RebarCAD
Getting Started

Contents

Introduction

This guide aims to help users to get started using **RebarCAD**, starting new drawings, drawing bars and ranges, producing schedules and electronic output files. Reading this guide will equip you with the knowledge needed to explore **RebarCAD** in more detail.

1. Starting a New Drawing

This section deals with starting a new drawing in **RebarCAD**, setting up the scaling of the drawing using AutoCAD or **CADS Viewport Manager (CADS VPM)**.

Before starting to detail reinforcement you need to set-up an AutoCAD drawing. You can add reinforcement to a new drawing or to an existing one. This chapter explains how to create new drawings, how to set the working scale of the drawing, and how to set up existing drawings. The concept of **Drawing Sheets** is introduced which allows you to assign reinforcement to different drawing numbers.

1.1. Drawing Sheets

Drawing Sheets allow you to produce one or several drawings together with their associated Schedules from within a single AutoCAD DWG file. Whole structures can be detailed in one AutoCAD DWG file and split between several Drawing Sheets. Each Drawing Sheet and associated Schedule can be issued and tracked independently.

A Drawing Sheet can either be an AutoCAD Layout or a specific area of Model Space. Reinforcement can be assigned to specific Drawing Sheets as you detail or at a later time.

## 1.2. Creating a New AutoCAD File & Adding a Drawing Sheet

Use the AutoCAD **New** command to start a new drawing using an AutoCAD template file (DWT). By default **RebarCAD** opens using its own default template for metric drawings this is **CADSISO.DWT** and for imperial drawings **CADSIMP.DWT**. These files are located in the C:\Program Files\Common Files\CADS Shared\AcadSupp folder on your hard disk.

You can use your own template file either based on the ones shipped with **RebarCAD** or your existing template.

Note: When setting up the template do not edit the template inside **RebarCAD** as this will introduce a **RebarCAD** database into the template. Edit the template in AutoCAD without **RebarCAD** loaded.

There are several ways to create a Drawing Sheet. Users of **CADS VPM** can configure Drawing Sheet to be created automatically as part of the process of setting up a drawing. Other users can also ensure Drawing Sheets are created as part of their own drawing setup procedure by configuring **RebarCAD** to recognise the title blocks being inserted into the drawing. Instructions on configuring your own Title Blocks to both trigger Drawing Sheet creation and to map to the Schedule headers and footers can be found later in this chapter.

The creation of Drawing Sheets is triggered by the insertion of a Title Block that contains an attribute tag such as **DRAWING NO**. If a value is entered for this attribute, then a corresponding Drawing Sheet will be created inside **RebarCAD**. If no value is specified for this attribute then **RebarCAD** will present a dialog, shown below, to ask for the Drawing Sheet number. Your Title Blocks can be added into **RebarCAD** for automatic recognition please refer to the section <u>Configuring your Title Blocks</u>.
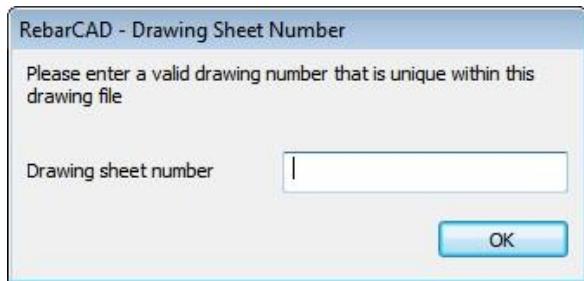
You can change the Drawing Sheet number by editing the associated Drawing Number attribute inside the Title Block. Similarly, you can delete Drawing Sheets by erasing the corresponding Title Block.

Think of a Drawing Sheet as an instance of a Title Block within the drawing. If you decide not to insert a Title Block then bars will be assigned to an **UNASSIGNED** Drawing Sheet. You can assign them to a valid drawing sheet later by using the **Assign Bar to Drawing Sheet** command, as described later.

If you select one of these drawing sheets, then only bars that belong to that specific drawing sheet will be shown in the formatted and free-form views.

The following examples will help explain some of the basic operations relating to Drawing Sheets.

Try it: Create a Layout Space Drawing Sheet Using CADS VPM and Add a Viewport

1.   Launch **RebarCAD**

2.   Select **CADS VPM** → Create Layout or ▭

3.   Accept the default Layout name and sheet. Select **Create**

4.   Immediately select **OK** on the Edit Attribute dialog

5. Specify a Drawing Sheet number of 01 in the **RebarCAD** Drawing Sheet Number dialog

    Note: this dialog will not appear if you specify a value for Drawing Number in the **EditAttributes** dialog.

6. Select **RebarCAD** → View Schedule or [icon]

    You should see that a Drawing Sheet called 01 has been created Close the Schedule

7. Select Layout2 Tab

8. Select **CADS VPM** → Create Viewport or [V]

9. Fill in the Viewport title and select the Working Scale by picking 1:20 and select **OK**

10. Pick two diagonal points within the top half of the drawing area of the Title Block to specify the extents of the Viewport

11. You will then be switched into Model Space and prompted to place the Viewport boundary. Pick a point in the positive quadrant. You will then switch back to **Layout2**

12. Create another Viewport in the bottom half of the drawing area of the title block with the scale set at 1:10 and place the red boundary in Model Space Note: make sure that the boundaries are not inside each other and are not overlapping

    In Model Space the current working scale will automatically change simply when moving over one boundary to another. In Layout Space activating a Viewport will change the working scale

Try it: Create a Layout Space Drawing Sheet Using AutoCAD

1. Launch **RebarCAD**

2. Make Layout1 active by selecting the tab

3. Right click onLayout1 and select **Page Setup Manager**…. Select **Modify**. Select ISO A2 (594.00 x 420.00 MM) paper size. Select OK and Close

4. Select **Insert** → **Block** or type Insert

5. Browse to the **...\cads\AutoCAD XXXX\CADS RC India XXXX.X\CADS Scale blocks** folder and select **A2CADS.dwg**. Select **Open** and then OK

6. Specify a Drawing Sheet number of 01 in the **RebarCAD** Drawing Sheet Number dialog

7. Select **OK** on the Drawing Sheet Number dialog.

8. Select RebarCAD → View Schedule or   You should see that a Drawing Sheet called Sheet 1 has been created.

1.3. Managing Drawing Scales

RebarCAD relies on the AutoCAD Dimscale system variable being set to display the scale of the Viewport in which the detail is being placed. **RebarCAD** will read the Dimscale value and will automatically scale any blocks inserted whilst detailing to the correct size. The Dimscale can be set using **CADS VPM** or set manually inside AutoCAD.

If using **CADS VPM**, when the current working scale is changed the Dimscale is changed, simply by moving from one Viewport boundary to another.

If you are using AutoCAD, you will need to manually create a different Dimension Style for each Working Scale on the drawing. The value that needs to be set is on the **Fit Tab → Scale** for **Dimension Features → Use Overall Scale** of menu option. You can then make a particular Dimension Style current to change the Current Working Scale.
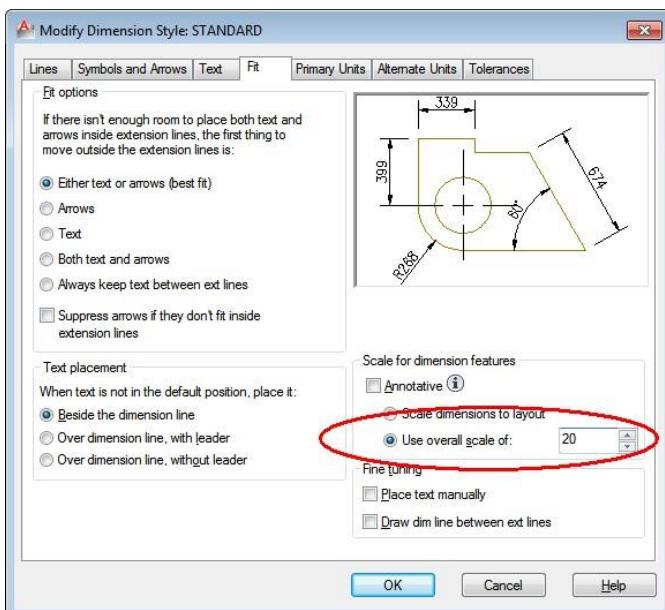
1.4. Best Practices on Detailing with RebarCAD

▶ Work within the positive quadrant of the AutoCAD drawing. This is where both X and Y co-ordinates are positive.

▶ Keep your details as close to the origin as possible (0,0). This keeps the co-ordinates small and reduces AutoCAD's calculation time.

▶ Always work with the UCS (User Co-ordinates System) set to **World.**

▶ Always work with the View set to **Plan World**.

▶ Do not use Z values on any of the entities within General Arrangement drawings. Occasionally you will find that G.A drawings from third parties will have lines with a Z value, these need to be 'flattened' before you detail.

▶ Always use the dimscale system variable to set the current working scale, either manually using different dimension styles or using **CADS VPM.**

▶ Do not use Annotative dimension or text styles on a **RebarCAD** drawing as these are not supported.

▶ Never re-use existing **RebarCAD** drawings, always start a new drawing using a clean template drawing that does not contain a **RebarCAD** database.

▶ It is recommended that you only have one layout per drawing file.

1.5. Configuring your title blocks

In order to get a printed formatted schedule you need to create drawing sheets inside the schedule and assign the reinforcement to the drawing sheet. If the reinforcement is not assigned to a drawing sheet you will not be able to produce a formatted schedule. You can allocate the reinforcement to different drawing sheets and independently issue and revise each of the drawing sheets.

You can configure your own title blocks to work with **RebarCAD** by selecting the **Configure Title Block** command. This feature will be shown when you first run **RebarCAD** following an installation and when the program detects that a title block may have been inserted on a drawing. If the **Configure title block** command appears unexpectedly simply cancel it, the command may have detected other blocks on the drawing such as section markers that contain a drawing number attribute.

The **Configure Title Block** feature allows you to select your own title block and then map its attributes to **RebarCAD**'s schedule data fields. In order to create drawing sheets and therefore formatted reports you will need to ensure that the drawing number field is mapped to the appropriate drawing number attribute within your title block. Mapping the remaining **RebarCAD** data fields to title block attributes will result in the schedule headers and footers being automatically populated from the title block.

If your title block has no attributes then the **Configure Title Block** command will offer to automatically add a single attribute to represent the drawing number.

The **Configure Title Block** dialog is shown below with some of the fields mapped to attributes on the title block:
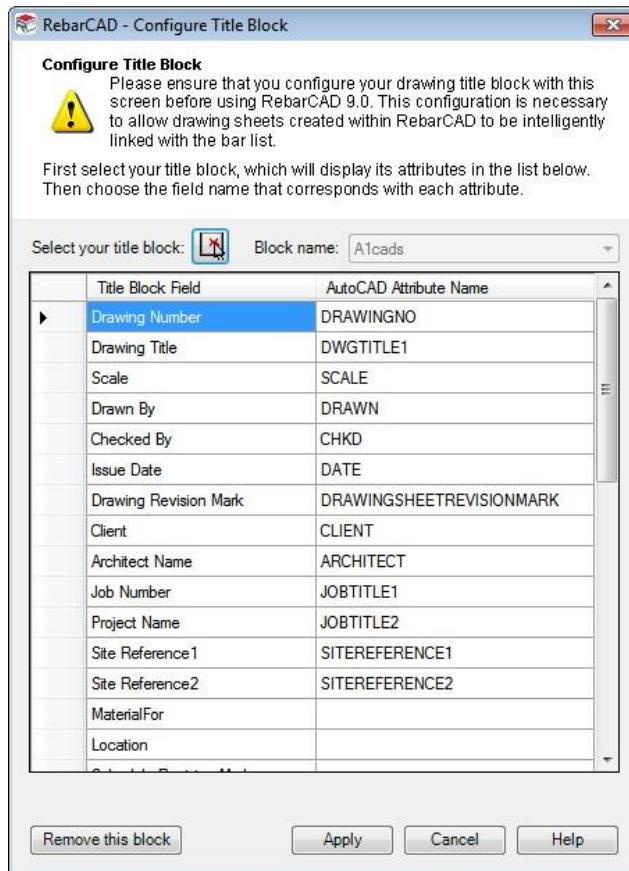
Please consult the **RebarCAD** Customisation & Configuration Guide for more information on saving the title block settings for future drawing sessions.

You can configure **RebarCAD** to work with any number of title blocks regardless of whether they use consistent attribute naming. You can use the same method to migrate any title blocks that are imbedded in an AutoCAD DWT file.

If the wrong block is accidentally configured you can use the **Remove this block** option to the block from the drop down list of configured blocks that appears on the top right of the **Configure Title Block** dialog.


 Try it: Configuring a Title Block inside RebarCAD

1. Launch **RebarCAD**
2. Open drawing **...\drawings\Title Block.dwg**
3. Select **RebarCAD – Configure – Configure Title Block**
4. Click on the **Select your title block** icon
5. Select any part of the title block and the **Configure title Block** dialog will be displayed

6.   **RebarCAD** will automatically assign several of the AutoCAD Attributes to the Title Block Fields

7.   Select the blank filed to the right of the Drawing Title field and choose the **DWGTITLE1** attribute. This means that data entered in the **DWGTITLE1** attribute field will automatically be added into the schedule header if the field is being used in the printed schedule or schedule on drawing.
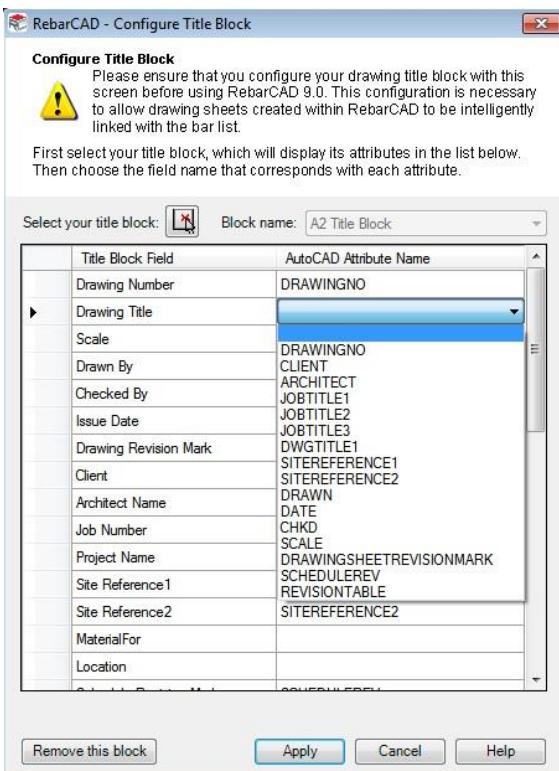
8. Click **Apply** to add the title block to the list of title blocks that **RebarCAD** will automatically recognise when a title block is inserted or a drawing opened

9. The Drawing Sheet Number dialog is then displayed

10. Enter 01 for the Drawing Sheet Number and click OK

1.6. Key Points

▶ Drawing sheets are created when suitable title blocks are inserted

▶ You can configure your title blocks to work with **RebarCAD** by using the **Configure Title Block** command

▶ You can use the **Configure Title Block** command to automatically add a drawing number attribute to title blocks that have no attributes

▶ The content of Drawing Sheets can be edited by changing the attribute data in its associated title block

▶ Drawing sheets can be removed from the schedule by deleting its associated title block

▶ You can only produce a formatted view or electronic output when you have at least one drawing sheet

▶ You can set the default drawing sheet by using the **Set Current Drawing Sheet** ![icon] command

▶ You can automatically assign bars to the default drawing sheet as you draw bars. Alternatively you can add bars to the drawing sheet at a later time by using the **Assign Bars** to Drawing Sheet command

▶ Data entered into the title block is automatically read by the bar schedule if the title block attributes are mapped to the schedule fields using the **Configure title block** command

▶ **RebarCAD** may sometimes mistakenly guess that an inserted block is a title block and display the **Configure Title Block** dialog. If this is the case simply cancel the command as the block select may be a section marker or similar.

▶ Use the **Remove this block** option to delete a previously configured block from the list of blocks in the **Configure Title Block** dialog.

1.7. Commands

Action	Menu	Toolbar
Create layout	**RebarCAD - CADS VPM - Create Layout**	
Create viewport	**RebarCAD - CADS VPM - Create Viewport**	![icon]
Set Current drawing sheet	**RebarCAD** - **Draw Bar - Set Current Drawing Sheet Draw Bar**	![icon]
Configure title block	**RebarCAD > Configuration > Configure Title Block Configuration**	![icon]
View schedule	**RebarCAD > View Schedule...**	![icon]

2. General Arrangement Drawings

Reinforcement can be added to any type of General Arrangement drawing that can be generated using standard AutoCAD commands. This can be an existing drawing or one prepared from scratch by the detailer. Before starting detailing you should set the **Current Drawing Sheet** and **Member Title.**
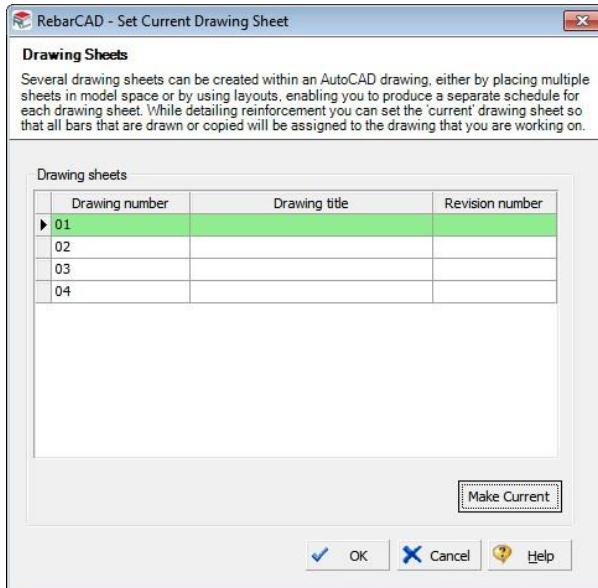
2.1. Setting the Drawing Sheet Current

RebarCAD - Detail - Set Current Drawing Sheet

If you have several layouts in the AutoCAD drawing file you can use the **Set Drawing Sheet** command to ensure that the reinforcement is correctly assigned to a particular Drawing Sheet.

The Schedule will automatically sort the reinforcement into Drawing Sheets. In the Set **Current Drawing Sheet** dialog highlight the drawing sheet and select the **Make Current** option.

If there are no drawing sheets showing in the dialog, use the **Configure Title Block** command to get **RebarCAD** to recognise the drawing sheet, please refer to the section on **Configuring Title Blocks.**
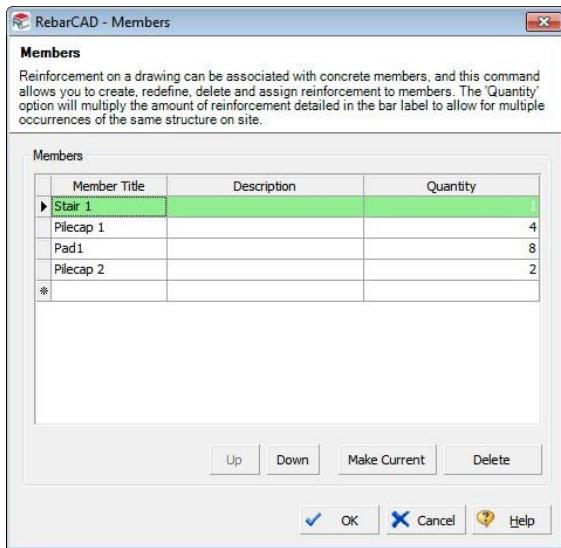

The reinforcement can be allocated to a different drawing sheet using the **Assign Bars** to **Drawing Sheet** command

2.2. Creating & Setting a Member Title

RebarCAD - Detail - Set Member

Members are used as a way of grouping and categorising bars in the schedule usually by structure type such as slabs, columns, beams etc. You can create a new Member Title by selecting the **Set Member** command. Type in the member title and any description required.

Use the quantity option where you need to repeat the same detail several times. Typing 5 into the quantity field in the Member title dialog will multiply the number of bars in the schedule for that particular member title.

Highlight the member title in the dialog and then click the **Make Current** option to set the member title as current for detailing.

The reinforcement can be allocated to a different member title using the **Assign Bars** to **membe**r command .

2.3. Outline Tools

RebarCAD Outline Tools contain several parametric routines that will automatically draw standard structural outlines such as Pilecaps, Padbases, Stairflights, and Retaining Walls etc. The Outline tools will draw the cover lines, accurate line types and appropriate dimensions as required. The tools for Outlines are found in the **RebarCAD** on the Tool Palettes. The Tool Palettes can be loaded from the View Tab, Palette Panel.
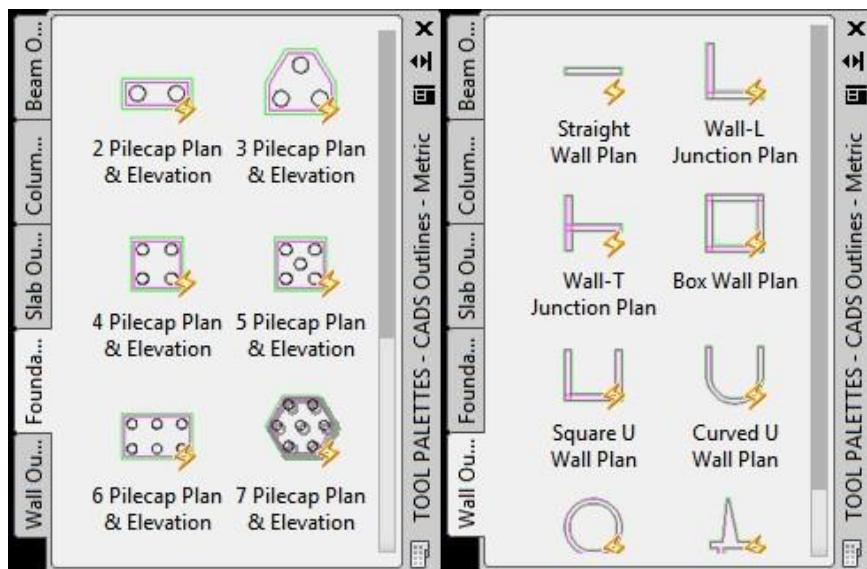
## Try It: Create a Pad Base from the RebarCAD Palette Outlines

1. Launch **RebarCAD**

2. Insert an A2 Title Block, set the Drawing No to 01 and create a Viewport with a scale of 1:20

3. Make the Viewport in 01 active

4. If your tool palette is not loaded select the **View Tab – Palettes Panel – Tool Palettes**

5. Select **Tool Palette – Foundation Outline – PadBase** with Column Plan & Elevation
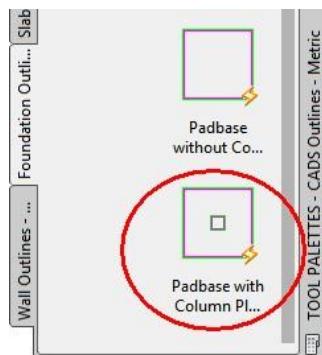
6. Place the Pad Base plan on the drawing
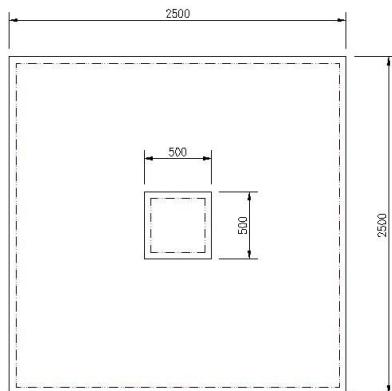
7. Click on the Pad Base Outline.C. Currently the Pad Base is 2500mm square with a 500mm square column. Use the stretching tools on the dynamic block to change the base to 3000mm square and the column to 600mm square.
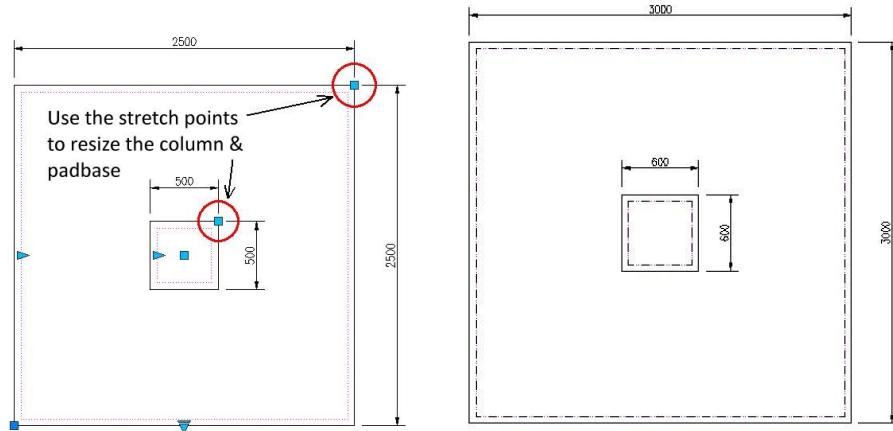
8.   Click on the square on the Pad Base, move the cursor to the right and type in 500 and press enter. Repeat and move the cursor vertically up and type in 500 and press enter

9.   Click on the square on the column, move to the right and type in 50 and press enter. Repeat and move the cursor vertically up and type in 50 and press enter.

10. Note: The horizontal arrows at the midpoints of the vertical cover lines can be used to adjust the cover distance.

     The next stage is to copy the Pad Base Outline and change it from a plan view to an elevation.

11. Use the AutoCAD **copy** command ⬚ Copy to duplicate the Pad Base Plan and place it above the existing plan.

12. Select the copied plan and use the arrow on the midpoint of the bottom horizontal line to change the plan view to the elevation view
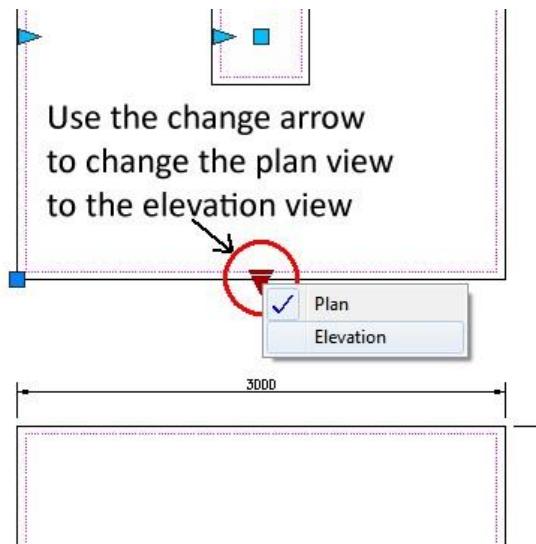
13. Use the stretch arrow on the elevation view to change the depth of the Pad Base to 750mm

Use the stretch arrow
to change depth of the
Pad Base to 750mm
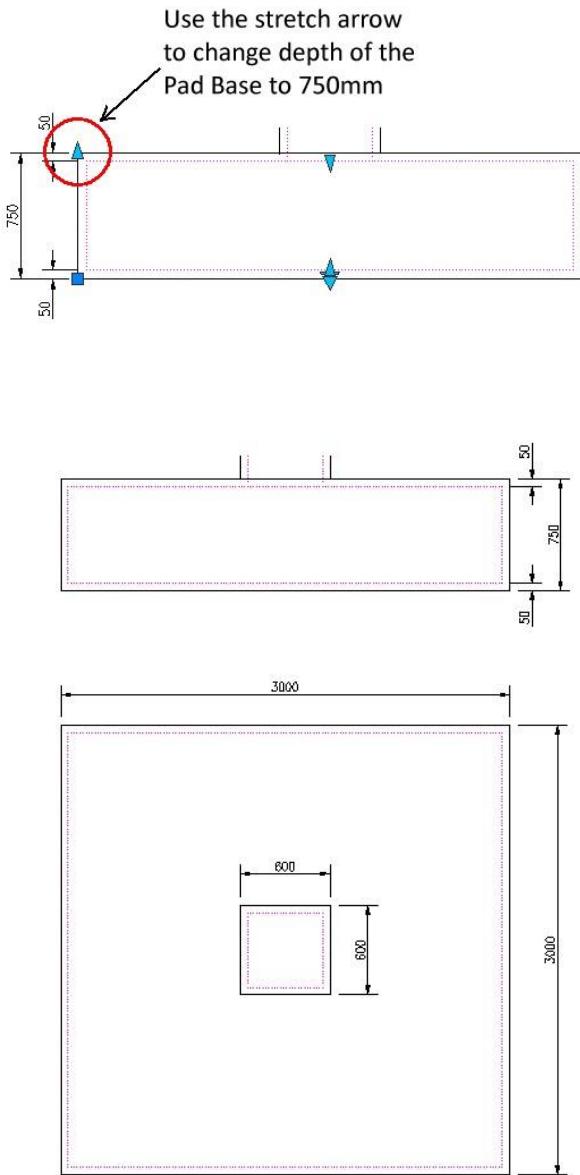
This completes the Pad Base Outline Try It.

2.4. Key Points

▶ You can use any existing drawing and add reinforcement

▶ You can create a new drawing and import G.A details from other drawings using **Copy/Cut** and **Paste**

▶ Ensure reinforcement is correctly assigned to a drawing using the **Set Drawing Sheet** command

▶ Use the **Set Member** command to assign the reinforcement to different structure types. The schedule can be sorted using the member titles

▶ Reinforcement can be placed on outlines created by lines, polyline, blocks and xrefs.

2.5. Commands

| Action	Menu	Toolbar
Set Current Drawing Sheet	**RebarCAD – Detail – Set Current Drawing Sheet**	
Set Current Member	**RebarCAD – Detail – Set Member**	

3. Adding Reinforcement to a Drawing

Before you add reinforcement to your General Arrangement drawing you need to understand the relationship between Bars, Ranges, Marks, Sets & Views that you are going to detail. If you correctly link the bar views, ranges and annotation in the different views of the structure they will dynamically update when they are edited.

3.1. Bars and Ranges

There are two basic commands for adding bars to your drawing, namely **Draw Bar** and **Draw Range**.

The **Draw Bar** command allows you to draw a single view of a bar in any orientation, either in profile or centreline.
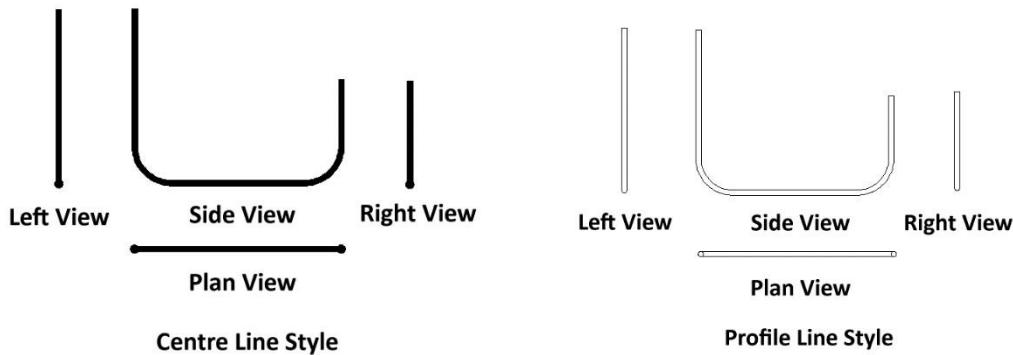
The views of the shape code are linked together, so if you make a change to the dimensions, bar diameter etc. all the different views will automatically update.

The **Draw Range** command allows you to draw a view of a bar with a Range Line attached or to draw a run of bars in section.
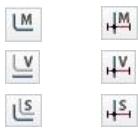
Bar Reference

Run of Bars in Section
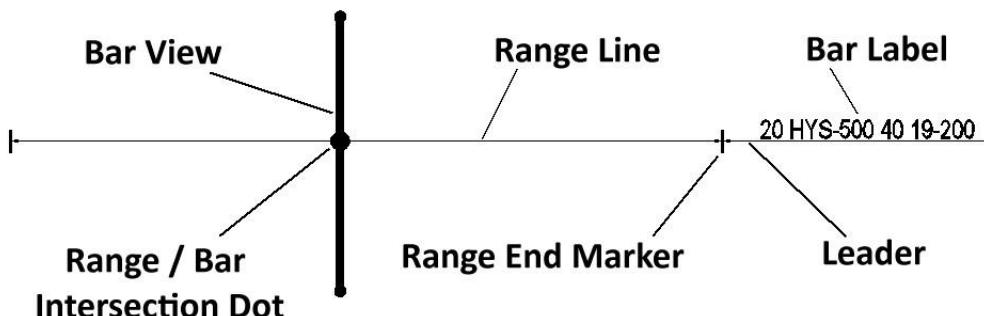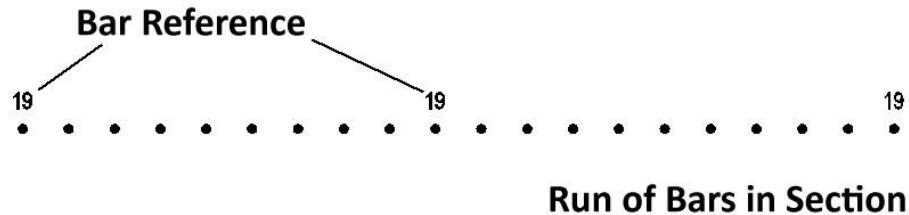
3.2. Marks, Sets & Views

Both the **Draw Bar** and **Draw Range** commands are used in conjunction with either of the following sub commands: -

*   **New Mark**
*   **Add View**
*   **New Set**

These 3 sub commands control the input of data to the Schedule.

As a drawing is developed, it is quite common to show the same bar in different views on the drawing. If each time one of these views were drawn and additional bars were added to the Schedule, there would be too many bars in the Schedule on completion of the drawing.

Therefore commands are required to draw bars in different bar views that will either 'Add a New Line to the Schedule' or 'Update an Existing Line in the Schedule'. This is achieved by the correct use of the **New Mark, Add View** and **New Set** options.

New Mark

This instructs **RebarCAD** that the **Bar View (and Range)** to be drawn is the First Set of a New Bar Mark. This will also add a New Line to the Schedule for this bar set. **RebarCAD** will only allow to place One Bar Label per bar set.

Add View

This instructs **RebarCAD** that the **Bar View (and Range)** to be drawn is another view of an existing Bar Set already on the drawing. This will not add a new line to the Schedule but may update the data in the line already present in the Schedule for this bar set.

New Set

This instructs **RebarCAD** that the **Bar View** to be drawn is the First of a New Bar Set but it will use an existing Bar Mark. This will also add a new line to the Schedule for this bar set and allow you to add a bar label.

NOTE: A number of lines in the Schedule with the same Bar Mark assigned to the same Member Title can be combined into 1 line showing the total number of bars if required.

A Bar Set would generally consist of:

▶ Several views of the bar to show its location in the structure

▶ A Bar Label detailing the number of bars, material type and size, Bar Mark Number and Bar Centres.

Each Bar Set is linked to a line in the Schedule that displays its Bar Mark Number, Shape Code, number of bars and it's bending dimensions.

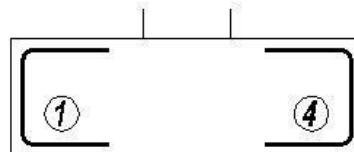As an example, considerShape Code 132 in the Pad Base shown in the figure below.
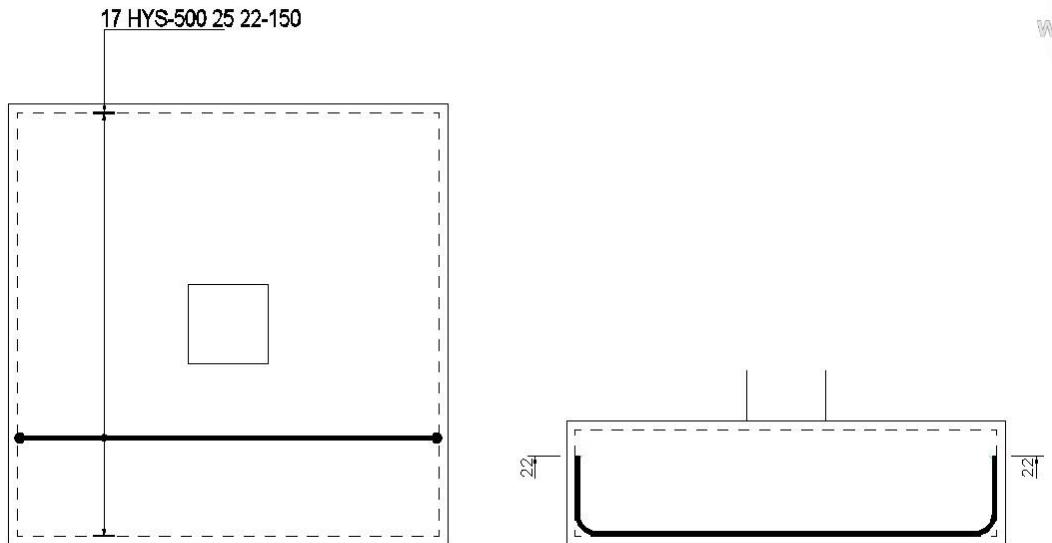
This bar is also drawn on the plan in the form of a Plan View of the bar with a range and the Bar Label. The two views form the Bar Set, which also has a corresponding line in the Schedule.
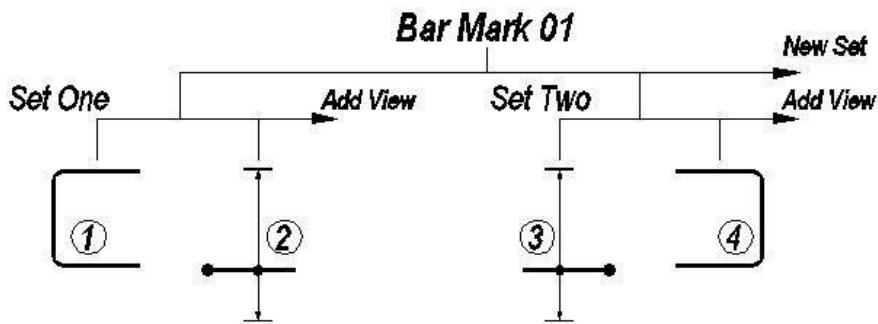
Plan View   Section

Bar Mark 01
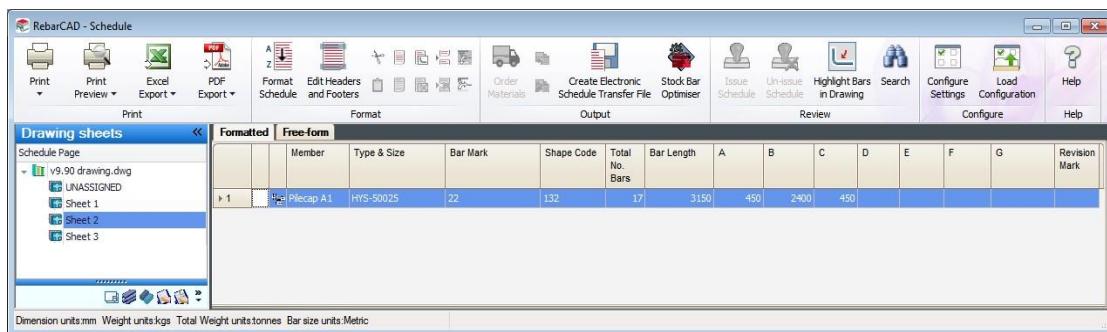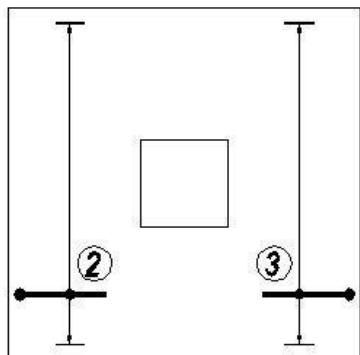
The graphics can be placed using four steps on the plan and the section. The relationship between the Mark, Sets and the Views is shown on the family tree diagram above. The circled numbers on these diagrams refer to the order of working while the different commands so used are described further below.

▶ **Draw Bar – New Mark** is used to place the Side View of the bar in the section. This allocates a new Bar Mark to the reinforcement plus a line in the Schedule.

▶ **Draw Range – Add View** is used to place the bar plus the Range Line in the plan. This updates any missing data in the existing line in the Schedule. Items 1 and 2 are linked together as Set One of Bar Mark 01.

▶ **Draw Range – New Set** is used to place a second instance of Bar Mark 01 in the plan and shows a bar plus it's Range Line. The **New Set** command repeats the Bar Mark Number and allocates a line in the Schedule. Item 3 shows in Set Two of Bar Mark 01 in the figure above.

▶ **Draw Bar – Add View** is used to place the Side View of the bar in the section. All the information for Set Two of Bar Mark 01 is already present in the Schedule and so this view of the bar indicates its placing position in the structure.

3.3. Draw Bar Dialog

The **RebarCAD Draw Bar** dialog is the main tool for the selection and input of bar bending data. You should try to input as much data as you can into this dialog box, as this will cut down the number of AutoCAD command line prompts needed to place a bar and so speed up your detailing.
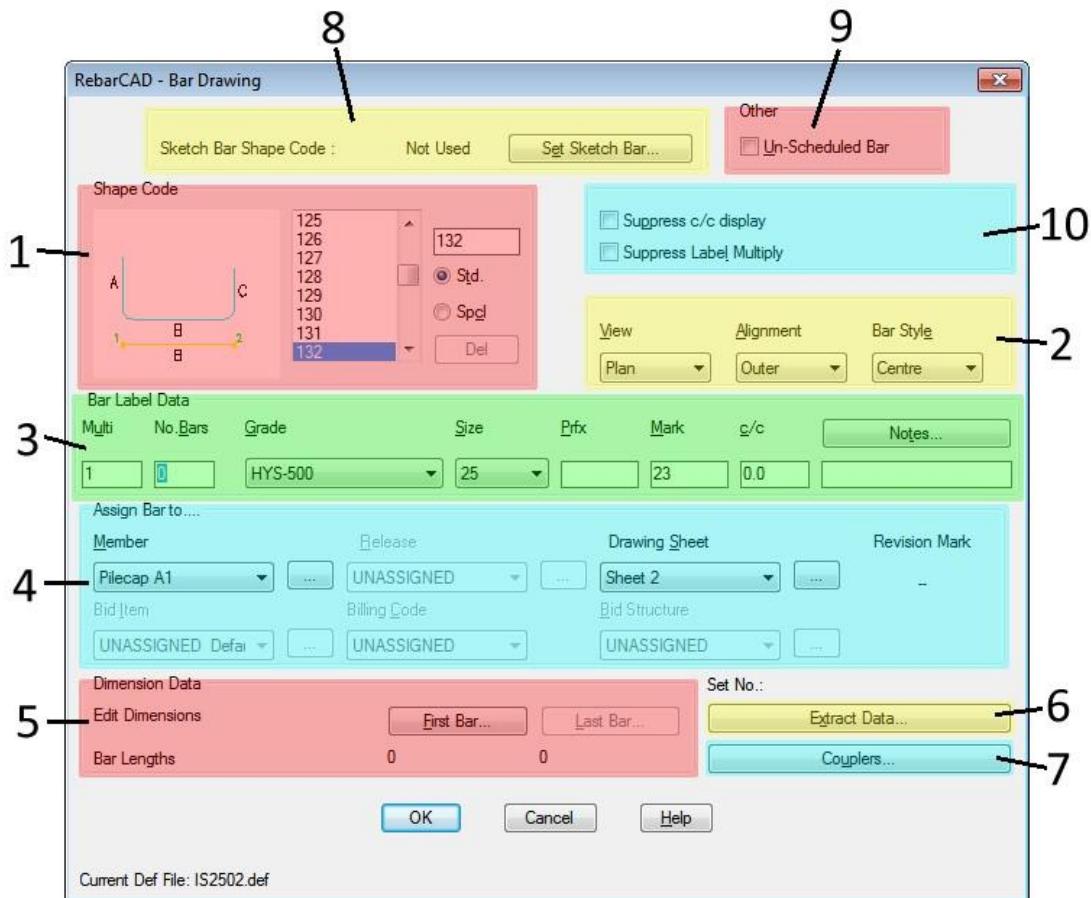
1 Shape Code – choose the required shape; see the **RebarCAD** User Guide for full information on shape code 99's

2 Choose the Bar View, Alignment and Style

3 Choose the Bar Type and Size, set the number of bars, centres and additional notes. The Multi field is used to multiply the number of bars being detailed

4 Select the Member and Drawing Sheet if not showing the correct ones by default

5 Use the First Bar button to input the bar dimensions if required. The Last Bar button is only active for tapered ranges

6 Data can be automatically entered into the draw bar dialog using the **Extract Data** button and selecting any existing set of bars

7 Select the **Couplers** button to add them to the bar being detailed

8 Use the **Sketch Bar** to show a view of the bar with different dimensions perhaps when viewing the bar at an angle

9 Use the **Unscheduled Bar** option to draw a bar that is not linked to the schedule

10 Ticking Suppress c/c **display** will prevent the bar centres being displayed on the bar label. Ticking Suppress Label Multiply will change the bar label format if data has been entered into the Multi field as shown in 3 above.

