RISA-2D

Rapid Interactive Structural Analysis — 2 Dimensional

New Masonry Wall Panel Feature: Introduction and Tutorial

RISA TECHNOLOGIES

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Table of Contents

Introduction	1
Masonry Codes & Materials	2
Creating Wall Geometry	4
Assigning Design Parameters	7
Regions	10
Boundary Conditions	14
Design Rules	15
Loading	16
Designing the Wall	20
Results	22
Conclusion	27

Introduction

This hands-on guide will help introduce you to the RISA Masonry Wall Panel, and walk you through an example start-to-finish with helpful information along the way. This is intended for both experienced and first-time users of RISA-2D.

All the action items in this guide are indicated with bullets shown below:

- Action Item

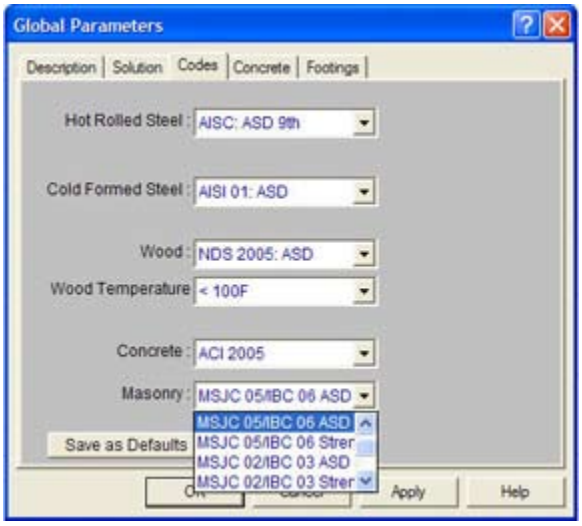
This guide is intended to show you the basics of the wall panel feature with a brief description. If you have further questions beyond this guide, please refer to the RISA-2D General Reference and the online help file.

Note: If you are not familiar with RISA-2D, you should also complete the RISA-2D User's Guide available on the RISA web site: www.risatech.com.

Masonry Codes & Materials

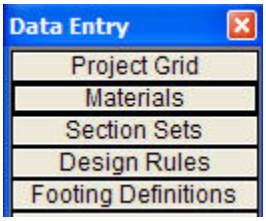
Let's start by setting the design code:

- Click on the **Global Parameters** icon.
- Choose the **Codes** tab.
- Select the **Masonry** code from the drop down list: **MSJC05/IBC 06 ASD**.



Let's create the material for the masonry wall:

- Click on **Material** button on the **Data Entry** toolbar:



Masonry Design Codes available in RISA:

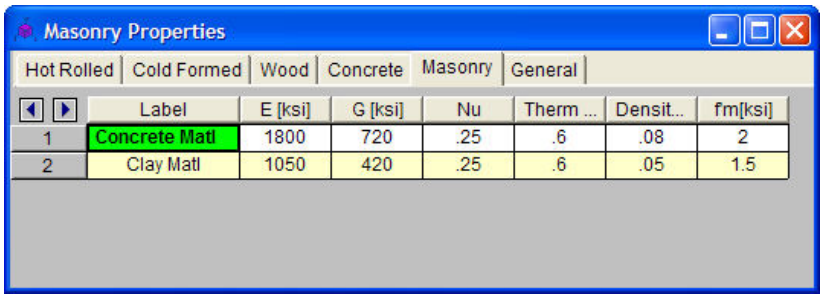
- UBC 97 ASD & Strength
- MSJC 99/IBC 00 ASD
- MSJC 02/IBC 03 ASD & Strength
- MSJC 05/IBC 06 ASD & Strength

- Click on the **Masonry** tab at the top of the spreadsheet
- Change the **Concrete Matl Properties** by typing directly in each cell:

  E= 1800

  G=720

  f'm= 2



TIP: RISA-2D has a variety of default materials properties available; you can customize your own default materials available by pressing the **Save As Default** icon at the top of the screen when the **Material** spreadsheet is open.

Creating Wall Geometry

Let's start by creating the wall:

- Start by clicking on the  icon on top of the **Graphic Editing Toolbar**.
  (If you don't see this toolbar press the  Icon or Ctrl-G)

You should now see the dialog box **Draw Wall Panels**, which is shown here.

You can create a wall by clicking on existing nodes or drawing the wall using a grid. We'll draw a wall using the drawing grid.

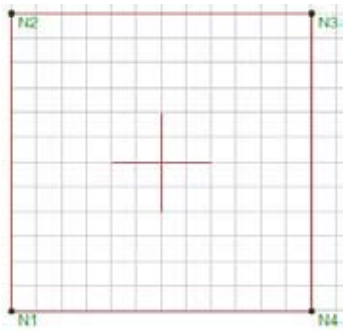
Choose which type of wall:

- Left click the **Masonry** radio button.
- Left click on **Apply**. This cursor  will appear and you are ready to start drawing.

The current types available are Masonry, Wood, and General. We'll start by drawing a Masonry Wall.

Using the drawing grid create a 12' high rectangular wall:

- Left click on the bottom left corner (0,0).
- Move your cursor to 12' height and left click on (0,12).
- Move the cursor to the top right corner and left click on (12,12).
- Left click on the last point (12,0).
- Right-click the mouse or press Esc to stop drawing.



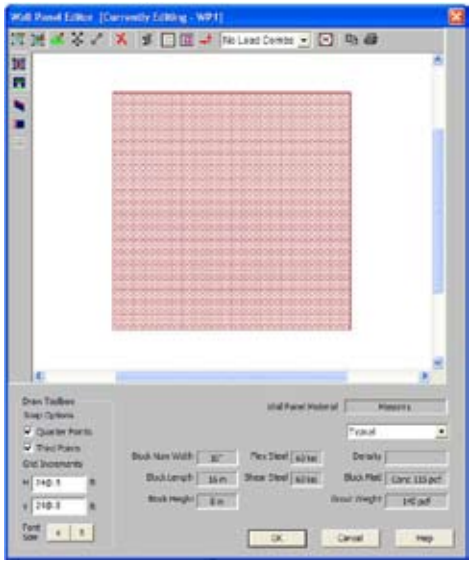
The wall panel will be created after the fourth click of the mouse and should look like the picture above.

