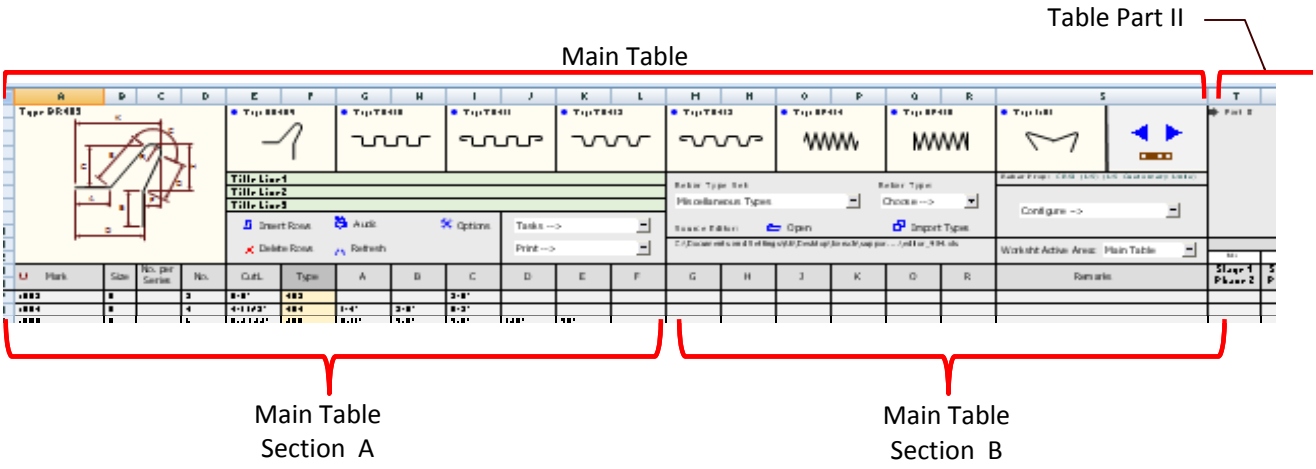
The spreadsheet includes provisions for series (sets of bars having one or more variable dimensions), multiple bar-number columns, weight calculations, and a choice of detailed or cut rebar length postings.

Print and CAD versions of the bar schedule are customizable. Customization options allow to the user to remove unused data columns from the bar schedule and move weight, number, and series columns into separate tables.

The Reference Guide uses special notations to mark the text carrying special importance or context. The notations are as follows:

important	marks something that is critical or is necessary to achieve a certain effect.
FT-IN	marks information that is specific to the US Customary Units in Feet-Inches.
Metric	marks information that is specific to the Metric Units.
FYI	marks extra information that goes beyond the minimum knowledge that is needed in order to use this spreadsheet and its features effectively.

Bar Schedule Form: Parts



Main Table, Section A

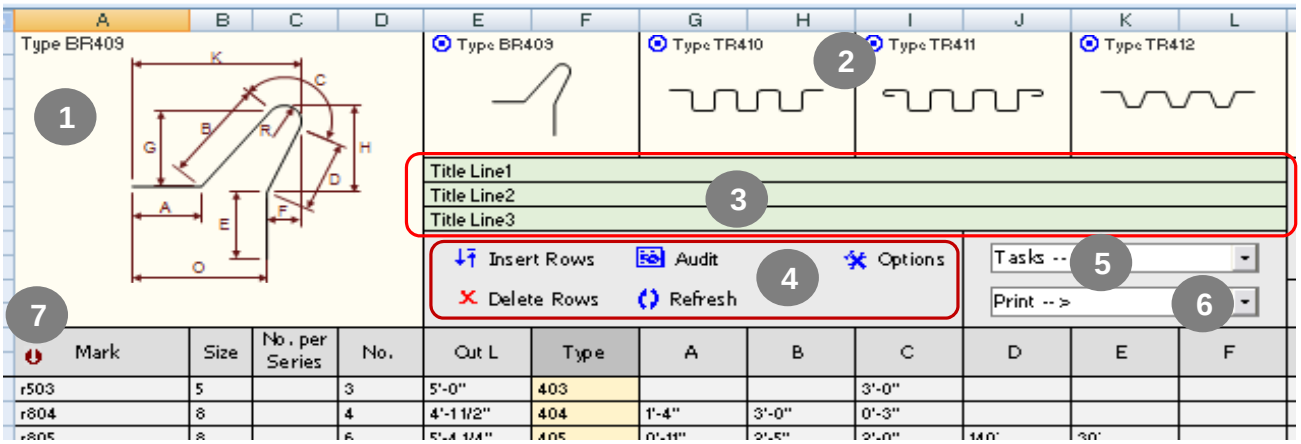
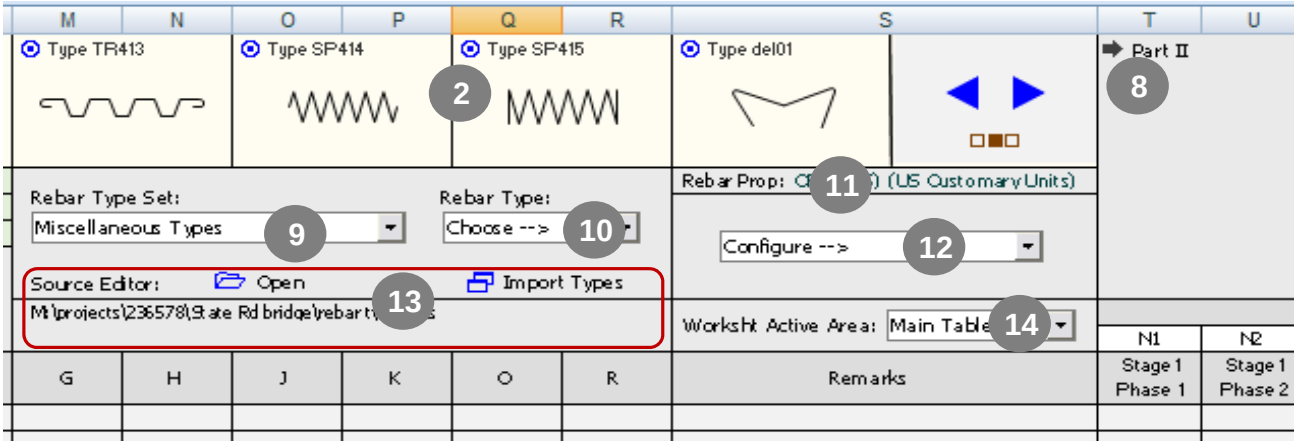