3.4. Range Types

RebarCAD provides a number of range types for use on different types of structure. Selecting the **Draw Range** command options opens up the Standard Range Type Selection Box from which you can select the desired range type to draw.
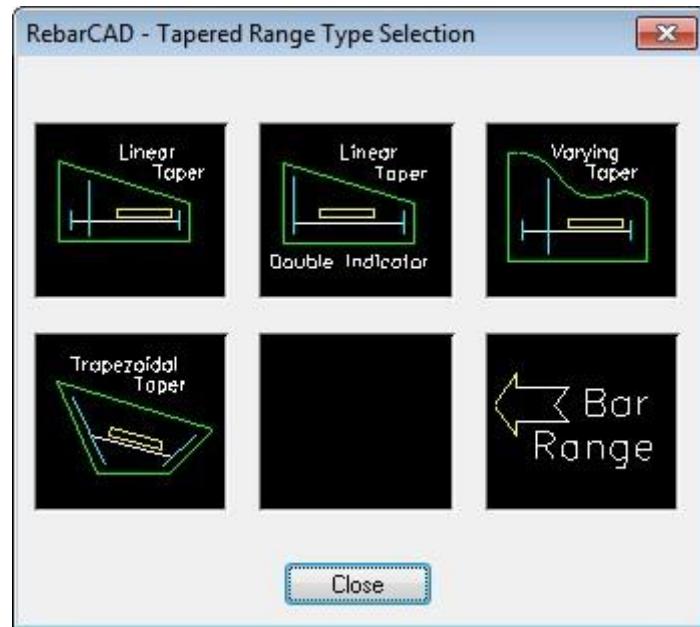
Standard Range Types
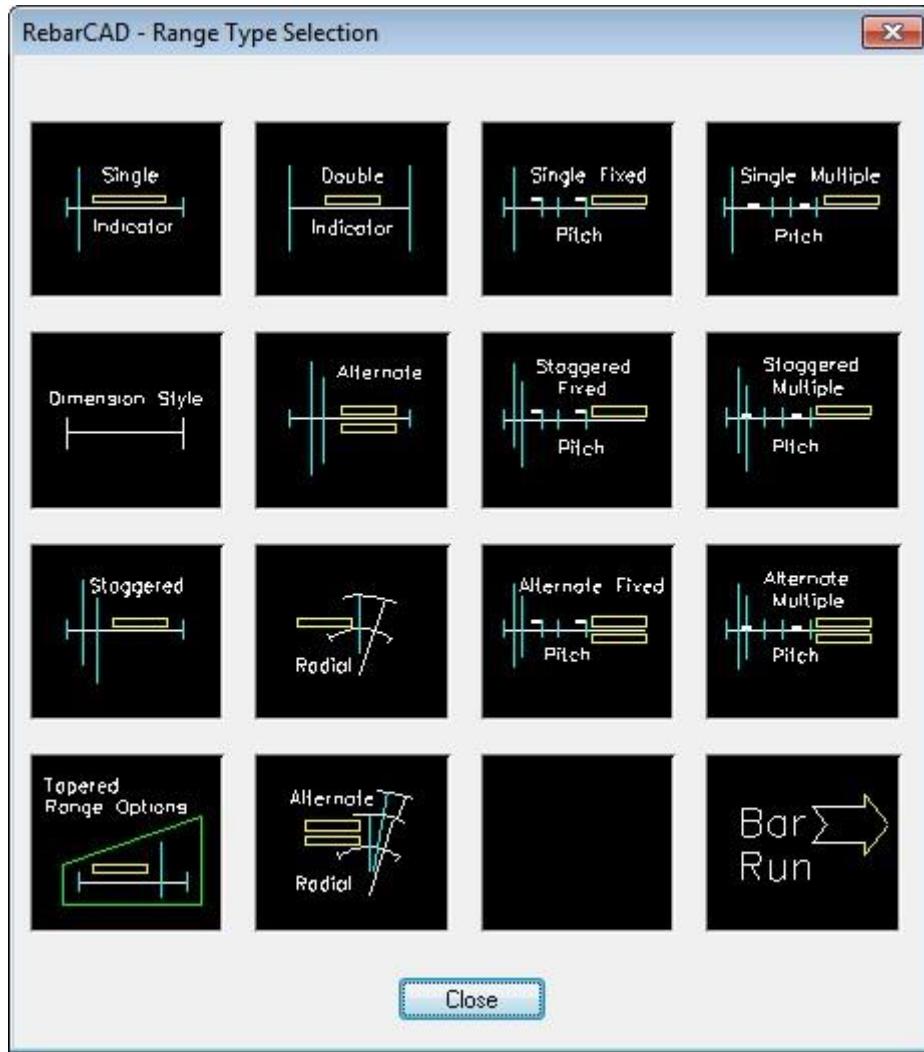
Please refer to the **RebarCAD** **User Guide** for additional information on each range type

Tapered Range Types

Selecting this option opens up the Taper Range type Selection box from which you can select the desired tapered range type to draw.

Bar Run Types

Selecting this option opens up the Bar Run Type Selection Box from which you can select the desired Bar Run type Range to be drawn. This option is used in drawing Sections of structural elements where the bars are to be represented as Dots.
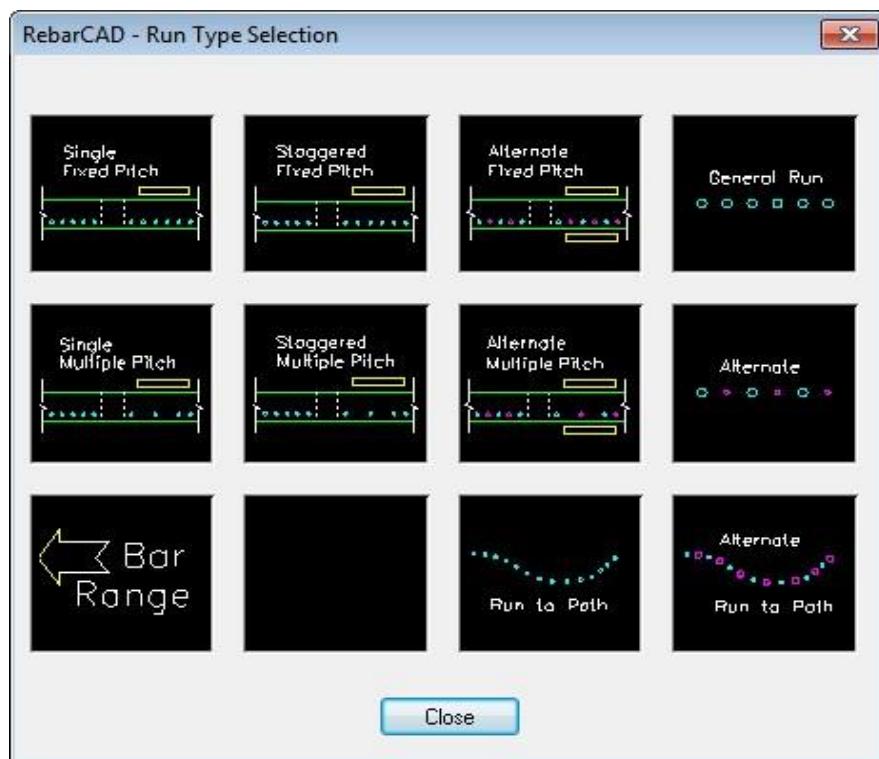

Try It: Adding Reinforcement to a Pad Base

In this example youare going to add two bar sets of Shape Code 132 to the Pad Base Section and Plan using **Draw Bar** and **Draw Range** and all sub commands of **New Mark, Add View** & **New Set**

1. Launch **RebarCAD**

2. Open drawing **...\drawings\Pad Base.dwg**

3. Switch to Model Space and zoom in on the Pad Base G.A. detail

4. Select **RebarCAD –Detail-DrawBar-New mark**

5. Type in Padbase 1 for the member title and select OK
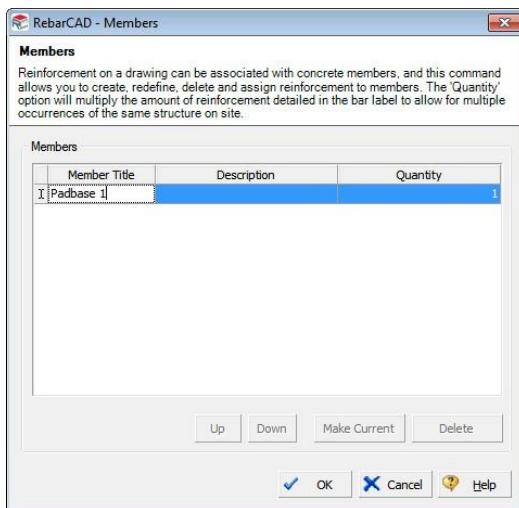
6. Input the data as shown in the figure below in the **Bar Draw** dialog
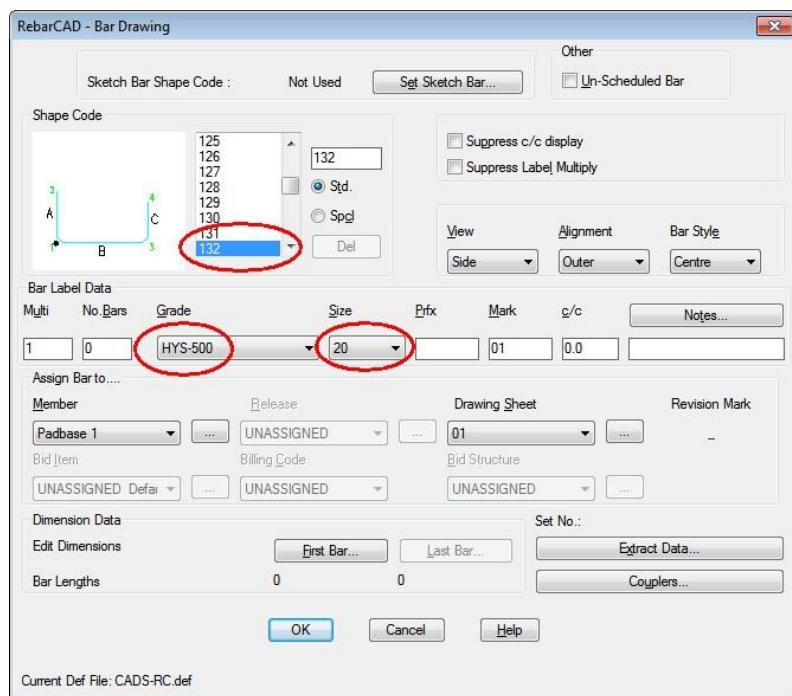
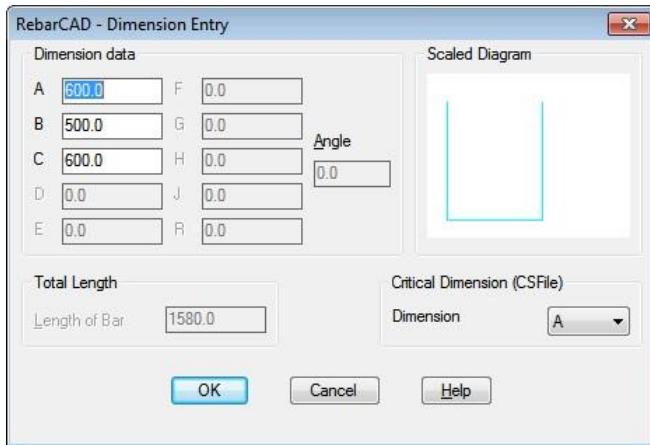7. Select the First Bar button and input Dimensions B (600), C (500) and D (600) as shown in the figure below. You do not have to input the dimensions in the First

   Bar dialog as they can be picked or specified directly on the screen whilst drawing the bar. Select OK twice


   Note: You can quickly move between the input fields by pressing the tab key on your keyboard

8. Pick the points to place the bar, as indicated in the figure below. The insertion point of the bar is on the Intersection of the Cover Lines at the top left shown as point 1.

   Note: You can simply pick in the direction of points 2, 3 and 4 with *Ortho* switched ON. If no dimensions have been specified you could use *Direct Distance Entry* to input the lengths, Relative Co-ordinates, Relative Polar Co-ordinates or Object Snaps
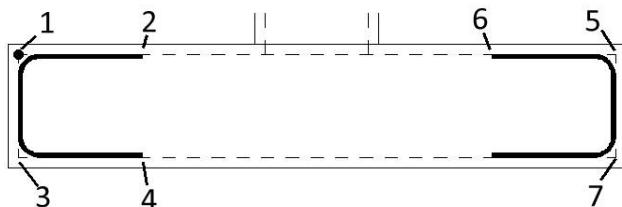

9. Answer *No* to the prompt to place the Bar Label (Call Off). You will add the Bar Label to the Range Line later. Select the RebarCAD – Detail – Draw Bar – New Set


10. Select **Continue with New Set**

11. Click on the bar you have just drawn in the left side of the section

12. All the data in this dialog box, is already set-up correctly and this includes the Bar View. Select OK

13. Place the bar on the right hand side of the Pad Base with the Insertion point on the top right (point 5) and Leg A (point 6) along the top face of the structure. Leg B (point 7) to indicate the direction of the bar vertically down.

14. Answer *No* to *Label Bar?*

15. Select **RebarCAD –Schedule - View Schedule** 📋
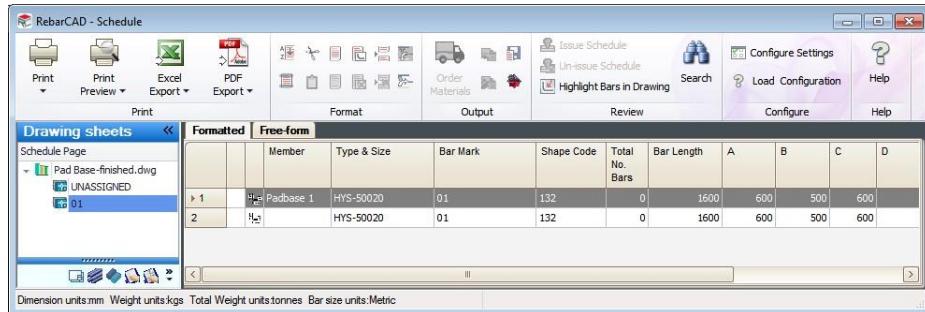
16. Close the schedule to return to the drawing

17. Select **RebarCAD - Detail - Draw Range - Add View** 📐

18. PickShape Code 132 on the left side of the section, indicated by point 1 on the diagram below

19. Select the Single Indicator Range Style

20. Set the **Bar View** to Left and select OK
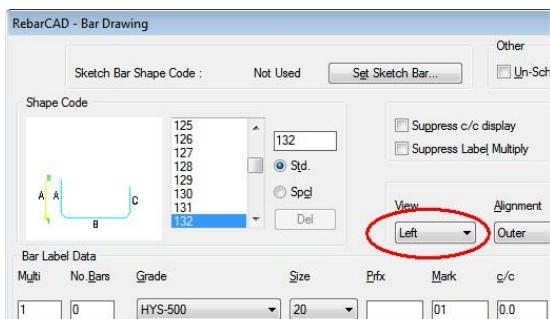
21. Pick the points as indicated in the figure below starting with point 2, to place the **Bar View** and the Range Line. The range offsets should be set to 0.0.

22. Set the Centre Spacing at 200 and answer Yes to placing the Bar Label
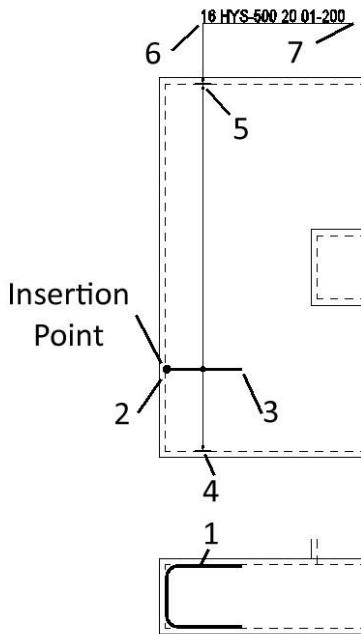
Left View Outer start point: Pick as indicated by point 2 Enter Outer

Dimension: Pick as indicated by point 3

Start of bar range / enter Slope / True Len / Line:

                                        Pick as indicated by point 4

Offset first bar from start <0>:   Press Enter

Pick End of range: Pick as indicated by point 5

Offset last bar from end <0>:   Press Enter
Range length to 1836

Centre spacing or <Number of bars>: Type in 200 (for 200 mm) and press enter
Range options:

16 bars at < 200 > / Average c/c = 193.3 / Run out / Numeric: Press
ENTER to continue or (A)verage/(R)un Out/(N)umeric:

                                        Press Enter to accept

Label bar <No>? or J to Justify: Type in yes and press enter

Pick point: Pick the position of the Bar Label above the Plan View, as indicated by point 6

Rotation: Indicate the rotational angle of the label, as indicated by point 7

23. Repeat the **RebarCAD – Detail - Draw Range - Add View** command and add the range of the right hand Shape Code 132 (shown by point 8) to the **Plan View**, as shown in the figure below
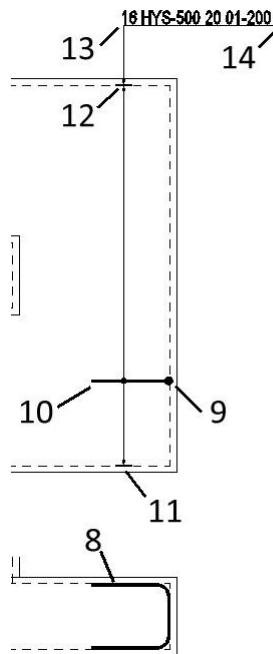
Note: If you have set the Range Offsets and Snaps and pre-set the Range Centres as suggested in the Hints & Tips at the end of this example then the time taken to place the range will have been reduced.

24. Select **RebarCAD – Schedule - View Schedule** . Note that the number of bars allocated to each line has updated. Close the Schedule and the drawing. If you want to save this drawing please use **Save As** and change the filename.
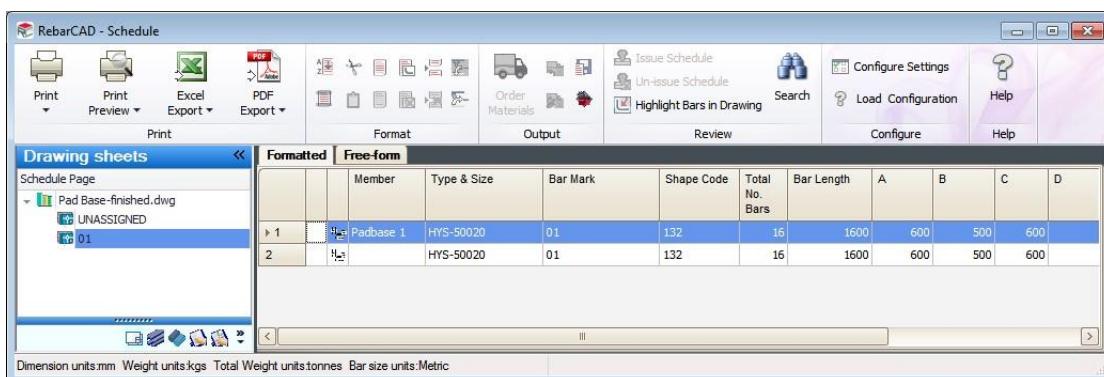
Hints & Tips – Disable the Offset Prompt

- The prompt Offset First/Last Bar from Start/End can be disabled if not required. This will speed up the placing of ranges.
- Select **RebarCAD – Configuration - Configuration Centre - Range Configuration** and set the Prompt for Range Offsets option to **No** as shown in the diagram below
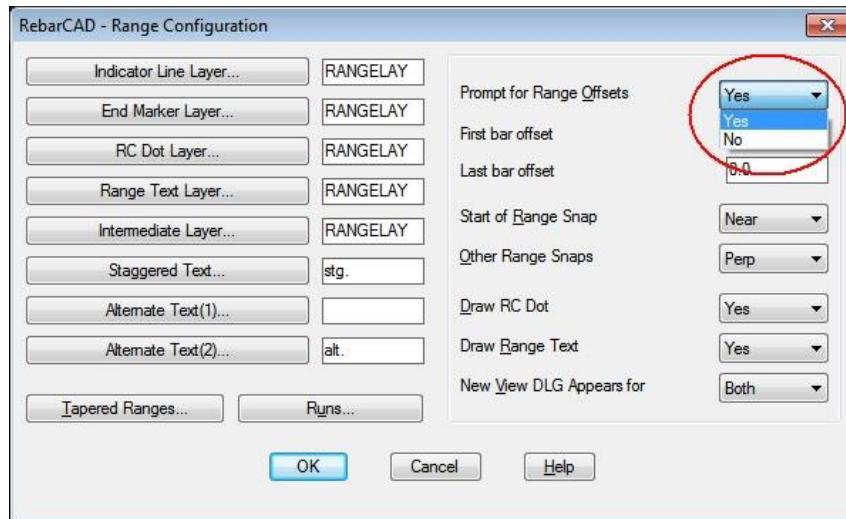
Hints & Tips – Set Object Snaps on the Range Prompts

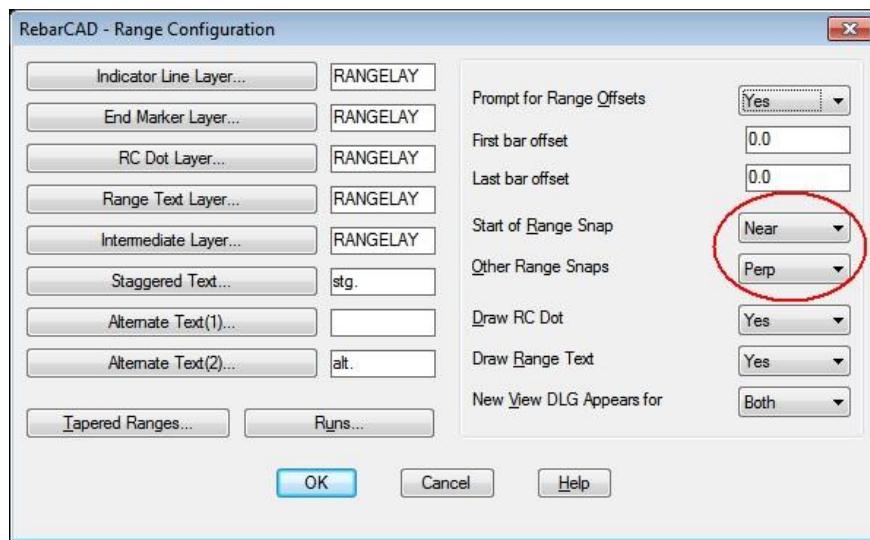- **Object Snaps** can be set on the Start / End of Range prompts. These will override the current Osnap settings and then reset them once the command has finished.
- Select **RebarCAD - Configuration – Configuration Centre - Range Configuration** and set the Start Snap to **Near** and the Other Snaps to **Perp** as shown in the diagram below.

Try It: Adding Lapped Reinforcement to a Pad Base

In this example you are going to add one bar set of Shape Code 010 to the Pad Base Section and Plan lapping with the existing shape codes, using **Draw Bar** and **Draw Range** and all sub commands of **New Mark, Add View** & **New Set**

1. Launch **RebarCAD**

2. Open drawing **...\drawings\Pad Base lapped bars.dwg**

3. Switch to **Model Space** and zoom in on the Pad Base detail

4. Select **RebarCAD – Detail - Draw Bar - New Mark**
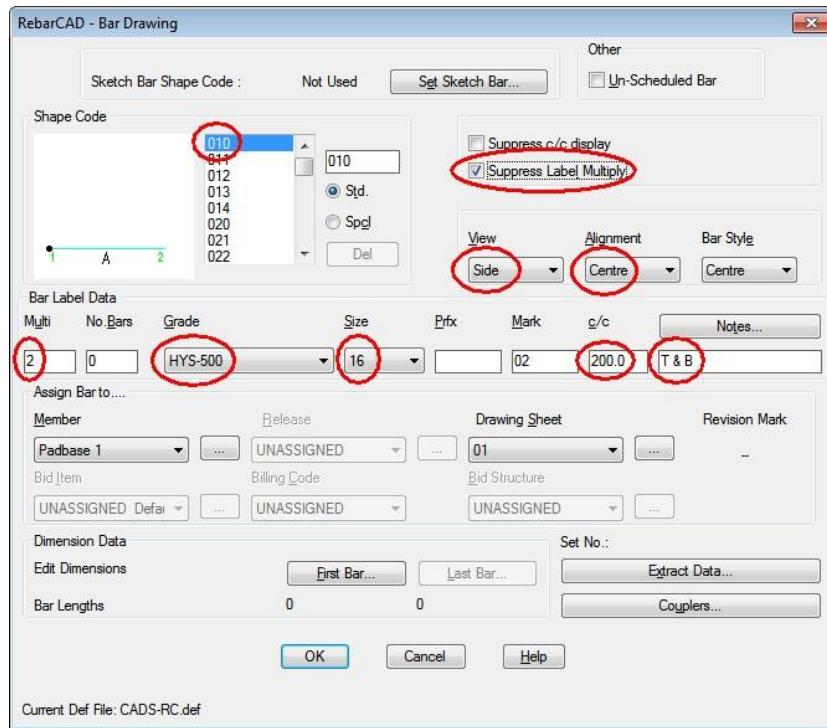
5. Input the data as shown in the figure below; note that that the number 2 has been entered in the multi field to double the number of bars. We will place the same bar set in the top and bottom of the section. Also add 200 in the centres field and T & B in the Notes. Tick the **Suppress Label Multiply** option, this stops the bar label displaying 2 x No of bars.

6. Select OK

7. Side View Outer Start point: Select the **lap bar snap**
   Note: if the **Lap Bar snap** toolbar is not showing you can simply type Lap on the AutoCAD command line.

8. Pick bar to lap with: Pick on the end of the bar, as indicated by point 1 in the figure below

9. Select 40d lap and select OK
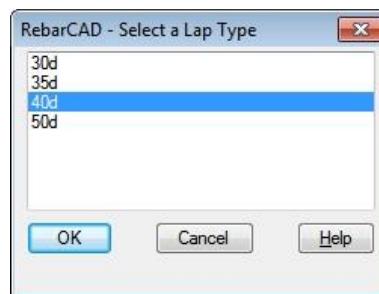
10. Distance from end of bar or Offset/<650>: Press enter to accept

11. Pick side of bar for flush face <Parallel>: Press enter to accept

12. Enter Outer Dimension A: Select the lap bar snap

13. Pick bar to lap with: Pick on the end of the bar, as indicated by point 2 in the figure below

14. Select 40d lap and select OK

15. Distance from end of bar or Offset/<650>: Press enter to accept

16. Pick side of bar for flush face <Parallel>:   Press enter to accept

17. Label bar <No> ?   Press enter to accept
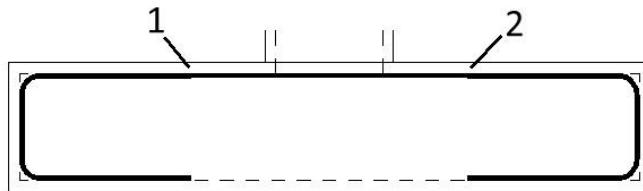
You are going to AutoCAD **mirror** the straight bar as a New View to the bottom of the section. You are using New View as a multiplier which has already been set in the bar set to double the number of bars.

18. Select **Home – Modify - Mirror** command

19. Select objects: Pick the straight bar, as indicated by point 3

20. Select objects: Press enter to continue

21. Specify first point of mirror line: Pick the midpoint, as indicated by point 4

22. Specify second point of mirror line: Pick the midpoint, as indicated by point 5

23. Erase source objects? [Yes/No] <N>: Press enter to continue

24. Select Mirror Bar View
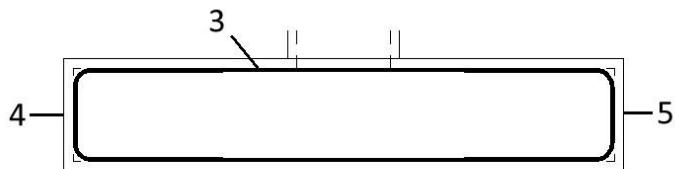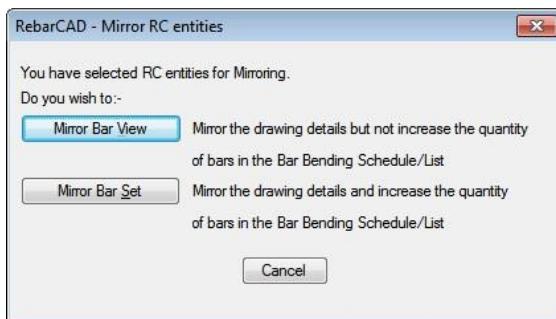
Next you are going to annotate the bars in the section using the **tick & tag** command. Then you are going to add a bar view and range to the plan.

25. Select **RebarCAD – Annotate - Tick & Tag a Bar**

26. Select crossing window of bars for ticking and tagging: Make a crossing windows around the top face of the section, as indicated by points 6 & 7 on the diagram below

27. Select side for bar-tick <None>: Pick side, the section, as indicated by point 8

28. Select side for bar-tag <None>: Pick above the section, as indicated by point 9
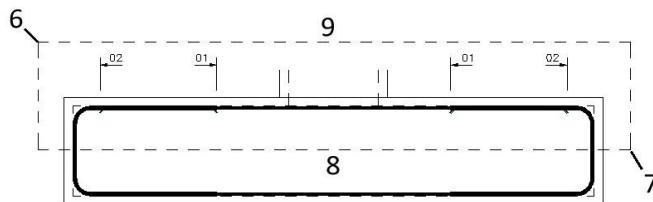
29. Repeat the **Tick & Tag** a bar to the bottom of the section

    Next you are going to show the straight bars in the plan view of the Pad Base.

30. Select **RebarCAD → Draw Range → Add View or**

31. Pick the **tick & tag** of Shape Code 010 on the top of the section, indicated by point 10

32. Select the **Single Indicator Range Style**

33. Select Ok on the Bar Drawing dialog

34. Side view Outer start point: Line up with the left hand tick and tag in the section below and pick the start point as indicated by point 11

35. Enter Centre Dimension A: With Ortho switched On, drag the cursor to the right and pick as indicated by point 12

    Start of bar range / enter Slope / True Len / Line:

    Pick as indicated by point 13

    Offset first bar from start <0>: Press Enter
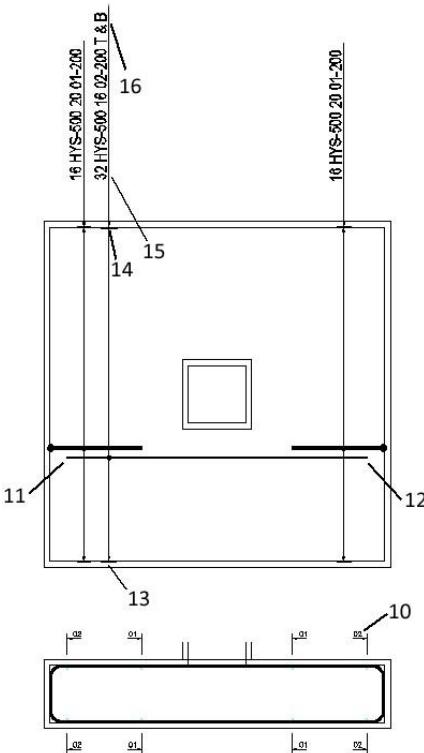
    Pick End of range: Pick as indicated by point 14

    Offset last bar from end <0>: Press Enter

    Label Bar <No>: Yes

    Pick point: Pick as indicated by point 15

    Rotating angle: Pick as indicated by point 16

36. Next you will need to update the number of bars displayed in the notes to match the number calcualted by the range command.

37. Pick bar/label to edit or <ENTER> for multiple selection : Select the straight bar label, indicated by point 17 on the figure below

38. Tick the Suppress Label Multiplier

39. Type in 16T & 16B in the Notes

40. Select OK
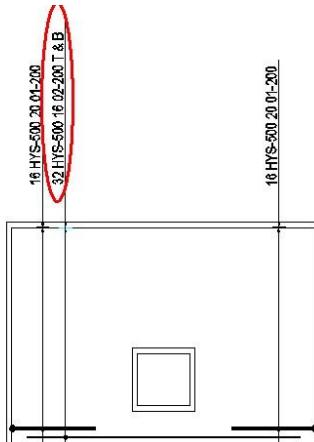
41. The next stage is to mirror all the reinforcement to produce the reinforcement in the opposite direction in the plan view. The U Bars at the edge of the bas will have to be adjusted to fit inside the existing U Bars.

42. **AutoCAD – Home Tab – Modify – Mirror**

43. Select Objects: Select all the reinforcement in the Plan View as shown in the diagram below. Make sure that the outlines and cover lines are not selected.

44. Press enter to continue

45. Specify first point of mirror line: Select the corner as indicated by point 18 in the diagram below
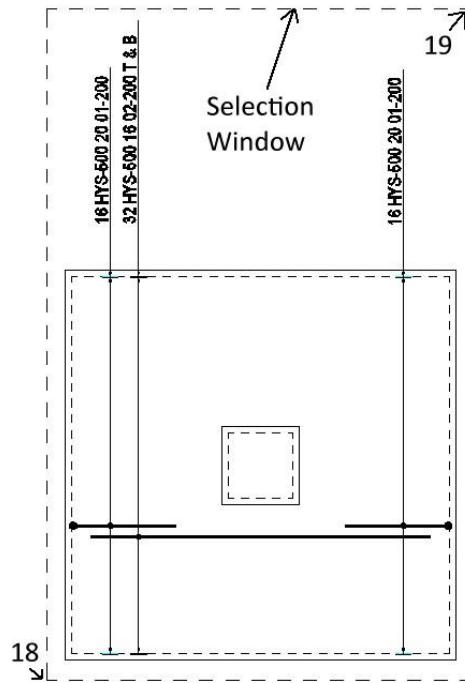
46. Specify second point of mirror line: Select the corner as indicated by point 19 in the diagram above

47. Erase source objects? [Yes/No] <No>: Press enter to accept No 50. Select **Mirror Bar Set** to add additional bars to the schedule.
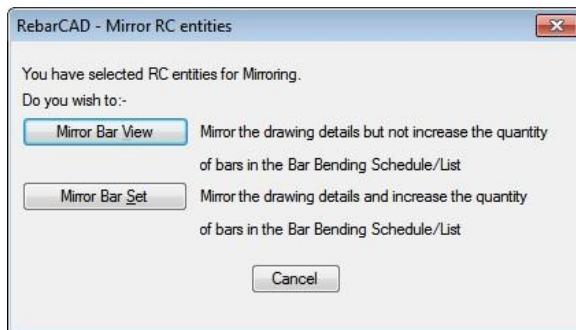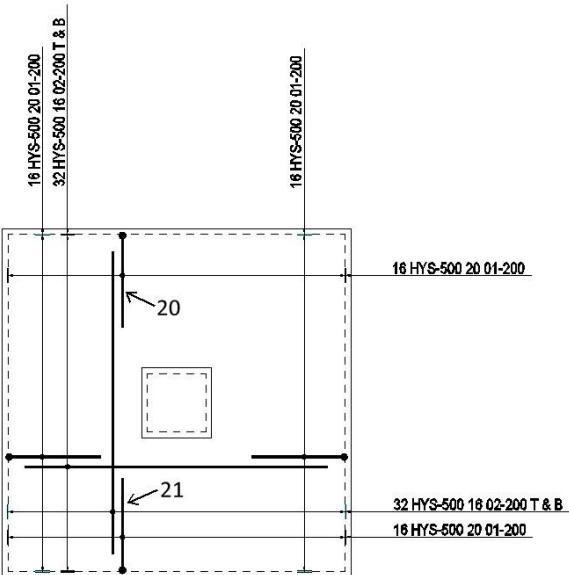
48. The next stage is to change the B dimension on the two new U Bars so that they fit inside the existing U Bars.

49. **RebarCAD – Modify – Edit Bars**

    Pick bar/label to edit or <Enter> for multiple selections: or Double Click on the U Bar as indicated by point 20 in the diagram above 52.

    Select the First Bar option and change Dim B from 500 to 450
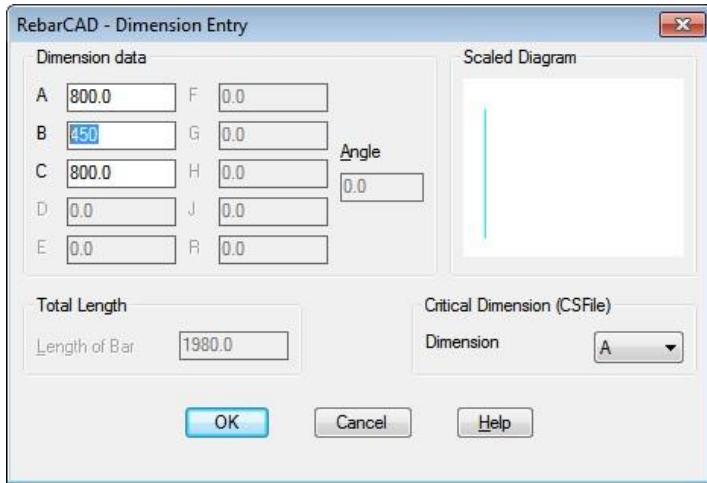
50. Click Ok twice

51. Answer Yes to Create a New Bar Mark for this bar. Asdimension B has been edited we do not want RebarCAD to update the other sets of Bar Mark 01 to this new dimension, we need a new bar mark.

52. Next bar mark is <03>:   Press Enter to accept

53. Double click on the U Bar as indicated by point 21 on the diagram above. 57. Change the bar mark to 03 and click Ok
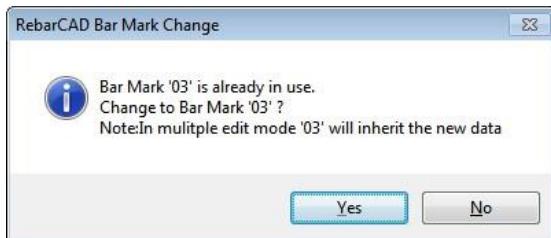
54. Answer Yes to inheriting the data from Bar Mark 03. The only change is to Dimension B, it will reduce from 500 to 450mm.
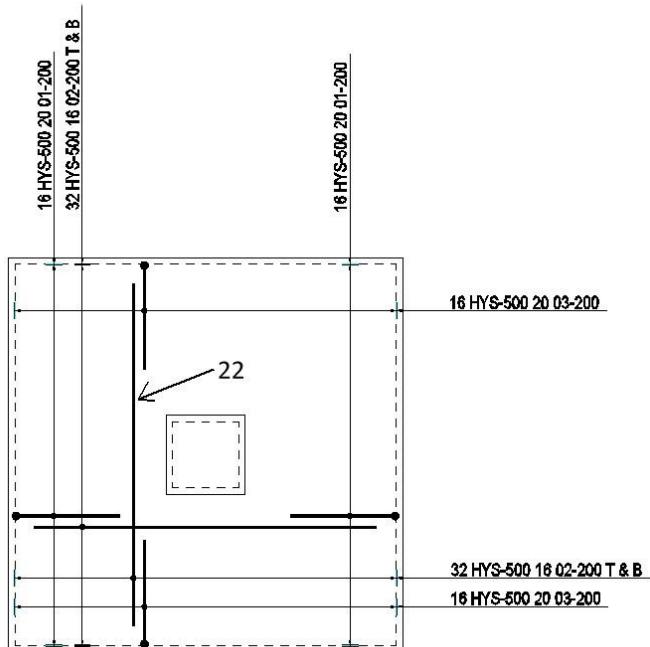
55. The final stage is to show the cut bars of bar mark 02 in the section view.

56. **RebarCAD – Detail – Draw Range – Add View** ![icon]

57. Select Bar Mark 02 as indicated by point 22 on the diagram above
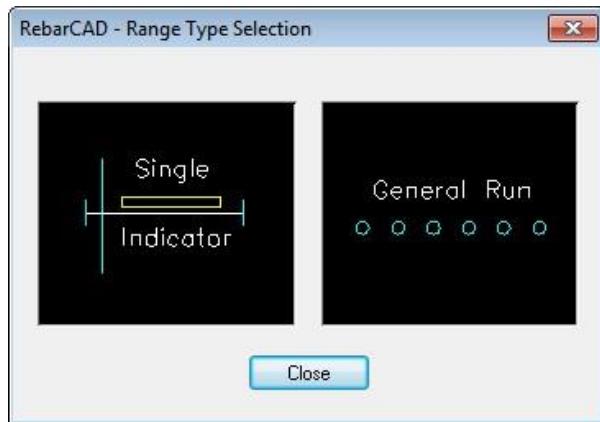
58. Click on the General Run option in the Range type Selection dialog

59. Click Okon the Bar Drawing dialog

60. Start of bar range or Enter to select bar leg: Pick on the endpoint as indicated by point 23 in the diagram below

61. Offset First bar from start <0>: Press enter to accept 0

62. Pick End of range: Pick on the endpoint as indicated by point 24 in the diagram below

63. Offset First bar from start <0>: Press enter to accept 0

64. Select side of line for bars to be placed: Pick the point as indicated by point 25 as shown in the diagram below

65. Offset by half bar diameter - <10>: Type in 20 and press enter to continue

    This will offset the bars away from the existing bars by 20mm so that they will print more clearly.

66. Range has already been specified, the distance you have picked is greater than 5% different. Are you sure you want to continue? <No>: Type Y and press enter to continue

    Bar references need to be added to the bars in section to indicate their bar mark number

67. **RebarCAD – Annotate – Bar Reference**
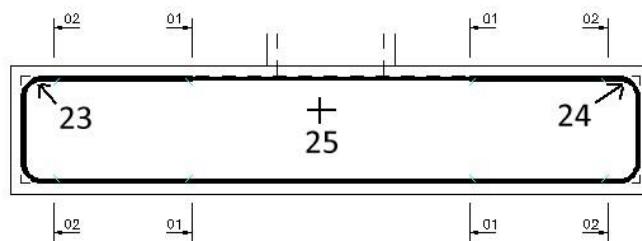
    Pick bar of required mark or Enter for selection: Press enter

    Please set angle of bar ref text Rest/Angle <0.00>: Press enter

    Select objects: Click on the first, last and two other bars in section and then press enter

    Start of reference line: Pick a pint above the bars in section as indicated by point 26 in the diagram below. Make sure that Ortho is switched on so that the reference line is horizontal.

68. End of reference line: Pick a pint above the bars in section as indicated by point 27 on the diagram below
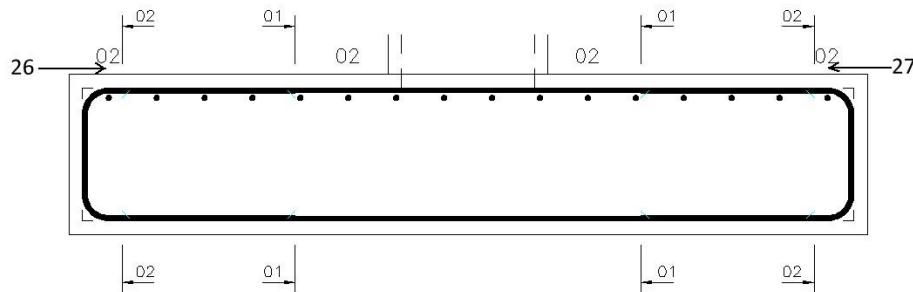
Note: The bar references will automatically line up with the bars selected in the section along the reference line

Now mirror the bars in section and the bar references as a New View to the bottom face of the Pad Base using the AutoCAD mirror command

69. **AutoCAD – Home Tab – Modify – Mirror**

70. Select all the Bar references and one of the bars in section and press enter

71. Specify first point of mirror line: Click on the midpoint as indicated by point 28 on the diagram below

72. Specify second point of mirror line: Click on the midpoint as indicated by point 29 in the diagram below

73. Erase source objects? [yes/No] <No>:   Press enter to accept No
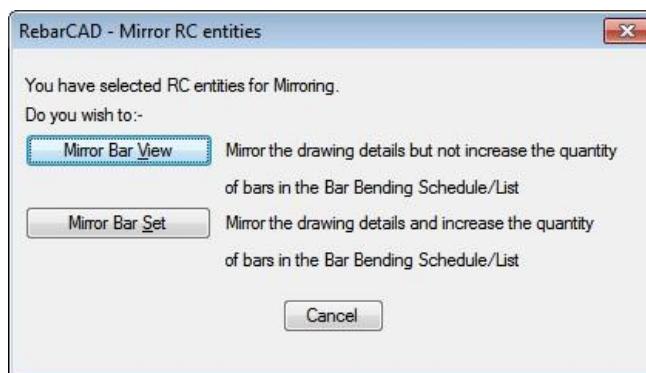
74. Select **Mirror Bar View**, as we added a multiplier to the straight bars we do not need to add any more bars to the schedule.
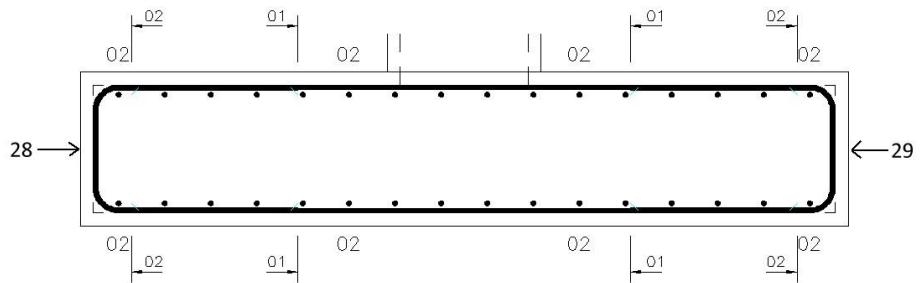
This completes the Pad Base detail

Please refer to the RebarCAD User Guide for further examples of detailing with the different range styles.

3.5. Creating Bars from AutoCAD Polylines

RebarCAD – Detail –Bar from Pline ⌐⌐

This command allowsyou to create bars by selecting an existing polyline or line on the drawing and matching it to a predefined shape code. This can be done for an individual bar or for a whole group of bars with the same shape code and bar diameter.

Using this facility and the **Polyline to Range** command allows the conversion of existing drawings produced by Engineers without the need to redraw the reinforcement or the ranges. The lines representing the bars can simply be selected.M.Missing dimensions can be added and the steel type and diameter can also be chosen. Use the **Convert Polylines to Ranges** command to add the ranges to the bar sets.

![mouse icon] Try It: Creating Bars from AutoCAD Polylines

In this example youare going to open a sample drawing produced by a Structural Engineer that already has some bars defined using the Convert Polylines / Lines to Rebar. You will then use the **Convert Polylines to Ranges** command to add range lines to the bars and calculate the number of bars in the range.

1. Launch **RebarCAD**

2. Open **drawing ...\drawings\Bars from Plines.dwg**

3. Switch to Model Space and zoom into the area enclosed by the magenta cloud

4. Zoom in further to the bar indicated with the number 3 and the red ellipse. This is shape code 132, 12mm diameter being placed at 250mm c/c as indicated in the table to the right of the drawing. The view shownin the drawing is the plan view.

