RISA Webinar Q&A

Dynamic Analysis in RISA

June 18, 2015

Q: When would you use a load versus a mass?
A: Loads tend to be easier than Mass because the program is doing the conversion for you.

Q: Did you just click on a point in the model randomly or did the software find the center of gravity?
A: That load is at the Center of Gravity. RISA-3D will find it for you if you put a diaphragm into the model.

Q: How much of an office or residential floor live load would you include in the seismic mass?
A: The ASCE7 talks further about the Seismic Wt in section 12.7.2. For Storage Live Load it states that 25% of the floor live load needs t be included.

Q: So RISA doesn't show accurate deflection shape?
A: Are you referring to the DAM stiffness adjustment?

Q: Why is the model only deflecting in plane when the joint is a pinned joint that should allow movement out of plane?
A: The mode shape that we looked at was an in-plane mode shape.

Q: I don't see the columns deflecting during mode shape 1.
A: Mode Shape 1 was 90% participation which is global mode so the entire model deflected together.

Q: How do you model a tension only bracings using Dynamic analysis?
A: Tension only members cannot be used in a Eigensolution due to non-linear behavior. You'll need to use Both Ways for the braces.

Q: What do you mean by Both Ways?
A: The loads are being applied to the structure as a "Load" or a "Mass"

Q: When does ASCE 7 require that a dynamic analysis be performed?
A: Certain types of building irregularities require dynamics.

Q: Does it matter which solver is chosen as long as the mass participation is at least 90%? Are the results valid as long as the participation is at least 90%?
A: That is correct.

Q: So the Ritz-Cracker solver is generally used for stiff structures?
A: It can be used for stiffer models to get to the prominent mode shape quicker.

Q: Why do we have red numbers in the results of the table of mass distribution?
A: The red numbers show the mass participation even though we didn't choose to run the RSA in that direction.

Q: Any advice on the interface with RISAFoundation when using RSA?
A: Unfortunately, the program will not send RSA results to RISAFoundation. You could manually find your reactions and apply them yourself.

Q: How are the results of a dynamic analysis affected by using tension only members? Do tension only members need to be changed to resist force in both directions? If so, how does that affect the dynamic results?
A: Tension only members cannot be used in a Eigensolution due to non-linear behavior. You'll need to use Both Ways for the braces. Usually it doesn't affect your dynamic results too much as the braces are not very stiff and their compression capacity is small.

Q: For controlling the real deflection of the structure, how should we scale the results, considering ductility and over strength factors?
A: Overstrength can be added into the LC's using the LC Generator which helps you for deflection.

Q: Besides ASCE 7, do you have any recommendations for technical references on modal response spectrum analysis?
A: Chopra Dynamic Analysis of Structures

Q: What about ductility factor?
A: You can factor the load combinations by that factor using Math on Block in the Load Combination spreadsheet.
