PCS Structural Solutions

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SUPPLEMENTAL STRUCTURAL CALCULATIONS

FOR

MERCER ISLAND MIXED USED
2885 78TH AVE SE
MERCER ISLAND, WA 98040

PREPARED BY
PCS STRUCTURAL *SOLUTIONS*

SEPTEMBER 30, 2021
19-028

Foundation Design Criteria

Code

ACI 318-14

Materials

Concrete f'c = 4,000 psi, Typical
Concrete f'c = 5,000 psi, Mats
Reinforcing Steel fy = 60,000 psi

Analysis

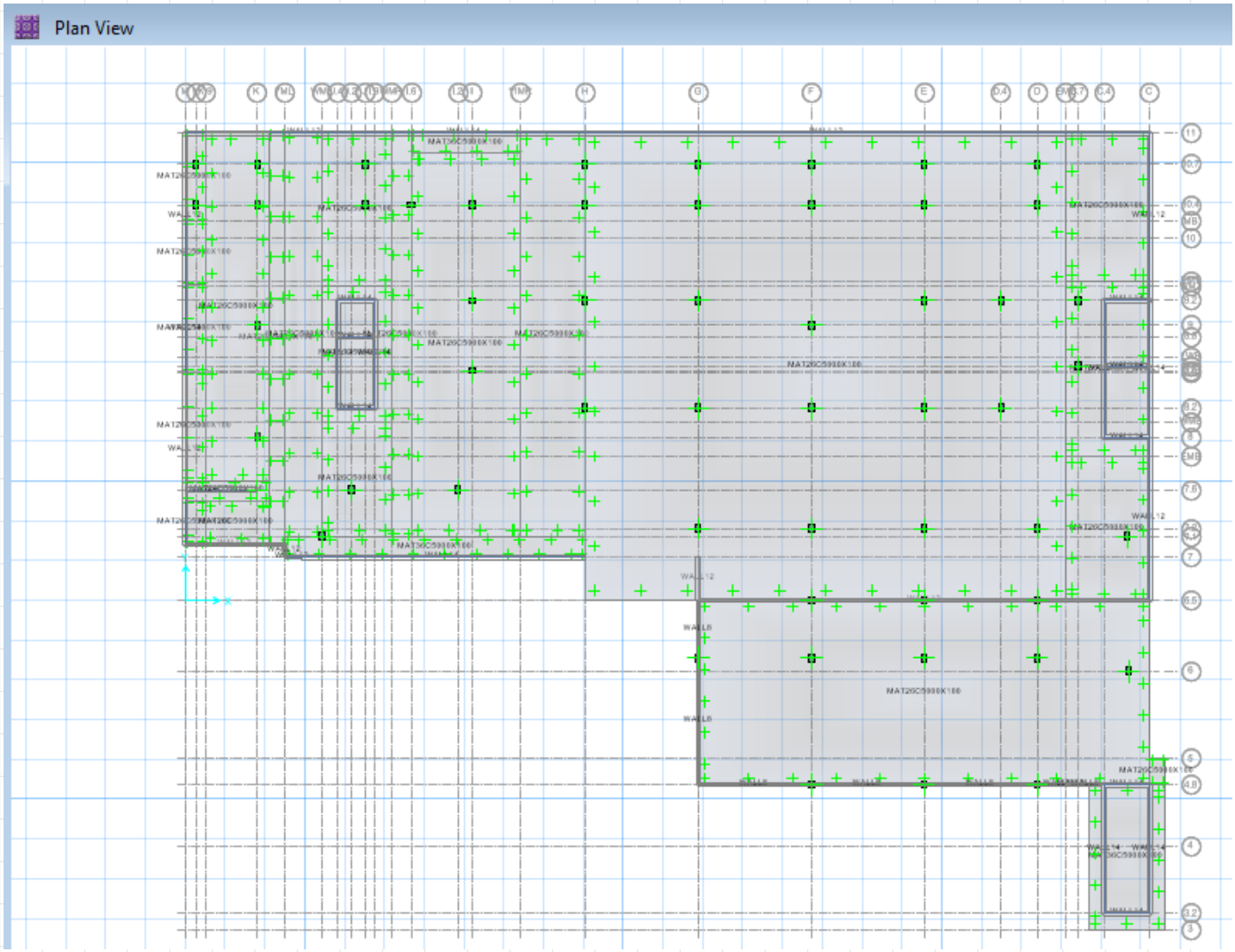
The foundation support was designed in accordance with the recommendations and values within the geotechnical report labelled "Multi-Family Development Mercer Island, Washington" dated November 3, 2020, Project 19413-00, and prepared by Hart Crowser.

Footing sizes were determined using service loads and reinforcing was designed using ultimate loads in accordance with ACI 318-14 and the allowable soil bearing values in the geotechnical report. Calculations were performed using Excel spreadsheets, one to track vertical gravity loads and another to determine footing size for allowable bearing pressures and reinforcing requirements in accordance with ACI 318-14.

The mat foundation (Level P2 and Detention Vault) was designed using SAFE. Load combinations considered hydrostatic pressure with both full detention vault tank and empty tank as well as no hydrostatic pressure with both full tank and empty tank for soil bearing checks including seismic forces within standard load combinations. Envelope results for all load combinations were considered for strength design.

