**25\_Defining frame sections**

After defining materials we need to define building framing sections.

Let's start by defining beam and column sections. In define menu click on define frame sections or directly click on this shortcut.

Here you will a list of already defined frame sections. You can delete or modify them.

To add new sections you have two options, either to add them or to import them.

You can import standard sections for example w shapes from AISC from this tool.

For example let's import w shapes from AISC data base installed in ETABS directory.

Select this file in ETABS folder. You will see a list of all shapes imported from this file.

Second case is to add shapes yourself.

For example you can rectangular shapes, or a circular shape or a tee etc.

We will cover advance and irregular shapes in our advance course on modeling.

Let's add a rectangular concrete beam of 200mm wide by 600mm deep.

Click on add rectangular, here you will write the beam name so that we know what have defined inside for this beam.

Let's put its name as b200x600.

Here we can put width and depth in selected units meters or can enter dimensions in mm by writing mm directly in these fields.

For example let's put 200mm in width and 600mm in depth fields.

You can give this section a color from here so that when you show sections by colors it's easily identified.

From material list we will choose c50 which we defined already in previous lecture.

You can view section properties such as area, perimeter, and inertia from this button.

You can define stiffness modifiers from this button.

We will come to basics of this topic later on in this course.

For the time being keep them 1.

And finally reinforcement pattern for this section. Here you will select design type of this section as either column or beam.

Here you can put top and bottom distance from face of concrete edge to centroid of tension zone reinforcement. For example with 40mm clear cover and 10mm dia stirrups and 20mm dia main reinforcement at top and bottom of this section, the cover will be 40+10+half of 20 = 60mm.

If you have reinforcement in more than two layers you must estimate this before analysis at the time of defining sections and put appropriate cover in these fields.

If you click on column you will see more options, the cover option is the same which have just discussed.

Here you can specify if column ties are rectangular or circular or spiral.

You can either design columns from ETABS or make ETABS to check the current reinforcement which you will put here.

For example let's keep 3 x 3 bars of dia 25 with same corner bars.

If click on check option, ETABS will give us utilization ratio based on this reinforcement. If the column fails ETABS will give ratio more than 1.0.

Selecting design option will design column reinforcement and will report rebar area or percentage. Lets select this option to design columns.