

A tropical waterfront scene at dusk. The sky is a deep blue, transitioning to a lighter orange glow near the horizon. Several palm trees are silhouetted against the sky. In the foreground, a body of water reflects the lights and structures. A building with a large overhang is visible on the right side. The overall atmosphere is serene and tropical.

Risa Final Project

By: T.S.

Project Idea:

My project in risa is an Island house, could be in places like:

- Florida
- Tropical island

The house will be hanging above the ground supported by concrete columns under the house to the ground. A garage is also under the house supporting the east side of the house. The house is made hanging about the ground due to possible flooding.

Example



Drafting Modeling << + Floor plan*

Draw

Hatch

Block

Modify

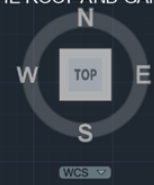
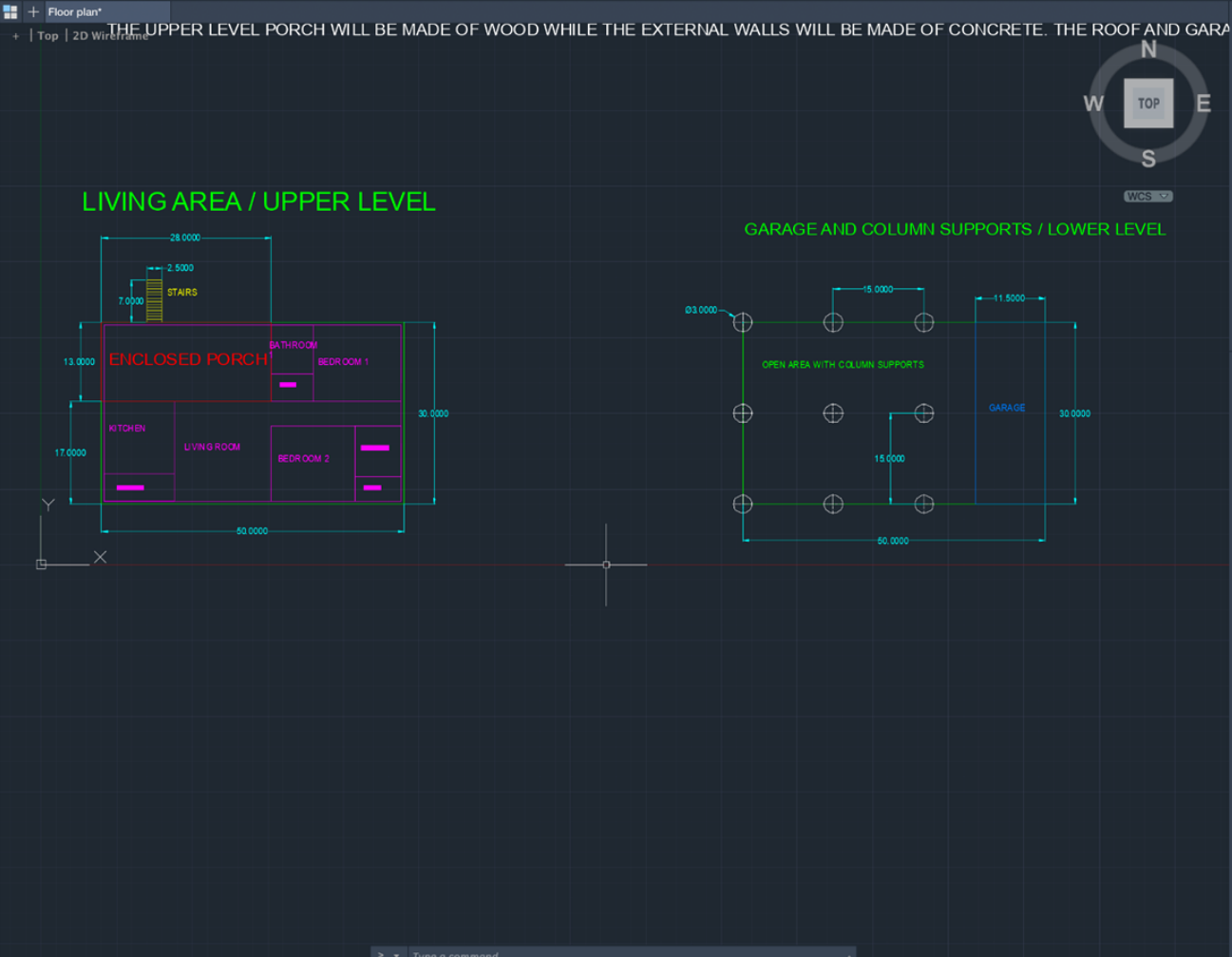
Text

Dimension

Leader

Table

Parametric



Layers

dimensions

Unsaved Layer State

Hide Layer List

- 0 D...
- Defp... D...
- dime... D...
- GARA... D...
- inter... D...

