



SOFICAD WORKSHOP

AUTUMN 2006

SOFICAD 2007 VERSION 16.5/17.1

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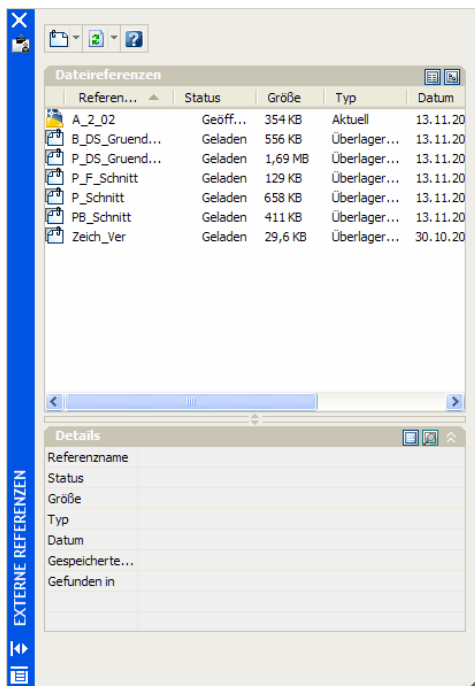
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1. News in AutoCAD 2007

Here you find a list of news which may also be interesting when working with SOFICAD.

1.1 Improvements for managing Xref-files

The pallet External References allow allocating, organizing and managing any file reference which are linked with the drawing. You can allocate and manage referenced drawings (XRefs), add DWF-documents and import raster images.



The following can be handled in the pallet External References:

- Allocate new file reference via the tool buttons or update existing references
- Manage existing references in the file reference area. This area allows switching between list and structure mode.
- Display information of each file reference in the Detail/Preview area.

The detail mode shows the attributes for a selected file reference. The preview mode shows a miniature preview of the selected file reference.

1.2 Selecting a suited work area

When starting AutoCAD 2007 you can select the initial work area.

- **AutoCAD Classic**

We recommend this option when working with SOFiCAD.

- **3D-modelling**

The work area 3D-modelling contains the new command navigators, which allows accessing the new 3D-features.

In the drawing area of the working area 3D-modelling a graded background color, a basic level or a working area (XY-level of the UCS) as well as a new rectangular raster are displayed. Thereby the visualization in 3D as well as the design of 3D-models will be easier.

Furthermore the new 3D-Cursor delivers hints for the UCS-alignment.

The tags Model and Layout where replaced by buttons on the status bar – thereby offering more space for the drawing area. However, in case you prefer using the tags, you can activate them with a right-mouse click on the model or layout button.

- **AutoCAD-default** (will only be showed if you migrate from a previous AutoCAD release)

1.3 Creating PDF files

The DWG-to-PDF driver allows creating a PDF-file (Portable Document File) from your drawing.

Just like Acrobat Reader the PDF-Viewer can be downloaded for free from the Adobe Website – therefore you can also send the file to persons not equipped with AutoCAD.

PDF-files are downloaded in a vector-based format; therefore the drawings are displayed exactly.

In the dialogue box Plot, select the option DWG-t-PDF.pc3. You can select the PDF-file's resolution and other parameters for printing, e.g. paper size and scale. After the PDF-file was created it can be displayed and printed with the Acrobat Reader.

1.4 Assigning DWF-files as documentation

A DWG-file can be assigned a DWF-file as external reference file. For it, use the command DWFATTACHMENT.

After selecting the DWF-file in the dialogue box DWF-File the dialogue box DWF-Underlay/Reference appears. This box allows defining the parameters and details of the assigned DWF-documentation.

If a DWF-file is added as documentation, the DWF-file can be moved, turned and scaled, whereby the geometry in the DWF-file may not be changed.

By default you specify an insertion point for the DWF-documentation in the drawing and then drag the cursor to specify the scaling. In case you would like to use a certain position to assign the DWF-documentation, you can do this by changing the settings in the assign DWF-Undelay dialogue box.

1.5 A lot of 3D

The new AutoCAD 2007 contains a large list of features supporting working in 3D. However as they are irrelevant for the work with SOFiCAD, in the following please find an abbreviated list:

- 3D-Volume bodies (generation by sweeping, rising, strengthen, striking)
- Poly bodies
- Spiral
- Adding edges and areas
- Changing volume bodies with grips
- Creating and editing section objects
- Materials, illumination, visual styles
- Improved navigation
- Updated camera function
- Animation and viewing
- Rendering

For more information concerning the single features, please refer to the AutoCAD Help.



2. General News in SOFiCAD 16.5/17.1

Here you find a list of news corresponding to any of the SOFiCAD modules.

2.1 Any module can be installed

In case of a subsequent switch from SOFiCAD-K (Design) in combination with Reinforcement to Reinforcement-solo it's no longer required to install all over again. A simple "Name.Nam" (Authorization File) exchange now suffices. SOFiCAD-K as well will only start by entering the corresponding command.

The same is valid for any further module.

Further more we warrant that the single modules are only loaded when required. For network-hardlock users we can thereby ensure that only those modules currently in use are blocked at the hardlock. This is also valid for the Design module.

2.2 User rights

As of now, users possessing user rights only can operate SOFiCAD. Installation by the administrator however is still required.

2.3 New Name.Nam query

For both versions a more advanced name.nam query is required as of immediately, an entry with the year dates – 2006 - is required.

Name.Nam extract:

```
2006NN001 SOFI SOFB STLI STL1 ROSY BAMT SOFP SOFS SOFV SOFM <  
2006NN001 SOFA SOFW SOFF SOFU SOU1 SOUE SOUP XXXX XXXX XXXX <
```

2.4 Differences 16.5 and 17.1

The versions 16.5 and 17.1 mainly differ in the used/applied AutoCAD version, please see the next section. A further difference lays in the Alignment, regarding this matter, please check the chapter 6, page 22.



2.5 Required AutoCAD-releases

SOFiCAD 2007 version 16.5 requires AutoCAD 2006.

SOFiCAD 2007 version 17.1 requires AutoCAD 2007.

2.6 Trial-Version

SOFiCAD can now be installed as trial version. Which means, if an authorization file was not found during start the program, a dialogue box will automatically be started – with it, a corresponding authorization file can be requested.

Request the license file by following the instructions on the screen. At the latest the next working day we will provide you with the file via Email. Please store it in any directory – **BUT NOT IN THE INSTALLATION DIRECTORY** of the **TRIAL**-version.

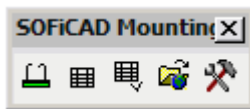
Restart the program and activate your SOFiCAD version. It will run for 28 days, once you've received the authorization file. The remaining days will be displayed each time you start the program for information purposes.

3. News in SOFiCAD-K 16.5 / 17.1

SOFiCAD Design offers many a new functionality and improvement which alleviate working with the program. In the following the new features are presented in brief.

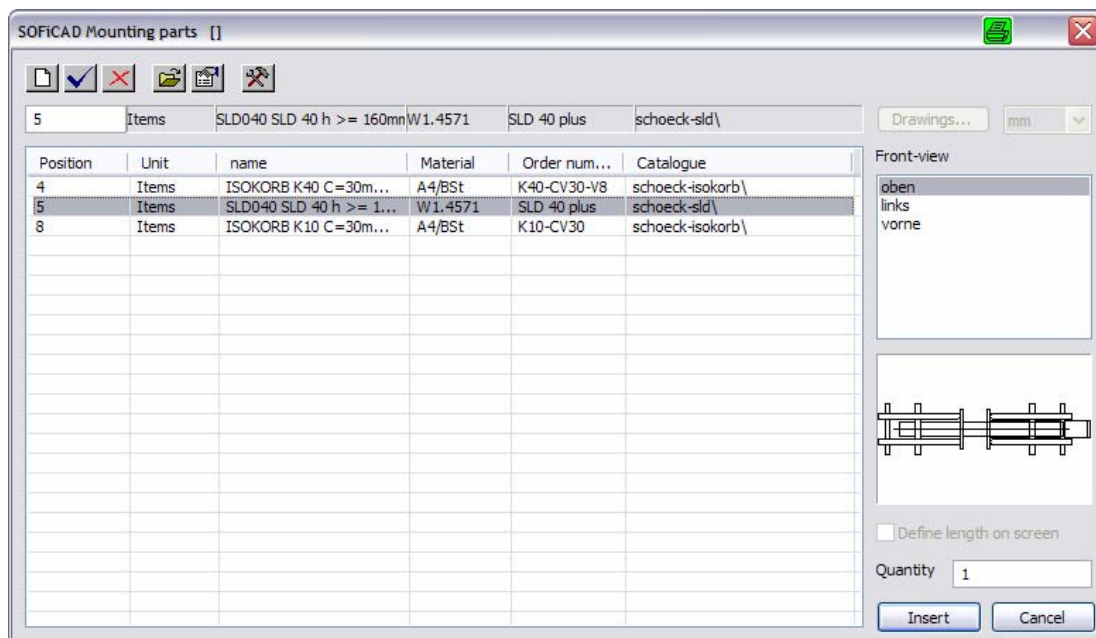
3.1 Building components

The new release certainly offers major improvements when dealing with building components.



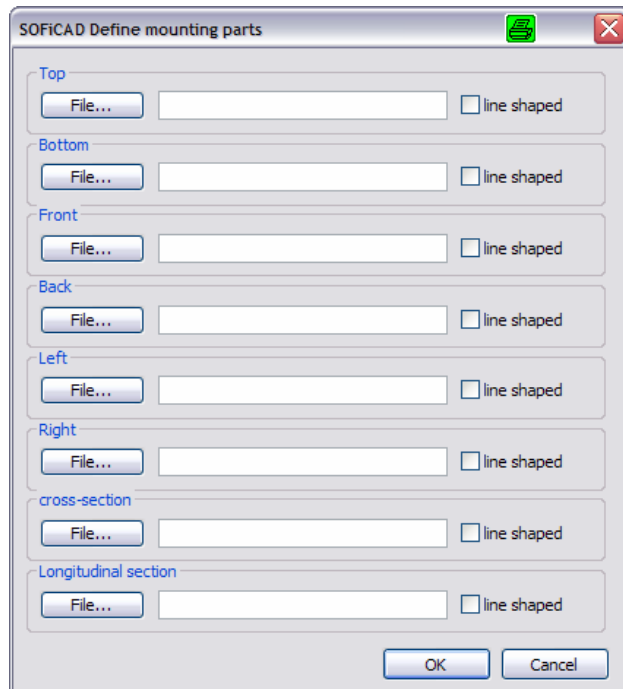
3.1.1 Inserting and managing

The command starts the component manager – which allows inserting and managing building components. The following dialogue box opens:

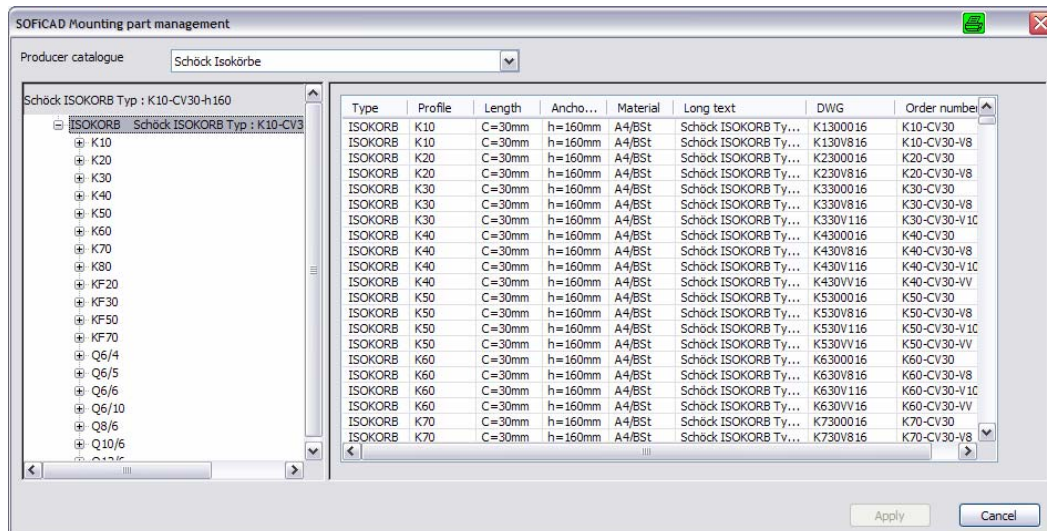


With the dialogue box new components can be defined, taken over from product catalogues or other project data bases and transferred into the drawing.

Should drawings exist for the new component, they can be added via the option “Drawings...”. Here you can select some blocks for several view types.



The option “Take over components from product catalogue” allows selecting components from different manufacturers. However they previously have to be loaded with the command „Compare manufacturer data (see [Compare manufacturers data page 8](#)):



3.1.2 Insert table

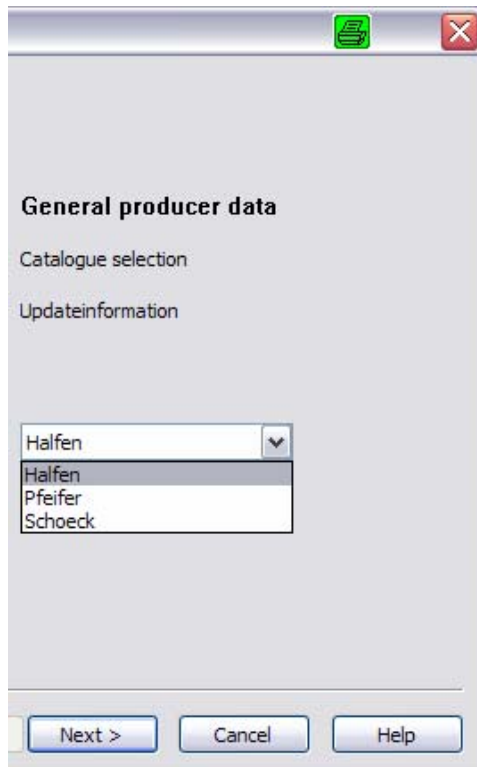
The inserted components will be compiled in an AutoCAD table using the command “Insert table”:

Mounting and add. parts list					
Pos.	Quantity	Unit	name	Material	Order number
1	1	Items	HBT 80 10/15-6 1250	BSt 500 S	0054.030-00004
3	1	Items	HTA 28/15 150 VF	A4	0001.010-01002
4	1	Items	SLD050 SLD 50 h >= 160mm ø = 22 mm	W1.4571	SLD 50 plus

3.1.3 Tracking components

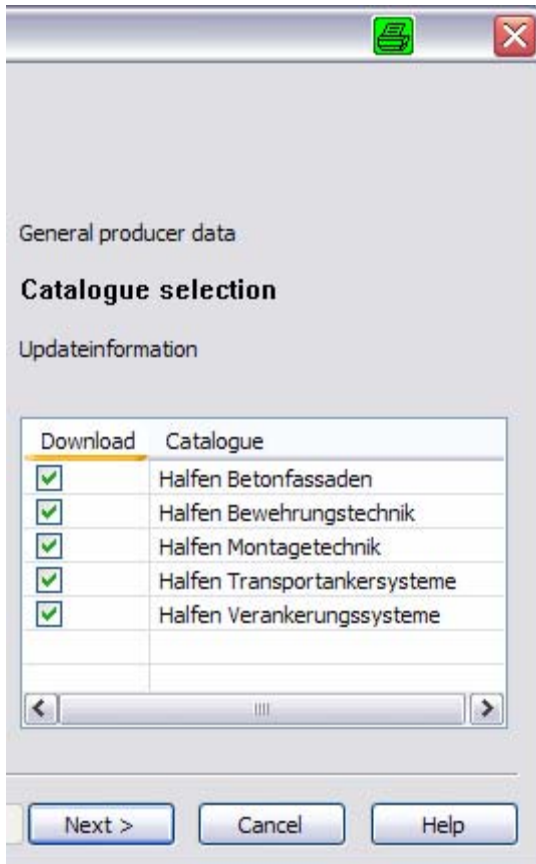
The inserted components can simply be copied, or their attributes can be changes with a double click. The inserted table can be updated with the command “Track components”.

3.1.4 Compare manufacturers data



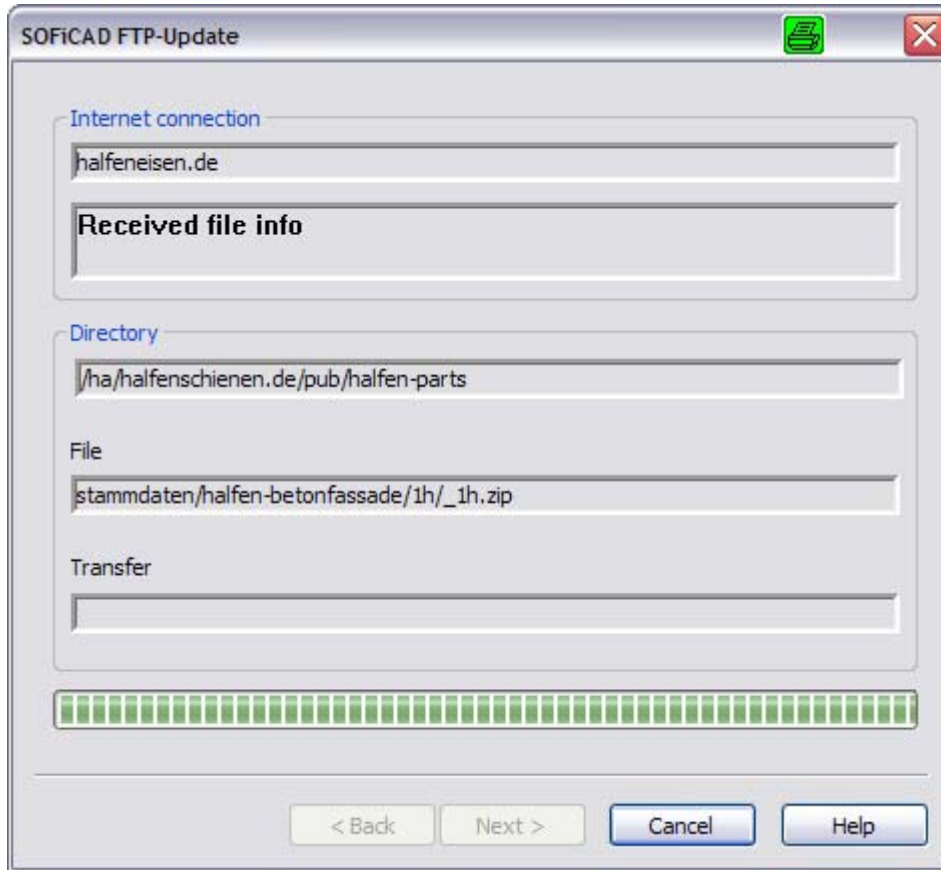
Data of building components from different manufacturers can be loaded with this option.

Select the manufacturer you would like to receive the data from on the wizard's first page.



The next page shows you a selection of the components available from the manufacturer. Select the desired catalogues.

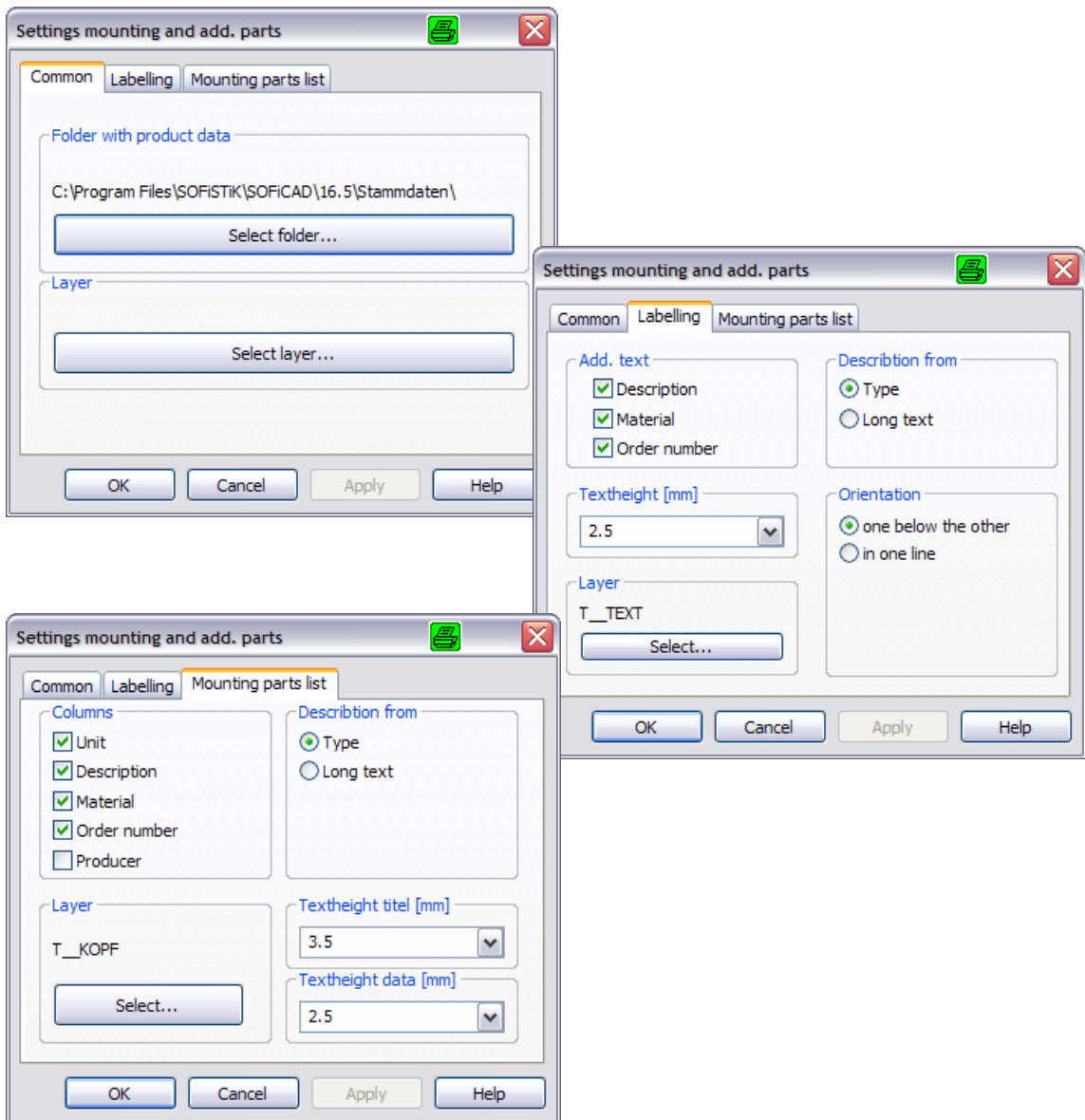
The next step shows the download process progression.



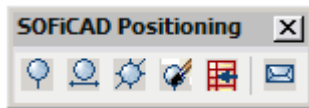
3.1.5 Settings

The three tabs in the dialogue box “Settings” allow setting different options for the components - for example the directory where the manufacturer’s details should be stored.

The settings can also be opened via the dialogue box for inserting and managing building components.