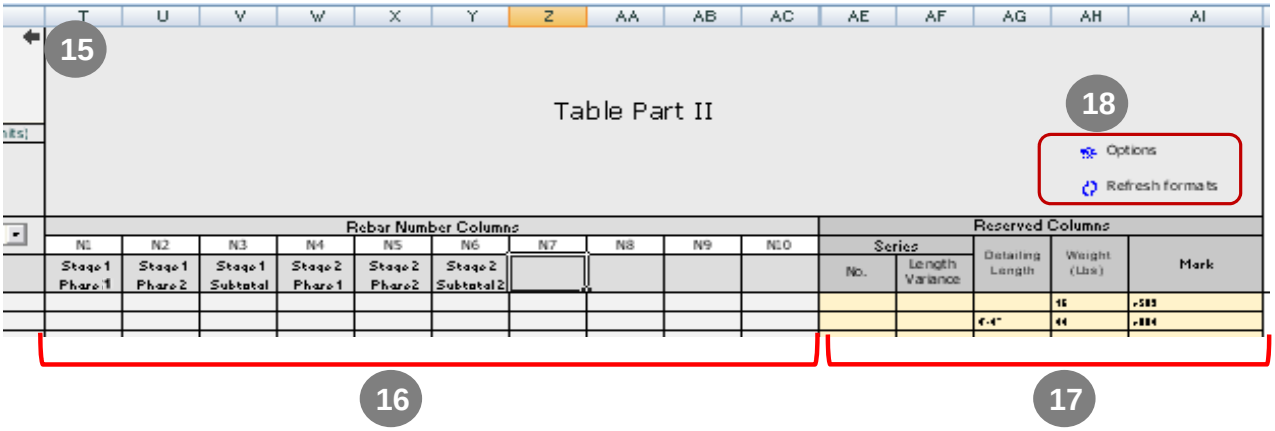
Table Part II

Main Table, Section B



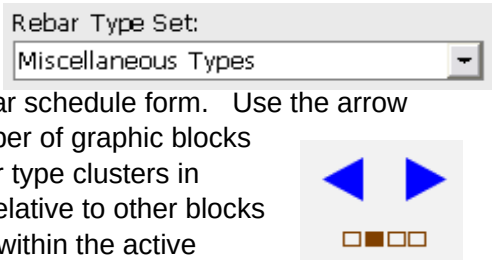
Bar Schedule Form: Parts - 2

Table Part II

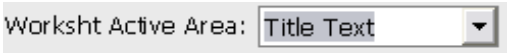


1 *Bending Diagram Window.*

2 *Rebar Type Ribbon*. The ribbon displays a cluster of rebar types belonging to the active rebar type set. Clicking ⊙ enters a rebar type in the active row of the bar schedule form. Use the arrow buttons to switch to other rebar type clusters. The number of graphic blocks below the arrows corresponds to a total number of rebar type clusters in the active rebar type set. The position of a filled block relative to other blocks corresponds to a position of the displayed rebar cluster within the active rebar type set.



3 *Title Lines*. Three title lines are used in a header text on the printed pages. To access title lines, choose *Title Text* from the drop-down list of worksheet areas.



4 *Command Icons*. Clicking an icon or a text does the following:

Insert Rows	Inserts empty rows above selected rows. The number of inserted rows is equal to the number of selected rows. A single row is inserted if no rows are selected.
Delete Rows	Deletes selected rows. The active row is deleted if no rows are selected.
Audit	Starts a bar schedule audit.
Refresh	Reformats the worksheet cells.
Options	Opens the Options dialog box. For details, see Chapter, Bar Schedule *Options*.

Bar Schedule Form: Parts - 3

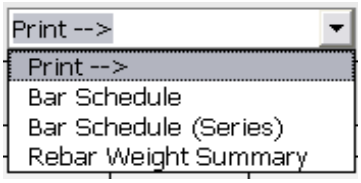
5 *Drop-down Tasks Menu* . Available tasks are as follows:

- *Copy Bar Schedule*
  Choose this task to make an internal copy of the active bar schedule worksheet.

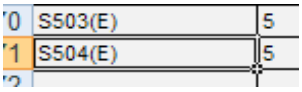
- *Insert Blank Bar Schedule*
  Choose this task to insert a blank bar schedule form in the active workbook. The inserted form inherits bar schedule options, configurations, rebar properties, and rebar type sets.

- *Create AutoCad DXF File*
  Choosing this task opens a dialog box allowing item-by-item selection of what to include in a CAD drawing. The item availability depends on the output configuration settings that are covered in the Chapter, Configuration Settings. In addition, the dialog box includes an option to horizontally break tables that are taller than a specified height limit.

6 *Drop-down Printing List* . Select an item from the list to print it. The spreadsheet assembles a printing list in conjunction with the output configuration settings that are covered in the Chapter, *Configuration Settings.*

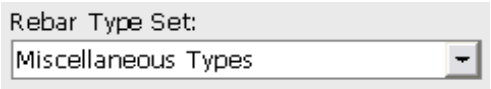


7 *Next Mark Button* . Clicking enters a rebar mark in the active row of the bar schedule form if a mark's text in a row immediately above the active row can be incremented. The new mark is an incremental copy of the mark immediately above it.

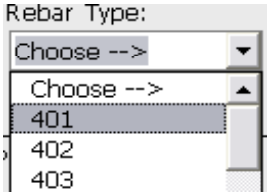


8 *Shortcut to Table, Part II* . Clicking changes the worksheet active area to the Table, Part II.

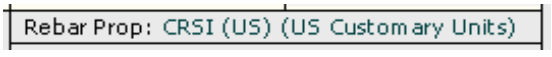
9 *Drop-down List of Rebar Type Sets* . Choose a set from the list to make it active. A non-collapsed list shows the name of the active rebar type set.



10 *Drop-down List of Rebar Types.* The list includes rebar types belonging to the active rebar type set. Choosing a type from the list enters it into the active row of the bar schedule form. The spreadsheet keeps a non-collapsed list view in sync with the currently selected bar schedule row.

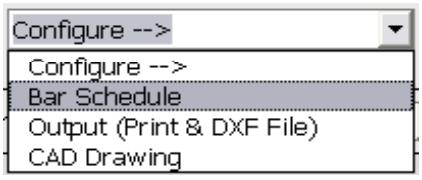


11 *Display of Active Rebar Properties*
Active rebar properties are set in the bar schedule configuration settings.



Bar Schedule Form: Parts - 4

12 *Drop-down Configuration Menu.* For configuration settings, see Chapter, Configuration Settings.

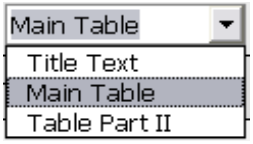


13 *Source Rebar Type Editor Interface Area.* Clicking an icon or a text placed in this area does the following:

Open — Opens source Rebar Type Editor spreadsheet.

Import Types — Opens the File dialog box. Choose the source Rebar Type Editor workbook from the dialog box. Note that the editor workbook can be open or closed. A full file path under the icons is updated after successful loading of the bar types. For more information on the import of the rebar types, see Chapter, Importing Rebar Types.

Important Import of the rebar types is available only in Excel 2007 and later versions.



14 *Drop-down List of Worksheet Areas* . Choose an area from the list to make it active.

15 *Shortcut to MainTable* . Clicking ⬅ changes the worksheet active area to the Main Table.

16 *Bar Number-columns* . There are ten bar-number columns in Table Part II. The actual number of bar-number columns to be used in the bar schedule is specified in the bar schedule configuration settings (see Chapter, Configuration Settings). Note that the column's headings are entered manually and that the spreadsheet appends the 'No.' to the headings in the print version of the bar schedule.

17 *Reserved columns* . Reserved columns in the Table Part II are used internally in various spreadsheet tasks.

18 *Command Icons* . Clicking an icon or text does the following:

Options — Opens the Options dialog box. For details, see Chapter, Bar Schedule *Options* .

Refresh — Reformats the worksheet cells.

Bar Schedule Form: Main Table Columns

Mark	Size	No. per Series	No.	L	Type	A	B	C	D	E
s812	8			21'-0"	TR410		3'-0"	1'-1"	1'-8"	2'-0"

F	G	H	J	K	O	R	Remarks

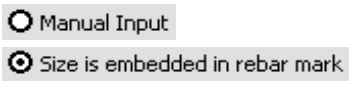
Mark

A mark can be any combination of alpha and numeric characters. A rebar size must be embedded in a mark if the embedment option is set in the configuration settings. If a bar size is embedded, it must be the first numeric occurrence in the mark's text.