BAR MARKING SCHEDULE:

BAR MARKED	DIAMETER OF BAR (MM)	SPACING (MM)	LOCATION	REMARKS
1	12	250	BOTTOM	LENGTH VARIES
2	12	250	TOP	LENGTH VARIES
3	12	250	BOTTOM	LENGTH VARIES
4	16	250	TOP	LENGTH VARIES
5	16	250	BOTTOM	ALTERNATELY PLACED WITH THROUGH BAR AS SHOWN IN PLAN (NET SPACING 125MM)
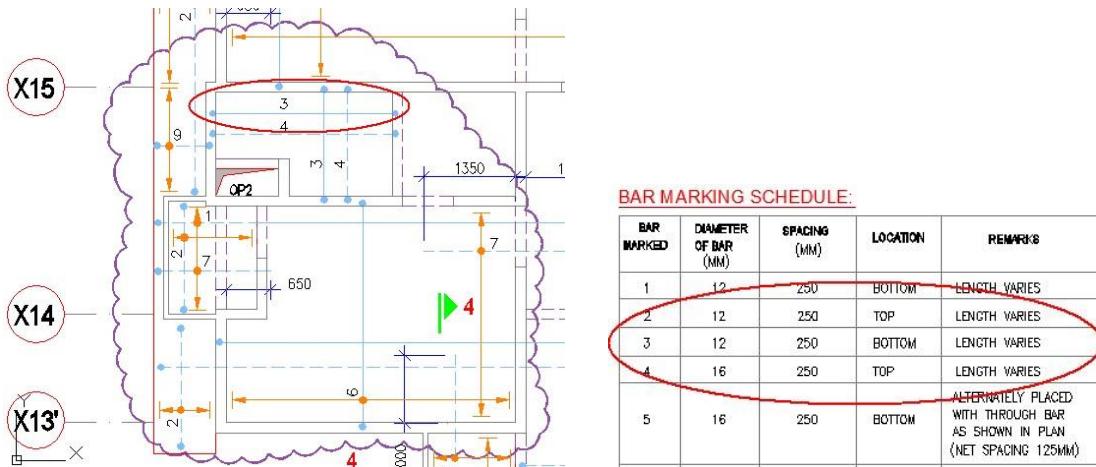
Now you are going to use the Create a Bar from a Pline

5. **RebarCAD – Detail – Bar from Pline**
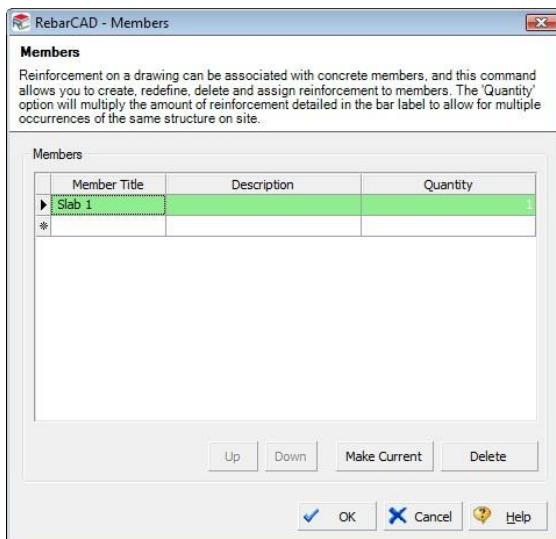
6. **Select** OK on the **Member** dialog
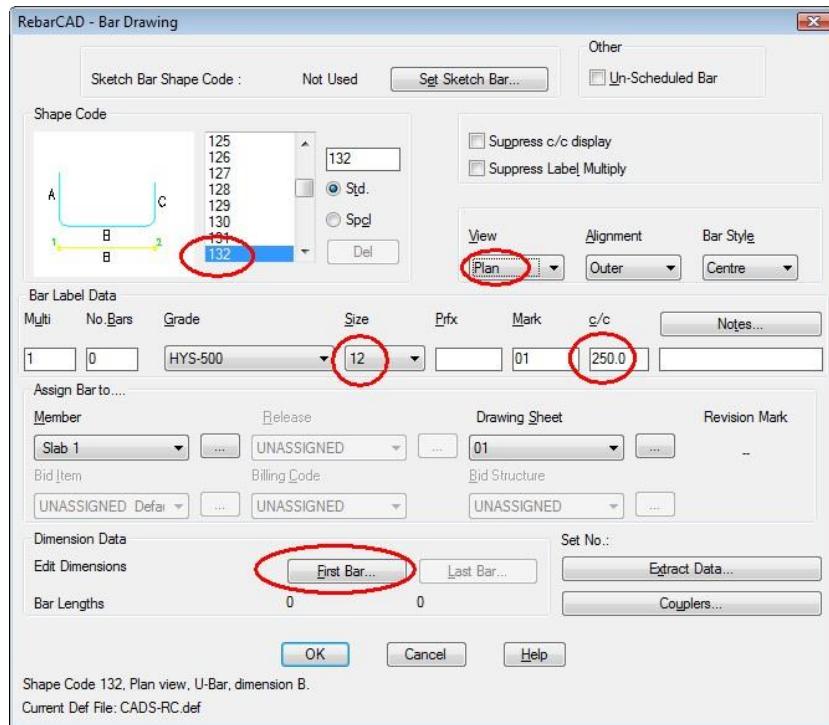
7. Choose shape code 132, Plan View, Size set to 12 and type in the centres at 250.
8. Select First Bar Button and type in 350 for Dims A & C, we will use the polyline on the drawing to set Dim B. Select OK twice.
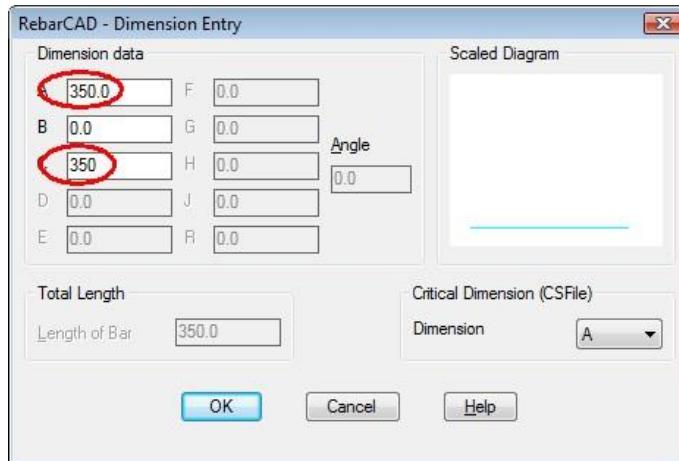
9. Click OK twice to return to the drawing
10. Select entity to create bar : Select the polyline indicated by point 1 in the diagram below
11. Pick Bar Label location : Select the insertion point indicated by point 2 in the diagram below
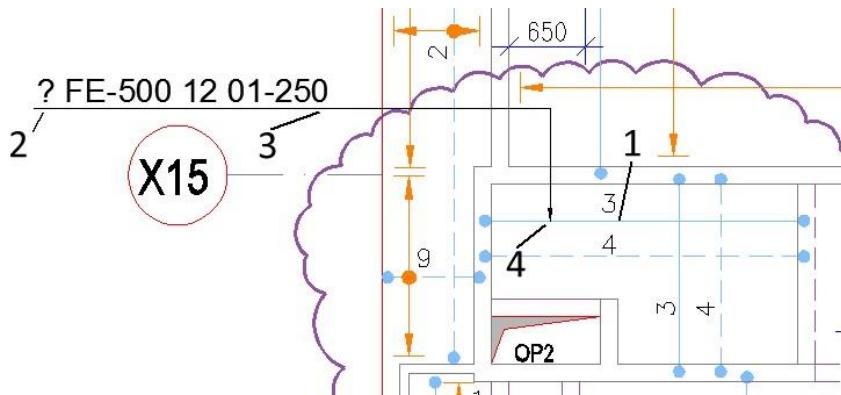
12. Rotation angle: Select point 3 to set the label horizontally

13. Pick point on bar: Select the end of the range indicate by point 4

14. Select entity to create bar: Press Escape to finish the command

15. Open the Schedule and check to see if shape code 132 has been added and ifDimension B has been shown.

16. **RebarCAD - Schedule - View Schedule**

17. Close the schedule

    Next you are going to use the same command to create multiple bars using the same shape code and A & C dimensions, these are indicated as bar marks 3 & 4 in the diagram below and the table above.

18. **RebarCAD – Detail – Bar from Pline**

19. Choose shape code 132, Plan View, Size set to 16 and type in the centres at 250.

20. Select First Bar Button and type in 350 for Dims A & C, we will use the polyline on the drawing to set Dim B as before
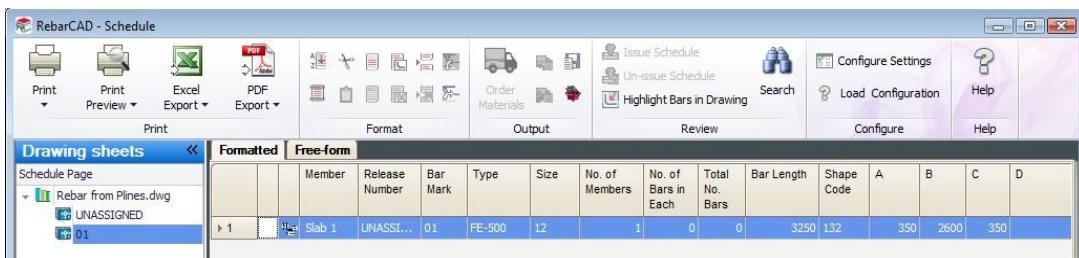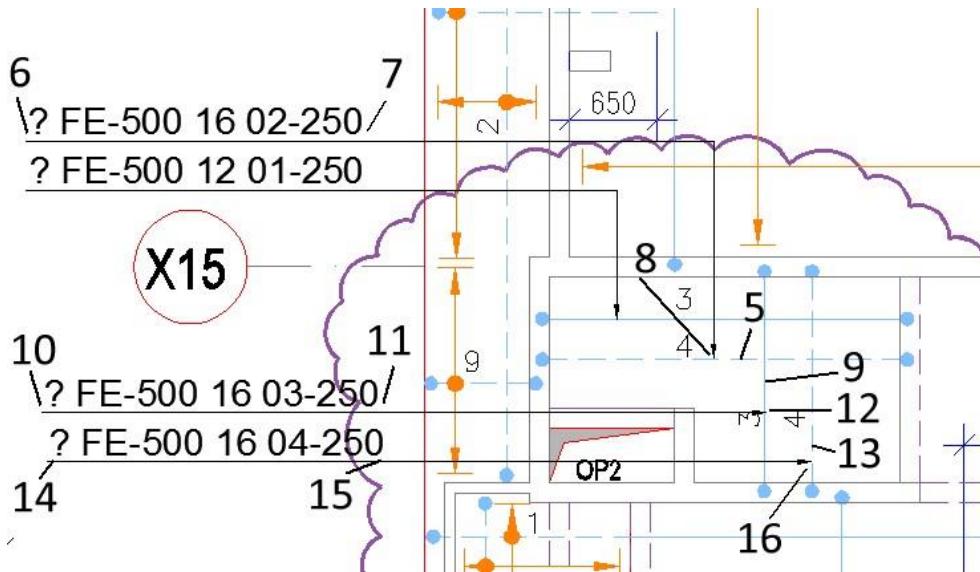
21. Click OK twice to return to the drawing

22. Select entity to create bar: Select the polyline indicated by point 5 on the diagram below

Pick Bar Label location: Select the insertion point indicated by point 6 on the diagram above

Rotation angle: Select point 7 to set the label horizontally

Pick point on bar: Pick point 8 to draw the leader

Continue with the command, you are going to add a further 2 bars to the drawing

Select entity to create bar: Select point 9

Pick Bar Label location: Select the insertion point indicated by point 10 on the diagram above

Rotation angle: Select point 11 to set the label horizontally

Pick point on bar: Select a point on the bar as indicated by point 12

Select entity to create bar: Select point 13

Pick Bar Label location: Select the insertion point indicated by point 14 on the diagram above

Rotation angle: Select point 15 to set the label horizontally

Pick point on bar: Select a point on the bar as indicated by point 16

Next open the schedule and review the bars you have created. Note all the dimensions are present but bar marks 04 and 05 are identical and should really have the same bar mark number. RebarCAD includes a function, Match Bars that will look for bar marks with identical properties and give them the same bar mark number.

23. RebarCAD - Schedule - View Schedule

24. Close the Schedule

This concludes Creating Bars from AutoCAD Polylines.

3.6. Creating Ranges from AutoCAD Polylines

RebarCAD – Detail – Range from Pline

This command allows you to create bars and ranges from existing lines / polylines on the drawing. **RebarCAD** will calculate the length of the bar from the selected line on the drawing andwill calculate the number of bars in the range from the entity selected to represent the range. Any missing dimensions, the steel type, bar diameter etc. can be chosen as the command is being used. This can be done for an individual range or for a whole group of ranges with the same shape code and bar diameter.

Using the Range from **Pline** command avoids having to completely redraw all the reinforcement where AutoCAD has previously been used to show the bars and ranges and therefore speeds up the detailing process.

Try It: Creating Ranges from AutoCAD Polylines

In this example youare going to open a sample drawing produced by a Structural Engineer and create some ranges and bars from some of the existing AutoCAD lines / polylines on the drawing. Initially you will create one set of bars and then several of the same shape code.

1.   Launch RebarCAD

2.   Open drawing ...\drawings\Ranges from Plines.dwg

3.   Switch to Model Space and zoom into the area enclosed by the magenta cloud
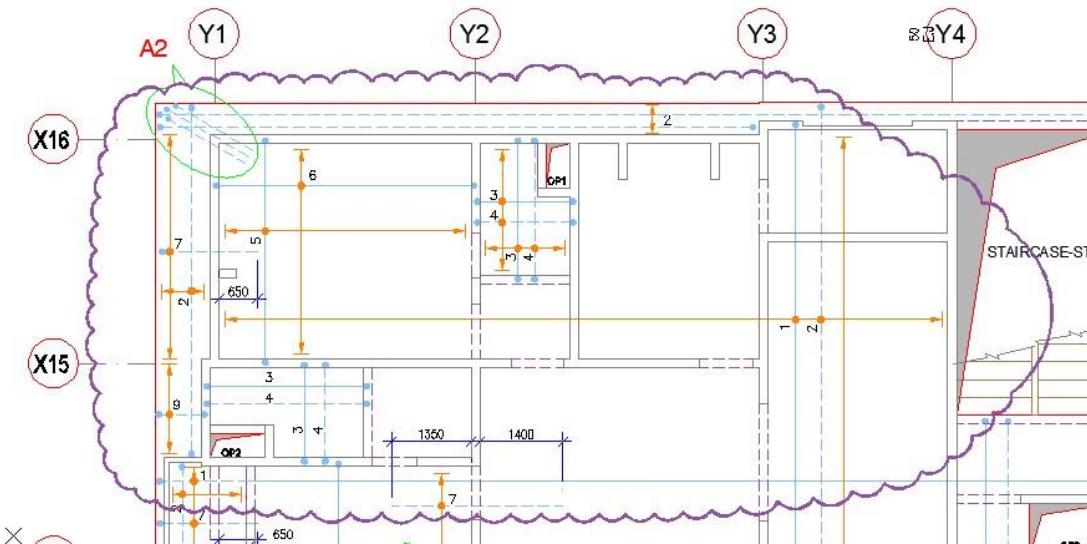
4.   Zoom in further to the bar indicated with the number 6. This is shape code 132, 12mm diameter being placed at 250mm c/c as indicated in the table to the right of the drawing. The view shownin the drawing is the plan view.

BAR MARKING SCHEDULE:

BAR MARKED	DIAMETER OF BAR (MM)	SPACING (MM)	LOCATION	REMARKS
1	12	250	BOTTOM	LENGTH VARIES
2	12	250	TOP	LENGTH VARIES
3	12	250	BOTTOM	LENGTH VARIES
4	16	250	TOP	LENGTH VARIES
5	16	250	BOTTOM	ALTERNATELY PLACED WITH THROUGH BAR AS SHOWN IN PLAN (NET SPACING 125MM)
6	12	250	BOTTOM	ALTERNATELY PLACED WITH THROUGH BAR AS SHOWN IN PLAN (NET SPACING 125MM)
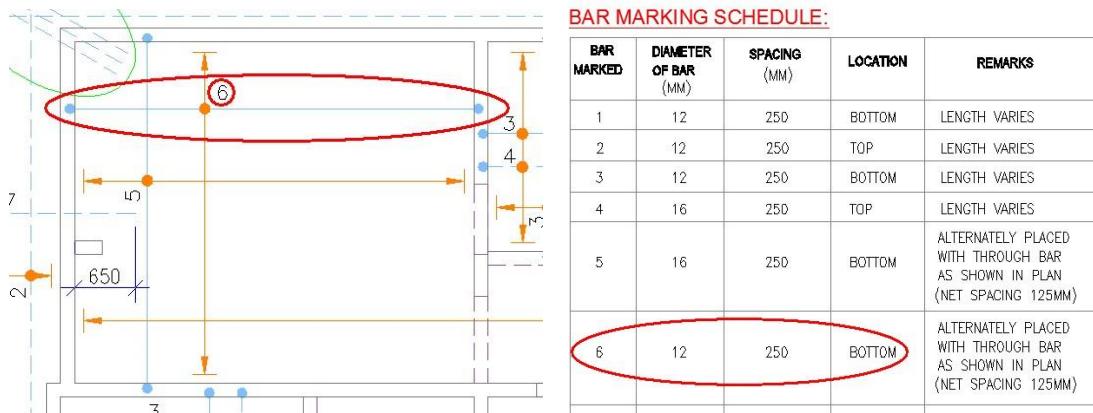
5.   Now you are going to use the Create a Range from a Pline

6.   **RebarCAD – Detail – Range from Pline**
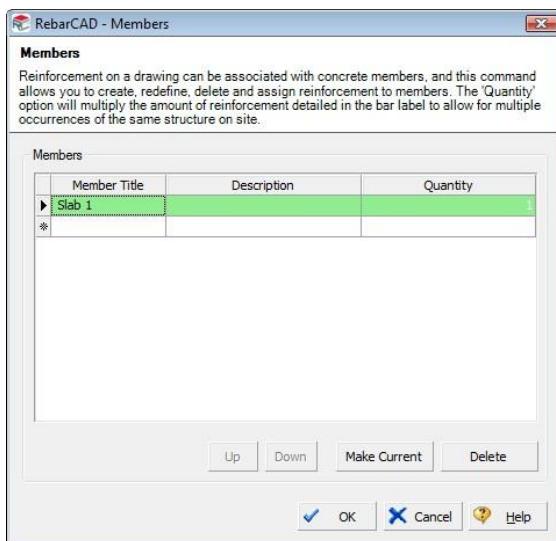
7.   Select OK on the **Member** dialog
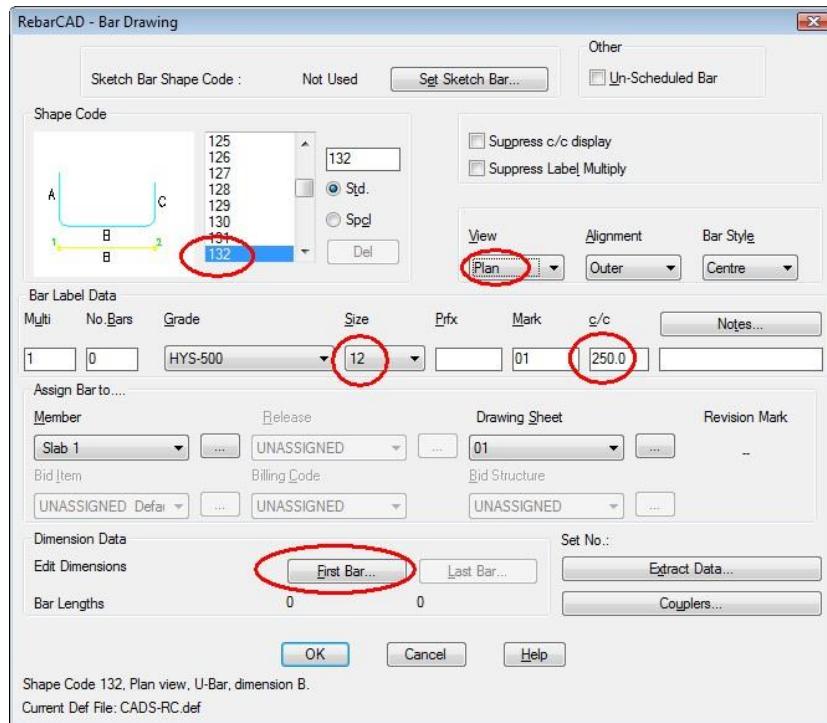
8. Choose shape code 132, Plan View, Size set to 12 and type in the centres at 250.

9. Select First Bar Button and type in 350 for Dims A & C, we will use the polyline on the drawing to set Dim B. Select OK twice.
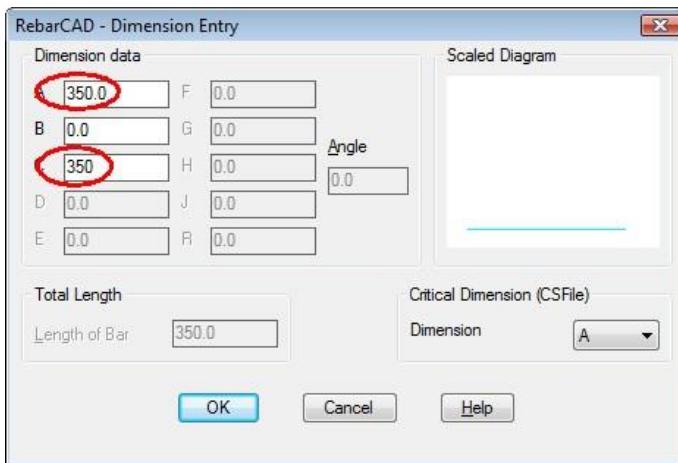
10. Click OK twice to return to the drawing

11. Select entity to create bar : Select the polyline indicated by point 1 on the diagram below

12. Select range line: Select the polyline indicated by point 2 on the diagram below Range length 3450 Range Options :

13. 15 bars at <250> / Average c/c = 246.4 / Run out / Numeric:

14. Press enter to continue or (A)verage/(R)un out/(N)umeric: Press Enter
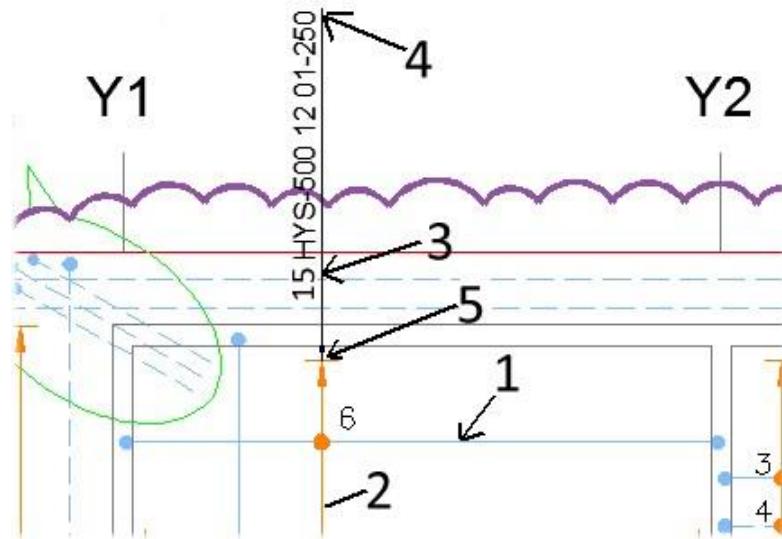
15. Pick Bar Label location : Select the insertion point indicated by point 3 in the diagram above

16. Rotation angle :   Select point 4 to set the label vertically

17. Pick point on bar :   Select the end of the range indicated by point 5

18. Select entity to create bar : Press Escape to finish the command

Open the Schedule and check to see if Shape code 132 has been added and ifDimension B has been shown.

19.   **RebarCAD – Schedule – View Schedule**

20.   Close the schedule

Next you are going to use the same command to create multiple ranges using the same shape code and A & C dimensions, these are indicated as bar marks 4 & 5 in the diagram below and the table above.

21.   **RebarCAD** – Detail – Range from Pline

22.   Choose shape code 132, Plan View, Size set to 16 and type in the centres at 250.

23.   Select First Bar Button and type in 350 for Dims A & C, we will use the polyline on the drawing to set Dim B as before
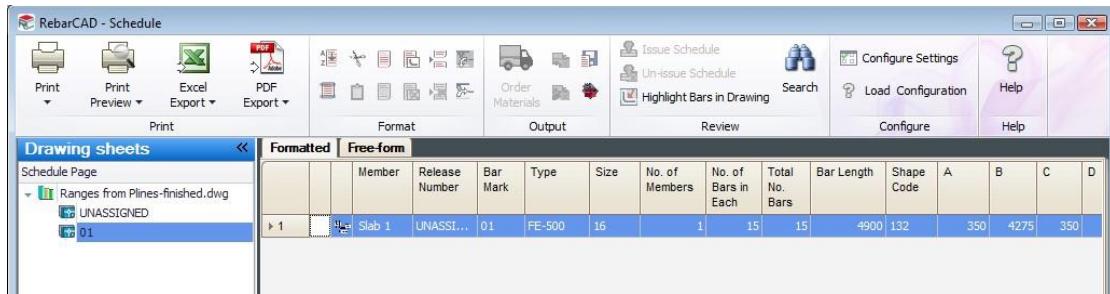
24.   Click OK twice to return to the drawing

25.   Select entity to create bar : Select the polyline indicated by point 6 on the diagram below

26.   Select range line: Select the polyline indicated by point 7 on the diagram below Range length 4082.8 Range Options :

27.   18 bars at <250> / Average c/c = 240.2 / Run out / Numeric:

28.   Press enter to continue or (A)verage/(R)un out/(N)umeric: Press Enter
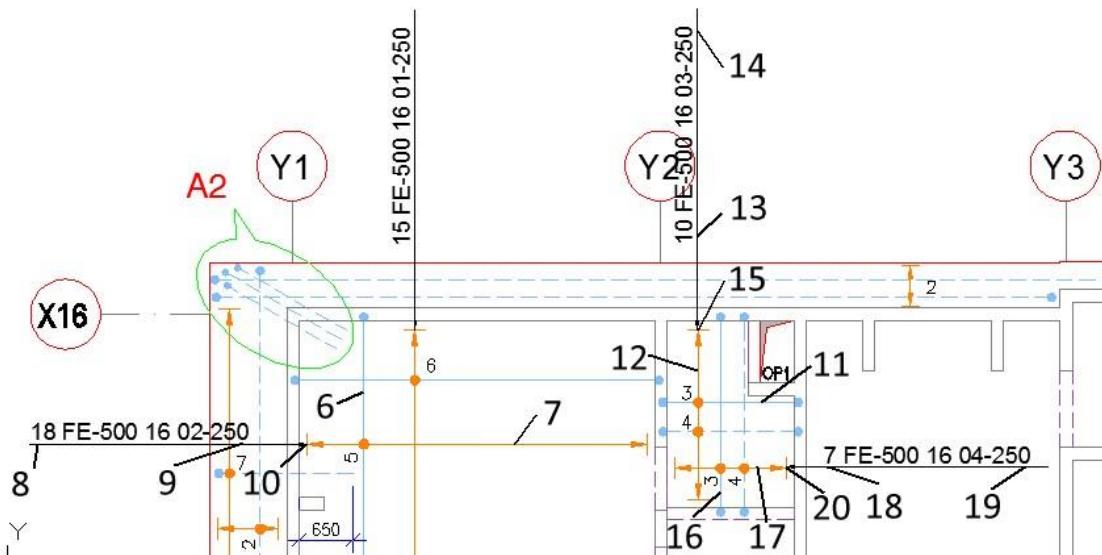
29.   Pick Bar Label location: Select the insertion point indicated by point 8 on the diagram above

30. Rotation angle: Select point 9 to set the label horizontally

31. Pick point on bar: Pick point 10 to draw the leader

Continue with the command, you are going to add a further 2 ranges to the drawing

32. Select entity to create bar : Select point 11

33. Pick Bar Label location : Select the insertion point indicated by point 12 on the diagram above

34. Select range line: Select the polyline indicated by point 13 on the diagram below Range length 2040.0 Range Options :

35. 10 bars at <250> / Average c/c = 226.7 / Run out / Numeric:

36. Press enter to continue or (A)verage/(R)un out/(N)umeric: Press Enter

37. Rotation angle :   Select point 14 as shown to set the label horizontally

38. Pick point on bar :   Select a point on the bar as indicated by point 15

39. Select entity to create bar : Select point 16

40. Select range line: Select the polyline indicated by point 17 on the diagram below Range length 1332.8 Range Options :

41. 7 bars at <250> / Average c/c = 222.1 / Run out / Numeric:

42. Press enter to continue or (A)verage/(R)un out/(N)umeric: Press Enter

43. Pick Bar Label location : Select the insertion point indicated by point 18 on the diagram above

44. Rotation angle :   Select point 19 as shown to set the label horizontally

45. Pick point on bar :   Select a point on the bar as indicated by point 20

Next open the schedule and review the bars you have created.

46. **RebarCAD – Schedule – View Schedule**
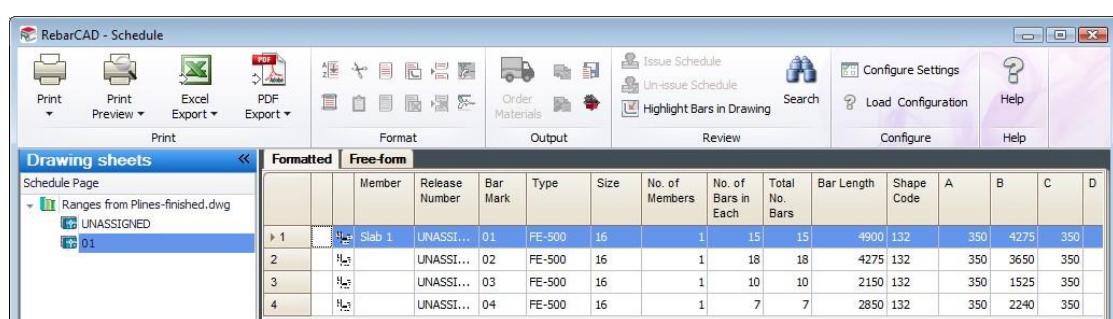
			Member	Release Number	Bar Mark	Type	Size	No. of Members	No. of Bars in Each	Total No. Bars	Bar Length	Shape Code	A	B	C	D
▶ 1			Slab 1	UNASSI...	01	FE-500	16	1	15	15	4900	132	350	4275	350	
2				UNASSI...	02	FE-500	16	1	18	18	4275	132	350	3650	350	
3				UNASSI...	03	FE-500	16	1	10	10	2150	132	350	1525	350	
4				UNASSI...	04	FE-500	16	1	7	7	2850	132	350	2240	350	

This concludes Creating Bars from AutoCAD Polylines

Try It: Creating Tapered Ranges from AutoCAD Polylines

In this example youare going to open a sample drawing produced by a Structural Engineer. You will then use the Ranges from **Pline** command to add a tapered range to the drawing.

RebarCAD calculates both the length of the bars and the number of bars in the range from the entities selected on the drawing.

1. Launch **RebarCAD**

2. Open drawing ...\drawings\Tapered Ranges from Plines.dwg

3. Switch to **Model Space** and **zoom** into the area enclosed by the magenta cloud
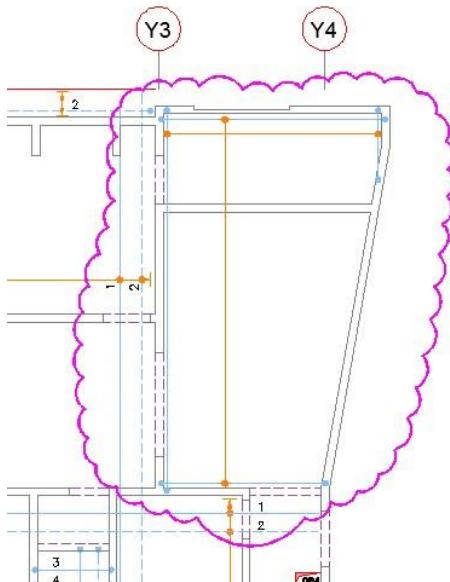
4. RebarCAD – Detail – Tapered Range from Pline

5. Choose shape code 132, Plan View, Size set to 16 and type in the centres at 250.
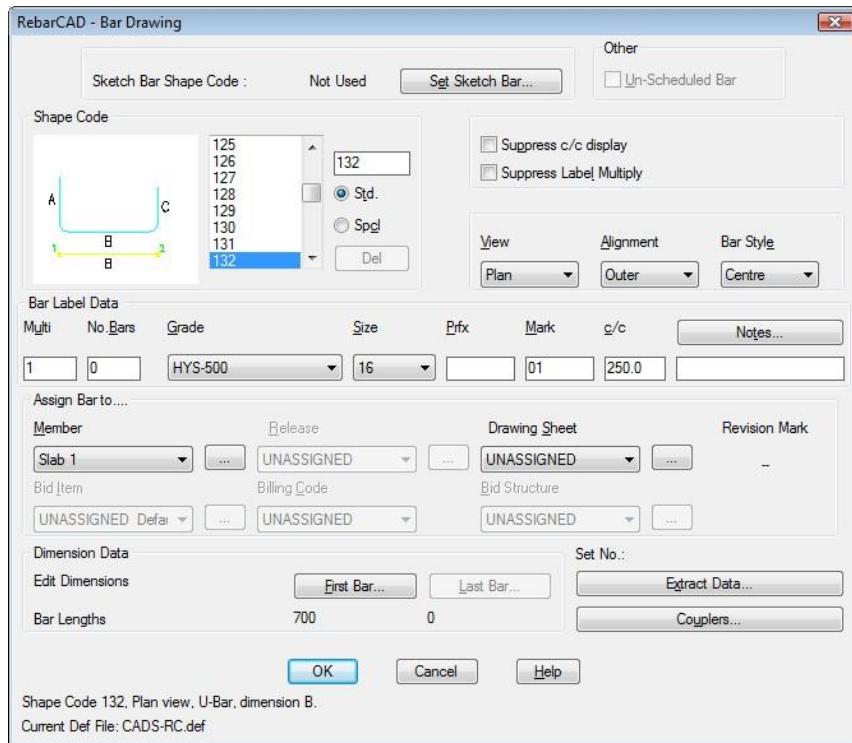
6. Select First Bar Button and type in 350 for Dims A & C, we will use the polyline on the drawing to set Dim B as before
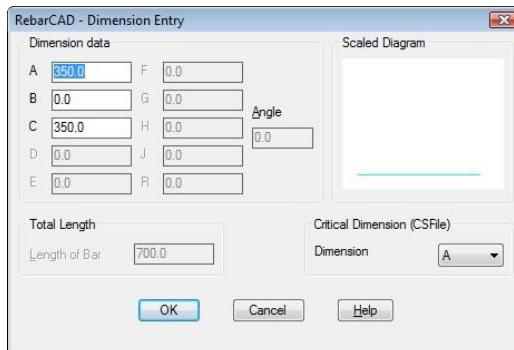
7. Click OK twice to return to the drawing

8. Select entity for first bar : Select point 1 as indicated on the diagram below

9. Select entity for last bar : Select point 2 as indicated on the diagram below

10. Select range line: Select the polyline indicated by point 3 on the diagram below Range length 4082.8 Range Options :

11. 18 bars at <250> / Average c/c = 240.2 / Run out / Numeric:

12. Press enter to continue or (A)verage/(R)un out/(N)umeric: Press Enter
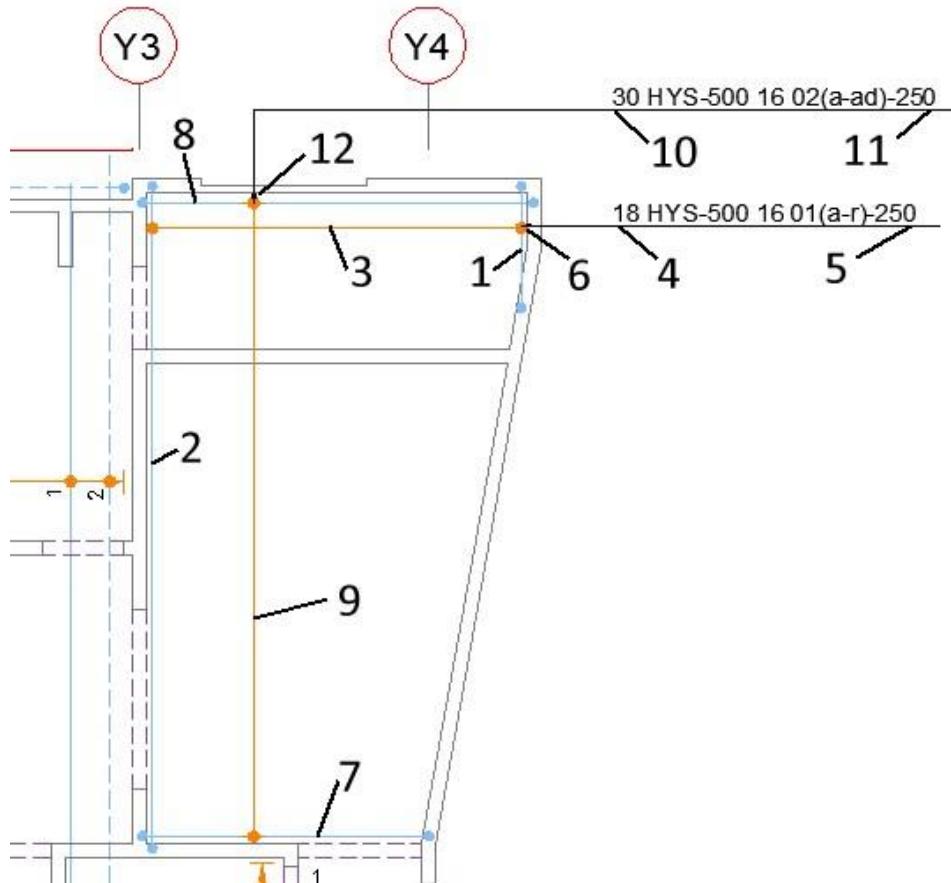
13. Pick Bar Label location: Select the insertion point indicated by point 4 on the diagram above

14. Rotation angle: Select point 5 as shown to set the label horizontally

15. Pick point on bar: Select a point on the bar as indicated by point 6

Continue with the command, you are going to add a further 2 ranges to the drawing

16. Select entity for first bar: Select point 7

17. Select entity for last bar: Select point 8

18. Select range line: Select the polyline indicated by point 9 on the diagram below Range length 7027.0 Range Options:

19. 30 bars at <250> / Average c/c = 242.3 / Run out / Numeric:

20. Press enter to continue or (A)verage/(R)un out/(N)umeric: Press Enter

21. Pick Bar Label location: Select the insertion point indicated by point 10 on the diagram above

22. Rotation angle: Select point 11 to set the label horizontally

23. Pick point on bar: Select a point on the bar as indicated by point 12 Next open the schedule and review the bars you have created.

24. **RebarCAD – Schedule – View Schedule**

25. Close the Schedule

26. This concludesCreating Tapered Ranges from Polylines

3.7. Over Stock Length Feature (OSL)

The **Over Stock Length** feature allows you to indicate bar lengths over the configured stock length on the drawing. These bars will then be split and drawn to the specified stock length with the appropriate laps. The ability to specify a run of lapped bars and their ranges across the structure in one operation increases productivity. In addition, **RebarCAD** allows the **OSL** bars to be edited, their centres, bar diameters, lap lengths etc. changed and the whole group will update.

Try It: Over Stock Length Feature (OSL)

In this example youare going to open a sample drawing produced by a Structural Engineer that already has some bars defined using the Convert Polylines / Lines to Rebar. You will then use the **Convert Polylines to Ranges** command to add range lines to the bars and calculate the number of bars in the range.

1. Launch **RebarCAD**

2. Open **drawing ...\drawings\Over Stock Length.dwg**

3. Switch to Model Space

4. **RebarCAD – Detail – Draw Range New Mark**

5. Click Ok on the member dialog

6. Select **Single Indicator Range**
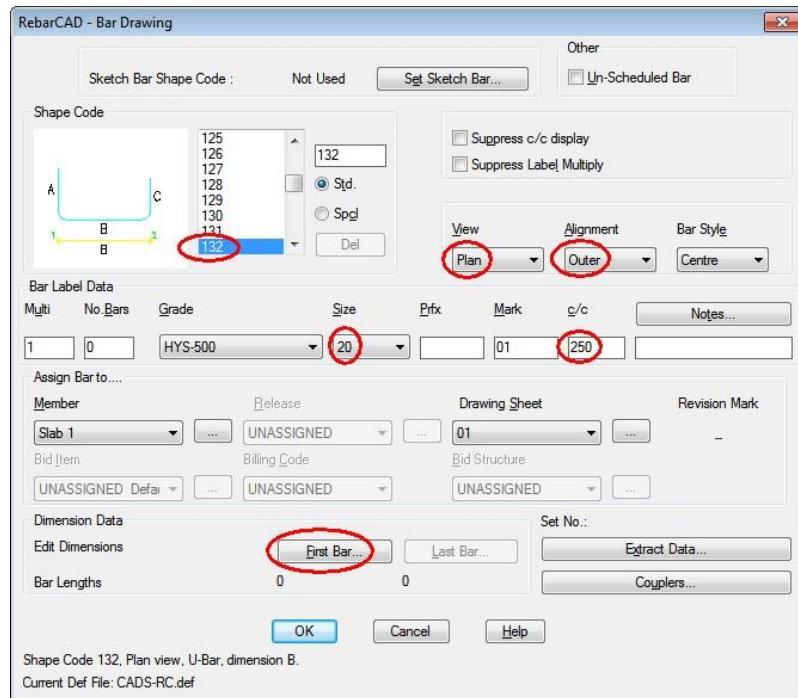
7.   Choose shape code 132, View – Plan, Alignment – Outer, Size – 20 and type in the centres at 250. Click on First Bar
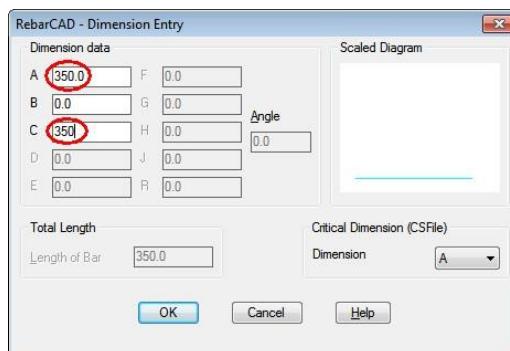
8.   Set dimensions A and C to 350

9.   Click OK twice

10. Plan View Outer Start point: Click on the cover line as shown by point 1

11. Enter Outer Dimension B: Click on the cover line as shown by point 2

12. Click on Yes to invoke the Over Stock Length
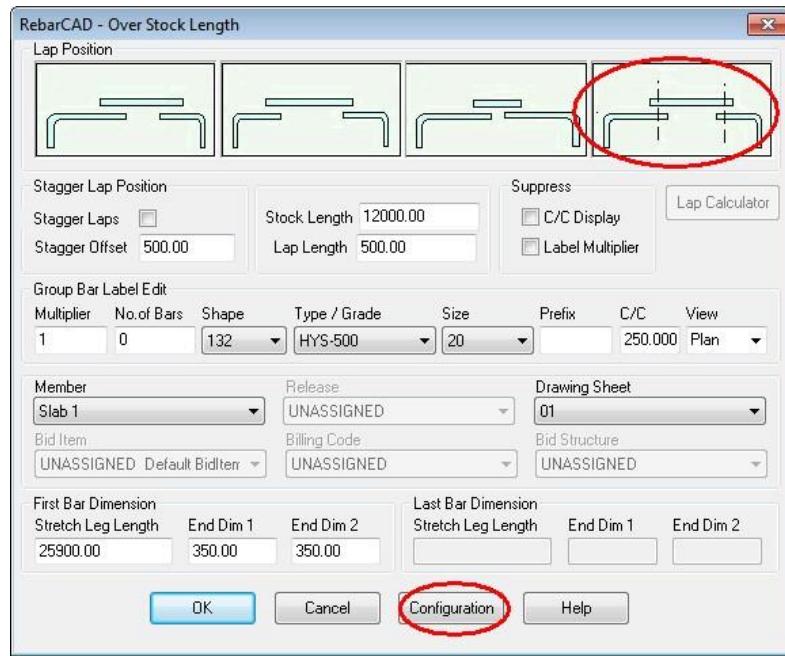
13. Click on the far left option for the lap calculator and then select the **Configuration** button
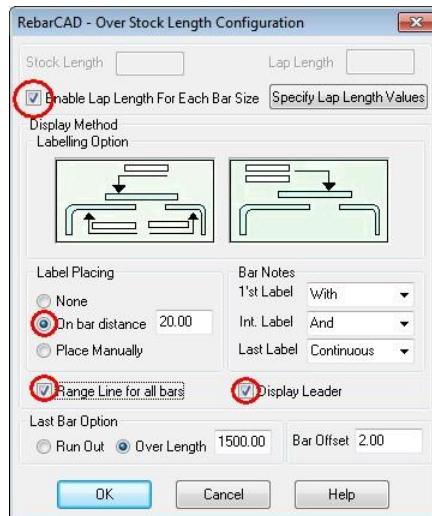
14. Select the options as indicated in the diagram above

15. Click OK twice
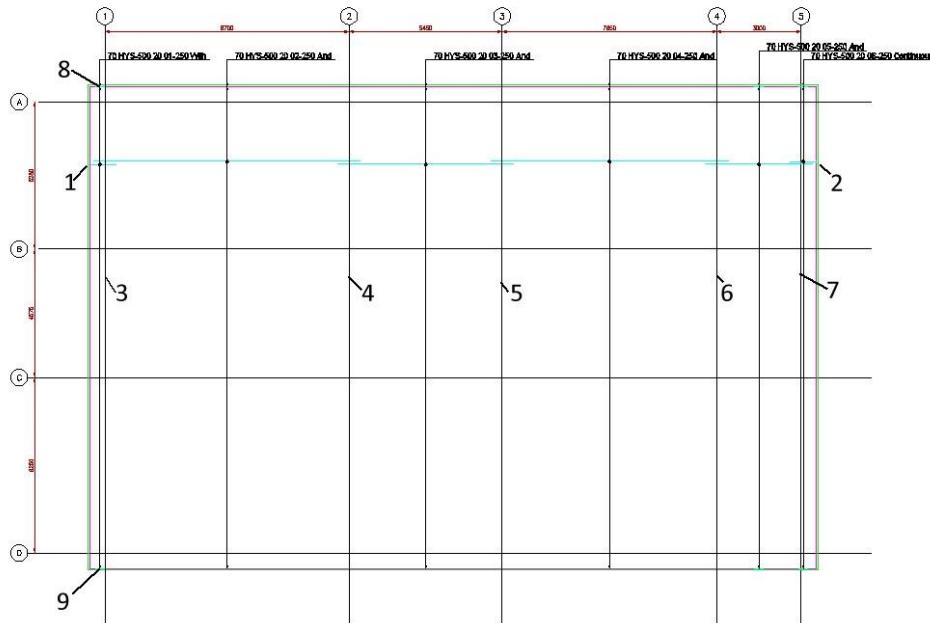
16. Select Splice Lines.

17. Select objects: Pick the grid lines indicated by points 3, 4,

18. 5, 6 & 7, then press enter

19. Start of bar range / enter Slope / True len / Line: Pick the point indicated by point 8 on the cover line

20. Offset First bar from start <0>: Press enter

21. Pick End of range:

22. Offset Last bar from end <0>: Pick the point indicated by point 9 on the cover line

23. Range options: Press enter

24. 70 bars at < 250 > / Average c/c = 248.9 / Run out / Numeric:

25. Press ENTER to continue or (A)verage/(R)un Out/(N)umeric: Press Enter

26. Repeat the same **OSL** command placing the bars vertically on the left hand side of the slab and the ranges along the top edge of the slab.
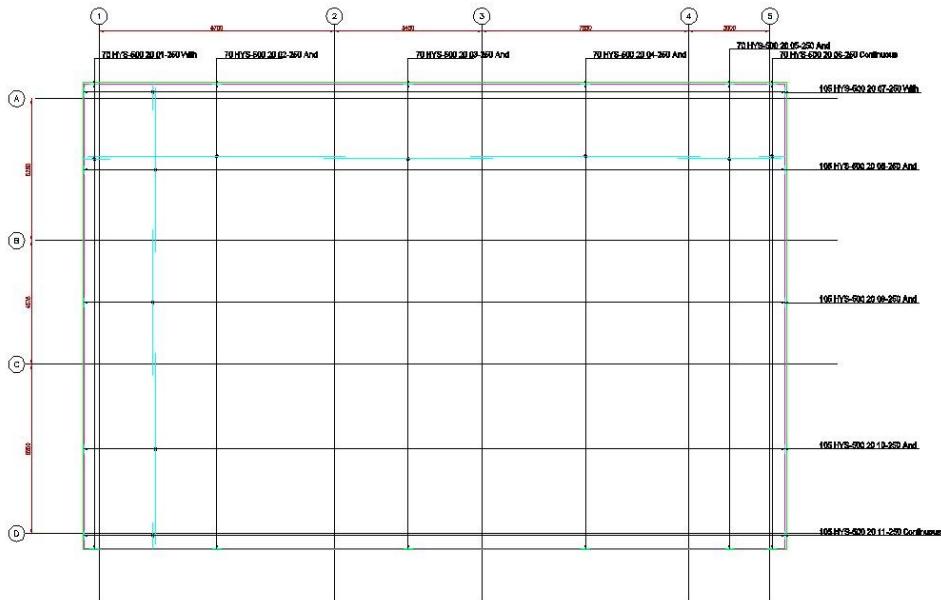
Now run Match Bars and Compact Bars to match the identical bar marks and compact the bar mark numbers into sequence.

