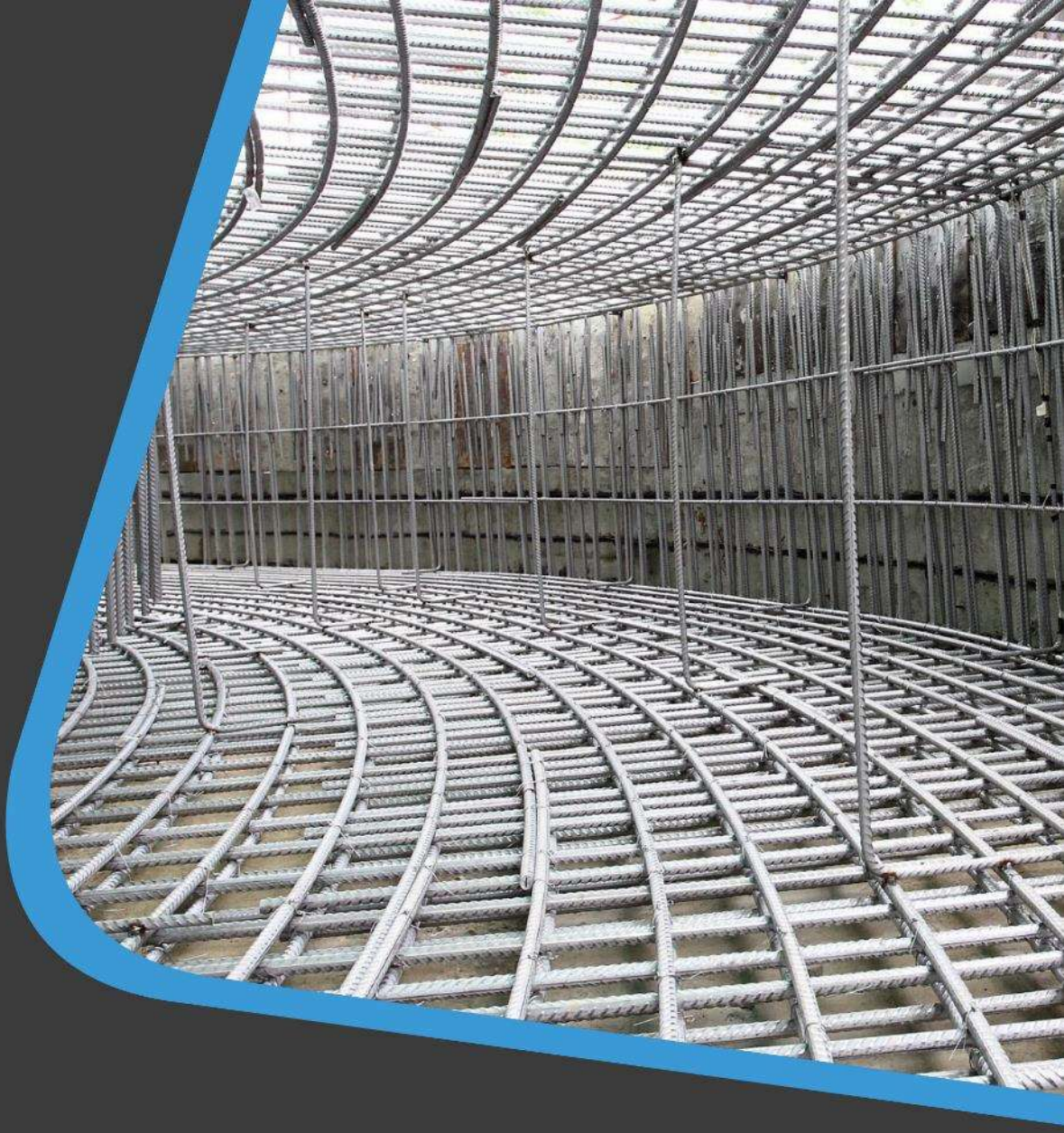

RebarCAD
Group Layering Tutorial

CADS
GLOBAL CONSTRUCTION
SOFTWARE AND SERVICES

AUTODESK
Authorised Developer

Microsoft
Partner

Revision history

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1 Using Group layering

Object title

The Group Layering Option in RebarCAD is used to differentiate between the reinforcement placed on the top, bottom, near face or far face of the structure by easily placing the bars, ranges, bar runs and bar labels etc. on different associated layers. For instance, the top reinforcement could be shown with a continuous line and then the bottom reinforcement could be shown with a hidden line.

Group layering customisation and configuration

The major benefit of the GLO (Group Layering Option) is that the drawing can be presented to show only the top or bottom reinforcement bars, or just the bars associated with a particular layer group such as T2 layer. Initially this workbook describes the files which are used by GLO, their locations and how to customise the files to suit the requirements.

After this, a worked example describes how to use GLO to place reinforcement on a slab on the top and bottom layers and how to display the required reinforcement.

GLO filenames and their default locations

Group layering is controlled by two files:

- RCGRPLAY.GLO;
- RC-LAY.TXT.

RCGRPLAY.GLO - this file contains a list of group layers mapped with RC entities. While drawing a bar with GLO option activated, it lists the group layers in the AutoCAD command prompt and allows the user to enter the required layer.

The default location of this file on a standalone installation is C:\Program Files\CADS\AutoCAD XXXX\RebarCAD XXXX.XX\CADS-RC\params.

RC-LAY.TXT – is the layer definition file which describes how the layers are created. This file requires editing when the GLO file has been changed. The default location of this file on a standalone installation is C:\Program Files\CADS\AutoCAD ****\RebarCAD ****\CADS-RC\params.

