New Features in RISA-3D, RISAFloor & RISAFoundation

Deborah Brisbin, P.E.
IBC 2009 Compliant

**** NEW CODES ADDED ****

- Concrete
  ACI 318-08

- Wood
  NDS 2008

- Cold Formed Steel
  AISI 2004 Supplement
  AISI 2007

- Masonry
  MSJC 2008

- International Codes
  2004/2005 Canadian Concrete Code
  2004/2007 Mexican CANACERO (CFS)
Concrete Wall Design

- Gravity and Shear wall design
- Reinforcement design based on Wall Design Rules
- Deflections based on FEA
- P-Delta Analysis and second order effects
- Icr Factors in Wall Panel Spreadsheet
- Comprehensive Detail Report
Concrete Wall Design Rules

Outer bars orientation: (d measured from the vertical bars)

- **Vertical**
  - Bars Centered

- **Horizontal**
  - Bars Centered
Concrete Wall Design

Interior Cover \(-z\) (in)

Bars are centered—here’s the extra

Exterior Cover \(+z\) (in)

Edge Cover
Concrete Wall Design

Concrete Walls are color coded in Rendered view so that you can determine your local axis and reinforcement.

Use ***New Modify Wall Panels- Flip Axis

Interior = Light Grey

Exterior = Dark Grey
Seismic Detailing & Design Provisions

• AISC Specifications for Structural Steel:
  AISC 360-05
• AISC Seismic Provisions for Structural Steel:
  AISC 341-05
  AISC 358-05

• Based on Seismic Design Rules applied to members
• Based on Member Type: Beam, Column or Brace
• Uses Earthquake Load Combinations- and Overstrength (if required)
• Results in Detail Report and Spreadsheets
Seismic Detailing

• Calculation of moment demand based on probable plastic moment, \( M_{pr} \)
• Calculation of Panel Zone shear requirements
• Calculation of required shear demand for moment connections

Table 1-2 thru 1-6- “Sections that Satisfy Local Buckling Requirements”

• Clean Column Checks including Stiffener and Continuity plate checks
• Strong Column / Weak Beam checks
• Brace Slenderness Checks
• Calculation of Unbalanced forces for braces
• Check for AISC 358 limits of pre-qualification testing
Seismic Detailing

Seismic Design Rules Spreadsheet

• Frame Ductility – High, Moderate, or Minimal (SMF, IMF, or OMF)
• Overstrength Required – Check separately for Column or Beam
• Z Factor – Ratio between Z values of reduced and unreduced beam sections (RBS)
• Hinge Location – measured from face of column to the hinge
Seismic Detailing

Seismic Design Graphics

• Display Seismic Design Rules with color coding

• Color Coded: Column Stiffness

[Diagram showing color-coded columns]

[Legend for column stiffener checks: N/A, Both Req'd, Web Doubler, Cont. Plate, Clean Column]
Seismic Detailing - Moment Frame Types

• Bolted Flange Plate (BFP)

• Reduced Beam Section (RBS) used in SMF and IMF
Seismic Detailing

Moment Frame Types

• Bolted Unstiffened Extended End Plate (BUEEP)

• Bolted Stiffened Extended End Plate (BSEEP)

• Welded Unreinforced Flange-Welded Web (WUF-W)
Brace Capacities:
Pnt = 200k
Pnc = 100k

BRACED FRAME

T = Pnt = 200k
C = 0.3*Pnc = 30k

COMPRESION BRACE BUCKLED

FREE BODY DIAGRAM

UNBALANCED FORCE ON BEAM

Seismic Detailing- Braces
RISAFoundation Features

- Overturning for Mat slabs
- Sliding checks for Mat Slabs

- New Quad mesher for FEA Analysis – FASTER & More Accurate

- Pile Cap EXF Export
Additional New Features

• Single Angle Bending Check
• Wall Local Axis Flip
• P-Delta added for Wall Panels
• Enhanced & Re-organized Masonry walls
  Self Weight in Materials Spreadsheet
  Steel Fy in Materials Spreadsheet
Questions?

Please let us know if you have questions.

We will answer as many questions as time permits during the webinar.

Once the webinar is closed, we will post all Q&A’s to our website: www.risa.com

For further information, contact us at: info@risatech.com

THANK YOU!