Let's open the Wall Panel Editor:

- Double click on the **Wall Panel** to open the **Wall Panel Editor**.

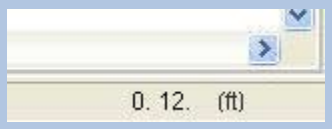
We'll create a window and a door opening:

- Click on the **Create New Openings** icon at the top left of the **Wall Panel Editor** to create an opening.



The Drawing Grid will help you draw the wall. As the mouse hovers over the drawing grid intersection lines, a red star will appear which indicates where the joint will be located. If your drawing grid is not visible, click the icon.

Notice that you can view the cursor coordinates in the lower right portion of the screen.

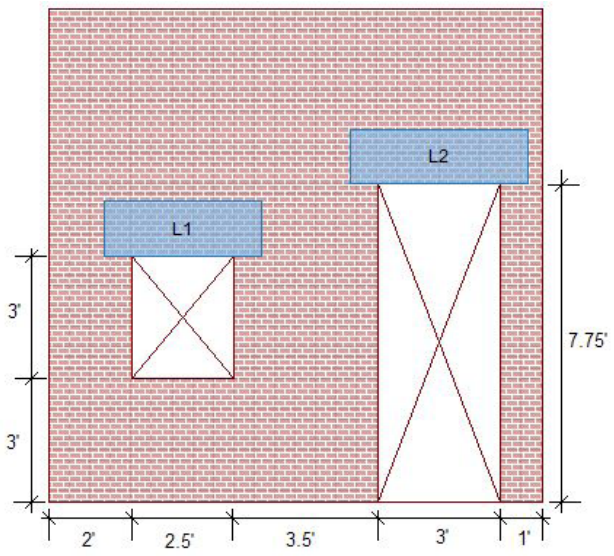


Clicking the Render button will allow you to see the grids better.

The lower left corner of the **Wall Panel Editor** defines the grids in the editor. You can modify these grids to match your openings.

Let's create the window opening:

- Using the coordinates at the bottom right corner, left click on the bottom left corner of the opening (2,3).
- Move the mouse to the top right corner (4.5,6) and left click on the grid intersection.



Let's change the drawing grid to locate the openings:

- In the Draw Toolbox, click in the box next to the **Grid Increments V (Vertical)**, and type **48@.25**.

The grid will automatically resize to adjust to the new scale. You can also toggle the grid display on and off by clicking the icon.

Now let's create a door opening:

- Left click on the bottom left corner (8,0).
- Move the mouse to the top right corner (11,7.75) and left click on the grid intersection.
- Right click or click Esc to exit this command.

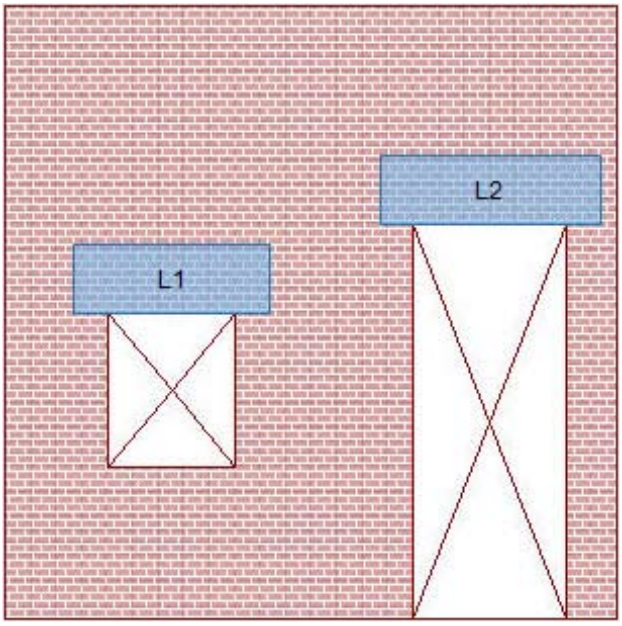
Masonry walls can have rectangular openings. You can click on any location on the grid to create an opening.

Openings can be created anywhere on the wall panel except the upper and side edges.

Note: If you make a mistake, you can delete an opening by using the Delete tool.

Assigning Design Parameters

Lintels



Let's review the Lintel design parameters:

- Double left click **directly inside the window opening** under L1 to view the Lintel design parameters.
- If the lintels do not show, use the toggle icon to turn them on. 

Here we will walk through the different input options available for designing/analyzing lintels.

Lintels will automatically be created and placed above the openings in masonry walls.

Within this window you must specify design options to design/analyze your lintel. You must specify the dimensions of the lintel, but the program will optimize the number of bars in a layer based on code checks.

Assign the window Lintel Design Parameters:

- **Density:** Check the box **Same as Wall**
- **Depth:** Type **16**
- **Bearing Distance:** Type **8**
- **Bar Size:** Select **#5**
- **No of Bars Per Layer:** Type **1**
- Check **Optimize** box
- **Number of Layers:** Select 1
- **c/c Spacing of Layers:** Leave blank
- **Centroidal Distance of lowest layer from the Bottom:** Type **4.5**
- **Stirrup Size:** Select **#3**

We are now finished with this Lintel:

- Click **Save & Close**.

Density: Allows you to make the density of your lintel a different value than the density of the wall panel.

Bearing Distance: The bearing length at either end of the lintel. This is used to define the effective length.

Number of Bars per Layer: The number of bars you wish to have in a given layer of reinforcement. There is also an option to have this value optimized based on geometry of the section and also the number of layers that you have defined.