Customising the Group layering option file

The RCGRPLAY.GLO file is a text file and can be edited using either WordPad or Notepad. If you open Windows Explorer and double click on the file, you may be asked to associate a program to the file. Pick either WordPad or Notepad. Remember to save the file as a TXT file. We would also suggest to save it to an alternative filename with the same GLO extension, to prevent your customisation being overwritten on the next upgrade.

Extract from default RCGRPLAY.GLO file for T1 Group Layers

The extract below only shows the T1 Group Layer. [G.L.O]

```
[--------]
[ T1/N1]              ; Group Name
Rebars =              BarT1 ; Reinforcement Bars T1 layer
Centre colour =       Cyan  ; Bar plot line colour
Profile colour =      White ; Bar profile colour
Bar run =             BarT1 ; Bars in Section Layer
Bar section =         BarT1 ; Single Bar in Section Layer
Ticks =               BarT1 ; Bar Ticks Layer
Label =               TxtT1 ; Bar Labels T1 layer
Range Line =          TxtT1 ; Range Line Layer
End Marker =          TxtT1 ; Range End Marker Layer
Bar Refs =            TxtT1 ; Bar Mark Reference Layer
Range Refs =          TxtT1 ; Range Text Layer
Range Dots =          TxtT1 ; Range Dot Layer, between range and bar
Range Intermid =      TxtT1 ; Layer for lines between range lines in multiple ranges
RC Leader  =          TxtT1 ; Leader Layer
Tags =                TxtT1 ; Bar Tags Layer
Tags Text =           TxtT1 ; Bar Tag Text Layer
Tension Symbol =      BarT1 ; Tension Coupler Symbol Layer
Compression Symbol =  BarT1 ; Compression Coupler Symbol Layer
Thread Symbol =       BarT1 ; Coupler Thread Symbol Layer
Coupler Txt =         TxtT1 ; Coupler Text Layer
```

The format is 'RC entity name' = 'Layer name'. (Example: Rebars = BarT1)

Where "Rebars" is the RC entity name and "BarT1" is the layer name The 'RC entity name' should not be modified.

Each group is configured with two layers by default. For example, T1/N1 group is configured with BarT1 and TxtT1 layers. You can introduce new layer names for every RC entity. If a new layer name is introduced, then it should be added to the RC-LAY.TXT file.

Figure 1.1 shows the annotation of each RC graphic entity as described in the RCGRPLAY.GLO file.

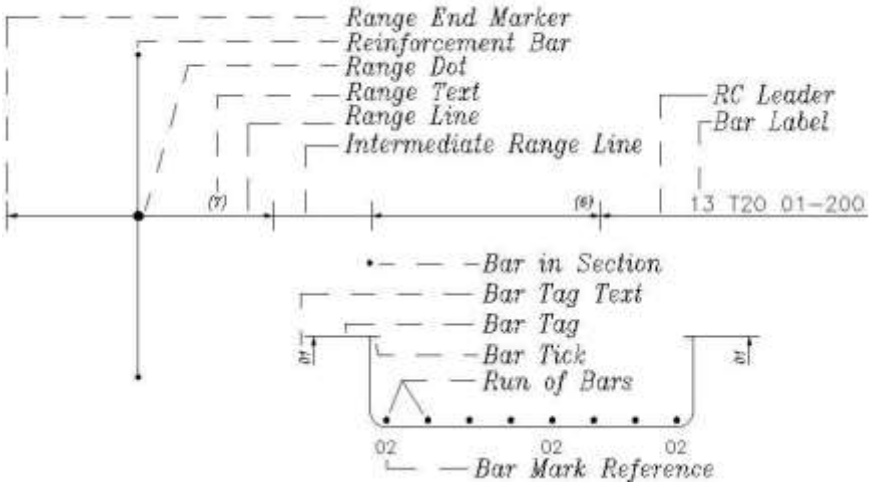

Figure 1.1 RC Graphics definition

Extract from a customised RCGRPLAY.GLO file for T1 Group Layers

The extract below only shows the T1 group layer and every RC entity is configured with a different layer. If you decide to change the layers, you have to add new layer names to the Groups. Extra groups can be added by copying a previous group and renaming the Group name and their associated layers. These new layers should be added to the RC- LAY.TXT file. [G.L.O]

```
[--------]
[ T1/N1]                ; Group Name
Rebars =                BarT1 ; Reinforcement Bars T1 layer
Centre colour =         Cyan  ; Bar plot line colour
Profile colour =        White ; Bar profile colour
Bar run =               BarT1 ; Bars in Section Layer
Bar section =           BarT1 ; Single Bar in Section Layer
Ticks =                 BarT1 ; Bar Ticks Layer
Label =                 TxtT1 ; Bar Labels T1 layer
Range Line =            TxtT1 ; Range Line Layer
End Marker =            TxtT1 ; Range End Marker Layer
Bar Refs =              TxtT1 ; Bar Mark Reference Layer
Range Refs =            TxtT1 ; Range Text Layer
Range Dots =            TxtT1 ; Range Dot Layer, between range and bar
Range Intermid =        TxtT1 ; Layer for lines between range lines in multiple ranges
```

RC Leader =	TxtT1 ; Leader Layer
Tags =	TxtT1 ; Bar Tags Layer
Tags Text =	TxtT1 ; Bar Tag Text Layer
Tension Symbol =	BarT1 ; Tension Coupler Symbol Layer
Compression Symbol =	BarT1 ; Compression Coupler Symbol Layer
Thread Symbol =	BarT1 ; Coupler Thread Symbol Layer
Coupler Txt =	TxtT1 ; Coupler Text Layer

Customising the layer definition file

The RC-LAY.TXT file is a text file and it can be edited using either WordPad or Notepad. If you open Windows Explorer and double click on the file, you may be asked to associate a program to the file, pick either WordPad or Notepad. Remember to save the file as a TXT file. We would also suggest to save the file to an alternative filename with the same TXT extension, to prevent your customisation being overwritten on the next upgrade.