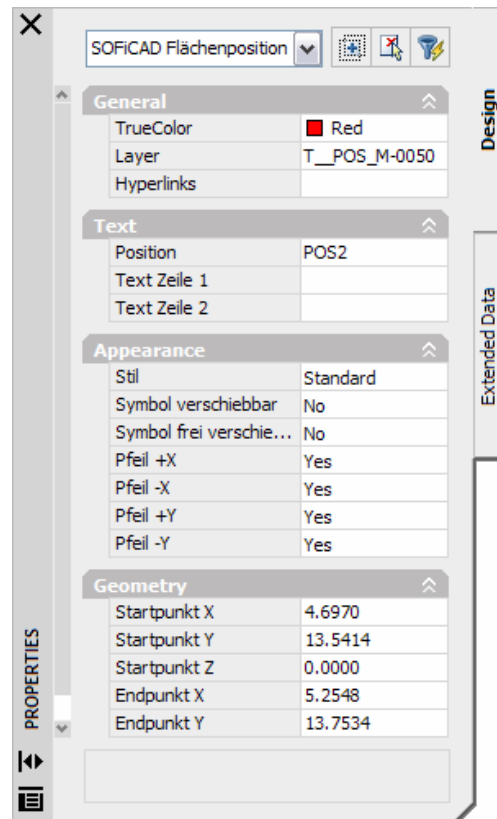


3.2 Positioning



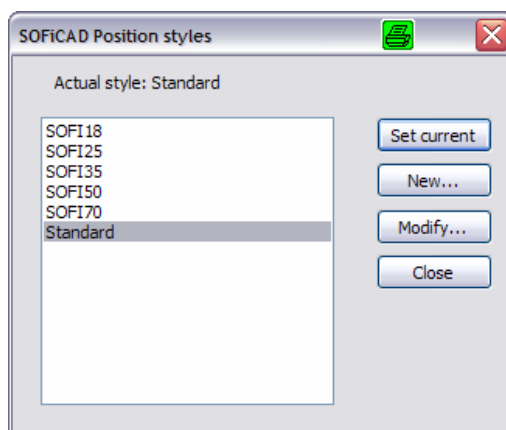
3.2.1 Objects

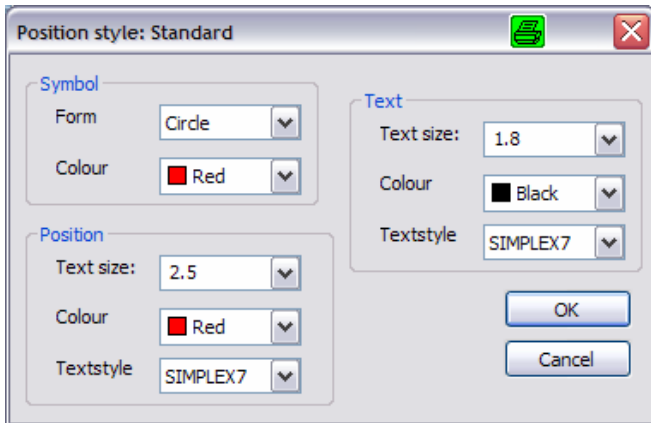
The positioning has newly been programmed – they are now objects as well. Therefore changes of inserted positions can finally be conducted subsequently as well. This can be done very comfortably by using the attribute dialogue.



3.2.2 Position style

The positioning styles can subsequently be changed according to your ideas using the positioning styles.





The settings listed in this dialogue box are available.

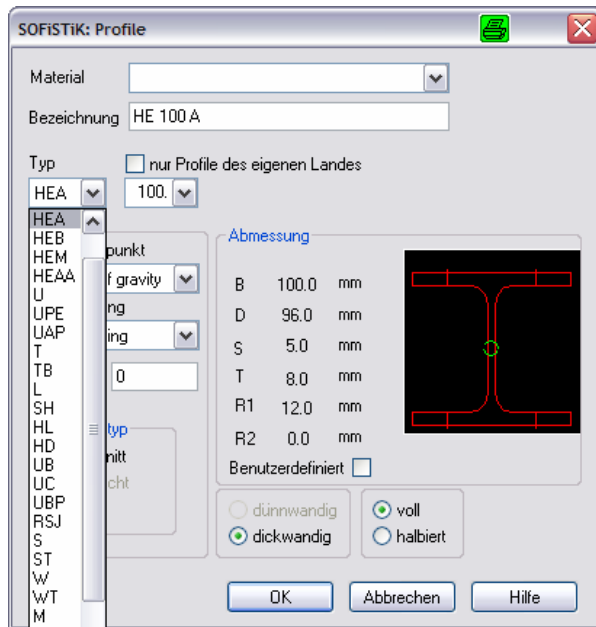
3.2.3 Position table

The command allows inserting an AutoCAD table with the positions present in the drawing.

At the moment the table needs to be re-inserted after changes – the old one should therefore be deleted.

3.3 Profiles from FEA in Steel Design Light

Any profile available in the FEA programs is now also available in Steel Design Light. With the exception of the profile selection the command procedure in the dialogue box has not been changed.





3.4 New construction material stamps according to Eurocode

The current version extends our offers concerning standard delivered construction material stamps. Now there is a selection with bending radii according to Eurocode with extensive tables of the new concrete covers – of course in German and English.

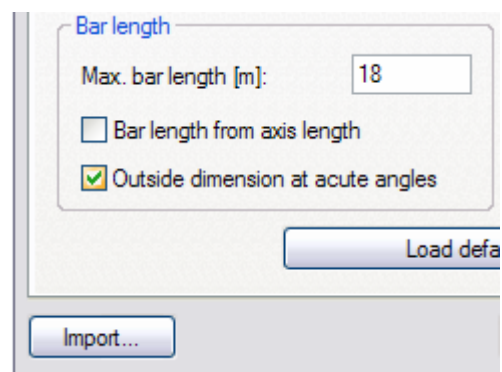
4. News in SOFiCAD Reinforcement 16.5/17.1

4.1 General

This section shows changes regarding the entire Reinforcement module – thereby concerning meshes as well as steel bars.

4.1.1 Reinforcement parameters

The reinforcement parameters can now be imported from an other drawing and can thereby taken over into the open drawing.



4.1.2 Layer browsing improved

Any object can now lie on the steel bars and mesh layers. They will also be hidden when browsing.

4.1.3 Position alignment

The alignment of the position for any text style is now by default always centered in the position circle in the case of steel bar positions – for meshes correspondingly in a square. Until now, this was not always the case for certain text styles.

4.1.4 Reinforcement in view windows

Reinforcement objects simultaneously available in several view windows. In the parameters a setting allows that the text block for each view window can be arranged separately. This is especially required if the same reinforcement objects should be displayed in different scales.



4.2 BFE Show

So far the BFE Show could only determine the inserted reinforcement of meshes and tracked linear distributions. As of now, the list and drawing meshes as well as steel bar laying with arbitrary bar arrangement will be taken into consideration.

4.2.1 Single bars

With BFE Show now single bars are also considered. Up until now it was only possible to consider meshes and linear steel bar laying.

Extract from the SOFiCADB.BDD file:

```
; With the width influence factors you can define the area, in which
; a crossing reinforcement for the respective reinforcement value from the
; BFE object will be considered.
; As a base value is used the distance of the reinforcement values, adjustable in
; the BFE object. If you want to use another value as the default settings,
; you have to define the values 53/54 down below
; 53 multiple of the thickness, for constant value
; 54 multiple of the thickness, for decreasing reinforcement at the side
; 55 display of the width of the influence
;53 0 Real 0.25
;54 0 Real 0.5
55 0 Integer 1
```

This means that via the BFE-object it will be checked which bars lay in a defined influence area and they will accordingly be converted and added to the corresponding reinforcement value.

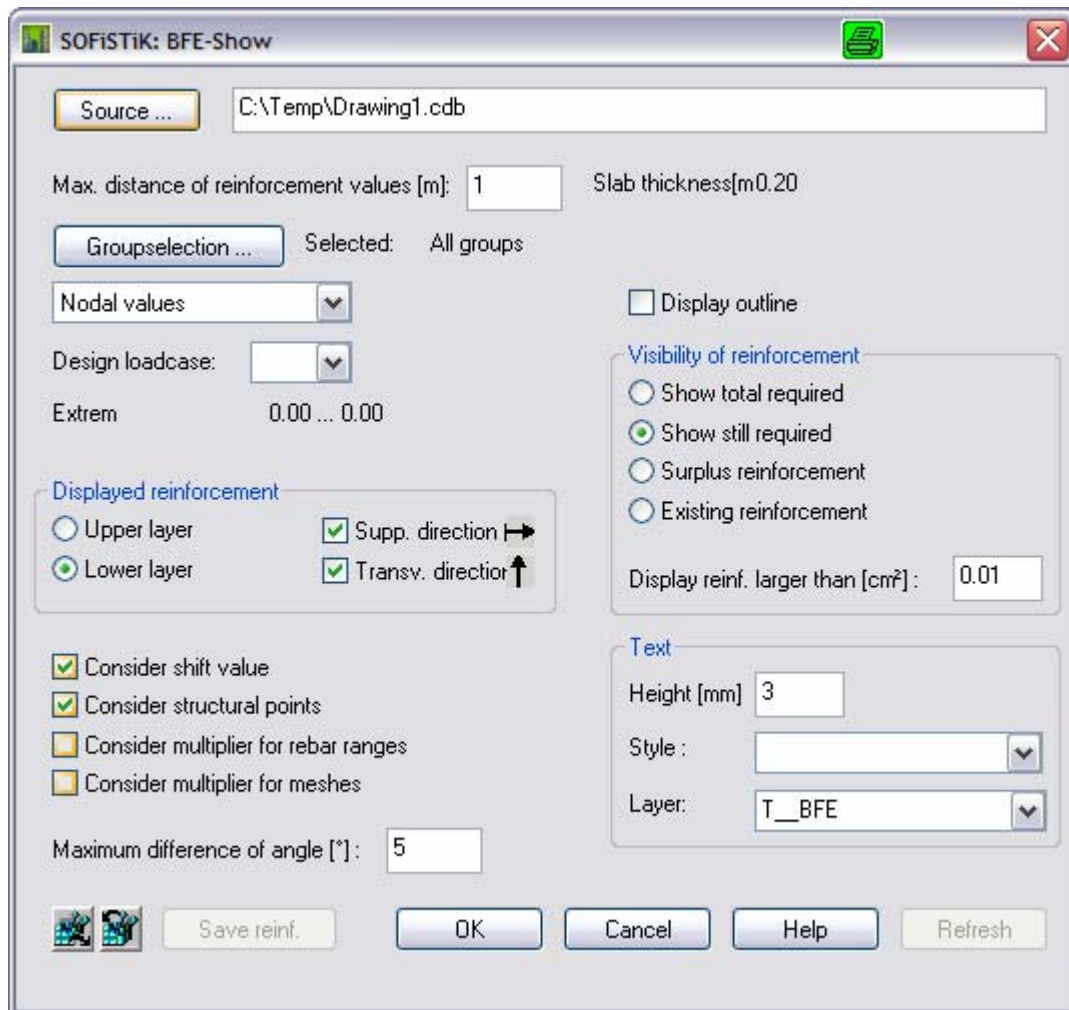
4.2.2 Speed

BFE-Show has substantially been increased in speed with the current version. The reason being is among others that not each of the current settings needs synchronization with the data base. Even updating is conducted without data base access.

Further more the BFE-object now stores the reinforcement values for the lower as well as the upper layers of the drawing, which again means that the data base will not be accessed in the case of switching the layers.

4.2.3 Over-reinforcement

A new display of the reinforcement values is the over-reinforcement. With it the designer may check at any time whether too much reinforcement was inserted. Further more it's also possible to display the values of the currently inserted reinforcement. Up until now, only the totally required reinforcement could be displayed.

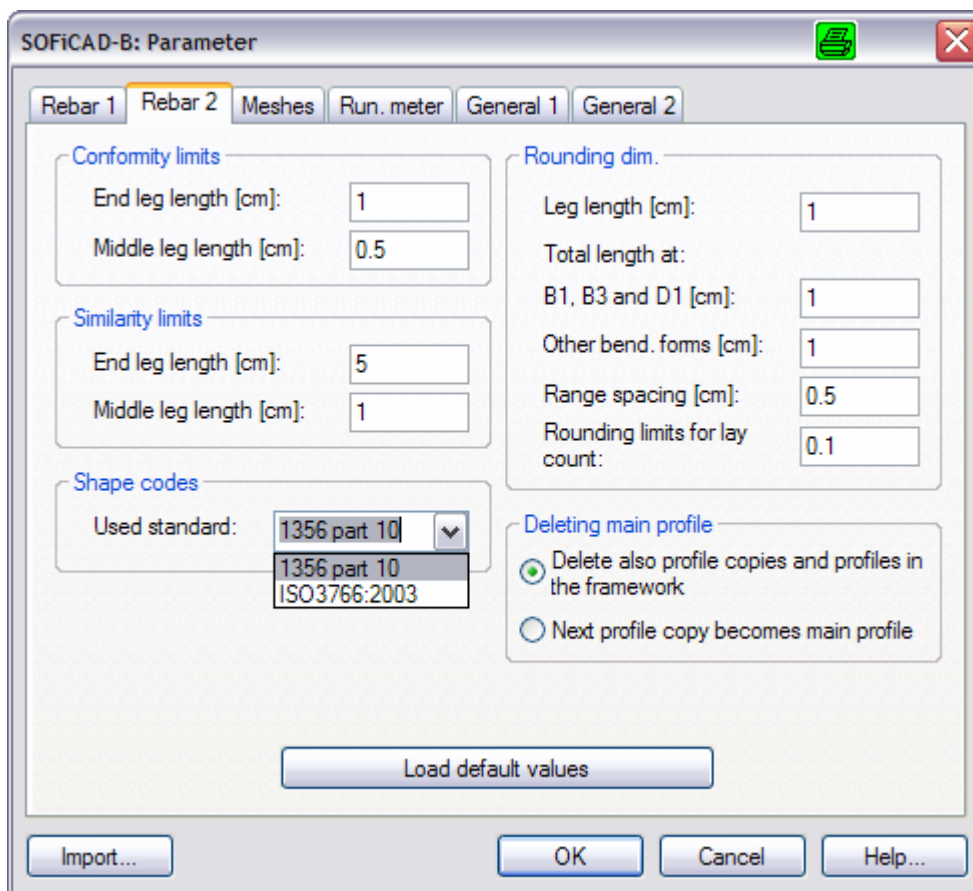


4.3 Steel bars

In the following we list the changes applying to steel bars.

4.3.1 Deleting extracts

It's now possible to set in the parameters whether by the deleting the main extract, any other extract in the formwork and the extract copies should be deleted as well (default and behavior until now) – or when deleting the main extract the following extract copy shall be transformed into the main extract and any other extract copies and formwork extracts remain untouched.



4.3.2 Automatical steel bar laying

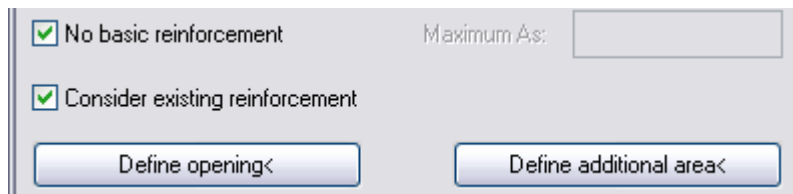
The automatical steel bar laying now works with temporary carpets / meshes. These can be processed in the BAMTEC-module and subsequently be disassembled into steel bars.

The processing options are the following:

- Add or delete bars
- Edit diameter
- Parts with optional entanglements
- Edit scale lengths
- Amend or edit areas (for further information please check the chapter [Error! Reference source not found.](#) on page [Error! Bookmark not defined.](#))

4.3.3 Supplements in steel bars for mesh fields

In order to generate steel bar supplements for mesh fields, select the command "*Automatical Steel Bar Laying*". Please also select the layers and directions to be generated. However in the dialogue box now activate the two fields "*No basic reinforcement*" and "*Consider existing reinforcement*". Now only the required supplements are generated in steel bars.



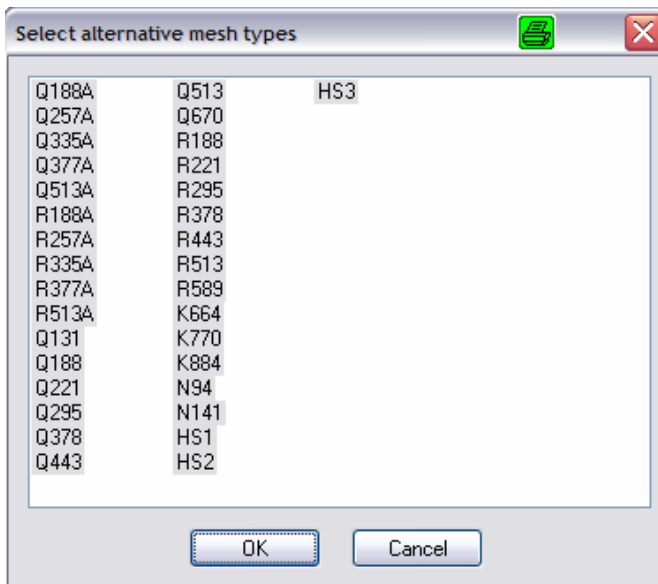
The supplements as well have to be disassembled into steel bars after processing.

4.4 Meshes

In the following we list the changes applying to meshes.

4.4.1 Optimizing meshes according to BFE

For every mesh field which is arranged over a BFE-object the command "Mesh/BFE optimize" is now available. With it you can automatically adjust mesh types in a present mesh filed.



In the appearing dialogue box the meshes and mesh types subject for optimization will be listed.

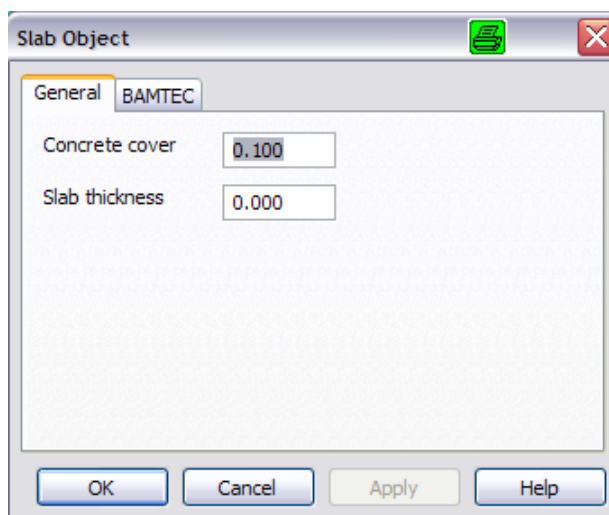
By subsequent updating the BFE-object the current values will be displayed.

5. BAMTEC 16.5/17.1

In the following we list the changes applying to BAMTEC.

5.1 Slab objects

BAMTEC is the first module using the brand new slab object. It stores different parameters and information from various modules. General parameters are concrete cover and the slab thickness. By double clicking onto the object e.g. the concrete cover may also subsequently be changed.



The contour of this slab object can be edited via the general editing function such as e.g. edit connection. After selecting “re-calculate carpet” the corresponding BAMTEC-carpet will be adjusted to this new contour.

5.2 Supplementary areas

Supplementary areas are now controlled via a new command. -> New Dialogue Box, already in 16.4, attributes are still to come, can be copied

Ditto automatically steel bar laying.

6. Alignment 16.5/17.1

In the following we list the changes applying to Alignment.

6.1 Bloss-Arch

The Bloss-Arch – primarily used for high speed sections for the German Bahn – can now also be generated with SOFiCAD Alignment as part of an axis. The Bloss-Arch describes a transition arch – similar to a clothoides.

6.2 Inclined sections in 17.1

Especially for the design of abutments it is often required to generate regular cross sections inclined to the corresponding axis. This can now be conducted with version 17.1.

In the file SOFiCAD.BDD you can now set whether the angle should be queried in case of inserting a regular cross section – you can also define this setting as default for the described procedure.

Extract from the file SOFiCAD.BDD:

```

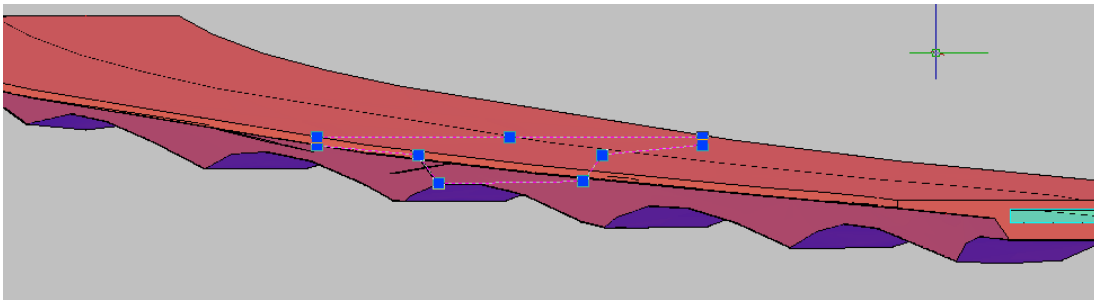
; BEREICH (101-200)
;
;
;
; REGELQUERSCHNITT / QUERSCHNITT (201-300)
.....
; Verdrehung der Querschnitte gegenüber der Achse [rad]
208 1 Real 0.00 ; 0.0rad = rechtwinkig zur Achse
.....

```

In order to generate a cross section at a certain station of the axis so far, works the following way: The axis incl. the gradient is written into the SOFiSTiK data base with any concerned tracks such as enlargements, haunches and the corresponding regular cross section - then calculated, re-imported from the data base into the drawing and the desired cross sections are displayed.

For cross sections inserted perpendicular to the axis, the described procedures for the desired station or the area for which the cross section was defined remains the same.

For inclined sections however, internally a perpendicular section will be defined for every main point of the axis. Based on these sections a 3D-solid will be generated on the actual Z-coordinate. In it at the desired station in the corresponding angle a cutting plane will be generated and blended with the 3D—solid. The thereby resulting AutoCAD-regions will be transformed into a SOFiCAD-V cross section and it can be processed as usual.

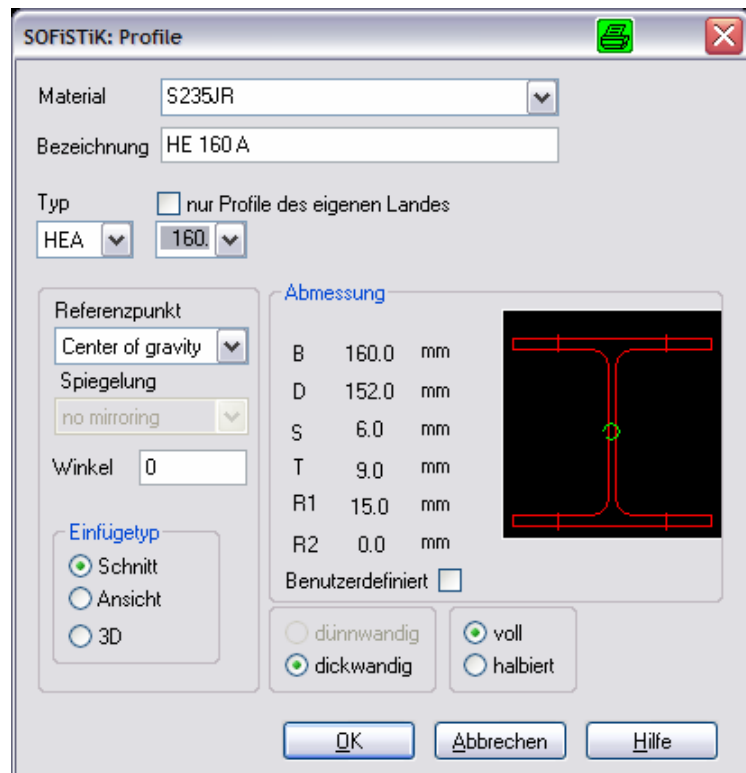


7. Steel Design 16.5/17.1

7.1 Profiles from FEA

As described in Steel Design Light, any profile which can be used with the FEA programs is also available in the Steel Design module. The command chain has therefore also not been changed with the exception of the profile selection in the dialogue box.

The profiles can be edited with proper specifications; it will then be noted at the inserted profile in the drawing.





8. General and introduction to automatical steel bar distribution

The slab reinforcement automatically develops based on reinforcement values which shall be determined or on a present FEA-analysis.

One distribution element in the upper and lower reinforcement layer for both distribution directions are dimensioned from a FEA-analysis, which again exactly corresponds to the required reinforcement.

