RISA Technologies

New Features in RISA-3D, RISAFloor & RISAFoundation

Deborah Brisbin, P.E.

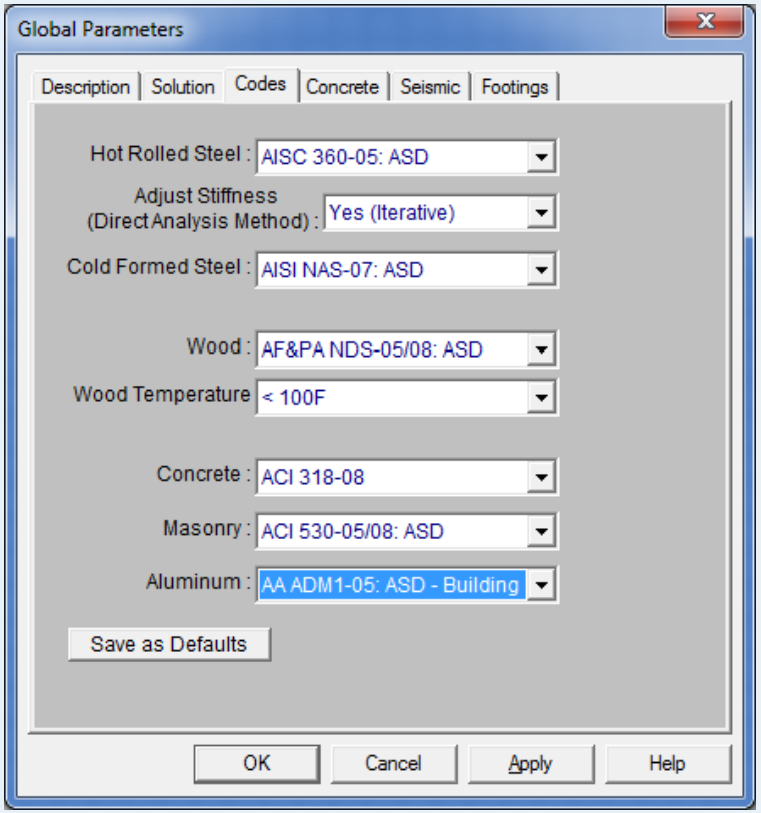
RISA TECHNOLOGIES

RISA TECHNOLOGIES

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)