Extract from Default RC-LAY.TXT File for T1 Group Layers

; ----------	
BarT1	; Reinforcement Bar Layer etc.
Continuous	; Line type
Cyan	; Colour
;----------	
TxtT1	; Reinforcement Label Layer etc.
Continuous	; Line type
White	; Colour

The above extract of the default RC-LAY.TXT file shows the layers, line types and colours used in the default RCGRPLAY.GLO file for Layer Group T1. If you have expanded the number of layers that the GLO option uses, as shown in the Customised Extract above, you will need to add the new layer names, as shown in the example below, to the RC-LAY.TXT file.

Extract from Customised RC-LAY.TXT File for T1 Group Layers

; ----------	
BarT1	; Reinforcement Bars T1 layer
3mmHidden	; Line type

Cyan ; Colour

;------------------------

BarRunT1 ; Run of Bars in Section & Single Bar in Section Layer

Continuous ; Line type

Cyan ; Colour

;------------------------

BarTickT1 ; Bar Ticks Layer

Continuous ; Line type

Cyan ; Colour

;------------------------

BarLblT1 ; Bar Labels T1 layer

Continuous ; Linetype

Yellow ; Colour

;------------------------

RangeT1 ; Range Line Layer

Continuous ; Linetype

White ; Colour

;------------------------

EndMarkT1 ; Range End Marker Layer

Continuous ; Linetype

Cyan ; Colour

;------------------------

BarRefT1 ; Bar Mark Reference Layer

Continuous ; Linetype

White ; Colour

;------------------------

RangeRefT1 ; Range Text Layer

Continuous ; Linetype

White ; Colour

;------------------------

RangeDotT1 ; Range Dot Layer, between range and bar

Continuous ; Linetype

White ; Colour

;------------------------

RangeIntTxtT1 ; Layer for lines between range lines in multiple ranges

Continuous ; Linetype

White ; Colour

;------------------------

LeaderT1 ; Leader Layer

Continuous ; Linetype

White ; Colour

;------------------------

BarTagT1 ; Bar Tags Layer

Continuous ; Linetype

White ; Colour

;------------------------

TagsTxtT1 ; Bar Tag Text Layer

Continuous ; Linetype

White ; Colour

;------------------------

TensionT1 ; Tension Coupler Symbol Layer

Continuous ; Linetype

White ; Colour

;------------------------

CompressionT1 ; Compression Coupler Symbol Laye

Continuous ; Linetype

White ; Colour

;-------------------------

ThreadT1 ; Coupler Thread Symbol Layer

Continuous ; Linetype

White ; Colour

;-------------------------

CoupTxtT1 ; Coupler Text Layer

Continuous ; Linetype

White ; Colour

Configuring the customised GLO files, Layer definition files and turning on the Group layering Option

After customizing and renaming the GLO files, you will need to reconfigure RebarCAD to use these new files.

Go to RebarCAD->Configuration->Configuration Centre->Miscellaneous Configuration->More Miscellaneous Config.

Select 'ON' for Group Layering Option.

"rcgrplay.glo" is set as default Group Layer File.

If you want to use the customised group layer file, click on the 'Group Layer File' button and browse to choose the required file.

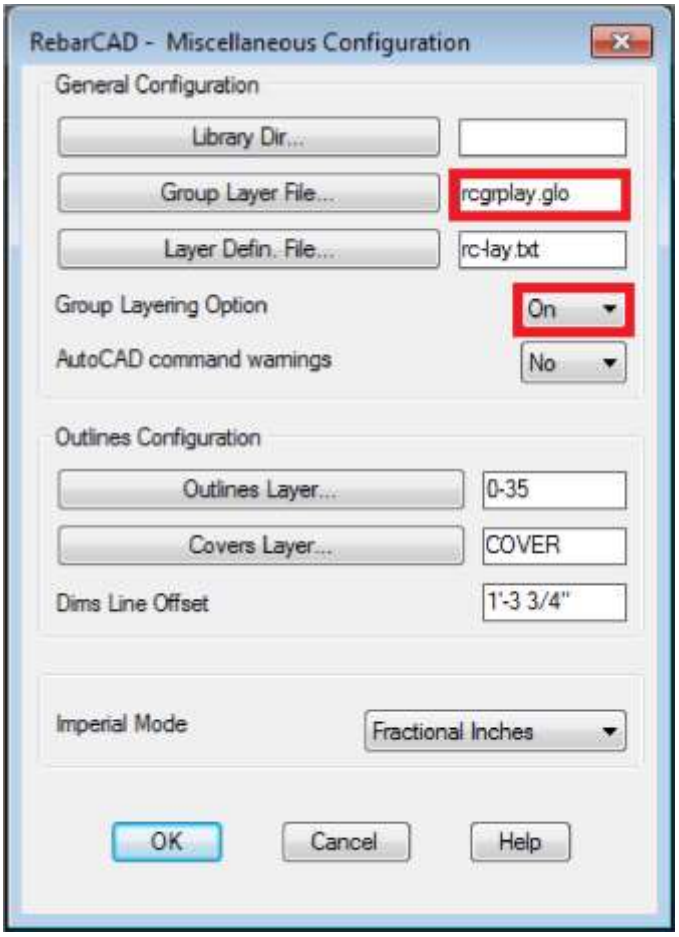

Figure 1.2 More miscellaneous configuration

If you are going to use the Group Layering Option on several drawings you will need to save the changes you have made to RebarCAD by Writing Prototype Settings.