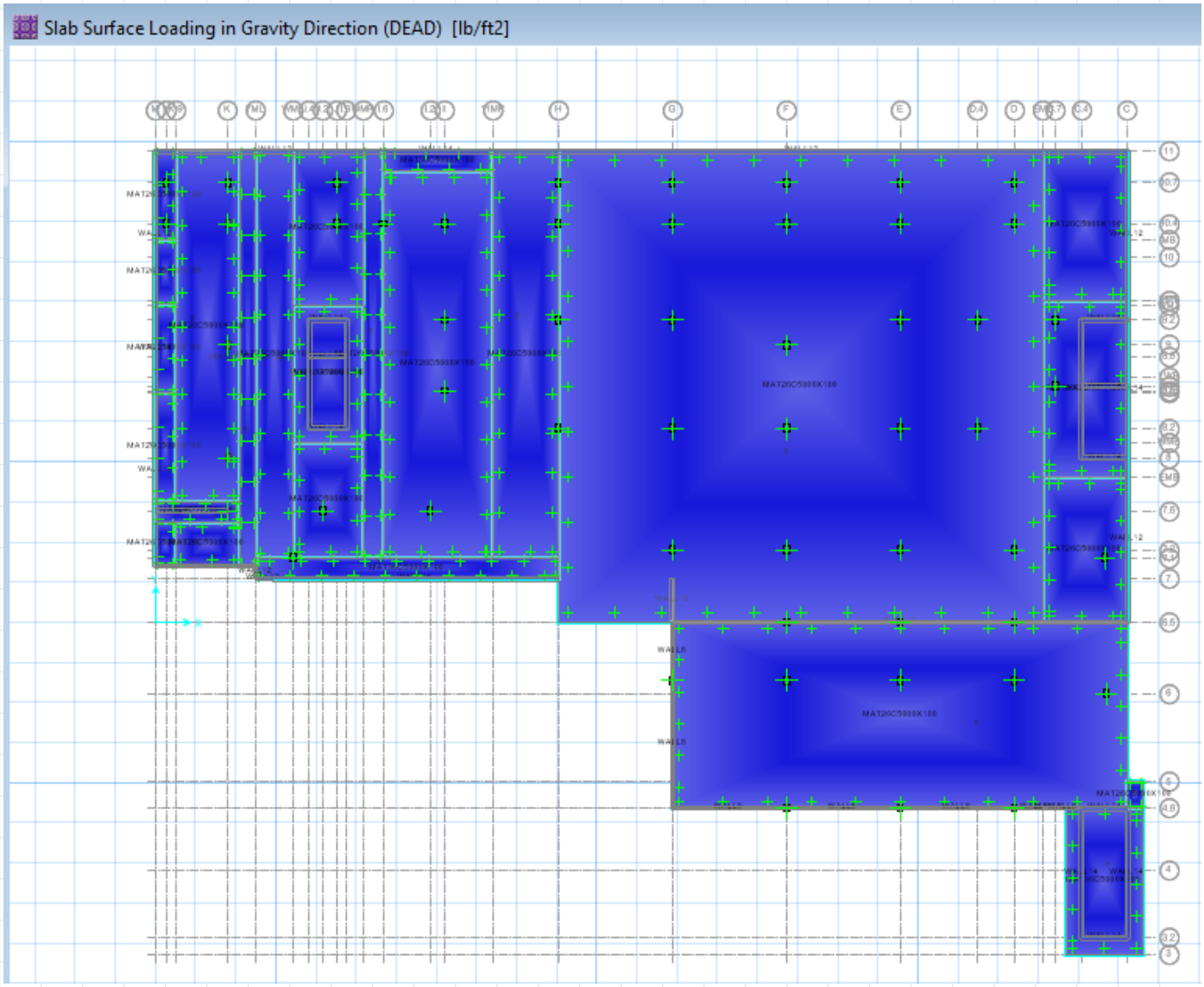
MAT FOUNDATION

FOUNDATION DESIGN



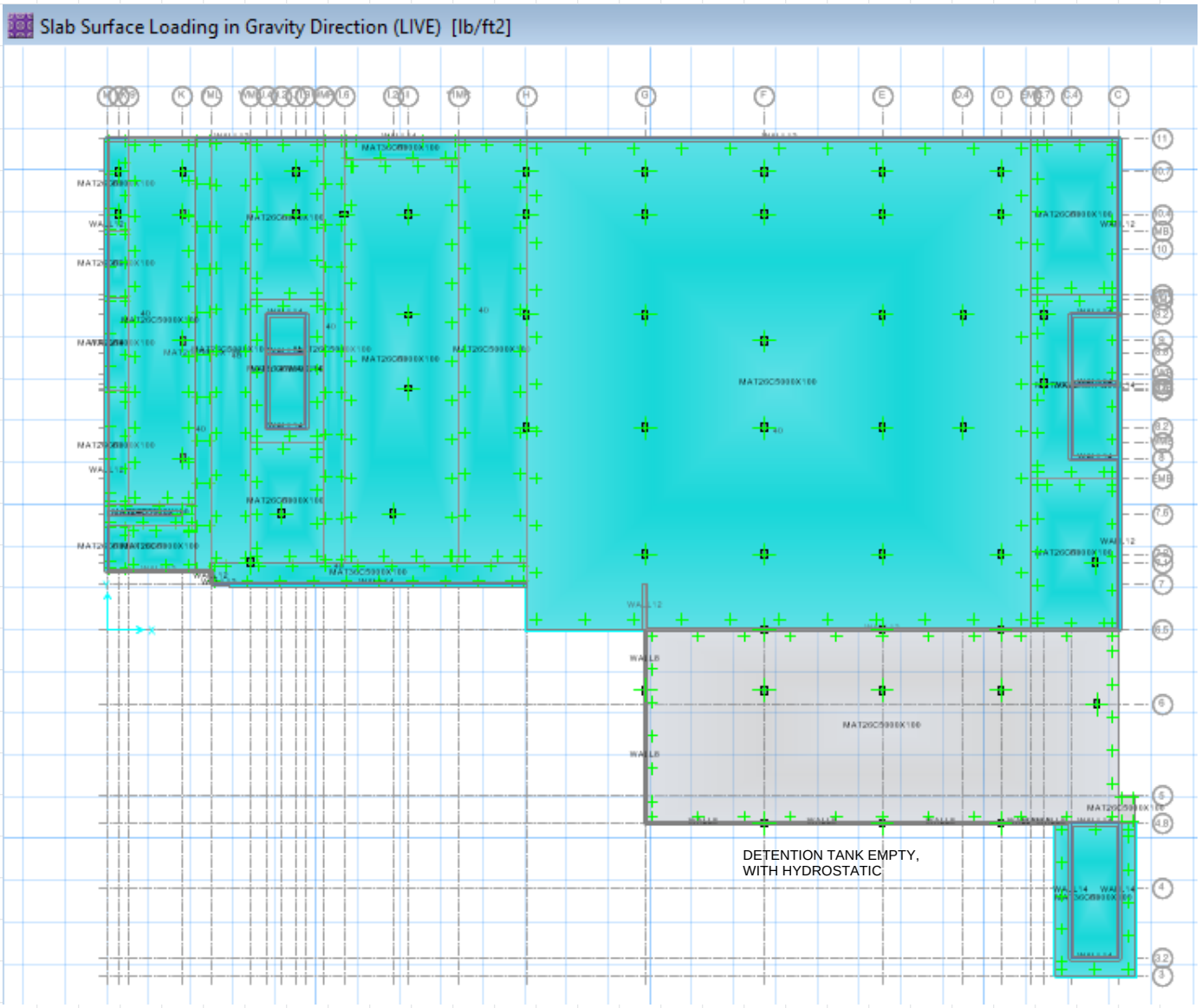
SAFE MODEL

FOUNDATION DESIGN



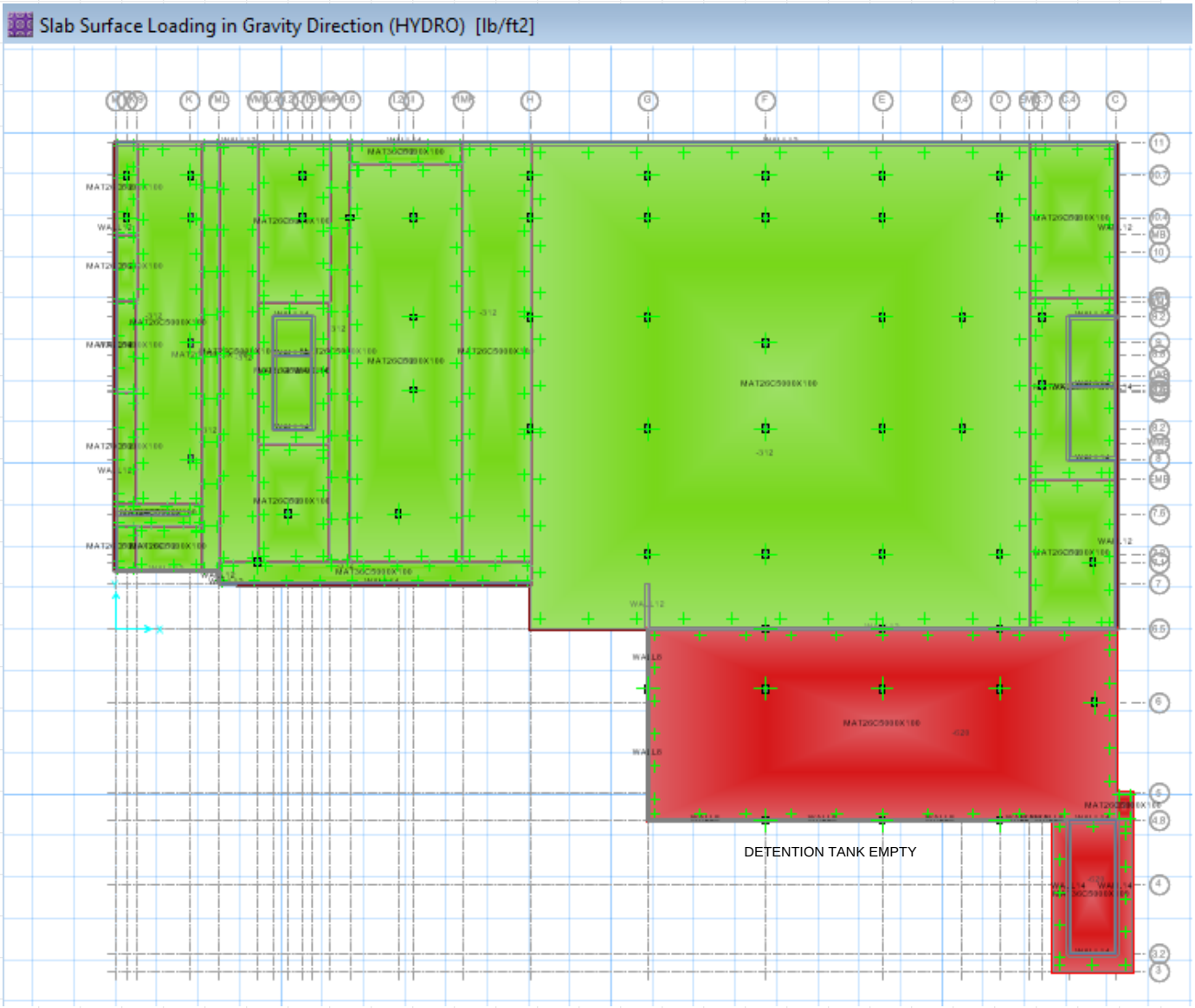
SAFE LOADS

FOUNDATION DESIGN



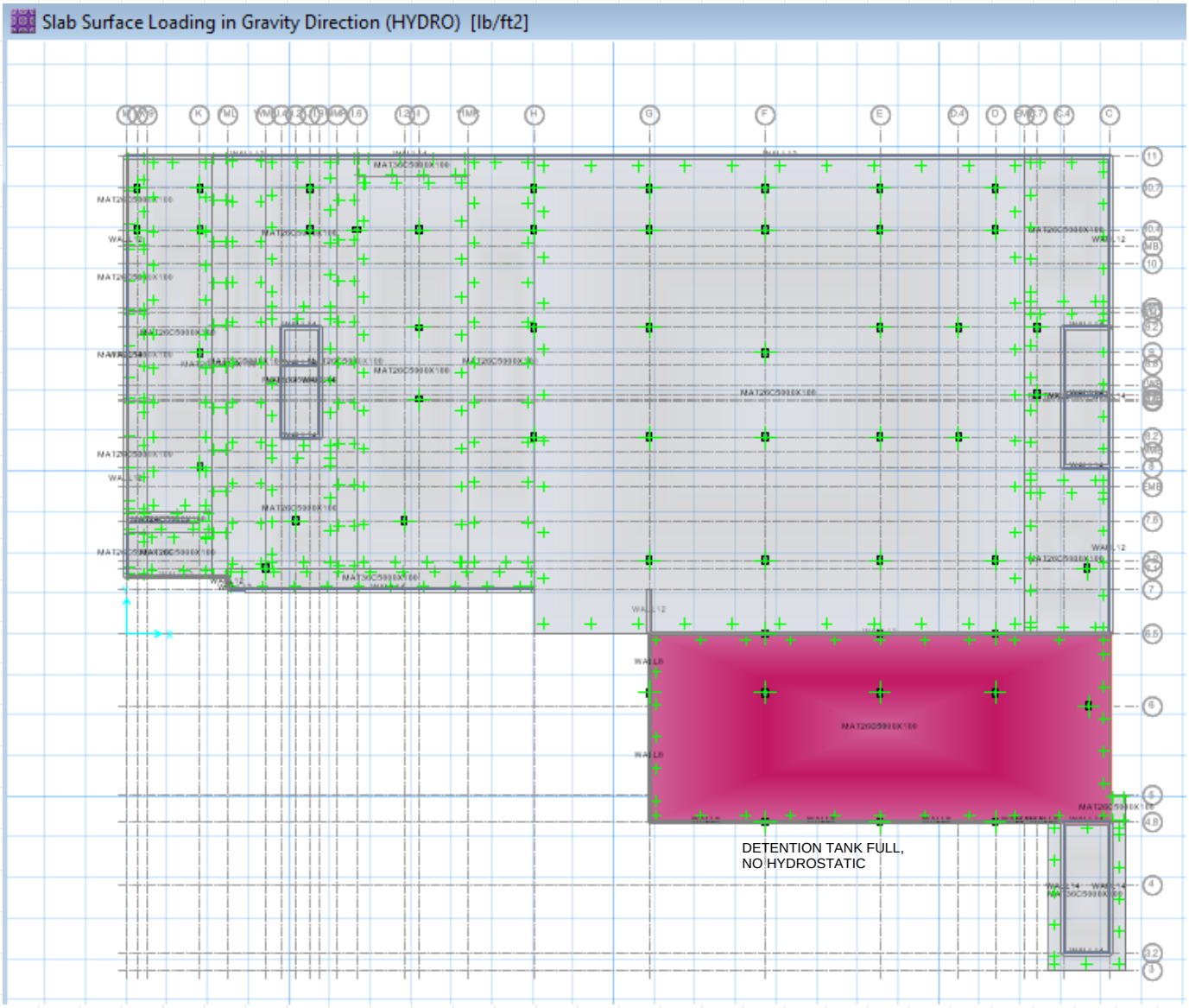
SAFE LOADS

FOUNDATION DESIGN



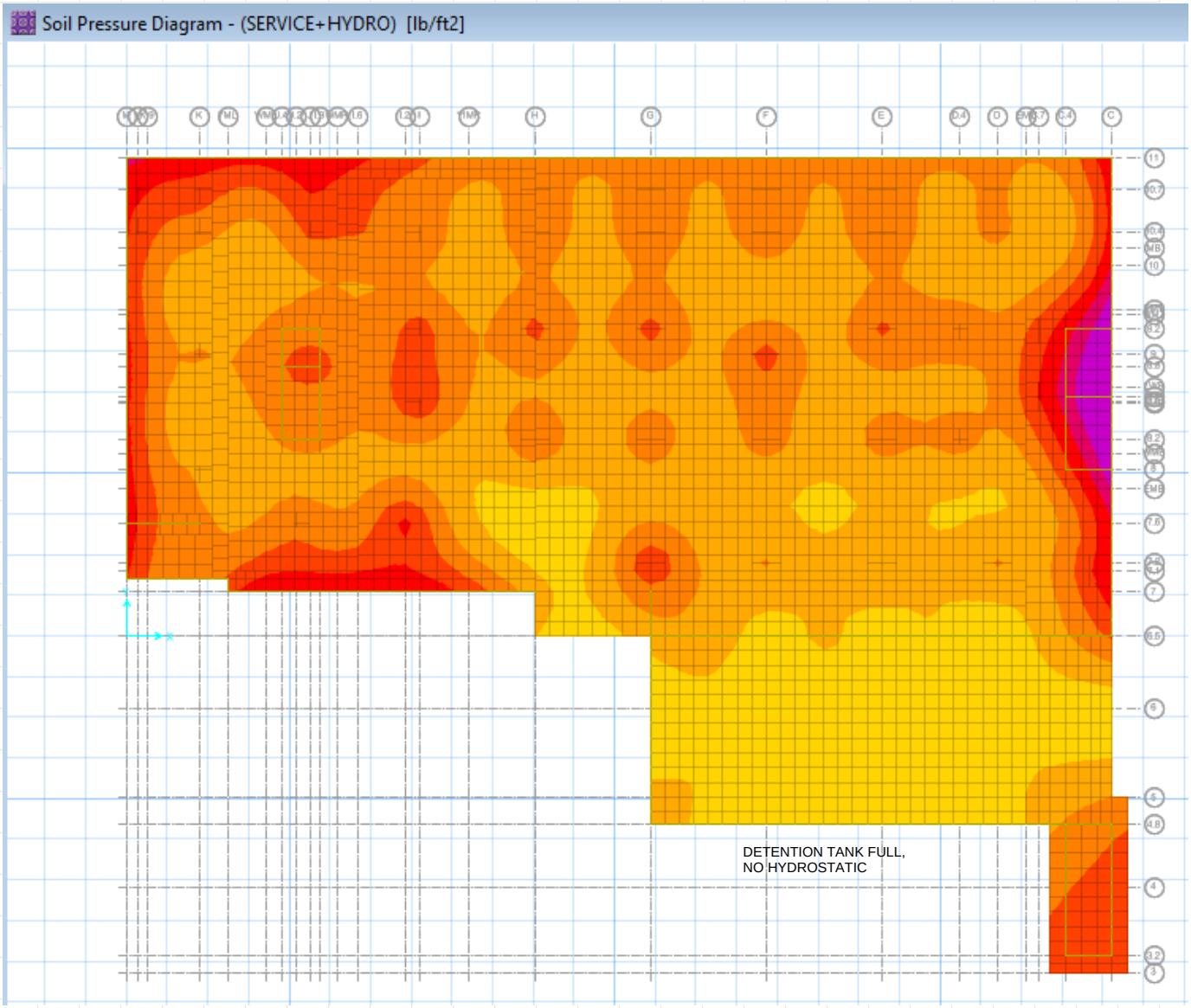
SAFE LOADS

FOUNDATION DESIGN



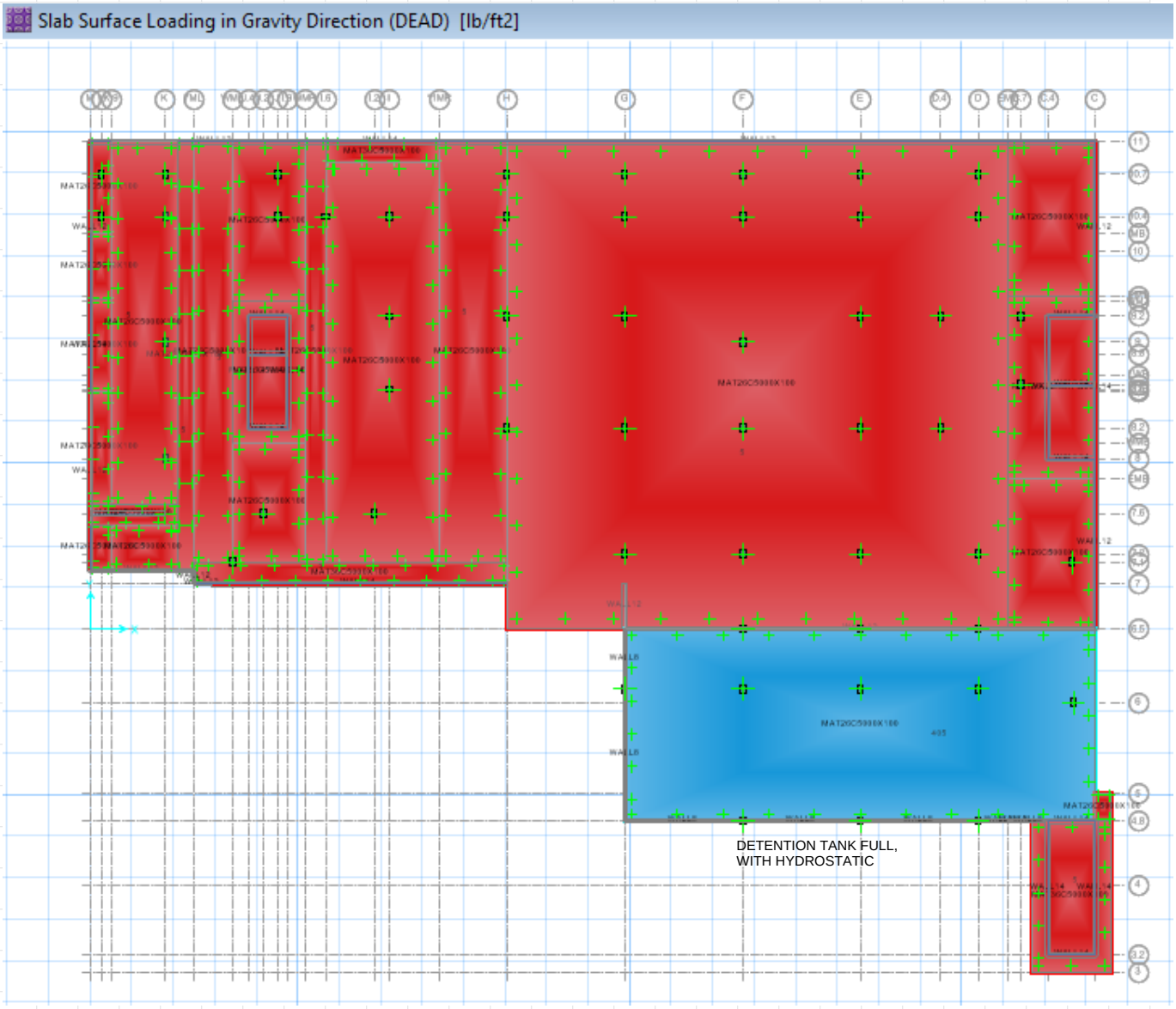
SAFE LOADS

FOUNDATION DESIGN



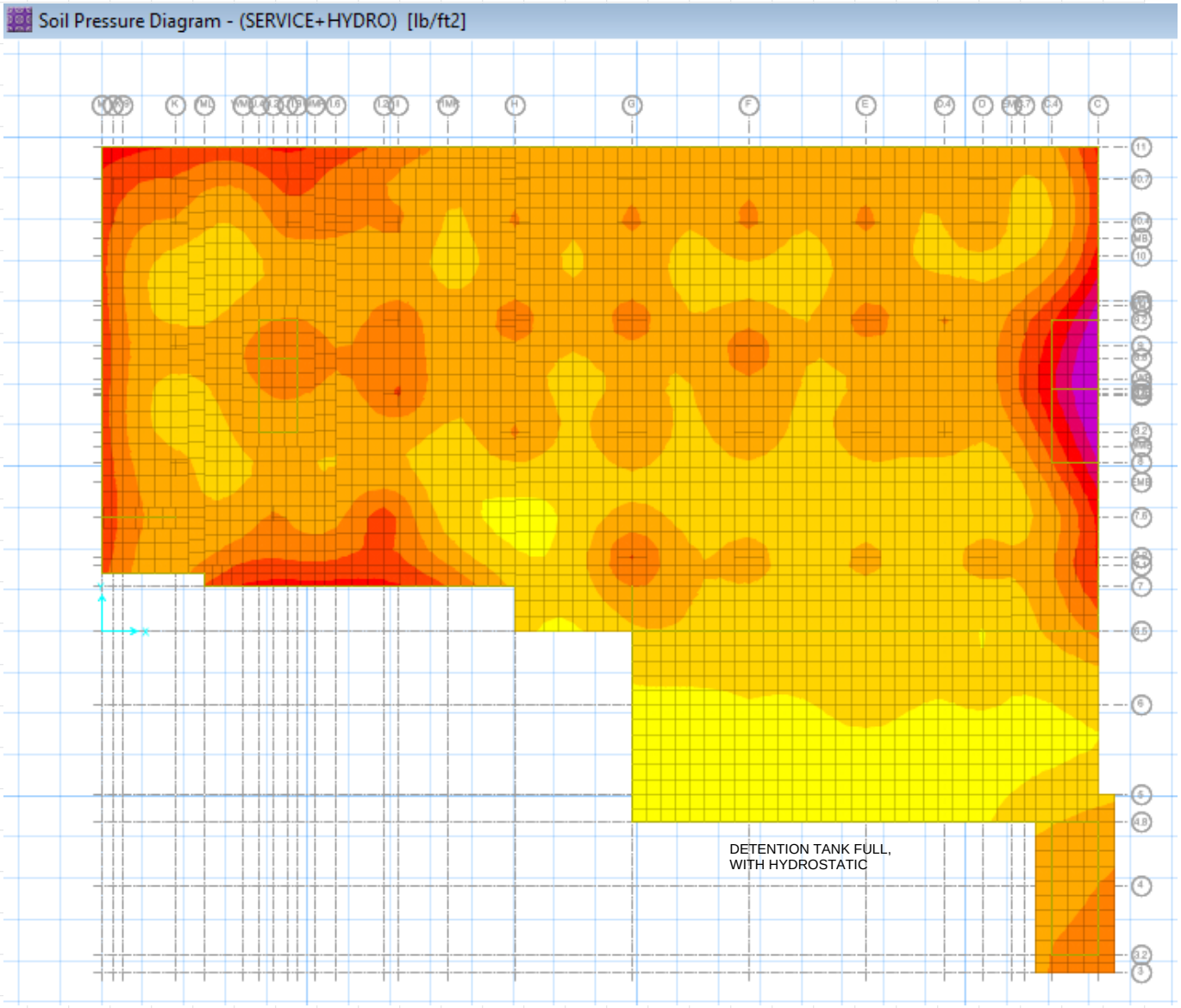
SAFE SOIL BEARING

FOUNDATION DESIGN



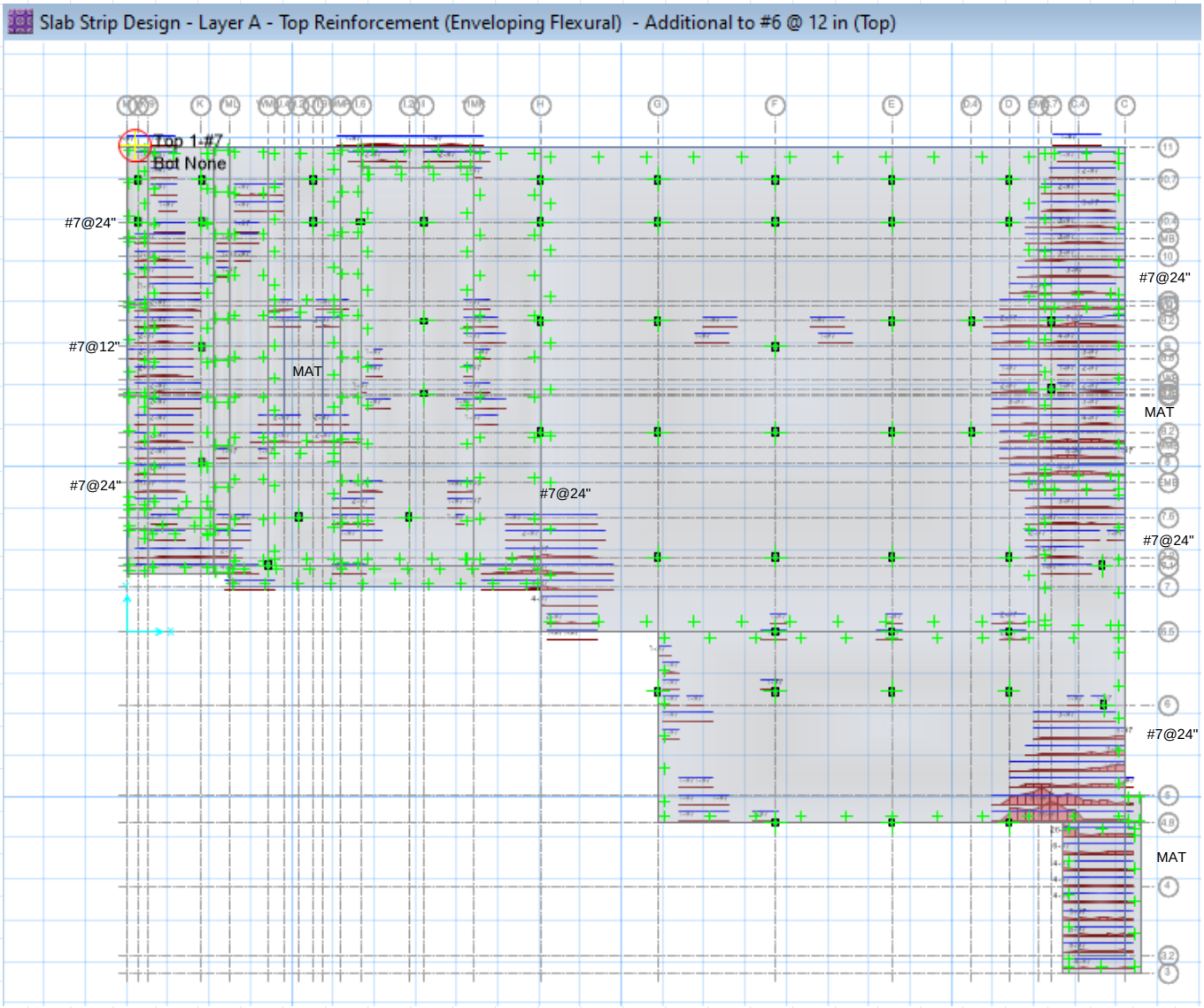
SAFE LOADS

FOUNDATION DESIGN



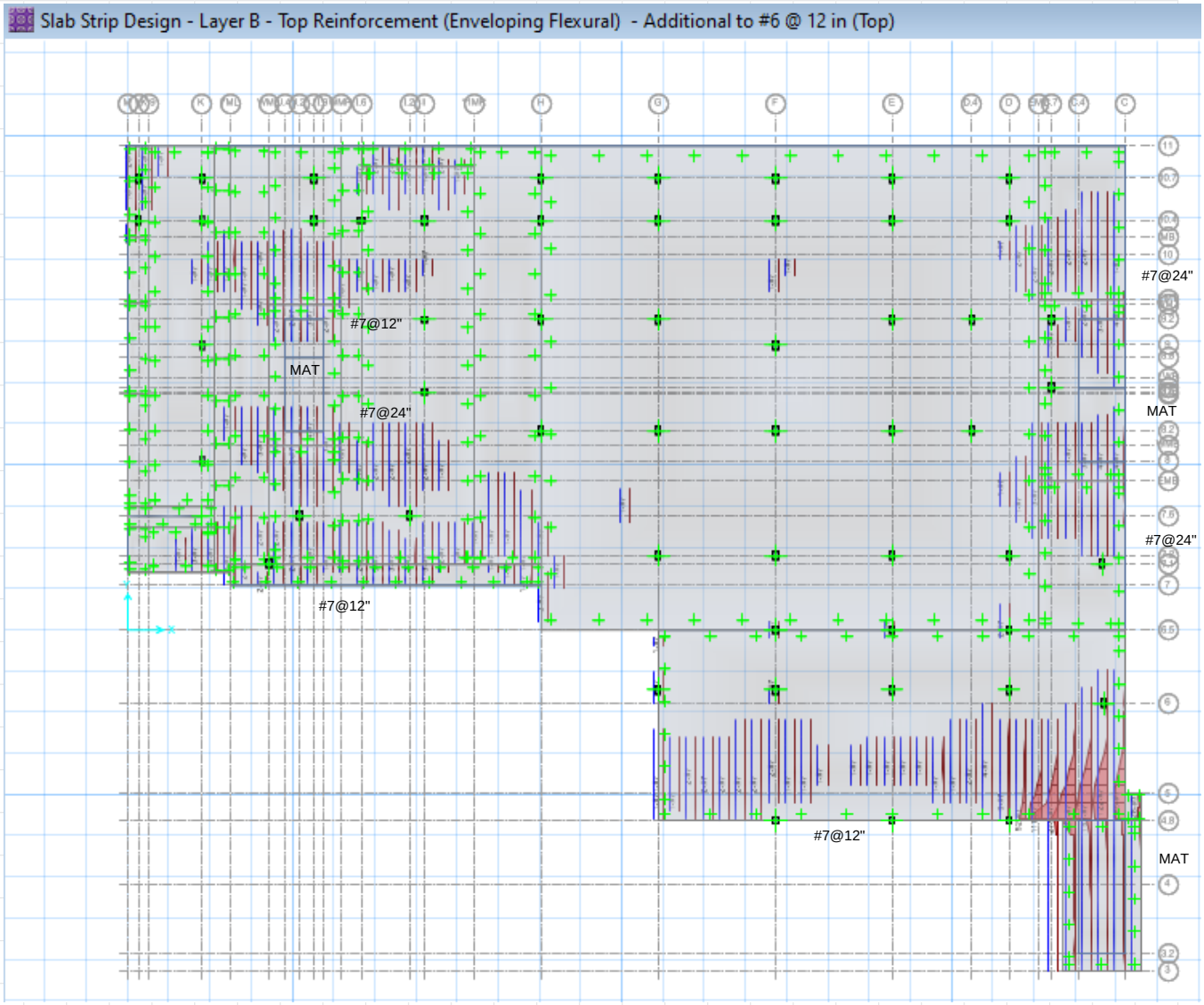