1. **RebarCAD – Check – Match**

2. Suppress questions and accept defaults <No>: Type Y and press enter

   Bar marks <01> and <06> are the same. Keeping Bar mark <01>.

   Bar marks <01> and <07> are the same. Keeping Bar mark <01>.

   Bar marks <01> and <11> are the same. Keeping Bar mark <01>. 26.

3. **RebarCAD – Check – Compact Bars**

4. Select Yes

5. **RebarCAD – Schedule – View Schedule**

- A **Bar Set** can have several **Bar Views** associated with it, including **Bar Views**, **Ranges**, **Bar Labels**, **Bar Mark References** and **Ticks and Tags**.

- Each **Bar Set** has its own **Bar Label** and one line in the **Schedule**.

- **Bar Sets** of the same **Bar Mark Number** and **Member Title** can be combined together prior to printing the **Schedule**.

- Input as much information into the **Draw Bar** dialog as possible to speed up the drawing process by minimising the need for command prompts later.

- Switch off the **Range Offset** prompts and pre-set Range Snaps in**Range Configuration** to reduce the number of command prompts.

- Use the Bar from **Pline** and **Range from Pline** commands to quickly take off the reinforcement from a Structural Engineers drawings

3.9. Commands

Action	Menu	Toolbar
Draw a Bar with New Bar Mark	**RebarCAD – Detail – Draw Bar New Mark**	
Draw a Bar with Existing Bar Mark	**RebarCAD – Detail – Draw Bar New Set**	
Add a Bar to an existing Bar Set	**RebarCAD – Detail – Draw Bar Add View**	
Draw a Range with New Bar Mark	**RebarCAD – Detail – Draw Range New Mark**	
Draw a Range with Existing Bar Mark	**RebarCAD – Detail – Draw Range New Set**	
Add a Range to an existing Bar Set	**RebarCAD – Detail – Draw Range Add View**	
Add Bar Mark Ticks & Tags to a Bar	**RebarCAD – Annotate – Tick & Tag**	
Add Bar Mark References to a Bar	**RebarCAD – Annotate- Bar Reference**	
Edit Bar Properties	**RebarCAD – Modify – Edit Bars**	
Bar from Polyline	**RebarCAD – Detail –Bar from Pline**	
Range from Polyline	**RebarCAD – Detail – Range from Pline**	
Tapered Range from Polyline	**RebarCAD – Detail – Taper Range**	
Match Bar Marks	**RebarCAD – Check – Match Bars**	
Compact Bar Mark Numbers	**RebarCAD – Check – Compact Bars**	
Open the Schedule	**RebarCAD – Schedule – View Schedule**	

4. Editing Reinforcement

4.1. Double Click Editing

You can double left mouse click on any **RebarCAD** entity to access the relevant editing command.

Double clicking on a bar view, bar label, bar reference, leader, tick and tag will display the **Edit Bar Label Data** Dialog

Double click editing on the range line or run of bars in section will display the **Edit Range** dialog. This dialog will automatically change depending on the range style selected.

Note: If the double click editing does not display the relevant **RebarCAD** dialog you may need to enable either the Double Click Editing inside **RebarCAD**. You can access the command from the **RebarCAD** pull down menu **– Configuration – Double Click Edit Toggle** or by typing **CADS_RC_DOUBLE_CLICK_TOGGLE** at the AutoCAD command line. If the command still does not work you may need to enable the Hyperlink setting in the AutoCAD Options dialog. ToTo access this settingright click on the AutoCAD command line, select Options, go to the User Preferences tab and tick the Display hyperlink cursor, tooltip, and shortcut menu setting.

4.2. Edit Bar

RebarCAD - Modify – Edit Bars

All the active fields are available for editing - these include the steel grade, bar diameter, shape code, centres etc.
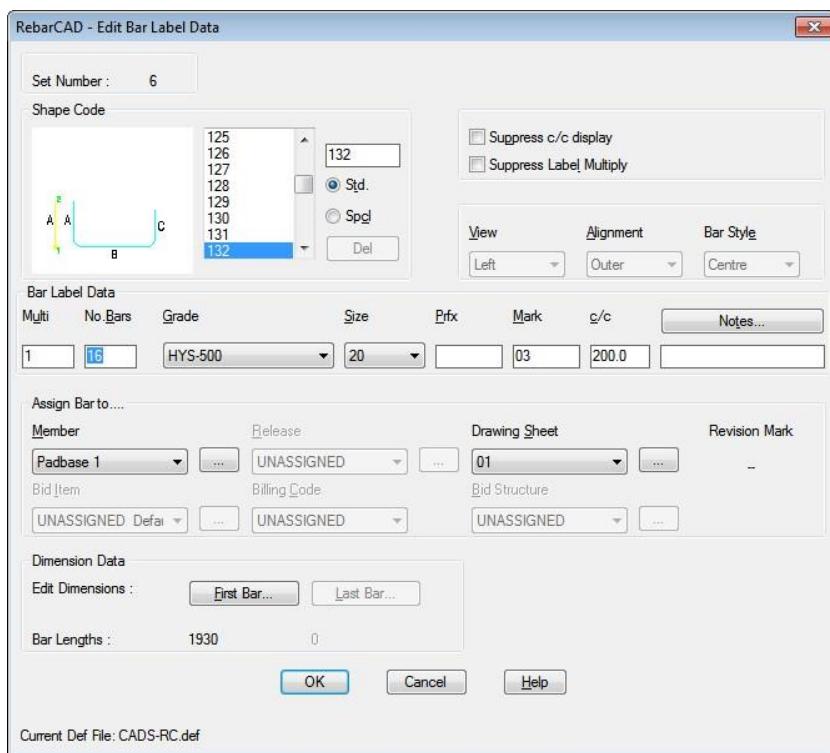
4.3. Multiple Edit Bars

A sub-option of the **Edit Bar** command is the multiple option, when prompted to select a bar either right mouse click or press enter. The command now allows the user to select several bar sets at once and edit some of the bar data globally such as the number of bars, grade, diameter, centres, notes, member title, and drawing sheet.

Note: A warning is issued when **RebarCAD** entities with different properties are selected, answer yes to proceed.
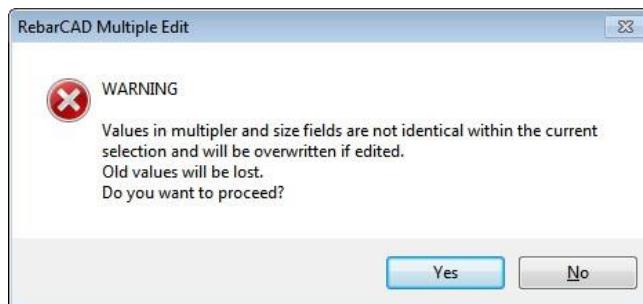
Note: You cannot change the shape code of multiple entities; this has to be carried out one bar mark at a time. The following warning is displayed;
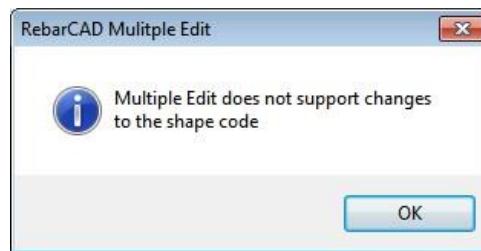
4.4. Edit Range

RebarCAD - Modify – Edit Range

The Edit Range dialog allows you to edit the range data of a bar set. It also allows the bar dimensions of tapered bar ranges to be edited.
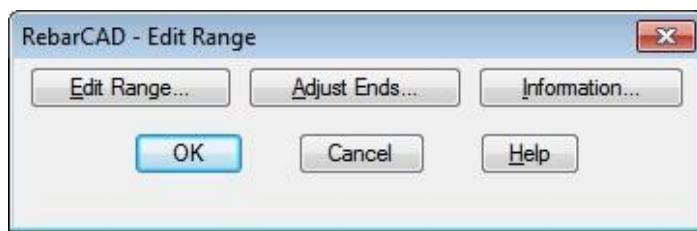
Adjust Ends…

Use this option to rotate the end markers on the range. The length of the range will be calculated at the skewed angle rather than the drawn length of the range. This option is useful for placing closer bars at the top of a sloping wall. The range line can follow the angle of the top of the wall but the centres can be calculated on the horizontal length. Note the angle of the range end markers on the two diagrams below and how the number of bars has changed.

28 HYS-500 20 04-150   27 HYS-500 20 04-150
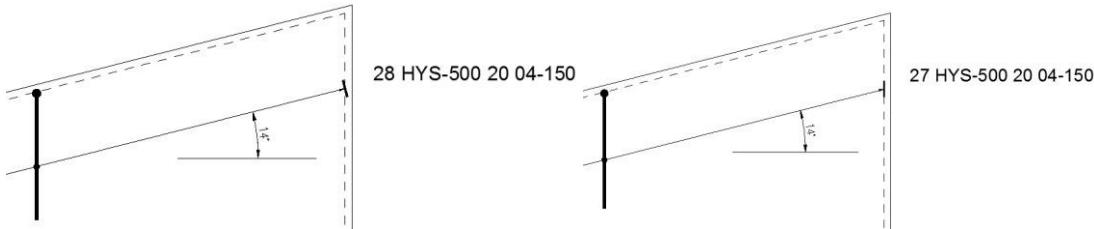
Edit Range….

Picking this option will display the **RebarCAD Range Editor** the **RebarCAD** Multiple Range Edit -Group List., depending upon the range type picked for editing.
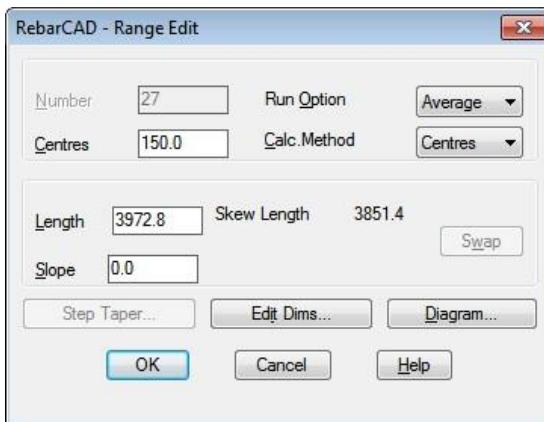
In the **Range Edit** dialog the centres, range length and vertical slope of the range can be edited.

Tapered Ranges

If a tapered range is selected, additional editing functionality is offered.
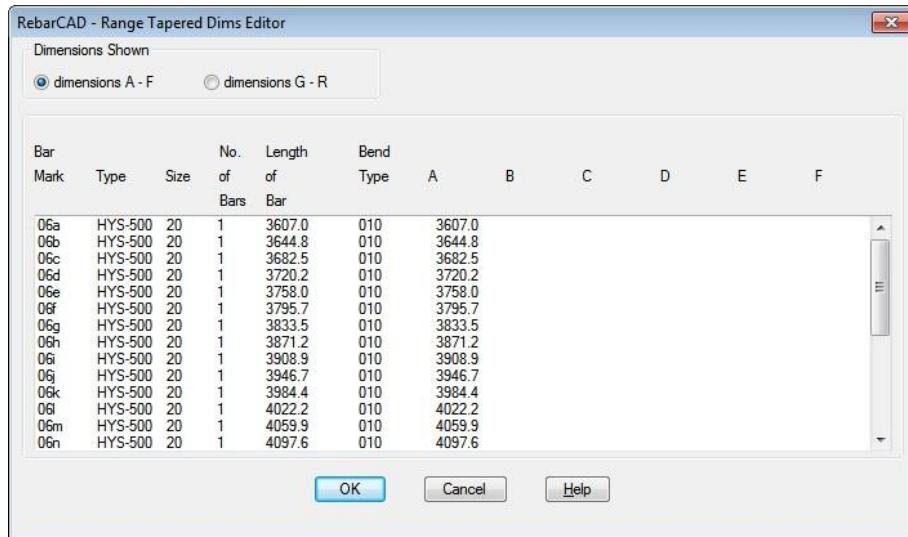
In the **Range Tapered Dims Editor** the length of individual tapered bars can be edited by double clicking on them.
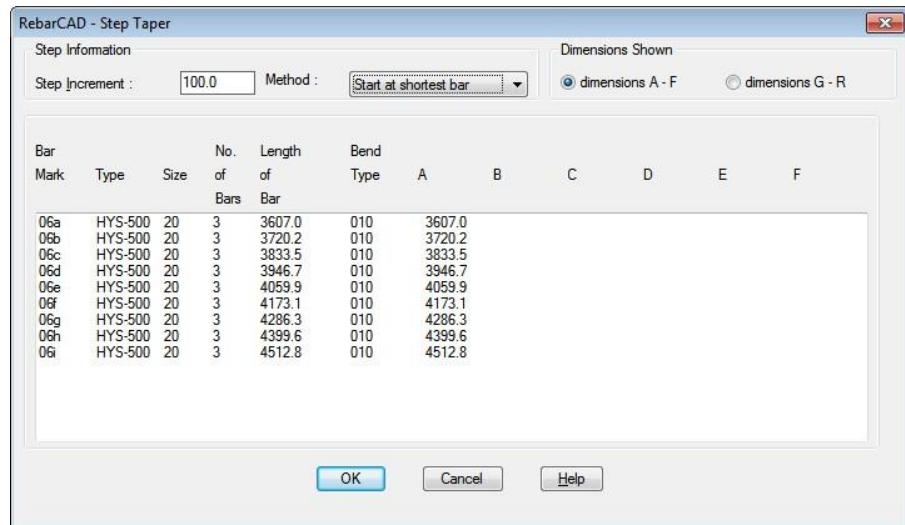
In the **Step Taper** a step increment for the length of the tapered bars can be introduced reducing the number of cuts in the tapered range.

Multiple Ranges
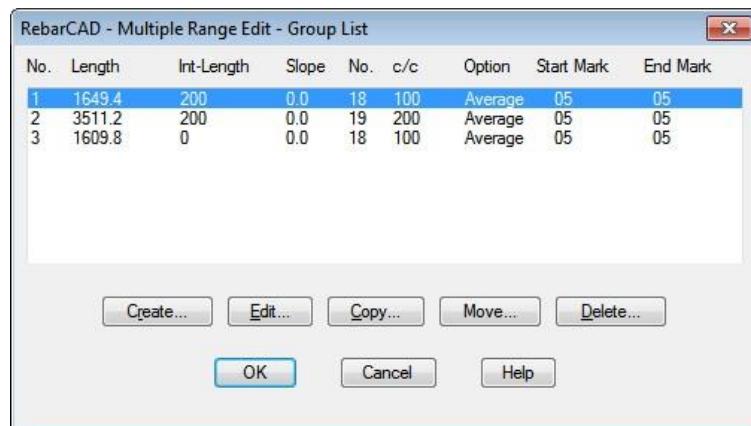
In the **Multiple Range Edit** dialog the properties of each individual range groups can be edited. This dialog also allows the detailer to add to, copy, move and delete the range groups.

Try It: Range Edit – Adjust Ends & Step Taper

In this example you are going to use the Range Edit command to edit a variety of Ranges. In the first example you will use the Adjust Ends and the Step Taper to complete a Sloping Wall.

1.   Launch **RebarCAD**

2.   Open drawing ...\drawings\Range Edit 1.dwg

3.   Switch to Model Space, zoom into the wall
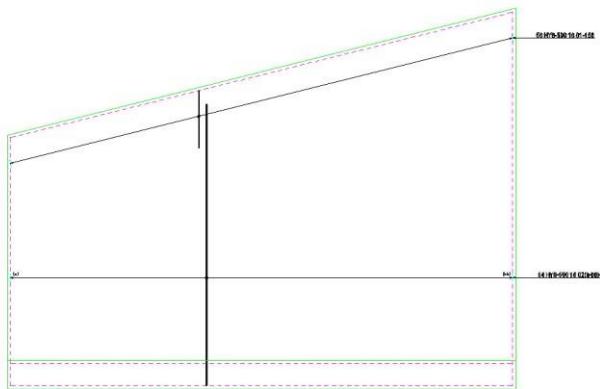
Use the Adjust Ends on the capping bar at the top of the wall. The range has to be drawn to follow the slope of the wall. **RebarCAD** calculates the range length along the slope which is not correct. Use the adjust ends to rotate the range end markers vertically and this will adjust the range length to the horizontal distance and reduce the number of bars 4.

4.   **RebarCAD – Modify – Edit Range**
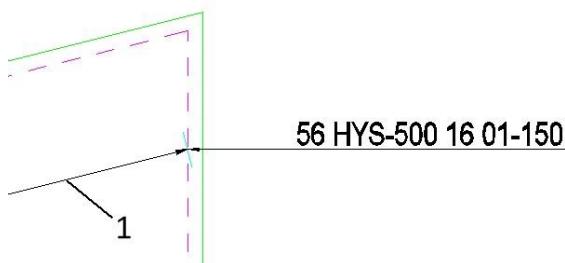
5.   The **Edit Range Dialog** is displayed, click on Adjust Ends

6.   Pick angle for group 1, relative to range line <-90.0ø>, actual <-76.0ø> : Click on the screen as indicated on point 1

7.   Specify second point: Click vertically down on the screen as indicated by point 2 Angle picked <270.0ø/4.712389 radians>.

8.   Skewing range length from 8143.1 to 7900.0 for bar number calculation.
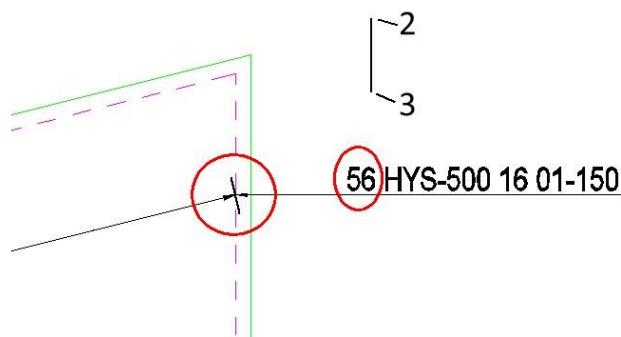
9. The range end marker is redrawn at 90 degrees and the number of bars is recalculated.
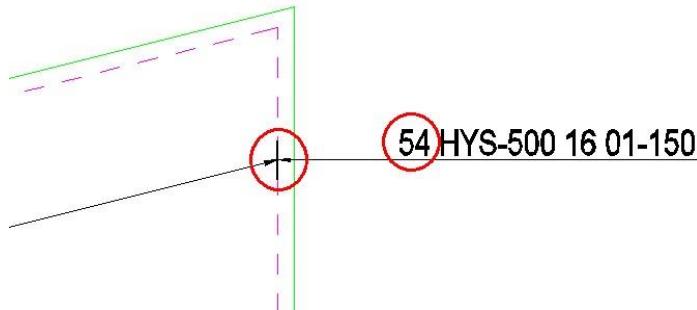
The next example uses the Step Taper routine on a tapering range to reduce the number of cut bars. If lapping with other bars when using the step taper remember to increase the lap length but the step taper distance so that a minimum lap is always achieved. Currently the range has 54 bars a to bb you apply a step value of 150 to group the tapered bars.

1. **RebarCAD – Modify**
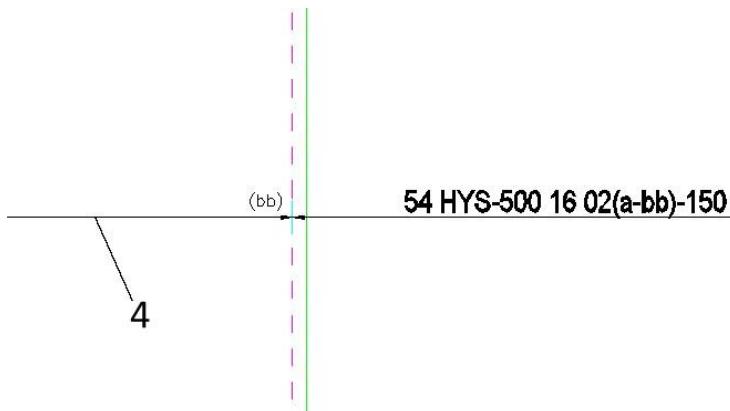
2. Pick Range for Editing:

3. Pick the range line indicated by point 4
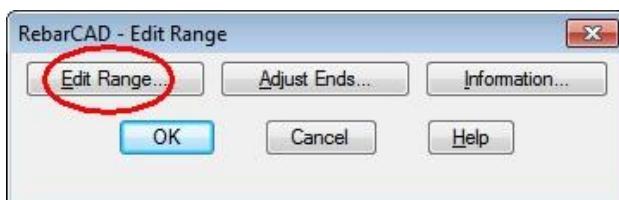
4. Click on Edit Range
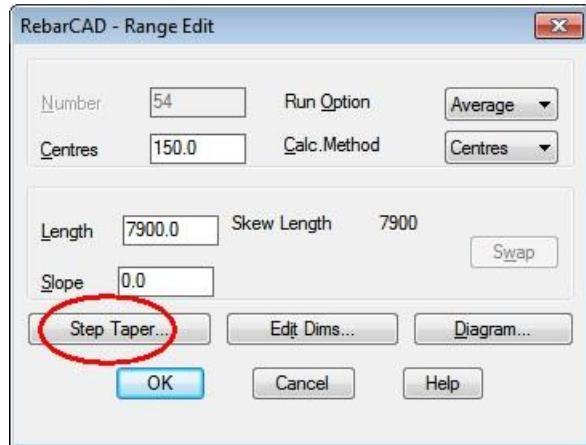
5.   Click on **Step Taper**
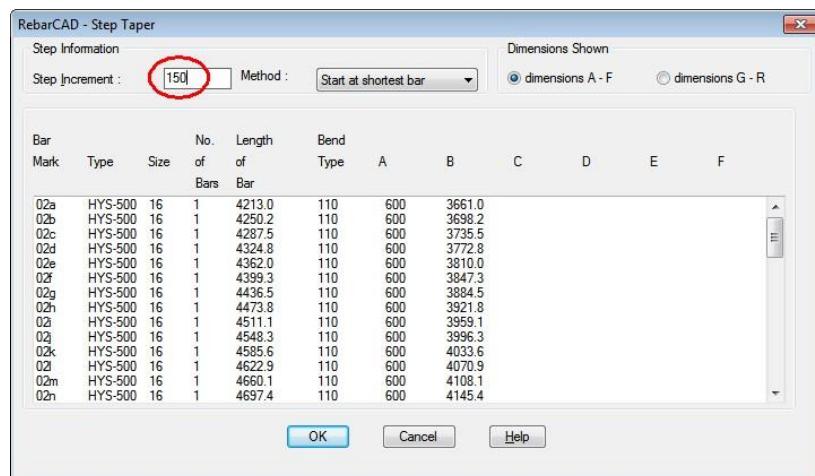
6.   Type in 150 and press the Tab key on your keyboard
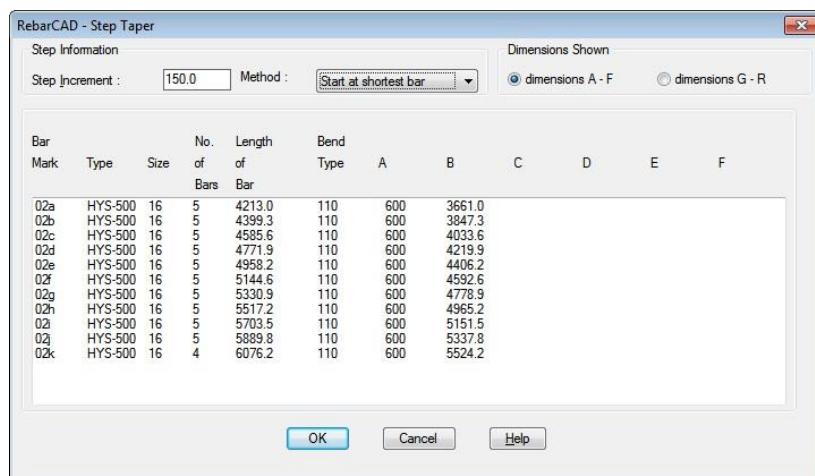
7.   The number of steps changes from (a – bb) to (a – k)

8.   Click Ok three times to return to the drawing

54 HYS-500 16 02(a-k)-150
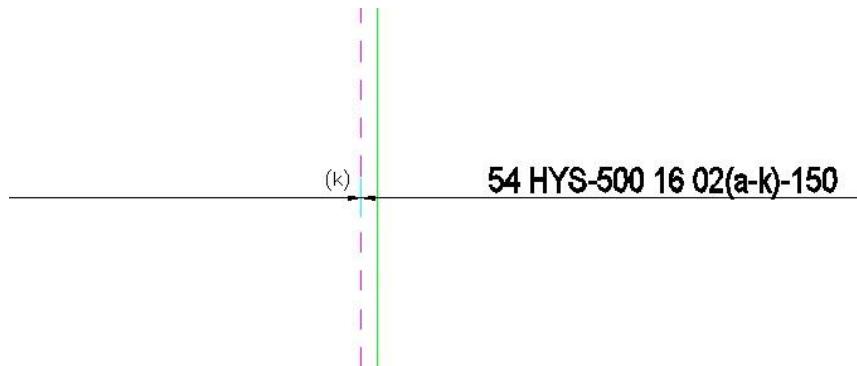
This completes the Range Edit – Adjust Ends & Step Taper Try It

Try It: Range Edit – Edit Range Groups

In this example you are going to use the Range Edit command to edit multiple pitch ranges to change the bar centres and the gaps and lengths of range groups. The drawing contains a slab in which you are going to introduce a new opening by editing the ranges.

1.   Launch **RebarCAD**

2.   Open **drawing ...\drawings\Edit Range Groups.dwg**

3.   Switch to Model Space and zoom into the slab
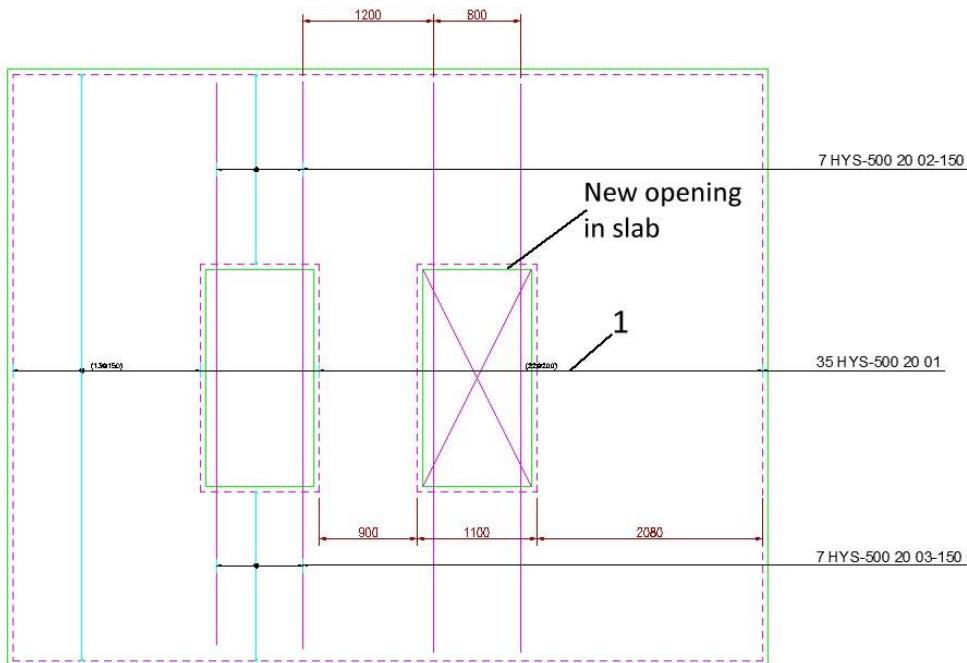
4.   **RebarCAD – Modify – Edit Range**   or double click edit on the range line

5.   Pick Range for Editing: Pick the range line indicated by point 1
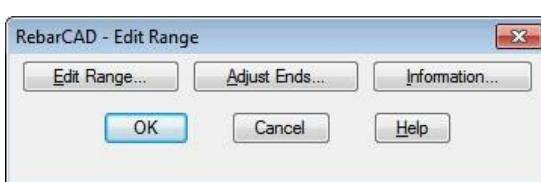
6. Click on the **Edit Range** button
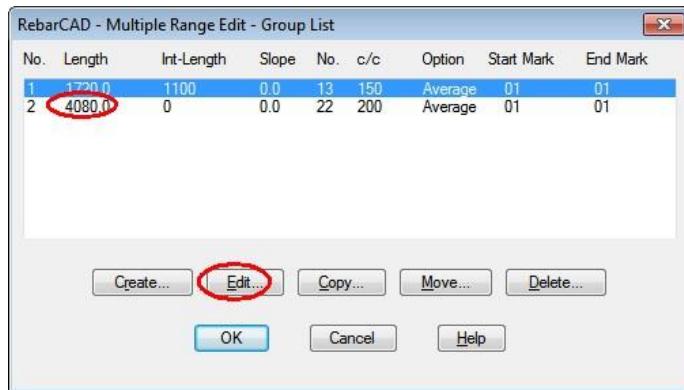
7. Highlight Range Group 2 (4080 length) on the list and click on Edit
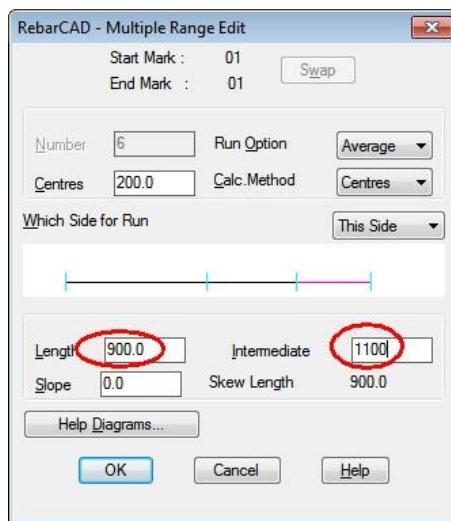
8. Change the Length to 900 and type in 1100 for the Intermediate length (gap between the range groups), click OK
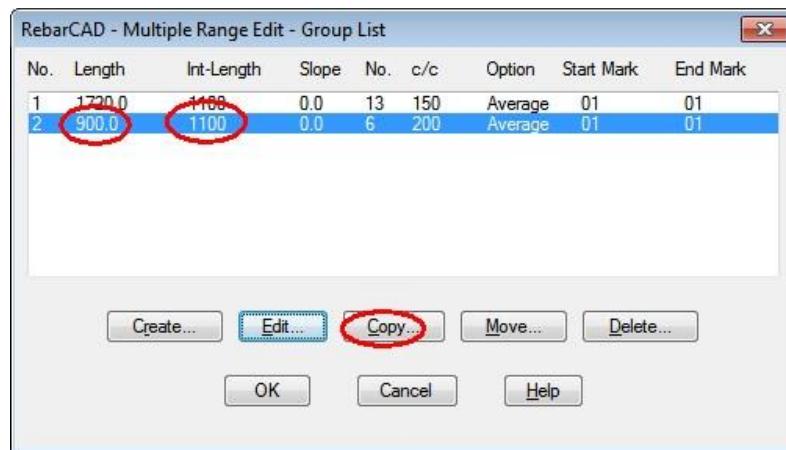
9. Note that the properties of range group 2 have got updated. Click on Copy to add another group to the range

10. Type in 3 for the Group position within the range and click Ok

    Group 3 is added to the list of groups
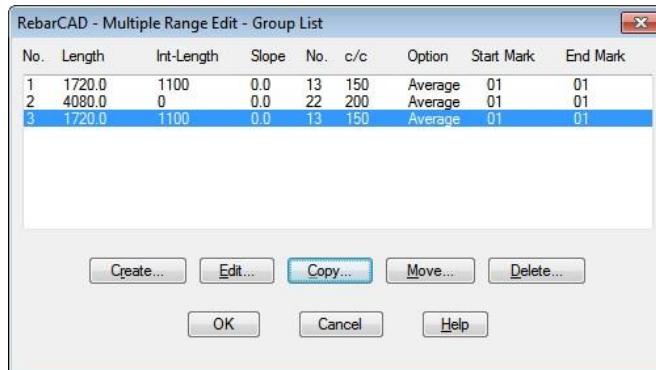
11. Highlight group 3 and click **Edit**
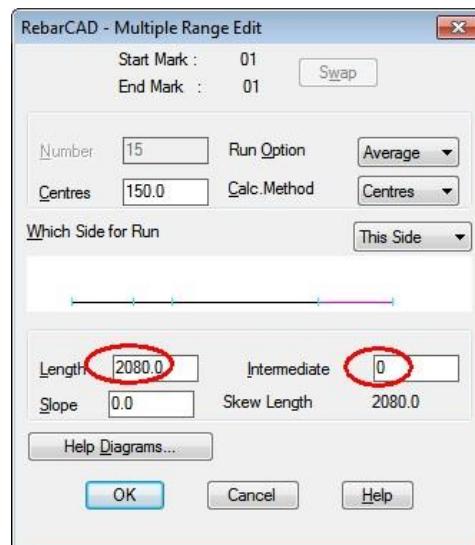
12. Change the centres to 150 and set the length at 2080, click Ok three times
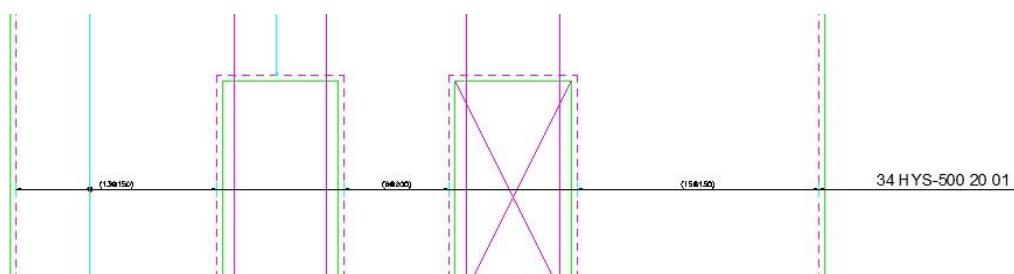
13. The range is redrawn to take account of the opening and the number of bars is adjusted accordingly

Next youadd a range group to the infill bars at the top and bottom of the slab around

1. **RebarCAD – Modify – Edit Range** 🔲 or double click edit on the range line

2. Pick Range for Editing: Pick the range line indicated by point 2 on the diagram below
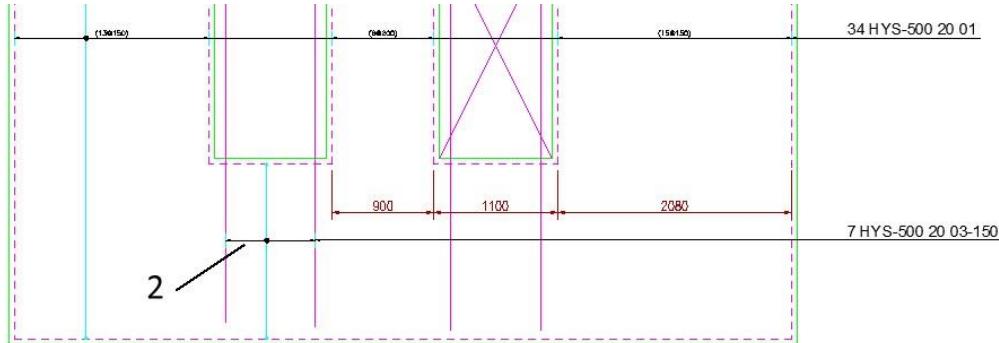
3. Click on the **Edit Range** button

4. Click on the **Edit** button
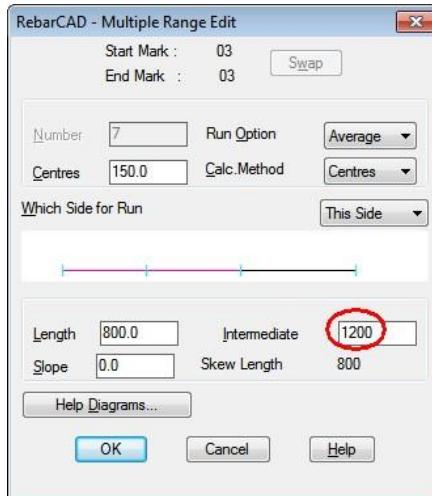
5. Type in 1200 for the Intermediate distance and click Ok

6. Click on the **Create** button
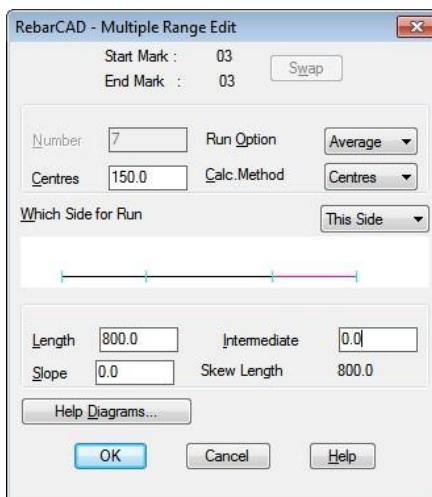
7. Type in a length of 800 and click Ok

8. Type in 2 for the group position, click Ok three times to return to the drawing

14 HYS-500 20 03-150
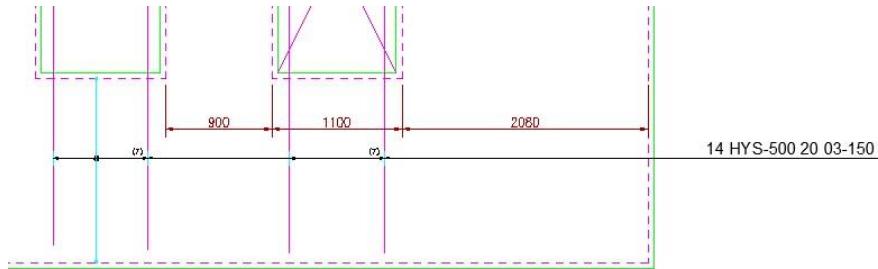
9.   Repeat the same procedure to the top range indicated by point 3 in the diagram below

7 HYS-500 20 02-150
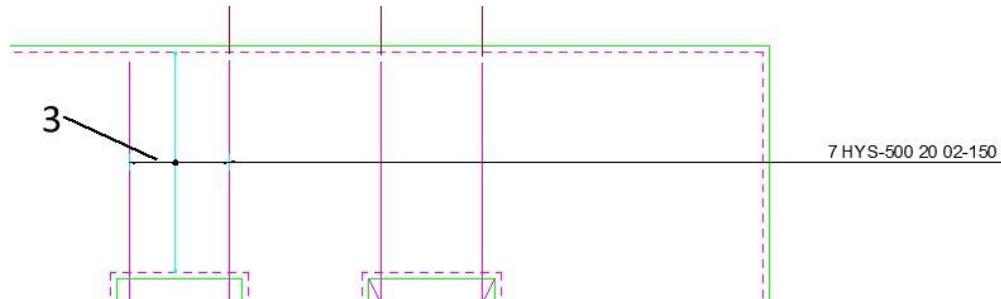
10.   The completed drawing should be like the diagram below

14 HYS-500 20 02-150

34 HYS-500 20 01

14 HYS-500 20 03-150
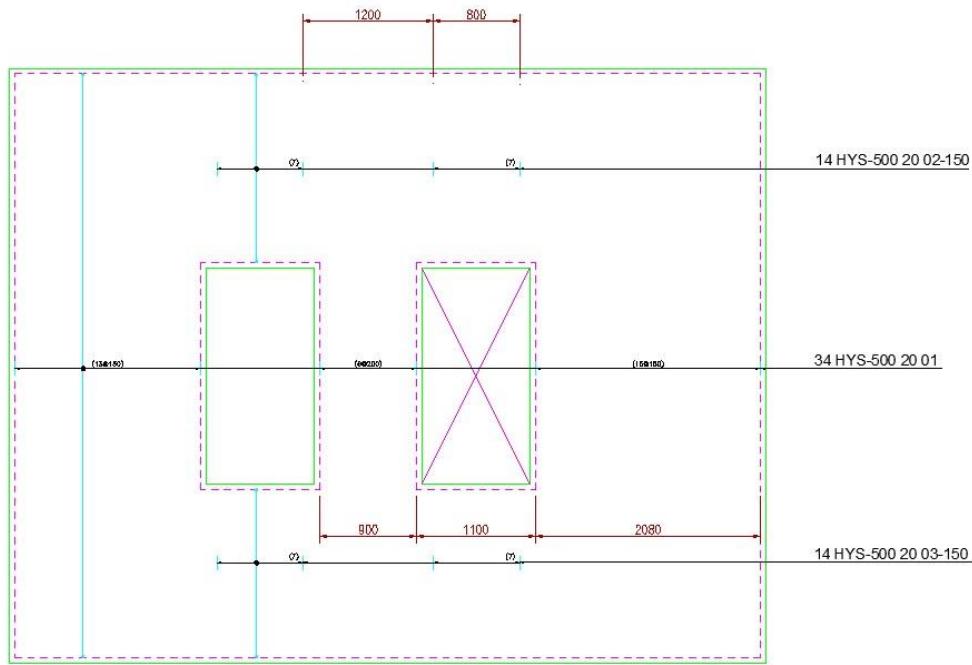
This completes the **Edit Range – Edit Groups** Try It

4.5. Stretch Bar / Range

RebarCAD - Modify – Stretch Bar/Range Stretch Bar/Range

The **Stretch Bar / Range** command allows **RebarCAD** entities to be stretched in a similar fashion to the AutoCAD stretch. Any bar view can be stretched, including ranges and runs, with all relevant views being updated automatically. **RebarCAD** asks whether new bar marks should be allocated to the stretched entities. It is advisable to answer Yes to this prompt as the results may be unpredictable if you have several sets of the same bar mark on a drawing.

Note: If the AutoCAD stretch is used on a bar, it will have no effect (if the entire bar view was in the stretch window, it will be moved as any entity would) but non **RebarCAD** entities will stretch as normal.