Search for layer

Properties

Model Space

Color ByLayer

Layer dimensions

Linetype ByLayer

Linetype scale 1

Lineweight ByLayer

Transparency 0

Text style Standard

Dimension... Standard

Multileader... Standard

Table style Standard

Annotation... 1:1

Text height 51

Plot style ByColor

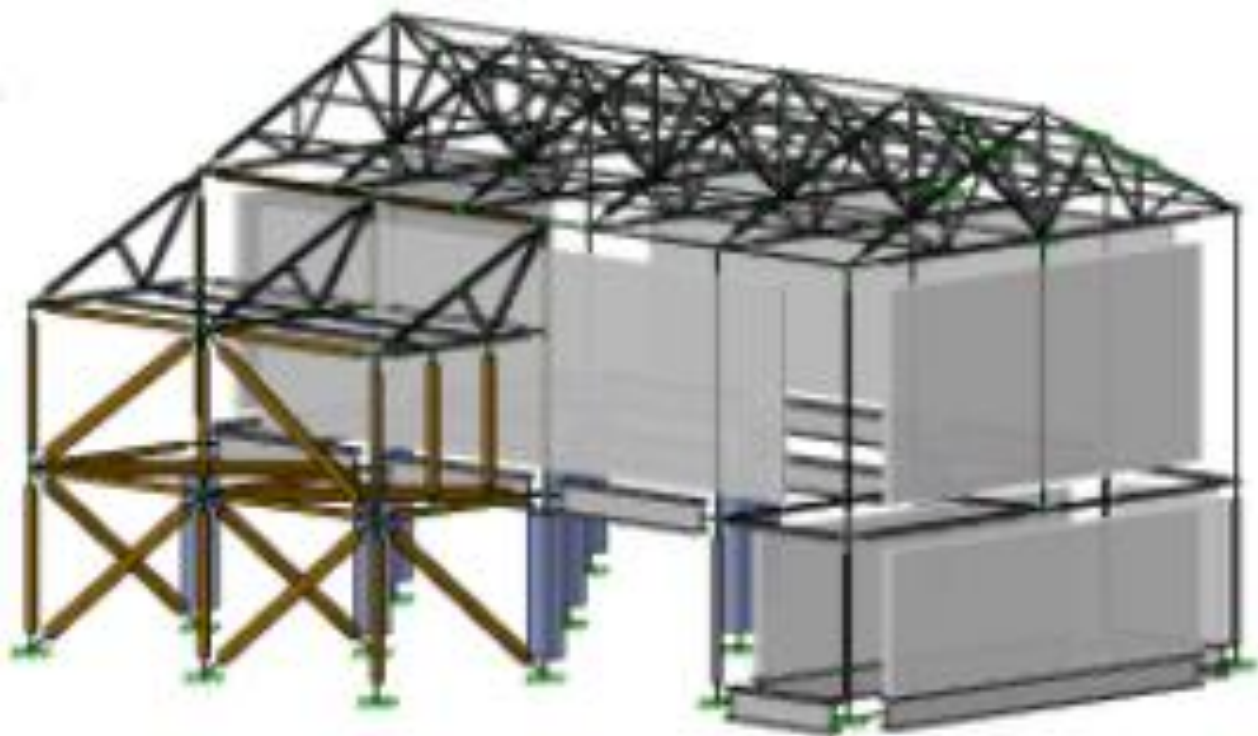
Plot style ta... None

Plot style at... Model

Plot table type Not available

>_ Type a command

My Design



Materials Used and Section Sets:

Hot Rolled Steel: A36 Gr.36, (roof / beams) 3.5x3.5x6x0, 3.5x3x5, 2x2x2

Wood: Douglas Fir- Larch, (porch) 2x6, 2x10

Concrete: Conc4000NW, (walls and supports) walls 6 inches thick, columns 24 in diameter

Basic Load Cases:

Dead load-DL

Hanging Load-LL

Roof Load-LL

Wind Load-WL

Load Combinations

Inserted a dead load + live load

- Both with factors of 1

Then, generated gravity and wind load combinations.

The screenshot displays a software interface for managing load combinations. The main window is titled "Load Combinations" and contains a spreadsheet with the following data:

LC Generator	Description	Solve	P-Delta	SRSS	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	dead load+LL	<input checked="" type="checkbox"/>	Y		DL	1	LL	1								
2	IBC 16-5 (a)	<input checked="" type="checkbox"/>	Y		DL	1.2	EL	1	LL	0.5	LLS	1				
3	IBC 16-5 (b)	<input checked="" type="checkbox"/>	Y		DL	1.2	EL	-1	LL	0.5	LLS	1				
4	IBC 16-7 (a)	<input checked="" type="checkbox"/>	Y		DL	0.9	EL	1								
5	IBC 16-7 (b)	<input checked="" type="checkbox"/>	Y		DL	0.9	EL	-1								
6	IBC 16-5 (a)	<input checked="" type="checkbox"/>	Y		DL	1.2	EL	1	LL	0.5	LLS	1				
7	IBC 16-5 (b)	<input checked="" type="checkbox"/>	Y		DL	1.2	EL	-1	LL	0.5	LLS	1				
8	IBC 16-7 (a)	<input checked="" type="checkbox"/>	Y		DL	0.9	EL	1								
9	IBC 16-7 (b)	<input checked="" type="checkbox"/>	Y		DL	0.9	EL	-1								

The interface also shows a "Design Properties" section with a "Description" field containing "Loads: DL - Dead Load". A 3D model of a structure is visible in the background, and the software title bar indicates "final.risa".