SAFE SOIL BEARING

FOUNDATION DESIGN



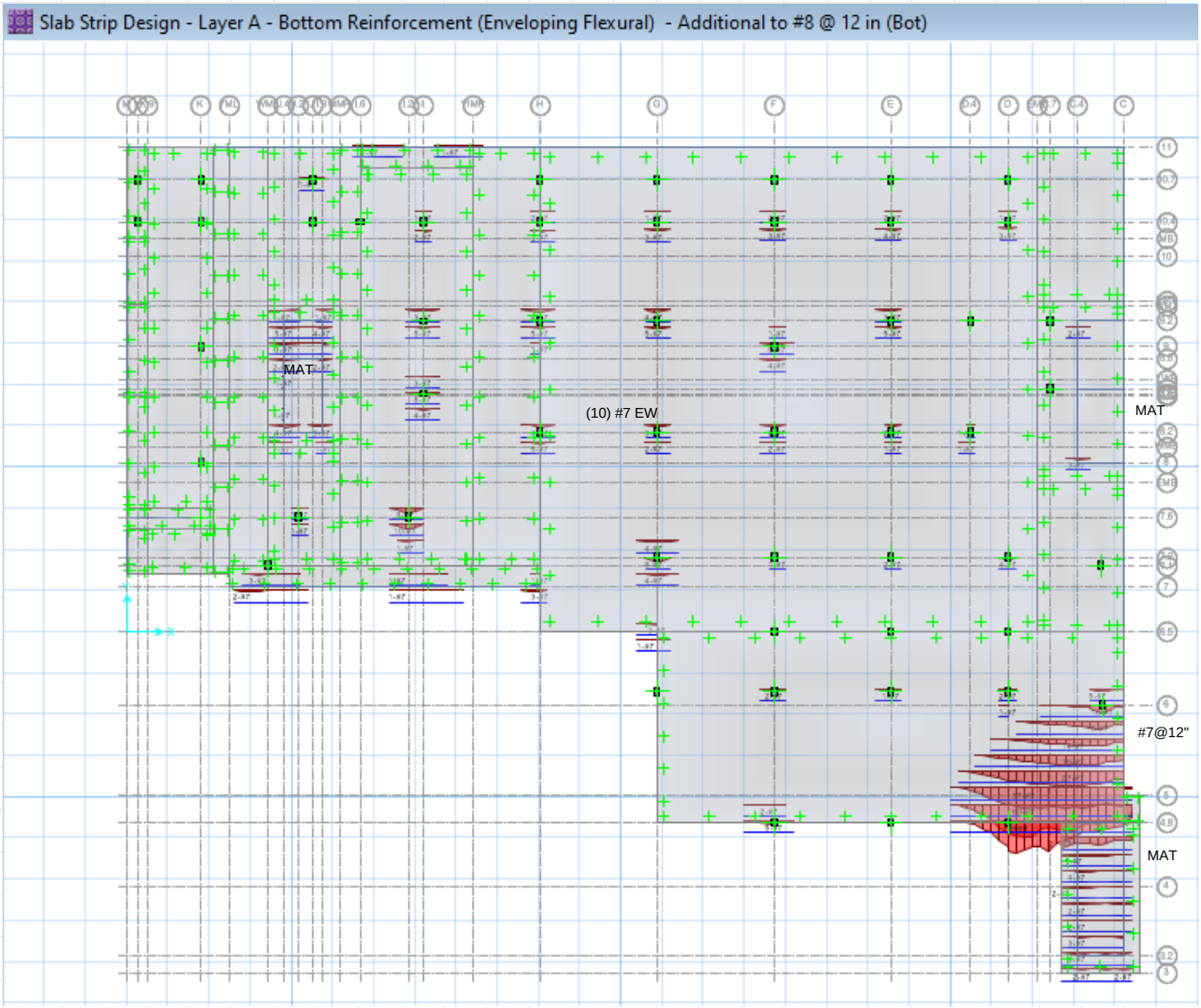
SAFE TOP REINF (ENV)

FOUNDATION DESIGN



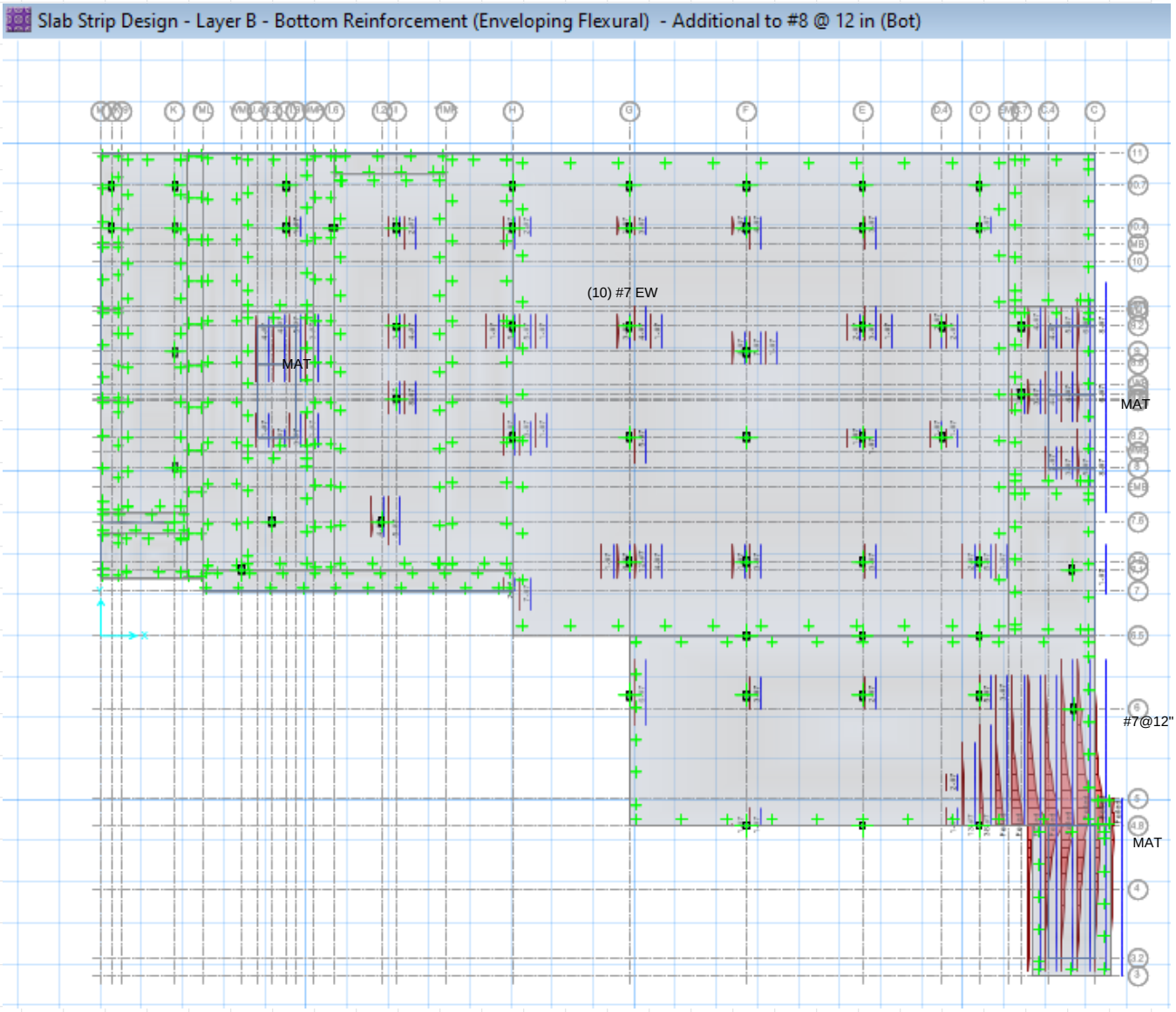
SAFE TOP REINF (ENV)

FOUNDATION DESIGN



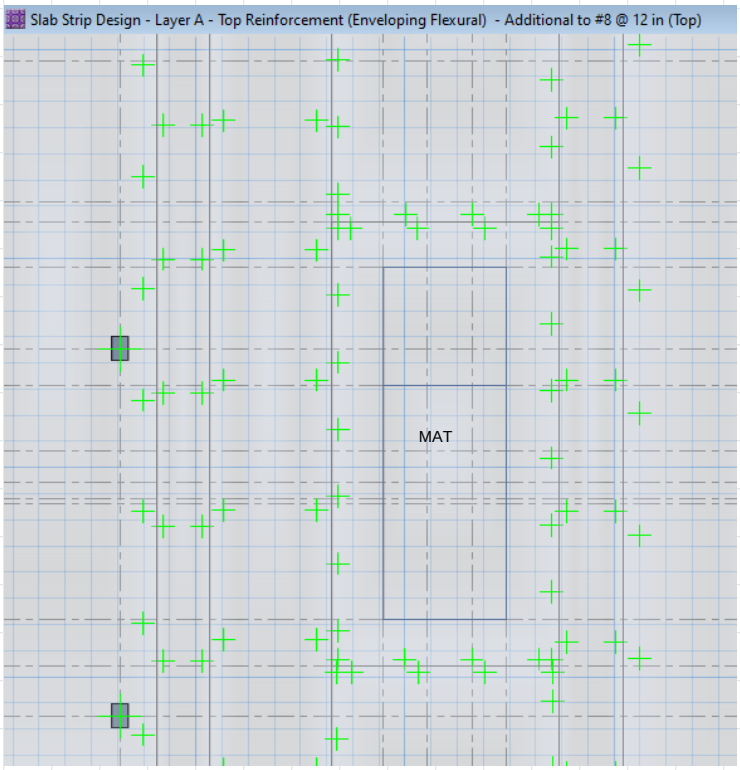
SAFE BOT REINF (ENV)

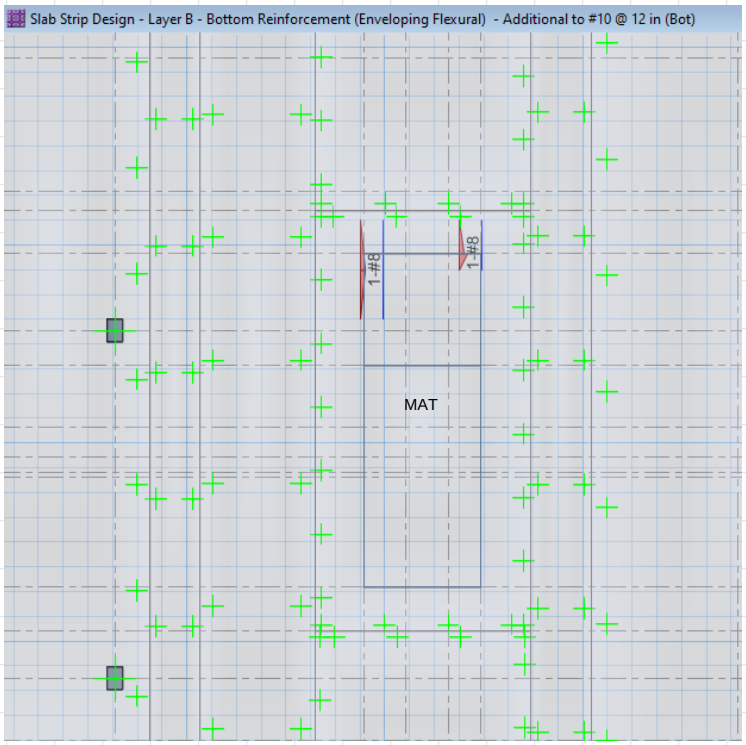
FOUNDATION DESIGN



SAFE BOT REINF (ENV)

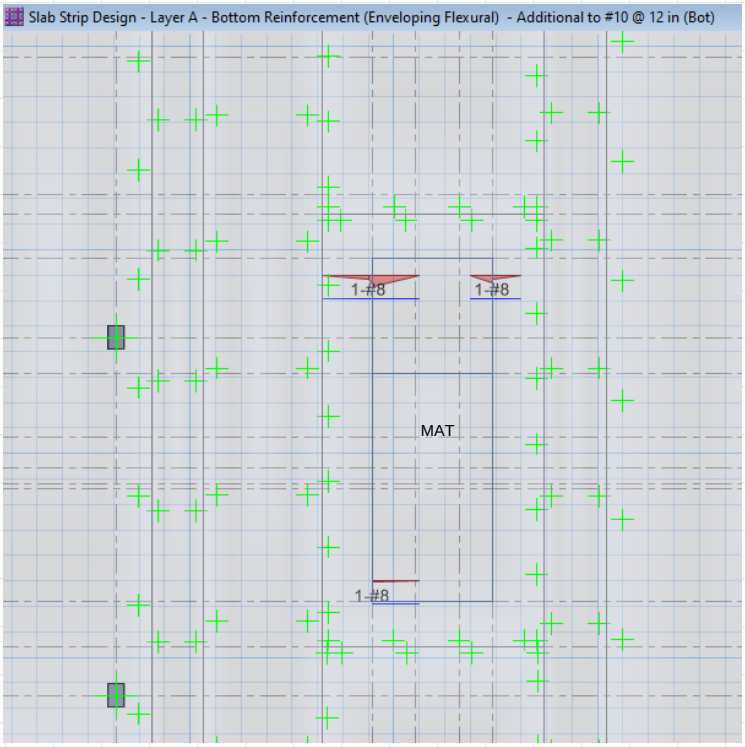
FOUNDATION DESIGN

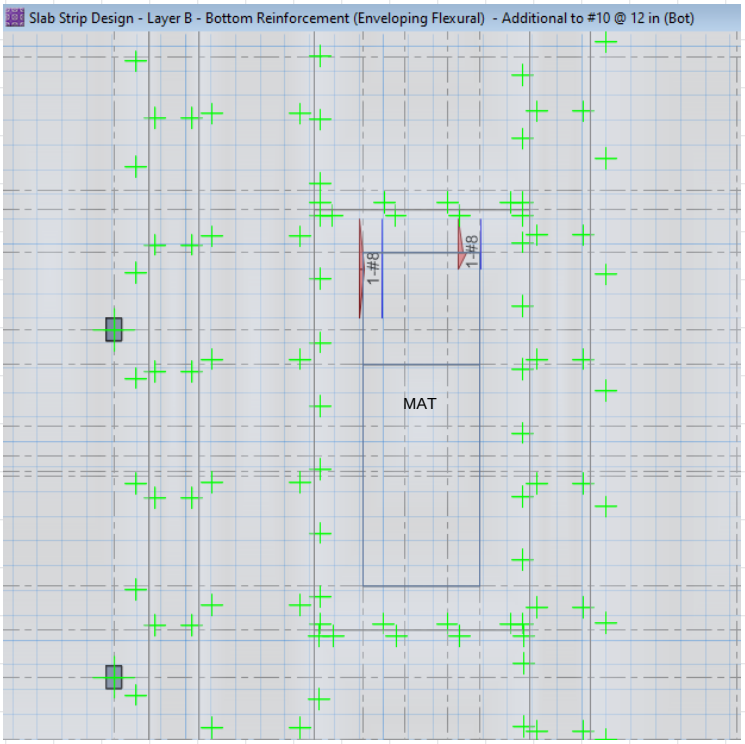




SAFE TOP REINF (ENV)

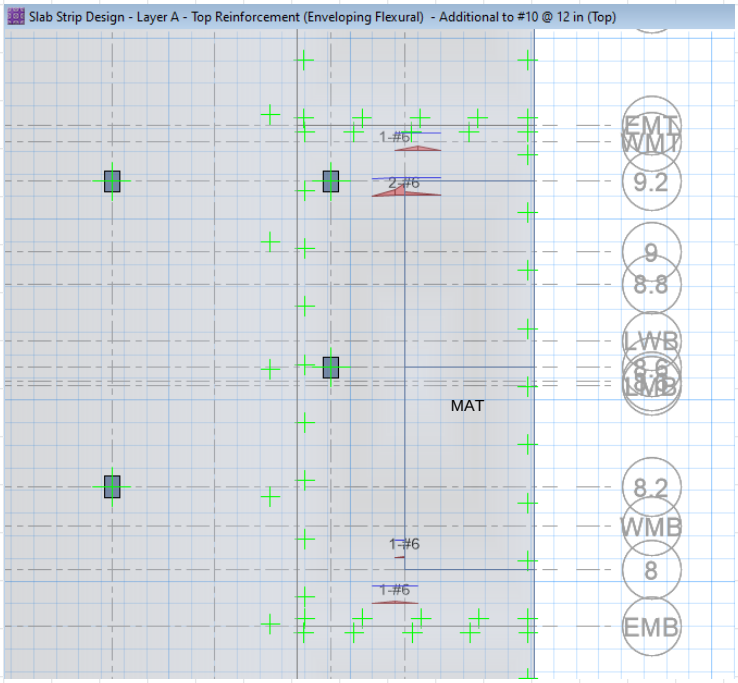
FOUNDATION DESIGN

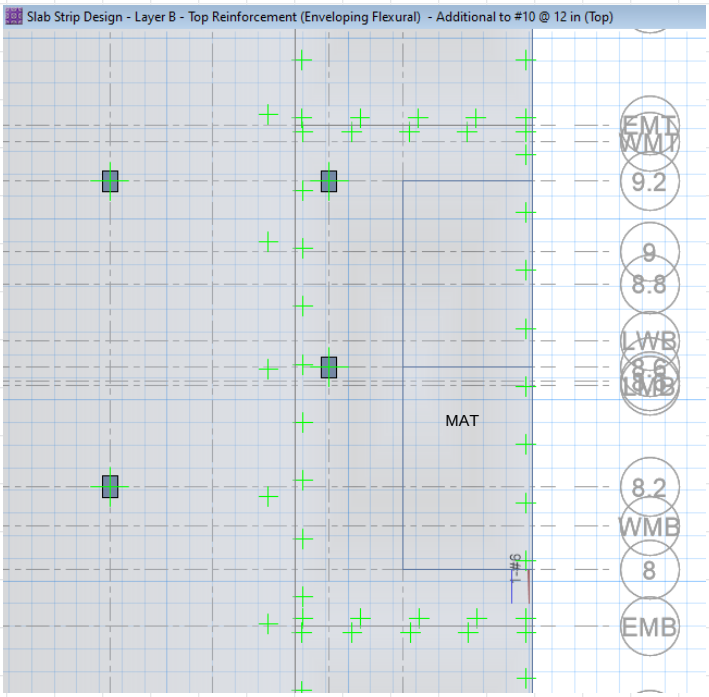




SAFE BOT REINF (ENV)