Number of Layers: Allows you to define multiple layers of reinforcement in the lintel.

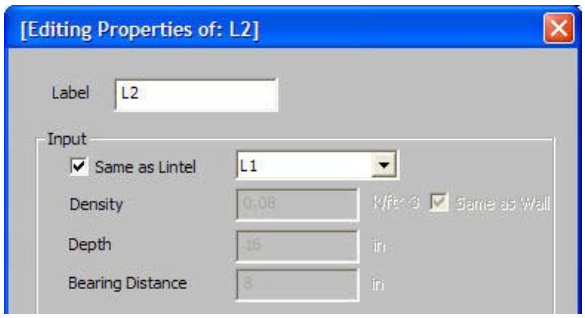
Center/center spacing of Layers: The distance between layers (if there is more than one).

Centroidal Distance of lowest layer from the Bottom: Used to calculate the "d" value for the lintel.

Stirrup Size: If stirrups are required, what size that should be used.

Let's create the same lintel design parameters for the door opening:

- Double left click **directly inside the door opening** under L2 to view the Lintel design parameters.
- Check the box **Same as Lintel** and select **L1**



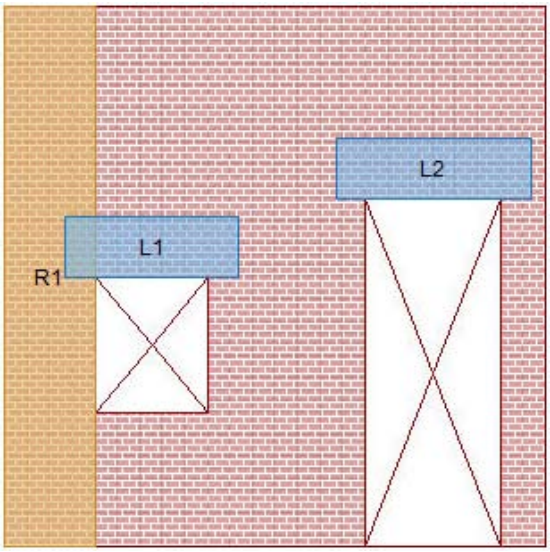
- Click **Save & Close**

Each Lintel can be designed separately with different parameters or you can choose to match the properties of another Lintel.

Regions

To define **Regions** inside the wall for design/analysis of the masonry wall:

- Select the **Create New Regions** icon
- Left click on the lower left corner (0,0)
- Move the cursor to the upper right corner (2,12) and left click
- Right click or Esc to exit command



Let's review the Region design parameters:

- Double left click **directly inside the Region** to view the **Region** design parameters.

In RISA, we define a wall strip for design of masonry and this strip is called a **Region**. Regions must be rectangular. To create them you use the cursor to select two nodes or grid intersections which define the lower left corner and upper right corner of the region.

Note: Regions cannot overlap openings. RISA-2D automatically creates a region for wall panels that have no openings that encompasses the entire wall panel.

The user must specify most region parameters, but the program will optimize the bar spacing and the boundary zone width based on code checks.

Here we will walk through the different input options available for **Regions**.

Assign the Parameters for the Region:

- **Block Grouting:** Select **Partially Grouted**
- **Bar/Grout Spacing:** Select **16"**
- **Mortar Type:** Select **Type M or S**
- **Cement Type:** Select **Portland, Lime/Mortar**
- **Vertical Bar Size**: Select **#5**
- **Bars Per Cell:** Select **1**
- **Boundary Zone Width**: Type **8**
- Check **Optimize** box
- **Horizontal Bar Size:** Select **#6**

We are now finished with this Region:

- Click **Save as Defaults**.
- Click **Save & Close**.

Bar/Grout Spacing: Define the bar/grout spacing.

Boundary Zone Width: The user must define a boundary zone width but RISA will optimize the width if the "Optimize" box is checked.

Note: If you have the optimize checkbox selected, then the value that you enter is the maximum width of the boundary zone that the program will select.

Horizontal Bar Size: Allows you to define horizontal bar size to be used, if horizontal reinforcing is required.

Multiply Shear by 1.5: This option applies to high seismic zones in UBC 97.

Let's create regions between the window and door openings:

- Select the **Create New Regions**  button
- Left click on the bottom left corner (4.5,0)
- Move the cursor to top right corner (8,12) and left click.
- Right click to end the command.

And now create a region at the end of the wall:

- Select the **Create New Regions**  button
- Left click on the bottom left corner (11,0)
- Move the cursor to top right corner (12,12) and left click
- Right click to end the command

We can use the same Design Parameters for all the Regions:

- Double click the **Region 2** that you have created
- Select **Same as Region**
- Select **R1**
- Click **Save & Close**

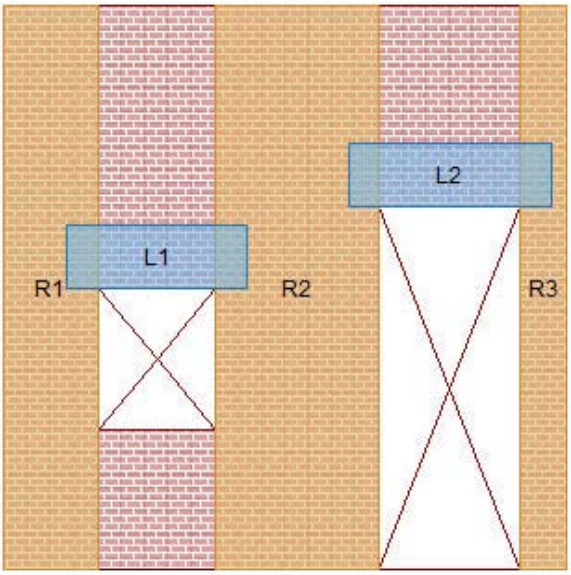
It is a good idea to set up one region first with all the design parameters that you intend to use and then press **Save as Defaults** before you continue to draw the rest of the regions or the walls. Now as you draw walls around the building these will be the default settings, which you can adjust as needed.