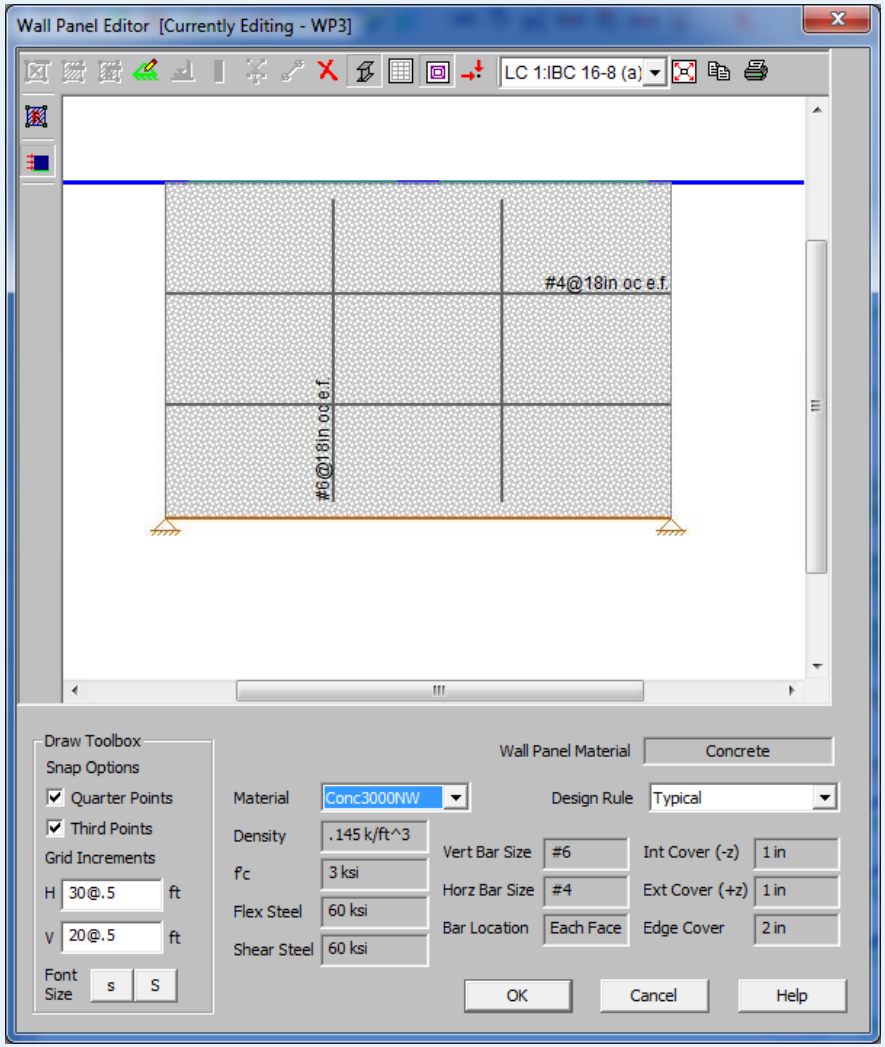


RISAFloor
RISA-3D
RISAFoundation

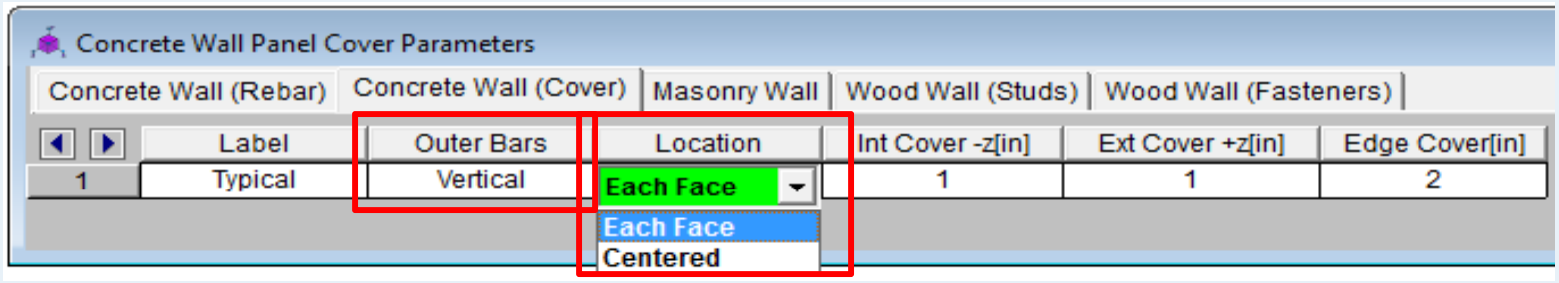
RISA TECHNOLOGIES

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

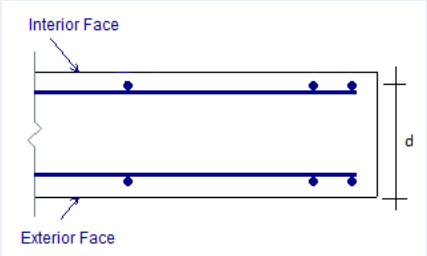


Concrete Wall Design Rules

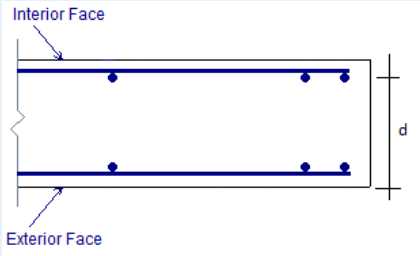


Outer bars orientation: (d measured from the vertical bars)