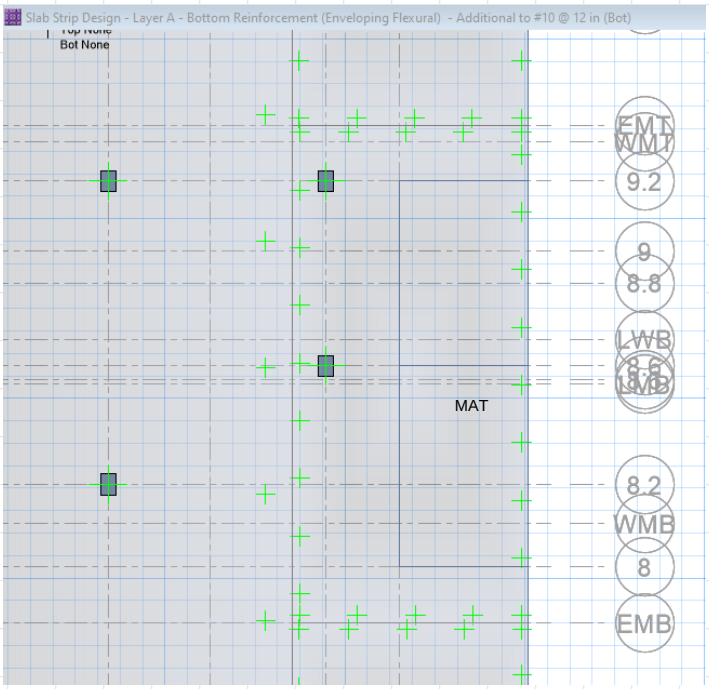
FOUNDATION DESIGN

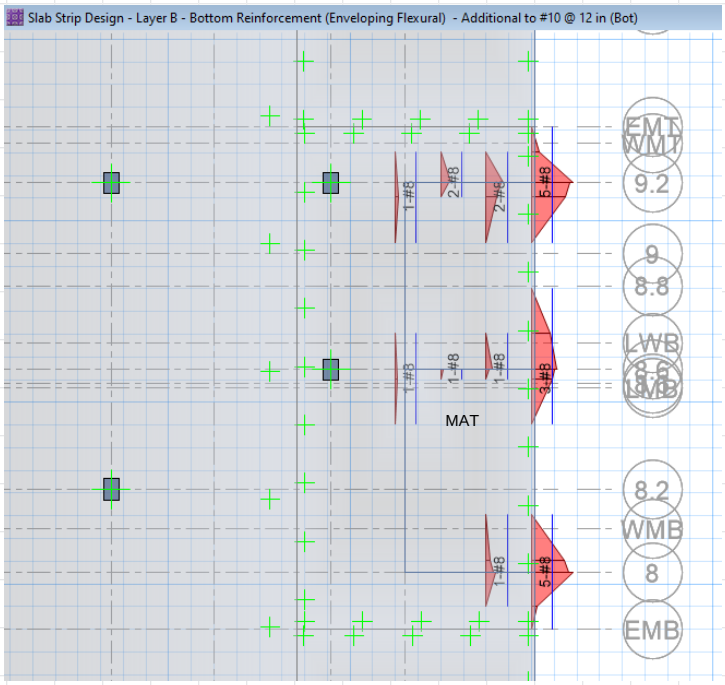




SAFE TOP REINF (ENV)

FOUNDATION DESIGN





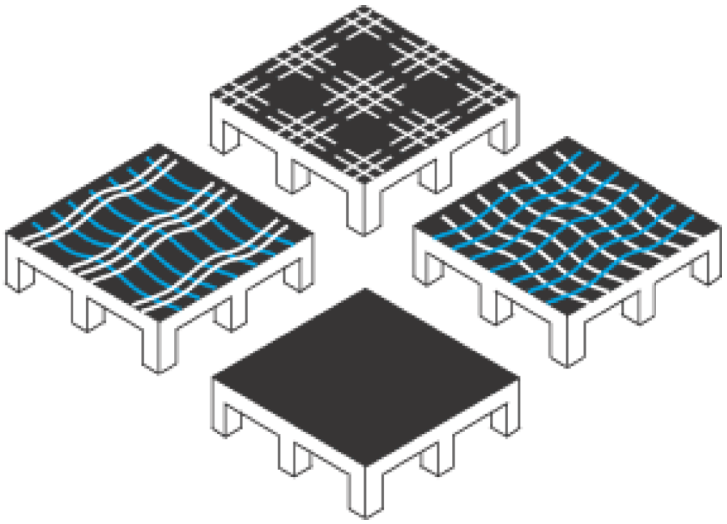
SAFE BOT REINF (ENV)

SLAB DESIGN

MERCER ISLAND APARTMENTS

PERMIT CALCULATIONS

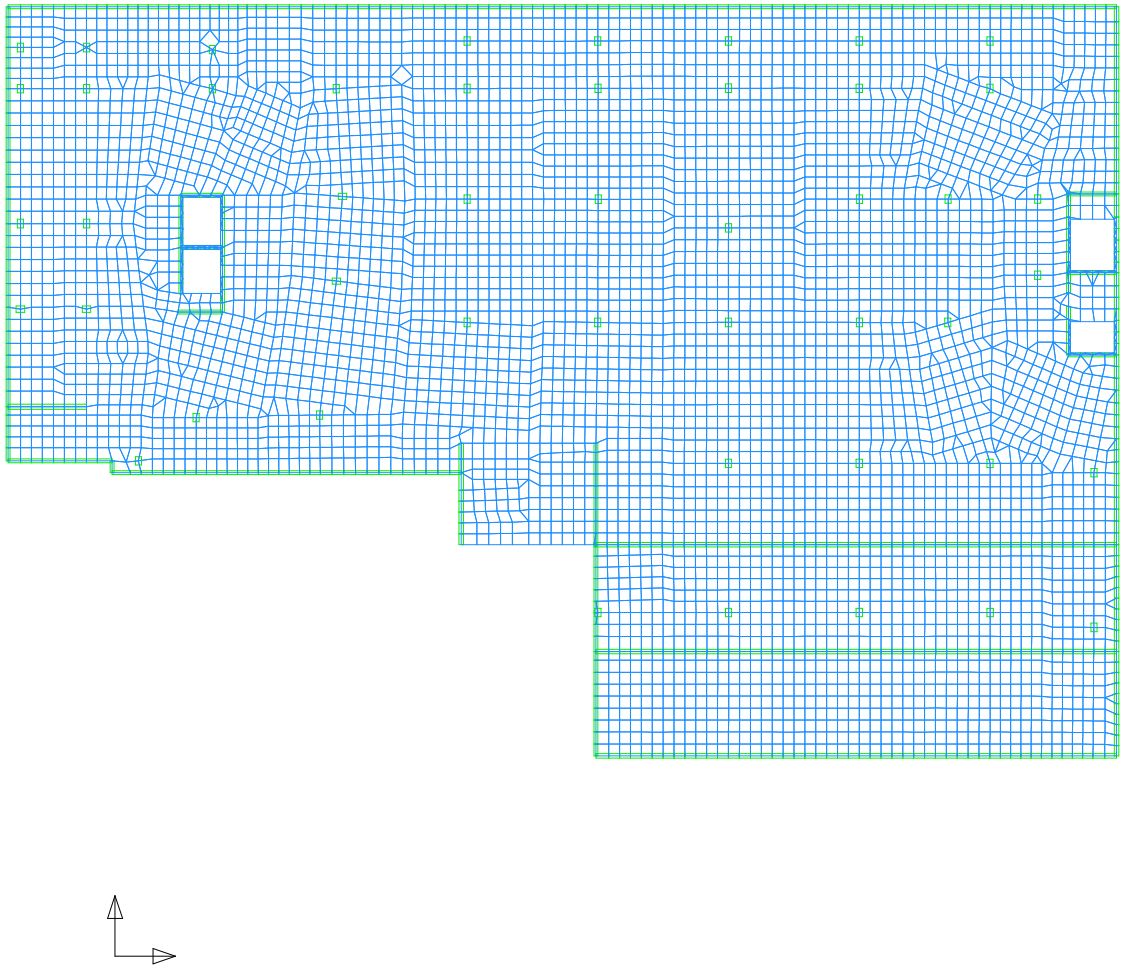
9/30/21



LEVEL P1 MILD SLAB (9-28-21)_KR v2.0.cpt
10/1/2021

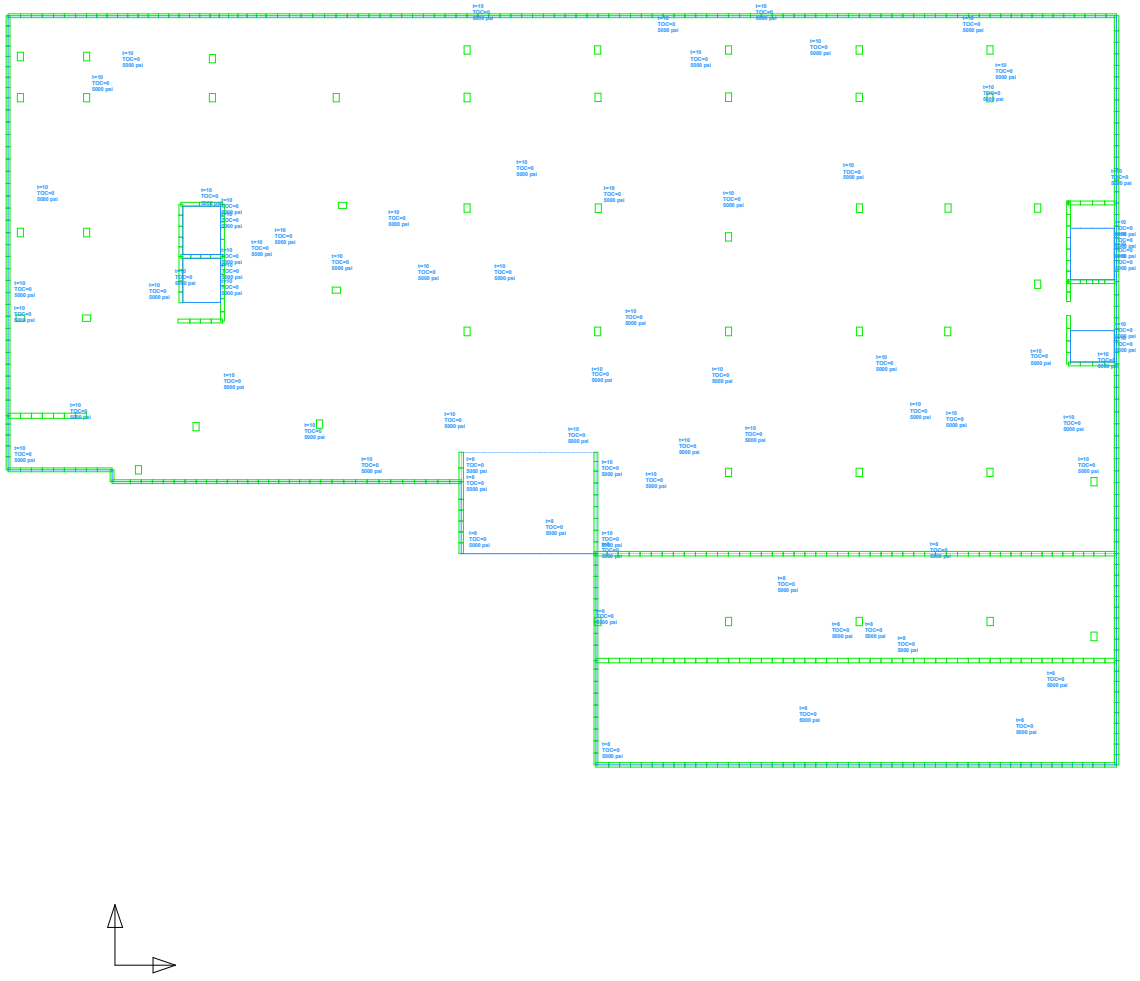
Element: Standard Plan

Element: Wall Elements Below; Column Elements Below; Slab Elements; User Notes; User Lines; User Dimensions;
Scale = 1:500



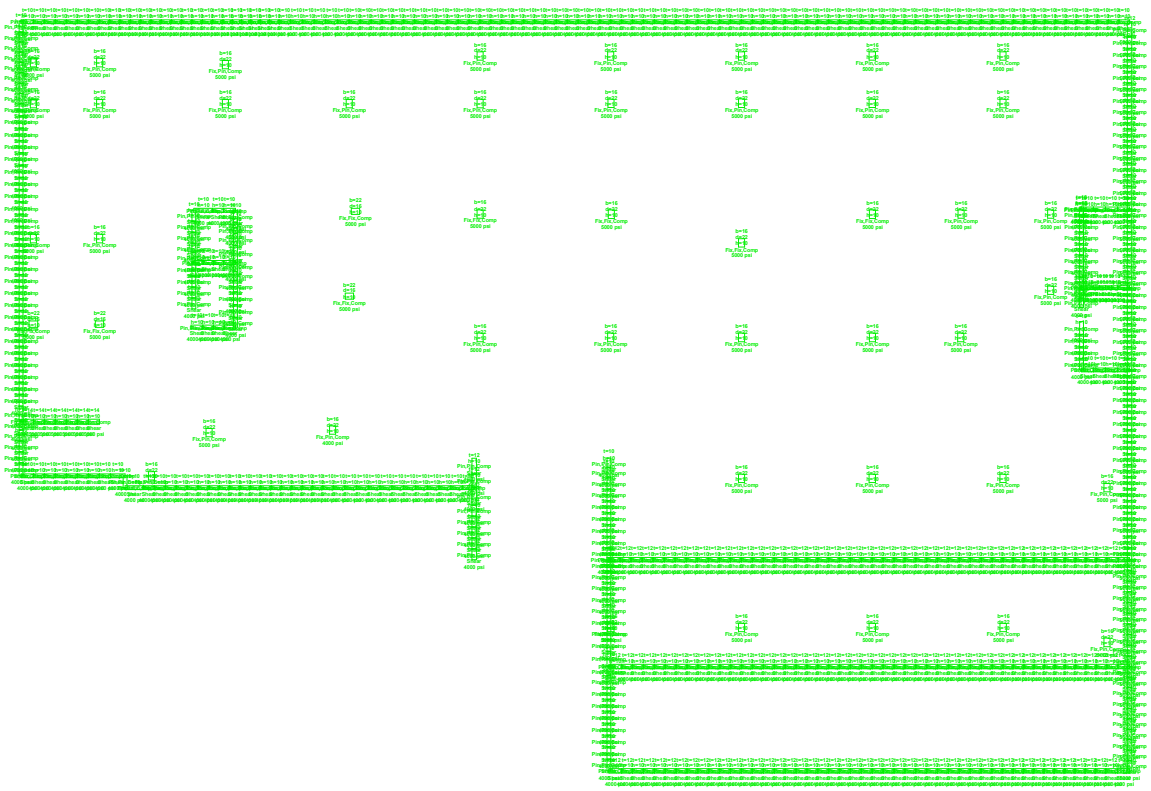
Element: Slab Summary Plan

Element; User Lines; User Notes; User Dimensions; Wall Elements Below; Wall Elements Above; Column Elements Below; Column Elements Above; Point Springs; Point Spring Icons; Line Springs; Line Spring Icons; Slab Elements; Slab Element Outline Only; Slab Element Thicknesses; Slab Element Elevations; Slab Element Concrete Models;
Scale = 1:500



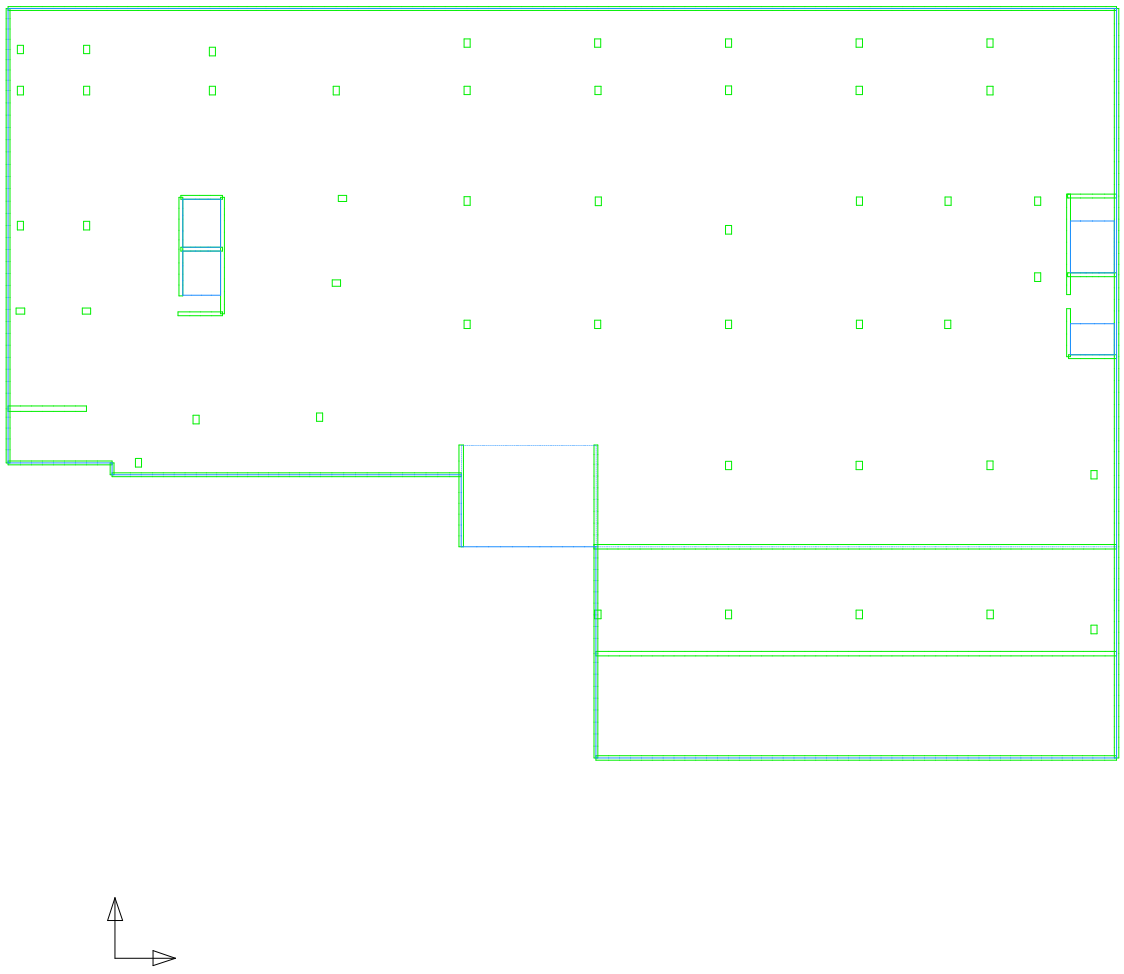
Element: Supports Below Slab Summary Plan