A special prefix or suffix can be used in the coated bar marks in order to separate coated and uncoated rebars in the weight calculations. This option and associated settings are set in the output configuration settings.

Size

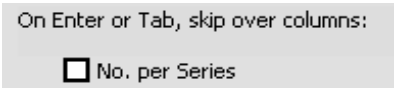
The spreadsheet automatically enters a custom function extracting a bar size from a rebar mark if the size embedment option is set in the configuration settings. A rebar size entered manually must be a numeric text.



The spreadsheet searches the active rebar properties table by bar size when it needs to retrieve size-specific properties such as a unit weight or hook dimensions.

No. per Series

This column is used only in conjunction with the rebar series. Series are covered in the Chapter, Rebar Series. When using the **Enter** or **Tab** key, the column can be bypassed if the skip option is checked in the Options dialog box.



No.

When more than one number-column is specified in the configuration settings, the spreadsheet automatically enters a formula that sums up the rebar numbers entered in the bar-number columns in the Bar Schedule Table Part II.

L , Cut L

When an auto-type is entered, the spreadsheet also enters a detailed or cut length formula if one is attached to the auto-type. The length calculation option set in the configuration options controls which formula is entered and which column heading (L or Cut L) is displayed.

Initially, the formula may result in an erroneous value such as negative length or an error (e.g. #VALUE!). The formula should produce a valid length once a rebar size and other type-related dimensions are in place. Manual input is as described for the A-R columns.

Bar Schedule Form: Main Table Columns - 2

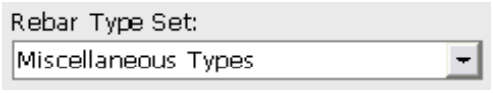
Type

Rebar type can be an auto-type or a user-type in the Bar Schedule Spreadsheet.

Auto-types are the rebar types that are imported from the Rebar Type Editor spreadsheet. The auto-types are entered in two steps as follows:

Step 1

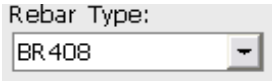
Choose a parent rebar type set from the drop-down list of rebar type sets. Skip this step if the parent rebar type set is already active.



Step 2

Enter a rebar type in the active row using one of the methods listed below:

- Click ⊙ for the target type in the rebar type ribbon.
- Choose the target type from the drop-down list of rebar types.

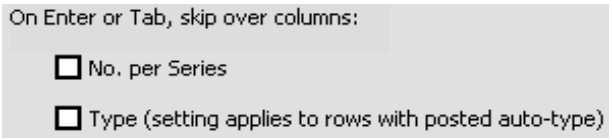


- Enter the target type name directly in the cell.

Any cell on the active row can be selected when using the first top two methods.

Compared to the auto-types, the user-types do not have a bending diagram or any other type-specific data attached to them. User-types are entered manually.

When using the **Enter** or **Tab** key and an auto-type is already entered, the column can be bypassed if the skip option is checked in the Options dialog box.



A-R Columns

Entering an auto-type in the Type-column triggers a chain of spreadsheet actions affecting dimension columns. The actions are as follows:

- Deleting existing dimensions.
  All dimensions within the column range A-R are deleted if the delete dimension option is checked in the Options dialog box. Uncheck the option to preserve values in the type-defined dimension cells.

- Changing background color of cells holding type-defined dimensions.
- Entering hook dimensions if applicable.

The spreadsheet allows for angle and unitless dimensions in addition to dimensions measured in the units of length. The number of turns specified for a spiral (helix) rebar is one example of a unitless dimension.

Bar Schedule Form: Main Table Columns - 3

A-R Columns (Continued)

If an auto-type is already entered in the Type-column and the inputted dimension is not unitless, the spreadsheet reforms the entered value or formula to include custom functions performing dimension rounding and formatting. Rounding options are set in the configuration settings. Custom functions are covered in the Chapter, Custom Functions.

If an auto-type is not yet inputted, the spreadsheet assumes that entered dimensions are measured in units of length and reforms them accordingly if the dimension units option is checked in the Options dialog box. If this option is unchecked, then manually entered user-type dimension formulas should include custom functions that are appropriate for a given dimension.

If an inputted auto-type formula includes at least one cell reference (e.g. H17), the spreadsheet selects custom functions depending on the variable dimension option setting in the Options dialog box. Variable dimensions are covered in the Chapter, Rebar Series.

The table below lists required input units, custom functions, and display formats for the different dimension types.

	Dimension Type	Req'd Input Units	Custom Function[1]	Display Format
FT-IN	Length	Feet	fi(), fd()	ft-in
Metric	Length	mm	rd()	n/a
	Angle	Degrees	dms(), deg()	d, d-m, d-m-s [2]
	Unitless	n/a	n/a	n/a

[1] For cases when a formula includes cell references and the variable dimension option is enabled in the Options dialog box, see Chapter, Rebar Series.

[2] The angle's display depends on the angle rounding setting.

Auto-type Dimension Examples:

	Dimension Type	Input	Reformed Formula	Cell Value
FT-IN	Length	7.83	=fi(7.83)	7'-10"
FT-IN	Length	=9+7.5/12	=fi(9+7.5/12)	9'-7 1/2"
FT-IN	Length	=5.67+H76	=fi(5.67+fd(H76))	13'-5"
Metric	Length	300	=rd(300)	300

Bar Schedule Form: Main Table Columns - 4

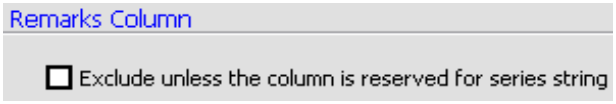
A-R Columns (Continued)

Auto-type Dimension Examples:

	Dimension Type	Input	Reformed Formula	Cell Value
Metric	Length	=405/4	=rd(405/4)	100
Metric	Length	=2*G76+H76	=rd(2*G76+H76)	1000
	Angle	70.25	=dms(70.25)	70°-15'
	Angle	=70+25/60	=dms(70+25/60)	70°-25'
	Angle	=10.25+K78	=dms(10.25+deg(K78))	60°-15'

Remarks

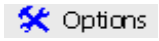
The Remarks-column can be excluded from the print and CAD versions of the bar schedule. For details, see Chapter, Configuration Settings.



Working With Bar Schedule Form - Essentials

- Modify the bar schedule configuration settings as necessary when starting a new bar schedule. For configuration settings, see Chapter, Configuration Settings.

- Choose options that are best suited for the task at hand. For options, see Chapter, *Bar Schedule Options* .



- Click the Refresh icon if the bar schedule form has to be reformatted for any reason. Avoid manual formatting. Do not manually change row heights and column widths in the Main Table.

- Insert and delete form rows using command icons.

- When a cell selection is extended vertically or horizontally over two or more cells in the Main Table, the spreadsheet extends the selection beyond the Table Part II. Selected records can be copied, cut, pasted, or dragged using conventional Excel methods.
- When pasting copied or cut rebar records, a copy-destination cell must be selected in the Mark-column (worksheet column A) of the bar schedule form.
- When copying rebar records from another internal or external bar schedule worksheet, verify the following:
    - Source and destination bar schedule configuration settings are in tune.
    - Copied auto-types have a match in the destination bar schedule worksheet.
      Important Not matching auto-types are denoted to user-types.

