



**Andhra Pradesh State Skill  
Development Corporation**



# **Extended Three-Dimensional Analysis of Building System**

## **ETABS**

### **New Model Creation**

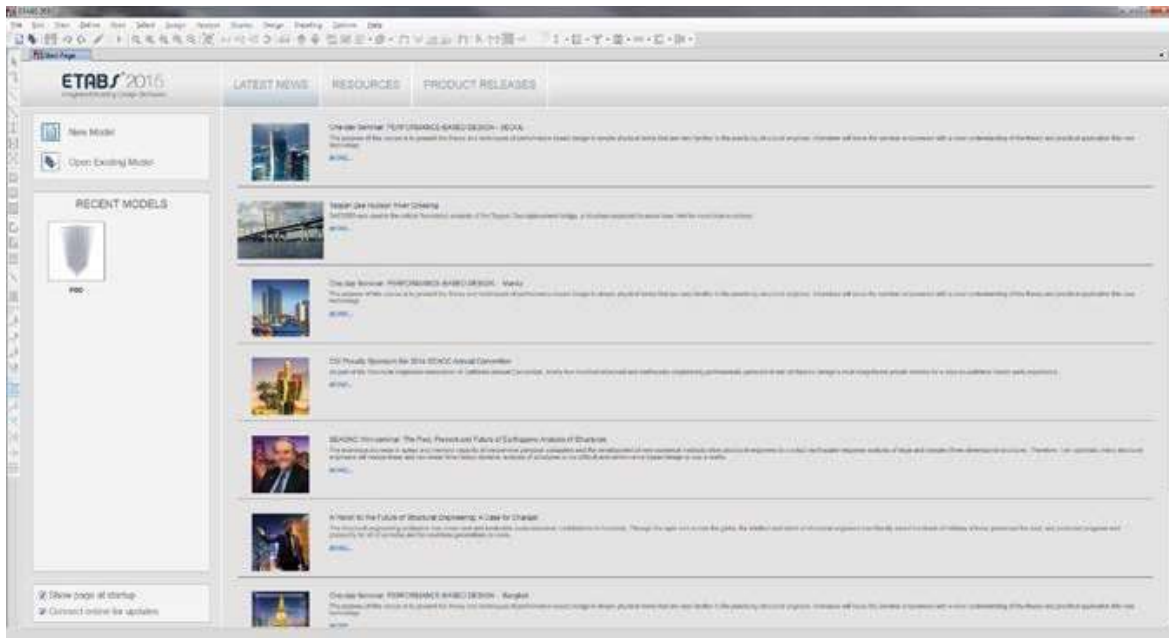
## NEW MODEL CREATION-1

### Objective

This chapter describes how to begin a model by creating the basic grid system. Structural objects are placed relative to the grid system.

### Create the Basic Grid System

Begin creating the grid system by starting the program. The Start Page will be displayed as shown in Figure 3-1. If the program is already running with a model displayed, you can start a new model by clicking the File menu > New Model command or the New Model button.



**Figure: Start Page**

Click the New Model button on the Start Page to display the Model Initialization form shown in Figure 3-2.



**Figure: Model Initialization form**

There are three options on the Model Initialization form for setting the initial units, preferences, properties and definitions:



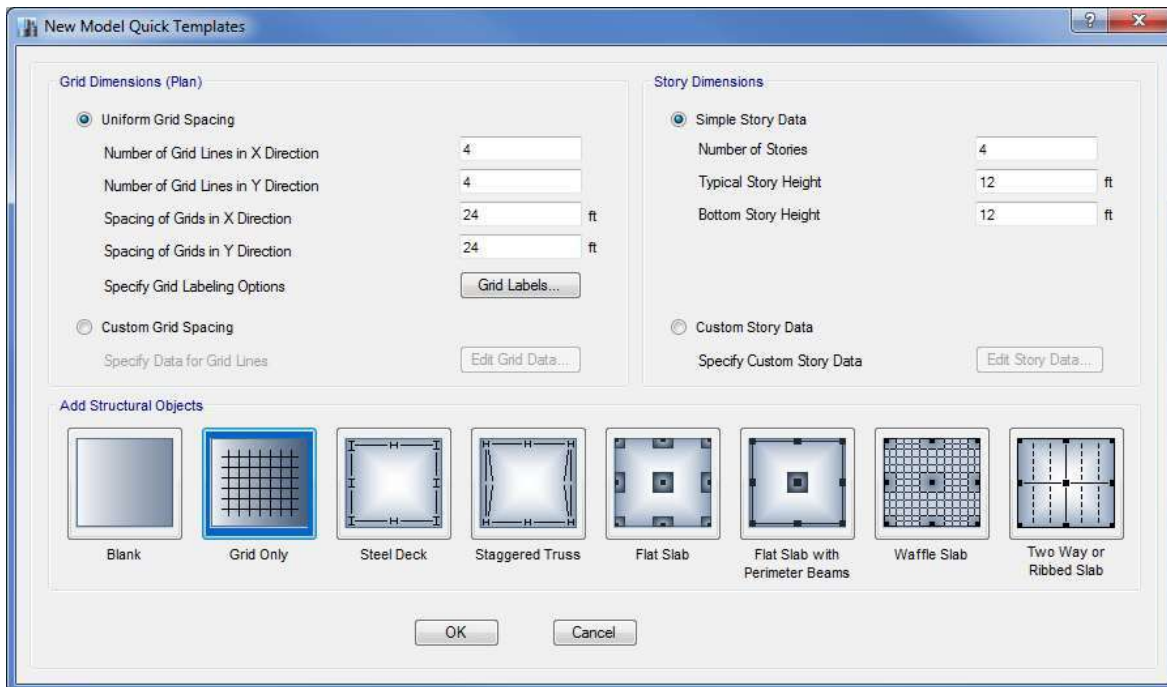
**User Default Settings** which can be saved using the Options menu > Save User Default Settings command;