Element; User Lines; User Notes; User Dimensions; Wall Elements Below; Wall Element Thicknesses; Wall Element Heights; Wall Element Fixity; Wall Element Shear Fixity; Wall Element Concrete Models; Column Elements Below; Column Element Dimensions; Column Element Heights; Column Element Fixity; Column Element Concrete Models; Point Springs; Point Spring Icons; Point Spring Values; Point Spring Elevations; Line Springs; Line Spring Icons; Line Spring Values; Line Spring Elevations;
Scale = 1:500



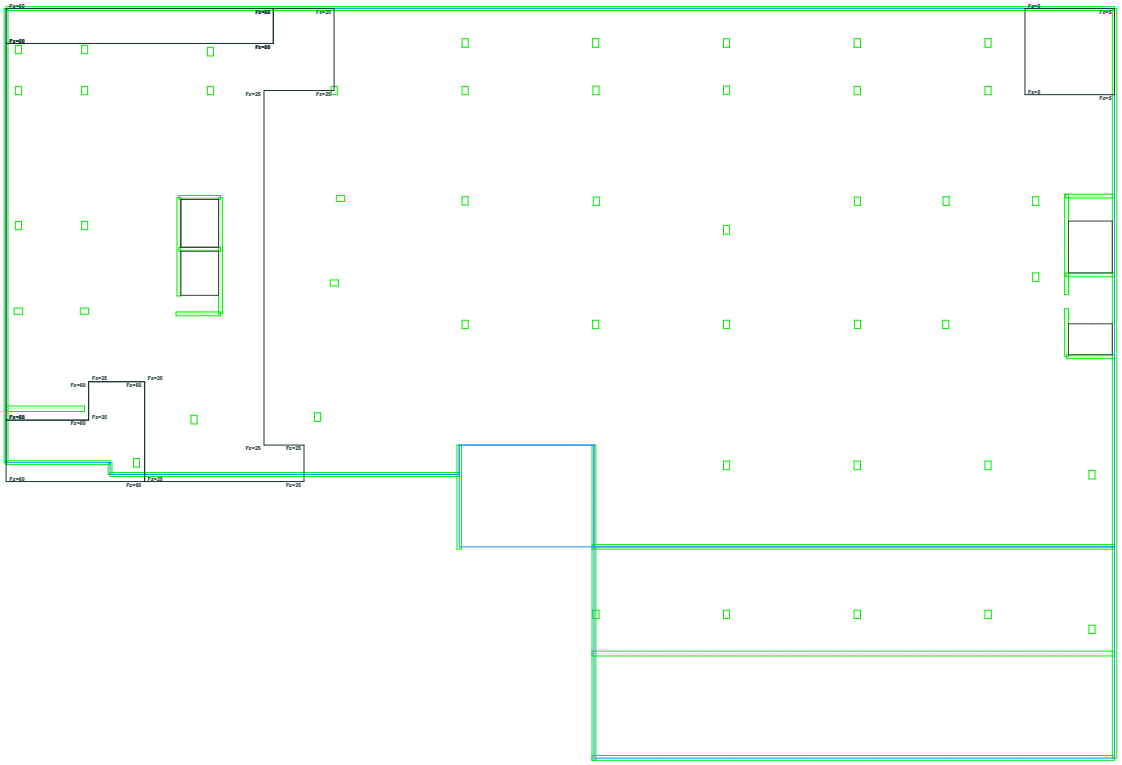
Temporary Construction (At Stressing) Loading: All Loads

Temporary Construction (At Stressing) Loading: User Lines; User Notes; User Dimensions; Point Loads; Point Load Icons; Point Load Values; Line Loads; Line Load Icons; Line Load Values; Area Loads; Area Load Icons; Area Load Values; Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:200



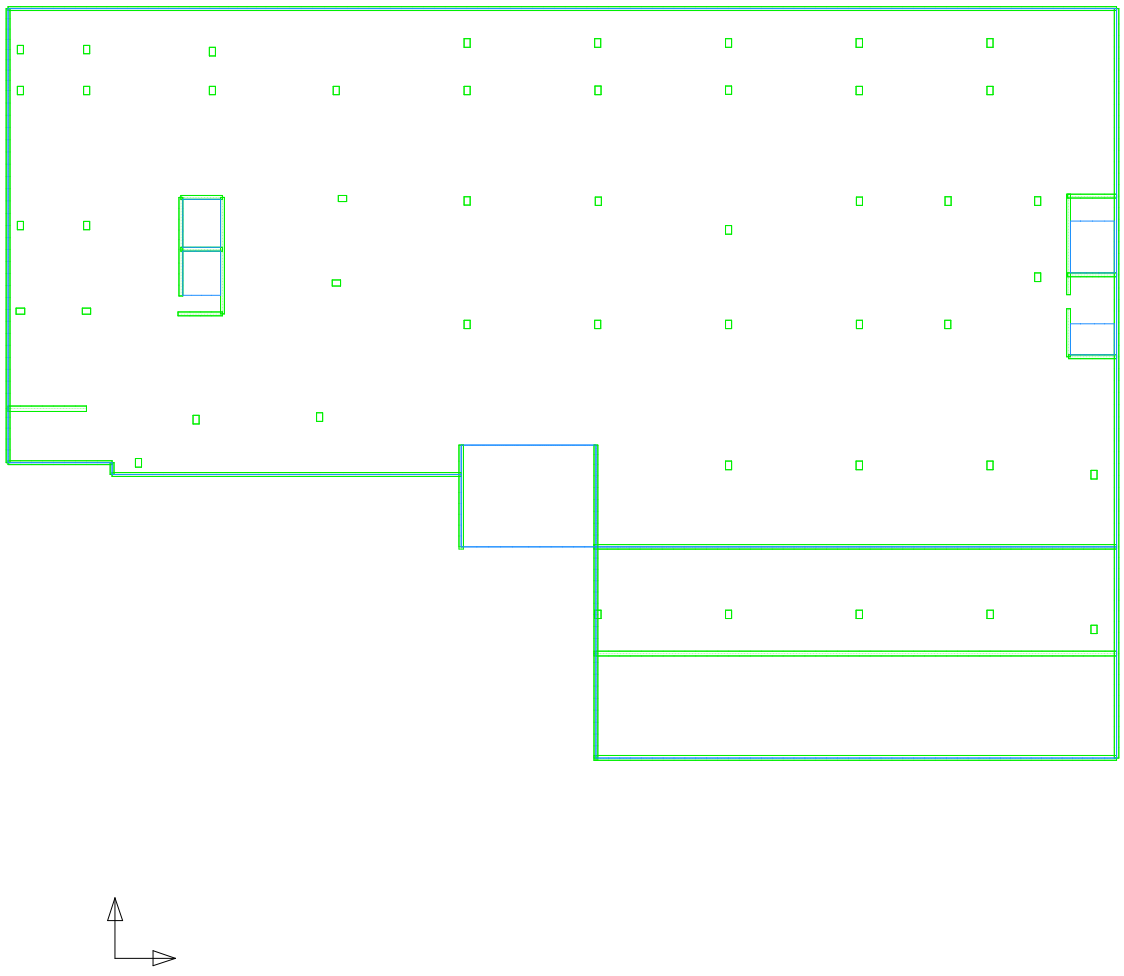
Other Dead Loading: All Loads Plan

Other Dead Loading; Point Loads; Point Load Values; Area Loads; Area Load Values; User Notes; User Lines; User Dimensions;
Mesh Input: Slab Areas; Slab Openings; Walls Below; Columns Below;
Element: Wall Element Outline Only; Slab Element Outline Only;
Scale = 1:500



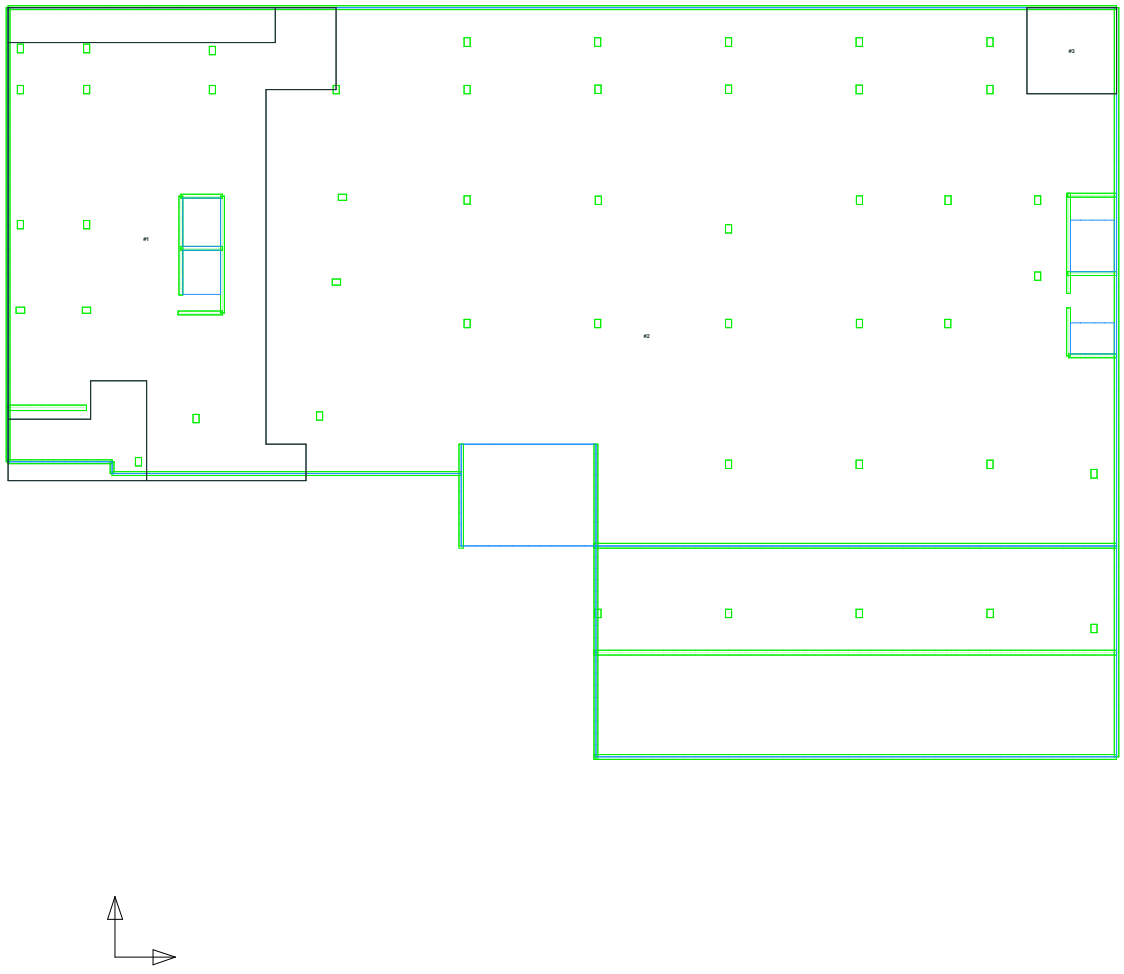
Live (Reducible) Loading: All Loads Plan

Live (Reducible) Loading: Point Loads; Point Load Icons; Point Load Values; Line Loads; Line Load Icons; Line Load Values; Area Loads; Area Load Icons; Area Load Values; User Notes; User Lines; User Dimensions;
Mesh Input: Slab Areas; Walls Below; Columns Below;
Element: Wall Elements Above; Wall Elements Below; Wall Element Outline Only; Column Elements Above; Column Elements Below; Slab Elements; Slab Element Outline Only;
Scale = 1:500



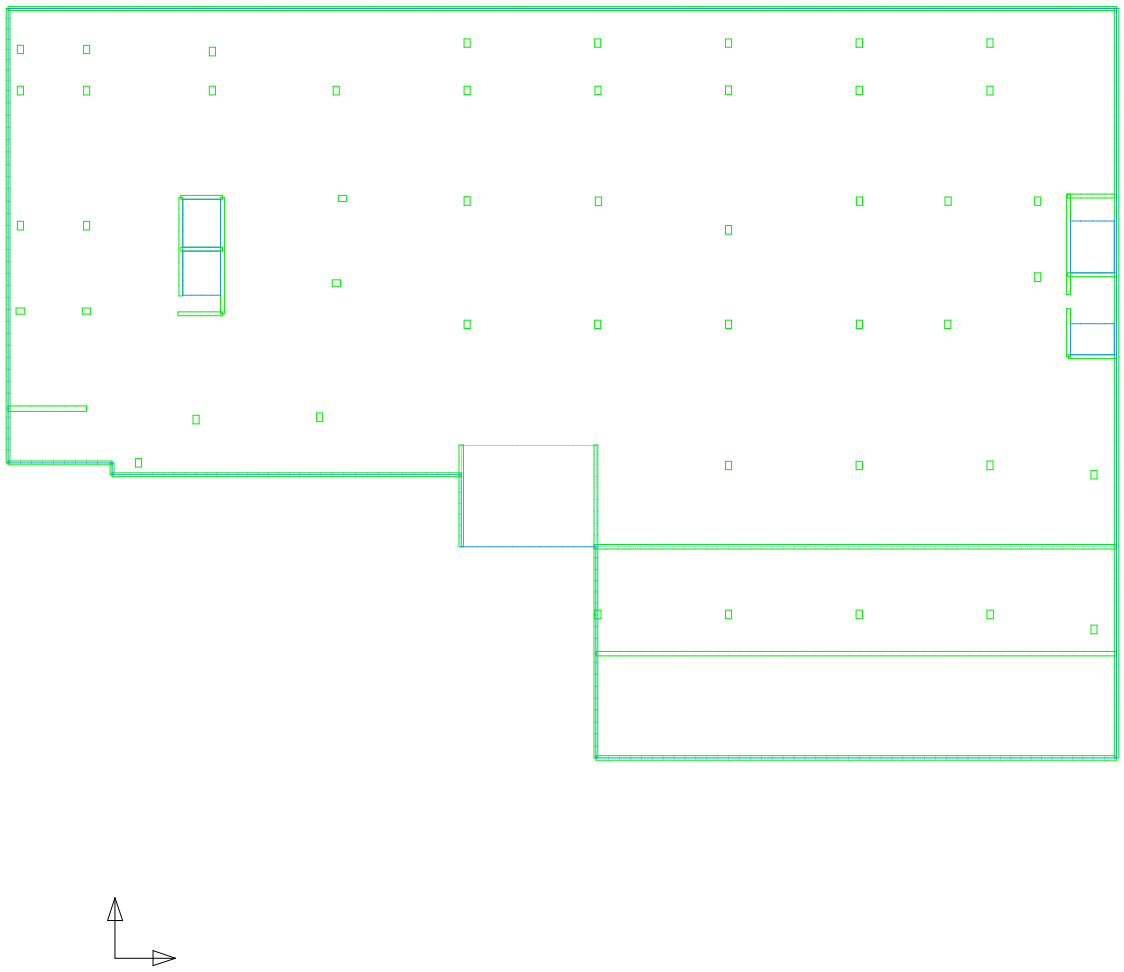
Live (Unreducible) Loading: All Loads Plan

Live (Unreducible) Loading: Area Loads; Area Load Numbers; User Lines;
Mesh Input: Slab Areas; Walls Below; Columns Below;
Element: Wall Elements Above; Wall Elements Below; Wall Element Outline Only; Column Elements Above; Column Elements Below; Slab Elements; Slab Element Outline Only;
Other Dead Loading: Area Loads;
Scale = 1:350



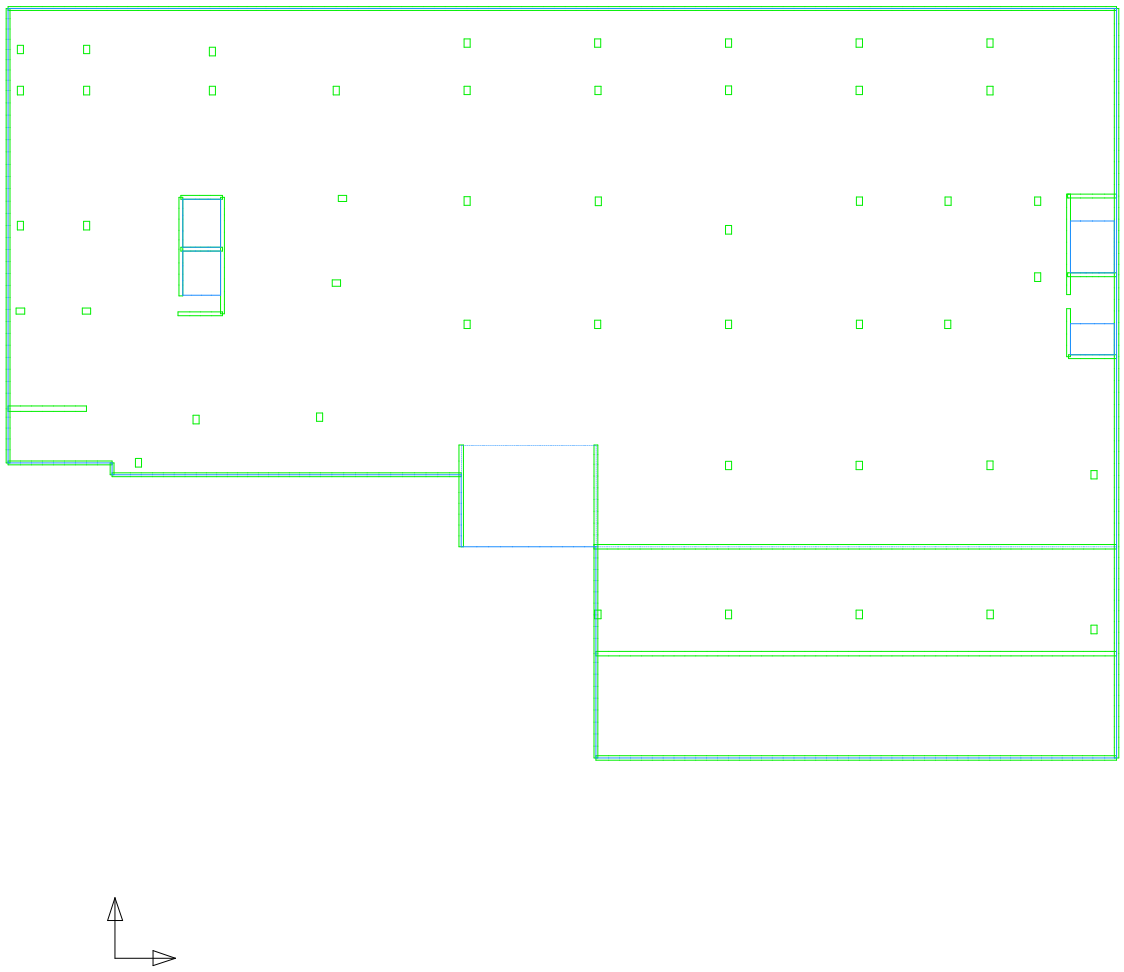
Live (Storage) Loading: All Loads Plan

Live (Storage) Loading: User Lines; User Notes; User Dimensions; Point Loads; Point Load Icons; Point Load Values; Line Loads; Line Load Icons; Line Load Values; Area Loads; Area Load Icons; Area Load Values; Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only; Scale = 1:500