Boundary Conditions Fixed to the Ground

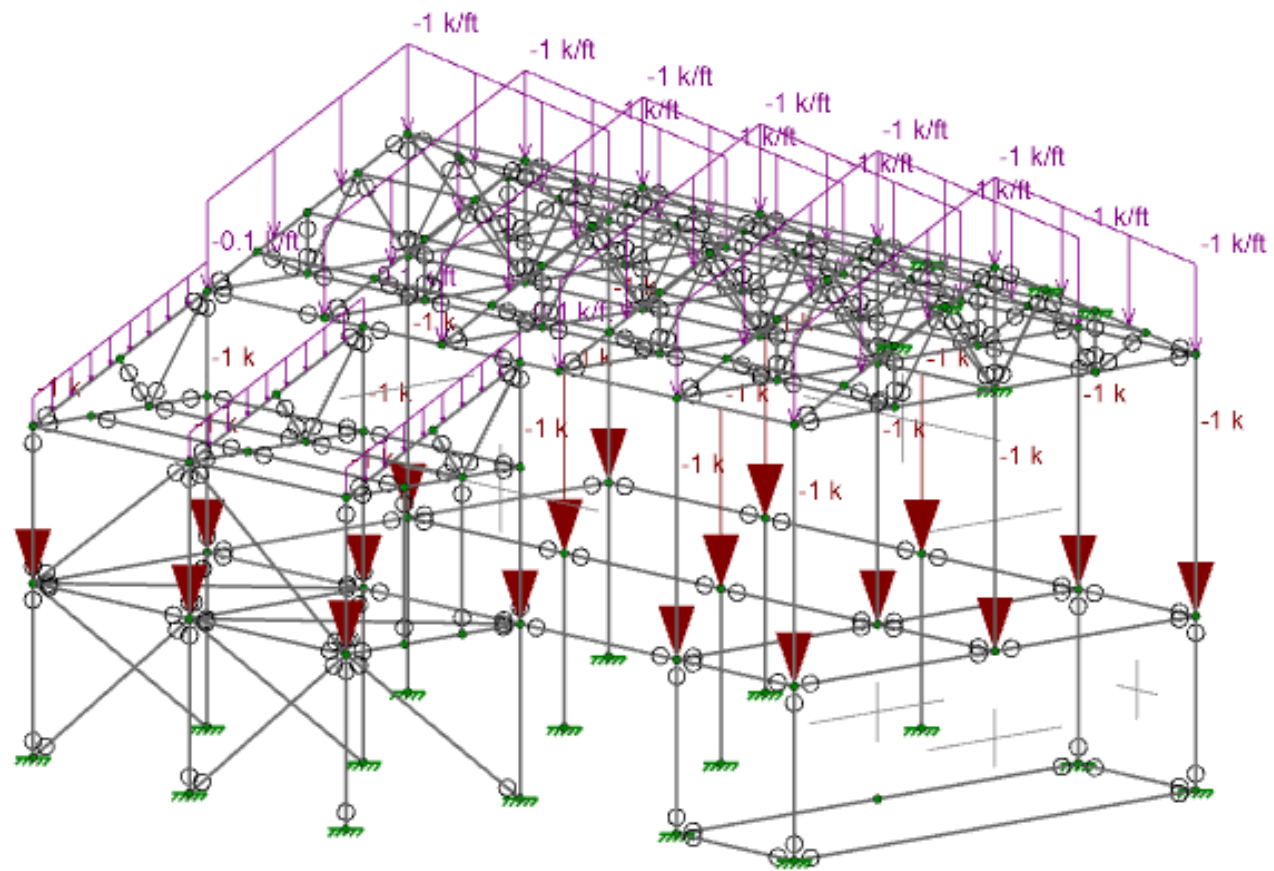
The screenshot displays the final risa software interface. The main window shows a 3D model of a structural frame with boundary conditions fixed to the ground. The interface is divided into several panels:

- Properties Panel:** Shows member properties for member M169, including length (15 ft), material type (Hot Rolled Steel), and section shape (LL3.5X3.5X6X0).
- 3D View:** Displays the structural model with a blue beam highlighted. The view is set to ISO, and the load category is DL - Dead Load.
- Explorer Panel:** Lists various design rules and boundary conditions, including Member Design Rules, Wall Design Rules, Seismic Design Rules, Connection Rules, Node Coordinates, Boundary Conditions, Diaphragms, Drift Definitions, Members, Plates, Solids, Wall Panels, Basic Load Cases, Nodal Loads, Point Loads, Distributed Loads, Member Area Loads, Surface Loads, Moving Loads, Time History Loads, Load Combinations, Results, Env, Batch, and Node Reactions.
- Detail Report:** Located at the bottom left, it prompts the user to "Select the boundary member".