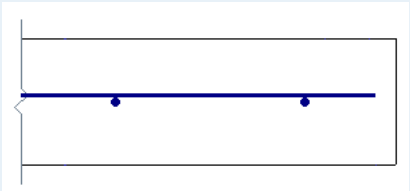
Vertical



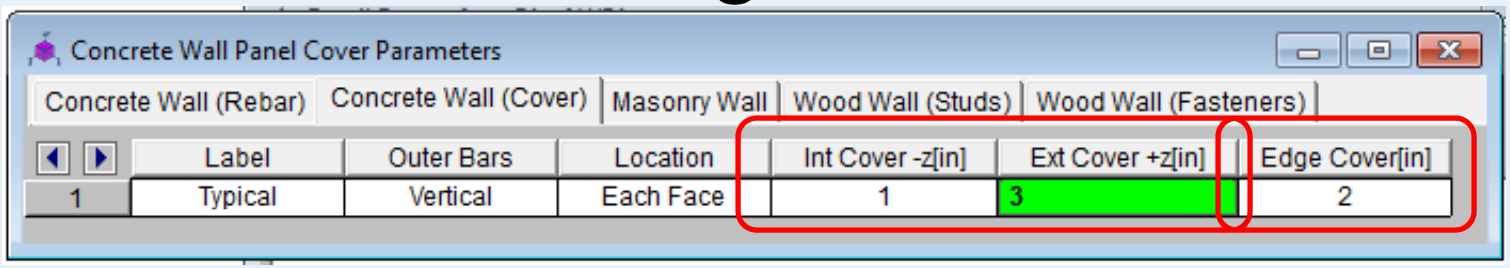
Horizontal



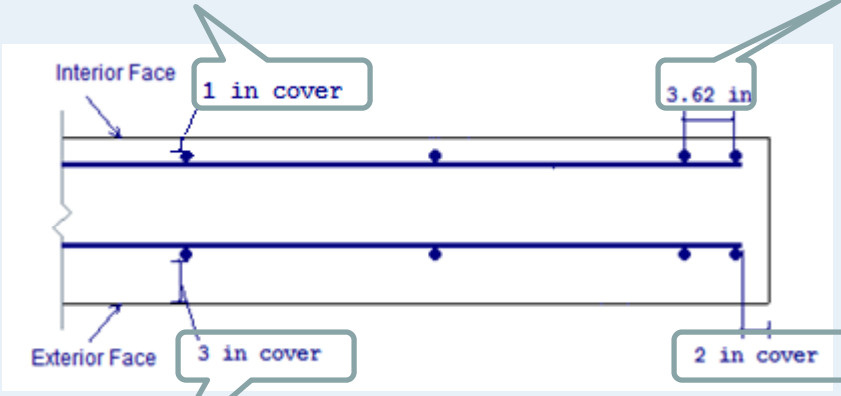
Bars Centered



Concrete Wall Design



Interior Cover –z (in)