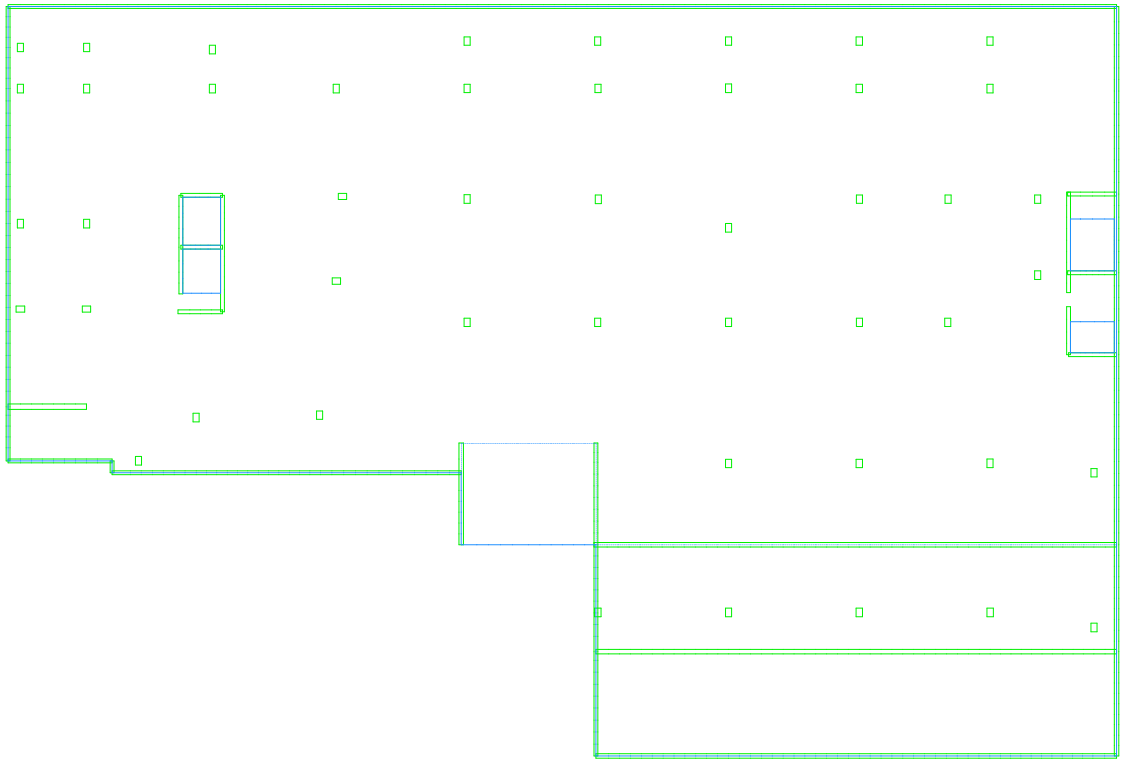
Live (Parking) Loading: All Loads Plan

Live (Parking) Loading: User Lines; User Notes; User Dimensions; Point Loads; Point Load Icons; Point Load Values; Line Loads; Line Load Icons; Line Load Values; Area Loads; Area Load Icons; Area Load Values; Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:000



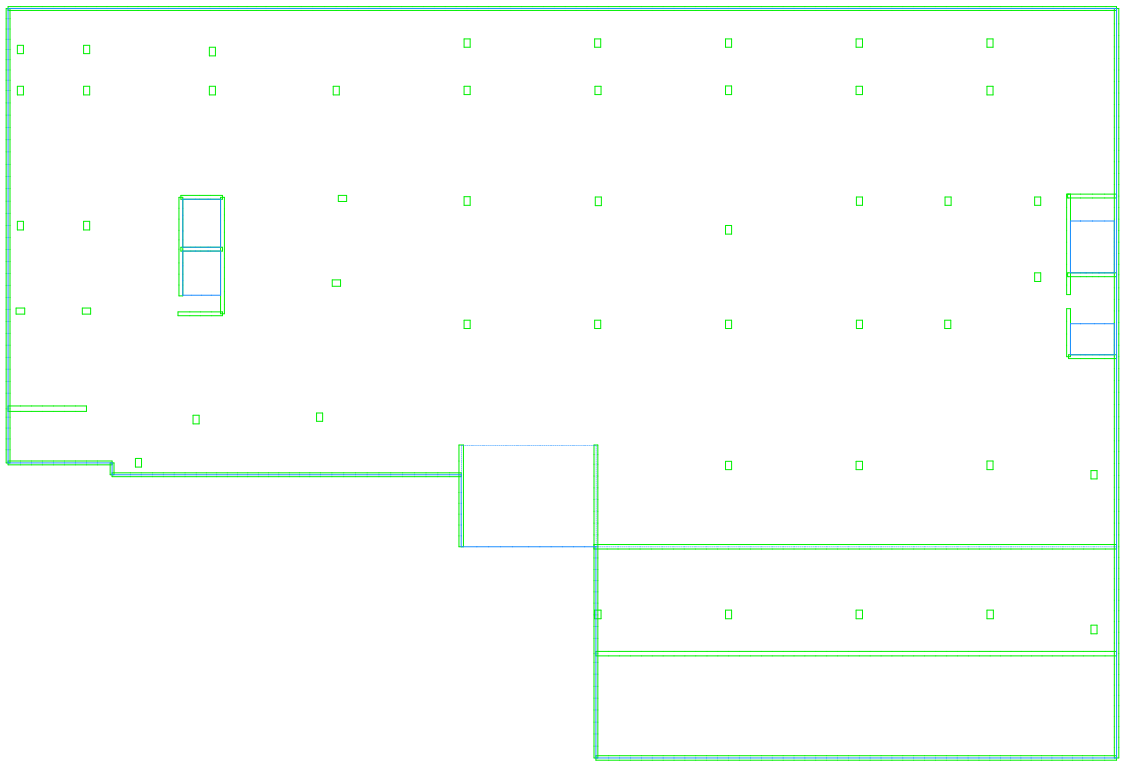
Live (Roof) Loading: All Loads Plan

Live (Roof) Loading: User Lines; User Notes; User Dimensions; Point Loads; Point Load Icons; Point Load Values; Line Loads; Line Load Icons; Line Load Values; Area Loads; Area Load Icons; Area Load Values; Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:500



Snow Loading: All Loads Plan

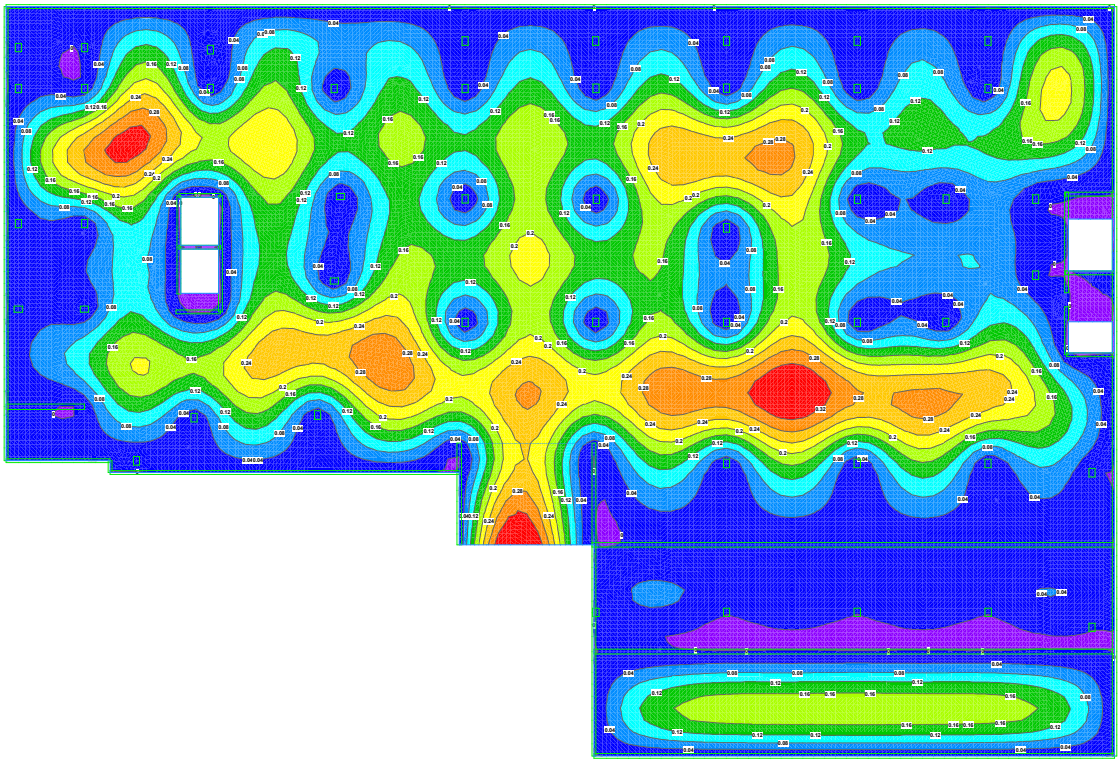
Snow Loading; User Lines; User Notes; User Dimensions; Point Loads; Point Load Icons; Point Load Values; Line Loads; Line Load Icons; Line Load Values; Area Loads; Area Load Icons; Area Load Values; Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:000



Service LC: D + L: Max Deflection Plan

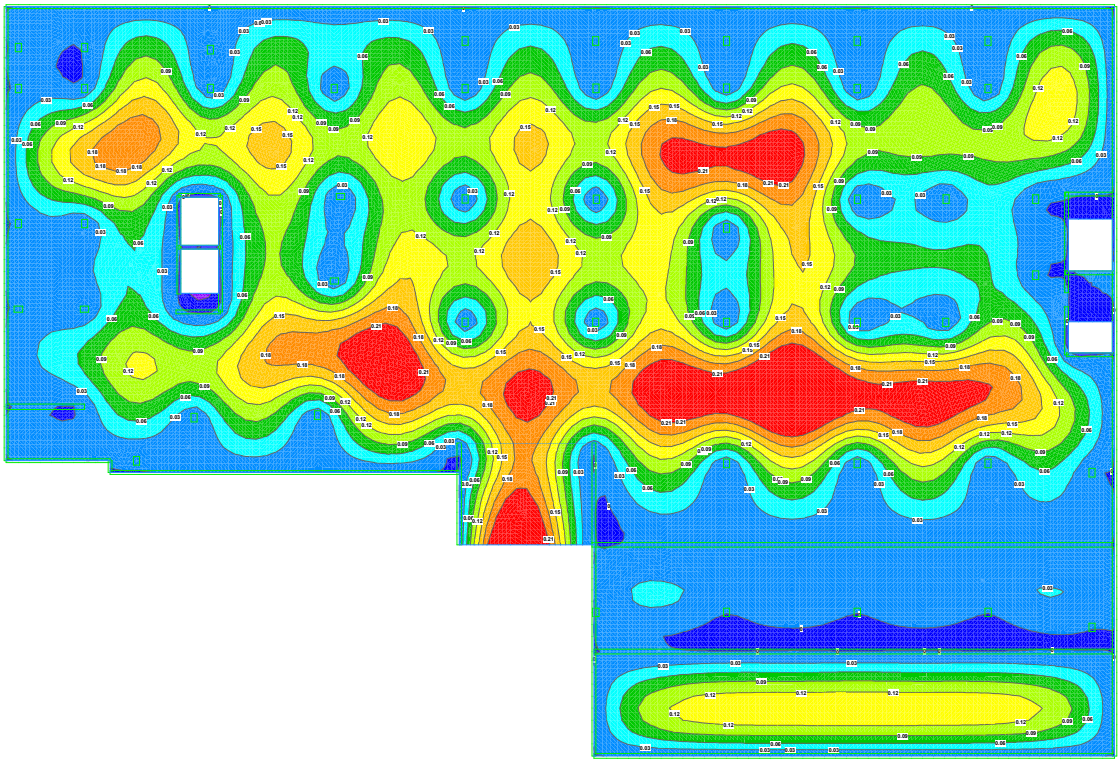
Service LC: D + L: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:202
Service LC: D + L - Vertical Deflection Plot (Maximum Values)

Min Value = -0.0261 inches @ (10.0, 143.0) Max Value = 0.3082 inches @ (66.24,89.29)



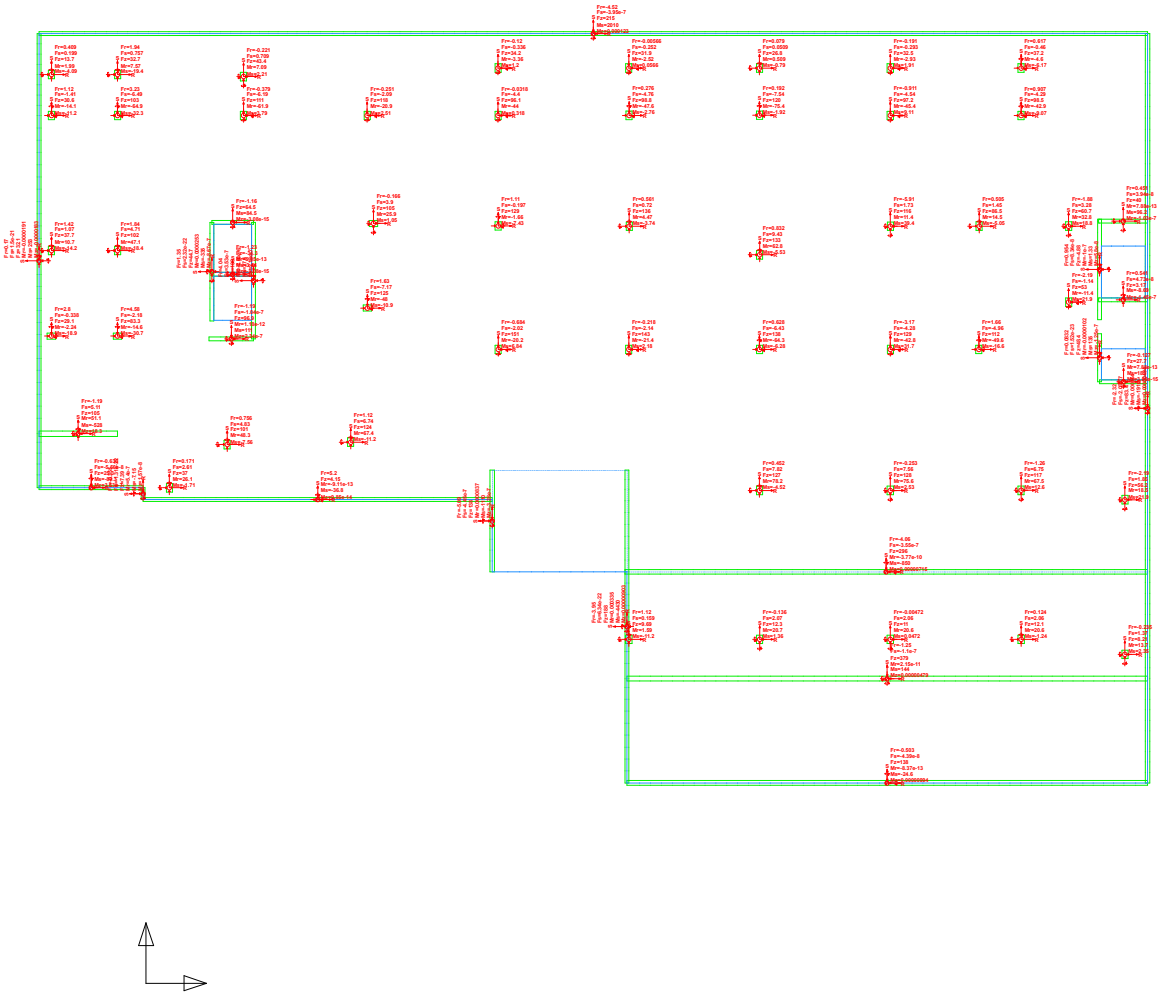
Service LC: D + L: Min Deflection Plan

Service LC: D + L: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:202
Service LC: D + L - Vertical Deflection Plot (Minimum Values)
-0.03 0 0.03 0.06 0.09 0.12 0.15 0.18 0.21
Min Value = -0.04156 inches @ (10.0,143.0) Max Value = 0.2067 inches @ (66.24,69.29)



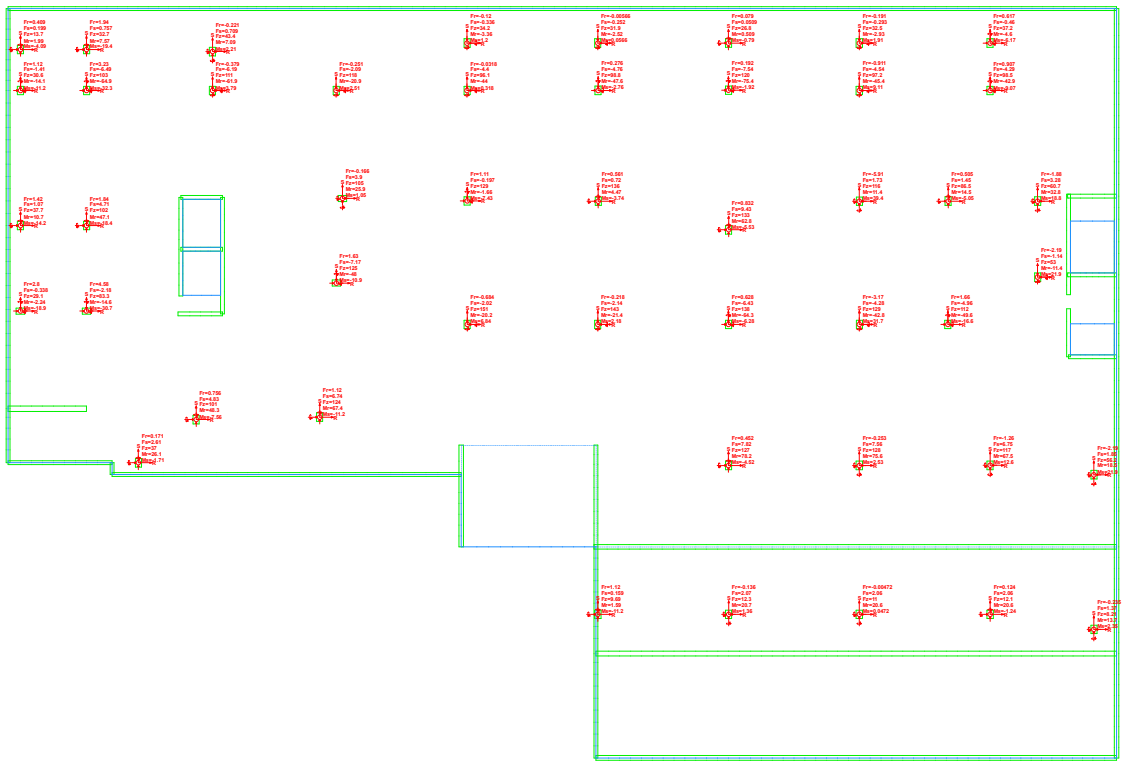
Factored LC: 1.4D: Std Reactions Plan

Factored LC: 1.4D: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:600
Factored LC: 1.4D - Reaction Plot: (Wall Below,Column Below,Point Spring,Line Spring,Point Support,Line Support)(Fr,Fa,Fz,Mr,Mx,My)(Standard Contest)