**Settings from a Model File;** or **Built-in Settings with** additional unit, section and code selections.

On the Model Initialization form select the Use Built-in Settings With option and then choose either U.S. Customary, Metric SI or Metric MKS from the Display Units drop-down list - this selection will set the defaults for the input and display units. These units determine what units are associated with each piece of input data, and what units are used to display model output. These units may be inconsistent for different items, i.e., moment diagrams may be displayed in kip-ft units while shear stresses are in lb/square inch. To review the display units hold the mouse cursor over the information icon.

To change the default units, use the Options menu > Display Units command or click on the Units button located in the lower right-hand corner of the screen.

Also on the Model Initialization form are drop-down lists for selecting the steel section database, the steel design code, and the concrete design code to use when creating and designing the model. Click the OK button on the Model Initialization form to display the New Model Quick Templates form shown in Figure 3-3. The New Model Quick Templates form is used to specify horizontal grid line spacing, story data, and template data. The form contains a blank button, a grid only option, four concrete building templates (Flat Slab, Flat Slab with Perimeter Beams, Waffle Slab, Two Way or Ribbed Slab), and two steel building templates (Steel Deck, Staggered Truss). Template models provide a quick, easy way of starting a model. They automatically add structural objects with appropriate properties to the model. We highly recommend that you start your models using templates whenever possible.



**Figure: New Model Quick Templates form**

## **Grid Dimensions (Plan) - Define a Grid System**

Use the Grid Dimensions (Plan) area of the form to define a grid line system.

Select from two options for defining the grid line system



**Uniform Grid Spacing.** Specify the number of grid lines in the X and Y directions and a uniform spacing for those lines. Note that the uniform spacing in the X and Y directions can be different. This option defines a grid system for the global coordinate system only. Click the Grid Labels button to control how the grids are labeled. If subsequently necessary, edit the information using the Edit menu > Edit Stories and Grid Systems command. Note that the default global coordinate/grid system is a Cartesian (rectangular) coordinate system.

## Grid Labeling Options Form

Use the Grid Labeling Options form to specify the labeling sequence for grid lines in individual uniform grid systems.

- **X Grid**

*Beginning X ID* edit box and *Label Left to Right* and *Label Right to Left* options. Use the edit box to specify the label for the first grid line along the X axis. "A" is the default designation. Then choose if the labeling will start on the left-hand side of the model and proceed to the right-hand side, or start on the right-hand side and proceed to the left-hand side. *Label Left to Right* is the default.

- **Y Grid**

*Beginning Y ID* edit box and *Label Bottom to Top* and *Label Top to Bottom* options. Use the edit box to specify the label for the first grid line along the Y axis. "1" is the default designation. Then choose if the labeling will start at the bottom of the model and proceed upward, or start at the top of the model and proceed downward. *Bottom to Top* is the default.

**Custom Grid Spacing.** Define non uniformly spaced grid lines in the X and Y directions for the global coordinate system. After choosing this option, click the Edit Grid Data button to edit the grid system.

The Grid System Data form has the following options.

- **Click to Modify/Show buttons Reference Points Options**

- **Bubble Size** edit box. Specify the size of the bubble to be used to delineate the grid line ID.
- **Grid Color** box. The color that will be used to display the grid lines is shown here. As necessary, click this box to display the Color form and select a new color to be used to display the grid system.
- **Diagram** -- As changes are made on the form, this diagram will update to illustrate those changes.
- **Quick Start New {Rectangular, Cylindrical} Grids** button. Clicking this button displays the Quick {Cartesian, Cylindrical} Grids form. Grids defined using the Quick {Cartesian, Cylindrical} Grids form will replace the grid data shown in the {Rectangular, Cylindrical} Grids spreadsheet area; General grids will not be affected.
- **Display Grid Data as Ordinates** or **Display Grid Data as Spacing** options. Choose to display the locations of the points defining the grid line using coordinates or lengths relative to the origin. The ordinates or the spacing will display in the {X} *Grid Data*, and {Y} *Grid Data* spreadsheets.



- **{X} Grid Data** spreadsheet area. Use the Grid ID, X Ordinate, Visible, and Bubble Loc (location) cells to specify the labeling scheme, coordinates, visibility, and bubble location for the grid label ID in the X axis direction.
- **{Y} Grid Data** spreadsheet area. Use the Grid ID, Y Ordinate, Visible, and Bubble Loc (location) cells to specify the labeling scheme, coordinates, visibility, and bubble location for the grid label ID in the Y axis direction.
  - Click the Add button if additional grid lines need to be defined.
  - Click the Delete button to remove a grid line.
  - Click the Sort button to arrange the data in sequential order.

The reasons for defining a grid system for the model include the following:

- Default elevation views in the model occur at each defined primary grid line in a model.
- Structural objects added to the model from a template are added based on the grid line definitions in the model.
- Objects snap to grid lines when drawn in the model.
- Objects mesh at their intersections with grid lines.
- The grid lines in the model can be defined using the same names as are used on the building plans. This may allow for easier identification of specific locations in the model.