Note: If you have Rebar linked together in a Padbase plan and section, and if you stretch the section, only then the rebar in the plan will update automatically but the outline will not.

Try It: Stretch Bar / Range

In this example you are going to increase the width of the opening in a slab

11.   Launch **RebarCAD**

12.   Open drawing ...\drawings\Stretch.dwg

13.   Switch to Model Space, zoom into the slab

14.   **RebarCAD - Modify – Stretch Bar/Range** Stretch Bar/Range

15.   Check for other sets and re-assign Bar Marks/Stock ? <Yes> : Press enter
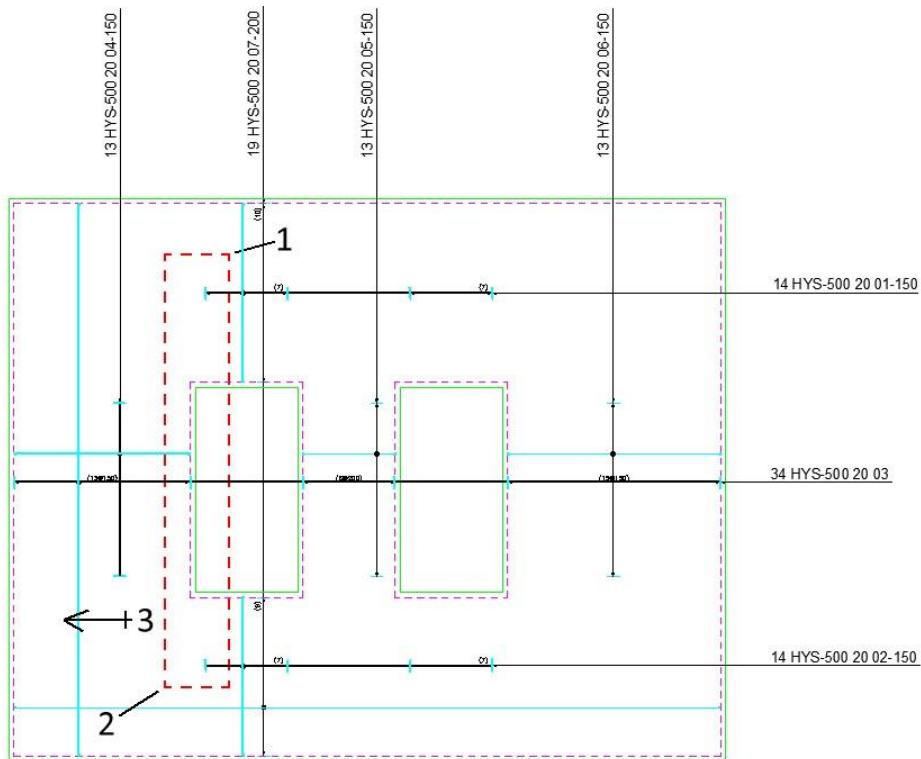
16.   Select object to be stretched or crossing window: Pick as indicated by point 1

17.   Other corner: Pick as indicated by point 2

18.   6 found. 4 bar(s) found.

19.   Base Point: Pick as indicated by point 3

20.   New point: Type in @-500,0 and press enter
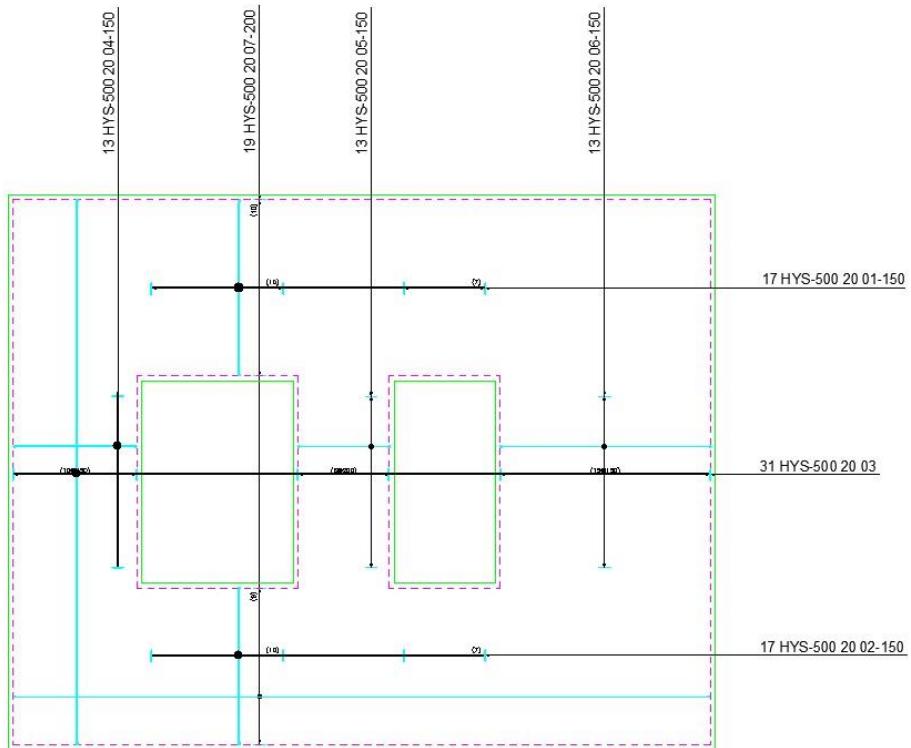
Review the drawing and the schedule, in bar mark 04 the Dim B has reduced. The number of bars in bar mark numbers 01 & 02 has increased whilst the number of bars in bar mark 03 has been reduced.

21.   **RebarCAD – Schedule – View Schedule**
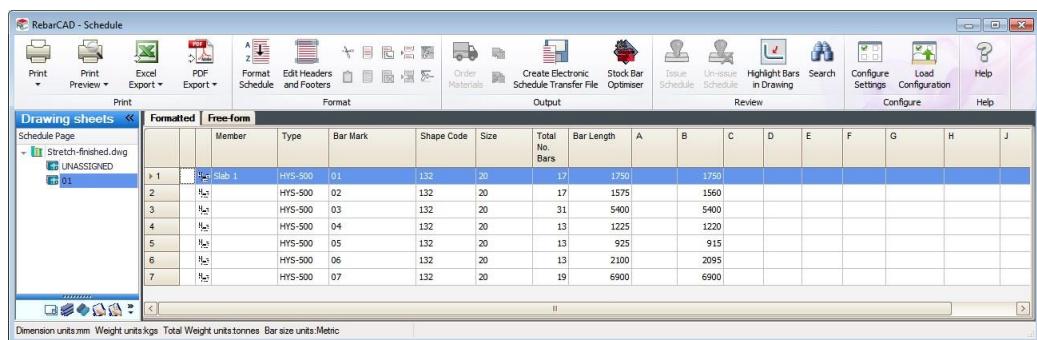
This completes the Stretch Try It

4.6. Copy & Array

Home – Modify – Copy   Copy

Home – Modify – Array   Array

The AutoCAD **Copy** and **Array** commands can be used to duplicate either bar views or bar sets on the drawing. When the user tries to copy or array a **RebarCAD** entity the following message will be displayed.
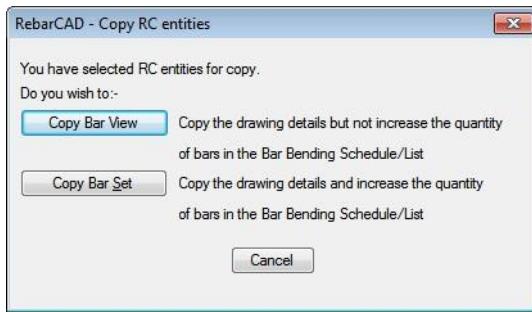
The **Copy Bar View** will create additional **RebarCAD** graphics on the drawing but will not add further **RebarCAD** entities to the schedule.

The **Copy Bar Set** option will create additional **RebarCAD** graphics on the drawing and increase the number of bars in the schedule.

Note: AutoCAD 2012 users, in this version of AutoCAD the **array** command has been amended to dynamically display the arrayed entities. **RebarCAD** cannot support this version of the command. You can invoke the original AutoCAD **array** command by typing in **–Array** at the AutoCAD command line.

4.7. Mirror

Home – Modify – Mirror   Mirror

The AutoCAD **Mirror** command can be used to create a mirrored view of RC entities on the drawing. The detailer can choose to either retain or delete the original **RebarCAD** entities. If he chooses to retain the original entities the following message will be displayed.

4.8. Erase, Cut and Delete

Home – Modify – Erase

Home – Clipboard – Cut

The AutoCAD **Erase**, **Cut** and **Delete** options can be used to remove **RebarCAD** entities from the drawing. When the detailer uses these commands the following message will be displayed.
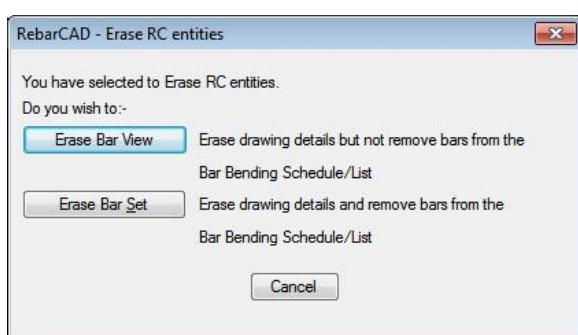
The **Erase Bar View** will delete the selected **RebarCAD** views from the drawing but it will not remove the bars from the schedule.

The **Erase Bar Set** will delete the selected **RebarCAD** bar sets from the drawing, including views of the set not already selected and it will delete the bar sets from the schedule.

Note: If the **Erase Bar View** is used to delete all the entities of a bar set from the drawing, then the bar set will still be present in the schedule. Use the **Drawing Audit** 🖼 command to purge these bar sets from the schedule. This command can be selected from the Check panel in the **RebarCAD** ribbon.

4.9. Copy and Paste

Home – Clipboard – Copy 🗐

Home – Clipboard – Paste 📋

The AutoCAD **Copy** and **Paste** options from the AutoCAD Clipboard Panel on the Home tab can be used to duplicate **RebarCAD** entities. The **RebarCAD** entities will be automatically copied as a New Set on the drawing; the **Copy Bar Set / View dialog** will not be displayed.

Note: You can use **Copy** and **Paste** to copy details from one **RebarCAD** drawing to another. The bar marks may not follow the same order as the original drawing in the pasted version. You cannot include the member title data in Copy and Paste.

4.10. Redraw Bar

RebarCAD - Modify – Redraw Bar

Use the **Redraw Bar** command to update **RebarCAD** entities on the drawing to reflect any configuration changes you may have made. This command effectively deletes and redraws the **RebarCAD** entities as if they were newly created.

Try It: Redraw Bar

In this example you are going to change some of the configuration relating to the bars and bar labels and then use the Redraw Bar command to update the drawing.

1. Launch **RebarCAD**

2. Open drawing ...\drawings\Redraw Bar.dwg

3. Switch to Model Space and zoom into the slab
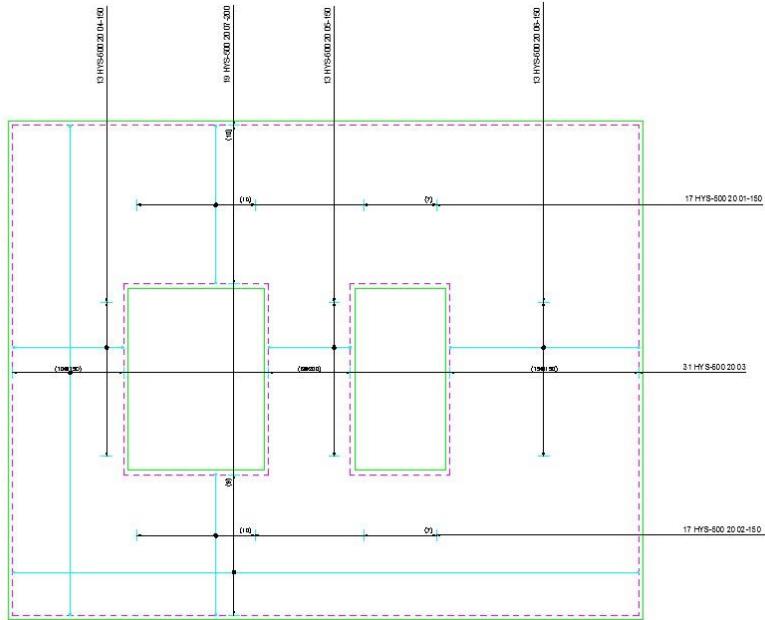
First youchange the colour and style of the rebar on the drawing and use the change bar **style** command to change and update the bars.

1. **RebarCAD – Configure – Configuration Centre**

2. Select Bar Configuration
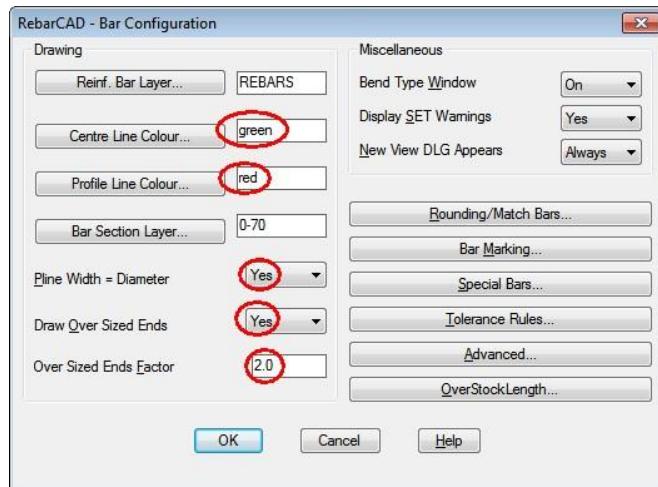
3. Change the Centre Line colour to Green, Profile Line Colour to Red, set Pline width = Diameter to Yes, Draw Over Sized Ends to Yes and the Over Sized Ends Factor to 2.

4. Click OK & then Close to return to the drawing

5. **RebarCAD – Modify – Change Bar Style** ⬍

6. Select Objects: Window the entire drawing and press enter

The bars are redrawn as a red double line indicating their diameter and the change in profile colour.
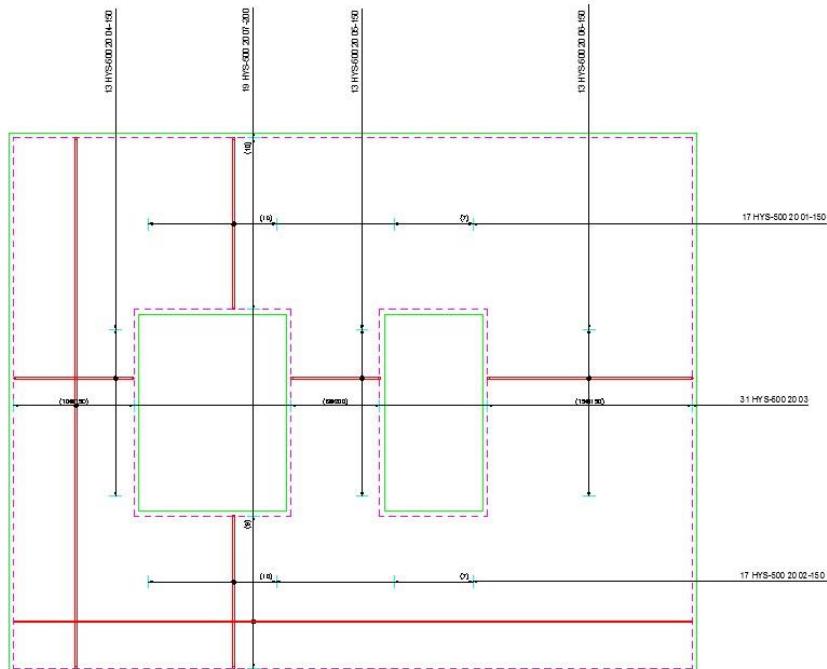
7. **RebarCAD – Modify** ⬍

8. Select Objects: Window the entire drawing and press enter

9. The bars are redrawn as a thickened green line indicating the change to show the centre line view as the true bar diameter.
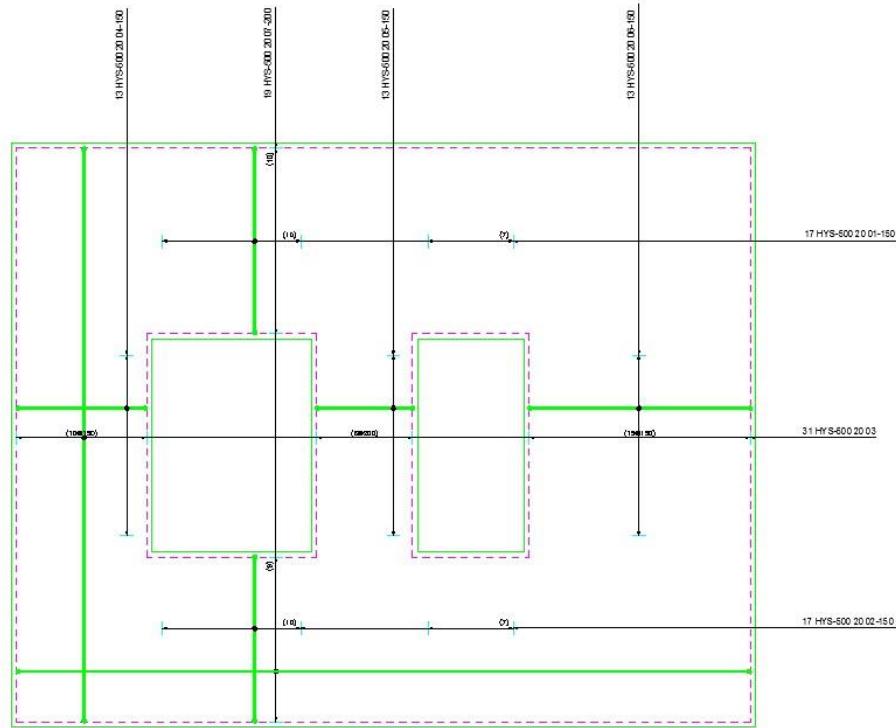
Next youchange the font and height of the bar labels on the drawing and use the redraw bar command to update the labels

10.   RebarCAD – Configure – Configuration Centre

11.   Select Label Configuration

12.   Type in Arial for the Bar Label Text Style and set the Bar Label Height to 5

13.   Click Ok and Close to return to the drawing

14.   **RebarCAD – Modify – Redraw Bar**

15.   Select **RebarCAD** entities to be redrawn:

       Select objects: Window the entire drawing and press enter
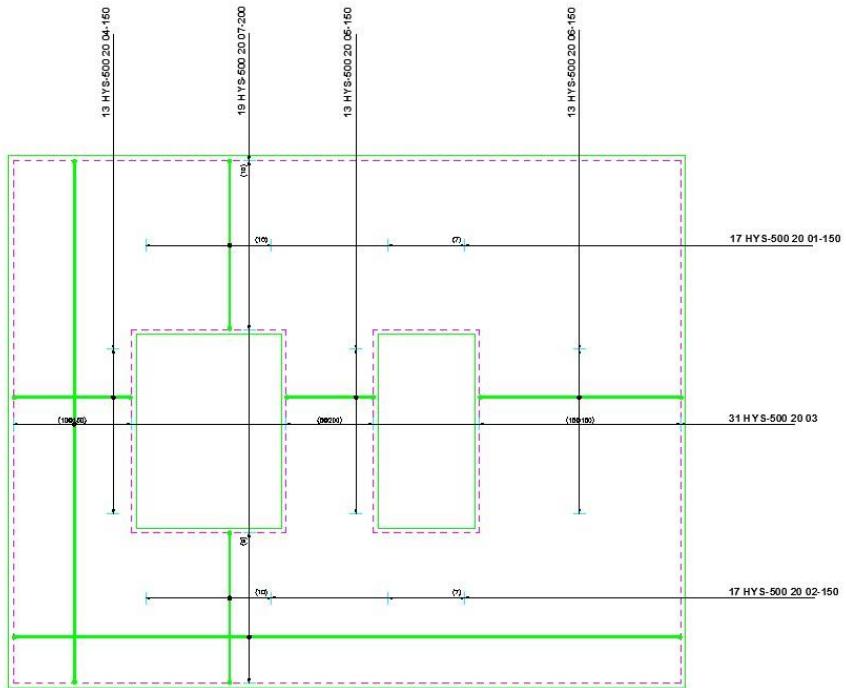
The **RebarCAD** entities are redrawn showing the change in font style and text height.

This completes the **Redraw** Bar Try It

4.11. Explode OSL Group

RebarCAD - Modify – Explode OSL Group

This command is used to explode the grouped bars and ranges created by the **OSL** command into individual bar sets. These sets can then be edited individually without affecting the other sets. The bars will no longer behave as a group.

4.12. AutoCAD Modify Commands

It is advisable not to use the following commands on **RebarCAD** entities. The reinforcement data attached to the entities will be lost and they will not be linked to each other or the schedule.

Lengthen, Trim, Extend, Break, Join, Chamfer, Fillet or Explode

4.13. Key Points

▶ For speed, use the Double Click Editing feature to edit **RebarCAD** Entities. If you select a **Bar View** it will display the **Edit Bar Data** dialog while if you select a range it will display the **Edit Range** dialog.

▶ The **Edit Range** dialog will vary depending on the type of range selected as some range types have restrictions on the type of data that can be edited.

▶ The **Edit Bars** command has a multiple selection option. This can be useful for changing globally properties such as steel Type, bar size and the like, within a whole drawing.

▶ Use the **Edit Bars** command to change properties such as Type, size, Shape Code, notes and so on relating to a bar.

▶ Use the **Edit Range** command to change the range properties such as range length, multiple groups, step increments on taper ranges, skewed range end markers, and more.

  ▶ You can apply a step taper to a Tapered Range that has more than one leg.

▶ Missing tapering dimensions for the Varying Taper can be added through the **Edit Range** dialog.

▶ Use the **Redraw Bar** command to refresh configuration changes made to an existing drawing.

▶ If you need to stretch RebarCAD entities then use the Reinforcement **Stretch Bar/Range** command. Do not use the AutoCAD **Stretch** command.

▶ Use the AutoCAD **Copy, Mirror** and **Array** commands to rapidly duplicate RebarCAD entities and then edit them to your requirements.

▶ You cannot use the following AutoCAD **Modify** commands on RebarCAD entities: **Stretch, Offset, Scale, Lengthen, Trim, Extend, Break,** and **Explode.**

▶ You can work through the available Bar Views using the **Change Bar View** command.

▶ You can change the style of multiple bars between Profile and Centre Line by using the **Change Bar Style** command.

▶ Use Windows **Copy** and **Paste** to duplicate details between open drawings.

4.14. Commands

Action	Menu	Toolbar
Edit Bar Properties	RebarCAD – Modify – Edit Bars	
Toggle Double Click Editing On/Off	RebarCAD – Configure – Double Click Edit Toggle	
Edit Range Properties	RebarCAD – Modify – Edit Range	
Stretch Bars / Ranges	RebarCAD – Modify – Stretch Bar/Range	
AutoCAD Array	Home – Modify – Array	
AutoCAD Copy	Home – Modify – Copy	
AutoCAD Mirror	Home – Modify – Mirror	
AutoCAD Cut	Home – Clipboard – Cut	
AutoCAD Clipboard Copy	Home – Clipboard – Copy	
AutoCAD Paste	Home – Clipboard – Paste	
Configuration Changes	RebarCAD – Configure – Configuration Centre	
Redraw Bar to show config change	RebarCAD – Modify – Redraw Bar	
Change the bar style profile/centre	RebarCAD – Modify – Change Bar Style	
Explode a group of linked Ranges	RebarCAD – Modify – Explode OSL Group	

5. Annotation

5.1. Labels

Bar Labels annotate the bar mark, giving information on the number, type, size, shape code and centres of the bar to be placed. **RebarCAD** can be configured to display this information in a variety of formats to suit the detailers' requirements. The bar mark number can be placed inside any shape required such as a circle or a hexagon, this can them be offset into different positions. A dimensioned sketch of the shape can be added to bar label.

Label an Existing Bar

RebarCAD – Annotate – Label an Existing Bar

You can place the Bar Label on the drawing for a bar set that has not been labelled.

The Multiple Option within the command will allow multiple bars to be labelled at a time. You are prompted whether you would like to add a leader to link the bar label with the bar\range.

NOTE: If a bar set is already labelled a message to this effect is given and the command will be cancelled. Only one bar label is allowed per bar set.

Add New Label

RebarCAD – Annotate – Add New Label

You can create a new set of bars (and hence a new line in the Schedule) by simply placing a bar label on the drawing without any other associated views. This is useful when creating a table of reinforcement. The New Label can either be created as a New Bar Number or as a New Set of an Existing Bar Mark.

Multiline Bar Labels

You can now configure multiline Bar Labels depending on your requirements. **RebarCAD** has supported multiline extra notes for a long time but this facility has now been extended to include all Bar Label properties.

Try It: Custom Bar Label – Multiline Bar Labels

In this example you are going to place the Notes and the Centres on the second line of the bar label using the standard notation available in the bar label format dialogs.

16. Launch **RebarCAD**

17. Start a new Drawing

18. Load an A2 drawing sheet and set the scale at 1:20 you can use **CADS VPM** Create Layout and Create Viewport

19. Switch to Model Space, the viewport boundary is the only thing present.

20. **RebarCAD – Configuration – Configuration Centre**

21. Select **Label Configuration**

22. Select **Bent Label Format**
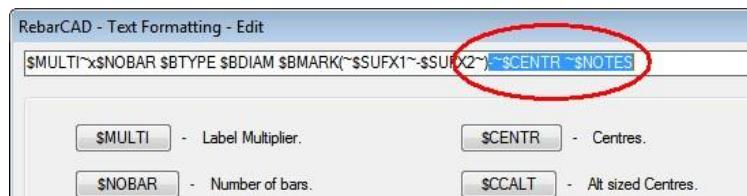
23. Delete the text highlighted in blue "-~CENTR ~$NOTES"

24. Click OK

25. Select **Global/General Configuration**

26. Set the top field to Label, scroll to the bottom of the list
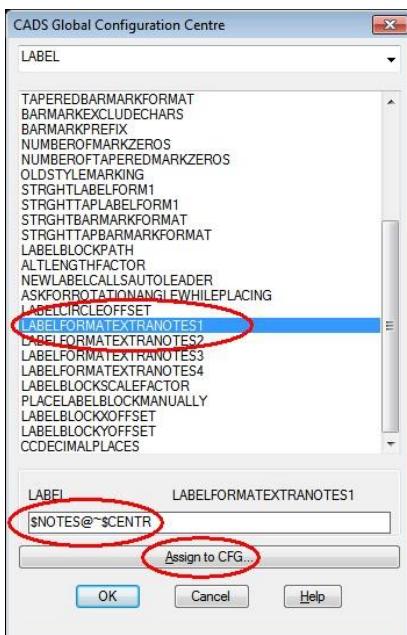
27. Highlight LabelFormatExtraNotes1 in the middle field

28. Type in $NOTES@~$CENTR in the lower field

29. Click Assign to CFG and click OK
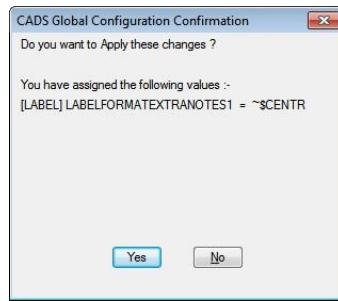
30. Answer Yes

31. Click on **Close** to return to the drawing 17.

1. **RebarCAD – Detail – Draw Bar New Mark**
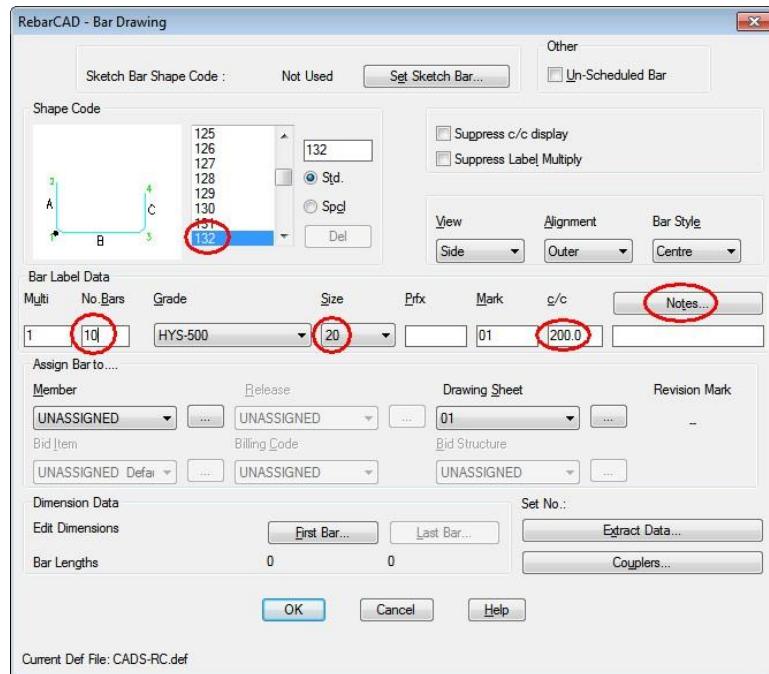
2. Choose shape code 132, No of Bars = 10, Size = 20, centres = 200 and then click on Notes
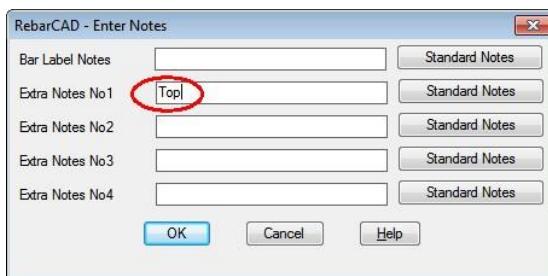
3. Type in Top and pick OK twice to return to the drawing

4. Draw shape code 132 on the drawing and add the bar label

10 HYS-500 20 01
Top@200
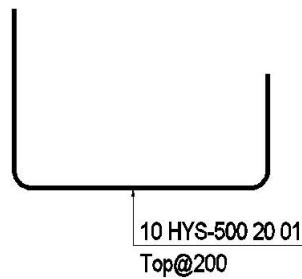
This completes the Multiline Bar Label Try It.

5.2. Tick & Tag

RebarCAD – Annotate – Tick & Tag

Ticks and Tags are used to annotate the start and end of the shape code with a tick at the end of the bar and tag. The tag can be configured to show the bar mark, the length of the bar etc.
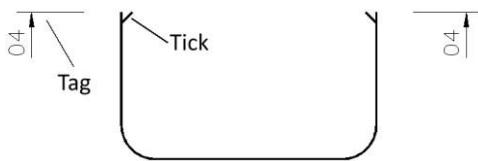
5.3. Add Bar Reference

RebarCAD – Annotate – Add Bar Reference

The **Add Bar Reference** command is used to position bar mark call offs on the drawing. For instance they can be used to indicate the bar marks of bars in section. The reference can either be added individually or as a selection.

05   05   05   05   05

Bar Reference
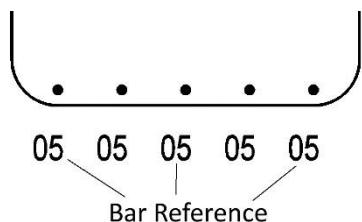
5.4. Mask Text

RebarCAD – Annotate – Mask Text

The masking option can be used on a congested drawing to mask out any entities behind the bar label. The Text Mask can be applied to individual bar labels or to the drawing as a whole. Use the same command to detach the bar label masks.
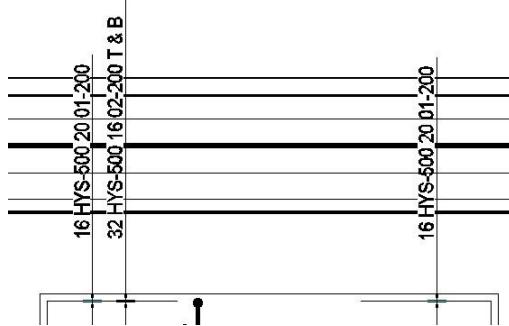
5.5. Annotation Configuration

RebarCAD offers extensive tools to configure the Bar Labels, Bar Refs and Ticks and Tags to your requirements. The Configuration options are available from the **RebarCAD** ribbon by selecting Configuration, then Configuration Centre and then Label Configuration. This is not intended to be an exhaustive guide to label configuration but it will give you some information and show you points that may be of use to you.

Custom Bar Labels - Dimensioned Shape Diagram

A new label configuration option is included to display dimensioned shape diagram in Bar Labels. Dimensioned shape diagram increases drawing readability at site. It also displays considerable information in the limited drawing space.

RebarCAD has a sub-folder called LabelSketches that is located in the **C:\Program Files\CADS\AutoCAD XXXX\CADS RC India XXXX.X\CADS-RC\DWGSketches** folder. This folder contains AutoCAD blocks illustrating all the standard shape blocks supplied with **RebarCAD**. You may add additional shape diagrams for Special Bars.

You can configure the dimensioned shape sketches through **Configuration Centre>Global/General Configuration->Label** as you would configure a normal block included in a bar label.
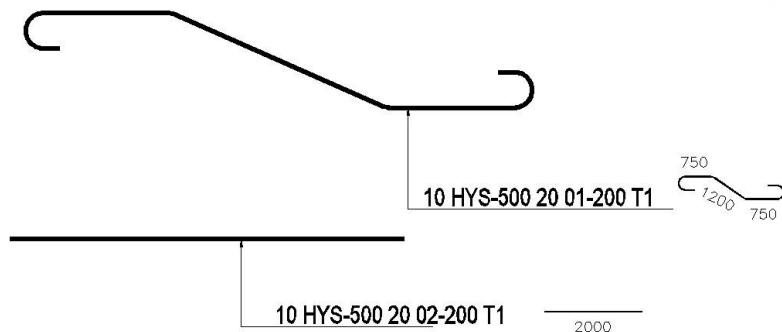
For detailed information on customisation please refer to the **RebarCAD** Customisation Guide

Try It: Custom Bar Label – Dimensioned Shape Diagram

In this example you are going to configure **RebarCAD** to add a dimensioned shape code diagram to the end of the bar label for both bent and straight bars.

5.   Launch **RebarCAD**

6.   Start a new Drawing

7.   Load an A2 drawing sheet and set the scale at 1:20 you can use **CADS VPM** Create Layout and Create Viewport

8.   Switch to Model Space

9.   **RebarCAD – Configuration – Configuration Centre**

10. Select **Label Configuration**

11. Select **Bent Label Format**
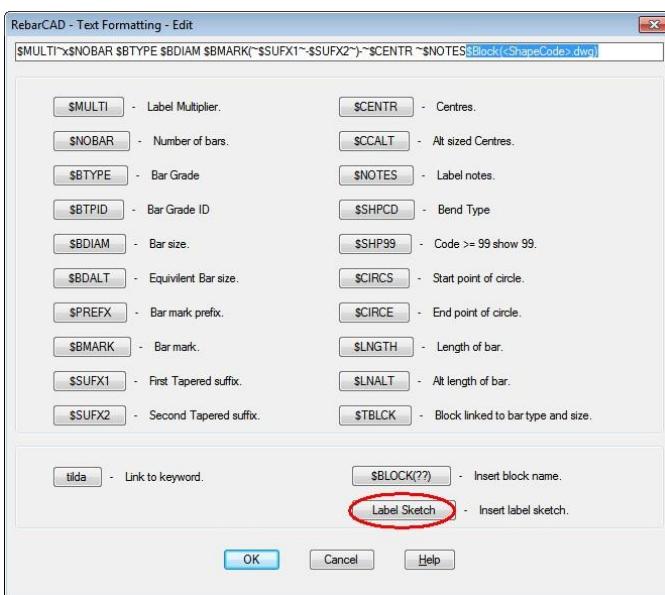
12. Click on the option '**Label Sketch**' at the bottom of the dialog, this will add additional text to the end of the bar label string. The additional text will make **RebarCAD** add a dimensioned shape code diagram at the end of the bar label. The Label Sketch also sets additional configuration to set the path to the label sketches

13. Click OK and select Straight Label Format

14. Click on the option '**Label Sketch**'

15. Click OK three times to return to the drawing

1. **RebarCAD – Detail – Draw Bar New Mark**
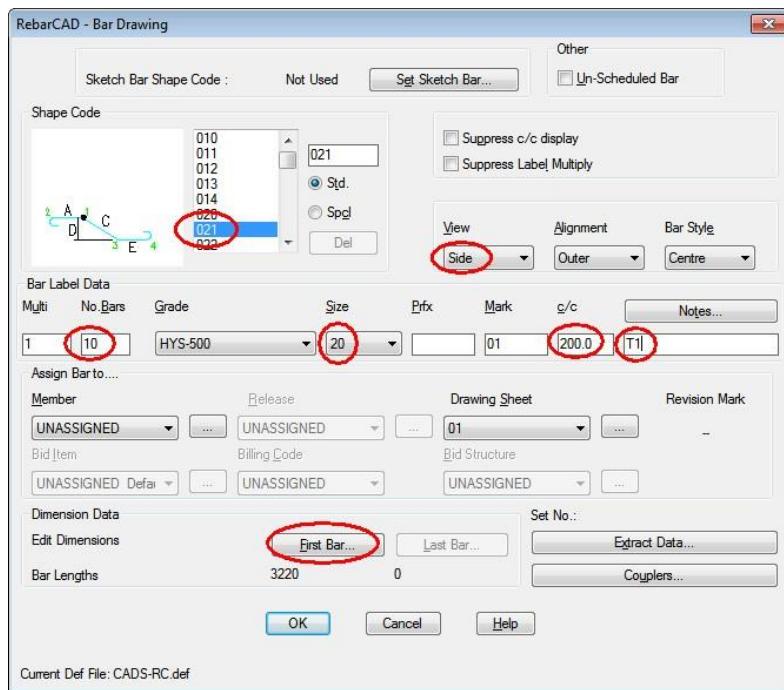
2. Choose shape code 021, View = Side, No of Bars = 10, Bar Size = 20, Centres = 200, Notes = T1
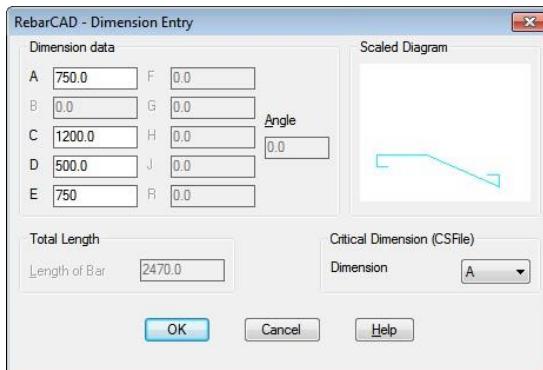
3. Click First Bar and set A = 750, C = 1200. D = 500 & E = 750

4. Click OK twice to return to the drawing

5. Draw the bar on the screen and add the bar label

10 HYS-500 20 01-200 T1
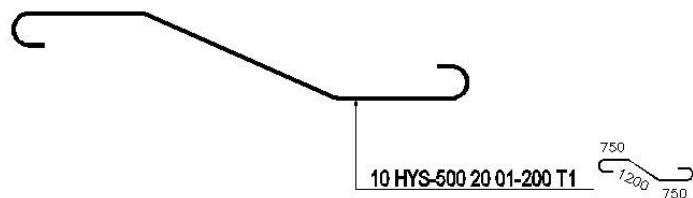
1.   **RebarCAD – Detail – Draw Bar New Mark** 🔳
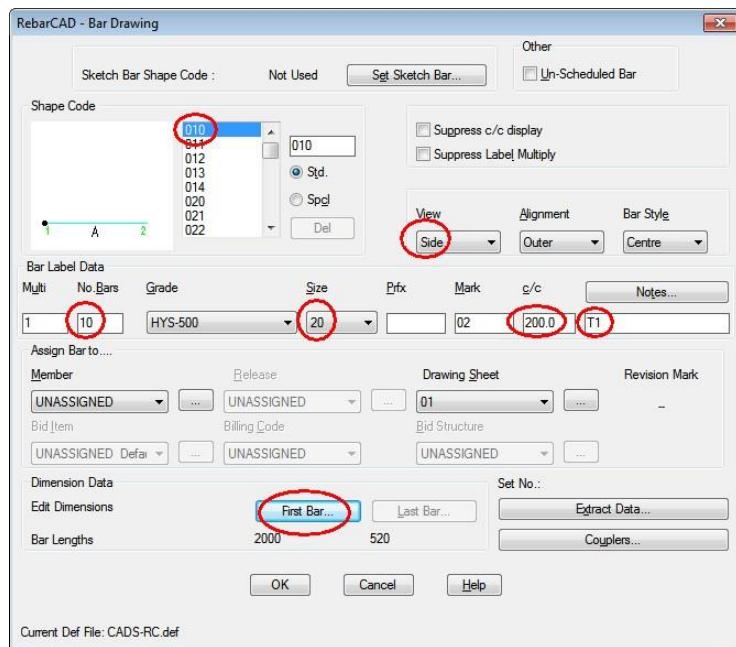
2.   Choose shape code 010, View = Side, No of Bars = 10, Bar Size = 20, Centres = 200, Notes = T1

3.   Click First Bar and set A = 2000

4.   Click OK twice to return to the drawing

5.   Draw the bar on the screen and add the bar label

10 HYS-500 20 02-200 T1   2000
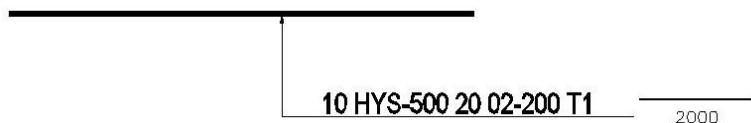
This completes the Bar Label – Dimensioned Shape Diagram Try It

Custom Bar Labels - Blocks in Bar Labels

You can attach blocks into bar labels. This feature has been designed to allow you to add enhancements to your bar labels, for instance you can place the bar mark number (using an AutoCAD attribute) inside a circle or polygon and control the position of the block within the bar label.

RebarCAD will identify different bar properties depending upon the attribute defined within the block, below are a list of the Bar Properties and their corresponding attributes

Bar Mark = BM

Shape Code = SC

Length of Bar = LB

Bar Diameter = BD

Bar Grade = BG

Range Centres - CC

RebarCAD installs two bar mark blocks, standard circular and hexagonal called **BarmarkCir.DWG** and **BarmarkHex.DWG** respectively. They both have the attribute BM defined inside the block

Try It: Custom Bar Label – Blocks in Bar Labels

In this example you are going to add on the predefined Bar Mark Blocks into the bar label and set its X & Y offsets to position correctly within the bar label.

