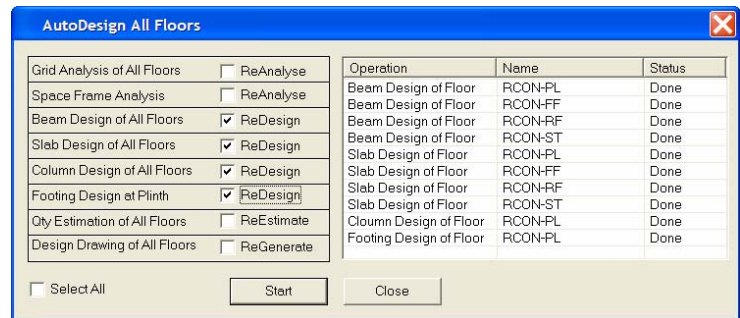


A Complete Package for RCC Building Analysis, Design, Drawing and Estimation

Many new features are added in **Build-Master Version 2009**, as compared to the previous Version 2005. Few important features are highlighted here briefly.

Auto Design All Floors

After Building model is created from the plans and Frame Analysis is done, in earlier version of Build-Master, user has to select each floor and give the command to design Beams & Slabs at every level. No more hassle of selecting the floor again & again. **Auto Design All Floors**, a new option from TOOLS menu will not only design Beams & Slabs at all floors with a single command, but it will also estimate the quantities and prepare design drawings.



Thus after entering single line plans with INPUT PLAN and editing data with EDIT PLAN DATA option from FLOORS menu, A Single new command **Auto Design All Floors** will Carry out Grid Analysis of All Floors, Create 3D model, Carry out Space Frame Analysis for Earthquake & Wind, Design Beams & Slabs at all Floors, Design Columns & Footings, Estimate Quantities & Create Design Drawings at all Floors.

User has complete control on selecting these options as shown above. **Redesign** of single components with **Interactive Design** option is available as earlier.

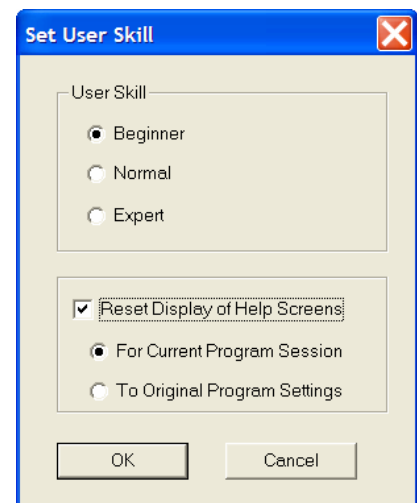
Set User Skill

Many computer games give option for the user to set his Level of skill for playing the game. On similar lines **Set User Skill**, a new concept is added in Build-Master, to set user skill level.

For the **Beginners** program will display **Help Dialog Boxes**, before execution of every command, describing what action will be taken by that command. It will also display and explain how to use various options of it.

Many Commands and options of the program remains Unused by User, due to lack of knowledge about its application. **Set User Skill** concept will eliminate such situations.

Set User Skill will also save the time of a senior person in an organization, spent on training a newly joined engineer for software usage for first time. **Help Dialog Boxes** will not be displayed for an **Expert** user.