Just like lintels parameters, you can specify the Region parameters for each Region or choose to match the properties of another Region.

Again, let's copy the design parameters from Region 1:

- Double click the **Region 3** that you have created
- Select **Same as Region**
- Select **R1**
- Click **Save & Close**

The wall drawing should now look like the picture below:



In order to get a design for the entire wall, a region must be defined for every piece of the wall.

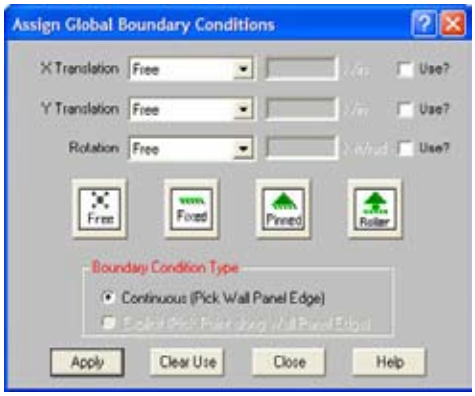
Areas in the wall that do not have regions assigned to them are assumed to be ungrouted/unreinforced for stiffness calculations and fully grouted for self-weight considerations.

Boundary Conditions

Let's assign a boundary condition to the bottom of the wall:

The wall panel boundary conditions need to be defined from within the wall panel editor:

- Left click on the **Boundary Condition** button at the top of the screen.
- Left click on the **Fixed** button.
- Press **Apply**

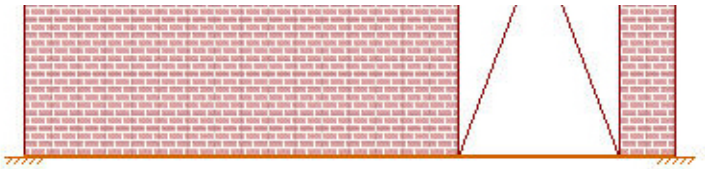


- Select any grid intersection on the bottom of the wall.
- You will see graphically in orange the **Fixed Boundary** condition at the base.
- Right click to escape

We are now finished with all modifications to the wall geometry:

- Click **OK** in the **Wall Panel Editor** and you're back into the **RISA-2D** interface.

You'll see that the bottom of the wall has a **Fixed** graphic drawn for the entire length.



The **Use Check Box** determines which condition will be applied for the respective translation/rotation condition.

If you make a mistake in this dialog, just press **Clear Use** and select the fixity you want.

Wall panel boundary conditions are defined as continuous for the entire edge.

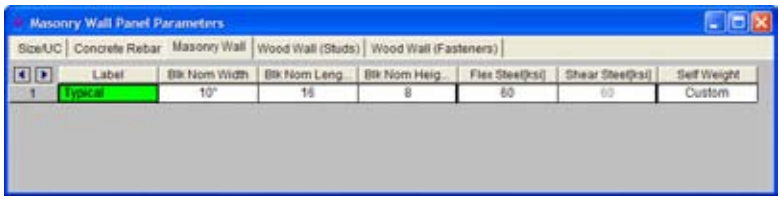
If you only have point supports for your wall panel you can define these as **Boundary Conditions** the same way as you would for Beams/Columns.

Note: RISA-2D automatically adds a boundary condition to wall panels at the lowest elevation in the structure. If you do not want this to occur you must use the **Wall Panel Editor** to set the base of the wall to a **Free Boundary** condition.

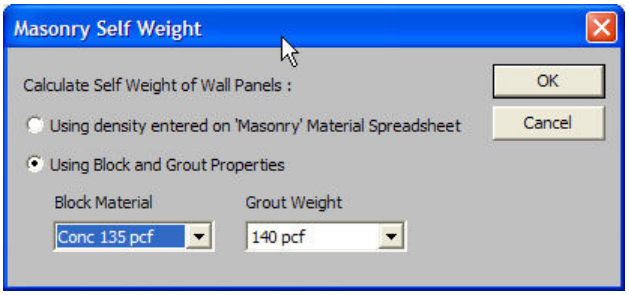
Design Rules

Wall Panel parameters are based off the **Design Rules** spreadsheets. The block size, reinforcing strength and the method of self-weight calculation are defined in the **Design Rules** spreadsheet under the **Masonry Wall** tab.

- Open the **Design Rules** from the **Data Entry Toolbar**, and click on the **Masonry Wall** tab.
  (If you don't see your **Data Entry** toolbar, click on the  Icon).



- **Block Nominal Width:** Select **10"**
- **Block Nominal Length:** Type **16**
- **Enter Block Nominal Height:** Type **8**.
- **Flex Steel:** Type **60**
- **Sheer Steel:** Type **60**
- **Self Weight:** Click within the cell and click the red arrow that appears. The **Masonry Self** weight dialog opens.



- Select **Using Block and Grout Properties**
- Select **Conc 135 pcf**
- Select **Grout Weight 140 pcf**
- Click **OK**
- Close the **Design Rules** spreadsheet

Block Nominal Width: This is used to calculate thickness of masonry walls. This value is used along with the value of grout/bar spacing to determine the effective thickness of the wall. The effective thickness is based on tables B-3a and B-3b of the **Reinforced Masonry Engineering Handbook, by Amrhein, Copyright 1998.**

Block Nominal Length: This value is used to optimize the boundary zone length of the masonry walls. It is assumed that there are 2 cells per block (typical for concrete masonry) and based on the value of **bars per cell** we can increment the number of bars in the boundary zone.