Go to RebarCAD->Configuration->Configuration Centre->Miscellaneous Configuration->Write Prototype Settings.

Clicking on Write Prototype Settings creates a .ini file in "C:\ProgramData\CADS\Autocad XXXX\RebarCAD XXXX.XX\CADS-RC\Params" folder.

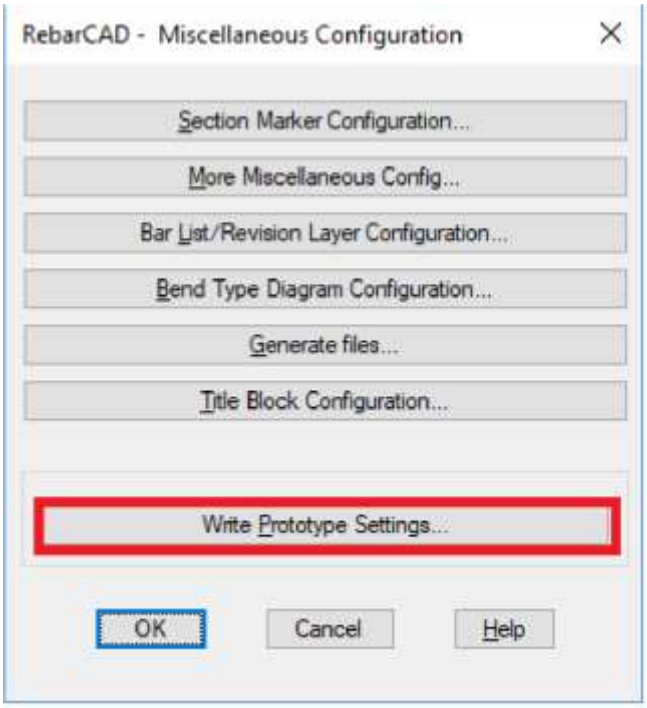

Figure 1.3 Miscellaneous configuration

Now on creating new drawings, the Group layering option is ON by default and the group layer file which we have configured previously is set as the default file.

Detailing and editing using GLO

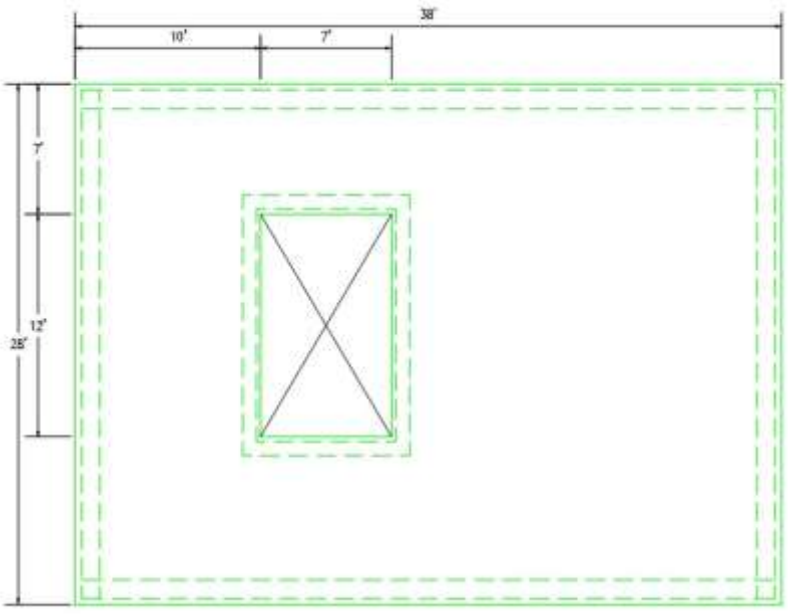

Figure 1.4 General arrangement drawing

To illustrate how to use the Group Layering Option we are going to add several bars to a general arrangement drawing of a simple slab with a stairwell. Split the reinforcement into three Member Titles, Top-steel, Bottomsteel and Section-steel. As we place the steel in each location, we have to choose the appropriate GLO Option, T1, B1 or Section from the AutoCAD command prompt.

Open the drawing “GLO GA_Imperial.dwg” from C:\Program Files\CADS\AutoCAD XXXX\RebarCAD XXXX.XX\CADS-RC\Drawings.

Make sure that the Group layering option is turned on. Next, create the following Member Titles, Top-steel, Bottom-steel and Section-steel. Make member title Bottom-steel as the current member.

Placing the reinforcement in the bottom of the structure

Initially, place the steel on the bottom layer using GLO on the member title Bottom-steel, then copy the ranges, bars and labels to the top layer using ‘Change to Other Group’ command and change the member title to Top-steel using RC edit routines.

SET ONE (horizontal bar, vertical range line)

RebarCAD -> DRAW RANGE -> NEW MARK

Pick required Group Layer or 'I' to Ignore: Choose B1/F1 from AutoCAD command prompt.