6.   Launch **RebarCAD**

7.   Start a new Drawing

8.   Load an A2 drawing sheet and set the scale at 1:20 you can use **CADS VPM** Create Layout and Create Viewport

9.   Switch to Model Space

10. **RebarCAD – Configuration – Configuration Centre**

11. Select **Label Configuration**

12. Select **Bent Label** Format

13. Click on the button $Block(??)

14. Browse to the **RebarCAD** Getting Started folder and select the

15. "**Custom_BarmarkCir.dwg**" file, click Open
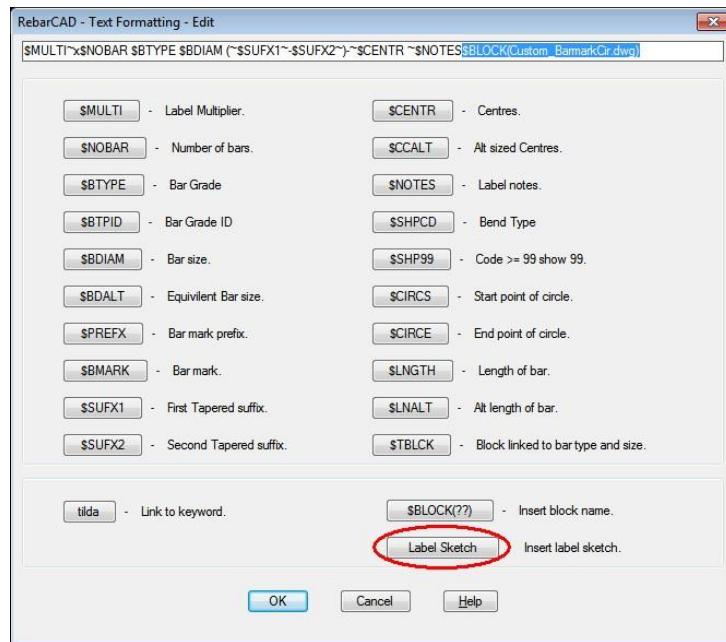
16. Click OK

17. Select Global/General Configuration

18. Set the top field to Label, scroll to the bottom of the list

19. Highlight "LabelBlockXOffset" in the middle field

20. Type in 2 in the lower field and then click the button "**Assign to CFG**"
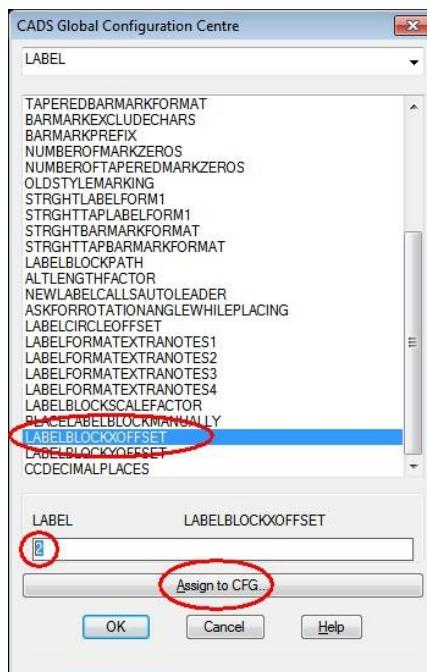
21. Highlight "**LabelBlockYOffset**" in the middle field

22. Type in 2 in the lower field and then click the button "**Assign to CFG**"
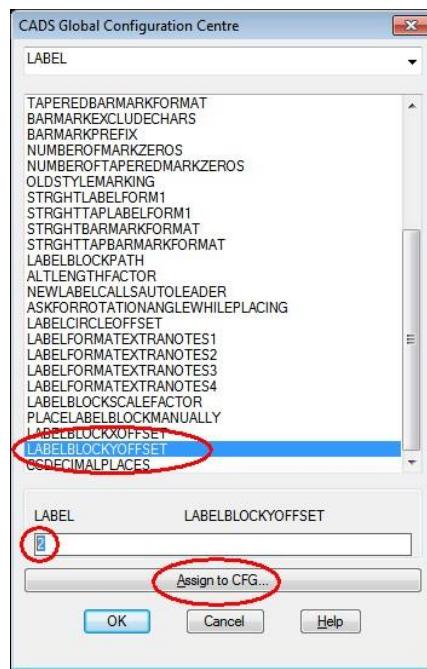
23. Click OK
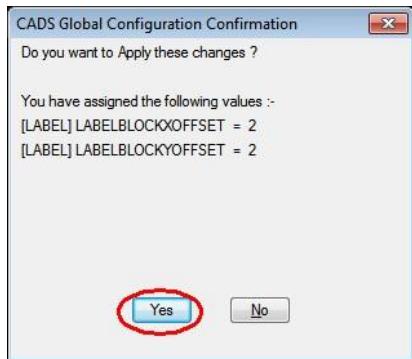
24.   Answer Yes

25.   Click **Close**

1.   **RebarCAD – Detail – Draw Bar New Mark**
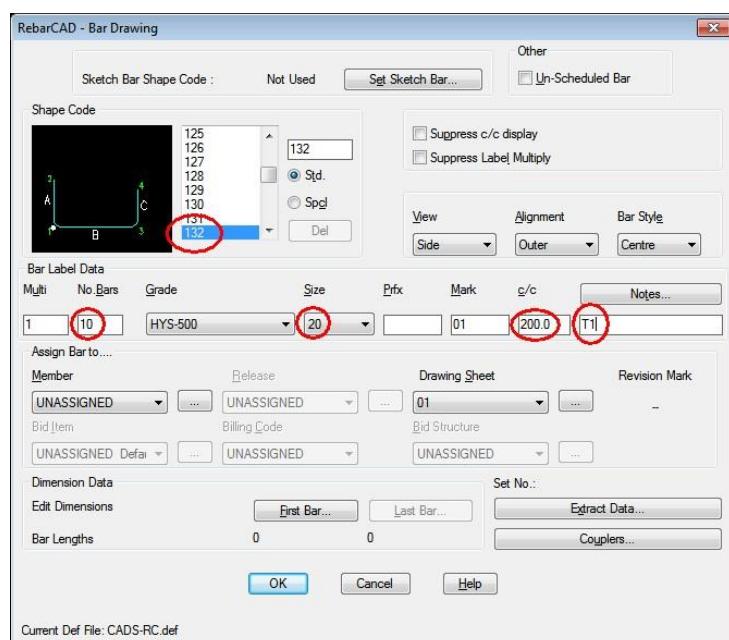
2.   Choose shape code = 132 View = Side, No of Bars = 10, Bar Size = 20, Centres = 200, Notes = T1

3.   Click Ok

4.   Place the bar and the label on the drawing

10 HYS-500 20 -200 T1 ⓪1
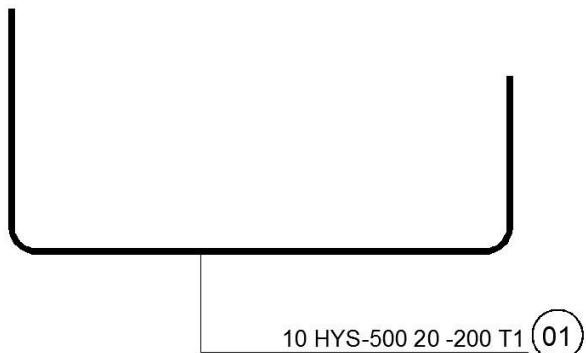
This completes the Custom Bar Label – Blocks in Bar Labels Try It

5.6. Key Points

▶ Use the **New Label** command to add another Bar Label to a Range Line, to indicate top and bottom steel for instance.

▶ Use **New Label** to populate a tabulated table.

▶ All **RebarCAD** labels can be formatted to your individual or company requirements ▶ Use **Label an Existing Bar** to add missing Bar Labels to previously drawn Bar Sets.

▶ **Ticks and Tags** can be used to indicate the start and end of bars.

▶ Use **Bar References** to indicate the Bar Marks or the bar lengths of bars in section.

▶ Use **Mask Text** to prevent Bar Labels becoming obscured in congested drawings.

5.7. Commands

Action	Menu	Toolbar
Add a Bar Label to an Existing Bar	**RebarCAD – Annotate – Label an Extg Bar**	
Add a New Bar Label as a Set / Mark	**RebarCAD – Annotate – Add New Label**	
Change RebarCAD Configuration	**RebarCAD – Configure – Configuration Centre**	
Add a New Bar Mark	**RebarCAD – Detail – Draw Bar New Mark**	
Add Markers to the end of the Bars	**RebarCAD – Annotate – Tick & Tag**	
Add Bar Mark Numbers to a Bar	**RebarCAD – Annotate – Bar Reference**	
Mask entities behind Bar Labels	**RebarCAD – Annotate – Mask Text**	
Configure Bar Labels	**RebarCAD – Configuration Centre– Label Config**	
Configure Global Settings	**RebarCAD – Configuration Centre – Global Config**	

6. Detailers

RebarCAD is shipped with detailing tools which will automatically draw the outlines and add the reinforcement to several different types of standard structural elements. These include Beams, Columns, Pad Footings, Pile Caps, Pad Bases, Stair Flights, and Octagonal Pad Bases. For the purposes of this Getting Started Guide we will explore the Stair Flight Detailer.

6.1. Stair Flight Detailer

RebarCAD – Generate – Stair Flight

Stair Flight Detailer provides an automated method of detailing the reinforcement arrangements for a single flight staircase. The details produced are fully compatible with **RebarCAD**, which means that they can be readily merged into an existing drawing and modified to suit the particular conditions.
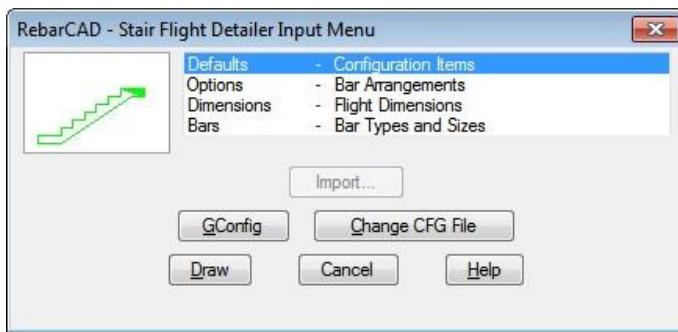
Defaults

This dialog sets the reinforcement type, lap lengths, general bar diameter and spacing.
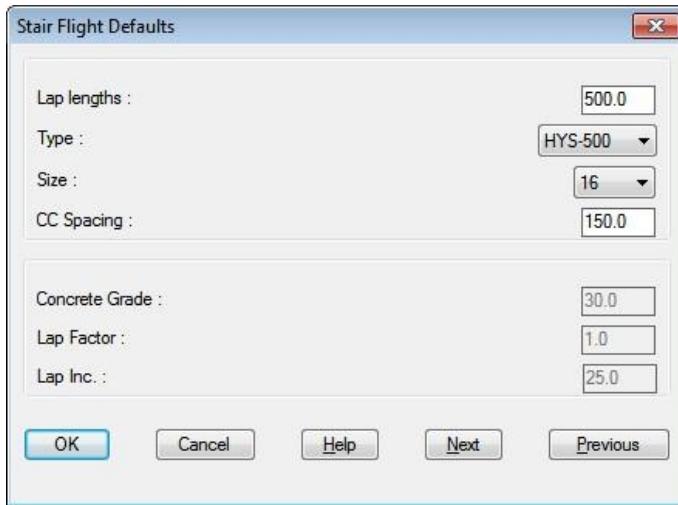
Options

This dialog is divided into three sections

<u>Orientation</u> – click the diagram to change the orientation of the stair

Drawings

Choose whether dimensions and / or reinforcement are drawn

Reinforcement Arrangements & End Conditions – the remaining four options are used to indicate where the main bars are to be placed and the end conditions for the landing outline.
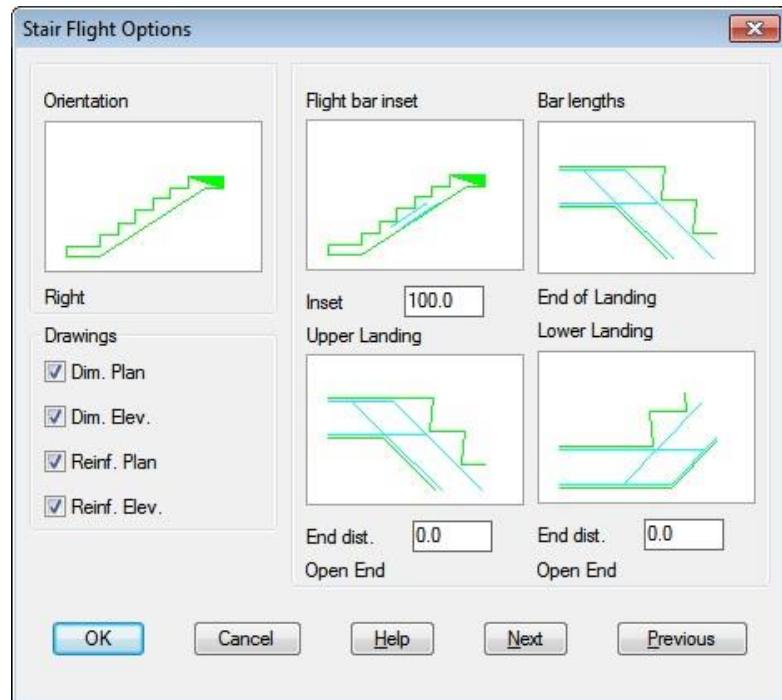
Dimensions

Use this dialog to set the geometry of the Stair Flight, the input fields are displayed with a letter corresponding to a dimension on the accompanying diagram. The overall dimensions are to the finishes but if you wish to specify to the structural concrete them make the finishes (F1, F2, A1 and A2) zero.
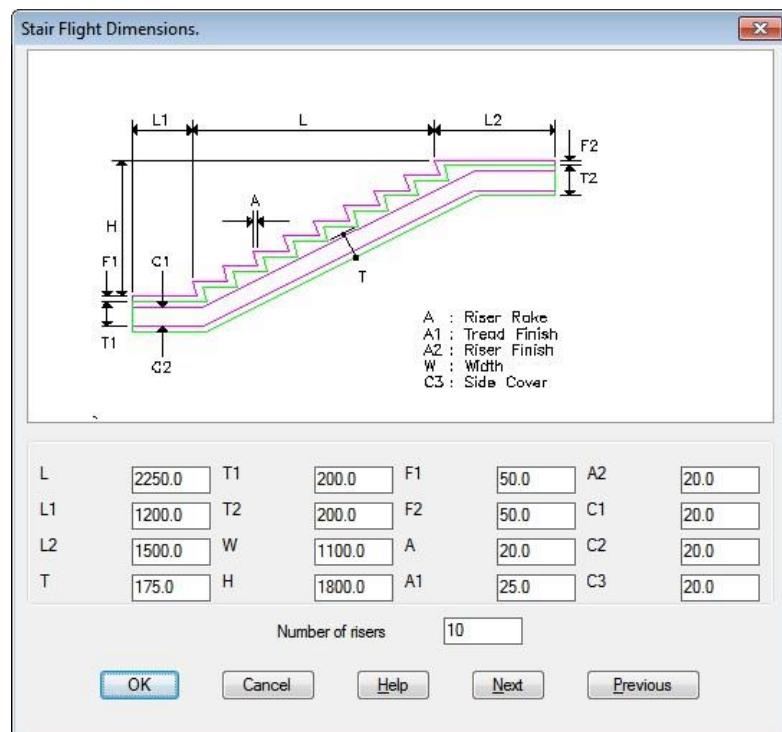
Defining Bar Arrangements

Use this dialog to define the properties of each of the bar sets in terms of the number, type, size and centres. The swap diagram button will toggle the display to show either the longitudinal or transverse bars.
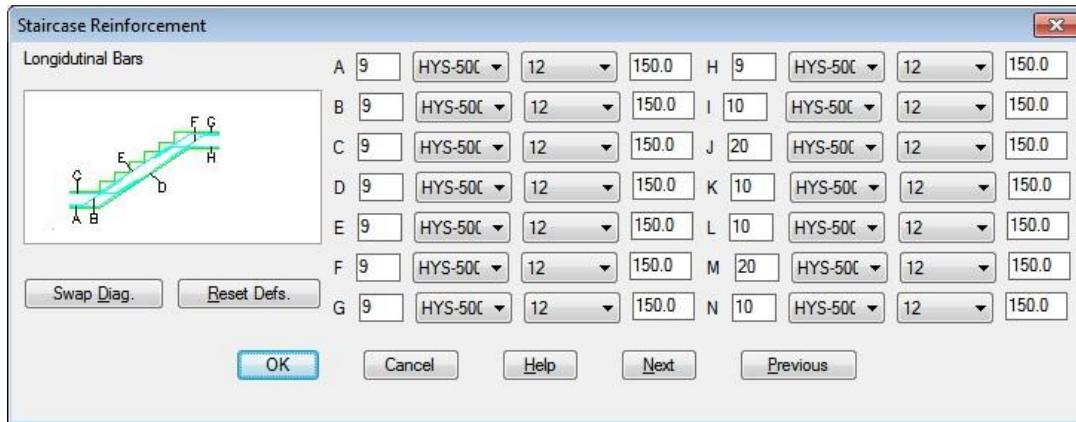
Draw

After completing the input in the above dialogs select the **Draw** button to place the Stair Flight on your drawing. You will be prompted to indicate whether you want the labels to be placed on the Plan View, Both Elevation and Plan or Neither (i.e. not labelled). If you choose 'Both', the longitudinal bars are labelled in the elevation and the transverse bars in plan. Finally you are asked whether the plan labels should appear above or below the plan. This is of most use when you are detailing both flights of a half landing stair.

The elevation is drawn first and can be moved to an appropriate position on the drawing. The plan is then drawn and can also be moved into position.

Try It: Stair Flight Detailer

5. Launch **RebarCAD**

6. Start a new Drawing

7. Load an A1 drawing sheet and set the scale at 1:20, you can use **CADS VPM** Create Layout and Create Viewport

8. Switch to Model Space

9. **RebarCAD – Generate – Stair Flight Detailer**
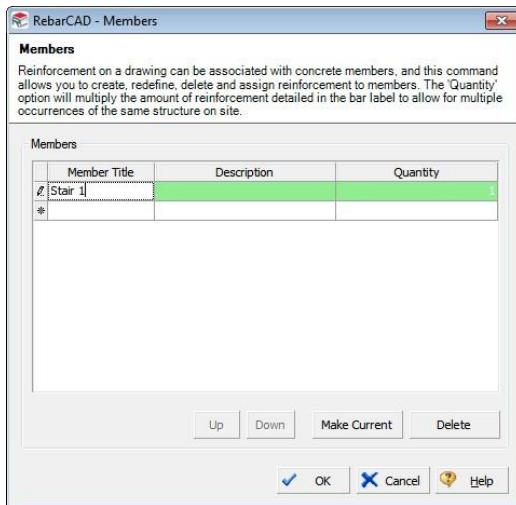
10. Type in Stair 1 for the Member title and click **Make Current**

11. Browse through the various dialogs, change some of the bar diameters and centres. In this example do not change the dimensions.

12. Click Ok to return to the front menu
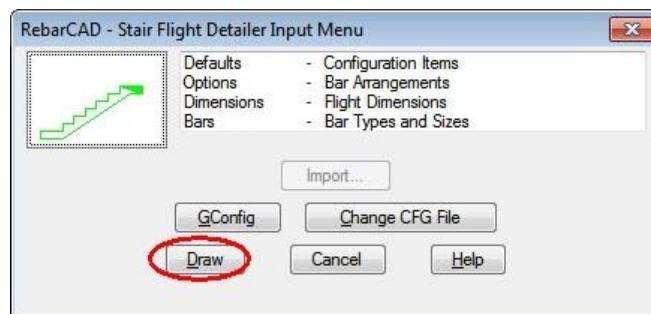
13. Click on **Draw** and then answer the questions on the screen and the AutoCAD command line as follows;
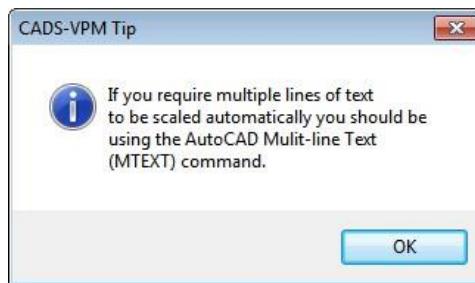
14. Click OK

15. Select the No option and Never Rescale and never ask again

16. Label Plan only, Both, Neither <Both>: Type P for Plan and press enter

17. Place plan view labels Above or Below plan <Below>: Type B for below and press enter

18. Select outline insertion point : Pick a point near the top of the viewport 15. Select outline insertion point : Pick a point below the section
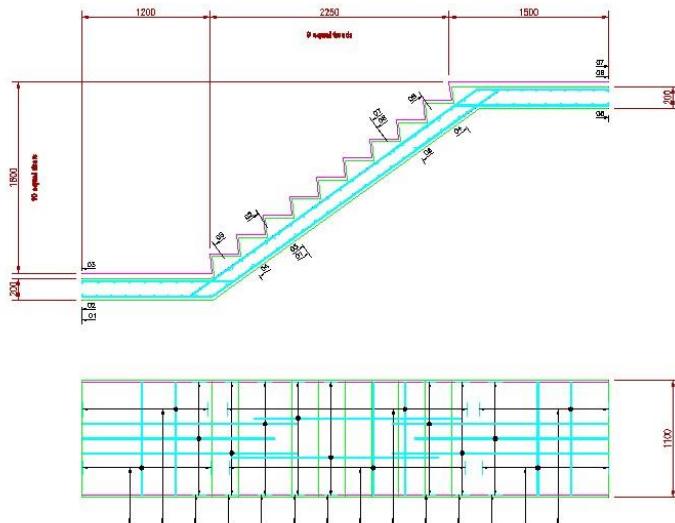
You may find that the bar labels are being drawn too small, you can use the CADS Viewport Manager function, Refresh Detail to redraw the elements in the viewport.

19. RebarCAD – Viewport Manager – Refresh Detail

20. Refresh scale region [Single/All] <All> :   Type S for Single and press enter This command will refresh all the entities with the specified scale region.

21. Select Scale Region to Refresh: Pick the red boundary of the viewport in model space.
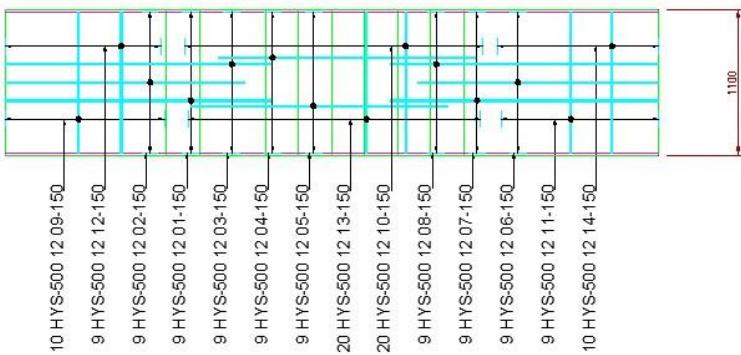
Open the schedule and review the bar data, you may find several identical bars with different bar mark numbers. You can run the **Match Bar** and **Compact Bar** commands to get rid of the duplicate bar marks and make sure that the bar numbering is sequential.

1. **RebarCAD – Schedule – View Schedule**

2. Close the Schedule

3. **RebarCAD – Check – Match Bars**

4. Suppress questions and accept defaults <No> : Type Y and press enter The command matches bar marks 05, 10, 11, 12, 13 & 14

5. **RebarCAD – Check – Compact** Bars

6. Answer Yes to compacting the gaps where bar marks have been deleted.

Open the schedule and review the bar marks, they have reduced in number and are now sequential 25

1. **RebarCAD – Schedule – View Schedule**

2. Close the Schedule

This completes the Stair Flight Detailer Try It.

6.2. Area Detailer

RebarCAD – Generate – Area Detailer

The **Area Detailer** provides an automated method of detailing irregular polyline outlines with polyline openings with the single indicator ranges, Over Stock Length Ranges and varying bars as either individual bars or as part of tapered range. Restrictions apply to the complexity of the outline. In some cases you would be advised to break the outline down into simpler shapes.

Try It: Area Detailer

In this example you are going to use the Area Detailer command to detail the majority of the reinforcement inside a closed polyline outline with openings.

1. Launch **RebarCAD**

2. Open **drawing ...\drawings\Area Detailer.dwg**

3. Switch to Model Space

4. **RebarCAD – Generate – Area Detailer**

5. Type in Slab 1 for the member title and click OK
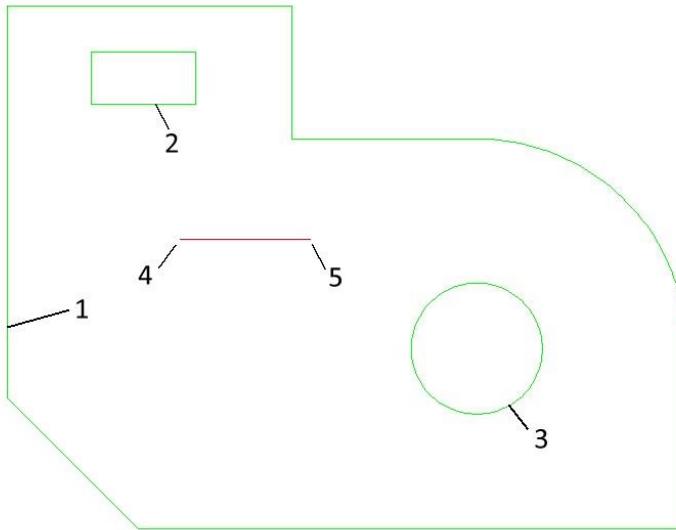
6.   Select the outer boundary.

7.   Select a Pline object: Pick the outline as indicated by point 1 7. Do you want to select any holes (Yes/No)<Yes>: Type Y and press enter

8.   Select the openings.

9.   Pick points/Region/<Select polyline>: Press enter

10. Select objects: Pick the openings indicated by points 2 and 3

11. Pick start point to indicate direction of ranges: Pick start as indicated by point 4

12. Pick end point to indicate direction of ranges: Pick end as indicated by point 5
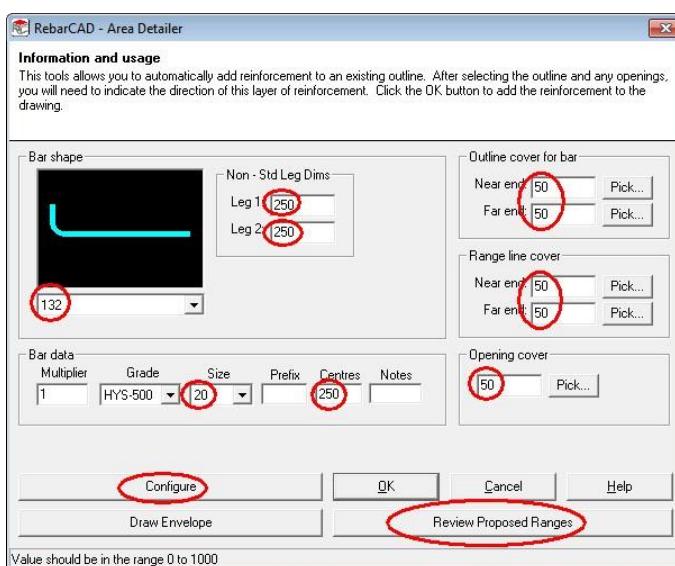
13. Choose shape code 132, type in 250 for both legs 1 & 2, set all the covers to 50 and then click on Configure
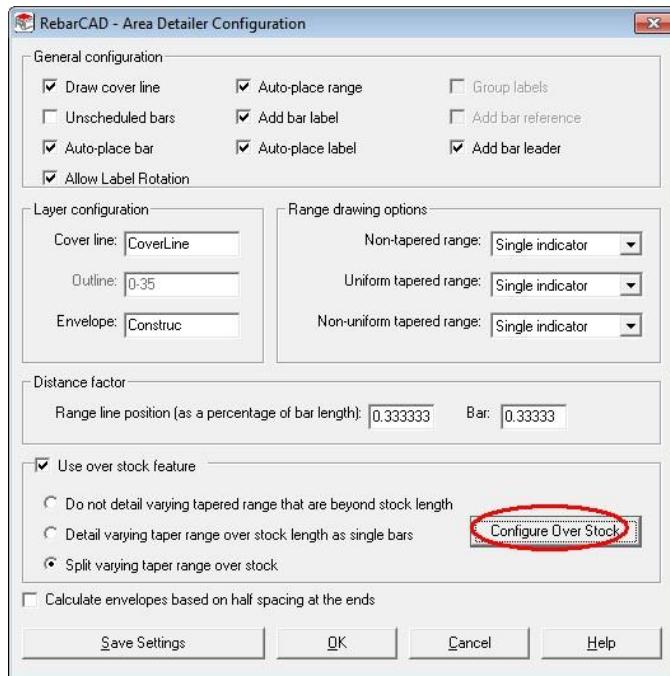
14. Ensure that all of the options are selected as shown in the dialog above. Then click on **Configure Over Stock**
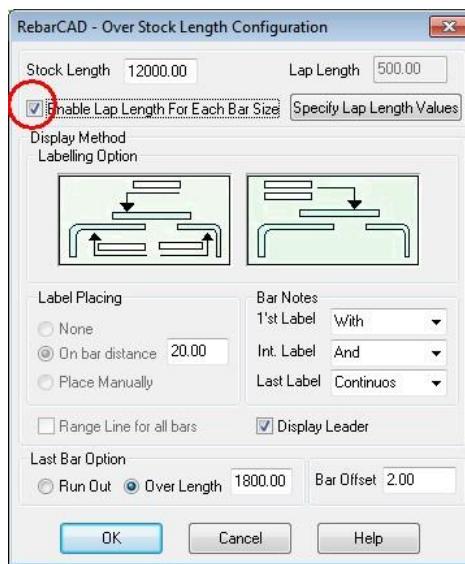
15. Tick**Enable Lap Length** for each Bar Size and click OK twice

16. Click on the **Review Proposed Ranges** button

    In the Review proposed ranges dialog you can step through each of the range envelopes and change the properties of the bar being drawn. The dimensions, grade, size, covers and centres can be amended. Use the forwards and backwards buttons to step through the range envelopes.
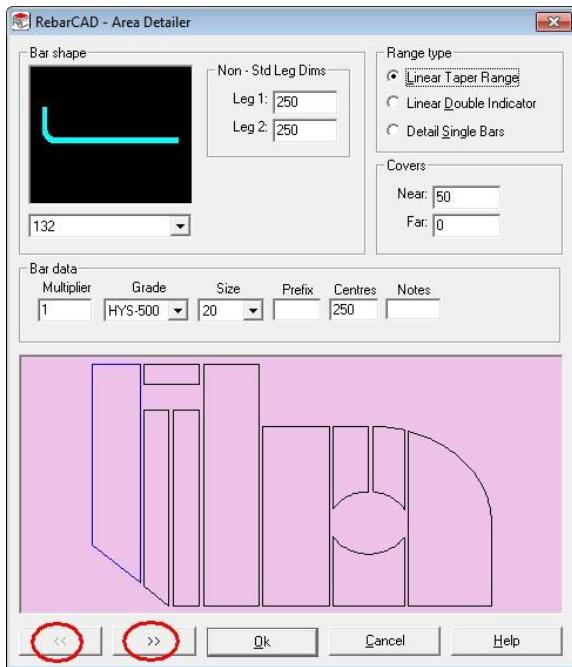
17. Click OK to return to the main dialog and then Ok to start the command
    detailing the outline Drawing Coverlines....

    Calculating Envelopes.... Detailing Envelopes....
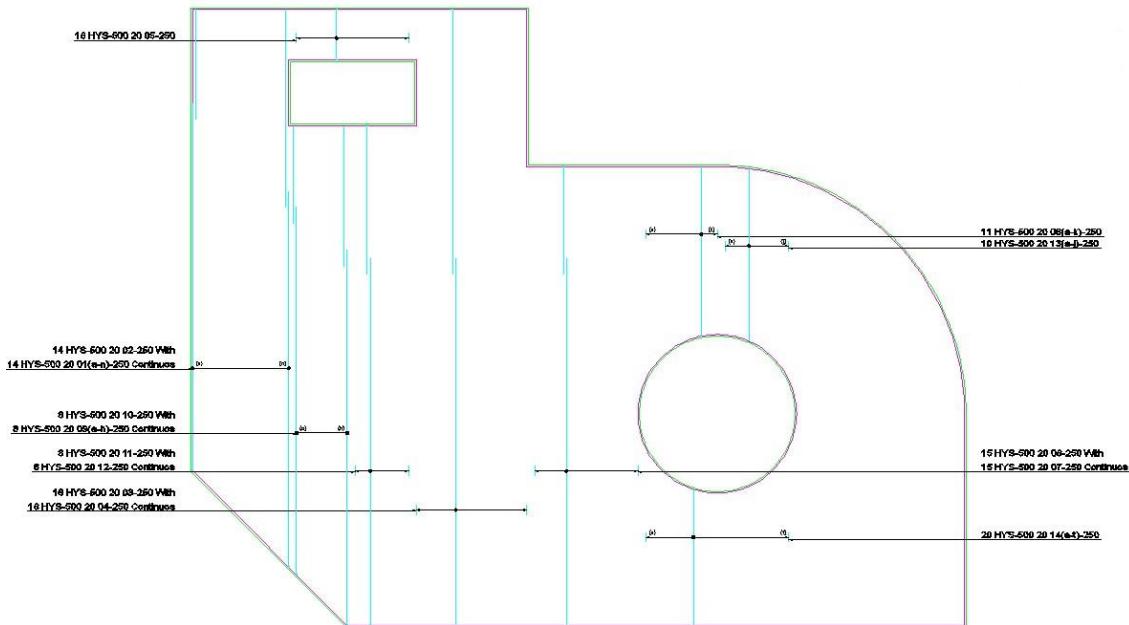
In order to finish the detail you would need to add the perpendicular reinforcement using the **Area Detailer** command. Then use the Trim openings command to add trimming reinforcement to the openings. Use the standard **Draw Bar** and **Draw Range** commands to add the remaining trimming steel.

This completes the Area Detailer

6.3. Split Range

RebarCAD – Modify – Split Range

Use the Split range command to introduce openings into an existing Range line.

Try It: Split Range

In this example you are going to use the Area Detailer command to detail the majority of the reinforcement inside a closed polyline outline with openings.

1. Launch **RebarCAD**

2. Open **drawing ...\drawings\Split Range.dwg**
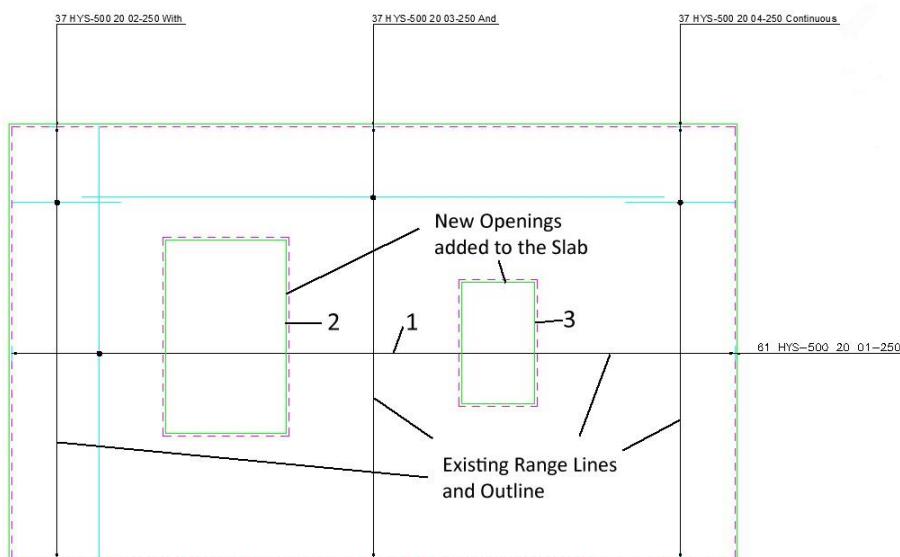
3. Switch to Model Space, zoom in on the slab

4. **RebarCAD – Modify – Split Range**

5. Select Range Line: Pick the range line indicated by point 1

6. Select the opening(s):

7. Pick points/Region/<Select polyline>: Press enter

8. Select objects: Pick the openings indicated by points 2 & 3

9. Select objects : Press enter to continue
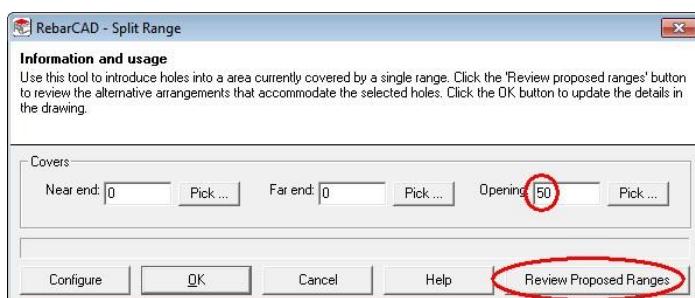
10. Type in 50 in the Opening Cover and click on Review Proposed Ranges

In the Review proposed ranges dialog you can step through each of the range envelopes and change the properties of the bar being drawn. The dimensions, grade, size, covers and centres can be amended. Use the forwards and backwards buttons to step through the range envelopes.
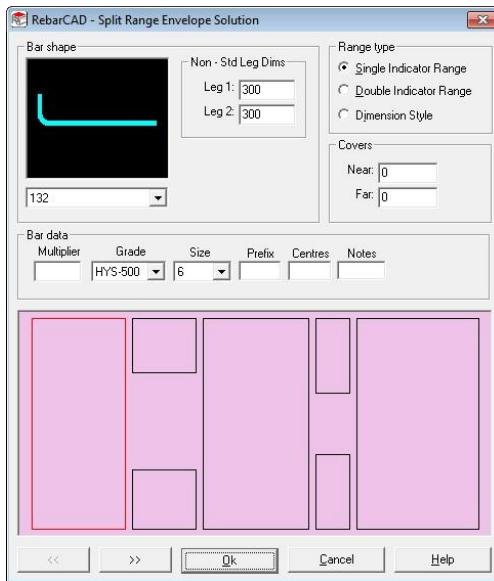
11. Click Ok twice to return to the drawing
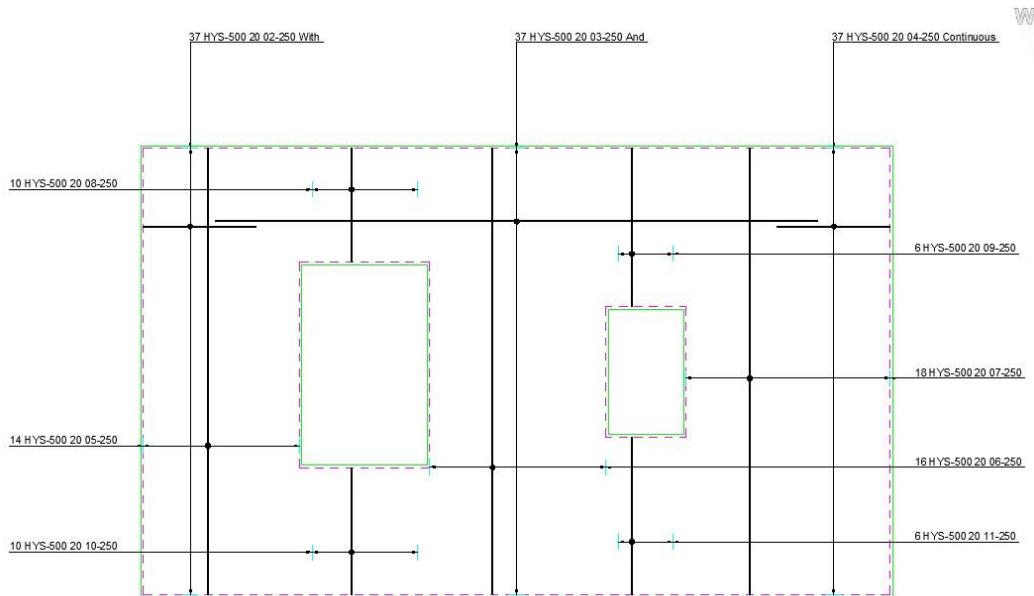
The **split range** command deletes the original range and draws in new ranges around the selected openings.

You are now going to add openings into the middle range of a set of **OSL** Bars. As you cannot split OSL bars they will need to be exploded first using the **Explode OSL Group** command.

1. **RebarCAD – Modify – Explode OSL Group**

2. Pick Over Stock Length Bar to explode :   Pick   the   OSL   Bars   as indicated by point 4 in the diagram below

The Group has been exploded successfully
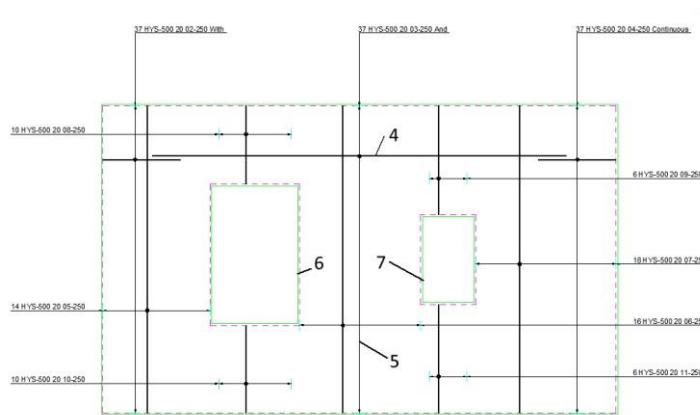
3. Select Range Line: Pick the range line indicated by point 5

4. Select the opening(s):

5. Pick points/Region/<Select polyline>: Press enter

6. Select objects: Pick the openings indicated by points 6 & 7

7. Select objects

8. Press enter to continue

9. Type in 50 in the Opening Cover

10. Click OK to return to the drawing

The **split range** command deletes the original range and draws in new ranges around the selected openings. Using the split range command increases the speed in which you can add openings to existing structures.

You may need to do some editing to tidy up the appearance of the drawing as some of the **RebarCAD** entities may be drawn close together.
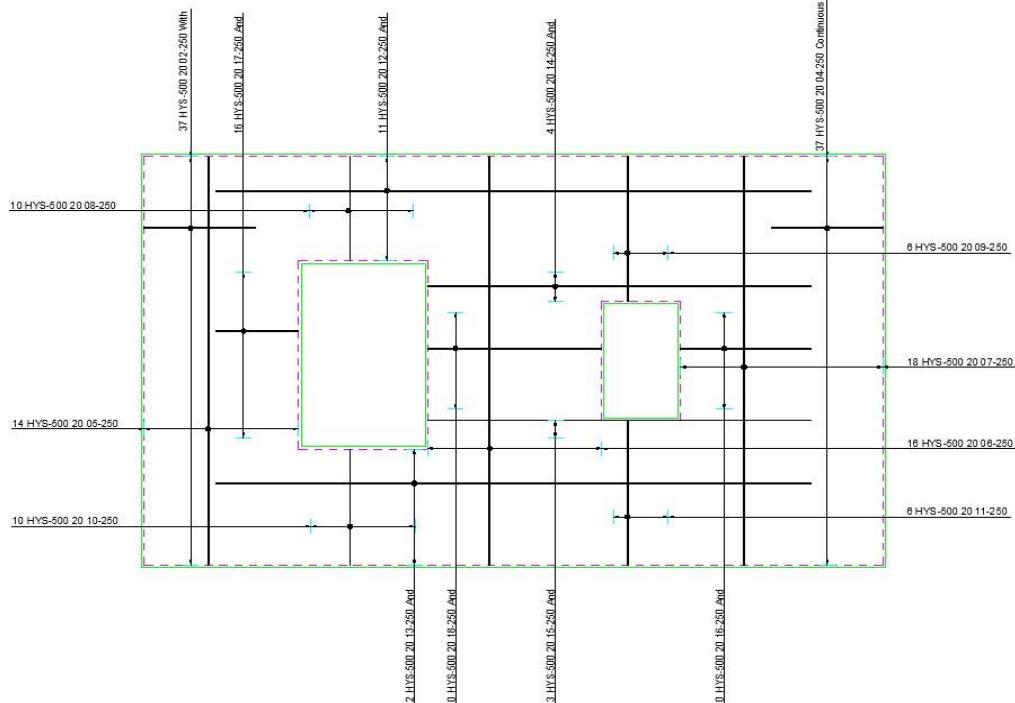
This completes the Split Range Try It.

6.4. Key Points

▶ **RebarCAD** is shipped with Tools to speed up your detailing by drawing the outlines and reinforcement for some standard structures

▶ Use the Tools in **RebarCAD** to edit, change and share Range Lines

▶ Detail Circular structures quickly and efficiently using the **Circular Bar** and **Radial Range Detailers**

▶ Add the main reinforcement with minimum effort to closed polyline Outlines using the Area Detailer

▶ Use the **Split Range** command to add openings to existing Ranges without having to delete them and redraw.

6.5. Commands

Action	Menu	Toolbar
Automatic Stair Flight Detailer	**RebarCAD – Generate – Stair Flight Detailer**	
Open the Schedule	**RebarCAD – Schedule – View Schedule**	
Match Like Bar Marks	**RebarCAD – Check – Match Bars**	
Compact Bar Mark Numbers	**RebarCAD – Check – Compact Bars**	
Automatic Polyline Outline Detailer	**RebarCAD – Generate – Area Detailer**	
Add Openings to Existing Ranges	**RebarCAD – Modify – Split Range**	
Explode a linked Range Group	**RebarCAD – Modify – Explode OSL Group**	

7. Checking Drawing & Optimising Bar Marks

7.1. Check Database

RebarCAD- Check – Check Database

The **Check database facility** checks every **RebarCAD** entity on the drawing to see if it is correctly linked to the bar list and if the bar list is correctly linked to it. It also checks the bar list indexes for validity. For the full information on this command please refer to the **RebarCAD** User Guide.

7.2. Drawing Audit

RebarCAD - Check – Drawing Audit

The Drawing Audit command checks the drawing for the following;

Incomplete Bar Sets

Bars which have incomplete bending data or bar sets where the number of bars is not yet specified will be highlighted and added to the AutoCAD selection set. (Bars are highlighted by a change of colour to magenta or by ghosting the entities).

Un-labeled Bar Sets

Bars Sets which have not had their label placed on the drawing will be highlighted and added to the AutoCAD selection set. (Bars are highlighted by a change of colour to magenta or by ghosting the entities)

Bars to be Purged from the Bar List

Bars which have had all their views erased will have their bar list entries Purged (erased from the bar list).

Un-assigned bar sets

Bars which are not assigned to any of the releases or members or drawing sheets or bid items will be identified and those bars can be highlighted based on the selection and added to the AutoCAD selection set.

Note: To manipulate the selection set and investigate which bars are incomplete and/or unlabelled you can type P for previous selection set when prompted to select objects with a command such as AutoCAD **Move.**

7.3.Match Bars

RebarCAD - **Check – Match Bars**

The **Match Bars** command searches the drawing for identical bars which have different bar marks and assigns the lower bar mark to the duplicate bar. The user is prompted to specify whether bars should be matched automatically or if each change should be verified.

If you use the **Match Bars** command in drawings the issued and un-issued bars, **RebarCAD** warning message will be prompted to confirm whether the issued bars need to be matched or not.

Try It: Match Bars

In this example you are going to use the **Match Bars** command to search through the bar marks and detail the majority of the reinforcement inside a closed polyline outline with openings.

1. Launch **RebarCAD**

2. Open **drawing ...\drawings\Match Bars.dwg**
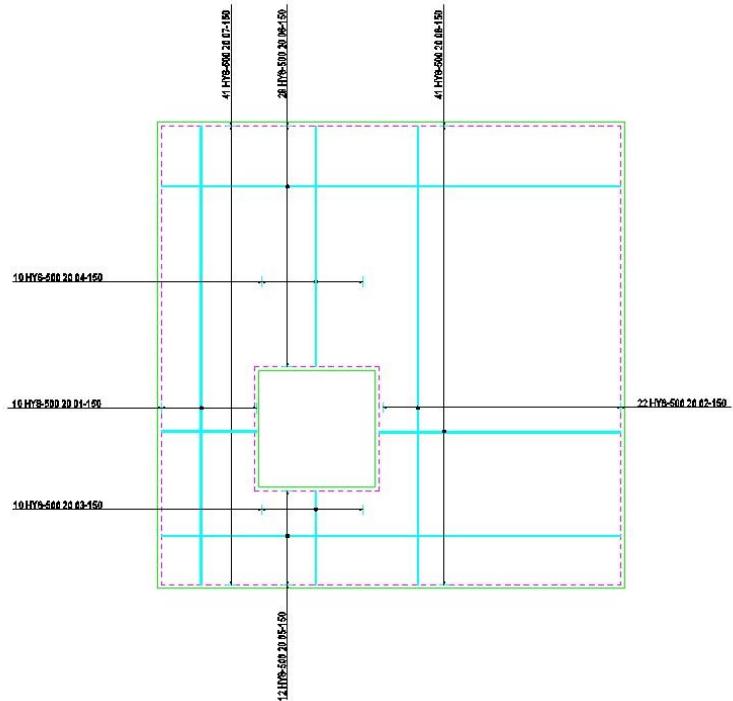
3. Switch to Model Space

4. **RebarCAD – Schedule – View Schedule**

Open the Schedule and review the reinforcement. Note that many of the bars have exactly the same properties but they have different bar mark numbers. If you run the Match Bars command, **RebarCAD** will assign the same bar mark number to bars with the same properties.