Without present FEA-analysis a distribution element will be generated separately for the distribution direction and the lower and upper reinforcement layer per work step.

When generating a distribution element, the area is queried either by a point in the area (the area must be closed) or by defining the boundary.

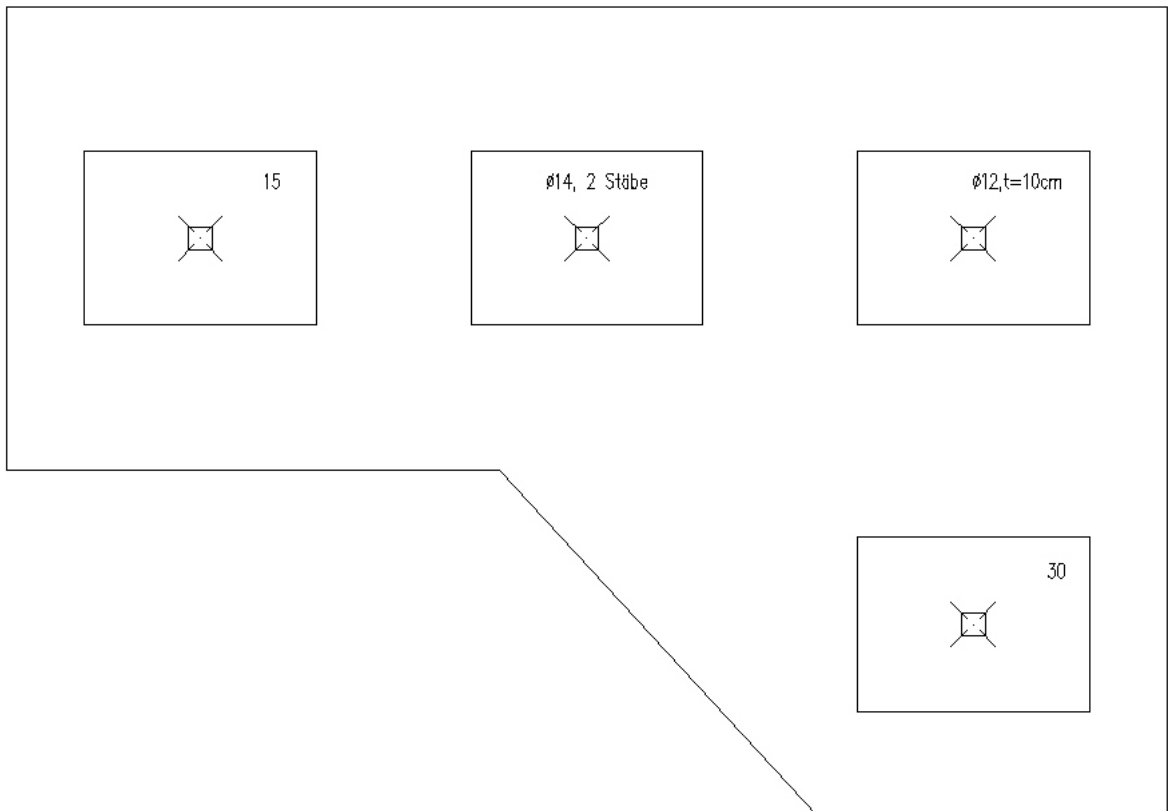
For areas, block outs can be considered and areas of extra reinforcement can be specified.

8.1 Automatical steel bar distribution without FEA

For steel bar reinforcement the required reinforcement is given by specifying the diameter and the distance. The extra areas the required A_s will be specified. The previously defined basic reinforcement will be added to this area.

8.1.1 Preparation

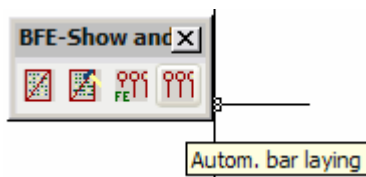
Ground view of the slab is located on Slab/Platte 2.dwg.



The slab is loaded by 4 columns. Around the columns a squared area shows the extra reinforcement.

8.1.2 Command automatical steel bar reinforcement distribution/laying

Select in toolbox BFE-show and automatical distribution the button automatical distribution.



Subsequently select a point in a closed area or the area by specifying the boundaries.

Command:

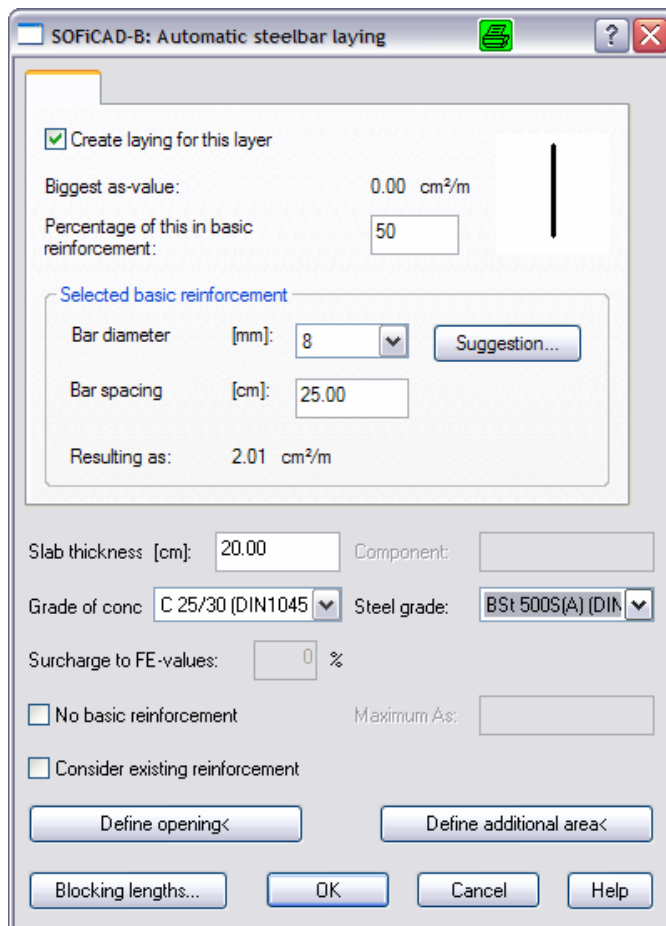
SOF_BT_AUTOMATICBARLAYING Select boundary of the carpet
Select Boundary or [Show point in area]:

You are asked for an extension of the boundary. Usually this means the abutment boundary. In our case however the value for the slab must be negative. It has the size of the concrete covering.

Extension of the border $m < 0.1000 >$: -0.05

Subsequently the bar's direction will be queried – in our case perpendicular.

A dialogue box appears which queries parameters for the steel bar distribution.



8.1.2.1 Basic reinforcement

A diameter of 12 mm and a distance should be selected as basic reinforcement.



8.1.2.2 Material values

The slab thickness as well as the concrete and steel quality should be inserted.

8.1.2.3 Block outs

The command Define Opening allows the definition of opening – again with specifying a point in the area or the boundary. Additionally the extension of the hole in m will be asked for.

Define opening
Select Boundary or [Show point in area]:
Extension of the hole m<0.0500>::

8.1.2.4 Extra area

The command Define Additional Area allows specifying areas for which an required As or directly a diameter with distance.

Type of add. area <ReqAs>[ReqAs/Spacing]: R

Afterwards an area will be queried – it can be specified by showing the point in area or the boundary.

Define area
Select Boundary or [Show point in area]:

Req. As: 15

This shall also be conducted for areas with 30 cm/2.

In order to specify the distance the command extra area must be called up again.

Type of add. area <ReqAs>[ReqAs/Spacing]: S
Define area
Select Boundary or [Show point in area]:

Now, the bar diameter and the distance will be queried.

Bar diameter in mm [8/10/12/14/16/20/25/28/32/40]: 12

Axial spacing in cm: 10

For the middle area a diameter and amount of bars are required which should be placed in-between the basic reinforcement.

Type of add. area <Spacing>[ReqAs/Number/Spacing]: NT
Define area
Select Boundary or [Show point in area]:
Bar diameter in mm [8/10/12/14/16/20/25/28/32/40]: 12

Bars between Basic Reinforcement or [1/2/3]: 1

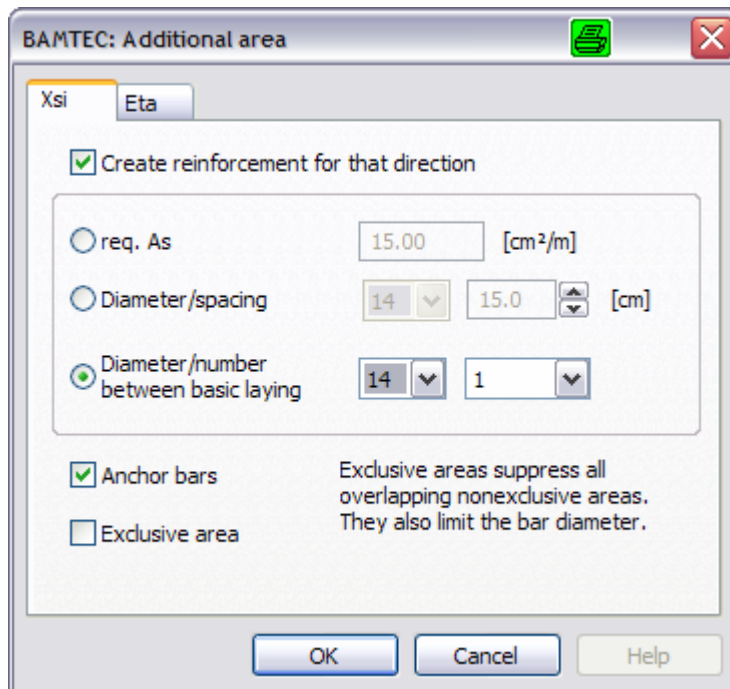
8.1.2.5 Subsequent changes

A double click in the reinforcement object or clicking on the object with a right mouse click → context menu → info/edit leads back to the dialogue box for the bar reinforcement. There, the basic reinforcement can be changed and openings or additional areas can subsequently be added.

In the context menu, the command Recalculate Carpet can be called up, in case the changes are not conducted right after leaving.

It's also possible to delete the areas for openings additional areas. In this case, Recalculate Carpet should be called up again.

8.1.2.6 Area 14, click on 2 bars



Activate Xsi

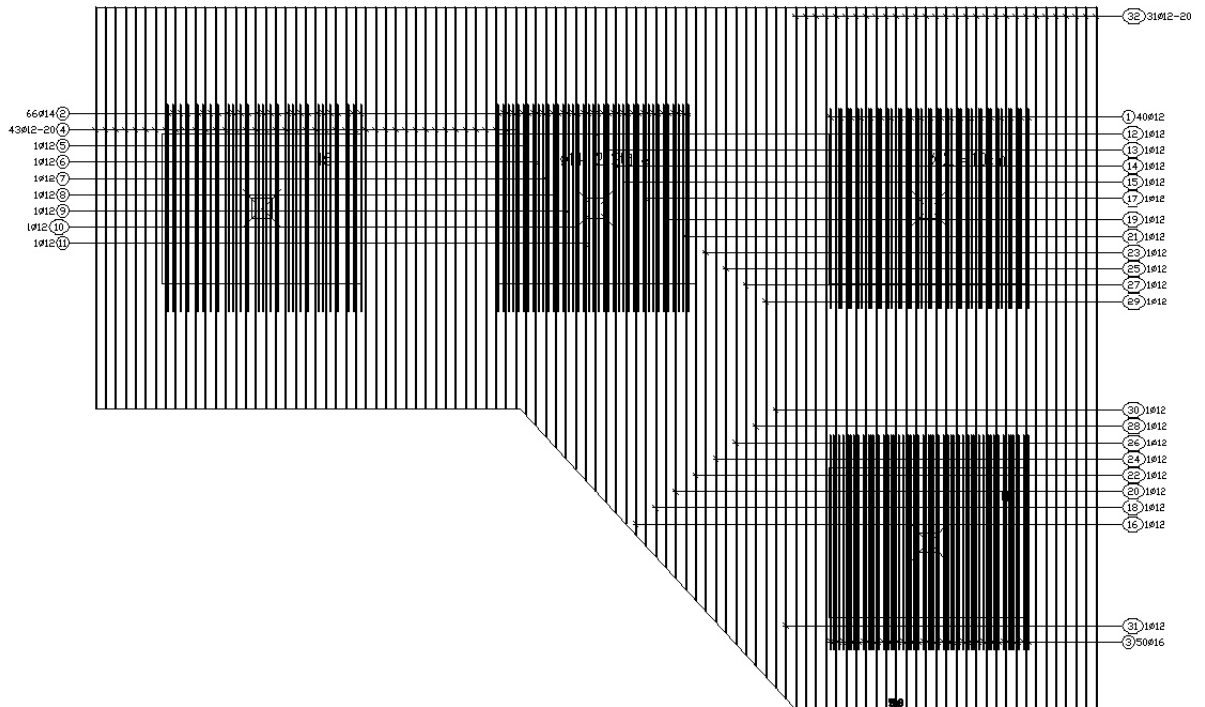
Activate diameter/amount between basic reinforcement

Enter diameter 14 and amount 2

8.1.2.7 Exercise

- Insert an opening and delete it again
- Insert an additional area and delete it again

8.1.2.8 Carpet



8.1.2.9 Exploding into bars

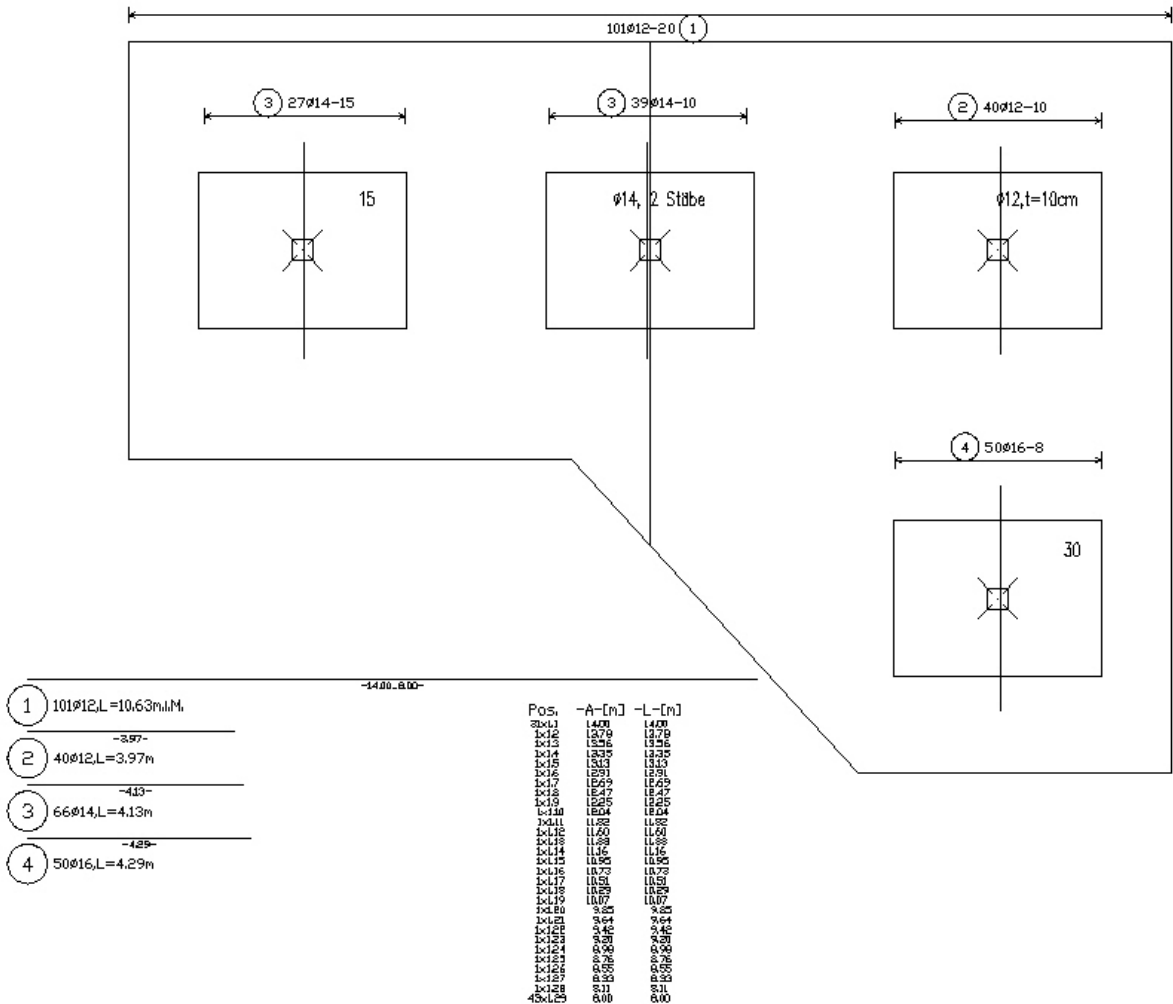
The command can be reached via clicking on the reinforcement object with the right mouse click → context menu → explode to bars

The command

Position objects (end+cen+int+per+nea+ext)

Allows placing the reinforcement extracts onto a free area.

8.1.2.10 Result



8.1.3 Divide Carpet

You have the option to divide the carpets. Due to design and constructive reasons it can sometimes be reasonable to divide the carpets – or the displayed bars in the SOF_BAMTEC-object are longer than the maximum bar length. They are shown in red.

8.1.3.1 Preparation

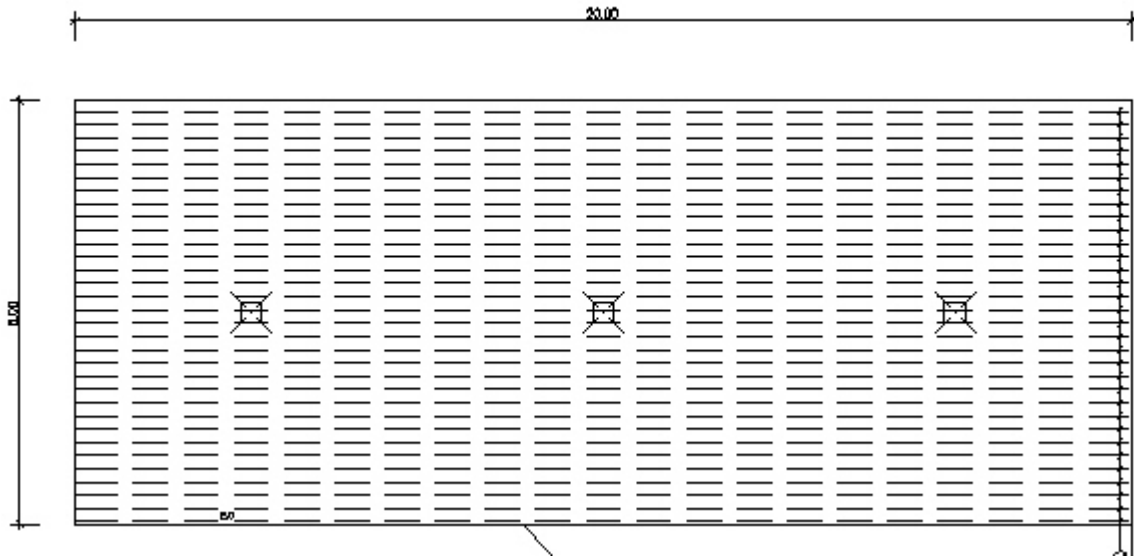
In the drawing Platte 4.dwg we only observe the upper part. We define reinforcement in X direction with automatical steel bar distribution.

Command:

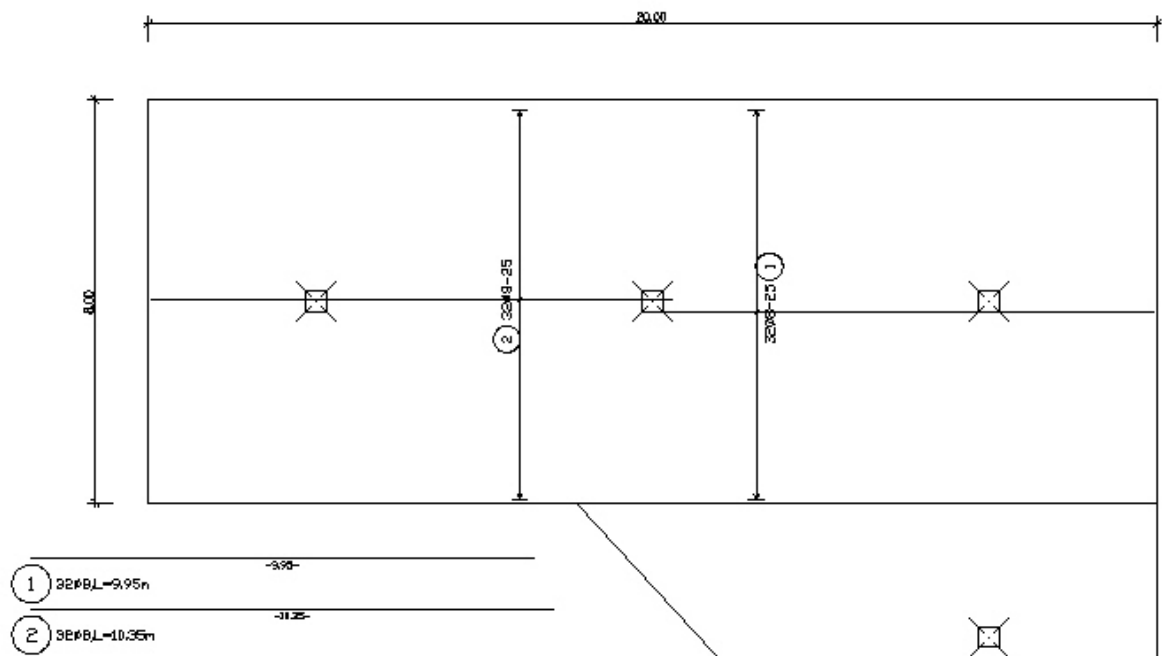
SOF_BT_AUTOMATICBARLAYING Select boundary of the carpet
 Select Boundary or [Show point in area]:

Extension of the border $m < 0.1000 > : -.05$

Show bar direction (end+cen+int+per+nea+ext):

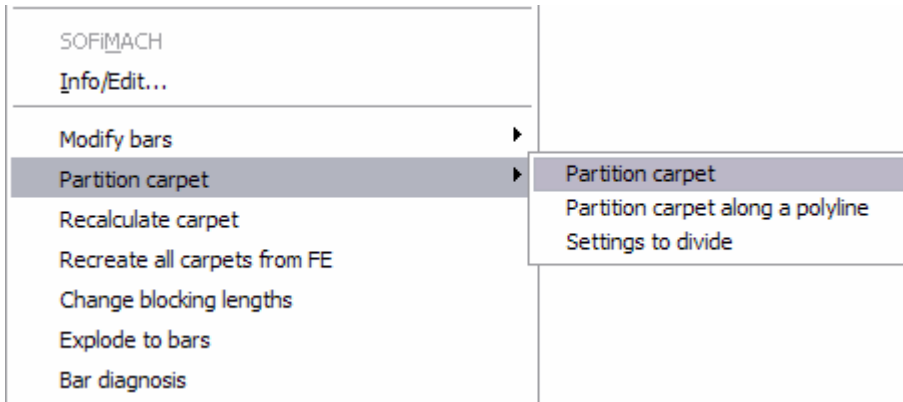


By clicking on the carpet the right-mouse click menu on the command divide into steel bars, they can also be converted into bars. Then, bars are generated which are shorter than the admmissive length.