The software interface includes a ribbon menu with tabs for FILE, HOME, MODIFY, VIEW, DRAWING TOOLS, SPREADSHEETS, ADVANCED, and RESULTS. The RESULTS tab is active, showing options like Envelope, LC, Dynamic, Filter Results, Node, Wall, TH Trace, Export TH Trace, Contour Diagram, Diagram Report, Clear Results, Warning Log, Suggested Design, and Detail Report.

Loads

- Roof load
- Wind load
- Dead load
- Live load



Results for Steel Beam

AISC 15th (360-16): ASD Code Check

Limit State	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial				
Applied Loading - Shear + Torsion	-	-	-	-
Axial Tension Analysis	7.125 k	1638.323 k	-	-
Axial Compression Analysis	0.000 k	1332.762 k	-	-
Flexural Analysis (Strong Axis)	9.005 k-ft	1097.605 k-ft	-	-
Flexural Analysis (Weak Axis)	0.206 k-ft	298.204 k-ft	-	-
Shear Analysis (Major Axis y)	6.194 k	396.288 k	0.016	Pass
Shear Analysis (Minor Axis z)	1.908 k	702.065 k	0.003	Pass
Bending & Axial Interaction Check (UC Bending Max)	-	-	0.011	Pass

Envelope LC Dynamic

Sort b

Sort b

Load Combination: LC 1: dead load+LL

Member Label: M220

Add to Full Report

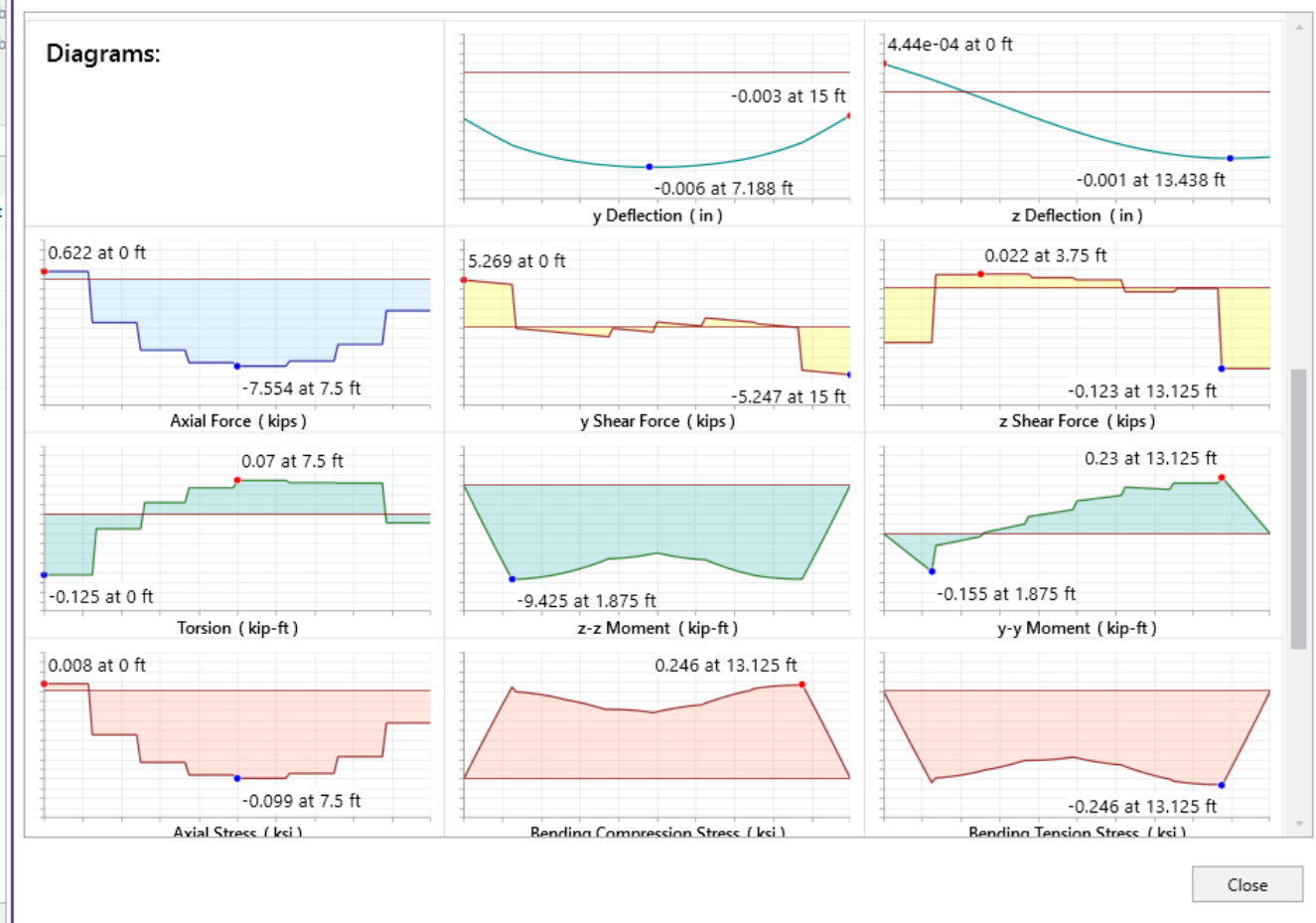
Options Print

Results

Properties

Project Information

Model Name	final project
Company	final project
Designer	tas1032
Project Number	
Project Notes	
Checked By	



Explorer

- Node Reactions
- Node Deflections
- Story Drift
- Member Forces
- Member Stresses
- Member Torsions
- Member Deflections
- Suggested Design
- Code Check
- Seismic Detailing
- Concrete Reinforcing
- Plate Stresses
- Plate Forces
- Plate Corner Forces
- Solid Stresses
- Solid Principals
- Solid Corner Forces
- Wall Panel Design
- Wall Panel Forces
- Material TakeOff
- Frequencies
- Mode Shapes
- Connection Results

Results for Steel Roof

AISC 15th (360-16): ASD Code Check

Limit State	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial				
Applied Loading - Shear + Torsion	-	-	-	-
Axial Tension Analysis	2.636 k	10.584 k	-	-
Axial Compression Analysis	0.000 k	0.784 k	-	-
Flexural Analysis (Strong Axis)	0.011 k-ft	0.339 k-ft	-	-
Flexural Analysis (Weak Axis)	0.01 k-ft	0.268 k-ft	-	-
Shear Analysis (Major Axis y)	0.009 k	3.234 k	0.003	Pass
Shear Analysis (Minor Axis z)	0.001 k	3.234 k	0.000	Pass
Bending & Axial Interaction Check (UC Bending Max)	-	-	0.318	Pass