      FYI To find a match, the bar schedule checks the names of the copied rebar auto-types against the names of the auto-types in the same relative position in the list of the rebar types on the destination worksheet. Type comparison is done on the auto-types that reside in the same rebar type sets on the source and destination worksheets. In this context, the same rebar type sets are those that are in the same relative position in the set list in the respective source Rebar Type Editor spreadsheet set lists (set's names do not matter).
- To preserve existing type-defined dimensions when entering auto-types, uncheck the delete dimension option in the Options dialog box.

Rebar Series: General

In the Bar Schedule Spreadsheet, a rebar series is a set of bars having one or more variable dimensions. Available series properties are as follows:

- No. Bars per Series
  The number of bars per series is entered in the No. per Series column in the Main Table of the bar schedule form.

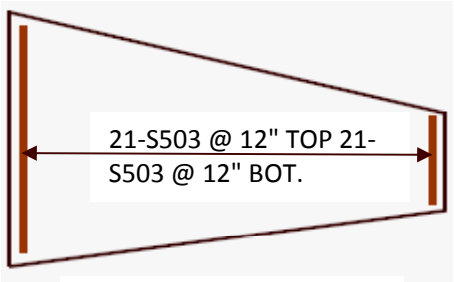
- No. Series
  The number of series is calculated by the spreadsheet and placed in the reserved column in the Table, Part II of the bar schedule form.

- Length Variance
  The variance is calculated by the spreadsheet with respect to the rebar length shown in the L-column of the bar schedule form. It is placed in the reserved column in the Table Part II bar schedule form.

Series Example:

S503 Series

Shortest bar L =	10 ft	
Longest bar L =	20 ft	
No. Bars =	84	= 2*2*21



Slab Type A (2 locations)

Series properties:

- No. Bars per Series = 21
- No. Series = 4 = 84/21
- Length Variance = 0.5 ft = (20-10)/(21-1)

There are two options that control how series are presented in the print and CAD versions of the bar schedule. The options are as follows:

Option 1: ⊙ Include series string in Remarks column

Series string format: [Number of series] EA. VARY BY [Length variance]
String for above example: 4 EA. VARY BY 6"
Note that No. Bars per Series is not explicitly specified.

Option 2: ⊙ Include 'No. Bars per Series' & 'No. Series' columns
☑ Include 'Length Variance ' column

The Length Variance column is optional.

Series options are set in the output configurations settings.

Rebar Series: Specifying Variable Dimensions

The spreadsheet provides two custom functions enabling input of variable dimensions. The functions are as follows:

- var_l(L1, L2) Use this function to input variable dimensions in units of length.
  L1 and L2 - Start and end dimension, respectively. Both dimensions can be a value in feet, millimeters, or a formula.

- var_d(D1, D2) Use this function to input variable angle dimensions.
  D1 and D2 - Start and end dimension, respectively. Both dimensions can be a value in degrees or a formula.

If cell references are part of an argument in the above functions, the cell references should be placed inside a rt() or lt() custom function. For custom functions, see Chapter, Custom Functions.

Dimensions are rounded based on rounding settings in the configuration settings.

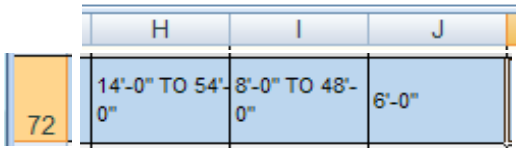
Input Examples:

	Dimension Type	Input	Cell Value
FT-IN	Length	=var_l(4.25,4.25*5)	4'-3" TO 21'-3"
FT-IN	Length	=var_l(lt(I74),6*lt(I74))	8'-0" TO 48'-0"
Metric	Length	=var_l(1340,12*375)	1340 TO 4500
Metric	Length	=var_l(1340,20*lt(H76))	1340 TO 8000
	Angle	=var_d(60,90)	60° TO 90°
	Angle	=var_d(60.5,lt(K76))	60°-30' TO 86°-30'

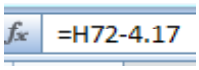
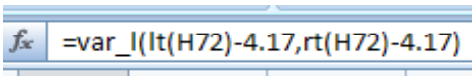
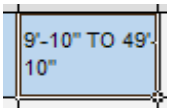
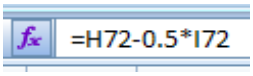
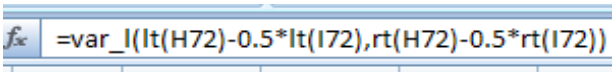
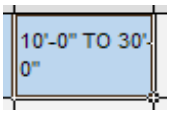
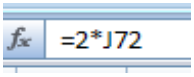
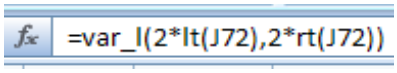
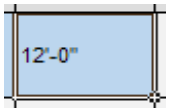
Rebar Series: Using Variable Dimensions in Formulas

Variable dimensions can be used in Excel formulas if the variable dimension option is checked in the Options dialog box. When this option is enabled, the spreadsheet reforms inputted formulas containing cell references to both constant and variable dimensions. The resulting formula consists of a custom function var_l() or var_d() with cell references being placed inside custom functions lt() and rt(). For custom functions, see Chapter, Custom Functions.

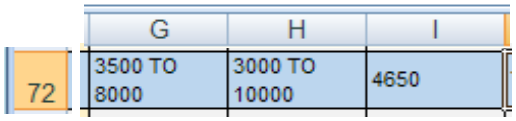
FT-IN Auto-type Dimension Examples:



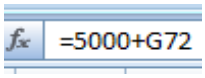
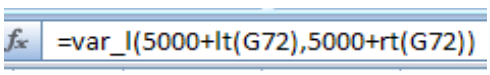
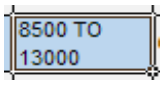
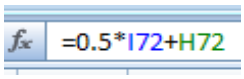
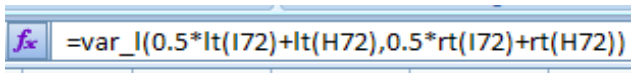
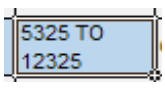
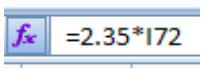
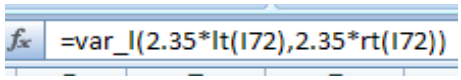
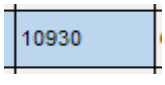
Note:
Examples also apply to user-type dimensions if the dimension units option is enabled.

Input	Reformed Formula	Cell Value
		
		
		

Metric Auto-type Dimension Examples:

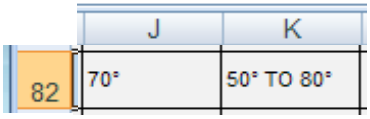


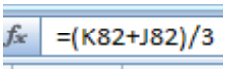
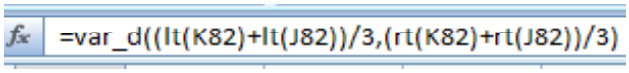
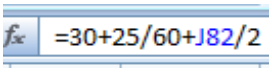
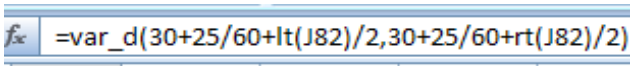
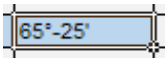
Note:
Examples also apply to user-type dimensions if the dimension units option is enabled.