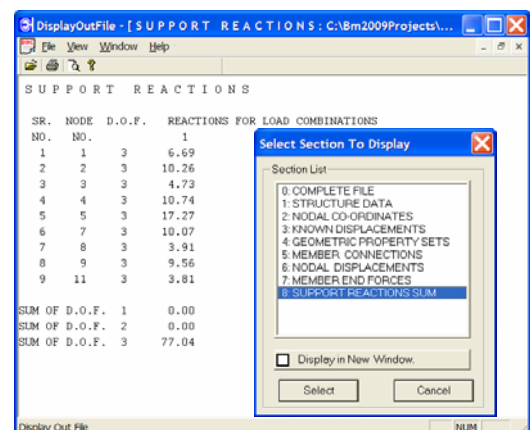


Display Output File

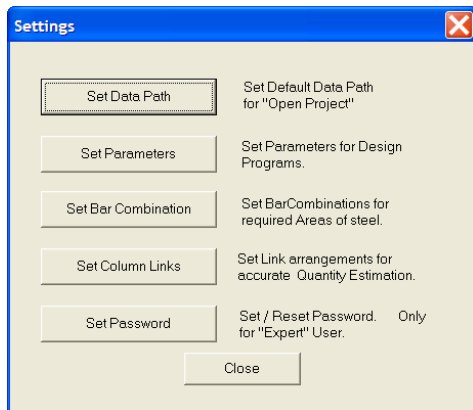
Space Frame Analysis output files are huge files and divided in various sections like Nodal Co-ordinates, Member Connections, Support Reactions etc. Locating a desired section in a Text Editor is not simple. A new utility is now added to display the desired section easily from a menu. It will also display the summation of Support Reactions for checking the results.

Improved Graphical Editor

New Editing commands **Trim**, **Extend**, **Fillet** & **Change Point** are now added in the in-built Graphical editor, Input Plan, apart from the earlier options of Copy, Move, Mirror, Offset, Rotate etc. **Draw Arc**, **Draw Circle**, **Show Distance**, **List Entities** are also added to make the Single Line Plan drawing simpler.



Program Settings made Easy



Now a Default path for creating New Projects can be set by the user. In earlier Version it was fixed path as BM2005Projects.

Optional Password Facility is provided in the program. So that a Beginner cannot change the Important Settings of Design Parameters and Bar Combinations prepared by an Expert User.

Project Code can now be **10 characters** long, instead of the earlier limitation of 4. Project folder path can now be **255 characters** long, instead of the earlier limitation of 50 .

Program will now run on **Windows Vista** Operating System as well.

Memory Management Improved

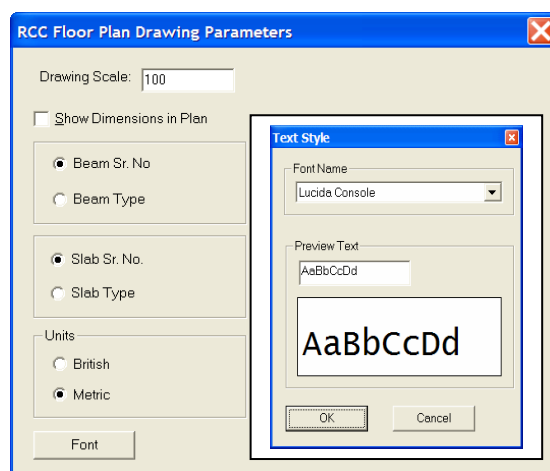
Earlier Version program used to crash sometimes, during the memory release operations, in case of inappropriate data inputs. This problem is now eliminated, by giving proper error messages to locate the incorrect data inputs.

User Selectable Fonts in DXF Drawings

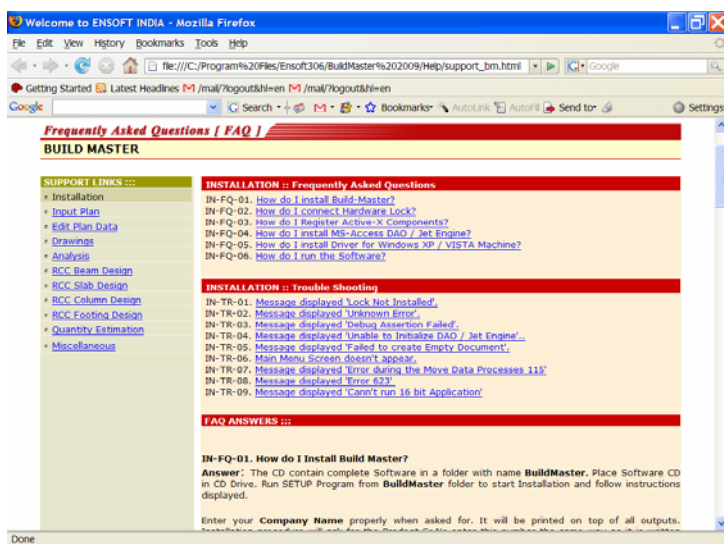
Now user can select the **Text Fonts** of his choice, with new **Font Button**, while creating the RCC & Architectural plans as well as Design Schedule Drawings in DXF file formats. Drawings can be created in both **Metric or British** units as desired by the user.