Choose Fixed Pitch Range. Choose Bend type 0, Grade A615/60, #10 Size, 8” c/c and B in the notes.

Draw the bar horizontally from the left to the right and the range is placed from top to bottom and it will also take into account the stairwell opening, as shown in Figure 1.5.

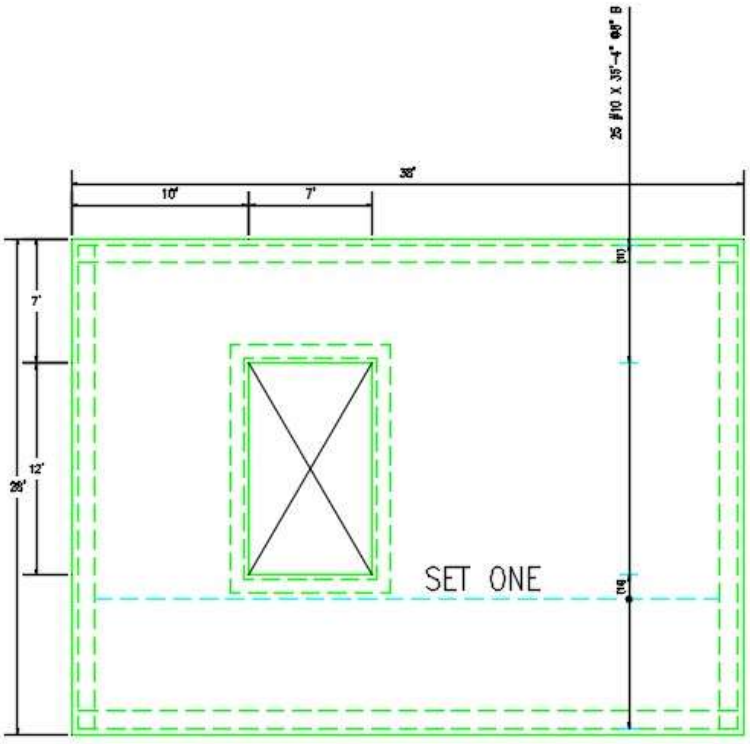

Figure 1.5 Slab with first set of bottom bar and range.

Continue and add the rest of the reinforcement to the bottom layer as detailed below and shown in Figure 1.6.

SET TWO (horizontal bar, vertical range line)

GLO B1/F1, Single Fixed Pitch Range, Bend type 0, Grade A615/60, #10 Size and B in notes

SET THREE (horizontal bar, vertical range line)

GLO B1/F1, Single Fixed Pitch Range, Bend type 0, Grade A615/60, #10 Size and B in notes

SET FOUR (vertical bar, horizontal range line)

GLO B1/F1, Single Fixed Pitch Range, Bend type 0, Grade A615/60, #10 Size and B in notes

SET FIVE (vertical bar, horizontal range line)

GLO B1/F1, Single Fixed Pitch Range, Bend type 0, Grade A615/60, #10 Size and B in notes

SET SIX (vertical bar, horizontal range line)

GLO B1/F1, Single Fixed Pitch Range, Bend type 0, Grade A615/60, #10 Size and B in notes

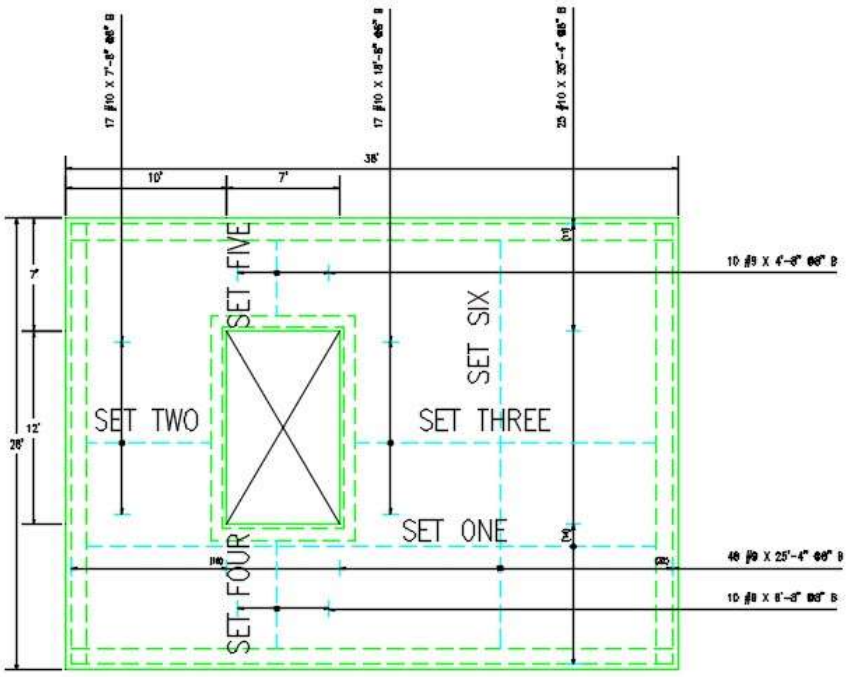

Figure 1.6 Reinforcement drawing showing bottom steel

Placing the reinforcement in the top face of the structure

Copy all the ranges and bars and place them 20 feet to the right, so that you can edit the information easily.

Now assign the member title of the copied bars and ranges to Top-steel.

RebarCAD -> EDITING -> ASSIGN BARS TO MEMBER -> TOP-STEEL

Next change the layer of the ranges and bars to the Top Steel Layers using ‘Change to Other Group’ command.