8.1.3.2 Command divide carpet

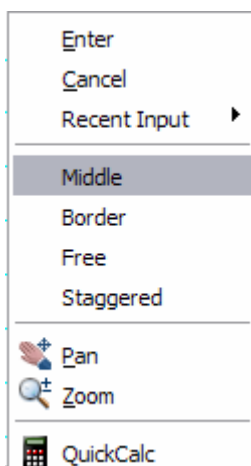
In the right-mouse click menu of the carpet you can find the command divide carpet.



On the cursor you'll find a bar running perpendicular to the reinforcement.

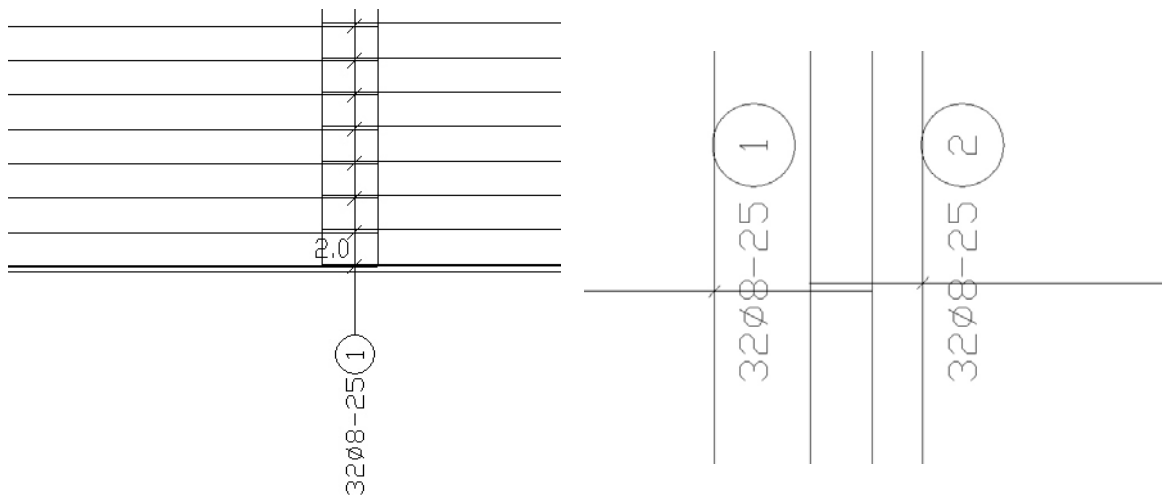
Show partition point:

Side of partitioning <Middle>[Middle/Border/Free/Staggered]: M



For the dividing line you have 4 options.

8.1.3.3 Middle division

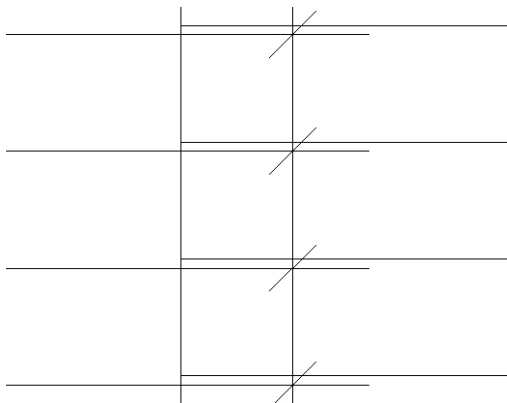


Half of the overlapping length will be added on both sides of the dividing line

8.1.3.4 Boundary division

Some of the bars jut out of the boundary with a anchoring length. On the other side the bars begin directly at the boundary. The side for the anchoring must be shown.

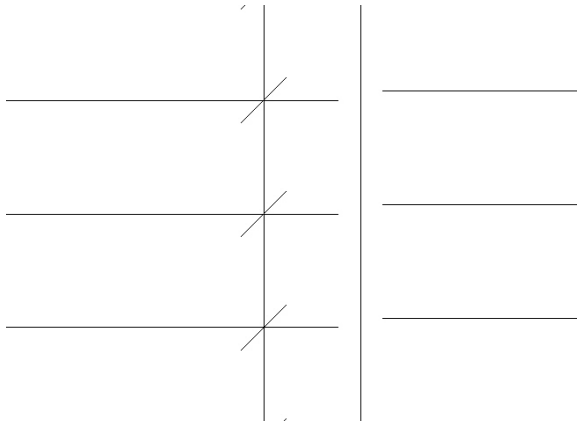
Show side of anchorage:



8.1.3.5 Free division

The bars start at both sides with defined free space.

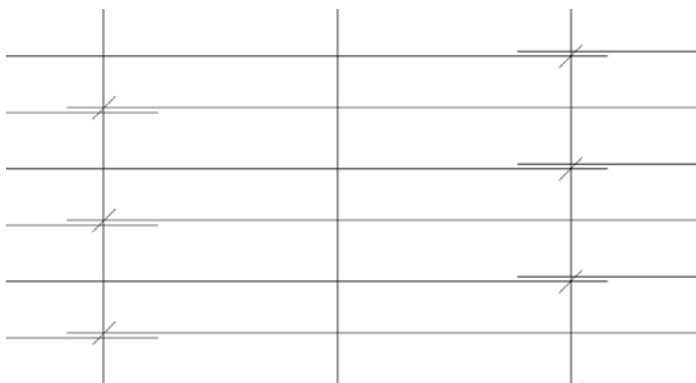
Freespace in $m < 0.0500 > : .1$



8.1.3.6 Staggered division

A width is required for the swiveling.

Width to deviate (m) <math><1.5000>>: 2



8.2 Automatical steel bar distribution/laying (FEA)

The program determines the required bar reinforcement with a required reinforcement – the so called BFE-object.

Previously the BFE-object needs to be analyzed with a slab program.

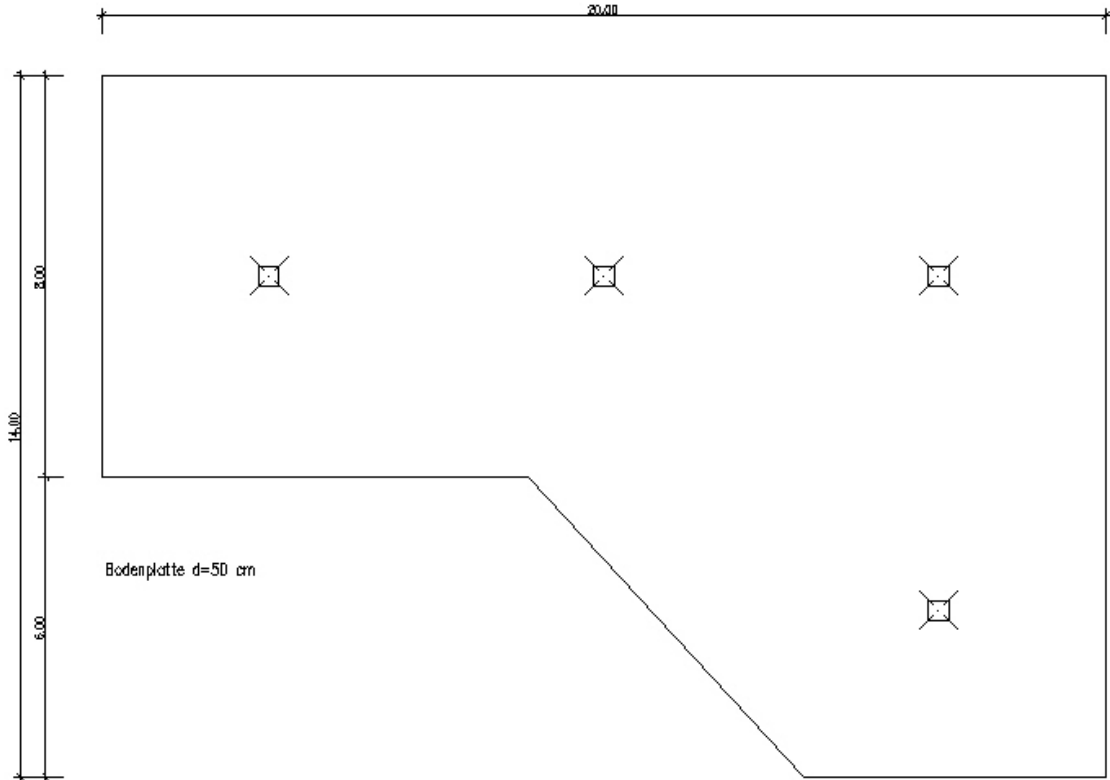
8.2.1 Slab analysis

The slab analysis will be conducted with the input module SOFiPLUS and the SOFiSTiK FEA module SEPP.

A slab analysis from any other FEA program could optionally be used as basis for the prospective reinforcement.

File: Platte 1a.dwg

8.2.1.1 Input values



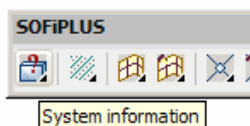
An elastically bedded floor slab absorbs the loads (700/300 kN each) of four columns.

8.2.1.2 Program call up

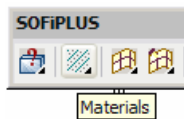
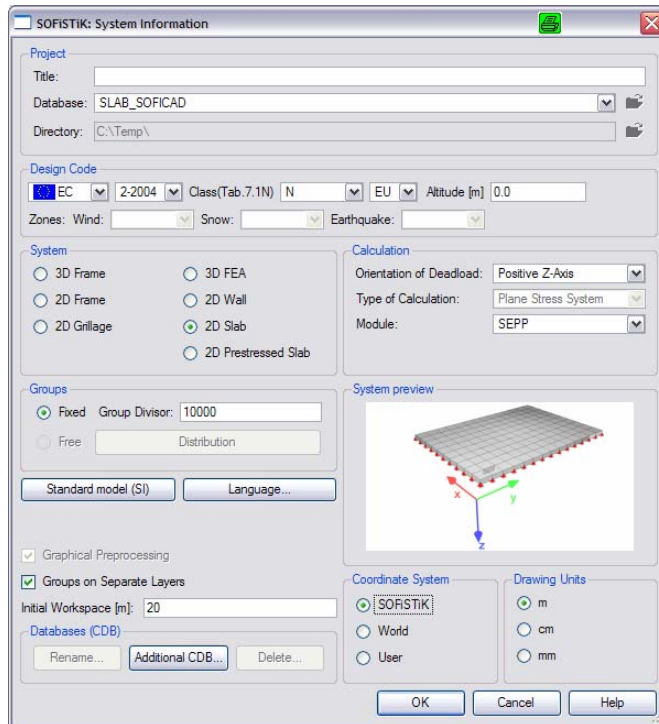


File: Platte 1_Statik.dwg

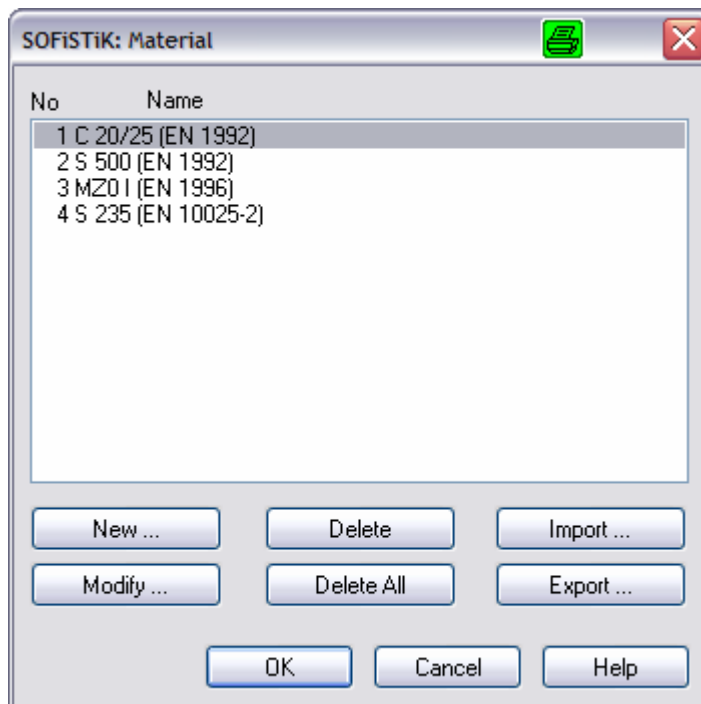
Toolbox

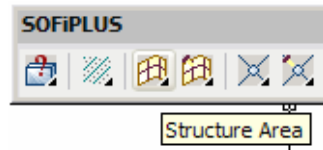


1. System Information



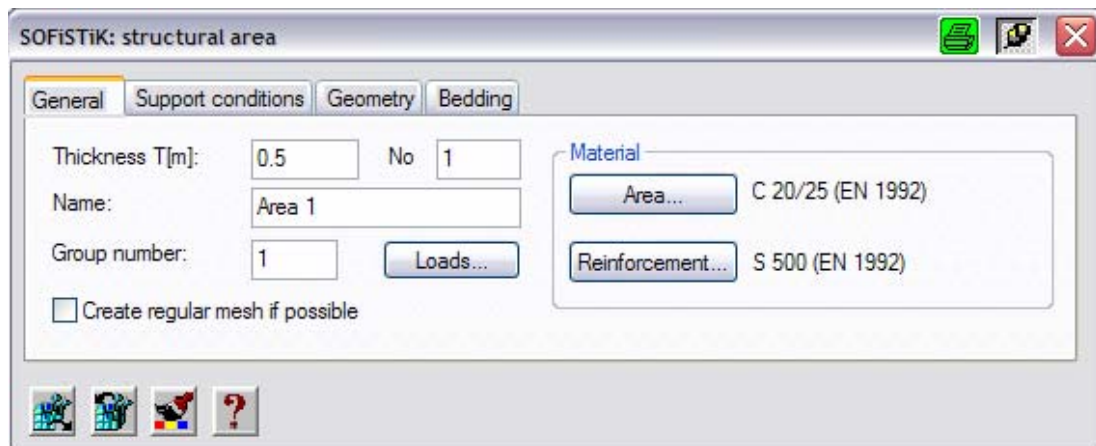
Concrete, steel quality





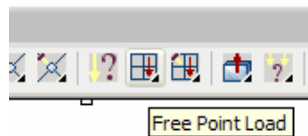
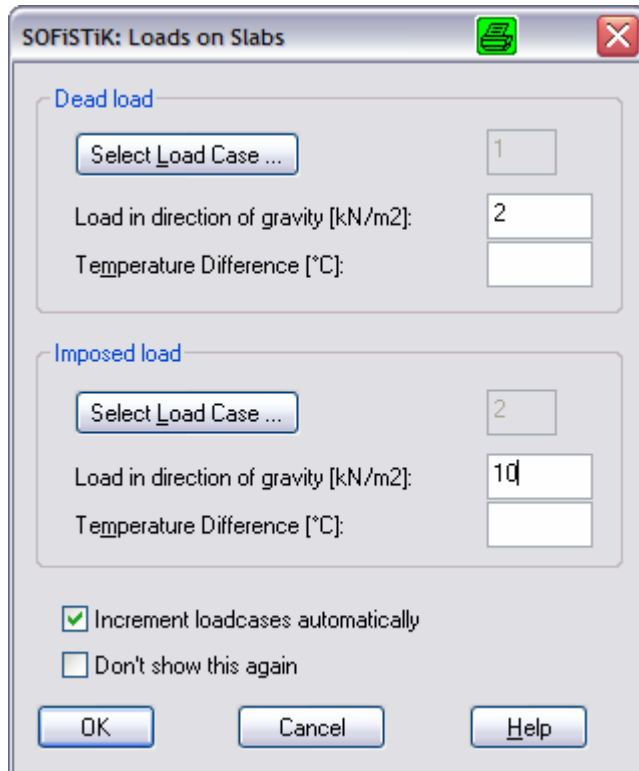
Structure area

The floor slab has a thickness of 0.50 m and it is elastically bedded (2000 kN/m³).



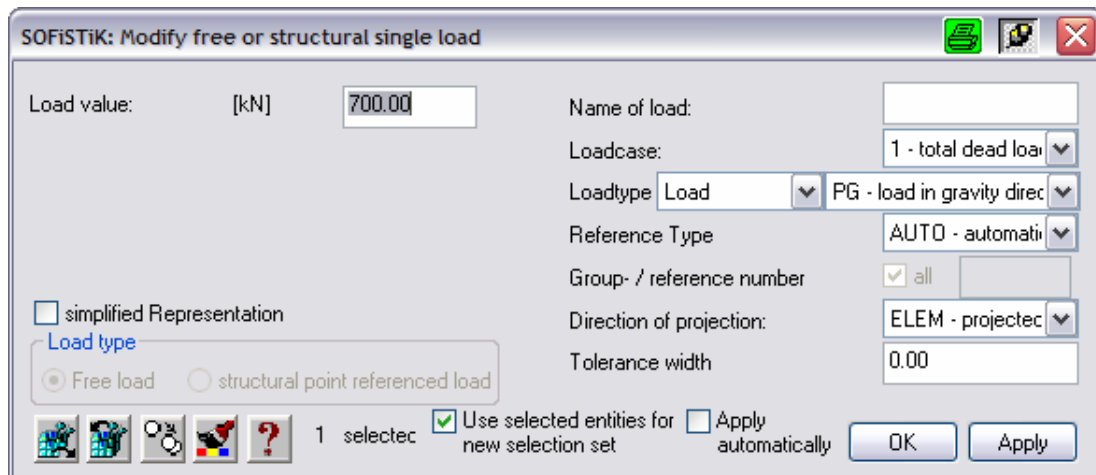
Loads

The program determines the dead load. A uniformly distributed load of 2 kN/m² for constant and 10 kN/m² as traffic load have to be added.



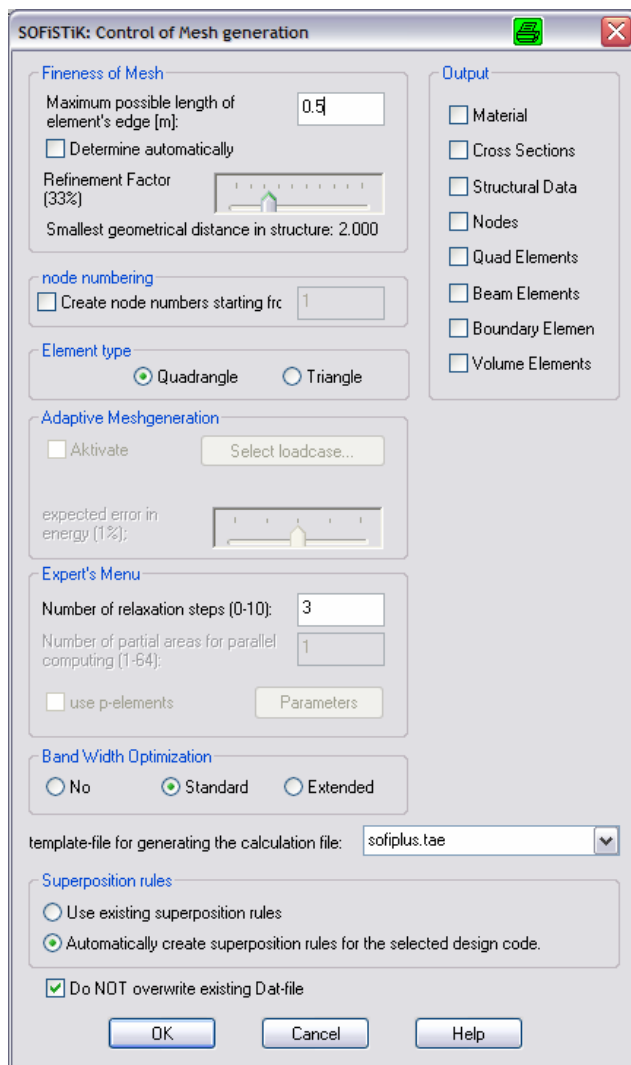
Free single loads

Single loads from the columns $G=700$ kN in the load case dead load.

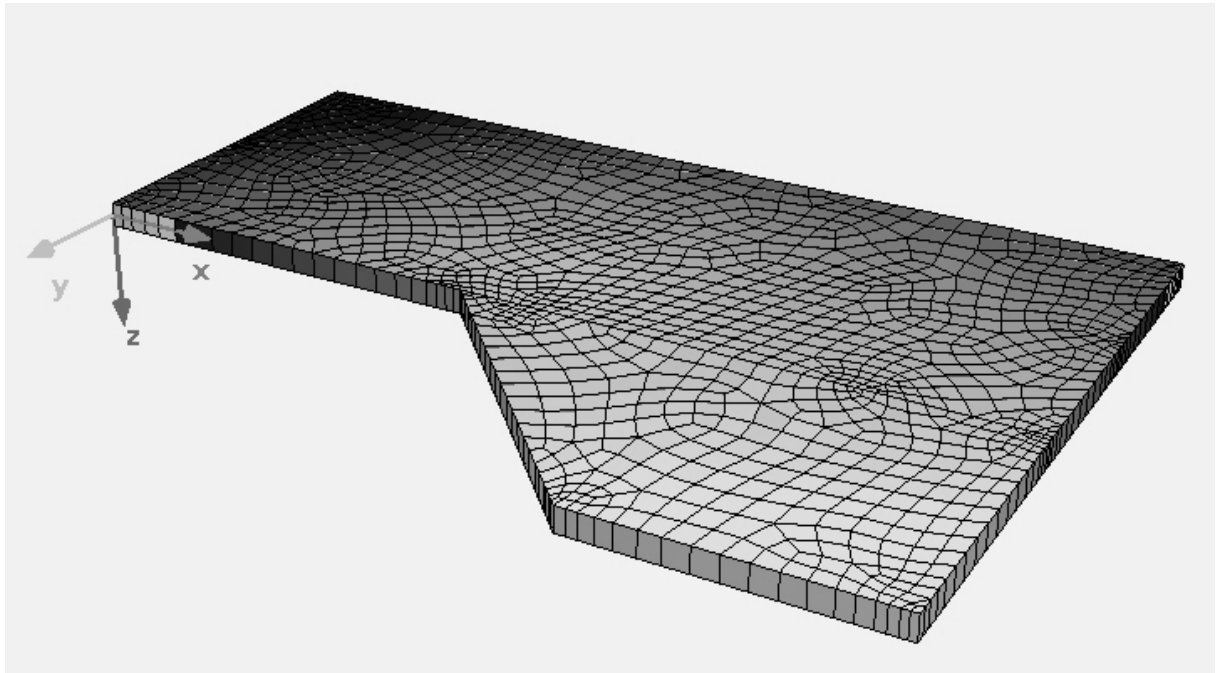


Single loads from columns $Q=300$ kN in load case traffic load

8.2.1.3 Element mesh



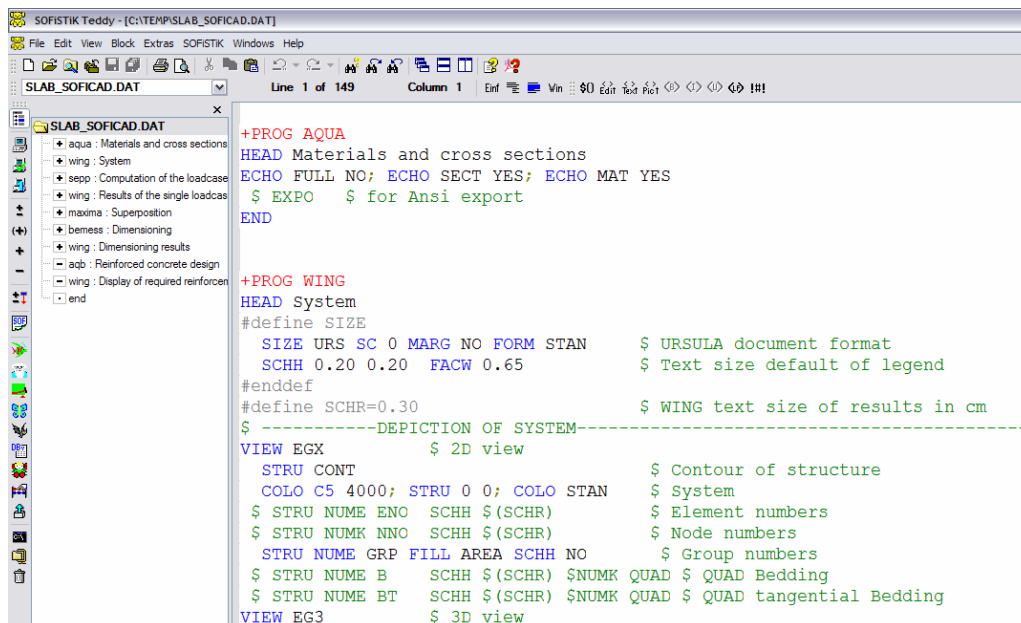
The element mesh can be viewed with the SOFiSTiK Animator.