RCC plan Drawings & Design Schedule Drawings will now be **more colorful**, instead of only Black as in earlier version.

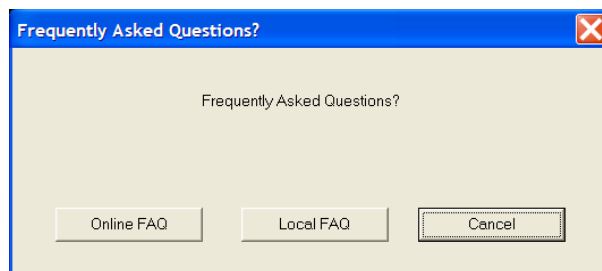
Scroll Button on mouse can now be used in Build-Master to change the size of a graphical image.



Frequently Asked Questions (FAQ)



List of Frequently Asked Questions and their Answers gets copied on your hard disk when you install the new version.



You can access them using **Local FAQ** option within program without any Internet connection.

Latest FAQ from website www.ensoftindia.com can be reached easily with **Online FAQ** option.

Detail Drawings Improved

The program generating Beam Sectional Elevation Details is improved. The **Distances of Bars** are now shown in Schematic Sketch. **Schedule Drawings** now has separate text strings for each column, which will help user in modifying schedule drawing easily, in CAD package.

Ductile Detailing

The provisions of "Ductile Detailing of Reinforced Concrete Structures Subjected to Seismic Forces" Code of Practice **IS 13920-1993**, Earthquake Load calculations as per Code **IS 1893-2002**, and Wind Load calculations as per **IS 875-1987** are incorporated in Build-Master. Procedure for RCC design & detailing of Beams and Columns is changed accordingly.

Following are few of the important Clauses of this Code considered while designing RCC Beams.
(All clauses not listed here.)

1. Beam Design Program will give a Warning if Width-to-Depth ratio of Beam is less than 0.3
2. Minimum tension steel ratio on any face of beam will be kept as $0.24 (\sqrt{f_{ck}}) / f_y$ as per code.
3. Maximum allowed tension steel ratio on any face of the beam will be restricted to 0.025.
4. Positive Steel at the Support face will be kept more than half the negative steel at that face.
5. Steel provided at each of the top and bottom face of beam at any section along the length is kept more than one-fourth of maximum negative moment steel at the face of either joint.
6. Spacing of Stirrups over a length of $2d$ at either end of a beam is restricted to $d/4$ or 8 times diameter of smallest longitudinal bar. This spacing value will not be less than 100 mm.
7. Spacing of Stirrups in the remaining portion is restricted to $d/2$ (for Rest Stirrups).

Following are few of the important Clauses of this Code considered while designing RCC Columns.
(All clauses not listed here.)

1. Column Design Program will give a Warning if Width-to-Depth ratio of column is less than 0.4
2. Spacing of the Links is restricted to half the column width or 150 mm which ever is less.
3. Special Confining Reinforcement is provided at each end of the column between the floors.

User can select whether Reinforcement Detailing shall be only as per IS 456-2000 code or both as per IS 456-2000 and Ductility Code IS 13920-1993.

DAT2STD Conversion Utility

This third party utility can convert Build-Master Analysis Data file to STD file format. It will read a DAT file and write it in STD format. Build-Master Space Frame 3D model data can also be converted. When Build-Master design outputs are submitted to third party (Proof Consultants) who do not have Build-Master, this utility can be used to convert Build-Master 3D model data in STD file format for submission. Thus user can get the benefit of entering all the data floor wise with Build-Master, which will generate the 3D model geometry as well as loads on each member, also calculate the earthquake and wind loads with all desired load combinations.

Set Bar Combinations

Two new Utilities are added in Build-Master 2005, namely, **BarCOMB.exe** & **SetCLink.exe** for configuring standard data files for storing User Defined Bar Combinations. RCC Beam Design program, reads the Bar Combinations to be provided against various required areas of bars from two files, namely, BeamBotB.dat for beam bottom bars and BeamTopB.dat for beam top bars. Since at a beam support lesser number of bars are desired to avoid congestion, separate files are provided for storing different combinations. RCC Column design program, similarly reads bar combinations from ColBars.dat file, for providing Main Vertical Bars in column.