Bars are centered- here's the extra

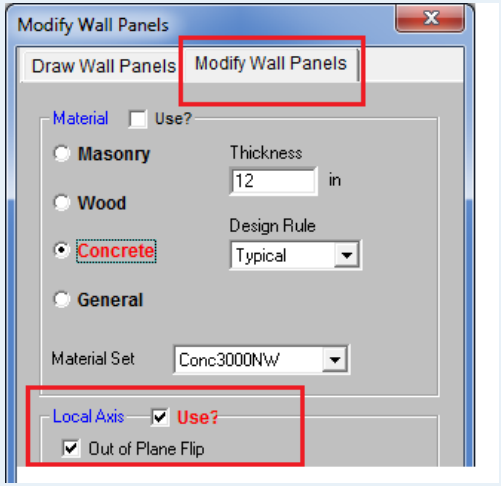
Edge Cover

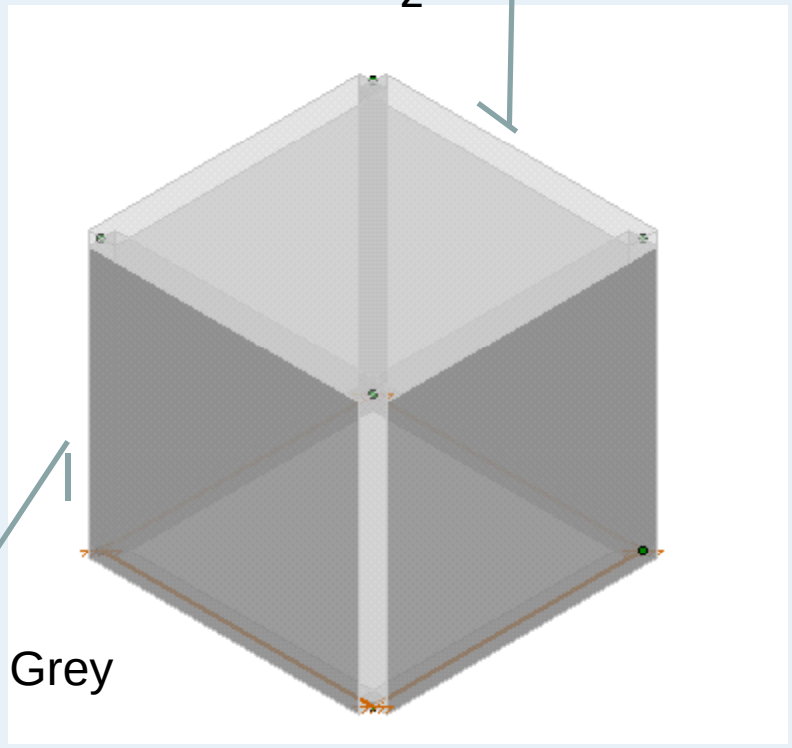
Exterior Cover +z (in)

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





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, Mpr
- Calculation of Panel Zone shear requirements
- Calculation of required shear demand for moment connections

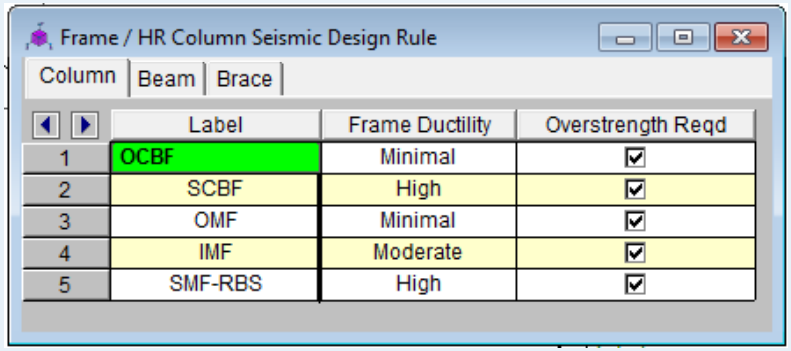
Bending Flange	Seismic NonCompact	Compression Flange	Seismic NonCompact
Bending Web	Seismic Compact	Compression Web	Seismic Compact

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

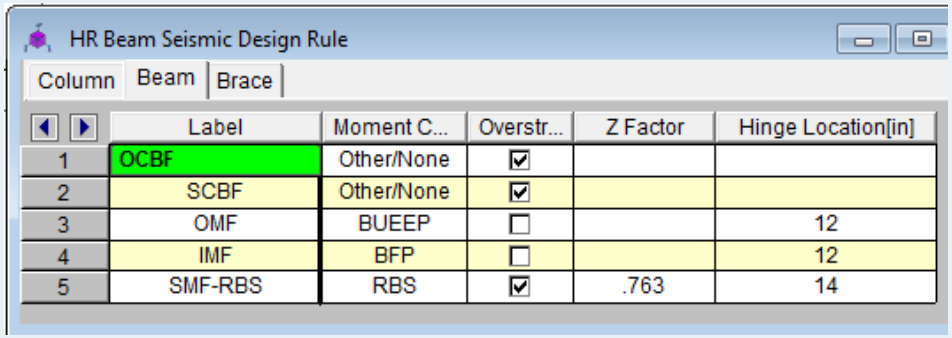
- Clean Column Checks including Stiffener and Continuity plate checks
- Strong Column / Weak Beam checks
- Brace Slenderness Checks
- Calculation of Unbalanced forces for braces
- Check for AISC 358 limits of pre-qualification testing

Seismic Detailing

Seismic Design Rules Spreadsheet



	Label	Frame Ductility	Overstrength Reqd
1	OCBF	Minimal	☑
2	SCBF	High	☑
3	OMF	Minimal	☑
4	IMF	Moderate	☑
5	SMF-RBS	High	☑