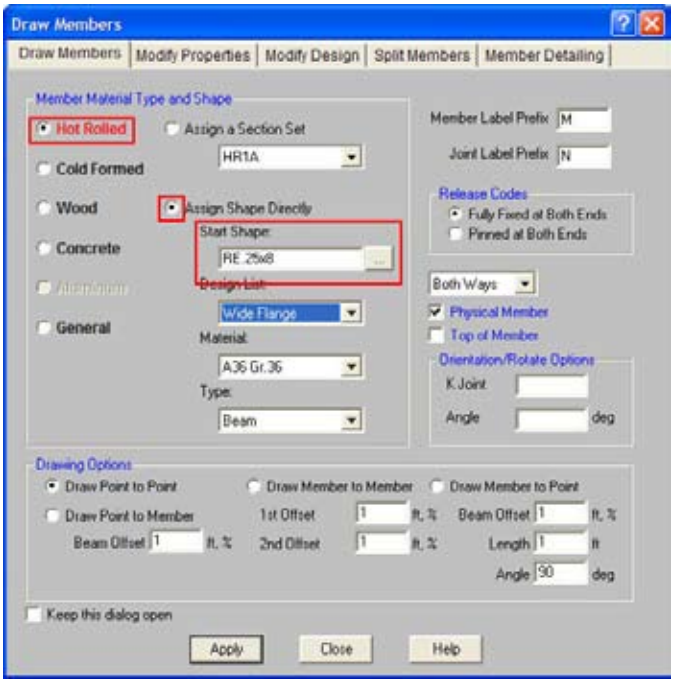
Self Weight: The first button will take the density input in the **Materials** spreadsheet and multiply that by the net area of the wall to calculate the self-weight. This displays **Material** in the Self Weight cell of the Design Rules spreadsheet.

The second button will use block material and grout weight, combined with the grout spacing and the width of the block, to give the self-weight. This will display **Custom** in the **Self Weight** tab of the **Design Rules** spreadsheet.

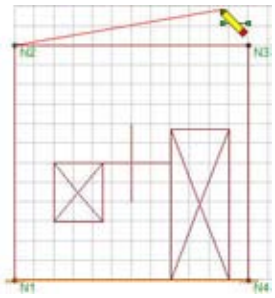
Loading

Now let's load the wall:

- Draw a new steel member by clicking the **Draw New Member** Icon
- Select **Hot Rolled** as the **Material Type**
- Select **Assign Shape Directly**
- Type **RE.25x8** in the **Start Shape** box (this creates a rectangular bar 1/4" x 8")
- Click **Apply**



- Draw the beam from **Node N2** to **N3** by first left clicking on the top left node **N2**, and moving the cursor to **N3** and left clicking on **N3**.
- Right click or click Esc



Walls can be loaded with joint loads only. However, we can add flexible members that overlap the walls so that the loads transfer from the members into the wall.

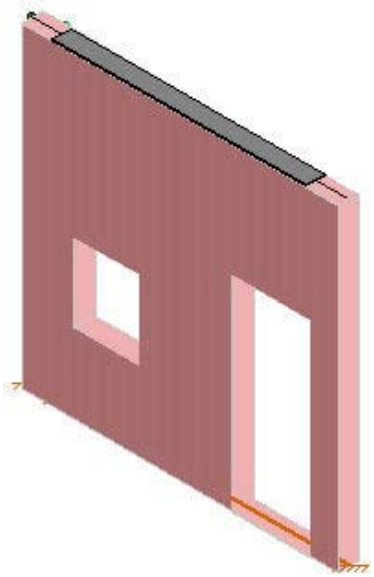
By adding a small steel beam to the top of the wall, we can transfer distributed loads into the wall.

Loads transfer through wall panels according to the relative stiffnesses of different portions of the wall panel. Texts use idealizations as far as how loads transfer (specifically 45 degree angle for lintel load attribution).

Thus, RISA-2D wall panel forces will not always match identically to published examples.

You can type on-line shapes directly into the shape name box for solid rectangular shapes (RE ht x Bar), solid circular shapes (BARdia) and Pipe shapes (Pldia x thick).

To view the steel member better, click on the **Rendered Icon** twice, and the **Snap to Isometric** view tool.



Review the wall in **Rendered** view.

Note: To view the wall panel rendered to 100%, go to the **Plot Options** dialog, click the **Panels** tab and select **100%** using the drop-down menu.

Now let's create the Basic Load Cases:

- Open the **Basic Load Case** spreadsheet on the **Data Entry** toolbar or press the BC icon.
- Type **Dead Load** on the first line under the **BLC Description** column.
- Select **DL (Dead Load)** from the **Category** drop-down menu.
- Type **-1** into the **Y Gravity** column.

You must define the **Category** in order to use the Load Combination Generator.

Typing a **-1** in the Y Gravity column creates a Basic Load Case which includes Self-Weight.

Let's add wind load case:

- Type **Wind Load** on the second line under the **BLC Description** column
- Select **WL (Wind Load)** from the Category drop-down menu.

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint
1	Dead Load	DL		-1		
2	Wind Load	WL (Wind Load				
3		None				

- Exit **BLC** spreadsheet by clicking the **X** on the top right corner

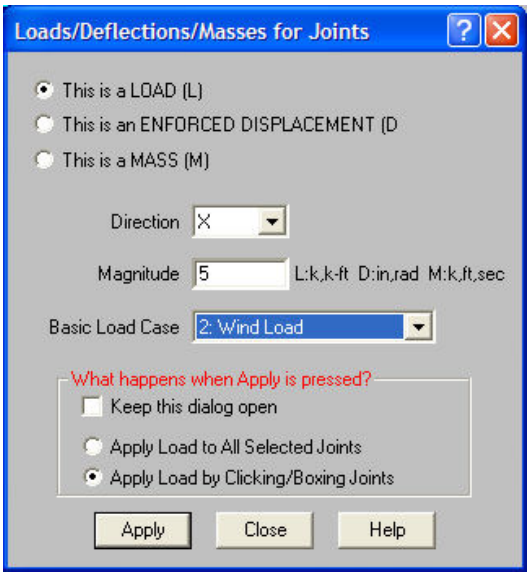
Add a distributed load to the steel member:

- Click **Distributed Load** icon
- Select **Y** for **Direction** in the drop-down menu
- Type **-0.1** as the **Start Magnitude**; **End Magnitude** will automatically fill in
- Select **Basic Load Case 1: Dead Load**
- Click **Apply Load to All Selected Members**
- Press **Apply**

You can also select **Apply Load by Clicking Members Individually** and left click on the top beam.