RebarCAD -> UTILITIES -> GROUP LAYERING -> CHANGE TO OTHER GROUP

Pick Group T1/N1

Now the bars change from the hidden lines to continuous lines. This is because the properties of layer BART1 have been set to line type Continuous in RC-LAY.TXT file.

Now change all the notes attached to the label from B to T using Bar Label Edit in Multiple Mode.

REBARCAD -> EDITING -> EDIT BARS

Sketch Mode <OFF> - Default cfg (USA).

Pick bar/label to edit or <ENTER> for multiple selection: Press enter Select items to edit globally:

Select all the top Steel bars and change the notes from B to T.

To ensure that the bars, labels and ranges do not overlay each other when you place the top steel entities back into the drawing, you will need to move the horizontal entities down by some units and the vertical entities to the right by some units.

Once you have realigned the bars, ranges and labels, place the whole lot back onto the drawing by moving @20'.

The drawing so far should look something like Figure 1.7.

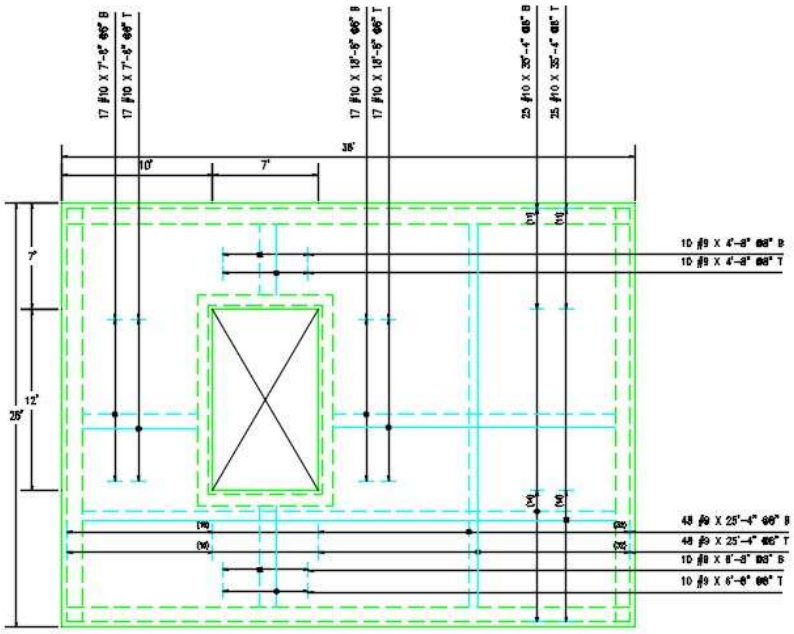

Figure 1.7 Reinforcement drawing showing the top and bottom Steel

Placing the reinforcement in the side of the structure

The next bar to be added is a horizontally placed bend type 17 with B leg lapping with the bend type 0 of Set One. Do tension anchorage lapping and this range and bar are then mirrored using copy Bars to the right-hand side of the slab. After this, a vertically placed bend type 17 of the same bar mark number needs to be added lapping with the bend type 0 of Set Four. Again do tension anchorage lapping and mirror the bar and range to the bottom of the slab. See Figure 1.8 for details.

RebarCAD – DRAW RANGE – NEW MARK

Bend type 17, type A615/60, #10 size, leg B lapping with Set One, tension anchorage lap. Set the C dimension appropriately; you will edit the bar set later to make Leg D the same as Leg B.

RebarCAD – DRAW BAR – COPY BARS – NEW SET

Mirror bend type 17, its label and range line to the right hand side of the slab.

RebarCAD – DRAW RANGE – NEW SET

Leg B lapping with Set Four, edit the dimensions and add the missing Leg D dimension, which is the same as Leg B.

RebarCAD – DRAW BAR - COPY BARS – NEW SET

Mirror vertical bend type 17, its label and range line to the bottom of the slab.