	Label	Moment C...	Overstr...	Z Factor	Hinge Location[in]
1	OCBF	Other/None	☑		
2	SCBF	Other/None	☑		
3	OMF	BUEEP	☐		12
4	IMF	BFP	☐		12
5	SMF-RBS	RBS	☑	.763	14

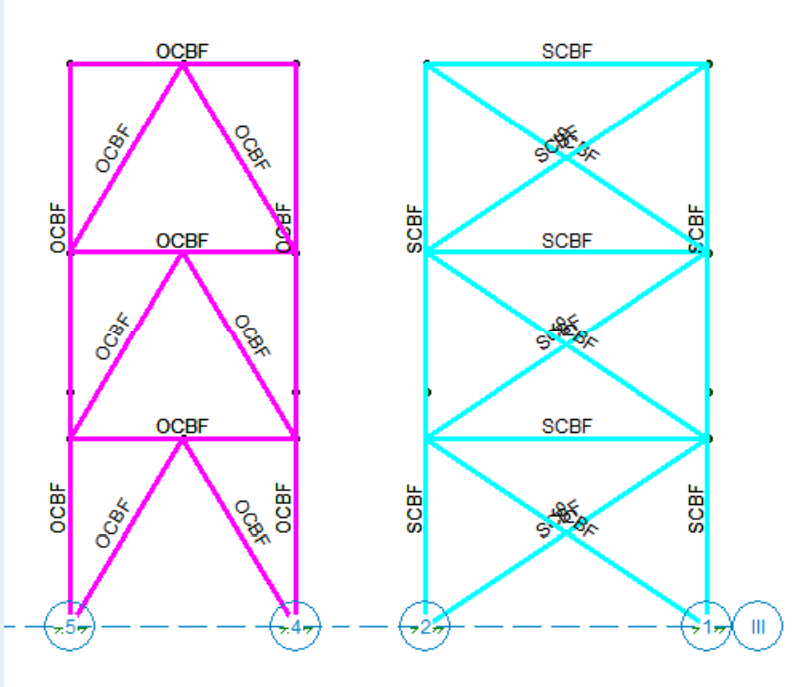
- Frame Ductility – High, Moderate, or Minimal (SMF, IMF, or OMF)
- Overstrength Required – Check separately for Column or Beam
- Z Factor – Ratio between Z values of reduced and unreduced beam sections (RBS)
- Hinge Location – measured from face of column to the hinge