Let's add a wind load as a joint load, representing how an adjacent wall is loading this wall:

- Click on **Joint Load**  icon
- Select **This is a Load**
- Select **Direction X** from the dropdown list
- Type **Magnitude 5**
- Select **Basic Load Case 2: Wind Load**
- Select **Apply Load by Clicking/Boxing Joints**
- Click **Apply**
- Click or box **Node N2**

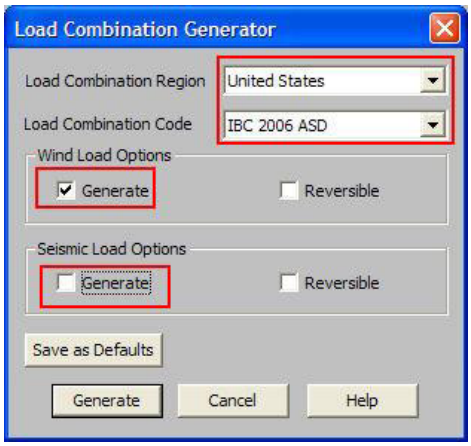


Joint loads can only be applied along the global axes. We can tell that this is the global axis because the **X** is upper case.

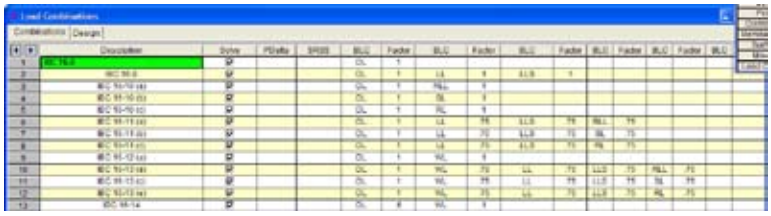
Designing the Wall

Let's create the Load Combinations using the LC Generator:

- Open the **Load Combination** spreadsheet by selecting the LC Icon at the top of the screen.
- Select **LCGenerator** LC Generator
- Select **United States** for the **Load Combination Region**
- Select **IBC 2006 ASD** for the **Load Combination Code**
- Check the **Generate** button under **Wind Load Options**
- UnCheck the **Generate** button under **Seismic Load Options**
- Click **Generate**



- Close **Load Combinations** spreadsheet

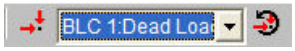


The LC Generator allows you to create load combinations quickly based on the code you select.

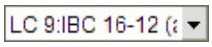
The Load Combination spreadsheet will automatically generate all the load combinations from the IBC 2006 and should look like the picture to the left.

Let's review the loads as they are applied to the wall:

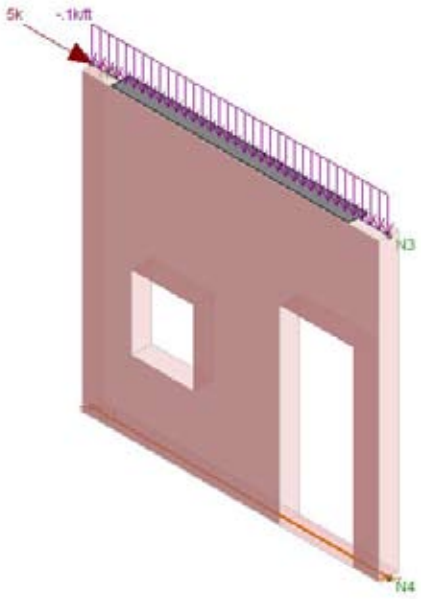
- Toggle the loads display to **On** by clicking the icon. The load display control panel is on the top of the screen.



- Click on the toggle icon to switch to the **Load Combinations LC**
- Select the **LC9** in the drop-down dialog



You should now see the **Load Combination 9: IBC 16-12 (a) = DL + WL** displayed on your screen as below.



With all the loads applied, let's run the analysis:

- Click the **Analysis and Design** Icon
- Select the **Single Combination** radio button
- Select **LC 9: IBC 16-12(a)** from the drop-down list.
- Click **Solve**

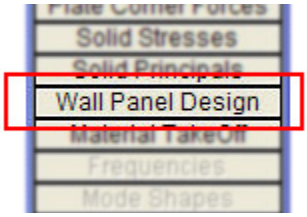
To display loads, we will work with the loading display toolbar at the top of the screen.

A single solution will only solve the selected load combination. An envelope solution will solve multiple load combinations and the results will show only the maximum and minimum forces and stresses. The **Batch** solution will solve multiple combinations and the results will be retained for every solution.

Results

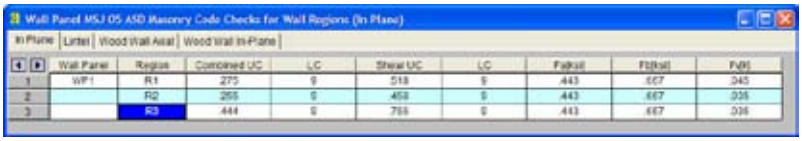
Reviewing Results:

- Select the **Wall Panel Design** spreadsheet from the **Results** toolbar (If you don't see your **Results** toolbar, click the icon)



- To view the different results for wall panels click on the tabs at the top: **In Plane**, and **Lintel**

The **In-Plane** results provide the code checks for the shear wall behavior of the wall.



The **Regions** corresponds to the regions defined in the Wall Panel Editor.