8.2.1.4 Analysis

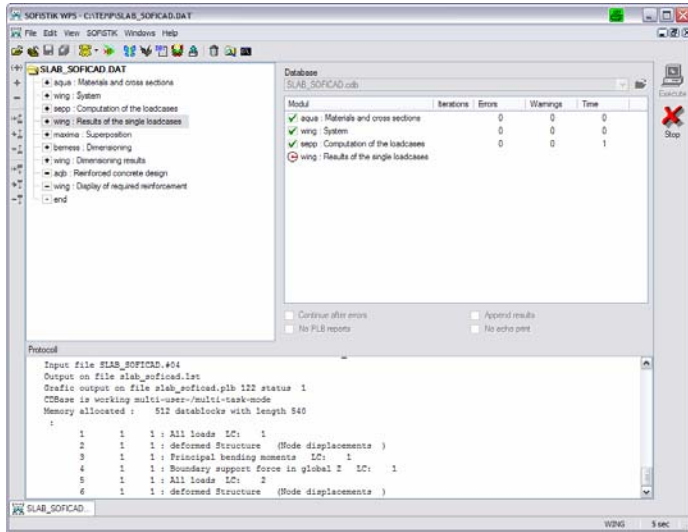


For analysis control load the file with Teddy.



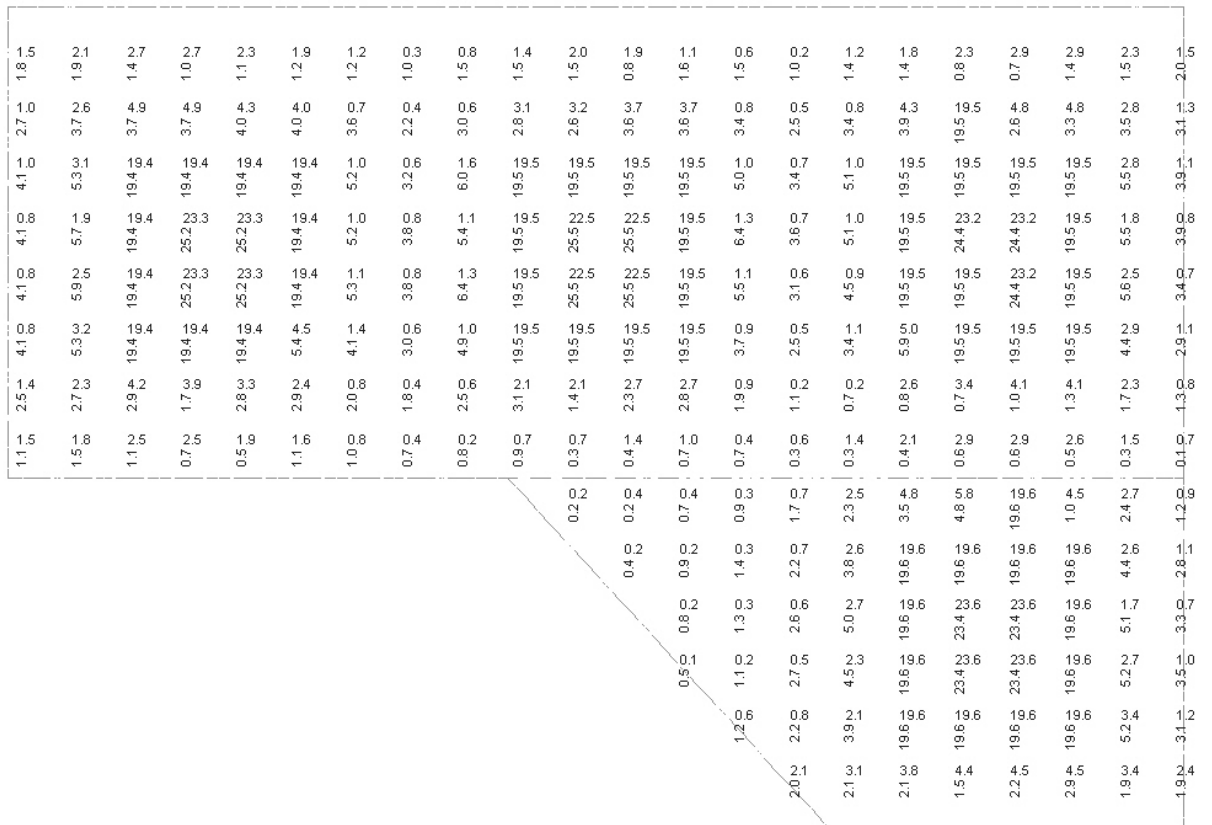
Start analysis

Execute (F12)



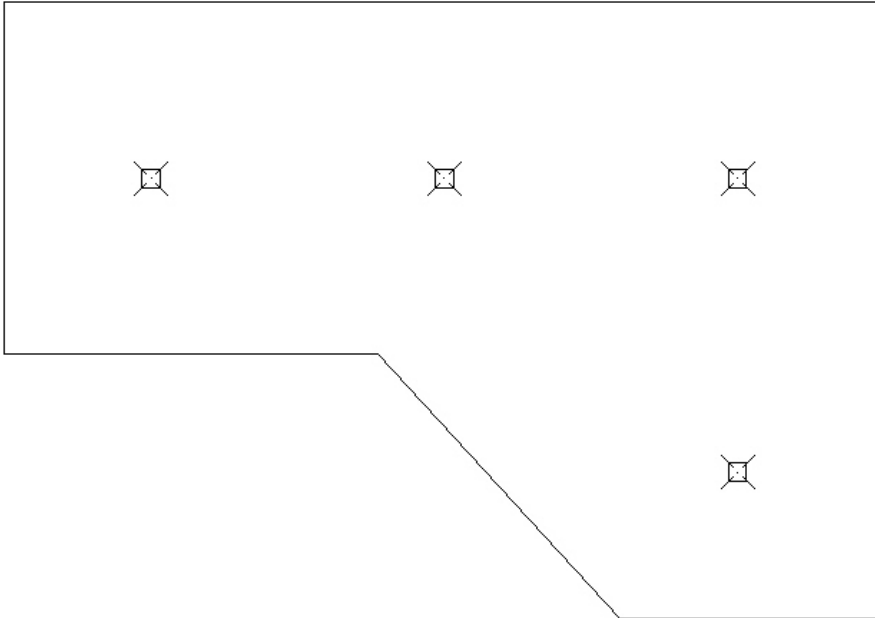
8.2.1.5 Result

Reinforcement bottom



8.2.2 Preparation

Ground view of floor slab can be found on Platte 1.dwg

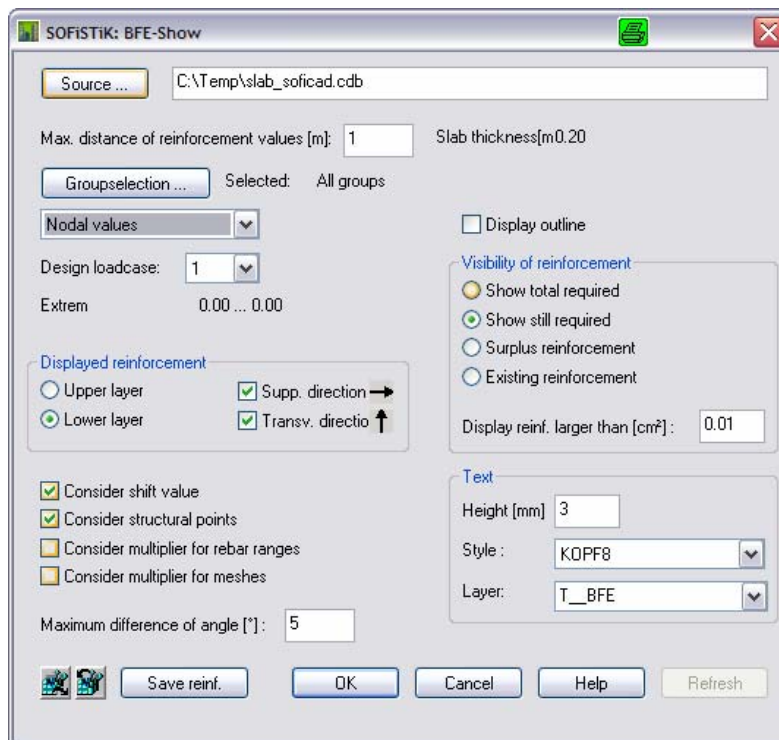


8.2.2.1 *Insert BFE-Object*

In toolbox BFE-Show and automatical steel bar laying

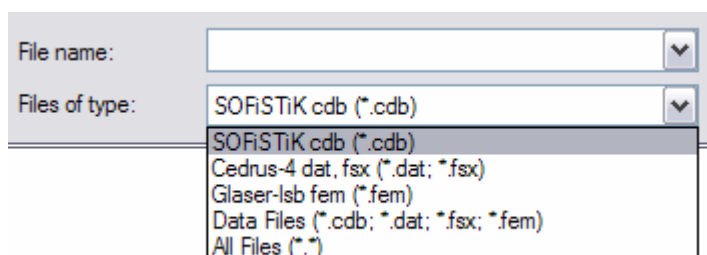


select the command BFESHOW.



First the source for the required reinforcement will be loaded, In case of the SOFiSTiK programs it's a .CDB file, the data base for the statical analysis.

Please select the Source of your CDB file.



File type allows accessing data sets resulting from a Cedrus-4 or a Glaser analysis.

The maximum distance for displaying the reinforcement can be selected. The exactness of the subsequently determined reinforcement depends on this distance. The smaller the distance will be selected the more exact will be the subsequent reinforcement lead. However the determination of the reinforcement values is faster the bigger the distances are selected.

1 m



For analysis a slab will be subdivided into several groups (per field one group). The command group selection allows selecting the groups to be edited.

Any group

It makes sense to show the contour when inserting the As values. It's substantially easier to move the BFE object to the correct place.

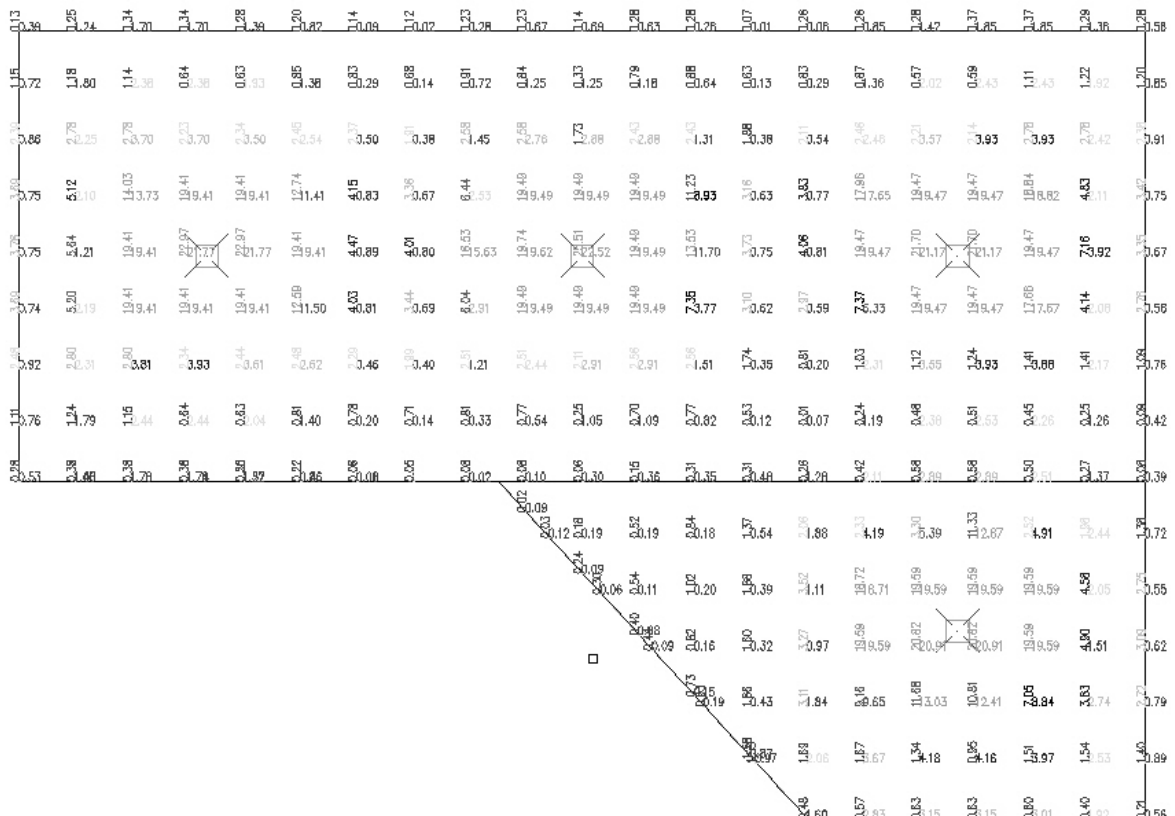
Show contours

The entire BFE object will be inserted with top and bottom reinforcement. Showing the top or the bottom reinforcement can also be selected.

Bottom layer

The box for the visibility of the reinforcement is needed in the case reinforcement was added.

8.2.2.2 BFE-Object



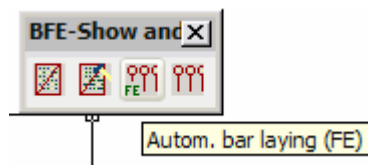
8.2.3 Automatical bar laying / distribution

8.2.3.1 *Turn contour off*

First the contour of reinforcement object must be turned off:

Double click on the reinforcement object and deactivate the option show contours. This option is also available through the context menu.

8.2.3.2 *Command*



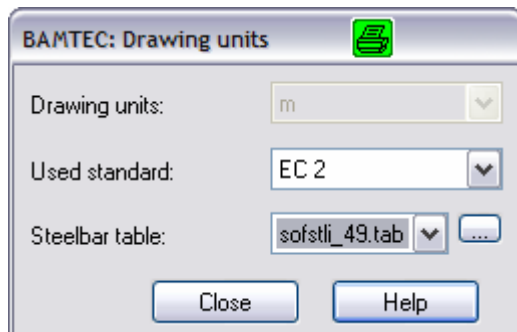
The command

Lays automatically the bars.

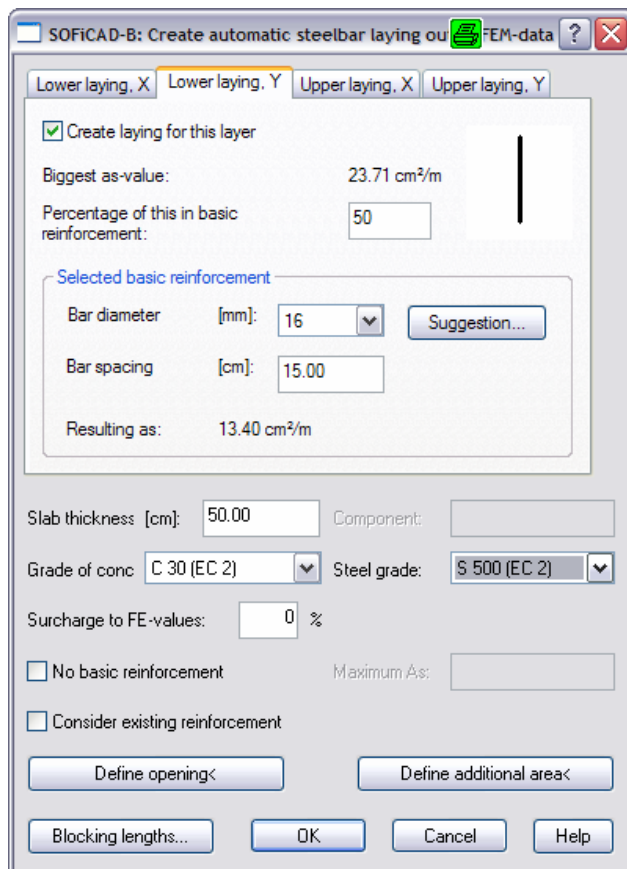
Select FEM-object: Select boundary of the carpet

Show point in area or [Select Boundary]:

Extension of the border $m < 0.1000 >$: -0.5



The applied code and the steel bar table can be specified here. The dialogue box for the automatical steel bar distribution will be displayed.



Reinforcement for the reinforcements bottom and top, X and Y direction can be displayed using the four tags.

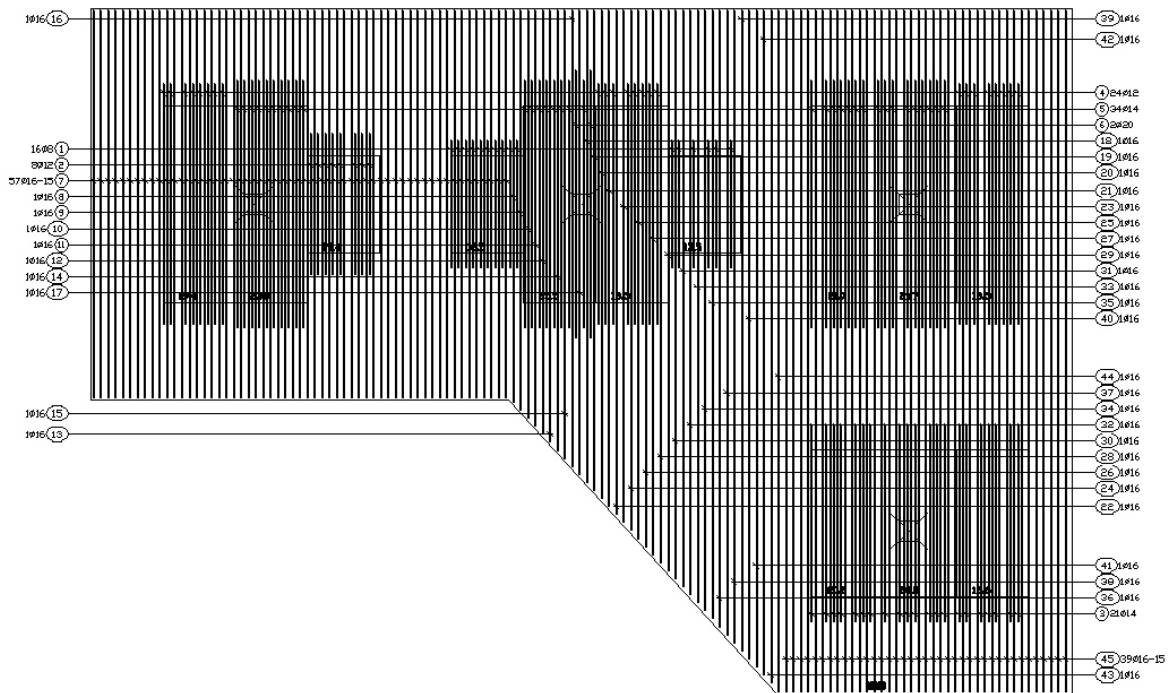
For every layer the largest existing A_s value will be shown. A percentage for the basic reinforcement can be selected (default at 50%). The entire area will be covered with the basic reinforcement.

The program offers a proposal for the basic reinforcement. It can be changed however by entering other amounts.

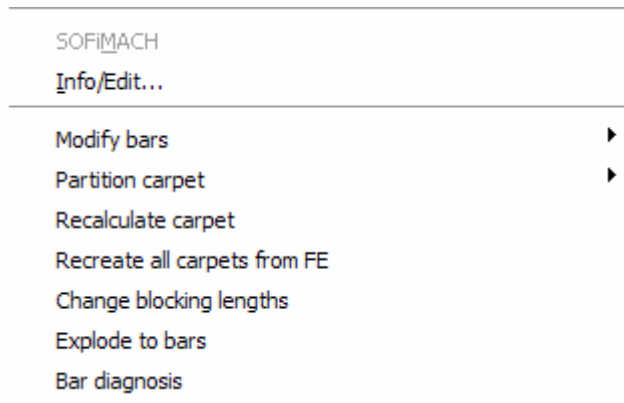
For conciseness it makes sense to select covering for only one layer (bottom layer Y).

8.2.3.3 Carpet

OK shows the basic reinforcement and the required extra amounts.



8.2.3.4 Possible changes



Info/Edit or a double click leads back to the carpet dialogue box.

Here the basic reinforcement can be changed; subsequent block outs or extras can be specified.

Single bars can be changed with bars.

The carpet can be divided - which is necessary in case the basic reinforcement bars are larger than the maximum bar length. Herewith you can define where overlapping should be located and for which scale the bars should be swiveled.

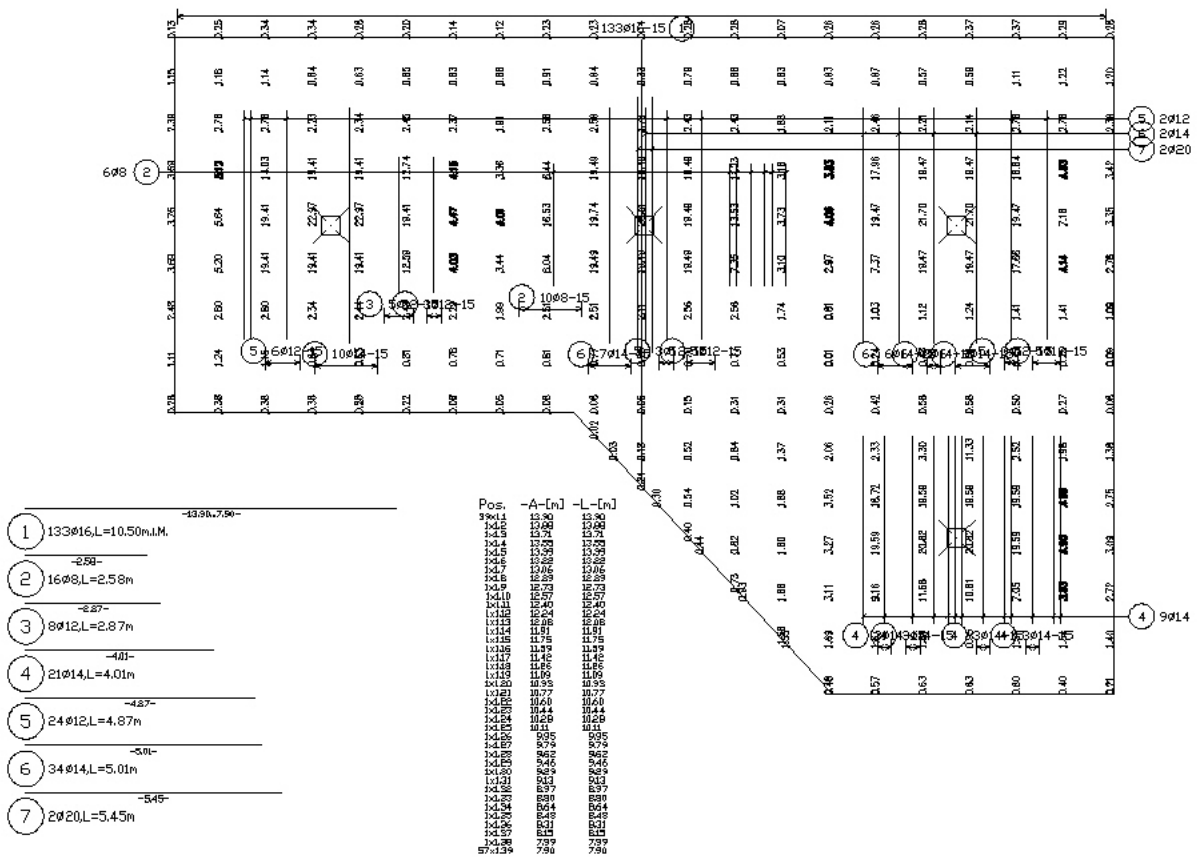
From here a new analysis run on the carpet will be conducted, which requires if block-outs or extra areas have been added or deleted.