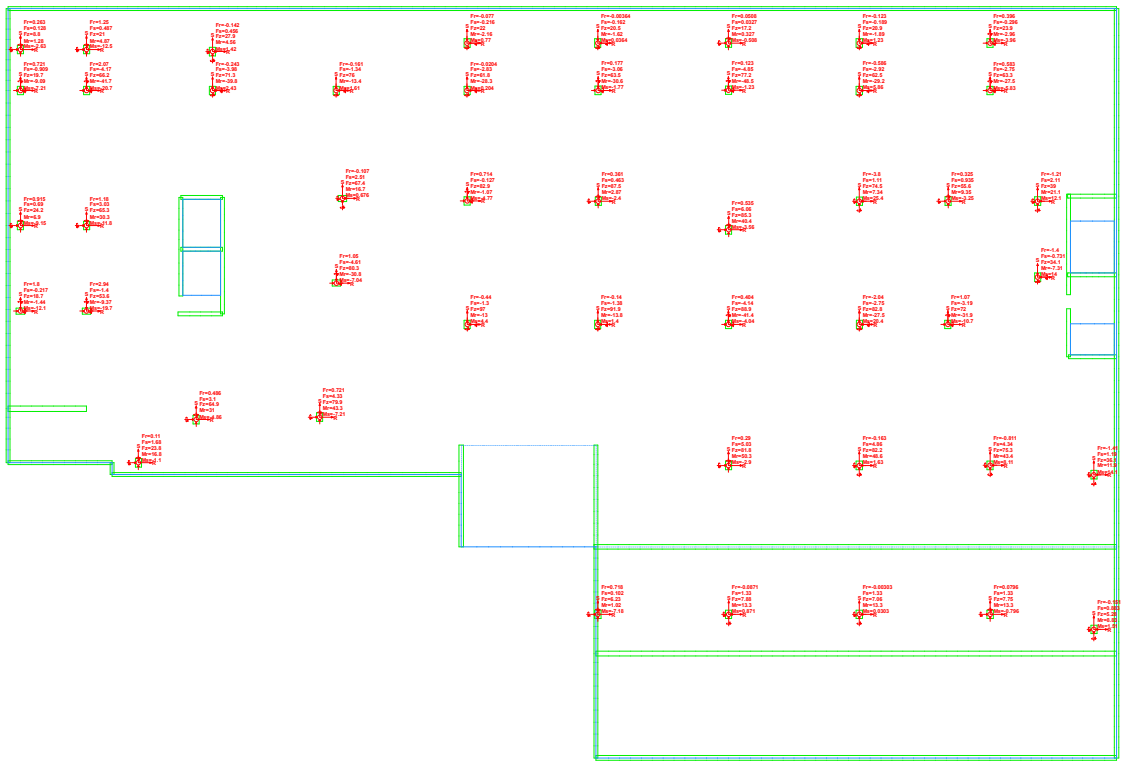
Factored LC: 1.4D: Max Reactions Plan

Factored LC: 1.4D: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:600
Factored LC: 1.4D - Reaction Plot: (Column Below)(Fz,Fx,Fz,Mr,Mx,My)(Max Fz Contour)



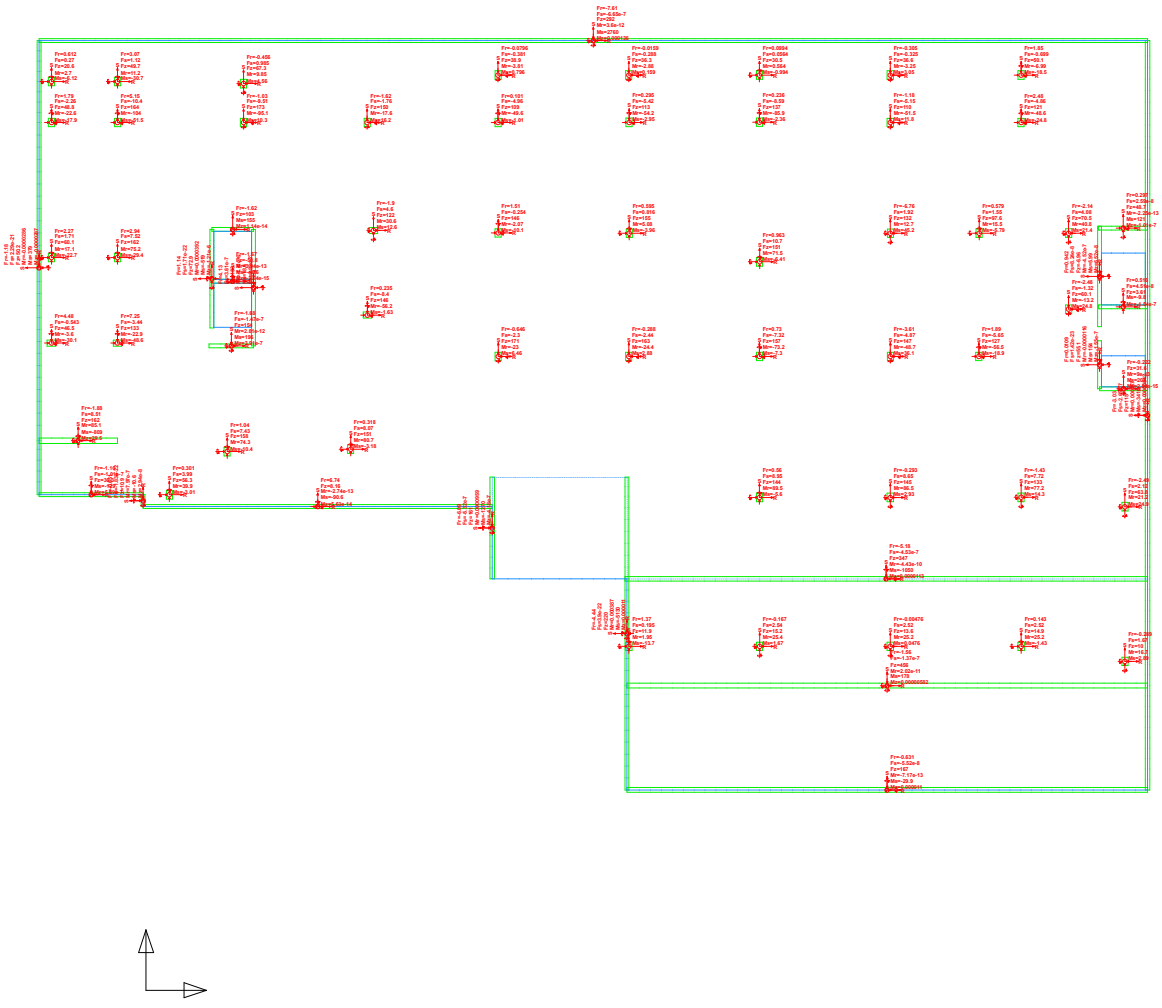
Factored LC: 1.4D: Min Reactions Plan

Factored LC: 1.4D: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:600
Factored LC: 1.4D - Reaction Plot: (Column Below)(Fz,Fx,Fz,Mr,Mx,Mz)(Min Fz Context)



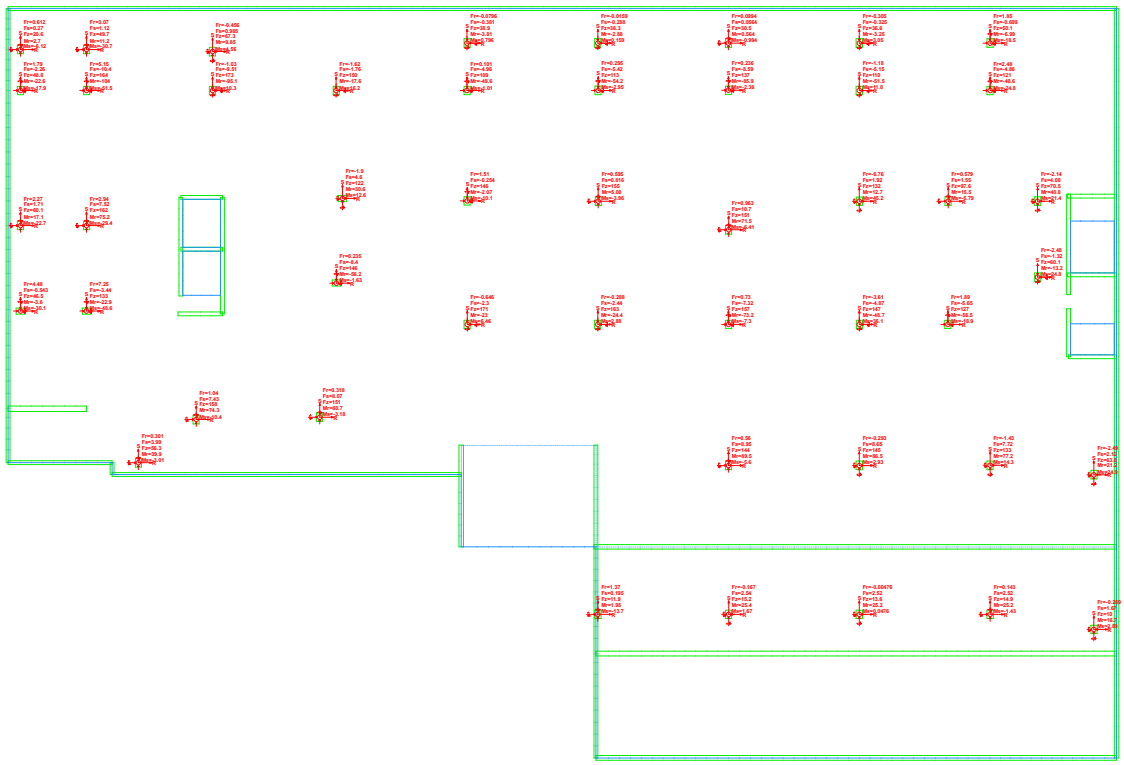
Factored LC: 1.2D + 1.6L + 0.5Lr: Std Reactions Plan

Factored LC: 1.2D + 1.6L + 0.5Lr: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:600
Factored LC: 1.2D + 1.6L + 0.5Lr - Reaction Plot: (Wall Below,Column Below,Point Spring,Line Spring,Point Support,Line Support)(Fr,Fx,Fz,Mr,Mx,Mz)(Standard Context)



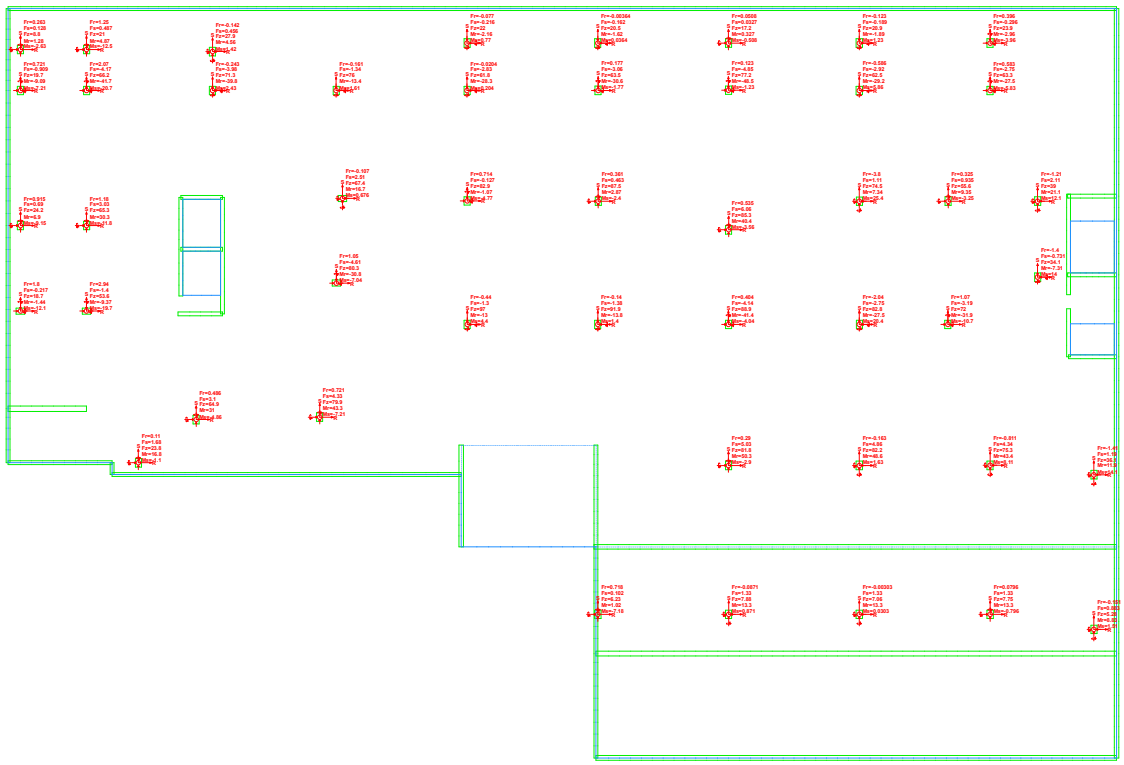
Factored LC: 1.2D + 1.6L + 0.5Lr: Max Reactions Plan

Factored LC: 1.2D + 1.6L + 0.5Lr: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:600
Factored LC: 1.2D + 1.6L + 0.5Lr - Reaction Plot: (Column Below)(Fr,Fa,Fz,Mr,Ma,Mz)(Max Fz Contact)



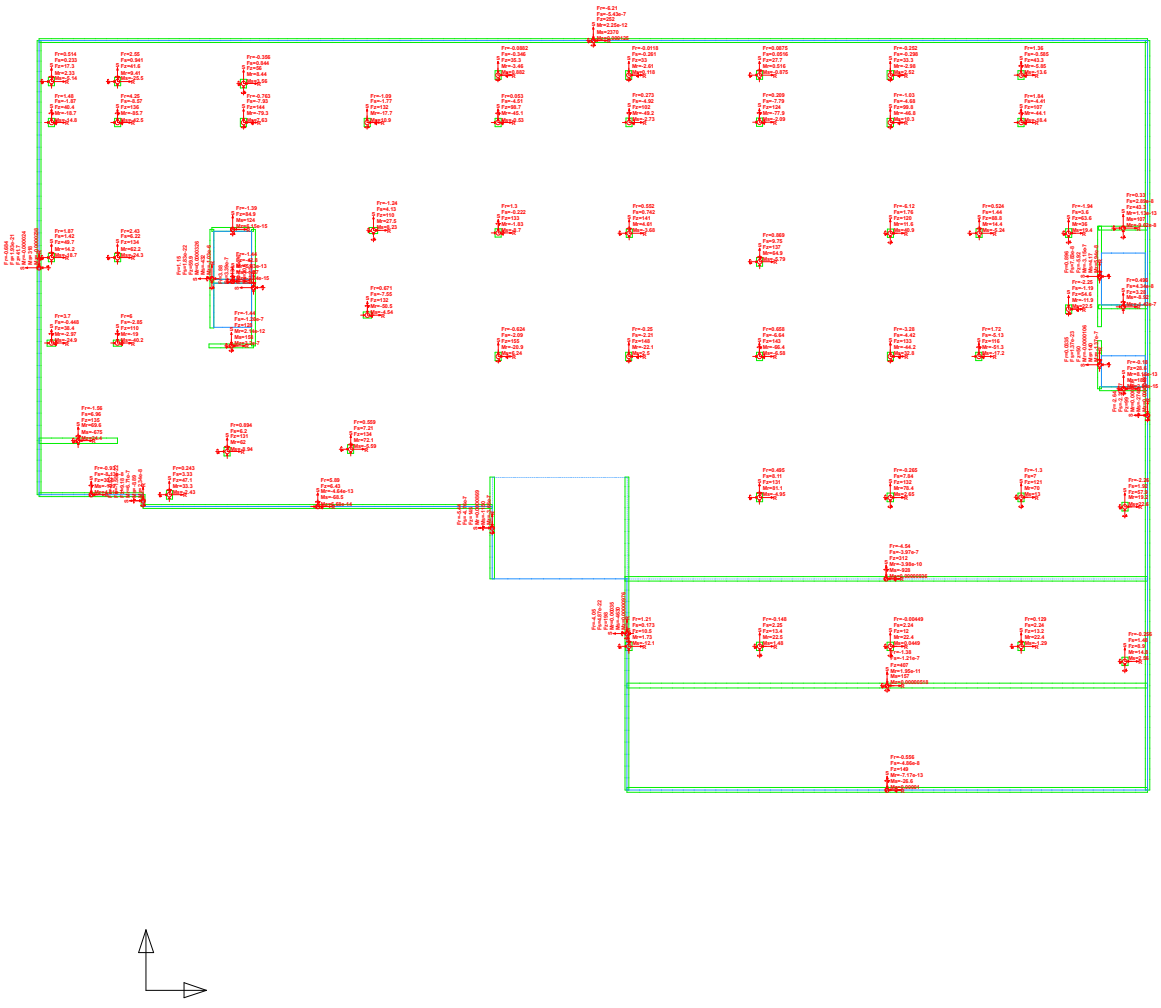
Factored LC: 1.2D + 1.6L + 0.5Lr: Min Reactions Plan

Factored LC: 1.2D + 1.6L + 0.5Lr: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:950
Factored LC: 1.2D + 1.6L + 0.5Lr - Reaction Plot: (Column Below)(Fr,Fa,Fx,Mr,Mx,My)(Min Fz Contact)



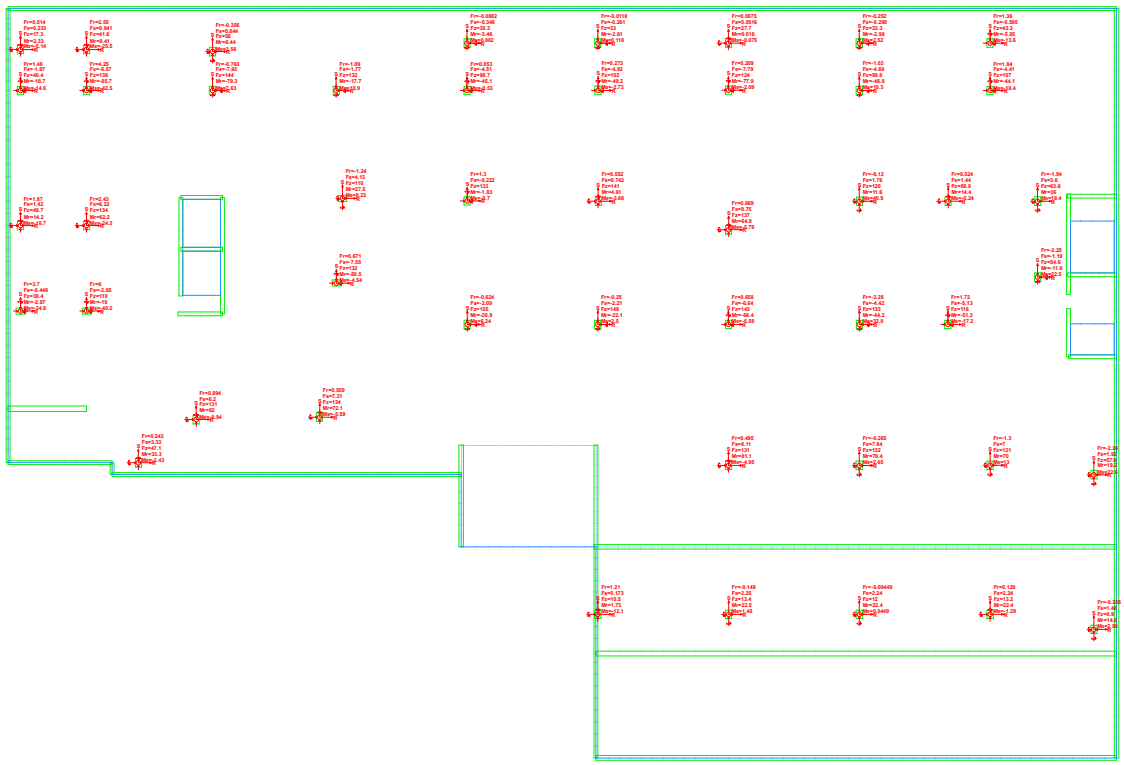
Factored LC: 1.2D + f1L + 1.6Lr: Std Reactions Plan