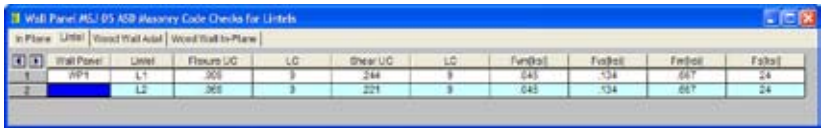
The **Combined UC** entry gives the code check due to axial force plus in-plane bending. The **Shear UC** shows the code check for shear effects. A value greater 1.0 for either of these values indicates failure.

The **Fa** or **Pn*Phi** reports the allowable axial stress or axial capacity.

The **Fb** or **Mn*Phi** reports the calculated allowable bending stress or moment capacity for the region.

The **Fv** or **Vn*Phi** reports the calculated allowable shear stress or Shear Capacity for the region.

The **Lintel** results give the results for the masonry lintels that span over user defined openings in the wall. They can also be viewed by looking at the detail report associated with each opening.



The **Flexural UC** entry gives the code check due to pure flexure of the **Lintel**. **Axial** force is not considered in this code check at all. The **Shear UC** gives the code check for shear. A value greater 1.0 for either of these values would indicate failure.

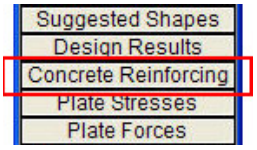
The **Fm**, **Fs** or **Mn*Phi** reports the calculated allowable bending or moment stress capacity for the region.

The **Fvm**, **Fvs** or **Vn*Phi** reports the calculated allowable shear stress or Shear Capacity for the region.

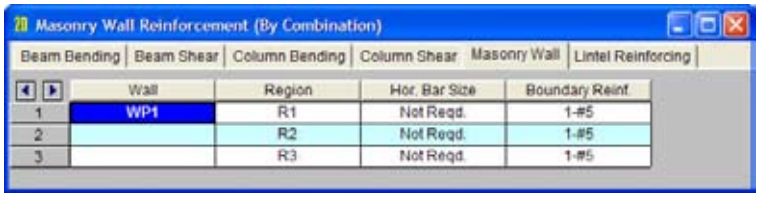
- Close the **Wall Panel Design** spreadsheet

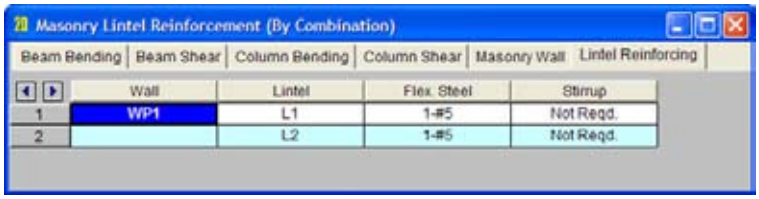
All the reinforcing can be reviewed in a spreadsheet format:

- Select the **Concrete Reinforcing** spreadsheet from the **Results** toolbar.



- To view the different results click on the tabs at the top: **Masonry Wall**, **Lintel Reinforcing**



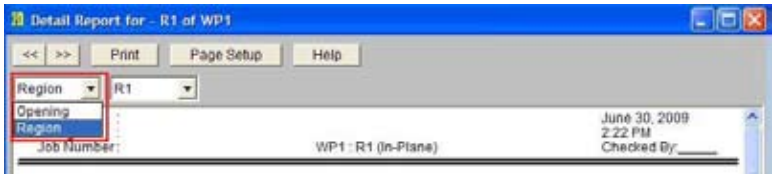


- Close **Concrete Reinforcing** spreadsheet

Let's take a closer look at the wall by viewing the Detail Report:

Left click the **Detail** button on the left hand side of the screen.

- Click anywhere on the wall panel
- Take a look at the output



The **Detail Report** is only available for single combination solutions or **Batch** solutions.

The top of the detail report will control the view.

You can toggle the **Lintel** display or the **Region** display by clicking in the drop down box at the top of the screen.

You can also choose which **Region** or **Lintel** you would like to review by clicking in the left side drop-down box shown to the left.

Region Detail Report

Company :
Designer :
Job Number :

WP1 : R1 (In-Plane)

June 30, 2009
2:45 PM
Checked By:_____

CRITERIA

Code	: MSJC05 / IBC06	
Special Insp	: Yes	
Hor Bar Size	: #6	
Vert Bar Size	: #5	
No of Ten Bars	: 1	
Effective Depth	: 20	in

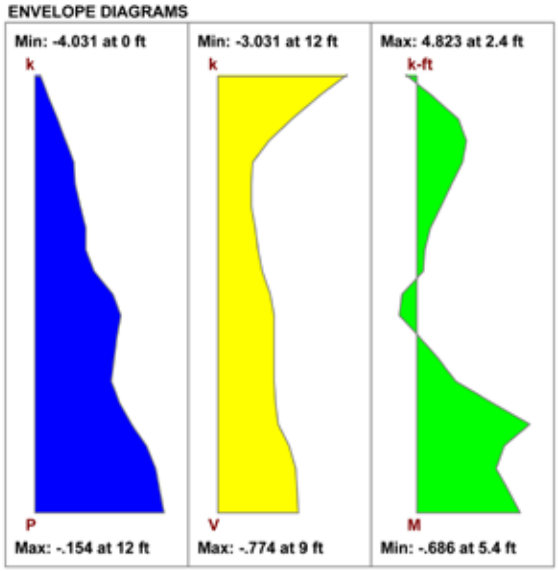
MATERIALS

Masonry f'm	: 2	ksi
Masonry Em	: 1800	ksi
Steel fy	: 60	ksi
Steel E	: 29000	ksi
Blk Material	: Conc 135 pcf	
Grt Weight	: 140 pcf	

GEOMETRY

Total Height	: 12	ft
Total Length	: 2	ft
Blk Grouting	: Partially Grouted	
Grout Spacing	: 16"	
Blk Nom Width	: 10"	
1.5 Shear Factor	: No	