RISA TECHNOLOGIES

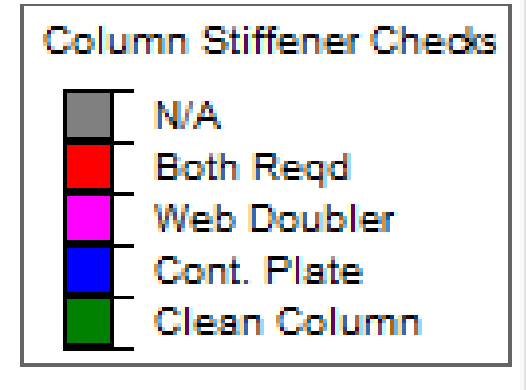
Seismic Detailing

Seismic Design Graphics

•Display Seismic Design Rules with color coding



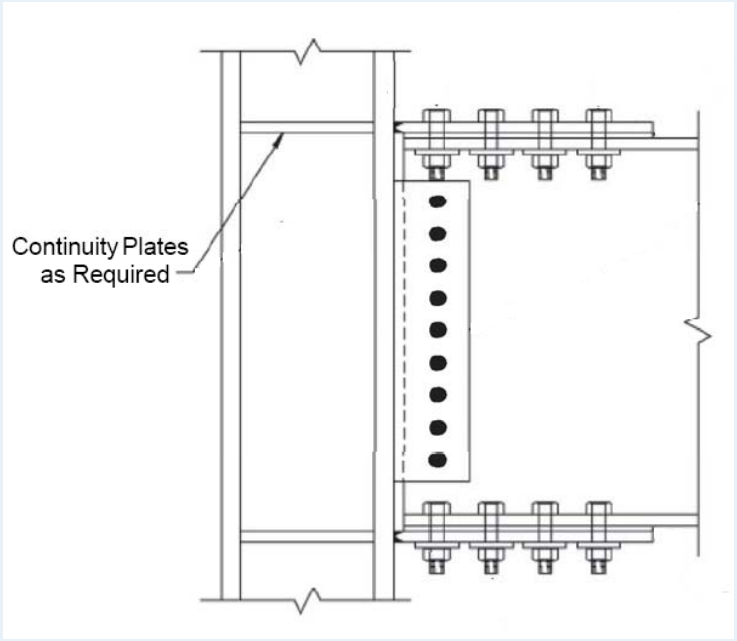
• Color Coded: Column Stiffness



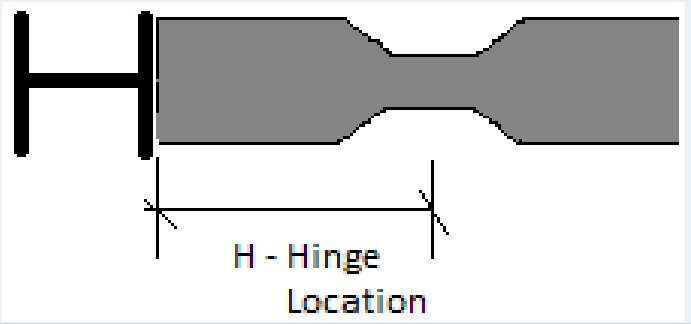
RISA TECHNOLOGIES

Seismic Detailing- Moment Frame Types

•Bolted Flange Plate (BFP)



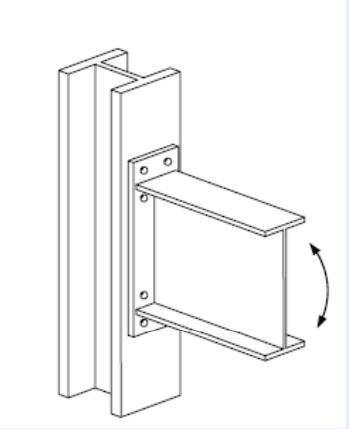
• Reduced Beam Section(RBS) used in SMF and IMF



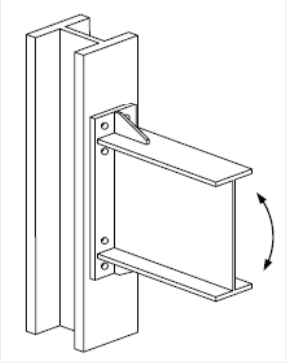
Seismic Detailing

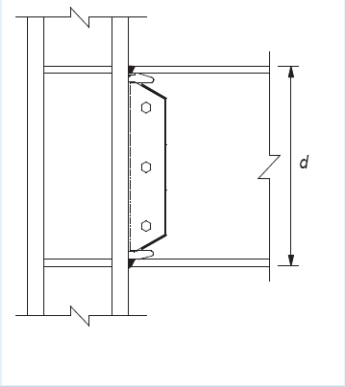
Moment Frame Types

- Bolted Unstiffened Extended End Plate (BUEEP)

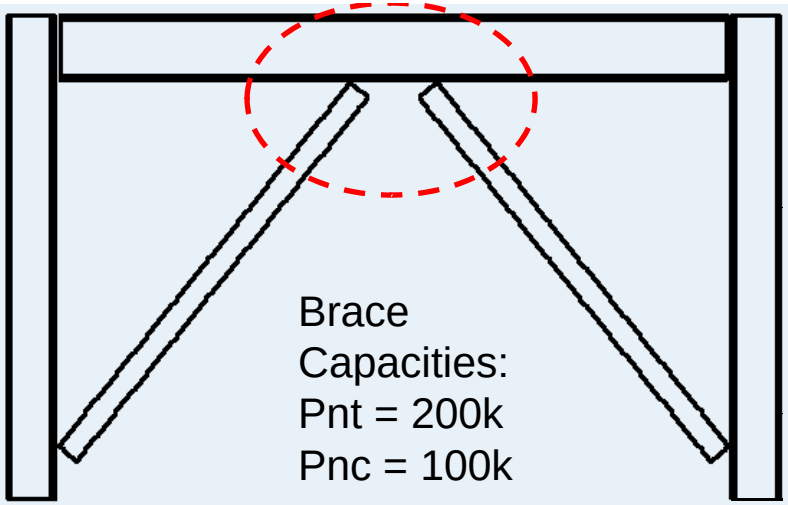


- Bolted Stiffened Extended End Plate (BSEEP)