Load Combination: LC 1: dead load+LL

<<

Member Label: M80

>>

Add to Full Report

Options

Print

Envelope LC Dynamic

Sort by Combination Sort by Item

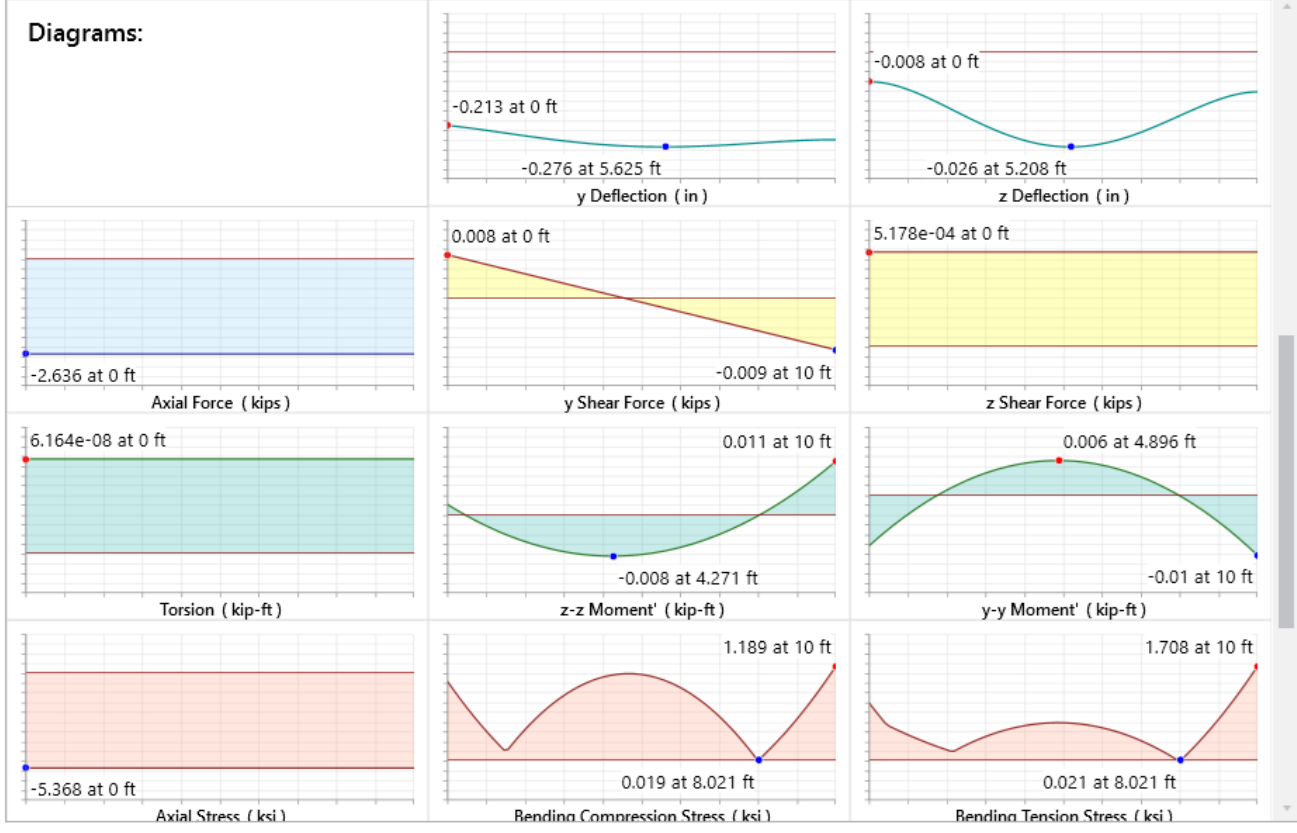
Properties

Project Information

Model Name	final project	...
Company	final projet	...
Designer	tas1032	...
Project Number		...
Project Notes		...
Checked By		...

Results

Diagrams:



Close

Explorer

- Node Reactions
- Node Deflections
- Story Drift
- Member Forces
- Member Stresses
- Member Torsions
- Member Deflections
- Suggested Design
- Code Check
- Seismic Detailing
- Concrete Reinforcing
- Plate Stresses
- Plate Forces
- Plate Corner Forces
- Solid Stresses
- Solid Principals