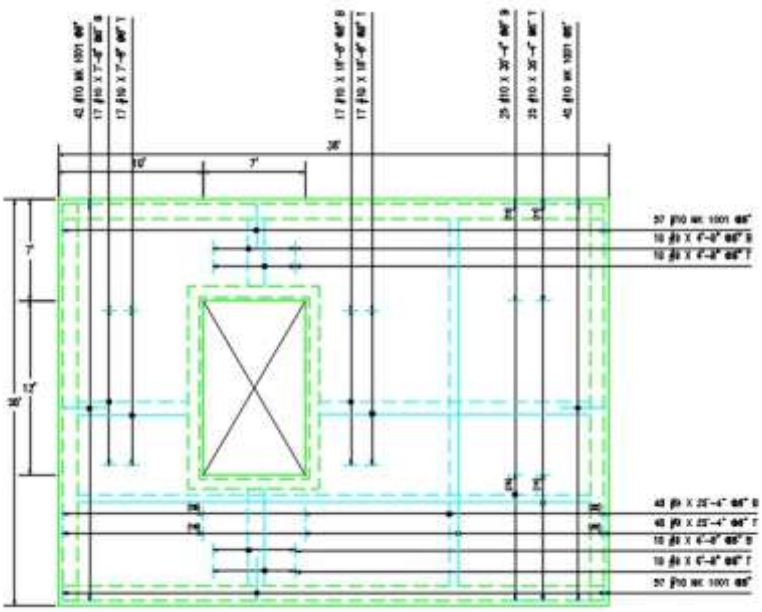

Figure 1.8 Reinforcement drawing showing top, bottom and side Steel

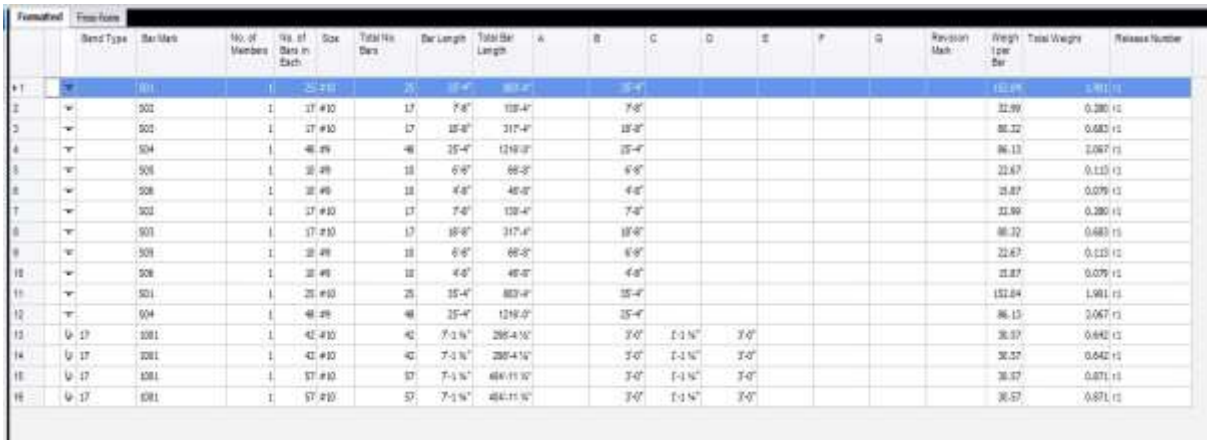

Figure 1.9 Bar list

The finished reinforcement drawing is saved as GLO_Imperial.dwg in C:\Program Files\CADS\AutoCAD XXXX\RebarCAD XXXX.XX\CADS-RC\Drawings.

Group layering display commands

Group layering display commands are accessed through

- Command line input;

- Menu bar;
- Ribbon panel;
- Tool bar.

Show Group Only

This command will show only the group which we have entered in the command prompt. Any other groups in the drawing will be automatically turned off. This is useful for preparing a drawing for plotting where you require only a particular layer to be plotted.

The "Show Group Only" command can be accessed through

- Command line input – Type "cads_rc_show_one_glo" in the command line Menu bar – RebarCAD->Utilities-> Group Layering->Show Group Only;
- Ribbon panel->GLO;

Figure 1.10 Show Group Only-Ribbon panel

- Tool bar;

Figure 1.11 Show Group Only-Tool bar

Run the "Show Group Only" command using any of the above options and enter T1/N1. Only the top bars with the continuous line are shown. In this tutorial the GLO has been used in combination with different member titles, so that you can plot a drawing with only top steel as shown in Fig 1.12.

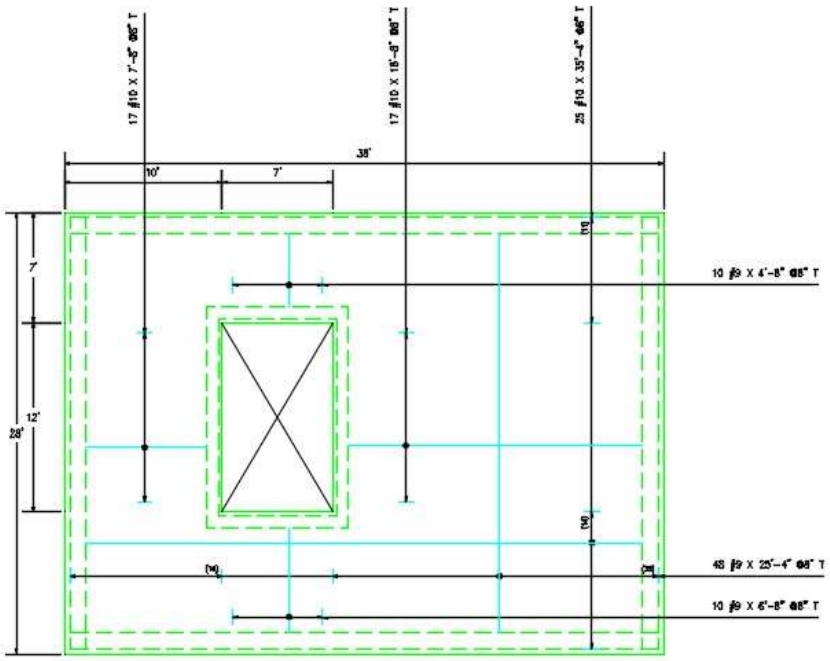

Figure 1.12 Drawing showing top steel only

Show Group

This command allows you to turn on a group which we have entered in the command prompt. You can use this command to turn on as many groups as you wish.

The "Show Group" command can be accessed through

- Command line input – Type "cads_rc_show_glo" in the command line Menu bar – RebarCAD->Utilities-> Group Layering->Show Group;
- Ribbon panel->GLO;

Figure 1.13 Show Group -Ribbon panel

- Tool bar;

Figure 1.14 Show Group –Tool bar

Run the “Show Group” command using any of the above options and enter B1/F1.

The drawing now shows the bottom steel as well as the top steel.