8.2.3.5 Explode to bars

This command generates steel bars from the carpet.

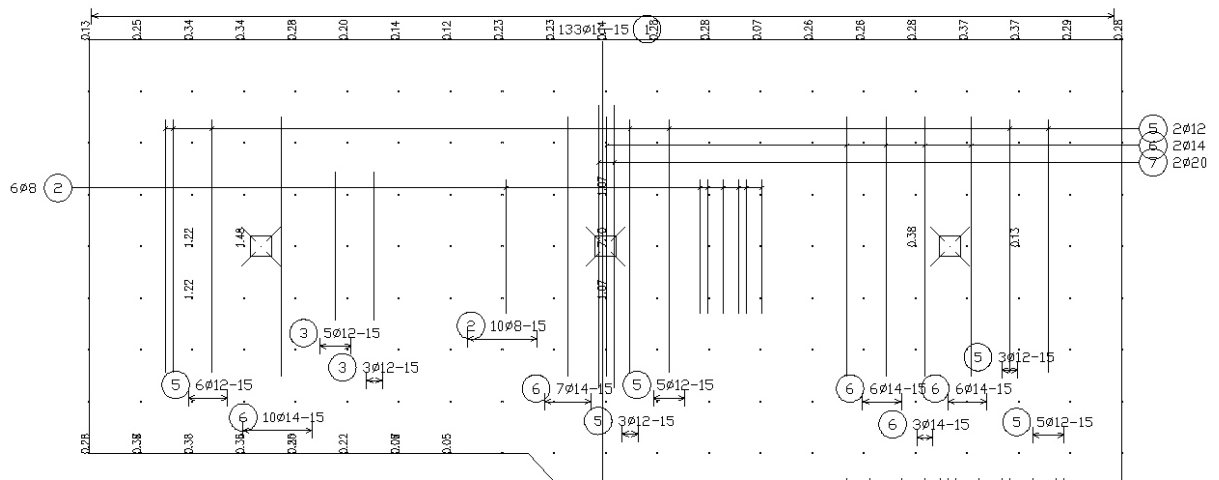
Subsequently it must be specified, where the bar extracts shall be placed.

8.2.3.6 Result of the steel bay laying/distribution

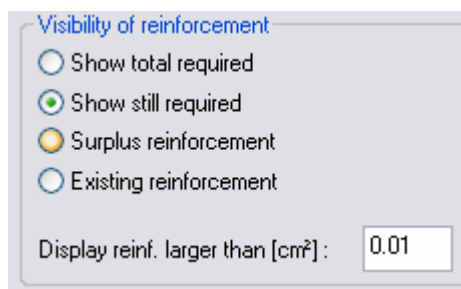


8.2.3.7 Checking the reinforcement

In the BFE-Show dialogue box "Show Still Required", the program checks the existing with the required reinforcement



The following options can be elected in the dialogue box:



- Show totally required reinforcement
- Show still required reinforcement
- Show existing reinforcement

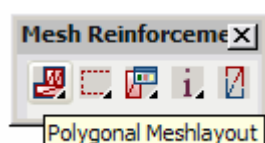
8.3 Optimizing meshes

The file Platte 3.dwg contains the BFE object already.

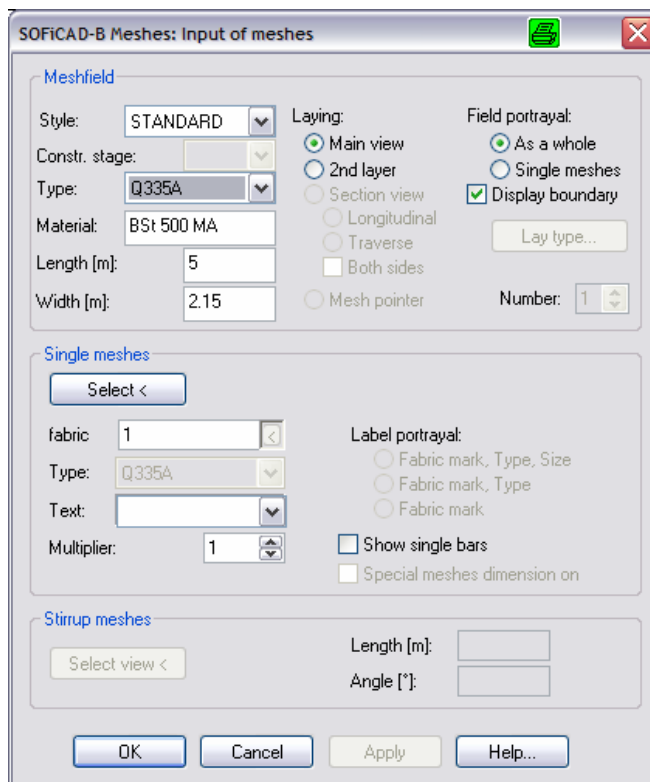
The slab should be provided with a basic reinforcement with meshes.

The layer for the BFE-object T_BFE will be turned off, in order not to disturb the conciseness.

Select the command Polygonal Mesh Layout in the mesh reinforcement tool-box.



8.3.1 Mesh distribution / laying



In this case the mesh type Q335A will be selected and the option single meshes activated.

Command: SOF_B_POLYGONALMESH

Define area for mesh displacement or [Select Boundary]:
support in m<0.100>: -0.05

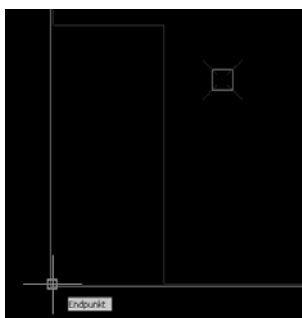
Select Boundary or [Define opening for mesh layout]:

A starting point and direction for the first mesh will be required.

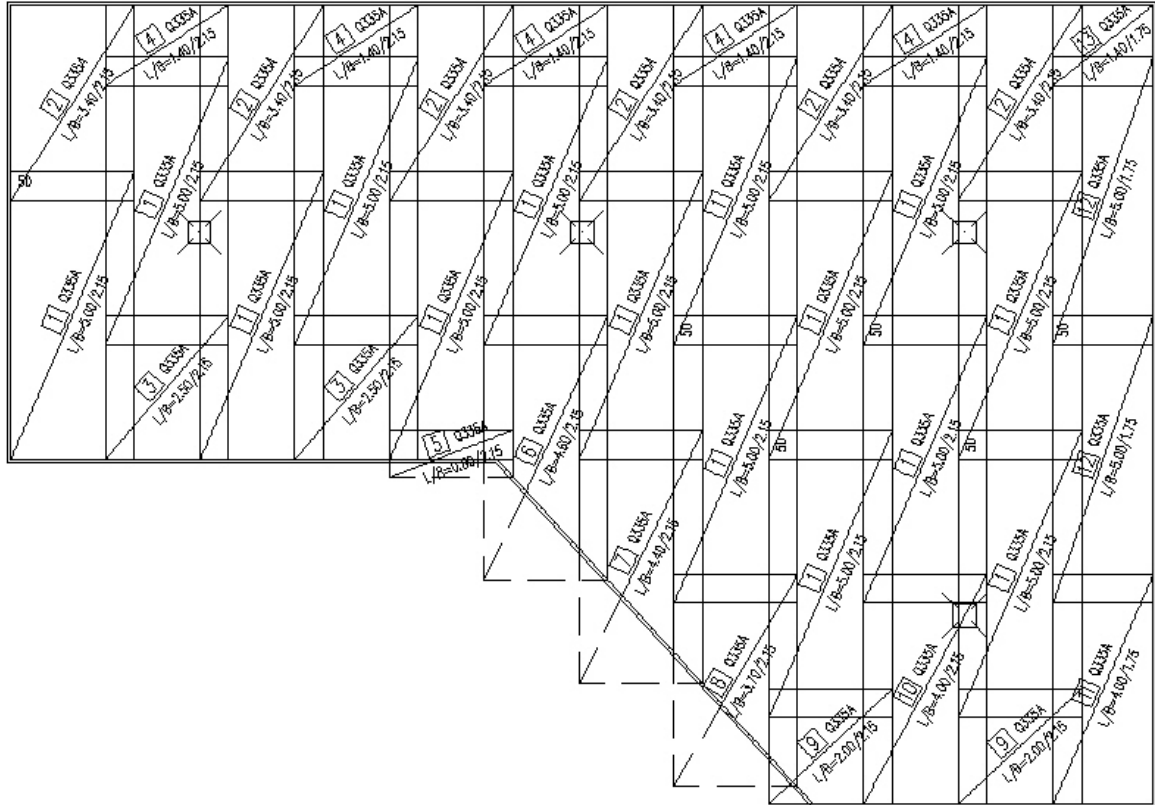
With these specifications the mesh field will be generated. The insertion point of the first mesh however can subsequently still be changed.

Insert point or

Angle :

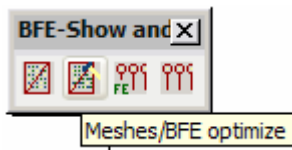


The completed mesh field



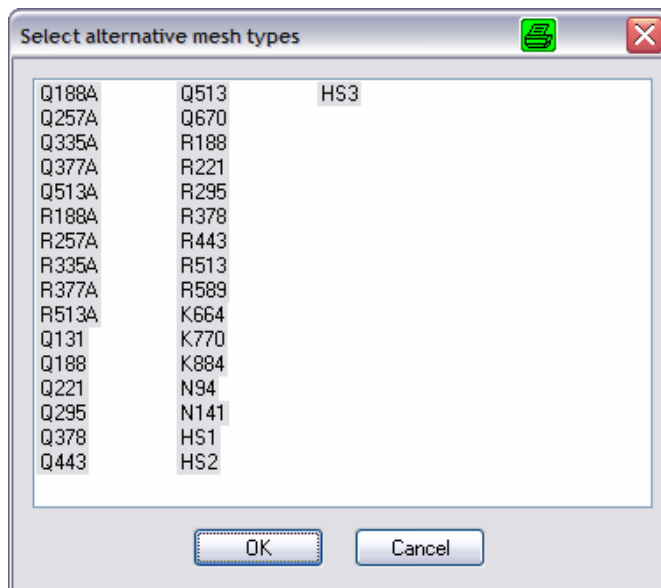
8.3.2 Adjust mesh field

The mesh field should be adjusted in correspondence to the required A_s values.



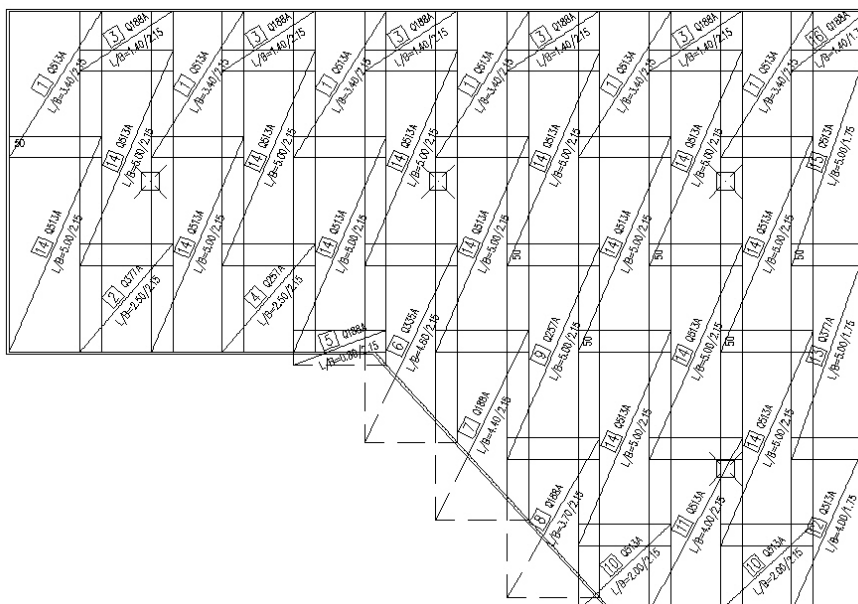
It's done using the command Meshes/BFE optimizing

Select mesh field:

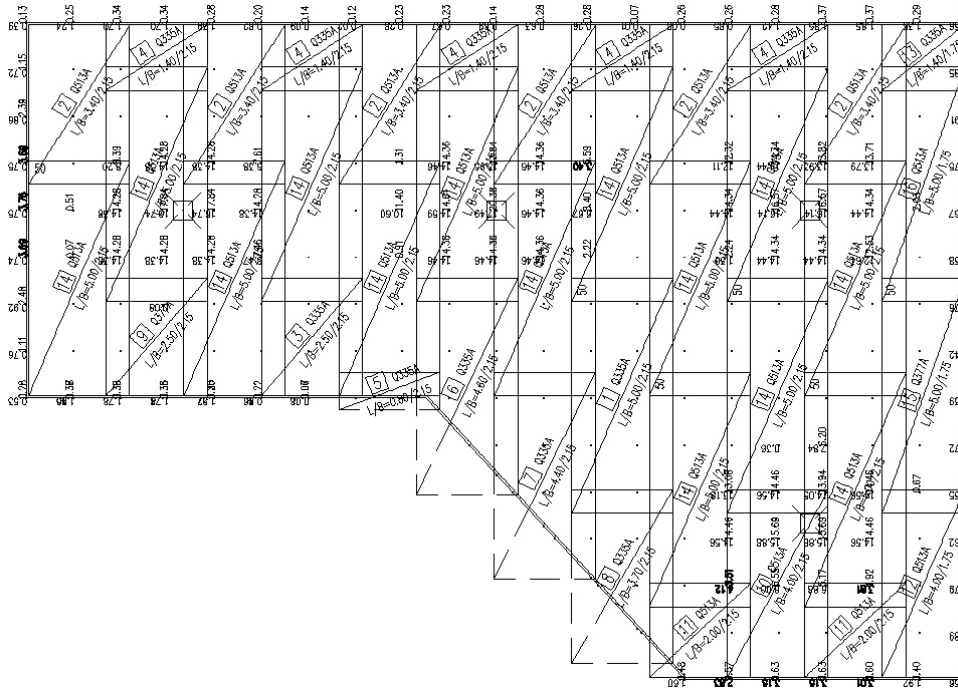


This dialogue box allows selecting the mesh fields which should be used for the adjustment. It can also be smaller mesh types which are used if they are sufficient for covering the required reinforcement.

8.3.3 Results of mesh adjustment



Now, the BFE object layer (T_BFE) may be turned on again. The right-click menu contains the command Update, thereby the mesh reinforcement are synchronized with the required A_s .





9. General info and introduction to Macros

SOFiCAD-Reinforcement allows Macros with or without the Wizard.

9.1 Macros with Wizard

Any required values are defined by a dialogue. As far as they make sense, results from AFE can be considered as proposals. The input in the Wizard are for any Macros - formal (GUI) and logical (settings, order etc.) – equal.

Macros with Wizard are available for the following components:

- Column 
- Stair 
- Duct 

Entries – meaning single values - can easily be changed with Teddy, the SOFiSTiK Editor and adjusted to the requirements. The course of the analysis however cannot be influenced by the user.

9.2 Macros without Wizard

Using the so called expert entry you have the opportunity of defining the entries for a Macro without Wizard. That is a section of a template. The file can be generated by an independent program such as (SOFiSTiK FEA or Visual Basic) and with CADINP-entry it can especially be defined for your needs.

Macros without Wizard are available for the following components:

- Column
- Console
- Continuous Beam / girder
- Round slabs

- Strip foundation
- Retaining wall
- Single span beam

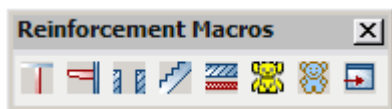
Teddy, the SOFiSTiK editor the entries of the requirements and changes of single values can easily be conducted. Additionally the course of the analysis can be adjusted to personal needs.

Independently of the existing macros, the user has the opportunity to create individual Macros.

9.3 Requires programs

9.3.1 SOFiCAD-Reinforcement and Design

Versions 16.4 , 16.5, 17.1





Reinforcement Macros in the SOFiCAD toolbox with the following commands

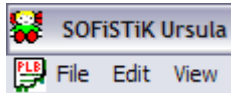
With Wizard

- Column Wizar 
- Console Wizard
- Shaft Wizard 
- Stair Wizard 
- Wall Wizard
- Calling wizard up again.

Without Wizard

- Play Macro file  (yellow)
- Play Macro-Mac file  (blue)

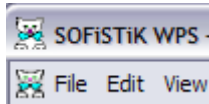
9.3.2 SOFISTiK-Browser URSULA



In case of the Macros without Wizard it displays the variable entry values to check and/or change them.

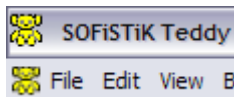
Afterwards the command „start program (F12) “starts the generation and transmission of the images to SOFiCAD.

9.3.3 SOFISTiK WPS (Program start)



Starts the single modules.

9.3.4 SOFISTiK-Editor Teddy



This editor is required in the case you make changes – as well for the data file for the Macros as well as for the expert files for the analysis and drawing course.

9.4 Data storage

The entry values are stored in a file with the ending .DAT, according to the CADINP-Entry rules.

For better specification compared to other .DAT files from the FEA analysis it makes sense to specify the Wizard files as ..._wiz.dat and the others as ..._mac.dat.

9.4.1 wiz.dat

```
PROG TEMPLATE
HEAD Pre-Deformation EA Beam 1
NORM DIN 1045-1
CONC 1 C 20
STEE 2
CTRL SOLI 0
CTRL DIM 0
MEMB COLUMN
```



```
UEBD 3.
QB - 0.25 0.25
GESH 2.9 0.2
BEW DIAL 28 NL 0 DIAB 8 EB 25. AS 51.53
END
```

PROG

The PROG TEMPLATE induces the analysis of a Macro.

HEAD Pre-Deformation EA Beam 1

The first entry field of the Wizard allows the user to specify a name for his component. The heading will appear above his component in SOFiCAD.

```
NORM DIN 1045-1
CONC 1 C 20
STEE 2
```

NORM, CONC and STEE defines the concrete and steel quality.

MEMB COLUMN

MEMB specifies the applied Macro.

9.4.2 mac.dat

```
$PROG
#define      vers= 10.01
#define      Pos   = st2_ 1 $
#define      concr = 25 $ Concrete quality
#define      qsteel = 435.0 $ Steel quality
#define      b0    = 25.0 $ Section Width
#define      d0    = 25.0 $ Section height
#define      arrange= 1 $ Arrangement of reinforcement,
0=boundry,1=edge,2=edge(2),3=edge(3)
#define      direct = 1 $ Bewehrungsrichtung, 1=X-Ri., 2=Y-Ri.,
3=XY-Ri.
#define      bd    = 3.0 $ Concrete cover
#define      ly    = 2.800 $ Column length
#define      dd    = 0.200 $ slab Thickness
#define      kote  = 0.000 $ Level at column base
#define      stoss = 2 $ Joint top: 0=no, 1=tension, 2=pressure
#define      gebog = 0 $ string wreath: 0=no, 1=yes
#define      aserf = 15.61 $ As necessary
#define      ldiam = 25 $ Diameter reinforcement
#define      lanz  = 4 $ Number of bars
#define      bdiam = 8 $ Diameter links
#define      bab   = 20.0 $ pitch of links

$
#define      sPos=Position
#define      sUeb= Column input
```



```
#define      sUebS= Column for SOFiCAD
#define      sConc=<B></B>Concrete quality<B></B>
#define      sJoin=<B></B>Joint    <B></B>
#define      sJoinO= no,pressure,tension
#define      sCross=<B>Section properties</B>
#define      sB0=<B></B>Width      <B></B>
#define      sD0=<B></B>Height     <B></B>
#define      sBd=<B></B>Concrete cover <B></B>
#define      sSyst=<B>System items</B>
#define      sLy=<B></B>Column length <B></B>
#define      sDd=<B></B>slab thickness <B></B>
#define      sKt=<B></B>Height notation <B></B>
#define      sBew=<B>Reinforcement</B>
#define      sReinA=<B></B>nec. reinforcement <B></B>
#define      sDiamN=<B></B>Number of bars <B></B>
#define      sDiamD=<B></B>Diameter of bars <B></B>
#define      sDiamB=<B></B>Diameter of links <B></B>
#define      sALink=<B></B>Pitch of links <B></B>
#define      sReinE=<B></B>existing reinf.<B></B>
#define      sFormO= straight,bent
#define      sSect= Section
#define      sArra=<B></B>Arrangement<B></B>
#define      sArraO= boundry,edge,edge(2),edge(3)
```

```
#include $(Templates)\mac_STUE.dat
```

```
#define      Pos      = st2_ 1 $
#define      concr    =      25 $ Concrete quality
#define      qsteel   =   435.0 $ Steel quality
```

#define - defines the variables and texts as well (for other languages).

```
#include $(Templates)\mac_STUE.dat
```

#include - inserts the file in, which contains the defined analysis course.

```
$(Templates)\
```

\$(Templates) specifies the path where the file e.g. mac_STUE.dat can be found. SOFiCAD is set on the support directory under c:\Documents and settings\..\Local Setting\Application Data\SOFiSTiK\SOFiCAD\17.1\support. However you have the possibility to set „Templates“ for the environment variable in system control and to show a directory containing the module mac_STUE.dat.

mac_anchor.dat	1 KB	SOFISTIK Datfile	20.04.2006 16:54	A
mac_balconyslab.dat	6 KB	SOFISTIK Datfile	20.04.2006 16:54	A
mac_becken.dat	7 KB	SOFISTIK Datfile	20.04.2006 16:54	A
mac_bgfm_a1.dat	1 KB	SOFISTIK Datfile	20.04.2006 16:54	A
mac_bgfm_b1.dat	1 KB	SOFISTIK Datfile	19.05.2006 14:42	A
mac_blockfoundation.dat	6 KB	SOFISTIK Datfile	20.04.2006 16:54	A
mac_circslab.dat	7 KB	SOFISTIK Datfile	22.05.2006 12:11	A
mac_concrcoverpoint.dat	2 KB	SOFISTIK Datfile	01.06.2006 10:29	A
mac_concrete.dat	1 KB	SOFISTIK Datfile	06.06.2006 14:27	A
mac_console.dat	31 KB	SOFISTIK Datfile	16.06.2006 11:42	A
mac_diameter2.dat	1 KB	SOFISTIK Datfile	20.04.2006 16:54	A
mac_diameter.dat	1 KB	SOFISTIK Datfile	20.04.2006 16:54	A
mac_dimensional.dat	1 KB	SOFISTIK Datfile	20.04.2006 16:54	A
mac_dula.dat	47 KB	SOFISTIK Datfile	22.05.2006 12:45	A
mac_findebet.dat	1 KB	SOFISTIK Datfile	20.04.2006 16:54	A
mac_index.dat	1 KB	SOFISTIK Datfile	20.04.2006 16:54	A
mac_intersection.dat	2 KB	SOFISTIK Datfile	20.04.2006 16:54	A
mac_linearlaying.dat	1 KB	SOFISTIK Datfile	13.02.2006 11:54	A
mac_masst.dat	1 KB	SOFISTIK Datfile	26.07.2006 15:33	A
mac_rect.dat	1 KB	SOFISTIK Datfile	20.04.2006 16:54	A
mac_single-span-beam.dat	6 KB	SOFISTIK Datfile	22.05.2006 14:45	A
mac_stripfoundation.dat	6 KB	SOFISTIK Datfile	24.05.2006 15:33	A
mac_stue1.dat	19 KB	SOFISTIK Datfile	25.08.2006 14:30	A
mac_STUE.dat	18 KB	SOFISTIK Datfile	19.09.2006 10:47	A
mac_version.dat	1 KB	SOFISTIK Datfile	20.04.2006 16:54	A
mac_wsm.dat	20 KB	SOFISTIK Datfile	24.05.2006 14:09	A

The files controlled via \$(Templates)\ may also be directly in the project directory if e.g. adjustments are required for this specific project.