Input	Reformed Formula	Cell Value
		
		
		

Rebar Series: Using Variable Dimensions in Formulas - 2

Auto-type Angle Dimension Examples:



Input	Reformed Formula	Cell Value
 =(K82+J82)/3	 =var_d((lt(K82)+lt(J82))/3,(rt(K82)+rt(J82))/3)	 40° TO 50°
 =30+25/60+J82/2	 =var_d(30+25/60+lt(J82)/2,30+25/60+rt(J82)/2)	 65°-25'

FYI The auto-type rebar length formulas that were set up in the Rebar Type Editor spreadsheet are always placed inside a var_l function.

Importing Rebar Types

Important Rebar type importing is available only in Excel 2007 and later versions.

To import rebar types from the Rebar Type Editor spreadsheet, click the Import Types icon or associated text and then choose an editor workbook from the File dialog box. The Rebar Type Editor workbook can be open or closed.

When importing rebar types, the spreadsheet does the following:

- Deletes all existing bar sets.
- Stores imported bar sets.
- Inspects existing entries in the bar schedule for a match with the loaded auto-types. The match is found if new and existing auto-type names match and both auto-types come from the same rebar type set. In this context, the same rebar type sets are those that are in the same position in the set list in the respective source Rebar Type Editor spreadsheets (set's names do not matter).
  The spreadsheet updates the records of the matching auto-types.

Important Existing auto-types without a match are denoted to user-types.

If the not-matching auto-type was renamed or moved to another rebar type set in the Rebar Type Editor spreadsheet, locate and enter it in place of the converted user-type in the Type-column to regain the auto-type status. To preserve existing type-defined dimensions, uncheck the delete dimension option in the Options dialog box before entering the auto-type.

Important If rebar types were changed or new types were added in the source Rebar Type Editor spreadsheet since the last import, repeat the import operation to keep the bar schedule up to date.

FYI The Bar Schedule and Rebar Type Editor spreadsheets are not linked.

Bar Schedule Options

To access bar schedule options, click the Options icon or associated text. 

Available options are as follows:

- 

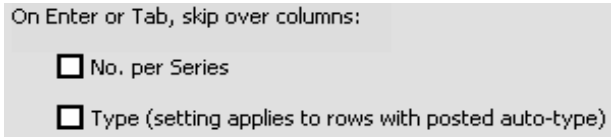
  When this option is unchecked, existing type-defined dimensions are preserved when an auto-type is entered in the Type-column.

- 

  For details on this option, see Chapter, Bar Schedule Main Table Columns, section *A-R Columns* .

- 

  For details on this option, see Chapter, Rebar Series, section Using Variable *Dimensions in Formulas* .

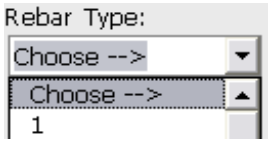
- 

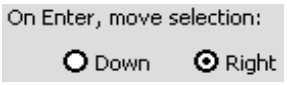
  Use these options to bypass respective columns when using the **Enter** or **Tab** key. Enabling this option makes it impossible to access the subject column directly.

  Type-column Notes

  1. This option has no effect on the ability to enter auto-types by choosing them from the rebar type ribbon or the drop-down list of rebar types.

  2. This option has no effect until an auto-type is entered. Once the auto-type is entered, the option setting is locked for the subject row until a new auto-type is entered or existing auto-type is re-entered. To re-enter an existing auto-type, select *Choose* --> in the drop-down list of rebar types and than re-enter the auto-type.



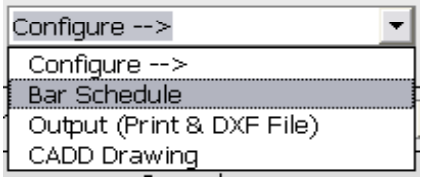
- 

  Use these options to set the direction of selection movement after pressing the **Enter** key.

  Note: Choosing the *Down* option disables direct access to the Type-column.

Configuration Settings: Bar Schedule

The Bar schedule configuration settings are accessed from the Bar Schedule Settings dialog box. To open the dialog box, choose *the Bar Schedule* from the drop-down configuration menu. The settings can be changed at any time. Changed settings are applied to both existing and future bar schedule entries. The configuration settings are divided into the following categories:



- Rebar Properties
- Dimension Rounding
- Rebar Length Options
- Rebar Size Options
- Rebar Number Columns

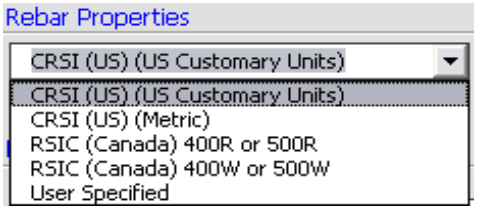
Rebar Properties

Rebar properties are stored in the property tables on the *Reference* worksheet. For rebar properties and their use in the spreadsheet , see Chapter, Rebar Properties.

The rebar properties are organized in the following groups:

CRSI Group	RSIC Group	User Group
CRSI (US) (US Customary Units)	RSIC(Canada) 400R or 500R	User Specified (Metric)
CRSI (US) (Metric)	RSIC(Canada) 400W or 500W	

The drop-down list of rebar properties includes every available property when the Bar Schedule's Main Table is blank. Otherwise, only the properties belonging to the same property group are listed.



Changing the property in the CRSI group amounts to the unit conversion. When converting units, consider the following:

- Dimension cell formulas are replaced with the converted values except rebar length formulas that were set up in the Rebar Type Editor spreadsheet, which are retained. It is recommended to reenter discarded formulas if they contain cell references to other dimensions (e.g. overall dimensions) in order to achieve accurate conversion.

- Literal dimensions and other unit-specific data attached to auto-types are not converted.

- Hook dimensions are replaced with the dimensions from the active rebar property table.

Configuration Settings: Bar Schedule - 2

Rebar Properties (Continued)

- Converted dimensions are rounded as follows:

Length-type Dimensions		
Unit	Other than Cut length	Cut Length
Feet	nearest 1/8"	nearest 1/4"
mm	nearest 5 mm	nearest 5 mm

Angle dimensions are rounded to the nearest minute.

Dimension Rounding

The spreadsheet rounds rebar dimensions using rounding options. The options are as follows:

Length-unit Dimension Rounding Options		
Unit	Dim's other than Cut length	Cut Length
Feet	nearest 1/8"	nearest 1/8"
	nearest 1/4"	nearest 1/4"
	nearest 1/2"	nearest 1/2"
	nearest 1"	nearest 1"
		higher 1/2"
		higher 1"
mm	nearest 1 mm	nearest 1 mm
	nearest 5 mm	nearest 5 mm
	nearest 10 mm	nearest 10 mm
		higher 5 mm
		higher 10 mm

Angle Dimension Rounding Options
nearest deg
nearest min
nearest sec

Note:

FT-IN Series length variance is always rounded to 1/8"

Metric Series length variance is always rounded to 1 mm

Rebar Length Options

These options apply to the auto-types with attached length formulas. The options control which length formula is entered in the L-column on the bar schedule form.

Configuration Settings: Bar Schedule - 3

Rebar Length Options (Continued)

Rebar length formulas that were auto-generated in the Rebar Type Editor spreadsheet are as follows:

- Detailed Length: Sum of all detailed (outside) dimensions plus hook length
- Cut Length: Length measured along the bar centerline

Rebar Size Options

The options are as follows:

FT-IN • ☐ Metric Designation

Enable this option to use metric rebar sizes in conjunction with US Customary Units.

