Webinar Questions and Answers

1. **Q: Why is Ritz modal analysis better for modal superposition?**
   A: Ritz vectors are recommended for response spectrum analysis because this formulation is computationally efficient. Only pertinent mode shapes will occur in the horizontal plane are identified. Ritz vectors capture more of the mass excited by the earthquake.

2. **Q: What are the advantages of applying R/I factors in the load case vs. load combination or vice-versa?**
   A: If applying the R/I factors in the load case, all of the default load combinations, which are automatically generated, would all have the correct scale factors associated with them.

3. **Q: What is the use of "rigid response" and the implication of not using it?**
   A: If modes ETABS have captured don't meet the code required mass participation ratios, it is recommended to use the rigid response option.

4. **Q: Code requires to adjust the response spectrum base shear to match static base shear, how can we do that in ETABS?**
   A: Once you've run the analysis and determined the static base shear value, users can adjust the scale factor in the response spectrum load case to match the static base shear value.

5. **Q: How does the diaphragm eccentricity option work in the response spectrum load case?**
   A: Users can apply eccentricities to specific diaphragms on selected stories. It is applied as a torsional moment. Note that the eccentricity is input as an absolute length, not a ratio.

6. **Q: What is the purpose of assigning mass source to the structure?**
   A: Use the Define menu > Mass Source command to access the Define Mass Source form. Choose to define the source of the mass of a building as from self mass and additional mass, from loads, or from a combination of self mass, additional mass, and loads. Also specify how lateral mass is to be considered and located. ETABS determines the building mass associated with the element mass by multiplying the volume of each structural element times its specified mass per unit volume. This is the default. Some codes require that some percentage of the live load be included in the seismic mass. The mass source definition allows for this by selecting the mass multiplier for load patterns option.

7. **Q: How can improve modal mass participation, i.e. the first 3 modes are contributing less than 65 percent?**
   A: You can increase the number of modes to be calculated under Define>Modal Cases.

8. **Q: Instead of defining a response spectrum in the U1 and U2 direction in one load case, can we define two separate load cases with U1 and U2 respectively?**
   A: Yes, users can define separate load cases for response spectrum for translation(U1,U2,U3) or rotation (R1, R2,R3). You can combine the output by defining a load combination containing all response spectrum load cases with associated scale factors.