Files for definition of concrete quality or applied diameter which are required in any reinforcement Macro are also controlled by \$(Templates)\.



mac_concrete.dat:

```
#define wconcr = 12,16,20,25,30,35,40,45,50,55,60,70,80,90,100
#define Concr_alf =0.85
#define Concr_sgam =1.5
#define Steel_sgam =1.15
let#fbd 1.6,2.0,2.3,2.7,3.0,3.4,3.7,4.0,4.3,4.4,4.5,4.7,4.8,4.9,4.9
let#raster 0
```

mac_diameter.dat

```
#define wDiam =0,6,8,10,12,14,16,20,25,28,32
let#ndim 0, 6, 8, 10, 12, 14, 16, 20, 25, 28, 32
let#rdim 0, 7, 10, 12, 14, 17, 19, 24, 30, 34, 38
let#qcm
0.000,0.283,0.503,0.785,1.130,1.540,2.010,3.140,4.910,6.160,8.040
```

9.4.3 Program files macdat

```
-PROG TEMPLATE urs:2
HEAD $(sUebS)
#include $(templates)\mac_Diameter.dat
#include $(templates)\mac_concrete.dat

NORM DIN 1045-1
CONC 1 C 20
STEE 2 BST 500SA
MEMB SOFiCAD
LAY T__VERM 3 Continuous 0.5 1
LAY T__TEXT 3 Continuous 0.5 1
LAY T__KONS 3 Continuous 0.5 1
TSTL Simplex7 LAY T__TEXT
```

10. Columns

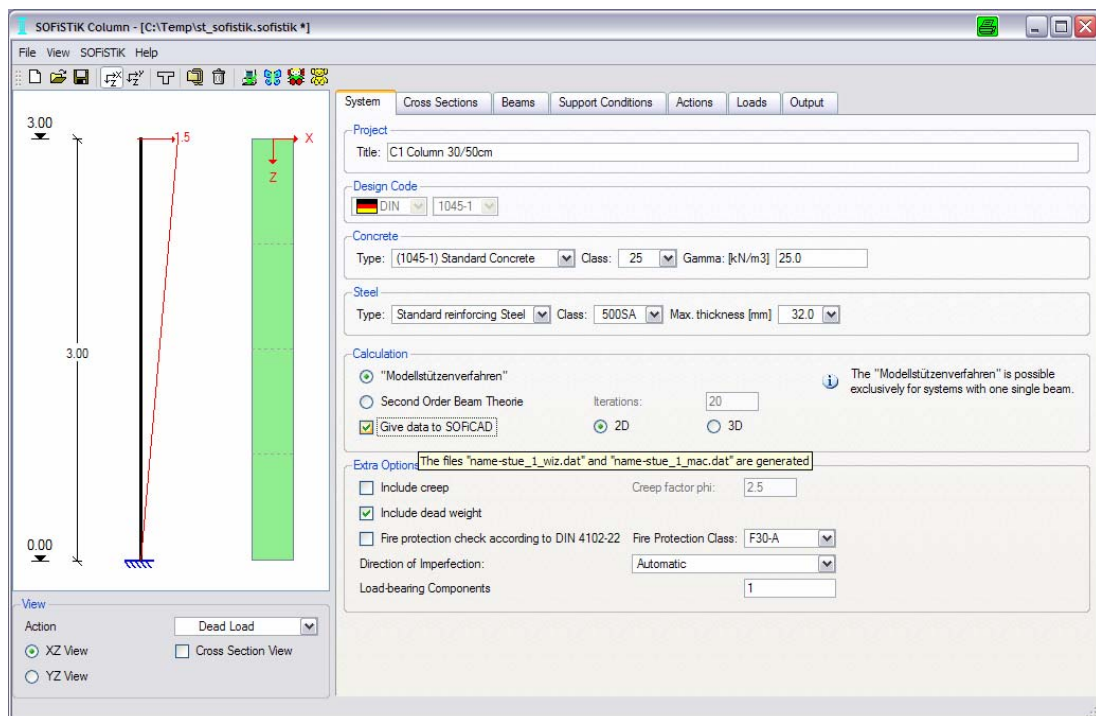
10.1 Analyzing a column with COLUMN

10.1.1 Starting the program



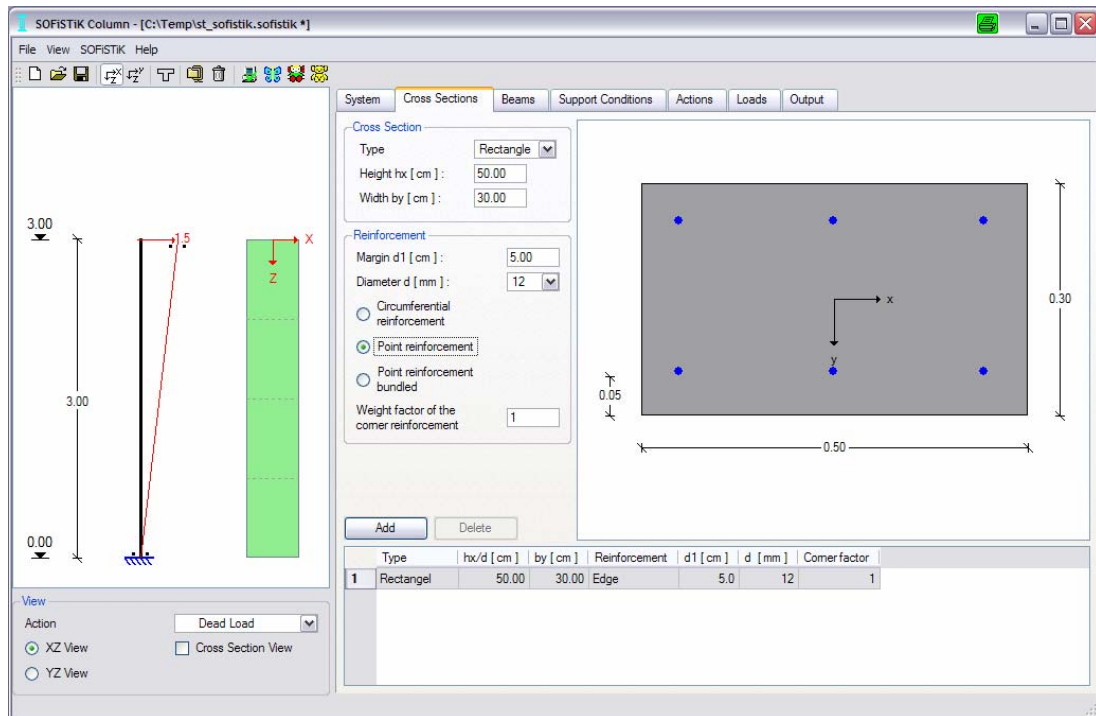
Column

10.1.2 System



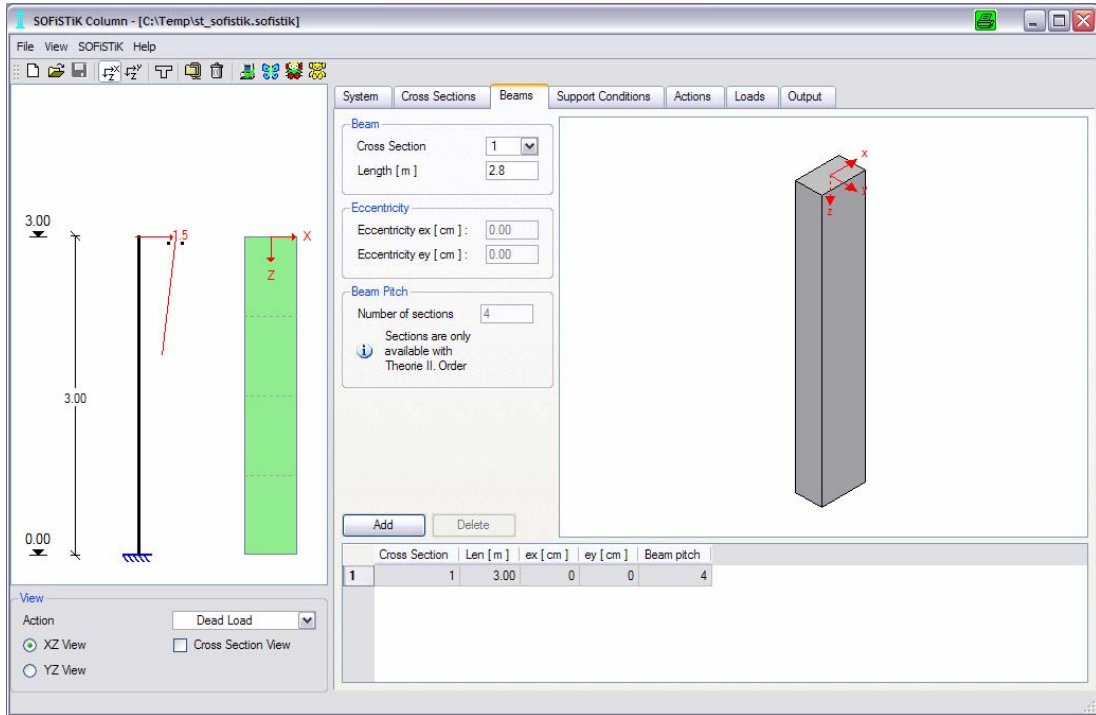
Entry of data such as header, concrete quality, data transfer to SOFiCAD, model column procedure.

10.1.3 Cross section



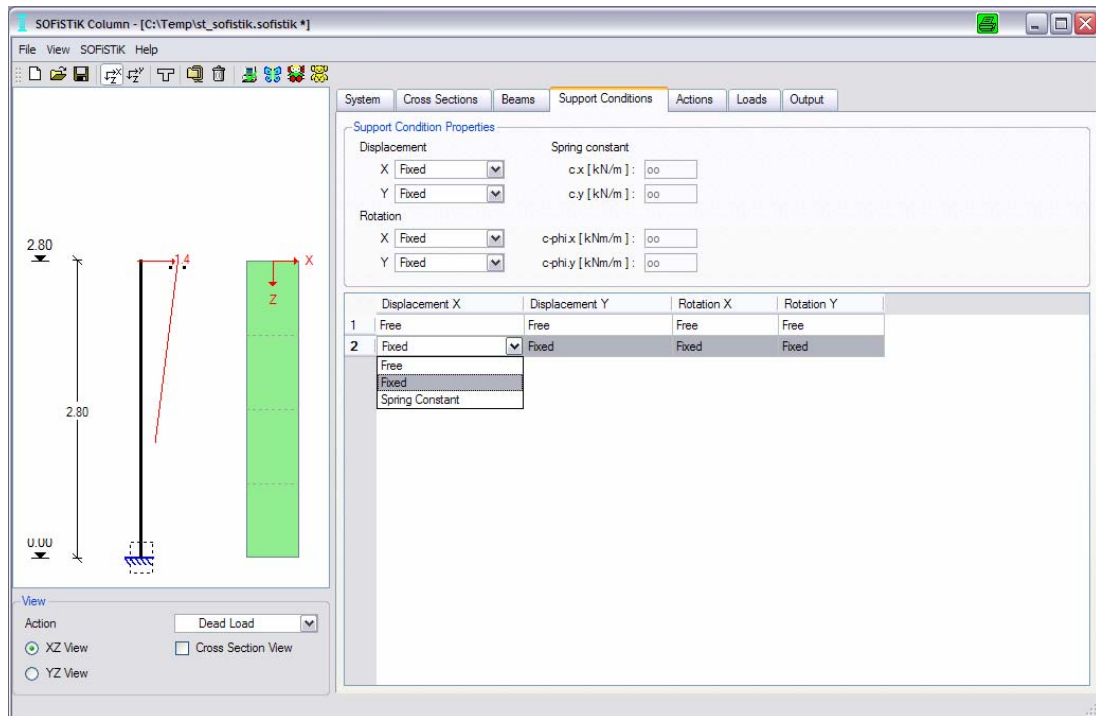
Entry: rectangle, height 50 cm, width 30 cm, corner/point reinforcement

10.1.4 Beams



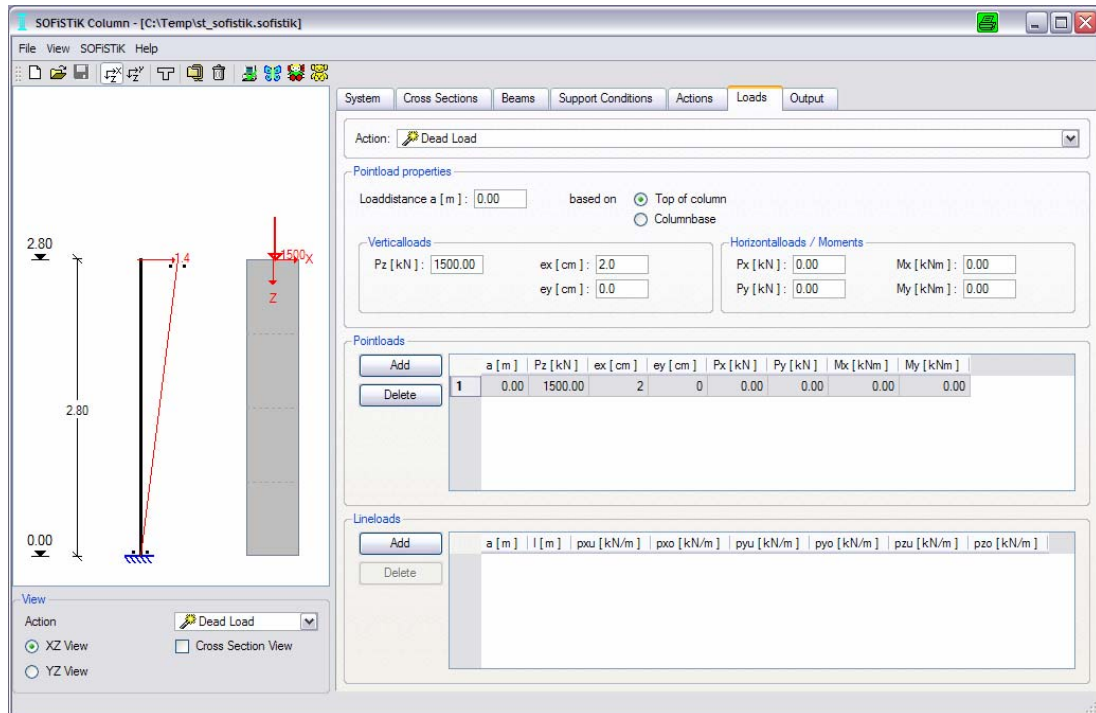
Entry: length 2.80 m

10.1.5 Support Conditions



Entry: cantilever column = top everything free, bottom everything fixed

10.1.6 Loads



Entry: Dead load $P_z = 1500 \text{ kN}$, $e_x = 2 \text{ cm}$

Variable load $P_z = 700 \text{ kN}$

10.1.7 Results in URSULA

designation:1

concrete grade	C 25/30	DIN 1045-1
reinforcement grade	BST 500SA	
G dead load ex= 2.00 cm	N	1500.0
25	N	10.5
Q live load	N	700.0

structural design calculation for the Y-axis

crosssection edge rein.	b= 30.0 cm	h= 50.0 cm	d1= 5.0 cm	As= 6.78 cm ²
system unbraced	L= 2.80 m	Ko= free	Ku= fix	
	SK= 5.60 m	LAMBDA= 39	limL = 25	

combination

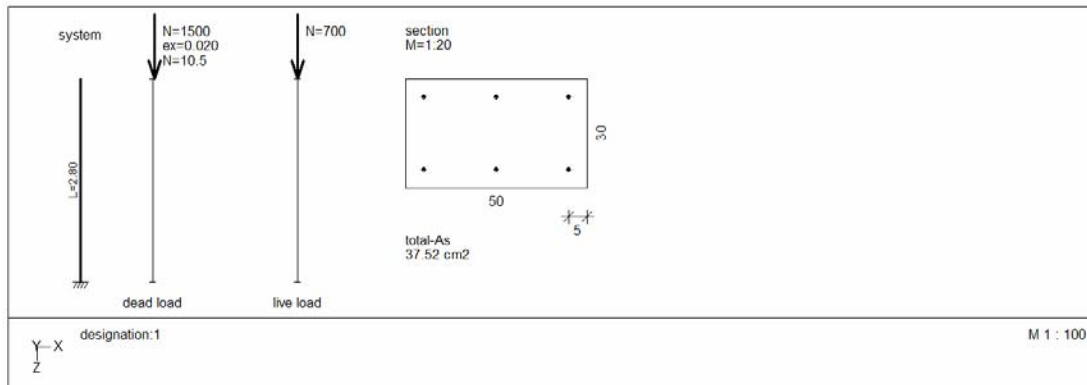
1.35*G+1.5*Q

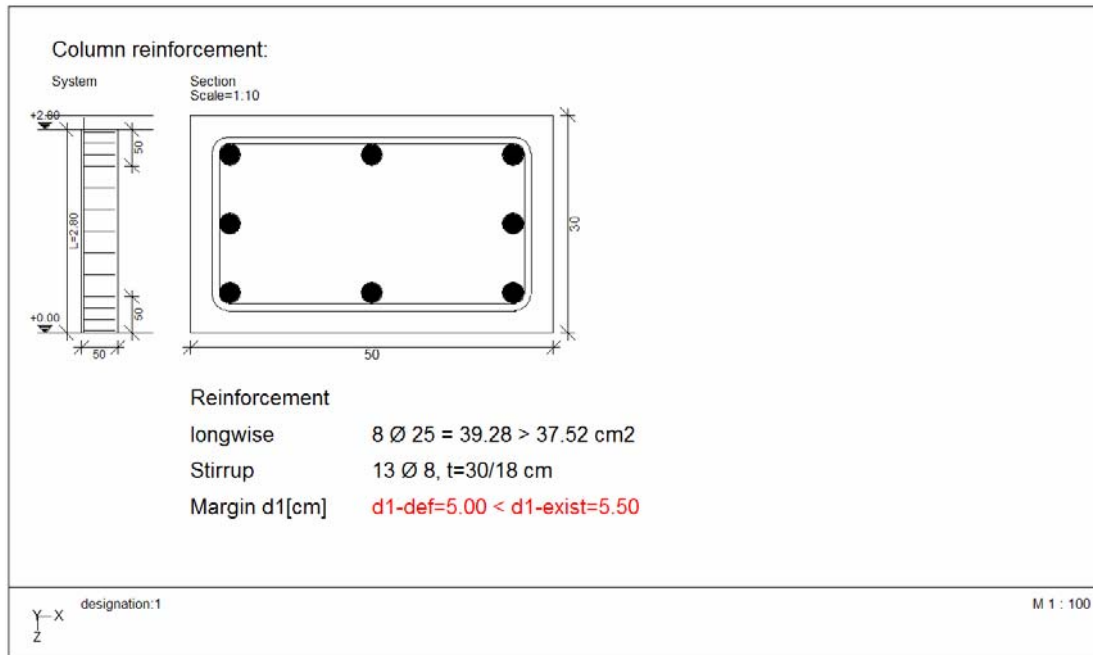
Sicherheiten	Beton 1.50	Stahl 1.15			
internal forces and moments	N	3089.2	Mo	40.5	Mu -40.5
imperfektion	ea= 1.40 cm		Mo	43.2	Mu -43.2
add.load eccentr.e2= 0.77 cm			Mo	23.9	
e2= 0.77 cm					Mu -23.9
design moment			Mo	107.6	Mu -107.6

design

	M[kNm]	ro[%]	AS[cm ²]
above Modellst.etot= 3.48 cm	107.6	2.50	37.52
below Modellst.etot= 3.48 cm	-107.6	2.50	37.52
--- minimum reinforcement	77.2	2.22	33.29 **2
minimum reinforcement		0.45	6.78 def
	0.08	2.50 [cm ² /m]	

**2 : minimum moment MRd = NEd*h/20 8.6.3.(9)
def : minimum reinforcement defined



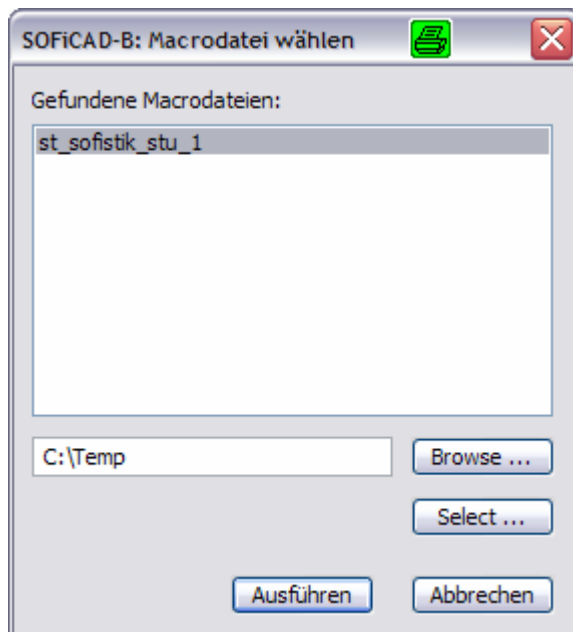


10.2 Column into SOFiCAD

10.2.1 Calling up the Macro



Select the Workshop directory, run Macro file:



Automatically a SOFiSTiK WPS is called up, the first module will be carried out and shown in the SOFiSTiK browser URSULA for checking and possible changes.