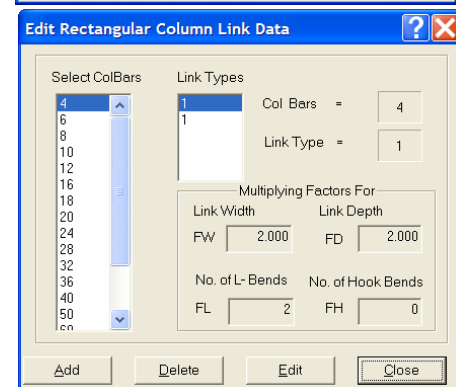
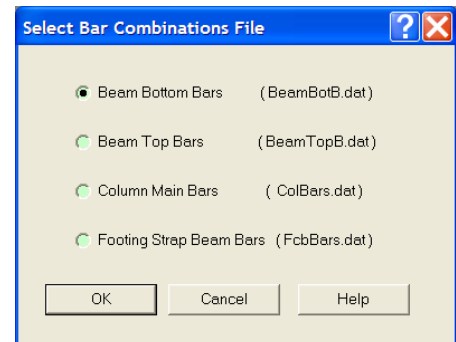
BarCOMB program can be used to customize the Number of Bars to be provided for different required Bar Areas.

Arrangements of Column Links for different number of Vertical bars can also be defined for accurate estimation of Column Links. These arrangements are stored in file Bmclinks.dat. A new program **SetCLink** is added with which various types of Link arrangements can be defined easily.

Column quantity estimation program will now work out the weight of Links more exactly.

Assign Schedule Sizes

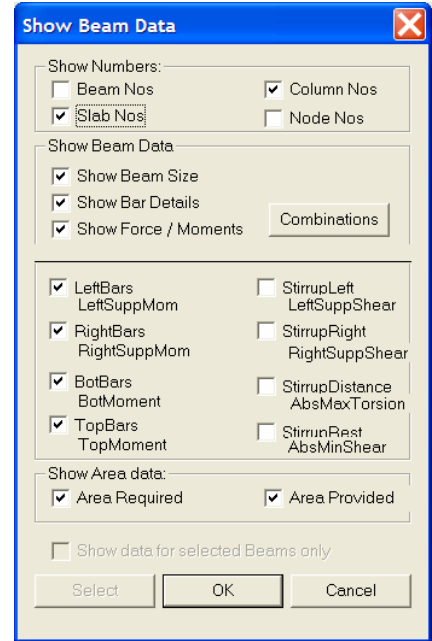
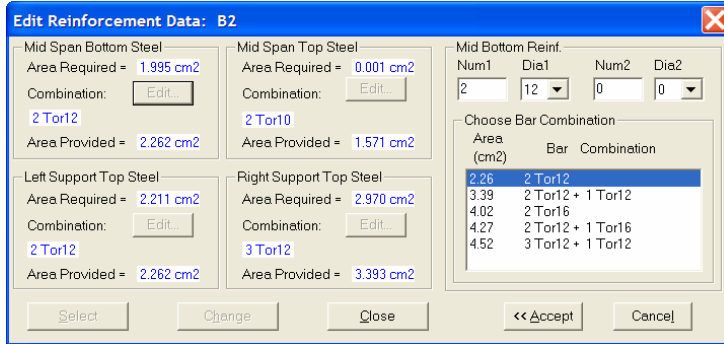
A new command is added in Tools Menu. The sizes of beams, columns and slab thickness calculated during Design may be different from those assumed in the data. If user wishes to reanalyze the Structure with the designed sizes, then he has to reassign these sizes in the data. Instead of changing them manually, this utility can be used to **Assign the Design Sizes** in the schedule output, to the respective RCC data file at each floor.