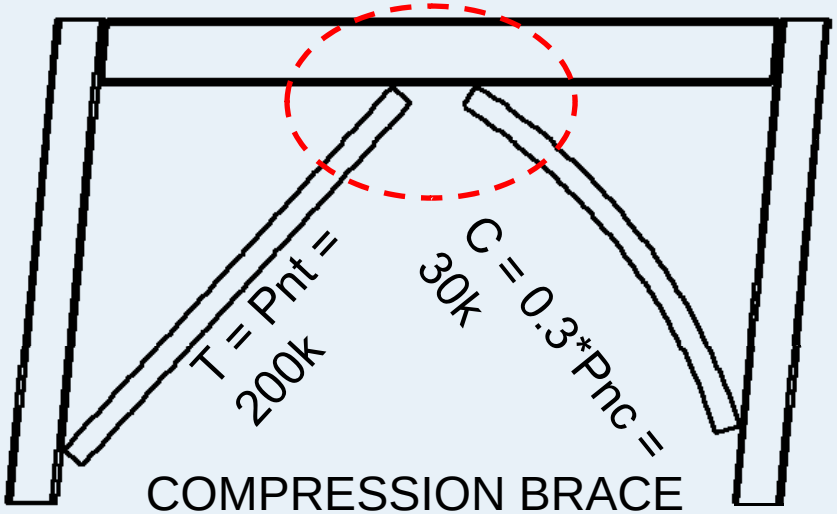




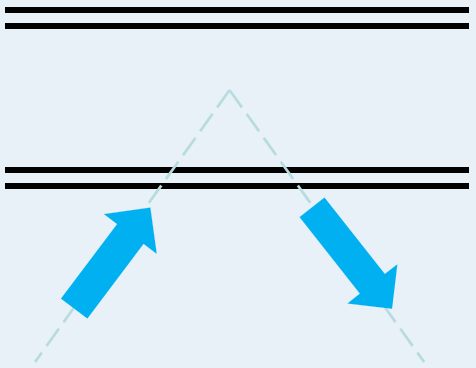
- Welded Unreinforced Flange-Welded Web (WUF-W)