Mark	Size	No. per Series	No.	L
S1901	19		10	12'-9"

- ○ Manual Input ◉ Size is embedded in rebar mark

Choosing the embedded size option instructs the spreadsheet to enter a custom function in the Size-column when a rebar mark is entered in the Mark-column. The custom function extracts the rebar's size from the rebar's mark. The size must be the first numeric occurrence in the mark's text.

Rebar Number Columns

Choose the number of rebar number columns to be used in the bar schedule from the drop-down list. If more that one column is specified, the spreadsheet enters a formula in the No.-column in the bar schedule's Main Table when a rebar type is entered in the Type-column. The formula sums up rebar numbers entered in the number-columns in the Table Part II. The summation is over the number of columns specified in the drop-down list, starting with the N1-column. The result of the summation is halved in the formula if the subtotal option is checked. This option is available when five or more rebar number columns are specified.

No. of Columns 2

☑ Num-columns include subtotals

Example:

No. of Columns 6

☐ Num-columns include subtotals

Total No.	N1 Stage 1 Phase 1	N2 Stage 1 Phase 2	N3 Stage 1 Phase 3	N4 Stage 2 Phase 1	N5 Stage 2 Phase 2	N6 Stage 2 Phase 3	N7
96	20	12	32	10	6	16	

☑ Num-columns include subtotals

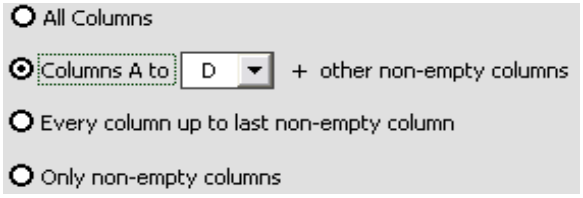
Total No.	N1 Stage 1 Phase 1	N2 Stage 1 Phase 2	N3 Stage 1 Subtotal	N4 Stage 2 Phase 1	N5 Stage 2 Phase 2	N6 Stage 2 Subtotal	N7
48	20	12	32	10	6	16	

Configuration Settings: Output

Output configuration settings are accessed from the Output Configuration dialog box. To open the dialog box, choose *Output (Print & DXF File)* from the drop-down configuration menu. The settings can be changed at any time. The settings apply to both print and CAD versions of the bar schedule except as noted. The configuration settings are divided in the following categories:

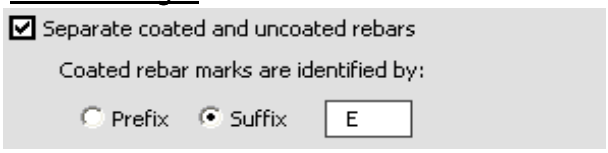
- Dimension Columns A-R
- Rebar Weight
- Rebar Series
- Multiple Num-columns
- Remarks Column
- Print Preview and Audit Options

Dimension Columns A-R



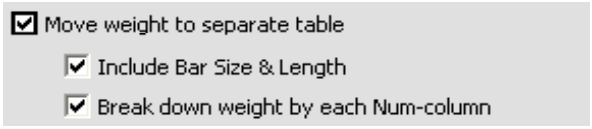
Dimension options allow to choose which columns to include in the output.

Rebar Weight



Enable this option to separate coated and uncoated rebars. Coated rebar marks must have a unique prefix or suffix for identification purposes.

MARK	SIZE	NO. BARS			L	TYPE	WEIGHT (LBS)	
		STAGE 1	STAGE 2	TOTAL			NOT COATED	COATED
S401E	4	152	152	304	9'-6 3/4"	BR408		1942
S402	4	30	26	56	20'-0"	STR	748	
S403	4	30	30	60	30'-6"	STR	1222	



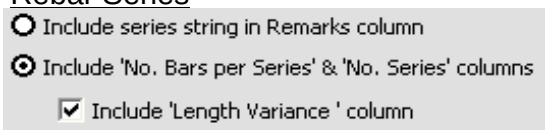
Enable this option to remove the weight column(s) from the bar schedule and to add a separate weight table to the print items in the drop-down Printing List.

Note: A stand-alone weight table can not be included in the output to the DXF file.

Mark	Size	L	Stage 1 No.	Uncoated Weight (Lbs)	Coated Weight (Lbs)	Stage 2 No.	Uncoated Weight (Lbs)	Coated Weight (Lbs)
S401E	4	9'-6 3/4"	152	0	971	152	0	971
S402	4	20'-0"	30	401	0	26	347	0
S403	4	30'-6"	30	611	0	30	611	0
			Tot Weight:	1012	971		958	971

Configuration Settings: Output - 2

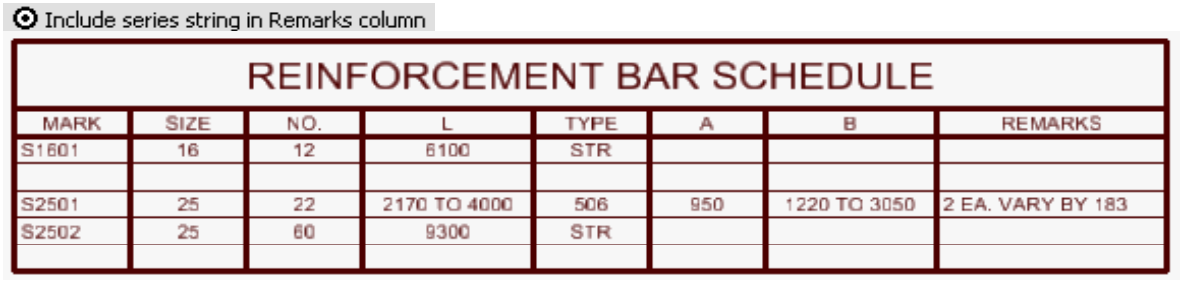
Rebar Series



These options allow to choose how series are presented in the bar schedule.

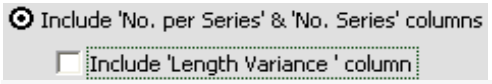
Remarks Column Option Note:

If the Remarks column is not excluded in the remarks column setting (see next page), then series strings are added to the existing remarks.



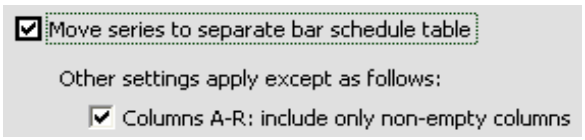
REINFORCEMENT BAR SCHEDULE

MARK	SIZE	NO.	L	TYPE	A	B	REMARKS
S1601	16	12	6100	STR			
S2501	25	22	2170 TO 4000	506	950	1220 TO 3050	2 EA. VARY BY 183
S2502	25	60	9300	STR			



REINFORCEMENT BAR SCHEDULE

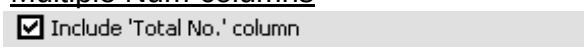
MARK	SIZE	NO.	SERIES		L	TYPE	A	B
			NO. BARS EACH	NO.				
S1601	16	12			6100	STR		
S2501	25	22	11	2	2170 TO 4000	506	950	1220 TO 3050
S2502	25	60			9300	STR		



Enable this option to:

- Remove the series from the bar schedule.
- Add a separate series table to the items in the drop-down Printing List and in the Create AutoCad DXF File dialog box accessible from the drop-down Tasks Menu.

Multiple Num-columns



Enable this option to exclude the 'Total No.' column from the bar schedule.