- Solid Corner Forces
- Wall Panel Design
- Wall Panel Forces
- Material TakeOff
- Frequencies
- Mode Shapes
- Connection Results

Results for Wood

AWC NDS-18: ASD Code Check

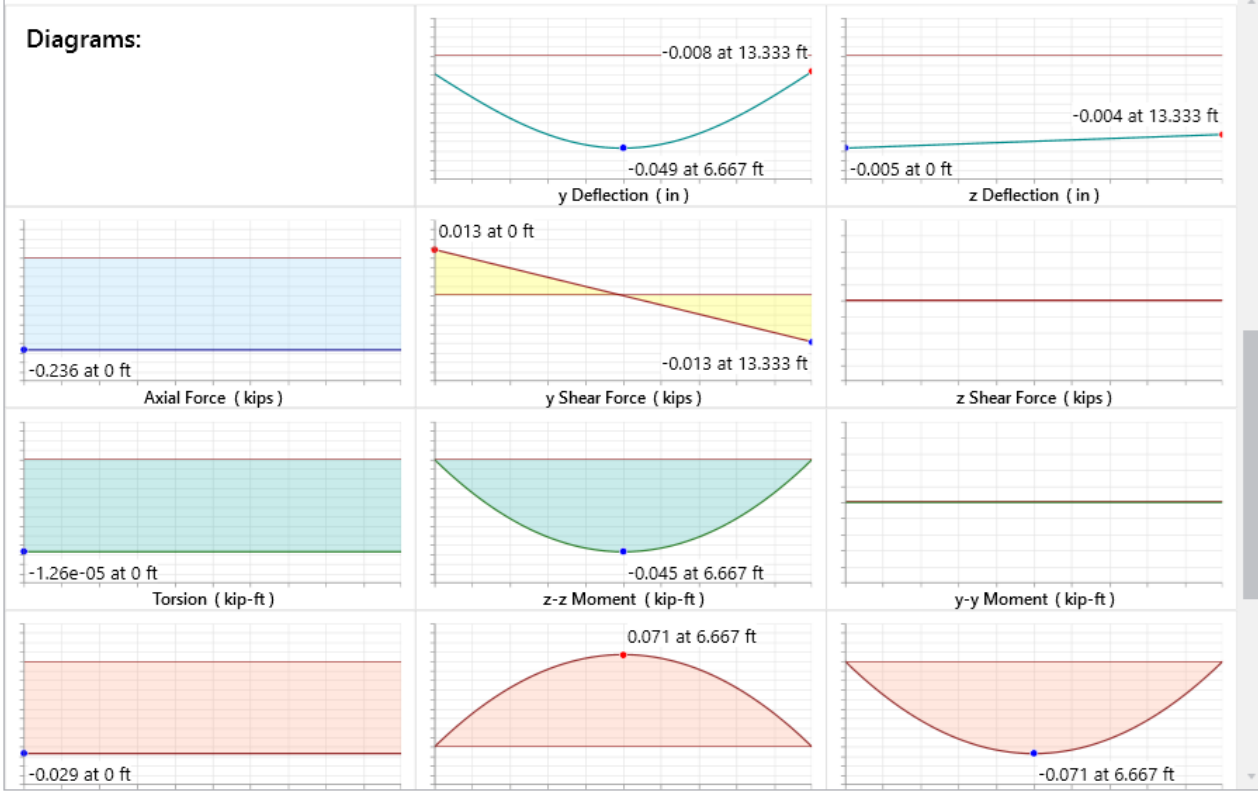
Limit State	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial	-	-	-	-
Applied Loading - Shear + Torsion	-	-	-	-
Axial Compression Analysis	0.000 ksi	0.045 ksi	-	-
Axial Tension Analysis	-0.029 ksi	0.877 ksi	-	-
Flexural Analysis, Fb1'	0.071 ksi	1.198 ksi	-	-
Flexural Analysis, Fb2'	0.000 ksi	1.495 ksi	-	-
Bending & Axial Compression Analysis	-	-	0.087	Pass
Bending & Axial Tension Analysis	-	-	0.087	Pass
Shear Analysis	0.002 ksi	0.18 ksi	0.014	Pass