Show All Groups

This command turns on all the group layers on the reinforcement drawing. The “Show All Groups” command can be accessed through

- Command line input – Type “cads_rc_show_glo A” in the command line Menu bar – RebarCAD->Utilities-> Group Layering->Show All Groups. Ribbon panel->GLO;

Figure 1.15 Show All Groups –Ribbon panel

- Tool bar;

Figure 1.16 Show All Groups –Tool bar

Suppress Group Only

This command turns off the group which we have entered in the command prompt and turns all other groups on.

The “Suppress Group Only” command can be accessed through

- Command line input – Type “cads_rc_!show_one_glo” in the command line;
- Menu bar – RebarCAD->Utilities-> Group Layering->Suppress Group Only. Ribbon panel->GLO.

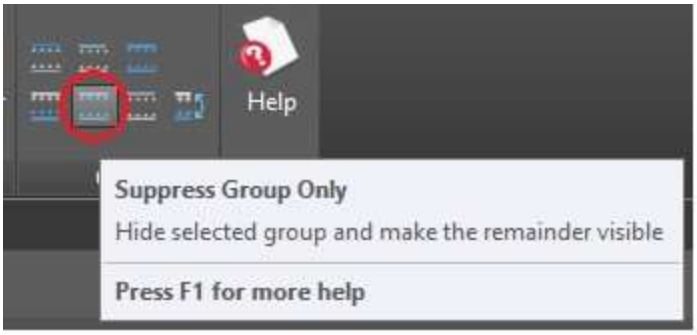

Figure 1.17 Suppress Group Only - Ribbon panel

- Tool bar.

Figure 1.18 Suppress Group Only –Tool bar

Suppress Groups

This command turns off the group which we have entered in the command prompt.

The “Suppress Group” command can be accessed through

- Command line input – Type “cads_rc_!show_glo” in the command line;
- Menu bar – RebarCAD->Utilities-> Group Layering->Suppress Groups;
- Ribbon panel->GLO;

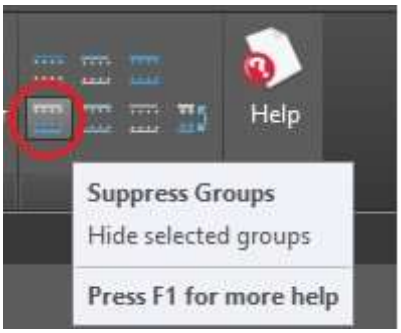

Figure 1.19 Suppress Groups–Ribbon panel

- Tool bar.

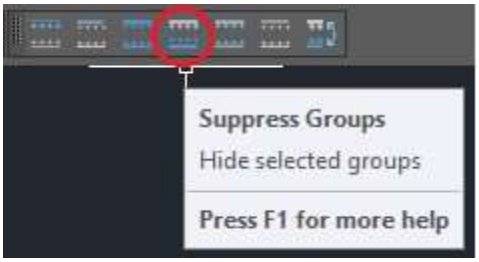

Figure 1.20 Suppress Groups–Tool bar

Suppress All Groups

This command turns off all the groups.

The "Suppress All Groups" command can be accessed through

- Command line input – Type "cads_rc_show_one_glo N" in the command line;
- Menu bar – RebarCAD->Utilities-> Group Layering->Suppress All Groups;
- Ribbon panel->GLO.

Figure 1.21 Suppress All Groups–Ribbon panel

- Tool bar.

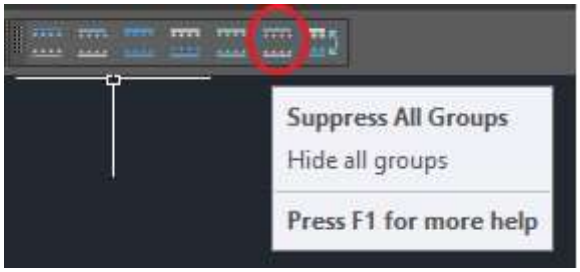

Figure 1.22 Suppress All Groups–Tool bar

Change to Other Group

The command allows you to change the RC entities on one group layer to another group layer. It simply requires you to select the RC entities you wish to change, and then enter the required group you wish to change. RebarCAD will redraw the selected entities on their new group layer. Also this command is used to change the RC entities drawn on normal 'REBARS' layer to the required group layer.

The "Change to other group" command can be accessed through

- Command line input – Type “cads_rc_change_glo” in the command line;
- Menu bar – RebarCAD->Utilities-> Group Layering->Change to Other Group;
- Ribbon panel->GLO;

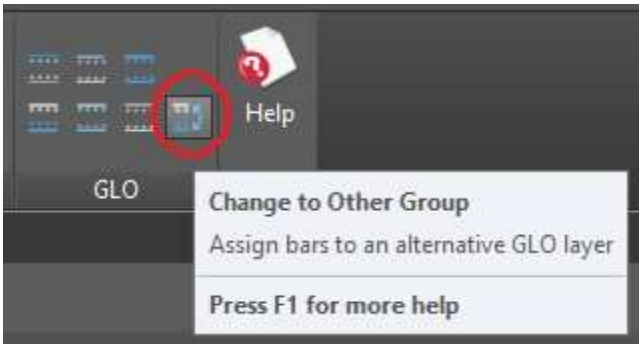

Figure 1.23 Change to Other Group–Ribbon panel

- Tool Bar.

Figure 1.24 Change to Other Group–Tool

Group layering and Non–RC entities

The GLO facilities are designed to work specifically with the bar views and their associated components. Other RC objects such as outlines are drawn according to their configured layers and the GLO does not over-ride these settings. If you want such objects on any group layer, then you have to change the object’s layer.