Configuration Settings: Output - 3

Multiple Num-columns (Continued)

☑ Move num-columns to separate table

☐ Keep 'Total No.' column in Bar Schedule

Enable this option to:

- Remove the number-columns from the bar schedule.
- Add a separate series table to the items in the drop-down Printing List and in the Create AutoCad DXF File dialog box accessible from the drop-down Tasks Menu.

☑ Move num-columns to separate table

REBAR NUMBER TABLE			
MARK	NO. BARS		
	STAGE 1	STAGE 2	TOTAL
S501	30	26	56
S801	152	152	304
S802	30	30	60

Remarks Column

☐ Exclude unless the column is reserved for series string

Enable this option to exclude the Remarks-column from the bar schedule.

If this option is checked and the series string option is enabled (see preceding page), then the output is configured conditionally as follows:

- The column remains but existing remarks are removed if the series are kept in the bar schedule.
- The column is removed if the series are moved to a separate bar schedule. Existing remarks are not transferred to the series bar schedule.

Print Preview and Audit Options

☑ Show Print Preview window

Enable this option to display a Print Preview when a print item is selected from the drop-down Printing List.

Note: This option does not apply to the DXF files.

☑ Run Audit

Enable this option to run an audit before proceeding with the rest of the ouput.

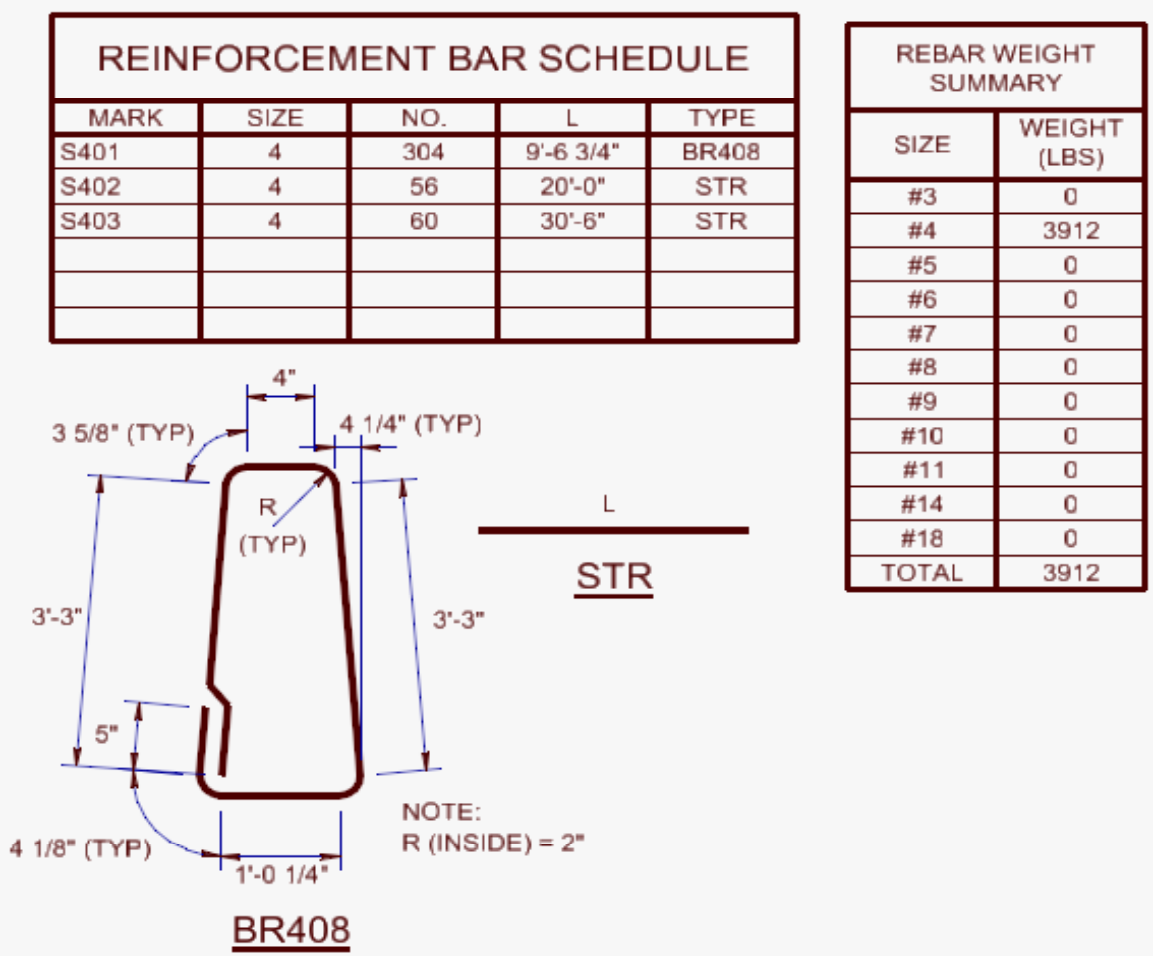
Configuration Settings: Output - 4

Output Configuration Settings Example: CAD Drawing

Excel Bar Schedule Form

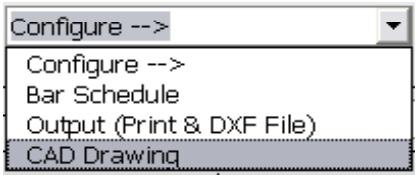
Mark	Size	No. per Series	No.	L	Type	A	B
S401	4		304	9'-6 3/4"	BR408		
S402	4		56	20'-0"	STR		
S403	4		60	30'-6"	STR		

Output Configuration Settings	
Dimension Columns A-R	◉ Only non-empty columns
Rebar Weight	☑ Move weight to separate table
Remarks Columns	☑ Exclude unless the column is reserved for series string



Configuration Settings: CAD Drawing

CAD Drawing settings are accessed from the CAD Drawing Settings dialog box. To open the dialog box, choose *CAD Drawing* from the drop-down configuration menu. The settings can be changed at any time.



The spreadsheet generates a DXF file of the CAD drawing with the following attributes and characteristics:

	FT-IN	Metric
Drawing Units	Feet	mm
Text Height	1/8"	3.17 mm
Colors	Per Configuration Settings	
Lineweights		
Table Column Width and Row Height		

Except for the Remarks-column, the width of each table's column is calculated taking into account the following:

- Font type (per configuration settings)
- Number of text characters in the longest text string
- Minimum column's width (per configuration settings)
- Internally set minimum and maximum column width limits

The width of a text string depends on the font type. Because there are numerous font types, the font type specified in the configuration settings is just a loose approximation of the actual font type in use.

The Remarks-column width is specified in the configuration settings. The table row heights are adjusted as necessary to fit the remark's text in the fixed-width column.

Calculated column's widths and row's heights can be increased and decreased using adjustment factors specified in the configuration settings.

Important It may take a few trials with different configuration settings to get acceptable results.