Properties

Project Information

Model Name	final project	...
Company	final projet	...
Designer	tas1032	...
Project Number		...
Project Notes		...
Checked By		...

Diagrams:



Explorer

- Node Reactions
- Node Deflections
- Story Drift
- Member Forces
- Member Stresses
- Member Torsions
- Member Deflections
- Suggested Design
- Code Check
- Seismic Detailing
- Concrete Reinforcing
- Plate Stresses
- Plate Forces
- Plate Corner Forces
- Solid Stresses
- Solid Principals
- Solid Corner Forces
- Wall Panel Design
- Wall Panel Forces
- Material TakeOff
- Frequencies
- Mode Shapes
- Connection Results

Close

Results for Concrete

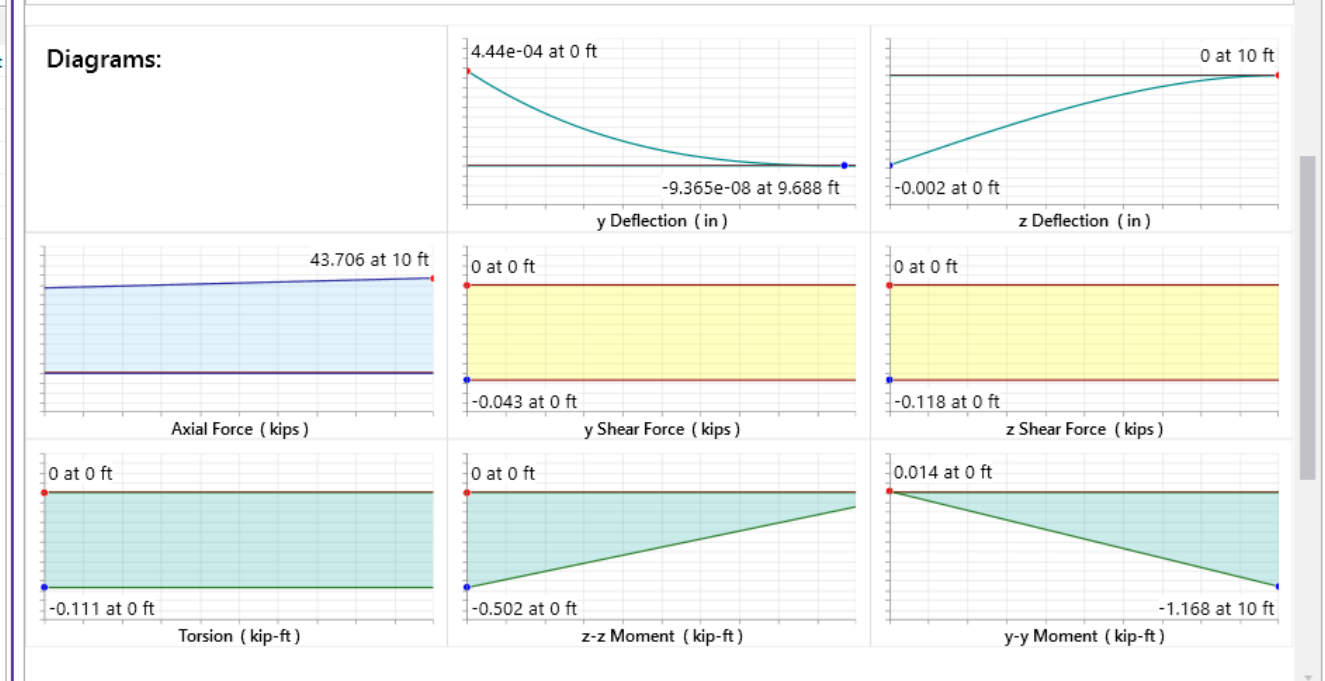
Limit State	Gov. LC	Required	Available	Unity Check	Result
Applied Loading - Bending/Axial					
Flexural Reinforcement	1	4.524 in ²	4.712 in ²	-	Pass
Axial Capacity	1	43.706 k	938.519 k	0.047	Pass
Bending Unity Check	1	1.17 k-ft	25.135 k-ft	0.047	Pass
Y Shear Design Strength	0	0.043 k	69.292 k	0.001	Pass
Z Shear Design Strength	0	0.118 k	69.292 k	0.002	Pass
Threshold Torsion		0.111 k-ft	12.43 k-ft	1	Pass
Span Information					
Rebar Detailing					