ENVELOPE DIAGRAMS



COMBINED CHECKS

(fa + fb)/Fb	: .275
fa/Fa	: .04
fs/Fs	: .224

AXIAL SUMMARY

fa	: .018	ksi
Fa	: .443	ksi

BENDING SUMMARY

fb	: .166	ksi
Fb	: .667	ksi
fs	: 5.367	ksi
Fs	: 24	ksi

SHEAR CHECKS

fv / Fv	: .518
u/U	: .429

SHEAR SUMMARY

fv	: .024	ksi
Fvm	: .045	ksi
Fvs	: .068	ksi
u	: .086	ksi
U	: .2	ksi

DESIGN DETAILS

AXIAL DETAILS

Max Axial	: 3.038	k
Location	: 2.4	ft
Load Comb	: 9	
Rad gyration r	: 3.04	in
h'/r	: 47.368	
Red Factor R	: .886	

BENDING DETAILS

Max Moment	: 4.823	k-ft
Location	: 2.4	ft
Load Comb	: 9	
Sect Mod S	: 687.648	in3
Tension St Asv	: .307	in2
Per of steel p	: .002	
k*d	: 7.099	in
j	: .88	

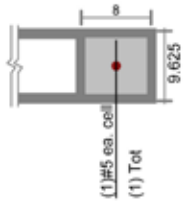
CRACKED SECT ANALYSIS

fm = fa + fb	: .183	ksi
C	: 4.66	k
T	: 1.622	k

SHEAR DETAILS

Max Shear	: 3.031	k
Location	: 12	ft
Load Comb	: 9	
Corresponding M:	.388	k-ft
M / (V*d)	: .955	
Shear St Area	: Not Reqd.	
Shear Spacing	: N/A	
Peri of bars	: N/A	

CROSS SECTION DETAILING



NOTE: All units are in "in."

The top section of the detail report echoes all of the user defined input.

Effective Depth: This gives you the distance from the compression face of the region to the centroid of tension reinforcement within that region.

The next section will display the envelope axial, shear and moment diagrams as well as a summary of the code checks.

The next section will provide the design details for axial, bending and shear.

The last section will provide a cross sectional drawing of the boundary zone width and reinforcement.

Lintel Detail Report

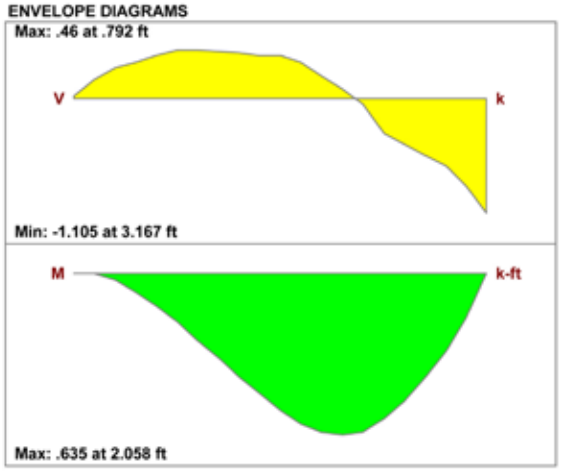
Company :
Designer :
Job Number :

WP1 : L1 (Lintel)

June 30, 2009
2:46 PM
Checked By:_____

CRITERIA		MATERIALS			GEOMETRY		
Code	: MSJC05 / IBC06	Masonry f'm	: 2	ksi	Top of Wall	: 4.667	ft
Special Insp	: Yes	Masonry Em	: 1800	ksi			
Type of Design	: ASD	Steel fy	: 60	ksi	Eff Length	: 3.167	ft
		Steel E	: 29000	ksi	Eff Width	: 9.625	in
Stirrup Size	: #3	Beam Dead Wt	: .104	ksf	Eff depth	: 11.5	in
Flex Steel	: 1-#5	Wall Dead Wt	: .104	ksf	Total Depth	: 16	in

ENVELOPE DIAGRAMS



SHEAR SUMMARY

Shear Chk fv/Fv	: .244	
Bond Chk u/U	: .268	
fv	: .011	ksi
Fvm	: .045	ksi
Fvs	: .134	ksi
u	: .054	ksi
U	: .2	ksi

BENDING SUMMARY

Bend Chk fs/Fs	: .099	
Bend Chk fm/Fm	: .076	
fm	: .051	ksi
Fm	: .667	ksi
fs	: 2.364	ksi
Fs	: 24	ksi

DESIGN DETAILS

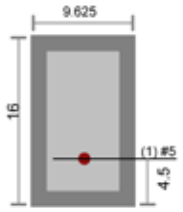
BENDING DETAILS

Max Moment	: .635	k-ft	Steel Area As	: .307	in2
Location	: 2.058	ft	Per of steel p	: .003	
Load Comb	: 9				
Mm	: 8.324	k-ft	k	: .258	
Ms	: 6.451	k-ft	j	: .914	

SHEAR DETAILS

Max Shear	: 1.105	k
Location	: 3.167	ft
Load Comb	: 9	
Tie Spacing	: Not Required	

CROSS SECTION DETAILING



NOTE: All units are in "in."

The top section of the detail echoes the entire user defined input.

The next section will display the envelope shear and moment diagrams as well as a summary of the code checks.

The next section will provide the design details for the bending and shear.

The last section will provide a cross sectional drawing of the lintel.

Note: The Help file within RISA-2D and the RISA-2D General Reference both provide explicit descriptions of nearly all of the values in the report.

Conclusion

If you have completed the tutorial you should now be familiar with the masonry wall panel in RISA-2D. RISA-2D has wall panels in Masonry, Wood, and General materials. To learn more about the other materials or if you wish to know more about specific features, you can refer to the **RISA-2D General Reference** or the **Help** from within RISA-2D.

If you have any questions, comments or suggestions feel free to email us at support@risatech.com, call us at 949-951-5815, or FAX 949-951-5848.

Thank you for choosing RISA!