The configuration settings are divided into the following categories:

- Lineweights and Colors
- Bar Schedule Table Properties
- Bar Schedule Table Size Adjustment
- Bending Diagrams

Configuration Settings: CAD Drawing - 2

Lineweights and Colors

Separate attribute sets are applied to the following:

- Table: vertical lines
- Table: horizontal lines
- Bending diagram
- Dimension lines
- Text

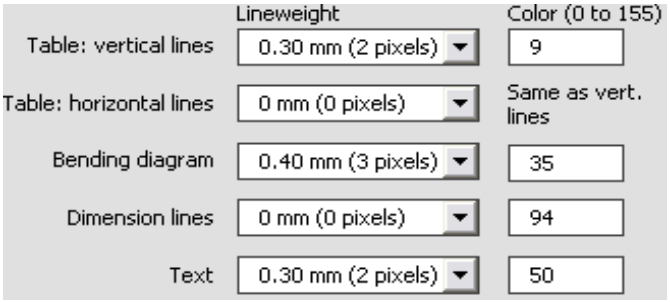
Lineweight options are as follows:

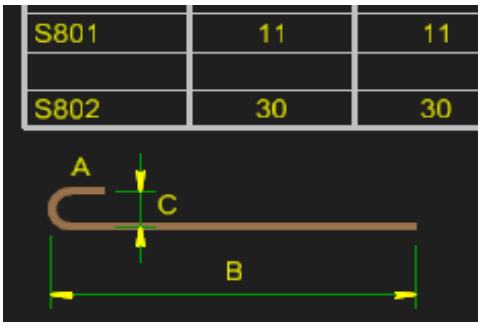
- 0 mm (0 pixels)
- 0.20 mm (1 pixels)
- 0.30 mm (2 pixels)
- 0.40 mm (3 pixels)
- 0.50 mm (4 pixels)
- 0.70 mm (5 pixels)
- 0.90 mm (6 pixels)

Note: Line weights are measured in pixels in the Microstation CADD applications.

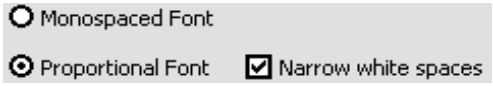
Colors are specified by color numbers in the range 0-155.

Defaut Settings:





Bar Schedule Table Properties

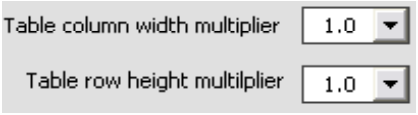


Specify a font type that best matches a drawing font type.

Table Property	Default Values (FT-IN)	Limits (FT-IN)		Default Values (Metric)	Limits (Metric)	
		Min.	Max.		Min.	Max.
Minimum column width	1"	0.625"	3"	25 mm	15 mm	75 mm
Remarks column fixed width	3"	1"	6"	75 mm	25 mm	150 mm
Top & bot. text margins	0.0625"	0.03"	0.125"	1.6 mm	0.75 mm	3.2 mm

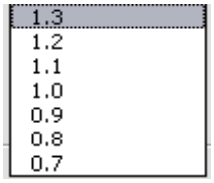
Configuration Settings: CAD Drawing - 3

Bar Schedule Table Size Adjustment



The spreadsheet multiplies column widths and row heights by the respective multiplier.

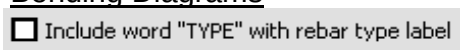
Typical drop-down list:



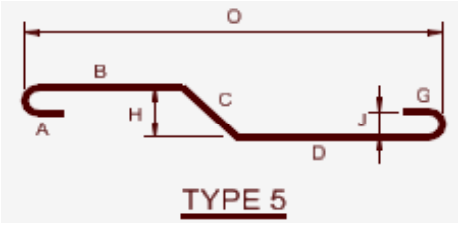
Default value = 1.0

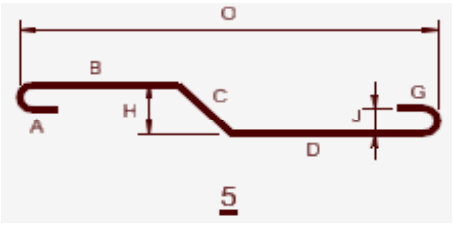
Note: Table adjustment do not apply to the width of the Remark column.

Bending Diagrams



Examples:





Rebar Properties

Rebar properties are stored in the property tables on the *Reference* worksheet. The spreadsheet includes the following property tables:

- CRSI (US) (US Customary Units) (CRSI: Concrete Reinforcing Steel Institute)
- CRSI (US) (Metric)
- RSIC(Canada) 400R or 500R (RSIC: Reinforcing Steel Institute of Canada)
- RSIC(Canada) 400W or 500W
- User Specified Properties (Metric)

The properties tables are used as look-up ranges that can be searched for a specific property by rebar size. Some of the property applications are as follows:

- Weight calculation
- Posting standard hook dimensions
- Cut length calculation
- Rebar length audit

Cells holding user-specified property values have a colored background.

As per CRSI, hook dimensions and bend diameters are tabulated for the following rebar classes:

	Hook Types
• Other than stirrup/tie	90°, 180°
• Stirrup/tie	90°, 135°
• Stirrup/tie (seismic)	90°, 135°

Rebar classes are assigned in the Rebar Type Editor spreadsheet. The editor spreadsheet implements the hook-related class rules as follows:

- 135° hooks are allowed only for stirrups and ties.
- Stirrups and ties may have 180° hooks.
- 180° hook dimensions and a bend diameter are for the *Other than stirrup/tie* class for any rebar class.

When using User Specified Properties, make a note of the following:

- 180° and 135° tabulated hook lengths are not modified when they are added to a detailed or cut length.
- Bar sizes must be a numeric text.

Note:
The bar area included in the property tables is not used in the current spreadsheet version.

Custom Functions

Trigonometry Functions

cos_(*angle*)
sin_(*angle*)
tan_(*ang* le)
acos_(*number*)
asin_(*number*)
atan_(*number*)
atan2_(*number1* ,*number2*)

Functions included in this category are the same as Excel functions with the same names but without an underscore, except they work with the angles in degrees (Excel functions operate on angles measured in radians).

Auto-type Dimension Examples:

	Input	Reformed Formula	Cell Value
FT-IN	=(6+4.5/12)*tan_(75)	=fi((6+4.5/12)*tan_(75))	23'-9 1/2"
Metric	=3000*cos_(75)	=rd(3000*cos_(75))	775

fi(*number*)[1] FT-IN

The function converts the *number* in feet to ft-in format. The result is rounded as per rounding configuration settings.

fd(*number*)[1] FT-IN

The function converts the *number* in ft-in to feet format.

rd(*number*)[1] *Metric*

The function rounds the *number* in accordance with the rounding configuration settings.

deg(*angle*)[1]

The function converts the *angle in d-m-s* to degrees.

Note:
For footnotes , see the next page.

Custom Functions - 2

dms(*angle*)[1]

The function converts the *angle* in degrees to d-m-s format. The result is rounded as per the rounding configuration settings.

var_l(*L1, L2*)[2]

L1 and L2 - Start and end dimension, respectively. Both dimensions can be a value in feet, millimeters, or a formula.
This function returns a variable dimension in units of length.

var_d(*D1, D2*)[2]

D1 and D2 - Start and end dimension, respectively. Both dimensions can be a value in degrees or a formula.
The function returns a variable angle dimension.

lt(*dimension*)[3]

The function returns the left part of the variable dimension. If the dimension is constant then the function returns an unmodified dimension.

rt(*dimension*)[3]

The function returns the right part of the variable dimension. If the dimension is constant then the function returns an unmodified dimension.

[1] The spreadsheet inserts this function automatically for the auto-type dimensions. The same applies to the user-type dimensions if the dimension units option is enabled in the Options dialog box. Manual use of this function should be limited to the user-type dimensions and only if the dimension units option is disabled.

2 For function examples, see Chapter, Rebar Series.

[3] This function is always used inside functions var_l() and var_d().