Properties

Project Information

Model Name	final project
Company	final project
Designer	tas1032
Project Number	
Project Notes	
Checked By	



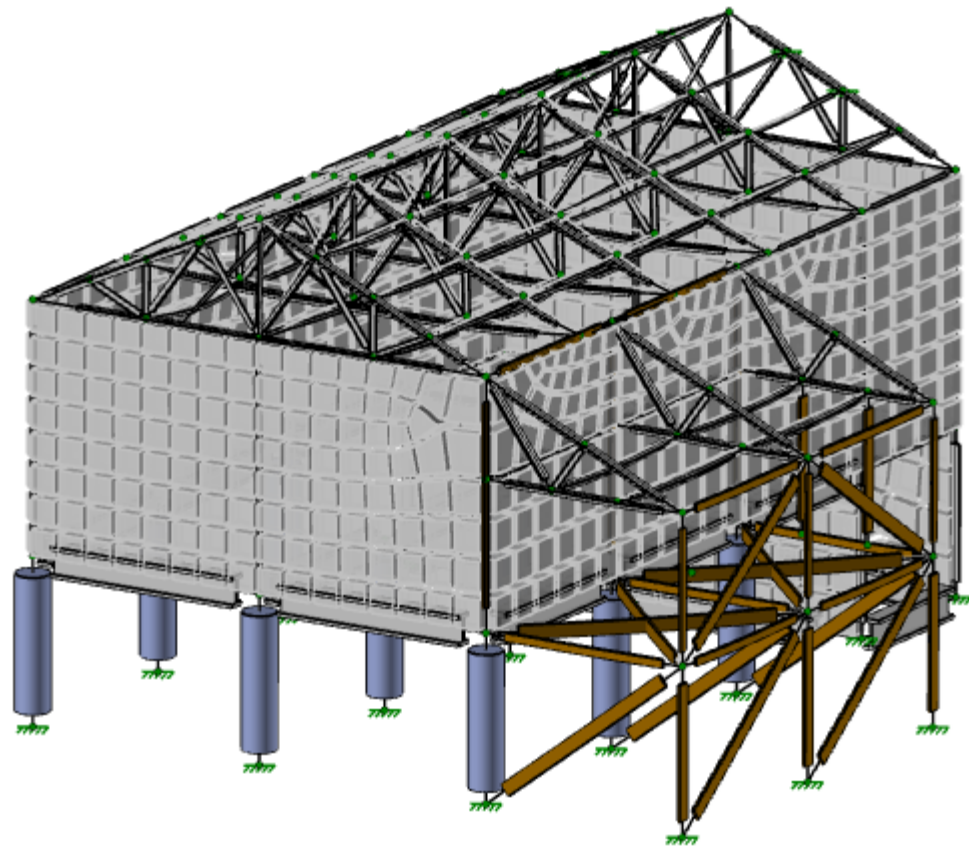
Director ?

Explorer

- Node Reactions
- Node Deflections
- Story Drift
- Member Forces
- Member Stresses
- Member Torsions
- Member Deflections
- Suggested Design
- Code Check
- Seismic Detailing
- Concrete Reinforcing
- Plate Stresses
- Plate Forces
- Plate Corner Forces
- Solid Stresses
- Solid Principals
- Solid Corner Forces
- Wall Panel Design
- Wall Panel Forces
- Material TakeOff
- Frequencies
- Mode Shapes
- Connection Results

Close

Deflection



Cost Analysis

Hot Rolled Steel:

- \$245 per ton
- \$181424.46

Wood:

- 2x6=\$8.82 per=\$132.30
- 2x10=\$15.36 per=\$245.76

Concrete:

- \$117 per cubic yard
- \$7944.30

Total: \$189,748.82

	Material	Size	Pieces	Length[ft]	Weight[K]
	Hot Rolled Steel				
	A36 Gr.36	L2x2x2	79	857.1	1.432
	A36 Gr.36	L3.5X3X5	54	288.5	1.914
	A36 Gr.36	LL3.5x3.5x6x0	45	677.2	11.522
	A36 Gr.36	M4X6	2	26.7	0.159
	A36 Gr.36	W18X258	15	230	59.481
	Total HR Steel		195	2079.5	74.508
	Wood				
	DF	2X6	15	191	0.383
	DF	2X10	16	237.2	0.8
	Total Wood		31	428.2	1.183
	Concrete Members			Volume (yds^3)	
	Conc4000NW	CRND24	9	10.5	40.998
	Concrete Walls				
	Conc4000NW		7	57.4	224.75
	Total Concrete		16	67.9	265.748