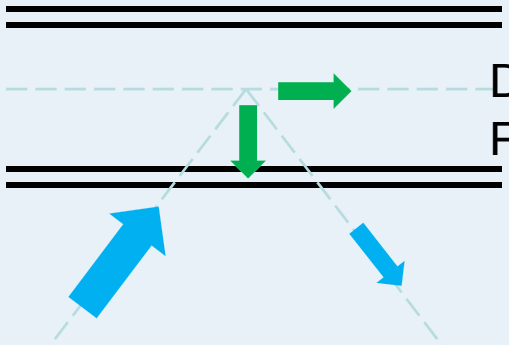
BRACED FRAME



COMPRESSION BRACE BUCKLED



FREE BODY DIAGRAM



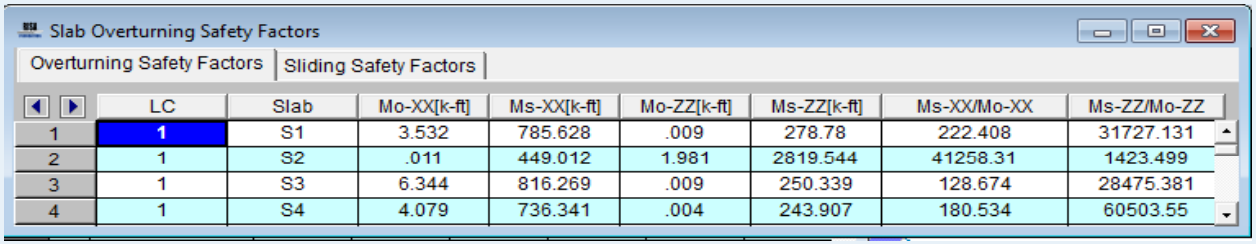
UNBALANCED FORCE ON BEAM

Seismic Detailing- Braces

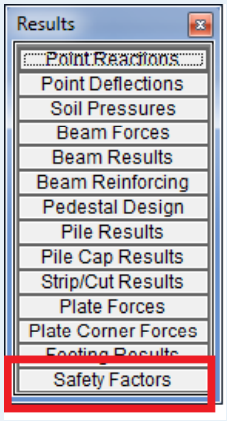
RISA TECHNOLOGIES

RISAFoundation Features

- Overturning for Mat slabs
- Sliding checks for Mat Slabs

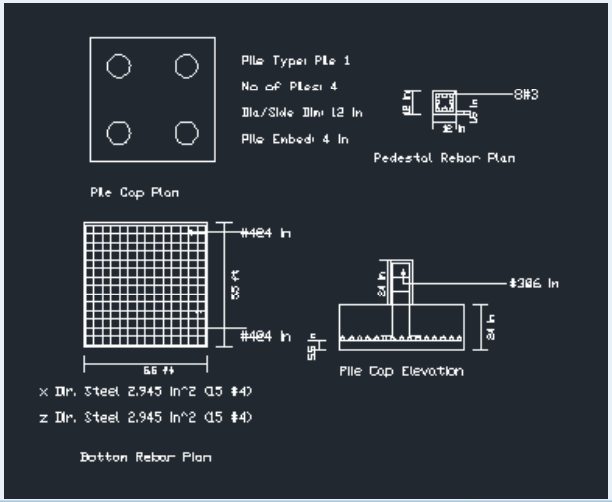


	LC	Slab	Mo-XX[k-ft]	Ms-XX[k-ft]	Mo-ZZ[k-ft]	Ms-ZZ[k-ft]	Ms-XX/Mo-XX	Ms-ZZ/Mo-ZZ
1	1	S1	3.532	785.628	.009	278.78	222.408	31727.131
2	1	S2	.011	449.012	1.981	2819.544	41258.31	1423.499
3	1	S3	6.344	816.269	.009	250.339	128.674	28475.381
4	1	S4	4.079	736.341	.004	243.907	180.534	60503.55



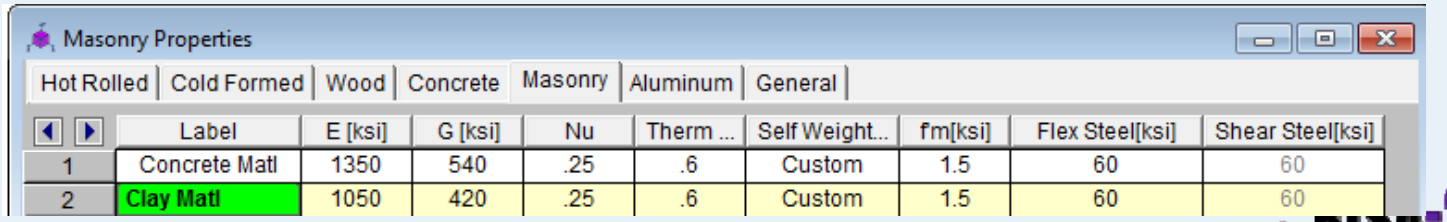
- New Quad mesher for FEA Analysis – FASTER & More Accurate

- 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

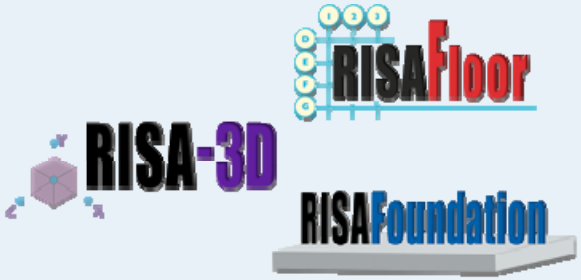


	Label	E [ksi]	G [ksi]	Nu	Therm ...	Self Weight...	fm[ksi]	Flex Steel[ksi]	Shear Steel[ksi]
1	Concrete Matl	1350	540	.25	.6	Custom	1.5	60	60
2	Clay Matl	1050	420	.25	.6	Custom	1.5	60	60

RISA-3D
RISAFloor
RISAFoundation

RISA TECHNOLOGIES

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!

RISA TECHNOLOGIES