5. RebarCAD – Check – Match Bars

6. Suppress questions and accept defaults <No> : Press Enter Bar marks <01> and <05> are the same.

7. Do you wish to combine them to make one mark? <Yes> : Press Enter

8. Enter the mark that you want to keep from 01/05 <01> :   Press Enter Bar marks <01> and <06> are the same.

9. Do you wish to combine them to make one mark? <Yes> : Press Enter

10. Enter the mark that you want to keep from 01/06 <01> :   Press Enter Bar marks <01> and <02> are the same.

11. Do you wish to combine them to make one mark? <Yes> : Press Enter

12. Enter the mark that you want to keep from 01/02 <01> :   Press Enter Bar marks <03> and <07> are the same.

13. Do you wish to combine them to make one mark? <Yes> : Press Enter

14. Enter the mark that you want to keep from 03/07 <03> :   Press Enter Bar marks <04> and <08> are the same.

15. Do you wish to combine them to make one mark? <Yes> : Press Enter

16. Enter the mark that you want to keep from 04/08 <04> :   Press Enter 5 similar bar marks found and modified.

17. Now open the schedule and review how the bar mark numbers have been amended.

Note that the bar marks are not sequential, please refer to the Compact Bars command to make them.

7.4.Compact Bar Marks

RebarCAD - Check – Compact Bar Marks

The **compact bar marks** command identifies gaps in the bar mark number sequence and it will then reassign bar marks on the drawing so that all bar marks are sequential. This ensures that there are no missing bar marks on the drawing.

If you use compact bar marks in a drawing with issued and un-issued bars, the **RebarCAD** warning message will be prompted as shown below to confirm whether the issued bars need to be compacted or not.

Try It :Compact Bars

In this example you are going to use the **Area Detailer** command to detail the majority of the reinforcement inside a closed polyline outline with openings.

1. Launch **RebarCAD**

2. Open **drawing ...\drawings\Compact Bars.dwg**
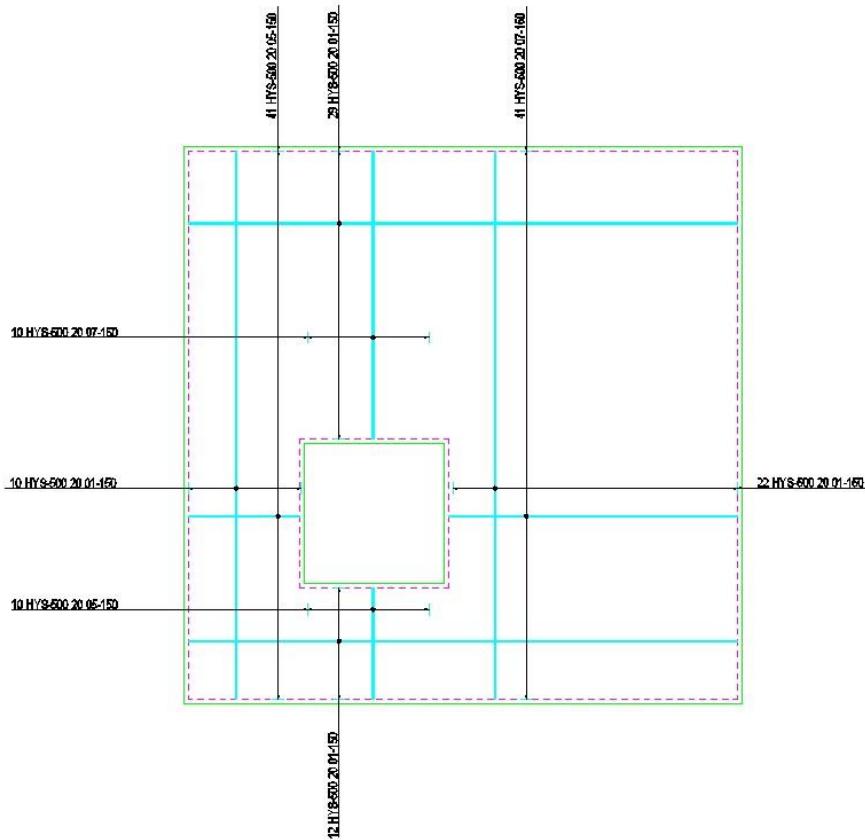
3. Switch to **Model Space**

4. **RebarCAD – Schedule – View Schedule**

Open the Schedule and review the reinforcement. Note that the bar mark numbers are not in numerical order; there are bar marks missing. If you run the **Compact Bars** command **RebarCAD** will renumber the bars into numerical order without any missing bar marks

5. **RebarCAD – Check – Compact Bars**

6. Answer Yes to Compact the gaps where bar marks have been deleted.

RebarCAD

? Compact gaps where barmarks have been deleted ?

[Yes]   [No]

7. Open the schedule and review the bar marks, they are now in order

		Member	Type	Bar Mark	Shape Code	Size	Total No. Bars	Bar Length	A
1		Slab 1	HYS-500	01	010	20	10	5900	5900
2			HYS-500	01	010	20	22	5900	5900
3			HYS-500	01	010	20	12	5900	5900
4			HYS-500	01	010	20	29	5900	5900
5			HYS-500	02	010	20	41	3100	3100
6			HYS-500	02	010	20	10	3100	3100
7			HYS-500	03	010	20	10	1200	1200
8			HYS-500	03	010	20	41	1200	1200
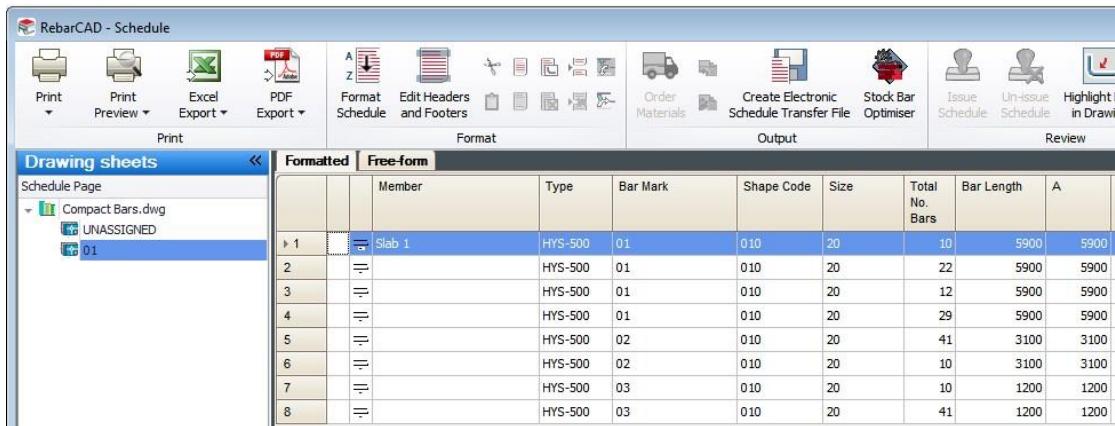
8. Please refer to the section on Formatting the schedule to combine similar bar marks in the schedule.

7.5. Key Points

▶ When you have finished detailing run the following commands:

- **Check Database**
- **Drawing Audit**
- **Match Bars**
- **Compact Bars**

▶ This ensures that all the **RebarCAD** entities on the drawing are correctly linked to the database and Schedule. Running **Match Bars** and **Compact Bars** ensures the most efficient use of Bar Marks on the drawing.

▶ Use Drawing Audit to tidy up the Schedule if bars are present that have been deleted from the drawing.

▶ Check Database will detect Bar Labels that have been manually edited and offer to redraw them.

▶ Use **Select Bars** to create AutoCAD selection sets of **RebarCAD** entities based on defined parameters such as Member, Release, Mark and the like.

7.6. Commands

Action	Menu	Toolbar
Check the RebarCAD Database	**RebarCAD – Check – Check Database**	
Check for missing Data & Labels	**RebarCAD – Check – Drawing Audit**	
Match like Bar Marks	**RebarCAD – Check – Match Bars**	
Compact Bar Mark Numbers	**RebarCAD – Check – Compact Bars**	

8. Schedule

8.1. Navigating around the Schedule

RebarCAD – Schedule – View Schedule 🗒

The schedule dialog and scheduling related functionality have been completely redesigned to offer improved usability, clarity and configurability. This section explains how to navigate around the new schedule dialog.

There are three main areas to the schedule dialog as highlighted below.

- The Explorer area: This area contains a tree view of the drawing sheets, members or releases.

- The Data area: This displays the bar bending data depending on the mode chosen in the navigation area. This area has two tabs, formatted and free-form. These tabs will be described later.

- The Mode area: This area contains five buttons that alter the navigation area, and therefore the data area, displays data pertaining to drawing sheets, members or releases. (Bid items and Bid Structures are for the USA version of **RebarCAD** only.)

- The Ribbon area: This area contains all the commands to format, issue and print the schedule. These commands will be explained later.
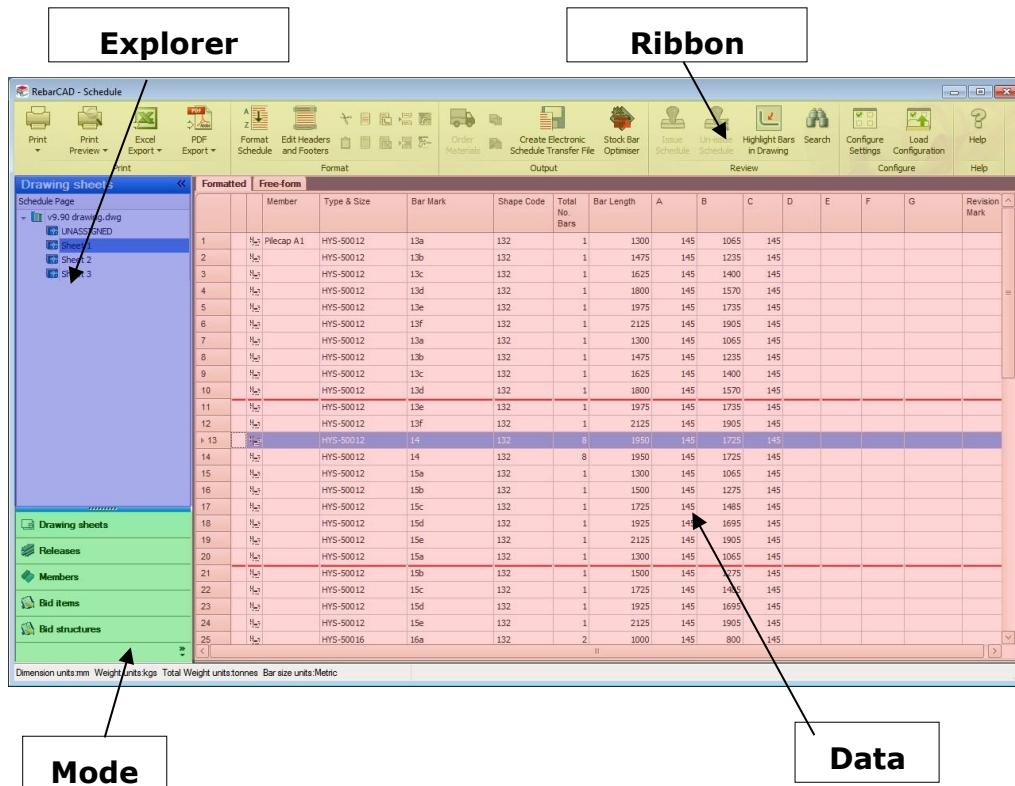
By default the Explorer area will show a list of all the currently created drawing sheets. Selecting a drawing sheet will filter the Data area to show only the bars that are assigned to that drawing sheet.
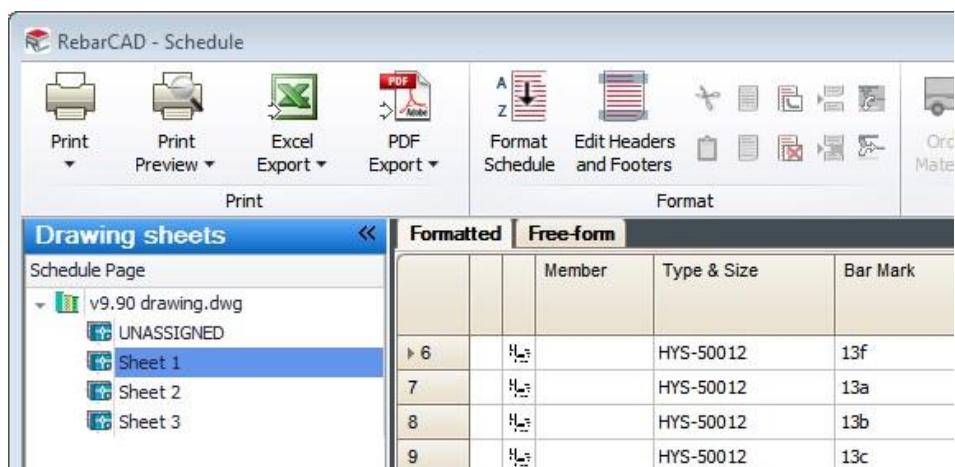
Selecting the Members button from the Mode Area, shown below, will toggle the Explorer area to show information about members. Selecting a member will filter the Data area to show only the bars belonging to the selected member.

Selecting the Release button from the Mode Area will toggle the Explorer area to show information about releases. Further information on releases can be found later in this guide.

8.2. Formatted versus Free-form

For each drawing sheet you can choose to view the bar bending data in the Data area in either a formatted or free-form style. You can toggle between these styles by selecting the corresponding tab above the Data area, as shown below.

The formatted view is only available for the drawing sheet mode

Reinforcement that has not been assigned to a drawing sheet is shown under the Unassigned drawing sheet and can only be viewed on the free-form tab.
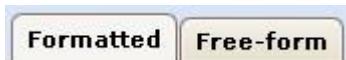
When the Mode area is set to Member or Release you will notice that the formatted tab is unavailable, this is because you can only view formatted data from the drawing sheet mode.

The formatted style will display the bar bending data as it will appear on the printed report. In the formatted mode you can sort, combine and segregate the bars bending data, as well as attach diagrams. You can manually insert text lines, page breaks and even move lines about to produce the required formatted schedule.

The free-form style will display the 'raw' unformatted bar bending data so you can produce reports beyond the constraints of any company or industry standard. You can filter, group and order the bar bending data as required. A full description of this feature can be found in the section titled **Free Form Reports**.

 Try it: Navigating around the schedule

1   Launch **RebarCAD**

2   Create three drawing sheets called "Sheet 1", "Sheet 2" & "Sheet 3"

3   Create three members called "Member 1", "Member 2" & "Member 3"

4   Draw numerous bars and assign them to the various drawing sheets and members

5   Click **View Schedule** 📄 command

6   By default the formatted view of the first drawing sheet ("Sheet 1") should be displayed

7   Select each drawing sheet in turn to filter the Data view to show only the bars belonging to that drawing sheet

8   Select the **Member** button from the Mode Area to change the mode of the Explorer area. The Explorer area should now show the list of members

9   Select each member in turn to filter the Data view to show only the bars belonging to that drawing sheet

10   Select the **Drawing Sheet** button from the Mode Area to change the mode of the Explorer area. The Navigation areas should now show the list of drawing sheets

11   Select the formatted tab to toggle the style of the Data area

8.3. Formatting the Schedule

Schedule – Format - Format Schedule 🔤

You can carry out three levels of sorting in the Schedule and segregate (group) the same based on the first sorting option. You can also specify how you wish to attach the diagram to the bar data lines. The entire schedule can also be combined as part of the formatting operation.
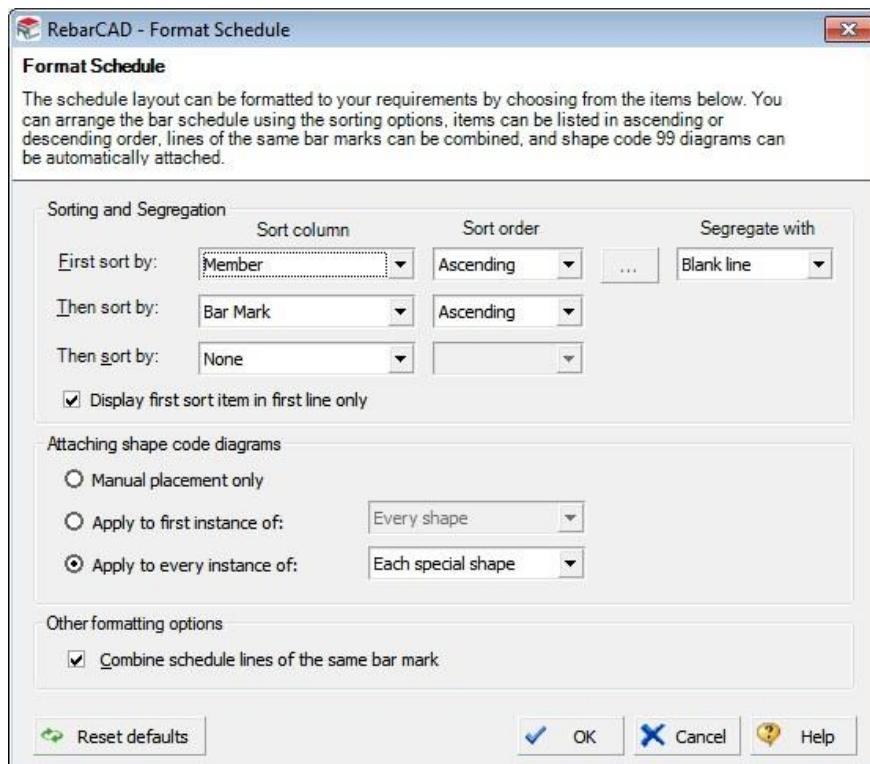
The **Reset defaults** button can be used to restore the default settings from the currently configured schedule configuration file.

If you wish to define the exact sequence of members within the schedule then you can set the sort order to "**Custom**. This enables the … **browse** button, which provides access to the following dialog:
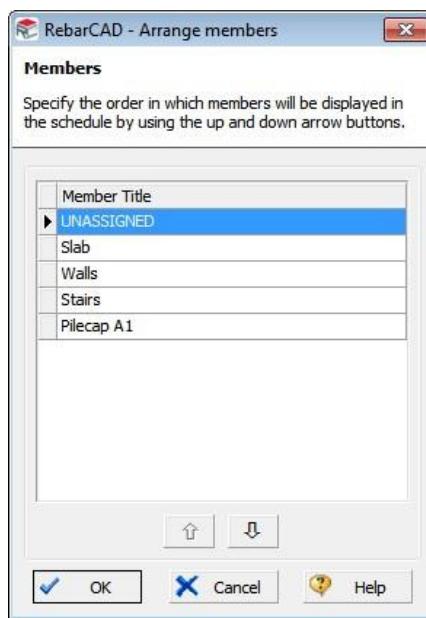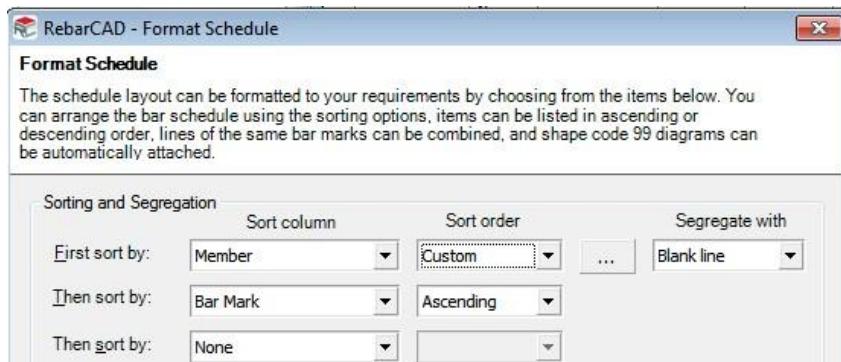
This dialog allows you to specify the exact order in which members should appear in the schedule. Use the Up and Down arrows to place the members in the order in which they should be displayed in the schedule. The order the member titles are displayed in the above dialog may not match the order in which they are displayed in the member title dialog.

Beyond this automatic formatting you are also free to manipulate the schedule manually using a range of commands.

Cut - stores the selected schedule lines ready for pasting.

Paste – inserts the previously cut schedule lines above the currently selected line.

Insert Lines – inserts a blank line, text can be added to this line.

Delete – deletes the selected blank line / text line.

Attach Diagram – adds a shape diagram to the selected schedule lines.

Detach Diagram – deletes the shape diagram from the selected lines.

New Page – inserts a page break at the selected schedule line.

Remove Page Break – removes the selected page break and repositions the schedule lines accordingly.

Uncombine Bars – uncombines any of the currently combined schedule lines.

Combine Bars – combines any of the currently selected schedule lines that share the same bar mark.

Or by directly selecting a line within the schedule and using a right mouse click to show available options.
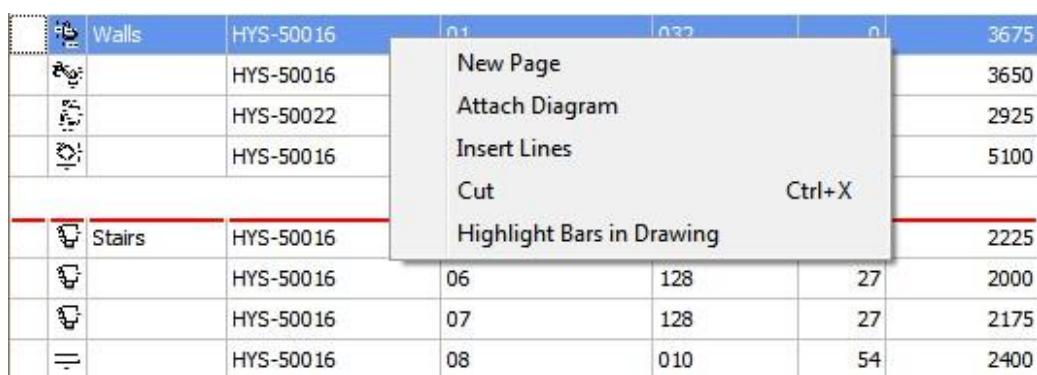
	Walls	HYS-50016	01	032	0	3675
		HYS-50016				3650
		HYS-50022				2925
		HYS-50016				5100
	Stairs	HYS-50016				2225
		HYS-50016	06	128	27	2000
		HYS-50016	07	128	27	2175
		HYS-50016	08	010	54	2400

Context menu shown: New Page, Attach Diagram, Insert Lines, Cut (Ctrl+X), Highlight Bars in Drawing

Highlight Bars in Drawing – highlights the bar sets of the selected schedule lines.

 A navigation tool is invoked when more than one set of bars are highlighted on the drawing.

By default the schedule will be automatically combined on events such as placing a schedule on drawing. You can configure the schedule to combine always, only

during specific actions, or wholly via the manual commands. More details on these configuration options can be found in the **RebarCAD** Customization & Configuration Guide

8.4. Free-form Reports

A custom report can be produced from the bar bending data using the free-form view. To access this open the schedule and select the free-form tab as shown below.
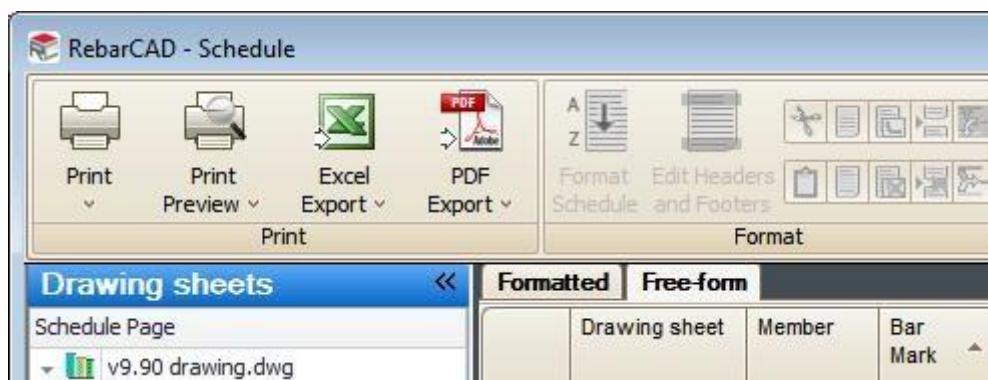
The bar bending data will initially be displayed in the order in which the bars were created. You can change the order of the bar bending data by selecting the required column header. The order can be changed from ascending to descending by repeatedly clicking on the column header.

	Drawing sheet	Member	Bar Mark ▲	Type	Bar Size	No. of Members	No. of Bars in Each
1	Sheet 1	Slab	01	HYS-500	16	1	25
▸ 2	Sheet 1	Walls	01	HYS-500	16	1	0
3	Sheet 1	Slab	02	HYS-500	16	1	15
4	Sheet 1	Walls	02	HYS-500	16	1	30
5	Sheet 1	Slab	03	HYS-500	22	1	12
6	Sheet 1	Walls	03	HYS-500	22	1	24
7	Sheet 1	Slab	04	HYS-500	16	1	22
8	Sheet 1	Walls	04	HYS-500	16	1	44
9	Sheet 1	Stairs	05	HYS-500	16	3	9
10	Sheet 1	Stairs	06	HYS-500	16	3	9
11	Sheet 1	Stairs	07	HYS-500	16	3	9

You can group bars with the same property by right clicking on the column header and selecting the **Group** By This **Column** option, as shown below. You can group

several columns if required. These can be ungrouped by selecting the **Ungroup** option.
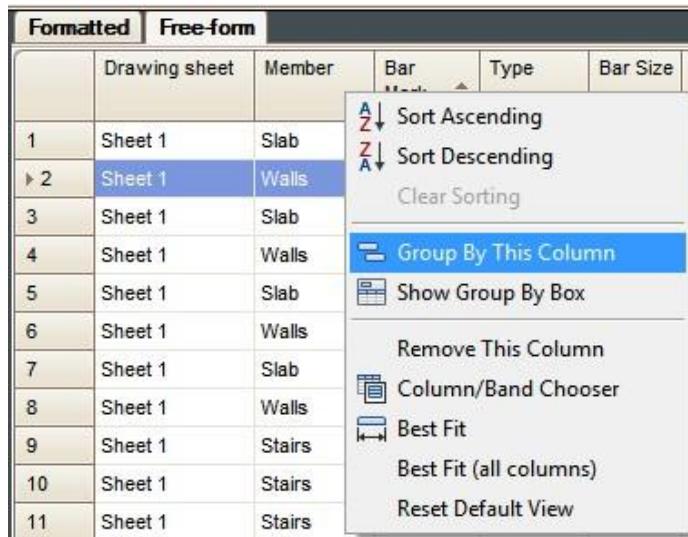
You can add/remove columns by right clicking on a column header and selecting the Column/Band Chooser option. This will display a list of available columns. These can be dragged to the column header area as required. You can also drag unwanted headers from the column header area into this dialog.

Once you have the required report you can select the **Print** or **Print Preview** command from the Print Panel of the Schedule ribbon.

The example report below shows a report of only the the type HYS-500, size 16 bars.

	Drawing sheet	Member	Bar Mark ▲	Type	Bar Size ▲	No. of Members	No. of Bars in Each	Total No. Bars	Bar Length	Total Bar Length
⊞ Bar Size: 12 'Total Weight : 0.092'										
▶ ⊟ Bar Size: 16 'Total Weight : 2.097'										
14	Sheet 1	Slab	01	HYS-500	16	1	25	25	3675	91875
15	Sheet 1	Walls	01	HYS-500	16	1	0	0	3675	0
16	Sheet 1	Slab	02	HYS-500	16	1	15	15	3650	54750
17	Sheet 1	Walls	02	HYS-500	16	1	30	30	3650	109500
18	Sheet 1	Slab	04	HYS-500	16	1	22	22	5100	112200
19	Sheet 1	Walls	04	HYS-500	16	1	44	44	5100	224400
20	Sheet 1	Stairs	05	HYS-500	16	3	9	27	2225	60075
21	Sheet 1	Stairs	06	HYS-500	16	3	9	27	2000	54000
22	Sheet 1	Stairs	07	HYS-500	16	3	9	27	2175	58725
23	Sheet 1	Stairs	08	HYS-500	16	3	18	54	2400	129600
24	Sheet 1	Stairs	09	HYS-500	16	3	9	27	2025	54675
25	Sheet 1	Stairs	10	HYS-500	16	3	9	27	2225	60075
26	Sheet 1	Stairs	11	HYS-500	16	3	9	27	2175	58725
27	Sheet 1	Stairs	12	HYS-500	16	3	77	231	1075	248325
28	Sheet 1	Pilecap A1	16a	HYS-500	16	1	4	4	1000	4000
29	Sheet 1	Pilecap A1	16b	HYS-500	16	1	4	4	1525	6100
⊞ Bar Size: 22 'Total Weight : 0.314'										

 Try it: Creating a free form report

1   Launch **RebarCAD**

2   Draw numerous bars of a variety of sizes and types

3   Click **View Schedule** 📄 command

4   As we have no drawing sheets, it will be in free-form mode

5   Right click on the **Type column** header and select **Group** by this Column

6   Right click on the **Bar Size column** header and select **Group** by this Column

7   Expand some of the groupings by selecting the ⊞ symbol

   8   Click Print Preview 🖨

8.5. Printing the Schedule

A schedule can be printed using the **Print** 🖨 and **Print Preview** 🖨 options from the Print Panel in the Schedule Ribbon. You will first need to ensure that the correct drawing sheet is selected from the Explorer area and that the schedule has been formatted as required.
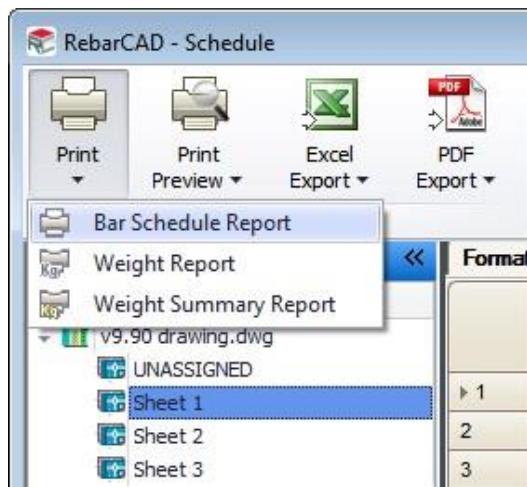
The **Print Preview** option offers some additional export options. To access these select either the "**Export/Save To**" options from the File menu or the following toolbar icons.
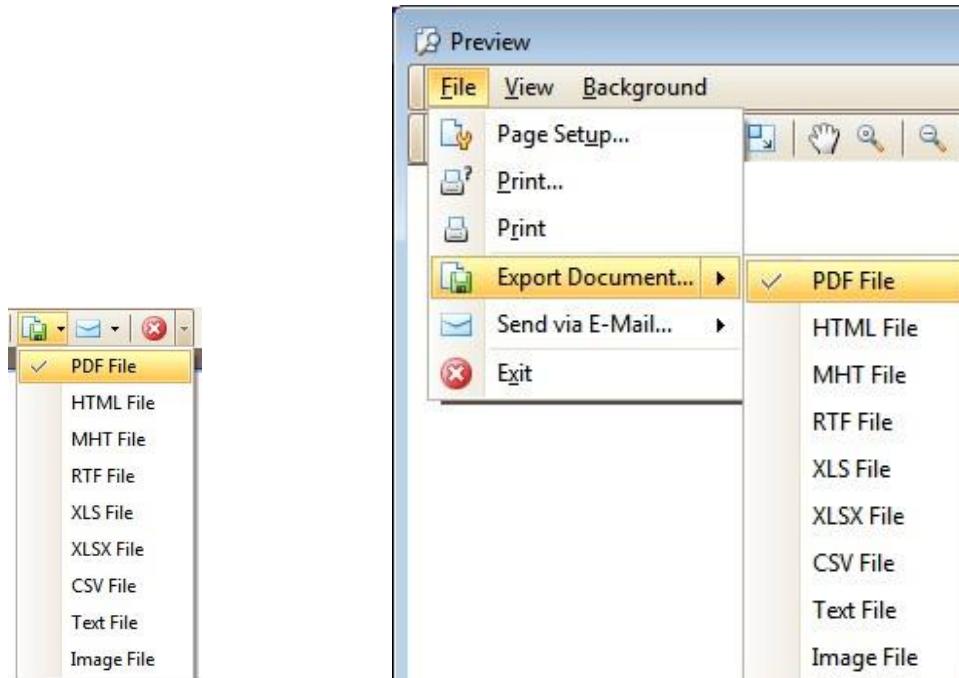
The style of the printed reports is controlled by the report templates which can be configured from the **Configure Settings** command in the Configure Panel of the Schedule Ribbon. A detailed description of how to customize your reports can be found in the **RebarCAD Customization & Configuration Guide.**

Alternatively you can place a schedule on the drawing. This can be done from AutoCAD by selecting the **Place Schedule** on **Drawing** command from the Schedule panel in the **RebarCAD** ribbon Tab. The command will ask you to select the required drawing sheet; tick the required sheets.
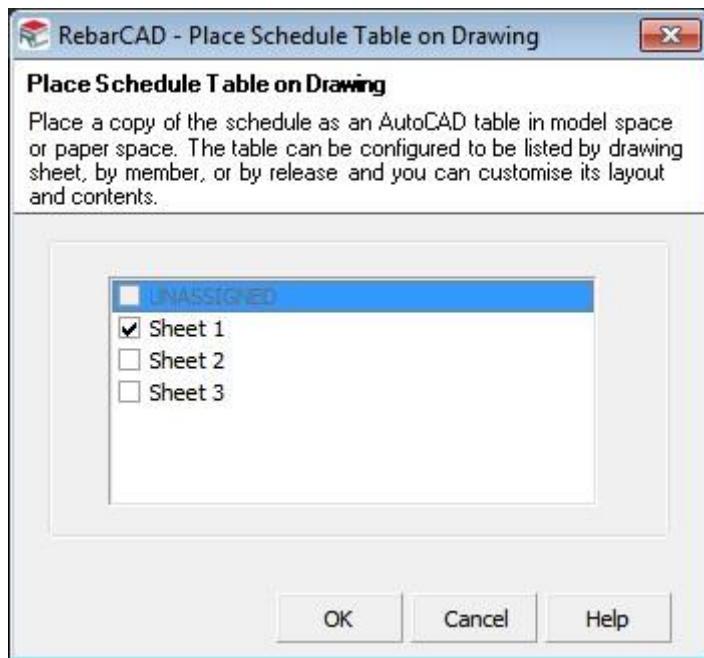
If changes are made to the reinforcement for a drawing sheet that has a schedule on the drawing an "**INVALID**" message will appear over the schedule on drawing, as shown below.

This is to signify that the schedule is now out-of-date. The schedule on drawing can be updated at any time by selecting the Refresh Schedule on **Drawing** command from the **RebarCAD** ribbon – Schedule Panel.

Try it: Printing a schedule

1   Launch **RebarCAD**

2   Create a drawing sheet using one of the methods described in the Drawing Sheet section above

3   Draw some bars on this new drawing sheet

4   Click **View Schedule** 📋 command

18.   Click **Print Preview** from the Print Panel

8.6. Placing the Schedule on drawing

RebarCAD – Schedule Place Schedule on **Drawing** 📇

Allows you to place Schedule on drawing by Drawing sheet, release or member based on the settings in the Schedule configure setting page. **Place Schedule on drawing** dialog allows you to do multiple selections while placing. You can specify if you want to place the shape table and weight table while placing Schedule on drawing. All the tables are placed according to the template selected in the configure setting dialog. You can also customise your templates.

The Schedule on drawing can be placed either as a fixed length or variable length.

Note: The no. of lines doesn't include the header and footer information.

If the variable length is selected, you can either enter the no of lines or pick points to define your Schedule height while placing the Schedule on drawing. The Schedule is shown in ghosted mode so that you are aware of the number of lines to be placed.

Any data edited or appended to the Schedule **RebarCAD** will mark the Schedule on drawing as invalid. Click on Refresh Schedule on drawing to update the changes.

Try it: Place and updating a schedule on drawing

1   Launch **RebarCAD**

2   Create a drawing sheet using one of the methods described in the Drawing Sheet section above

3   Draw some bars on this new drawing sheet

4   Click Place Schedule on **Drawing** 📇 command

5   Tick the drawing sheet and click Ok

6   Place the schedule on drawing

7   Edit the bar size of one of the bars

8   The schedule on drawing should now be shown as "**INVALID**"

9   Click Refresh Schedule on **Drawing** 📇 command

10 The schedule on drawing should now be up-to-date

8.7. Issuing & Revision

RebarCAD – Review – Issue Drawing Sheet

Once the drawing and schedule have been completed and checked it is normal to issue them together. However, if required the schedule can be issued on its own. Before issuing the schedule, formatting should be carried out and any diagrams and additional text added. The schedule header and footer should be checked and appended as required. Once the schedule has been issued it becomes locked and its layout cannot be altered. Before issuing any drawing it would be prudent to set-up a practice drawing and check the Schedule Configuration settings with regard your company standards.

To issue a drawing sheet together with the schedule, select the **Issue Drawing Sheet** command from the **RebarCAD - Review** menu.
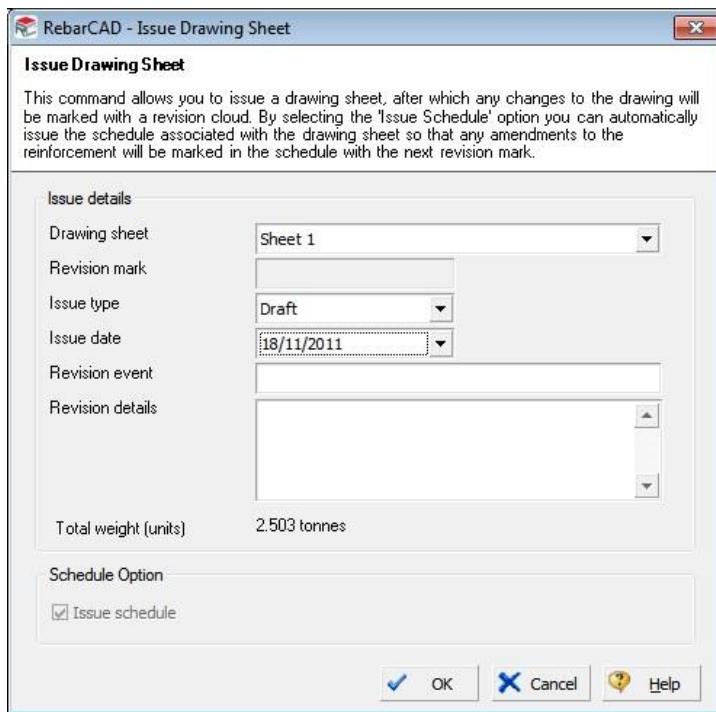
The initial issue of the schedule usually does not require a revision mark which is why it is shown blank in the dialog above. The revision mark SHOULD NOT be edited in the Revision Mark field, this dialog is confirming the revision mark related to this issue and not asking you to specify the revision mark to be used for subsequent revisions.

Following the issues a revision table will be automatically generated. If the title block does not contain this table then you will be asked to place the table manually.

If you now edit any of the bars within the issued drawing sheet then they will automatically be marked with a revision cloud and symbol, as shown below.
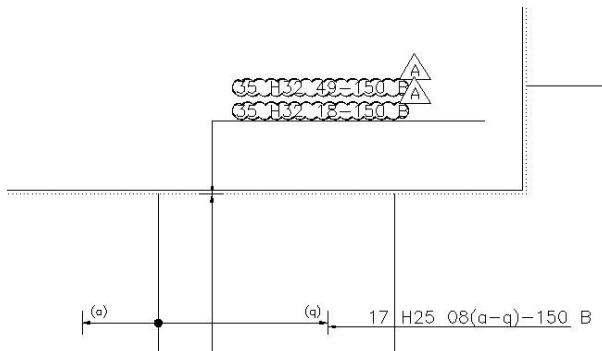
A **track changes layer** is also created automatically as part of the revision. This can be used to identify and control revision changes. The layer name is prefixed with the drawing sheet number and includes the corresponding revision letter. (e.g. Sheet1RevisionAChanges)

You could alternatively issue just the schedule independent of the drawing sheet using the **Issue Schedule** command from inside the schedule dialogue (Review Panel on the Schedule ribbon). To enable this option you will first need to un-tick the Always Issue Schedule with Drawing option within the Issue and Revision section of Schedule Configuration Settings, as shown below.
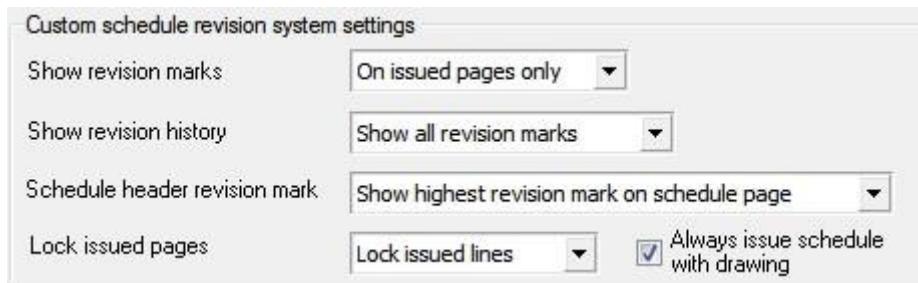
Once issued the schedule background colour will change as shown below.

		Member	Release Number	Bar Mark	Size	Total No. Bars	Bar Length	A	B	C
▸ 1	🖉	Slab	UNASSI...	01	16	25	3675	1225		
2	🖉		UNASSI...	02	16	15	3650	955		1575
3	🖉		UNASSI...	03	22	12	2925	1550	515	1065
4	🖉		UNASSI...	04	16	22	5100	1495		1195
5										
6	🖉	Walls	UNASSI...	01	16	0	3675	1225		
7	🖉		UNASSI...	02	16	30	3650	955		1575
8	🖉		UNASSI...	03	22	24	2925	1550	515	1065
9	🖉		UNASSI...	04	16	44	5100	1495		1195
10										
11	🖉	Stairs	UNASSI...	05	16	27	2225	980	585	1225
12	🖉		UNASSI...	06	16	27	2000	980	585	1020
13	🖉		UNASSI...	07	16	27	2175	735	440	1425
14	=		UNASSI...	08	16	54	2400	2400		
15	🖉		UNASSI...	09	16	27	2025	980	585	1030

Tabs: **Formatted** | **Free-form**

Try it: How to issue, revise and re-issue a drawing sheet together with the schedule

1 Launch **RebarCAD**

2 Create a drawing sheet

3 Draw some bars on this new drawing sheet

4 Click the Issue **Drawing Sheet** 📇 command

5 Accept all the defaults in the Issue **Drawing Sheet** dialog by pressing Ok. (Ensure Issue Schedule is ticked)

6 Click Ok in the **Issue Schedule** dialog.

7 If the drawing sheet was created in paper space then you should now be in the associated layout. Depending on which title block you inserted you will either see a revision table automatically appended to the title block or be asked to place one manually.

8 Click **View Schedule** 📄 command to see all issued bars highlighted in an alternative colour. You will notice that you cannot manipulate these lines.

9 Edit the size of one of the issued bars. Click Ok when the **RebarCAD** revision warning appears.

10 A revision cloud should now appear around the edited bar label

11 Click **View Schedule** 📄 command to see that a revision A letter has been applied to the edited bar

12 Using AutoCAD locate the AutoCAD layer that is suffixed with the drawing sheet name. (e.g. Sheet1RevisionAChanges) Toggle this layer on/off to show/hide the revision clouds and annotation

13 We have now completed our revisions so need to re-issue the drawing using the Issue **Drawing Sheet** 📇 command

14   Accept all the defaults in the Issue Drawing Sheet dialog by pressing Ok. Note that the Revision Mark field now shows A

15   Accept all the defaults in the Issue Schedule dialog by pressing Ok. Note that the Revision Mark field now shows A

16   The revision table will now have a Revision A entry

19.   Click the **View Schedule** 📄 command and then click Print Preview 🖨 Note the Revision letter A in the header and next to the bar

8.8. Key Points

▶ The Explorer area can be toggled to show drawing sheets, members or release by using **mode selector**

▶ You can only view a formatted view from the drawing sheet mode

▶ You can only view the data in free-form mode for the unassigned drawing sheet

▶ The data area is filtered depending on the selected drawing sheet, member or release

▶ The free-form style can be used to produce quick queries and reports

▶ Ensure you have the correct drawing sheet selected before doing a print

▶ The **preview** dialog includes some additional export options. (e.g. PDF, Excel)

▶ The schedule on drawing will display an "**INVALID**" message if subsequent edits are made to the bars being shown. The schedule can be refreshed by using the Refresh Schedule on **Drawing** 🖼 command.

▶ Ensure you have the correct drawing sheet selected before taking a print

▶ The preview dialog includes some additional **export** options. (e.g. PDF, Excel)

▶ The schedule on drawing will display an "**INVALID**" message if subsequent edits are made to the bars being shown. The schedule can be refreshed by using the **Refresh Schedule** on **Drawing** 🖼 command.