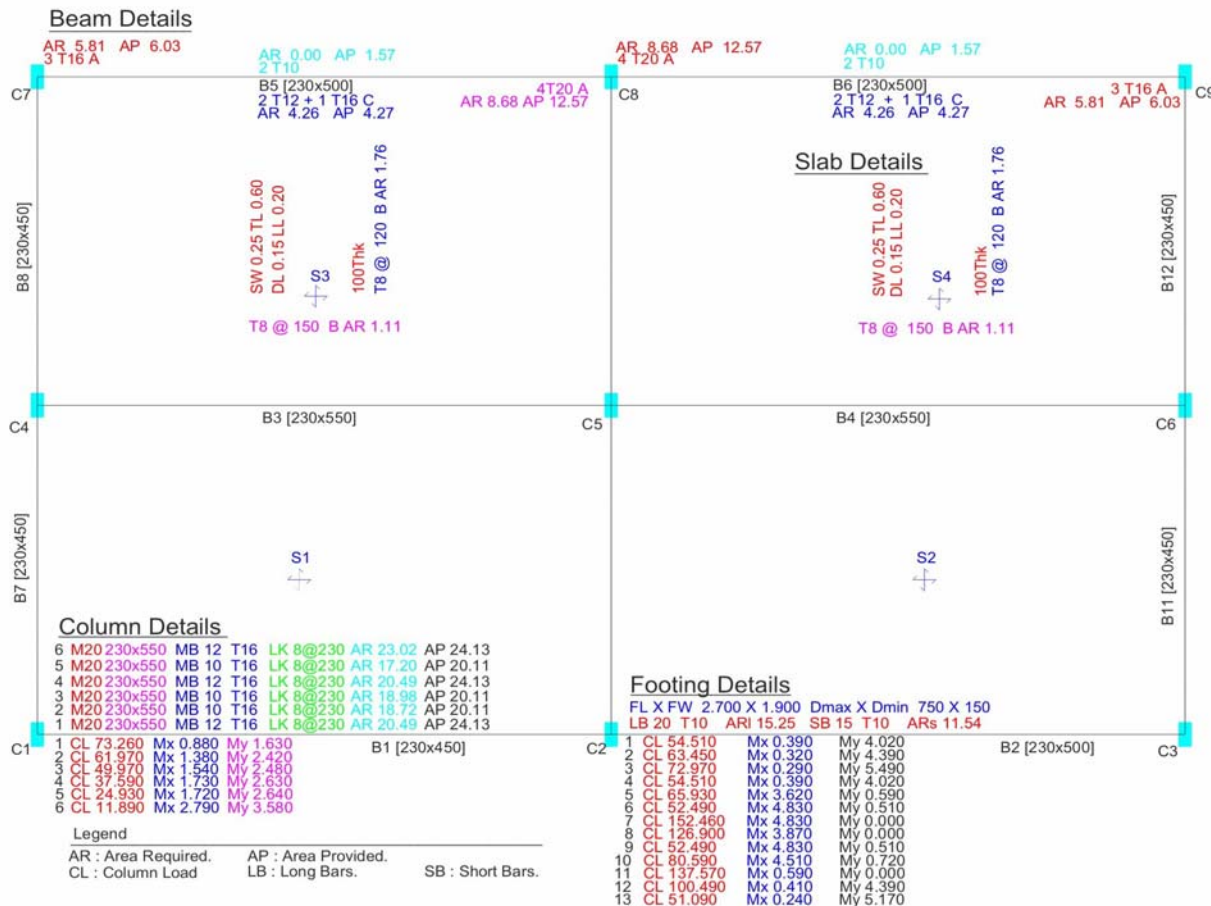
Modify Schedule Using Plan Layout

A new concept of **editing Design Schedules on plan layout** itself is added in this Version. To provide appropriate reinforcement across adjoining beams & slabs, some designers write the required Area of Reinf. on plan, prior to providing numbers and diameters of bars.

Since this utility will now display the bar details of beam, slab, column and footings on plan, as shown below, valuable time of designers will be saved. Forces and moments can also be displayed simultaneously, with the required bar areas. The bar combinations can also be edited directly on the plan, by selecting desired beam, slab or column. Changes made will be saved in the database files at backend. Schedule drawings in DXF formats will also get revised automatically.



Sample Plan Showing Design Details on Plan



For more Details get in touch with us today !

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