10.2.2 Check variables

Stütze Eingabe

Position: S01 Stütze 30/50 cm 1

Betongüte 25 Stoss Druck Übergreifung 1.16 m def. 1.16

Querschnittswerte

Breite 30.0 cm
 Höhe 50.0 cm
 Betondeckung 3.0 cm

Systemwerte

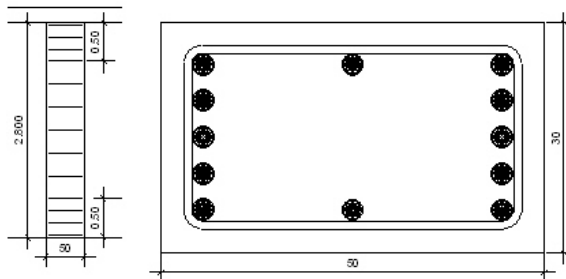
Stützenlänge 2.800 m
 Deckendicke 0.200 m
 Höhenkote 0.000 m

Längsbewehrung

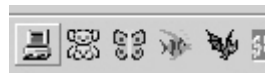
erf.As[cm²] 37.5 vorh.As 49.1 Anordnung Eckbew.
 Anzahl 10Ø 25 gebogen 3.0 Richtung Y
 Stabbündel B1

Bügelbewehrung

Ø 8, t= 30.0 / 18.0 cm
 Längen 0.50 . 0.50 m

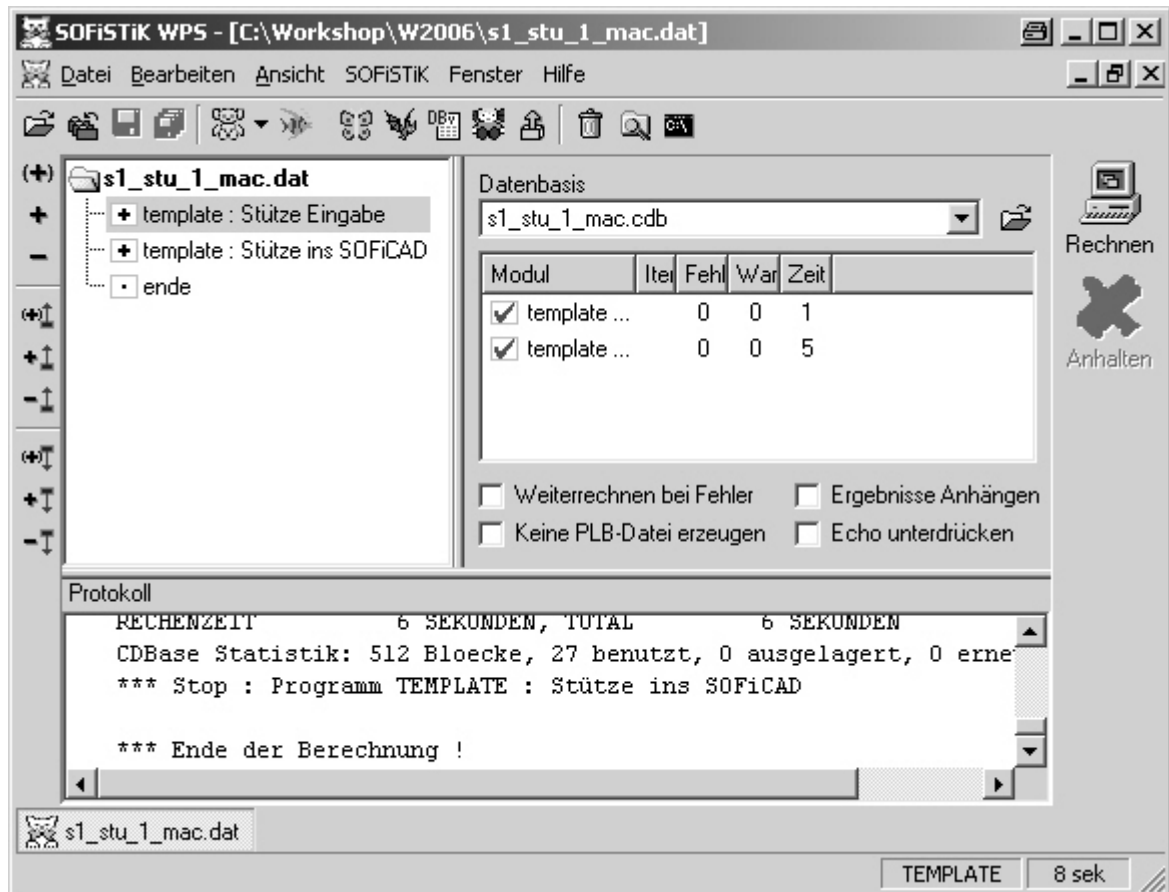



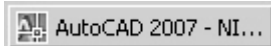
10.2.3 Continue analysis



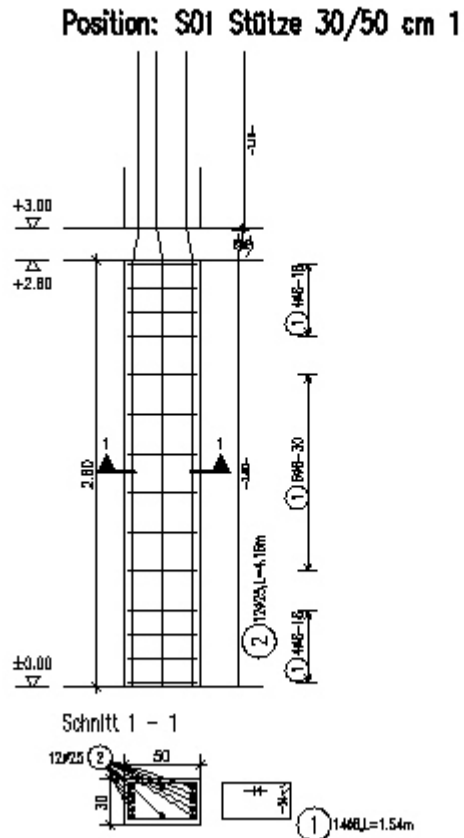
To continue analysis, select Program start **Programmstart (F12)** of press F12.

The SOFiSTiK-WPS dialogue box appears.



Use  or F12 to start analysis. After a short while  will be blinking. Now the result can be inserted into AutoCAD in a layout window which has to be activated previously.

10.2.4 Results in SOFiCAD



10.3 Changing Macro files

The values of the grey shaded fields can be changed. Subsequently the template will be re-analyzed and the results are displayed.

The following changes should be conducted:

- Header
- Cross section: 25/25 cm
- Diameter: 25
- Amount bars: 8
- Form: straight bars
- Reinforcement direction: X
- Large stirrup reinforcement bottom: 1.20 m

Stütze Eingabe

Position: S01 Stütze 30/50 cm

Betongüte 25 Stoss Druck Übergreifung 1.16 m def. 1.16

Querschnittswerte

Breite 25.0 cm
 Höhe 25.0 cm
 Betondeckung 3.0 cm

Systemwerte

Stützenlänge 2.800 m
 Deckendicke 0.200 m
 Höhenkote 0.000 m

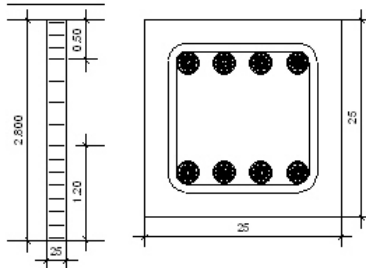
Längsbewehrung

erf.As[cm²] 37.5 vorh.As 39.3
 Anzahl 8Ø 25 gerade 3.0

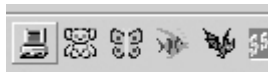
Anordnung Eckbew.
 Richtung X
 Stabbündel B1

Bügelbewehrung

Ø 8, t= 30.0 / 18.0 cm
 Längen 0.50 . 1.20 m



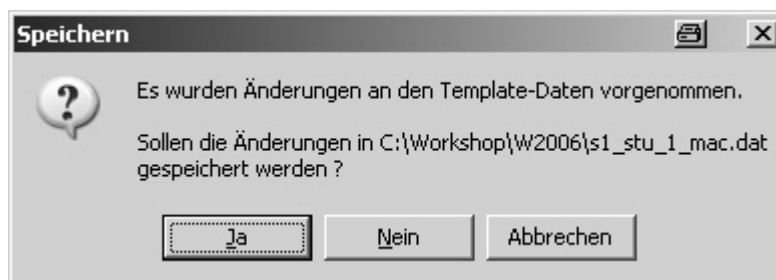
10.4 Re-start template



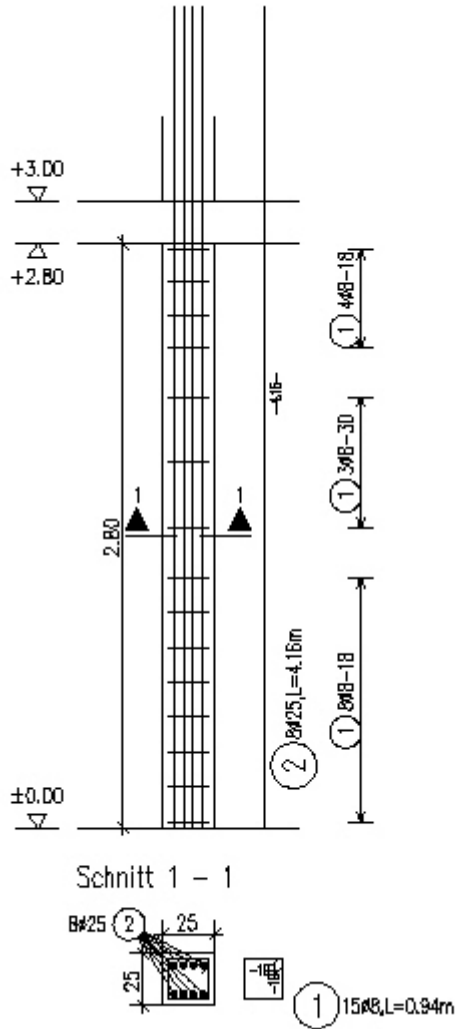
|Programmstart (F12)|

Start again with program start or F12.

Changes can be stored.



10.5 Result of the changes



11. Console

11.1 General

The Macro allows designing, dimensioning preparing consoles which are monolithically connected with concrete columns for SOFiCAD.

The course of the analysis can be found in the Betonkalender 2002, BK1, pages 519f.

11.2 Preparation

Examples for Macros can be found in the following directory:

```
C:\Documents and Settings\...\Local Settings\Application  
Data\SOFiSTiK\SOFiCAD\17.1\english
```

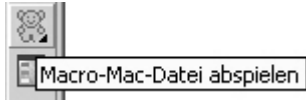
The Macro files can be recognized by their ending ..._mac.dat.

In order to leave them in their original state, the desired file should be copied into the working directory and then renamed corresponding to the project.

Copy the file Console_mac.dat and rename it to K01_mac.dat.

For display in SOFiCAD it's advisable to create a layout are 1:20

11.3 Call up Macro



Go to the workshop directory and run the Macro file:



SOFiSTiK WPS will automatically be started; the first module will be carried out and displayed in the SOFiSTiK browser URSULA for checking and possible changes.

11.4 Template Console

Konsole Eingabe

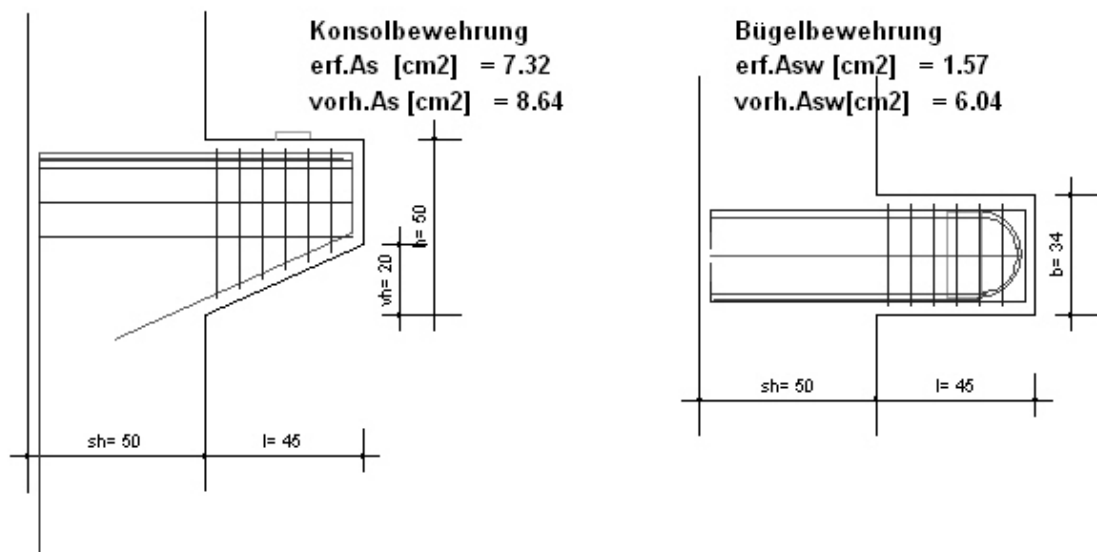
Pos. **F1** Konsole

Betongüte **40**

Einwirkungen		Geometrie [m]		Betondeckung [cm]	
Vertikal [kN]	380.0	h Höhe	0.500	oben	2.5
Horizontal [kN]	76.0	b Breite	0.340	seitlich	2.5
Angriffspunkt [m]	0.250	l Länge	0.450	hinten	2.5
Auflagerplatte		sh Stützhöhe	0.500	Überdeckung Konsoleisen	5.0
Länge [m]	0.100	vh Voutenhöhe	0.200	Abstand zwischen Eisen	2.0
Breite [m]	0.240				

Konsolbewehrung			A3 mit Haken			Bügelbewehrung		
Durchm.	außen	innen	Durchm.	außen	innen	Durchm.	Anz.	
1.Lage	16	0	1.Lage	0	12	horizontale Bügel	8	€
2.Lage	0	0	2.Lage	0	0	vertikale Bügel	8	€
3.Lage	0	0	3.Lage	0	0	seitliche Eisen	10	€

Berechnung		Bewehrung	
Stabwerkskraft [kN]	318.5	Schwerpunkt [cm]	5.38
VRd,max [kN]	1415.8		



The required values concerning the console's dimension are entered in the block Influences. The next block Geometry contains the geometrical data. The block concrete covering manages the different concrete coverings and further distances of the reinforcement bars.

The reinforcement can be conducted with **console bars** (bending type D3 or D3A) and **A3 bars with hooks**. Both bending types can be arranged outside and inside in 3 layers. Thereby it's important avoiding that console and A3

bars are at one position simultaneously. The **side bars** are accounted to the present reinforcement, however they are mainly required constructively.

The console will be linked horizontally and vertically.

The analysis results in the truss force which should be covered with reinforcement and $VR_{d,max}$, the loading capacity of the concrete compression strut, depending on the console's geometry and the concrete quality, which has to be larger than the vertical influence.

The gravity center of the reinforcement is decisive to determine the truss force. Due to the exact selection of the single reinforcements it can precisely be determined by the Macro.

11.5 Changes

The following changes should be conducted at the console.

- Vertical influences: 400 kN
- Amount side bars: 2

Konsole Eingabe

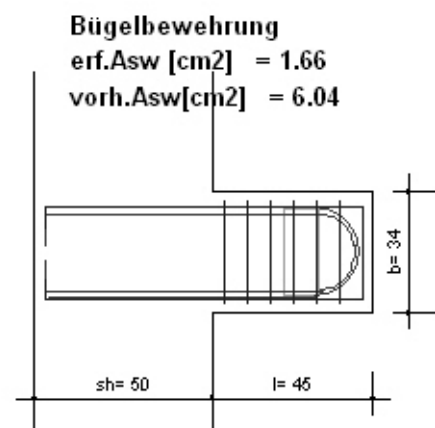
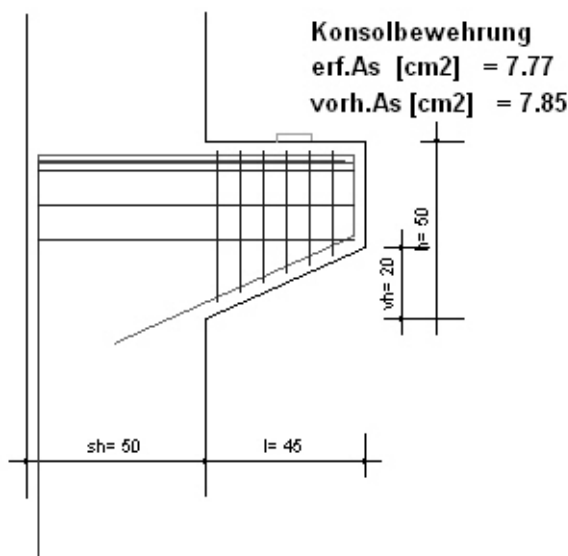
Pos. **F1** Konsole

Betongüte **40**

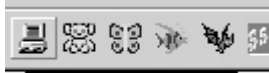
Einwirkungen		Geometrie [m]		Betondeckung [cm]	
Vertikal [kN]	400.0	h Höhe	0.500	oben	2.5
Horizontal [kN]	76.0	b Breite	0.340	seitlich	2.5
Angriffspunkt [m]	0.250	l Länge	0.450	hinten	2.5
Auflagerplatte		sh Stützhöhe	0.500	Überdeckung Konsoleisen	5.0
Länge [m]	0.100	vh Voutenhöhe	0.200	Abstand zwischen Eisen	2.0
Breite [m]	0.240				


Konsolbewehrung			A3 mit Haken			Bügelbewehrung		
Durchm.	außen	innen	Durchm.	außen	innen	Durchm.	Anz.	
1.Lage	16	0	1.Lage	0	12	horizontale Bügel	8	3
2.Lage	0	0	2.Lage	0	0	vertikale Bügel	8	6
3.Lage	0	0	3.Lage	0	0	seitliche Eisen	10	2

Berechnung		Bewehrung	
Stabwerkskraft [kN]	337.8	Schwerpunkt [cm]	5.51
VRd,max [kN]	1414.2		



11.6 Continue analysis





Call  Programmstart (F12) or F12 for program start.



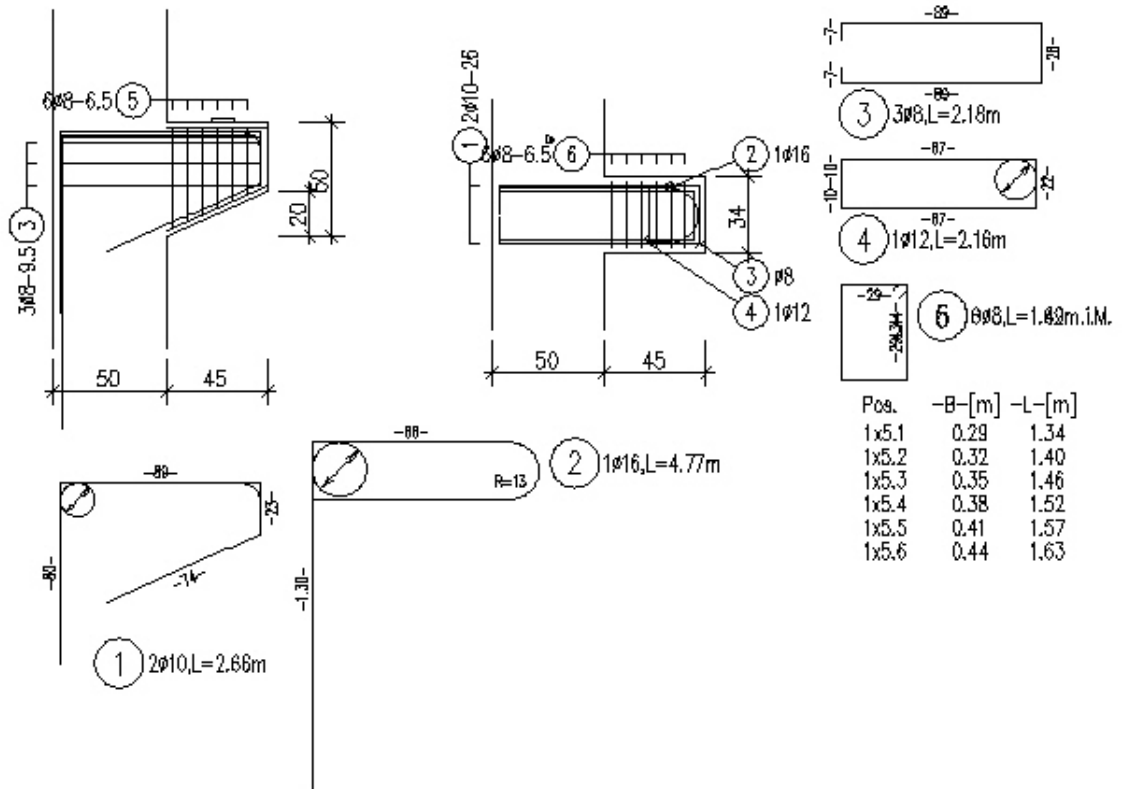
SOFISTIK-WPS dialogue box appears.



Use  or F12 to start analysis. After a short while  AutoCAD 2007 - NI... will be blinking. Now the result can be inserted into AutoCAD in a layout window which has to be activated previously.

11.7 Results in SOFiCAD

Position: F1



12. Round slab

12.1 General

This Macro generates the reinforcement for a round slab. The reinforcement will be arranged orthogonally in the inner area. Furthermore a radial reinforcement will be determined which will be provided with a ring type transverse reinforcement.

12.2 Preparation

Examples for Macros can be found in the following directory:

C:\Documents and Settings\...\Local Settings\Application Data\SOFiSTiK\SOFiCAD\17.1\english

The Macro files for SOFiCAD can be recognized at their ending_mac.dat.

In order to leave them in their original state, the desired file should be copied into the working directory and then renamed corresponding to the project.

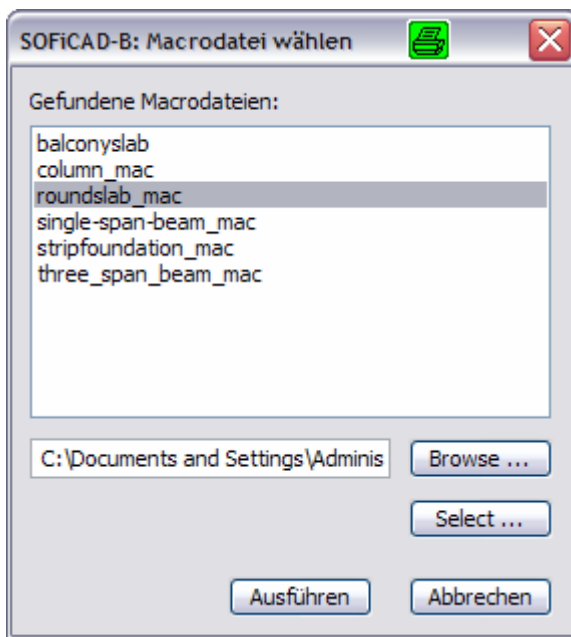
Copy the file roundslab_mac.dat and rename it to rpl_mac.dat.

For display in SOFiCAD it's advisable to create a layout are 1:50.

12.3 Call up Macro



Go to the Workshop directory and run Macro:



SOFiSTiK WPS will automatically be called up, the first module started and displayed in the SOFiSTiK Browser URSULA for checking and possible changes.

12.4 Template Round Slab

Entry reinforcement for round slabs

Position: 1 Basin

Geometry

Inner Radius 2.000 m
Outer Radius 12.000 m

Concrete Class 35

Concrete Cover [cm] 3.5 cm

Reinforcement

	req.As	Distance	Diameter	exis.As
Central	5.90	15.0 cm	14	10.27
Radial	6.00	20.0 cm	16	10.05
Ring	2.00	25.0 cm	8	2.01

The inner radius assigns the area for the orthogonal reinforcement, whereas the outer radius specifies the dimension of the round slab.

The concrete quality is required for the reinforcement overlapping length.

The required As can be assigned for the different reinforce. By selecting a distance and diameter the present As will be determined by the Macro.

12.5 Changes

The following changes should be conducted at the round slab:

- Inner radius: 3.00 m
- Outer radius: 9.00 m
- Any distance: 20 cm
- Diameter central: 12
- Diameter radial: 14

Entry reinforcement for round slabs

Position: 1 Basin

Geometry

Inner Radius 3.000 m

Outer Radius 9.000 m

Concrete Class 35

Concrete Cover [cm] 3.5 cm

Reinforcement

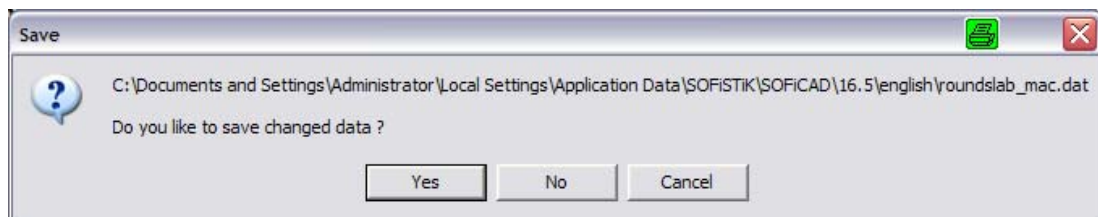
	req.As	Distance	Diameter	exis.As
Central	5.90	20.0 cm	12	5.65
Radial	6.00	20.0 cm	14	7.70
Ring	2.00	20.0 cm	8	2.52

12.6 Re-start Template



Re-start with program start or F12.

Changes can be stored.



12.7 Result of changes

Position: 1 Becken