▶ Select the Free-form tab to switch to free-form mode

▶ Right click on the column headers to see available options

▶ You can issue a schedule with or without its associated drawing sheet

▶ You have to un-tick the "**Always Issue Schedule with Drawing**" configuration setting in order to issue the schedule independently of the drawing

▶ You can un-issue a drawing sheet or schedule by using the appropriate un-issue command. You can only do an un-issue if you have made no changes since the last issue

▶ You can delete a drawing's entire revision history by using the **RebarCAD->Review>Delete Revision History** 🖼 command

▶ Revision clouds, annotation and track change layers are generated automatically following the edit of a bar that belongs to an issued drawing sheet

8.9. Commands

Action	Menu	Toolbar
View schedule	RebarCAD - Schedule - View Schedule	
Format Schedule	Schedule – Format – Format Schedule	
Print Schedule	Schedule – Print – Print	
Preview Schedule	Schedule – Print – Print Preview	
Place schedule on drawing	RebarCAD - Schedule - Place Schedule on Drawing	
Refresh schedule on drawing	RebarCAD – Schedule - Refresh Schedule on Drawing	
Issue drawing sheet	RebarCAD - Review - Issue Drawing Sheet	
Delete Revision History	RebarCAD - Review - Delete Revision History	

8.10. Exporting Schedule data

Schedule – Output – Create Electronic Transfer File

Use the **Create Electronic Schedule Transfer File** command from the Output panel in the Schedule ribbon to export your drawing sheet bar bending data to formats such as Steelpac & CSF.
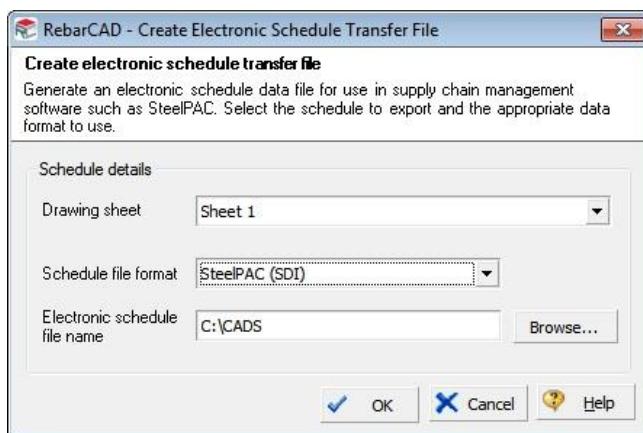
The other formats that are offered are shown below;
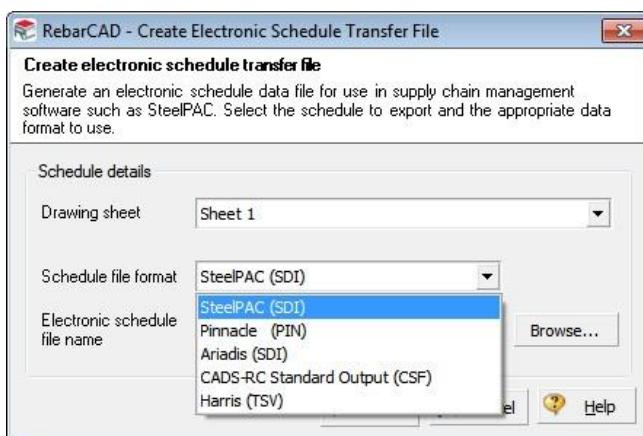
Try it: Export to Steelpac

1 Launch **RebarCAD**

2 Create a drawing sheet using one of the methods described in the Drawing Sheet section above

3 Draw some bars on this new drawing sheet

4 Click **View Schedule** 📄 command

5 Click **Create Electronic Schedule File** from the Review menu

6 Specify a folder and file name, then Click Ok

9. Stock Bar Optimiser

Schedule – Output – Stock Bar Optimiser

The CADS **Stock Bar Optimiser** in **RebarCAD** helps you to:

▶ Find out the best pattern to cut bars available in the bar bending schedule for minimum wastage.

▶ Utilise offcut bars effectively.

▶ Generate a user-friendly graphical output for the cut pattern in MS Excel format.

▶ Print and pass on cut pattern to your cut and bend shop for fabrication.

The **Stock Bar Optimiser** is a tool to optimise the raw material consumption, by grouping (combining) the detailed bars in various patterns so as to minimize wastage. It will calculate the least number of stock bars required for each grade and size of bar used in the schedule. The program automatically works out the number of stock bars and cut combinations which optimally reduce wastage and scrap. It also reportshow efficiently each size of bar has been cut.

Note: The **Stock Bar Optimiser** can only be invoked if there is at least one bar in the schedule.
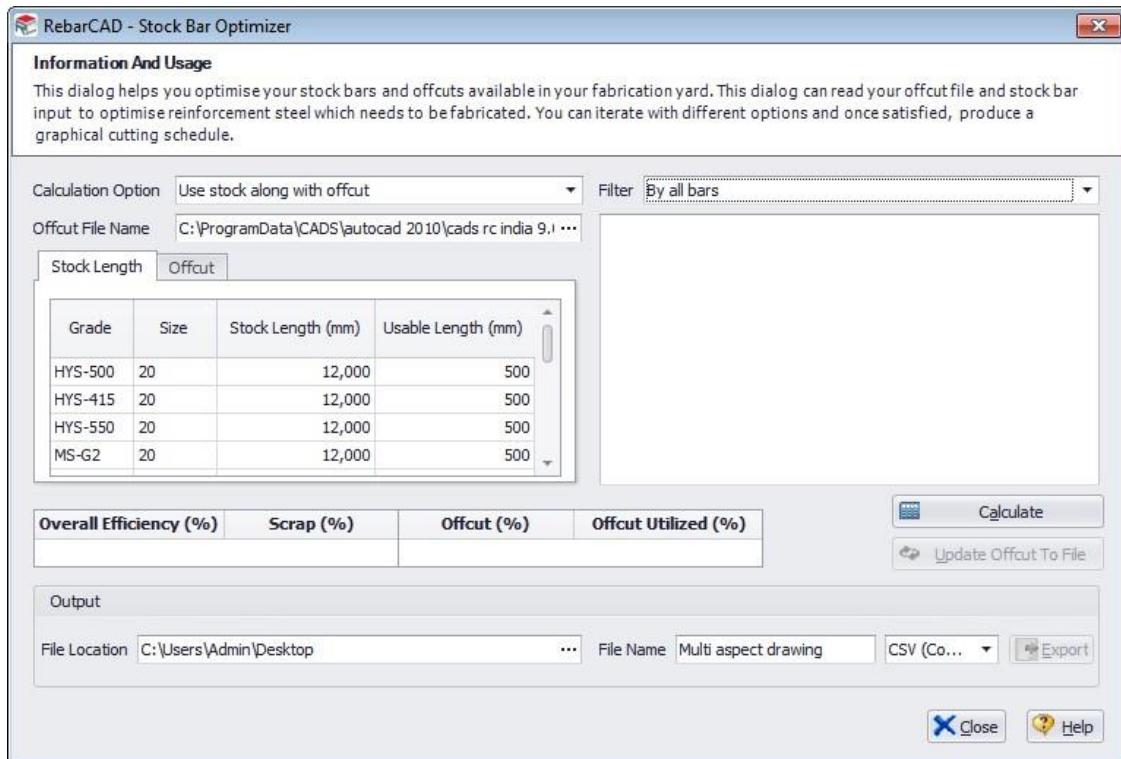
9.1. Compatibility

The graphic *.xlsx format report from Stock Bar Optimiser can be generated only if Microsoft Excel 2007 (or a later version) is installed in your system. The *.csv format will work with the earlier versions of **RebarCAD**, even if MS Office is not installed.

9.2. Features

This section introduces the **basic Stock Bar Optimiser** features available, and helps you to start using these features.

Stock Length

The **Stock Bar Optimiser** allows you to specify the stock length for each combination of size and grade of bar or universally specifies a single value for all.

To specify the stock length for each combination of size and grade, select the **Enable stock length for each size** option. This will display a table as shown below, with the combination of size and grade used in the current drawing, together with the default value of stock length. Each of the stock length values can now be edited independently. The value of stock length thus specified should be greater than the longest bar that has been detailed.
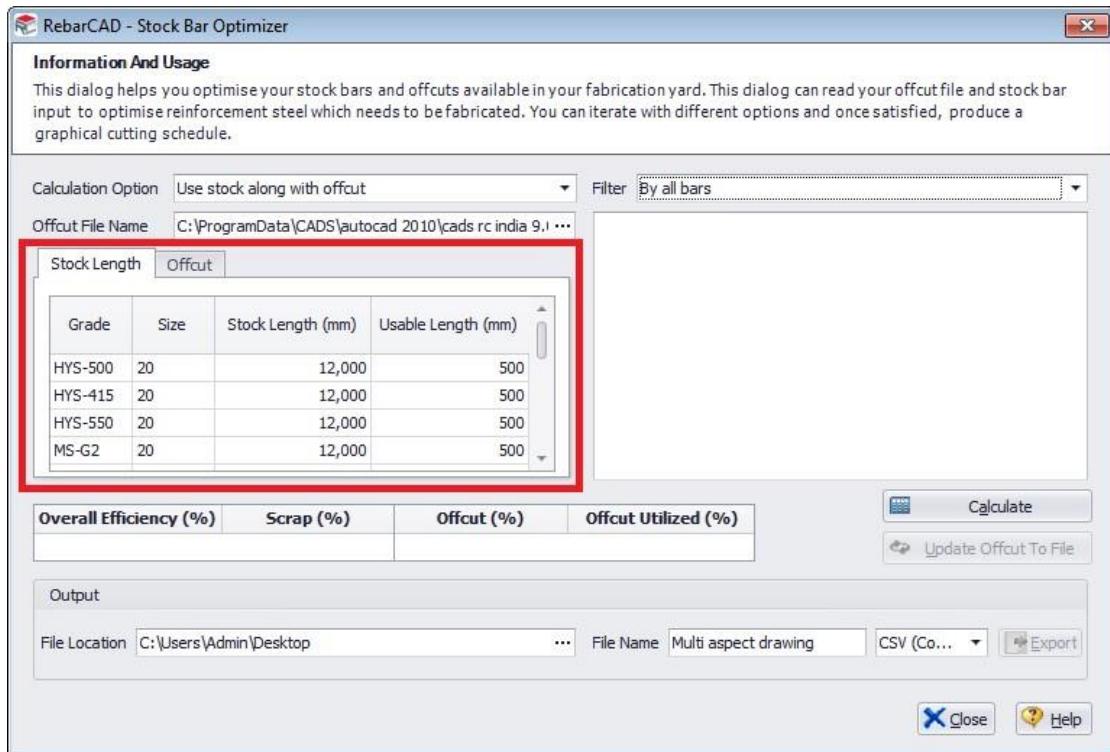
Usable length

This is the minimum length of rebar, which **Stock Bar Optimiser** identifies as reusable. They are grouped as Offcut bars.

Bars below this length are considered unusable, and will be grouped as Scrap.

Note: Only Bar diameters and Grades available in the drawing will be shown in the grid.

If the Stock Length value you entered is lesser than the value of the longest bar length (required for a given bar diameter and grade combination), you will get a warning message.
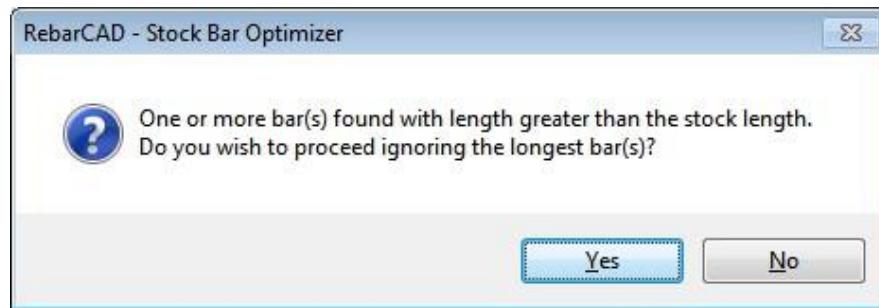
In the case of smaller diameter bars that come in coils, you can filter out the bar diameter from the optimisation selection set, described in the following section.

Offcut

Offcut bars are the remainder bars (that qualify the minimum length criteria set under Rebar Usable length section) that were accumulated post bar production.

Stock Bar Optimiser allows you to utilise offcut bars effectively, by generating cut patterns from the available Offcut bars.

The offcut details are always input as *.csv files. (The output can be in *.csv or *.xlsx file format).

If you choose to use offcut, you will need to configure the path and Offcut filename.

Click the browse button alongside the Offcut File NName to browse the offcut file, please see the diagram below;
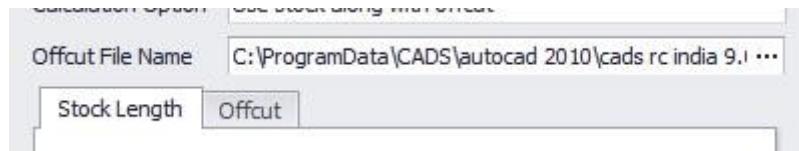
Offcut List Viewer

RebarCAD –Schedule- View Offcut List

The **Offcut List** can be viewed inside **RebarCAD.** It displays the available Grades, bar diameters, lengths and quantity of each bar available. The offcut file can be updated each time the Stock Bar optimizer is used. You can then use the refresh option to update the **Offcut List Viewer.**

Try It: Creating an Offcut File (CSV)

This describes how you should layout the data in an Excel file to describe your off cut bars. **RebarCAD** will only read spreadsheets created in Excel 2007 or higher.

1. OpenOpen Excel

2. Add the offcut bars in the following layout to the file

   Column A = Grade

   Column B = Bar Diameter

   Column C = Offcut Length

Column D = Quantity

	A	B	C	D	E
1	HYS-500	12	1234	12	
2	HYS-500	12	7600	1	
3	HYS-415	12	1000	1	
4	HYS-415	16	4500	1	
5	HYS-415	20	10625	1	
6	HYS-550	20	1000	26	
7	HYS-500	20	900	2	
8	HYS-550	20	500	12	

3.   Save the file in a suitable location such as a project folder with a name that describes its purpose i.e. Offcut"projectname".csv

Filter options

All the bars available in the drawing file will be selected for optimisation by default. You can also select a partial list of bars for optimisation.

For example, depending on the construction sequence and work load in your cut and bend facility, you can optimise the bars available by a particular member, followed by another member.

The filter can be applied by Members, Release or Drawing Sheet, which are standard **RebarCAD** features.

Based on the choice, the contents of the current drawing are displayed as shown below. These contents can be further selected individually as well.
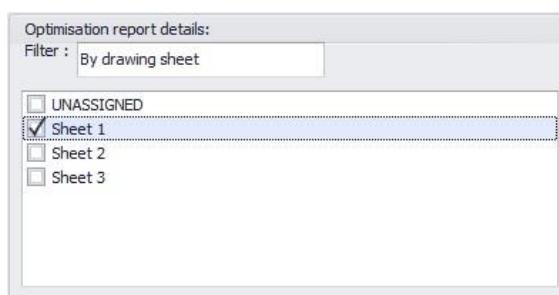
Note: With a mouse right click on the above shown list, the "**Quick selection options**" menu can be activated.
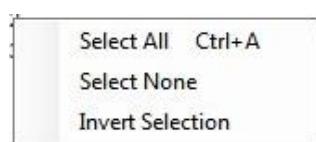
This menu has options to select all entries or to deselect all entries or to invert the current selection.

Calculation option

With **RebarCAD Stock Bar Optimiser**, you can calculate the bar cutting pattern using either Stock Length only, Stock Length with Offcuts or Offcuts First & then Stock length.


```
Use stock only
Use stock along with offcut
Use offcut first and stock for remaining
```
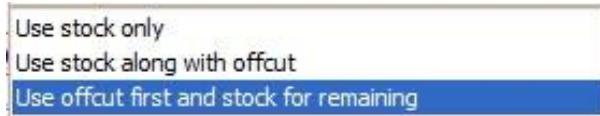
Use Stock Only

The optimised bar cutting pattern is calculated using only the configured Stock Bars.

Use Stock Along with Offcut

This option specifically identifies the best cutting pattern (either from Stock length, or from Offcut length), whichever produces the least wastage. Both Stock length and Offcut length are given equal preference in optimisation.

If you select this option, the **Stock Bar Optimiser** will generate the optimised cutting pattern using:

▶ Stock Bars, according to the length specified in the Stock length column, and ▶ Offcut bars, configured in the Offcut tab of the Stock Bar Optimiser.

In most of the cases, this option produces the greatest efficiency and least wastage. However, the usage of offcut bars is lower, since many of the best patterns are identified from Stock lengths.

When you choose Use Stock Along with Offcut:

▶ You will need to select a suitable Offcut *.csv file in the dialog box.

▶ TheThe details of the required bars will be automatically taken from the drawing. You can amend this selection by using the Filter options which are explained in the section above on Filter options.

Use Offcut First and then Stock for Remaining

This option:

▶ identifies the best cutting pattern among the available offcut bars first, and

▶ will then use Stock length for the remaining bars (i.e. bars for which the cutting pattern cannot be generated from the available offcut bars).

The advantage of using this option is that the available offcut bars will be used to their maximum, reducing the amount of wastage. This means that there will be less use of the Stock bars. This does though have a slight disadvantage compared to using Stock Bar along with

Offcut, the Stock Bar Optimiser selects the best pattern only from the Offcut length without considering the best patterns from the Stock length.

Calculation

When you click Calculate:

▶ **RebarCAD** calculates the patterns and the new offcuts are generated. The summary results will be displayed in the dialog box.

▶ The bar length patterns are presented in the report. (These patterns can be exported, as explained in the following section on Reports).

The calculated results can be exported either to an Excel file (in 2007 format) or to a CSV (comma separated value) file. The output file name can be mentioned as above and the file extension (either .xlsx or .csv) gets appended automatically.

The output location can be changed by clicking on the browse button.

Finally, the calculate button computes the optimised combination and displays a concise report in the table as shown below. It also exports the elaborate results to the file specified.
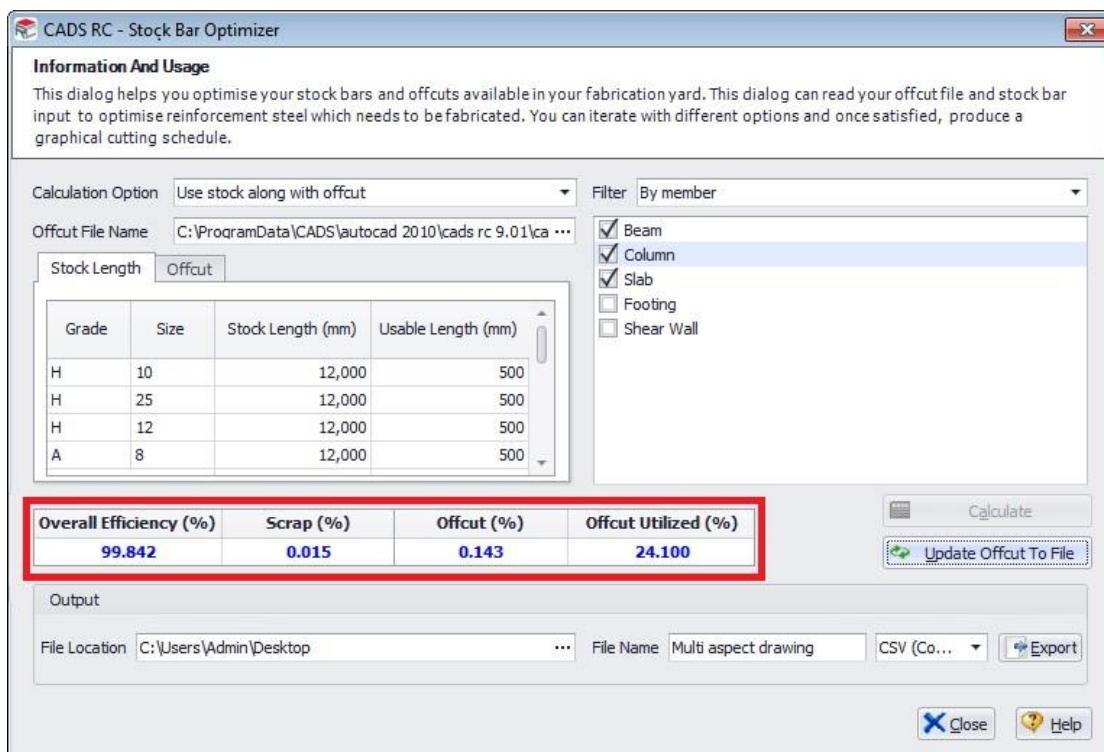
Update Offcut to file

During optimisation, some of the offcuts maybe used and new offcuts generated. When you click **Update Offcut to File**, the used offcuts will be removed from the list and the new offcuts generated will be added to the list.

This function updates the offcut file so that it can be used for the next optimisation.

9.3. Reports

The Optimised Report can be generated either in Comma Separated Values (*.csv) format or in Microsoft Excel (*.xlsx) format.

Once you select the file format, the program compiles the details.

To initiate calculations, select:

▶ The Output File Location

▶ The File Name,

▶ And the required output format, as shown below.
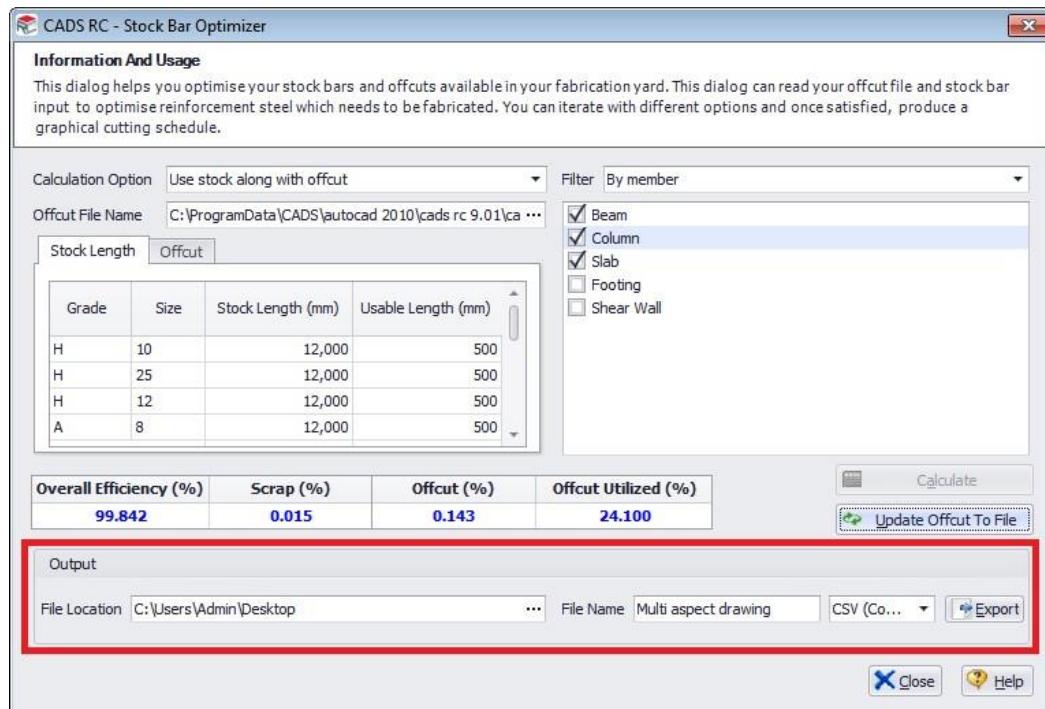
The output will be generated in the location you have selected.

You can use the **Comma Separated Values** (*.csv) format, if you do not have Microsoft Excel 2007 or higher version installed in your system.

The **Comma Separated Values** (*.csv) format can be opened in any text editing application such as Notepad or WordPad, supplied along with the Windows Operating System.

This format is also useful if you wish to send the data to your fabrication management system in electronic format.

Multi aspect drawing - Notepad

File Edit Format View Help

```
BarGrade, BarSize, StockLength, Pattern, Quantity, TotalPatternLength, ScrapLength
HYS-415, 16, 12000, 700(51) + 700(51) + 700(51) + 700(51) + 700(51) + 700(51) + 650(49) + 650(49) + 650(49) + 650(49) + 650(49) + 650(49) + 650(49) + 650(
HYS-415, 16, 12000, 700(51) + 650(52) + 550(50) + 550(50) + 550(50) + 550(50) + 550(50) + 550(50) + 550(50) + 550(54) + 550(54) + 550(54) + 550(
HYS-415, 16, 12000, 650(52) + 650(52) + 650(52) + 650(52) + 650(52) + 550(54) + 500(53) , 1, 4800, 7200
Total Required,28800
Total Used,36000
Efficiency,80.000

HYS-415, 16, 3600, 700(51) + 700(51) + 550(50) + 550(50) + 550(50) + 550(50) , 1, 3600, 0
Total Required,3600
Total Used,3600
Efficiency,100.000

HYS-415, 20, 12000, 2925(48) + 2925(48) + 2200(38) + 2200(38) + 1750(40) , 7, 12000, 0
HYS-415, 20, 12000, 2925(48) + 2675(35) + 1600(41) + 1600(41) + 1600(41) + 1600(41) , 1, 12000, 0
HYS-415, 20, 12000, 2775(37) + 2775(37) + 2675(35) + 1750(40) + 1600(41) + 1600(41) , 4, 12000, 0
HYS-415, 20, 12000, 2775(37) + 2775(37) + 2675(35) + 2300(36) + 1475(39) , 6, 12000, 0
HYS-415, 20, 12000, 2775(43) + 2775(43) + 2675(35) + 2300(36) + 1475(39) , 8, 12000, 0
HYS-415, 20, 12000, 2675(35) + 2300(36) + 1750(40) + 1750(40) + 1750(40) , 1, 11975, 25
HYS-415, 20, 12000, 2675(35) + 2675(35) + 2675(35) + 2200(38) + 1750(40) , 1, 11975, 25
HYS-415, 20, 12000, 2675(35) + 2675(35) + 2200(38) + 1475(39) + 1475(39) + 1475(39) , 4, 11975, 25
HYS-415, 20, 12000, 2675(35) + 2300(36) + 2300(36) + 2300(36) + 2300(36) , 1, 11875, 125
HYS-415, 20, 12000, 2300(36) + 2300(36) + 1475(39) + 1475(39) + 1475(39) + 1475(39) , 1, 11975, 25
HYS-415, 20, 12000, 2300(36) + 2300(36) + 1475(45) + 1475(45) + 1475(45) + 1475(45) , 1, 11975, 25
HYS-415, 20, 12000, 2300(36) + 2300(36) + 1475(45) + 1475(45) + 1475(45) + 1475(45) , 2, 11975, 25
HYS-415, 20, 12000, 2300(36) + 2300(42) + 1475(45) + 1475(45) + 1475(45) + 1475(45) , 1, 11975, 25
HYS-415, 20, 12000, 2300(42) + 2300(42) + 1475(45) + 1475(45) + 1475(45) + 1475(45) , 1, 11975, 25
HYS-415, 20, 12000, 2300(42) + 2300(42) + 1475(47) + 1475(47) + 1475(47) + 1475(47) , 1, 11975, 25
HYS-415, 20, 12000, 2300(42) + 2300(42) + 1475(47) + 1475(47) + 1475(47) + 1475(47) , 6, 11975, 25
HYS-415, 20, 12000, 2300(42) + 2300(42) + 2300(42) + 2300(42) + 2200(38) , 1, 11400, 600
HYS-415, 20, 12000, 2200(38) + 2200(38) + 2200(38) + 2200(38) + 2200(38) , 2, 11000, 1000
HYS-415, 20, 12000, 2200(44) + 2200(44) + 2200(44) + 2200(44) + 2200(44) , 6, 11000, 1000
HYS-415, 20, 12000, 2200(46) + 2200(46) + 2200(46) + 2200(46) + 2200(46) , 6, 11000, 1000
HYS-415, 20, 12000, 2200(46) , 1, 2200, 9800
Total Required,730975
Total Used,756000
Efficiency,96.690

HYS-415, 20, 5400, 2925(48) + 2300(36) , 1, 5225, 175
Total Required,5225
Total Used,5400
Efficiency,96.759

HYS-500, 12, 12000, 1100(32) + 1100(32) + 1100(32) + 1100(32) + 1100(32) + 1100(32) + 1100(32) + 1100(32) + 1100(32) + 1050(31) + 1050(31) , 1, 12000, 0
HYS-500, 12, 12000, 1100(32) + 1100(32) + 1100(32) + 1100(32) + 1100(32) + 1100(33) + 1100(33) + 1050(31) + 1050(31) + 1050(31) , 1, 12000, 0
HYS-500, 12, 12000, 1100(33) + 1100(33) + 1100(33) + 1100(33) + 1100(33) + 1100(33) + 1050(31) + 1050(31) + 1050(31) , 1, 12000, 0
HYS-500, 12, 12000, 1100(33) + 1100(33) + 1100(33) + 1050(31) + 1050(31) + 1050(31) + 1050(31) + 1050(31) + 1050(31) , 1, 11700, 300
HYS-500, 12, 12000, 1050(31) + 1050(31) + 1050(34) + 1050(34) + 1050(34) + 1050(34) + 1050(34) + 1050(34) , 1, 11550, 450
HYS-500, 12, 12000, 1050(34) + 1050(34) + 1050(34) + 1050(34) + 1050(34) + 1050(34) + 1050(34) , 1, 7350, 4650
Total Required,66600
Total Used,72000
Efficiency,92.500

HYS-500, 12, 2550, 1100(32) + 1100(32) , 1, 2200, 350
Total Required,2200
Total Used,2550
Efficiency,86.275
```

The Pattern column shows the way in which bars can be cut from the available Offcut and Stock length.

The Bar Mark is shown in brackets next to the Bar Length (in mm) value.

You can output the optimisation report in Microsoft Excel 2007 or higher (*.xlsx) format to view a graphical representation of the cutting schedule, see the diagram below.
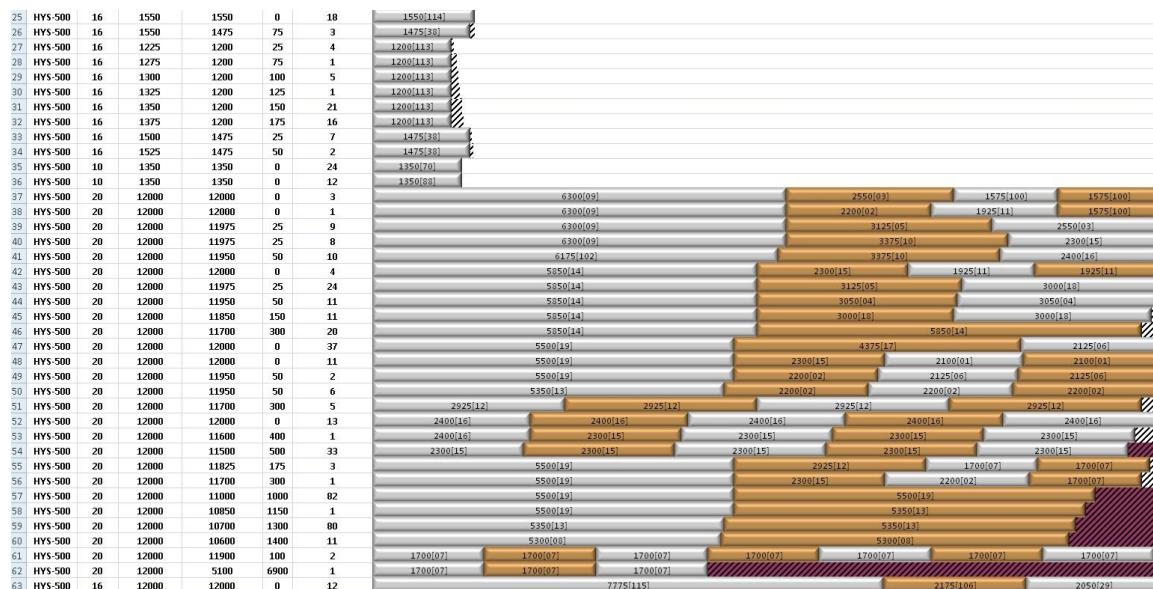
In the graphical representation of the patterns, the required bar lengths are shown alternately in gold and silver. The offcut bars generated are indicated in slanted magenta and black colour, and the scraps are displayed in slanted black and white.

88	1350			
09	6300 03	2550 100	1575 100	1575
09	6300 02	2200 11	1925 100	1575
09	6300 05	3125 03	2550	
09	6300 10	3375 15	2300	
102	6175 10	3375 16	2400	
14	5850 15	2300 11	1925 11	1925
14	5850 05	3125 18	3000	
14	5850 04	3050 04	3050	
14	5850 18	3000 18	3000	
14	5850 14	5850		
19	5500 17	4375 06	2125	
19	5500 01	2300 01	2100 01	2100
19	5500 02	2200 06	2125 06	2125
13	5350 02	2200 02	2200 02	2200
12	2925 12	2925 12	2925 12	2925
16	2400 16	2400 16	2400 16	2400 16
16	2400 15	2300 15	2300 15	2300 15
15	2300 15	2300 15	2300 15	2300 15
19	5500 12	2925 07	1700 07	1700
19	5500 15	2300 02	2200 07	1700
19	5500 19	5500		
19	5500 13	5350		
13	5350 13	5350		
08	5300 08	5300		
07	1700 07	1700 07	1700 07	1700 07
07	1700 07	1700 07	1700	
115	7775 106	2175 29	2050	
115	7775 37	2225 109	2000	
23	5775 22	2075 22	2075 22	2075
23	5775 107	2125 29	2050 29	2050
23	5775 107	2125 108	2050 108	2050
23	5775 37	2225 109	2000 109	2000
23	5775 28	2625 111	1800 111	1800

The Microsoft Excel 2007 or higher versions (*.xlsx) format also contains individual piece lengths and corresponding Bar Marks in tabular format. If required, this data can be used for electronic data transfer.

|	A Bar Grade	B Bar Size (mm)	C Stock Length (mm)	D Total Cut Length (mm)	E Scrap	F No of Stock Bars	G Cut Length[Bar Mark]
3	HYS-500	20	6500	6300	200	1	6300[09]
4	HYS-500	20	4700	4400	300	10	4400[101]
5	HYS-500	20	4700	4375	325	34	4375[17]
6	HYS-500	20	4775	4375	400	3	4375[17]
7	HYS-500	20	3400	3375	25	1	3375[10]
8	HYS-500	20	5250	5075	175	3	3375[10] 1700[07]
9	HYS-500	20	3175	3125	50	1	3125[05]
10	HYS-500	20	5000	4825	175	7	3125[05] 1700[07]
11	HYS-500	20	2625	2550	75	10	2550[03]
12	HYS-500	20	4000	4000	0	4	2300[15] 1700[07]
13	HYS-500	20	4000	3850	150	4	1925[11] 1925[11]
14	HYS-500	20	1700	1700	0	1	1700[07]
15	HYS-500	20	1725	1700	25	1	1700[07]
16	HYS-500	20	1725	1575	150	1	1575[100]
17	HYS-500	20	1750	1700	50	1	1700[07]
18	HYS-500	20	1750	1575	175	1	1575[100]
19	HYS-500	20	1875	1700	175	1	1700[07]
20	HYS-500	20	1650	1575	75	1	1575[100]
21	HYS-500	16	5025	5025	0	1	2650[41] 2375[42]
22	HYS-500	16	4400	4400	0	2	2650[41] 1750[103]
23	HYS-500	16	2475	2375	100	1	2375[42]
24	HYS-500	16	1800	1800	0	2	1800[111]
25	HYS-500	16	1550	1550	0	18	1550[114]
26	HYS-500	16	1550	1475	75	3	1475[38]
27	HYS-500	16	1225	1200	25	4	1200[113]
28	HYS-500	16	1275	1200	75	1	1200[113]
29	HYS-500	16	1300	1200	100	5	1200[113]
30	HYS-500	16	1325	1200	125	1	1200[113]
31	HYS-500	16	1350	1200	150	21	1200[113]
32	HYS-500	16	1375	1200	175	16	1200[113]
33	HYS-500	16	1500	1475	25	7	1475[38]
34	HYS-500	16	1525	1475	50	2	1475[38]
35	HYS-500	10	1350	1350	0	24	1350[70]
36	HYS-500	10	1350	1350	0	12	1350[08]
37	HYS-500	20	12000	12000	0	3	6300[09] 2550[03] 1575[100]
38	HYS-500	20	12000	12000	0	1	6300[09] 2200[02] 1925[11]
39	HYS-500	20	12000	11975	25	9	6300[09] 3125[05]

Try It: Creating a Stock Bar Report

In this example you are going to use the **Stock Bar Optimiser** to run the optimisation calculations and then produce the reports.

4.   Launch **RebarCAD**

5.   Open **drawing ...\drawings\Stock Bar Optimiser.dwg**

6.   Switch to **Model Space**

Notice that there are two drawing sheets; the first sheet contains three structures, a stair, beam and a pilecap. The second sheet contains a reinforced concrete slab. Open the schedule and load the Stock Bar Optimiser.

7.   RebarCAD – Schedule – View Schedule

8.   Schedule – Output – Stock Bar Optimiser (SBO)

9.   In the SBO dialog, set the Calculation Option to Use Stock Only, set the Filter to By Drawing Sheet, and select both 01 & 02 drawing sheets.

10.   Click the calculate option
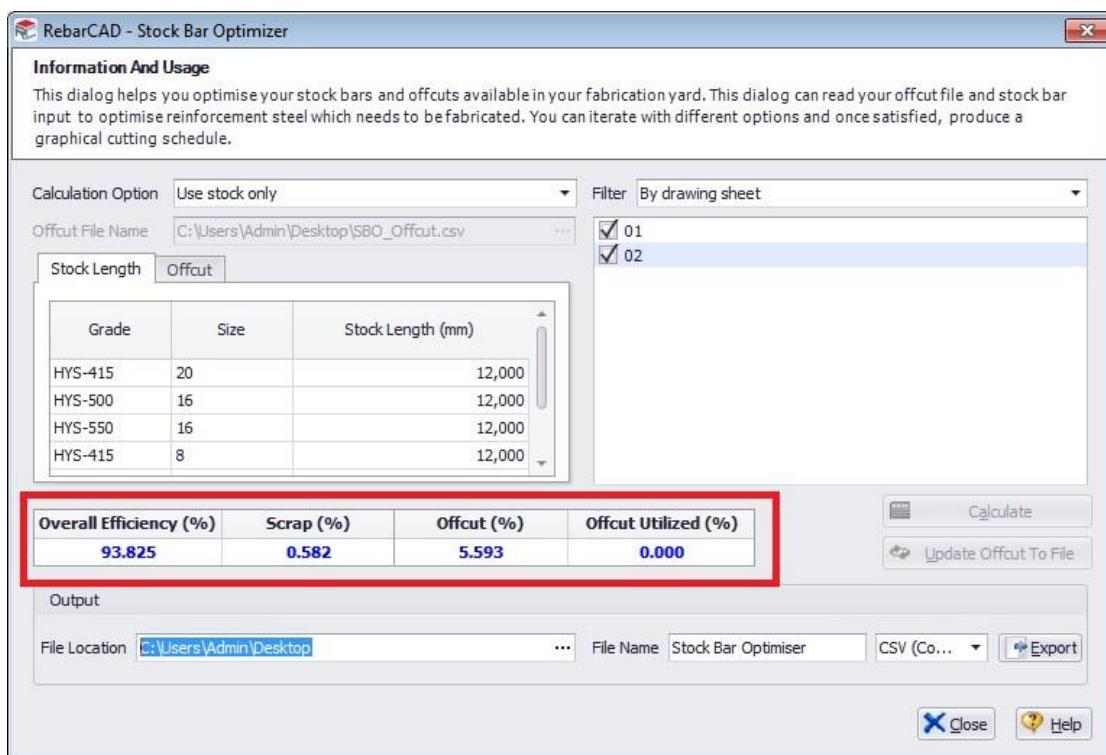
11.   Notice the Efficiency, Scrap & Offcut values.

You are now going to select the other two calculation options to compare the efficiency results.

12.   Now change the option to Use Stock Along with Offcut.

13.   Select the Offcut file by selecting the browse button to the right of the Offcut File Name, the file is located in the same folder as the Try It drawings and is called SBO_Offcut.CSV
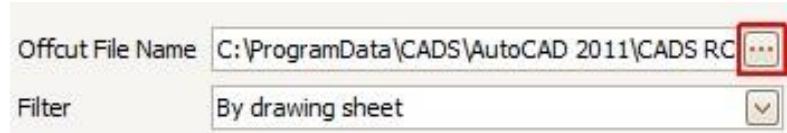
14. Click Calculate

15. Click on the Offcut and review the offcuts available
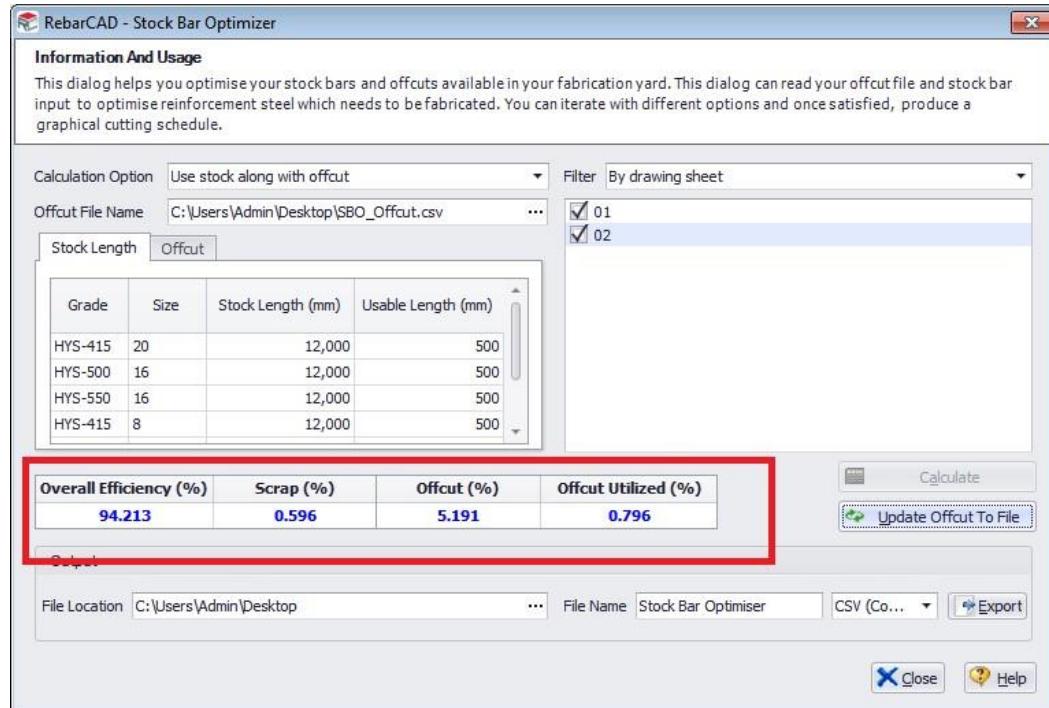
16. Notice the Efficiency, Scrap & Offcut values.

17. Now change the option to Use Offcut first and Stock for remaining.

18. Use the existing Offcut file

19. Click Calculate

20. Notice the Efficiency, Scrap & Offcut values.
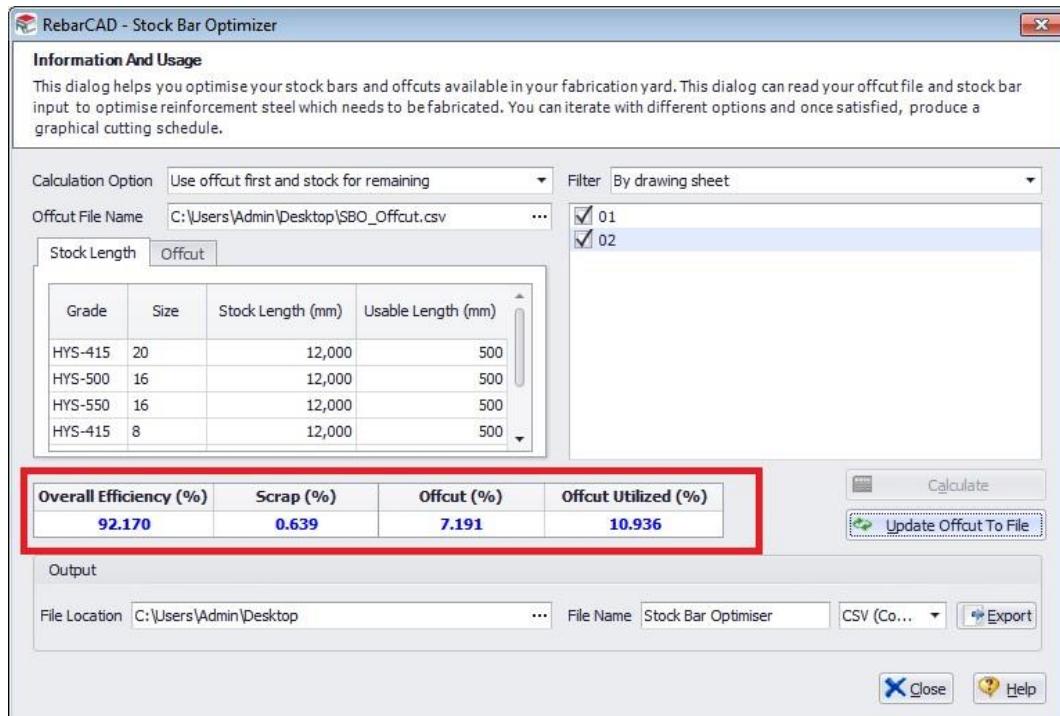
21. In conclusion the "Use Offcut first and stock for remaining" calculation option is the most efficient

22. Set the Calculation option back to Use Offcut first and stock for remaining

23. Click **calculate again**

24. Click update Offcut file

25. Select the Offcut tab and review the usage of the offcut bars compared to the original values.

Next you are going to generate the reports from the **Stock Bar Optimiser**

26. In the Output section, set the Output to Excel Workbook (*.xlsx)

27. Click **Export**

28. Open the Export file with Excel

29. This concludes the Try It for the **Stock Bar Optimiser.**

9.4. Key Points

▶ Exports are done on a drawing sheet basis. You can only export bars that are assigned to a drawing sheet

▶ You can optimise the cutting of reinforcement by Grade and Size to minimise wastage based on stock length

▶ You can include your existing Offcut bars into the Optimiser to further reduce wastage

▶ You can choose three different calculation methods to increase the efficiency

9.5. Commands

Action	Menu	Toolbar
View Schedule	**RebarCAD – Schedule - View Schedule**	
Create a Schedule Transfer File	**Schedule – Output – Create Electronic Transfer File**	
Optimise Rebar Cutting	**Schedule – Output – Stock Bar Optimiser**	
Open Offcut List Viewer	**RebarCAD-Schedule-View offcut list**	