Factored LC: 1.2D + f1L + 1.6Lr: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:600
Factored LC: 1.2D + f1L + 1.6Lr - Reaction Plot: (Wall Below,Column Below,Point Spring,Line Spring,Point Support,Line Support)(Fr,Fx,Fz,Mr,Mx,Mz)(Standard Contest)



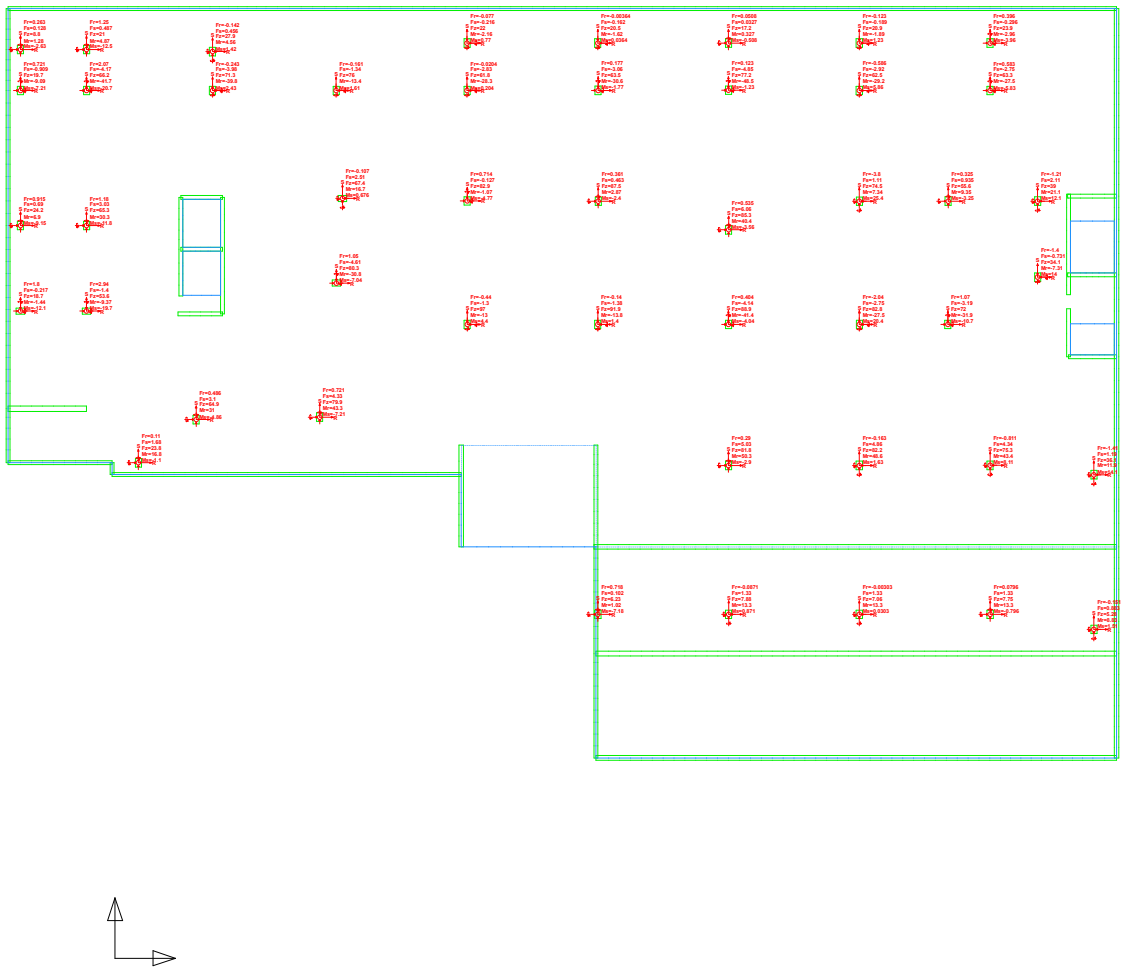
Factored LC: 1.2D + f1L + 1.6Lr: Max Reactions Plan

Factored LC: 1.2D + f1L + 1.6Lr: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:600
Factored LC: 1.2D + f1L + 1.6Lr - Reaction Plot: (Column Below)(Fr,Fx,Fz,Mr,Mx,Mz)(Max Fx Contest)



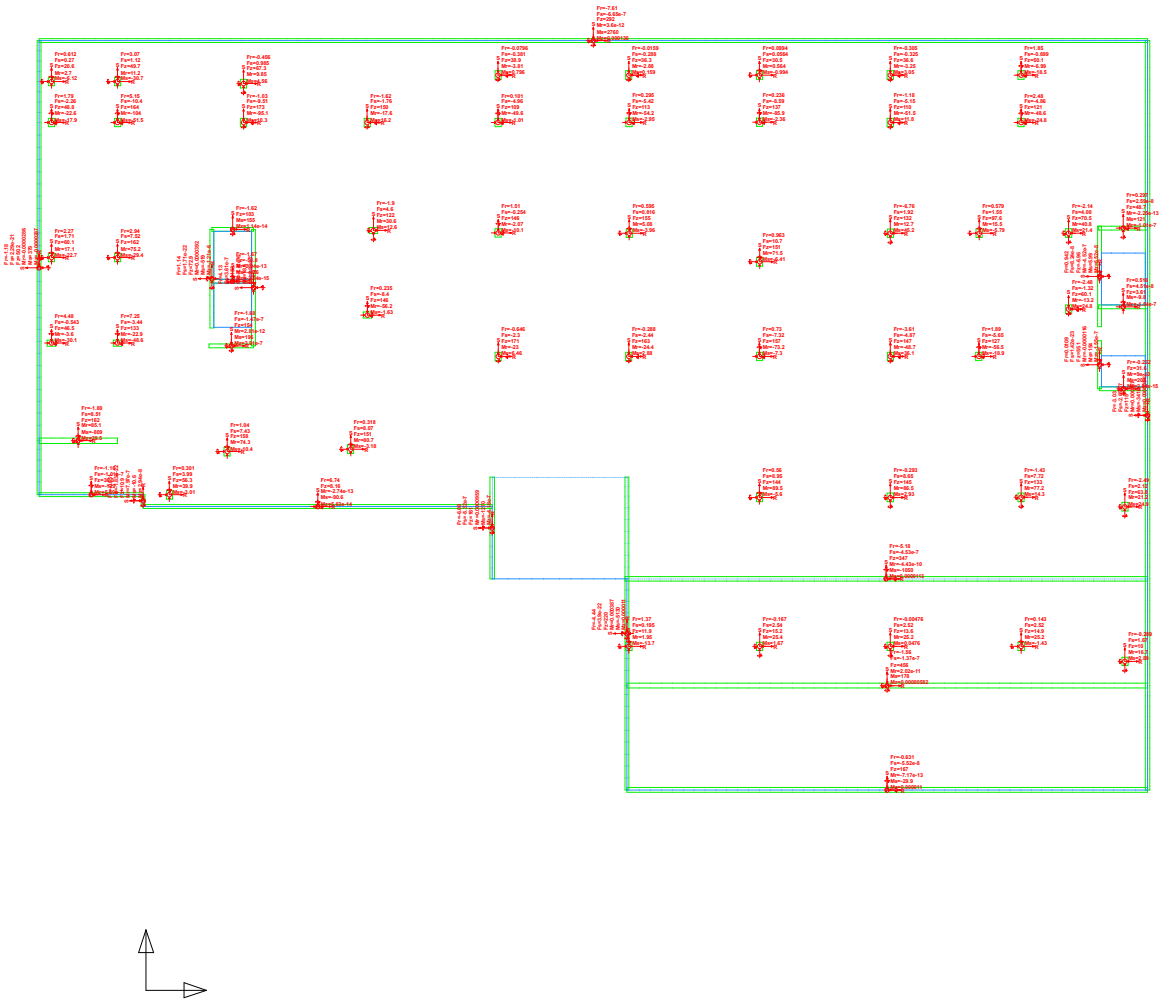
Factored LC: 1.2D + f1L + 1.6Lr: Min Reactions Plan

Factored LC: 1.2D + f1L + 1.6Lr: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:600
Factored LC: 1.2D + f1L + 1.6Lr - Reaction Plot: (Column Below)(Fz,Fx,Fz,Mr,Mx,My)(Min Fz Contest)



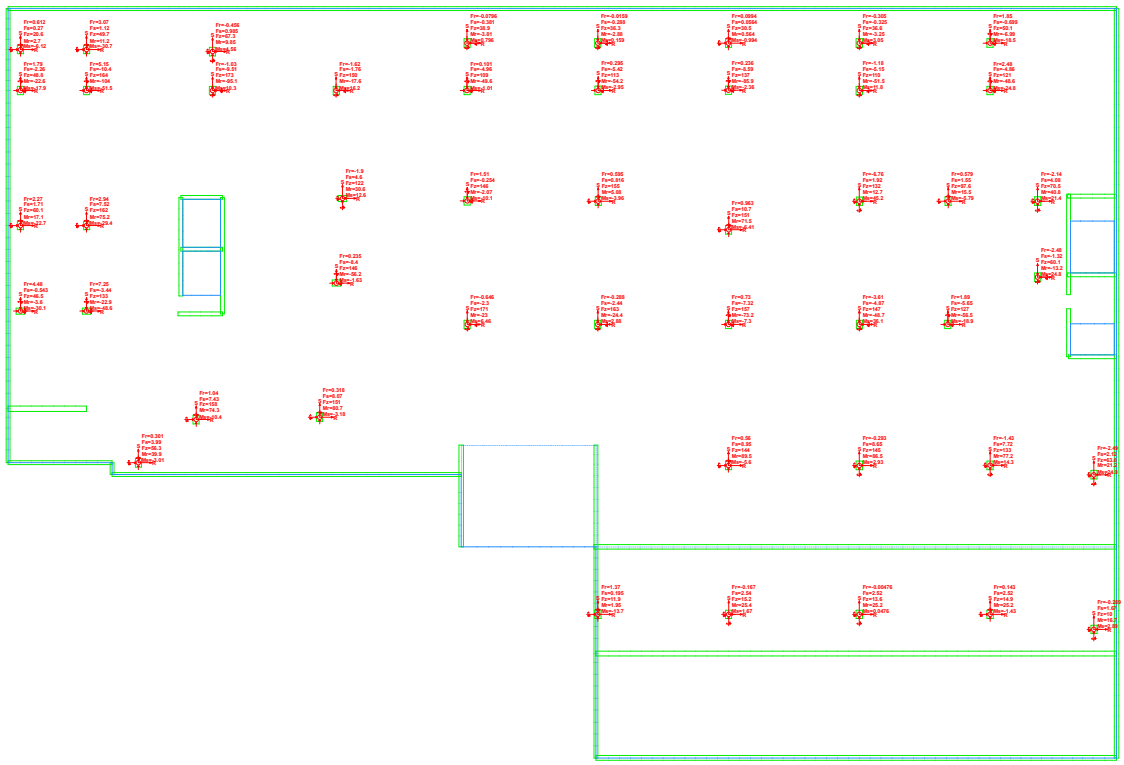
Factored LC: 1.2D + 1.6L + 0.5S: Std Reactions Plan

Factored LC: 1.2D + 1.6L + 0.5S: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:600
Factored LC: 1.2D + 1.6L + 0.5S - Reaction Plot: (Wall Below,Column Below,Point Spring,Line Spring,Point Support,Line Support)(Fr,Fx,Fz,Mr,Mx,My)(Standard Context)



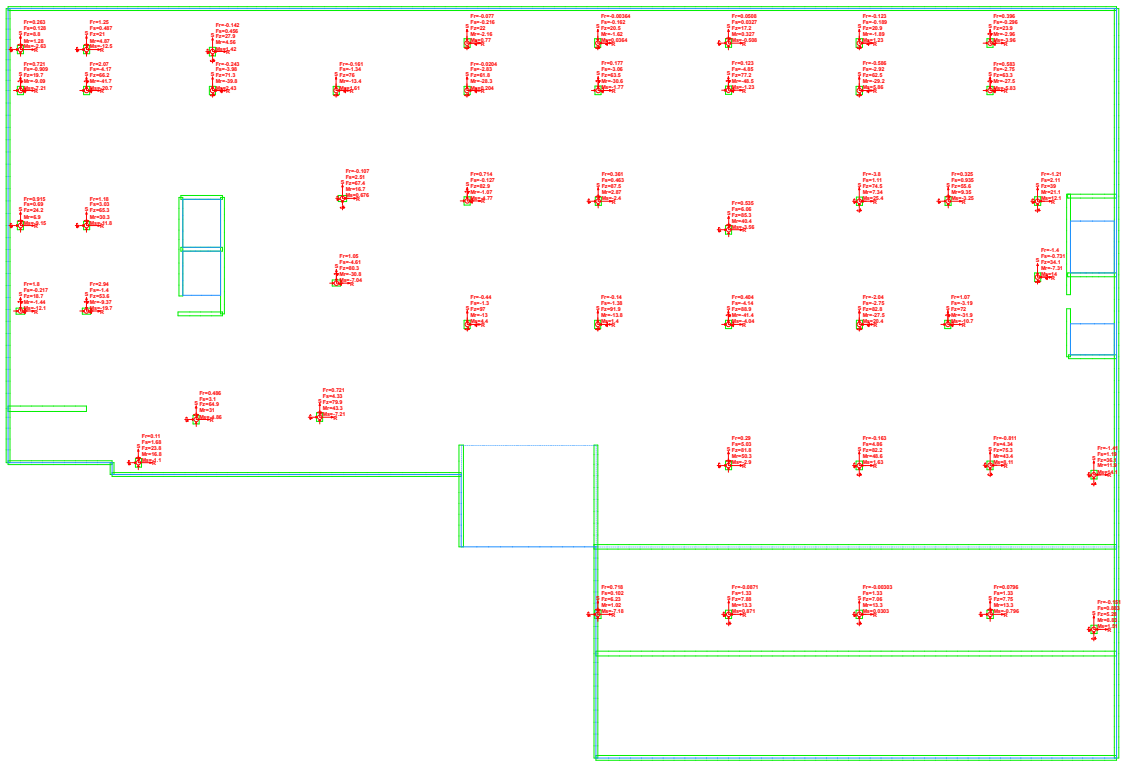
Factored LC: 1.2D + 1.6L + 0.5S: Max Reactions Plan

Factored LC: 1.2D + 1.6L + 0.5S: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:600
Factored LC: 1.2D + 1.6L + 0.5S - Reaction Plot: (Column Below)(Fr,Fx,Fz,Mr,Mx,My)(Max Fx Context)



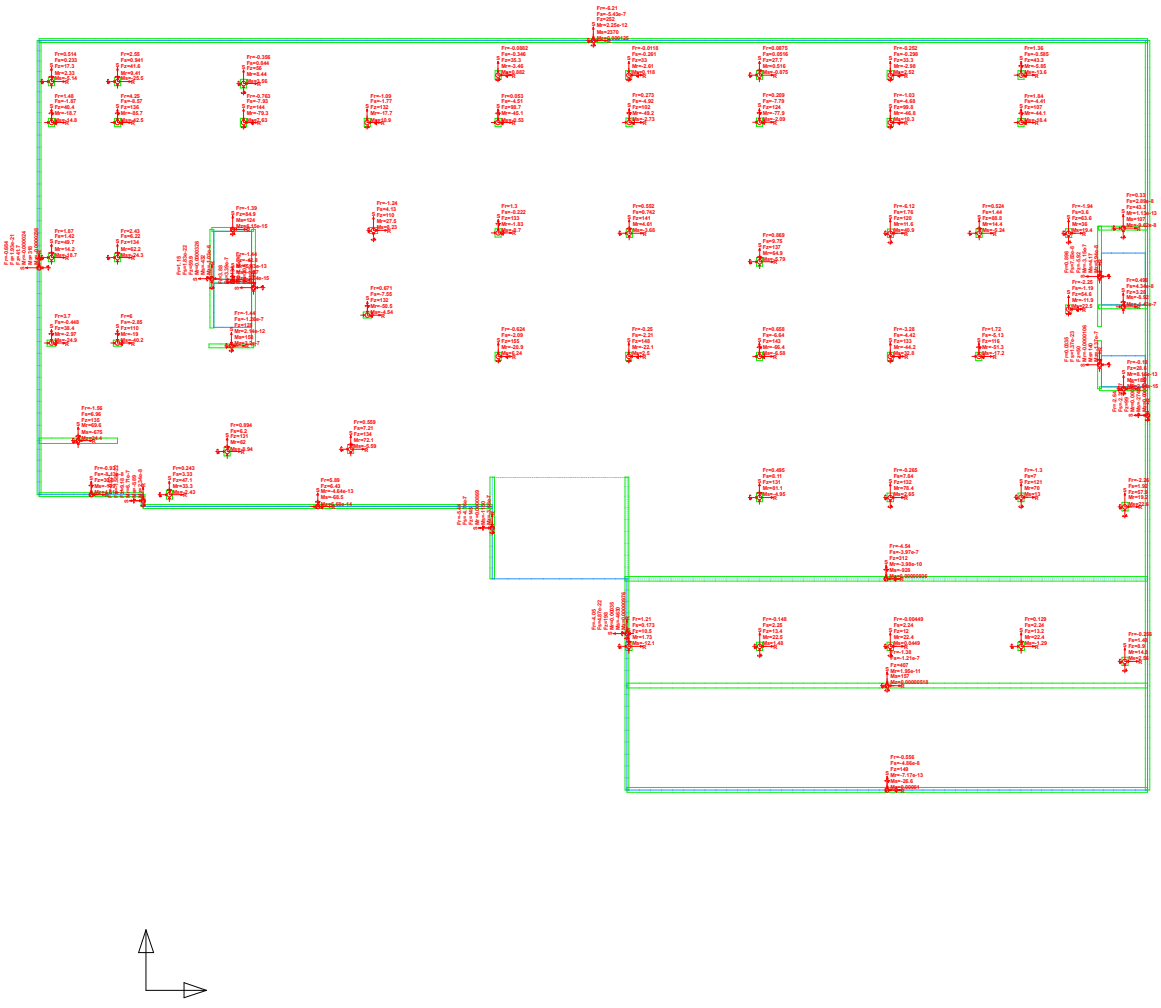
Factored LC: 1.2D + 1.6L + 0.5S: Min Reactions Plan

Factored LC: 1.2D + 1.6L + 0.5S: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:950
Factored LC: 1.2D + 1.6L + 0.5S - Reaction Plot: (Column Below)(Fr,Fx,Fz,Mr,Mx,Mz)(Min Fz Contest)



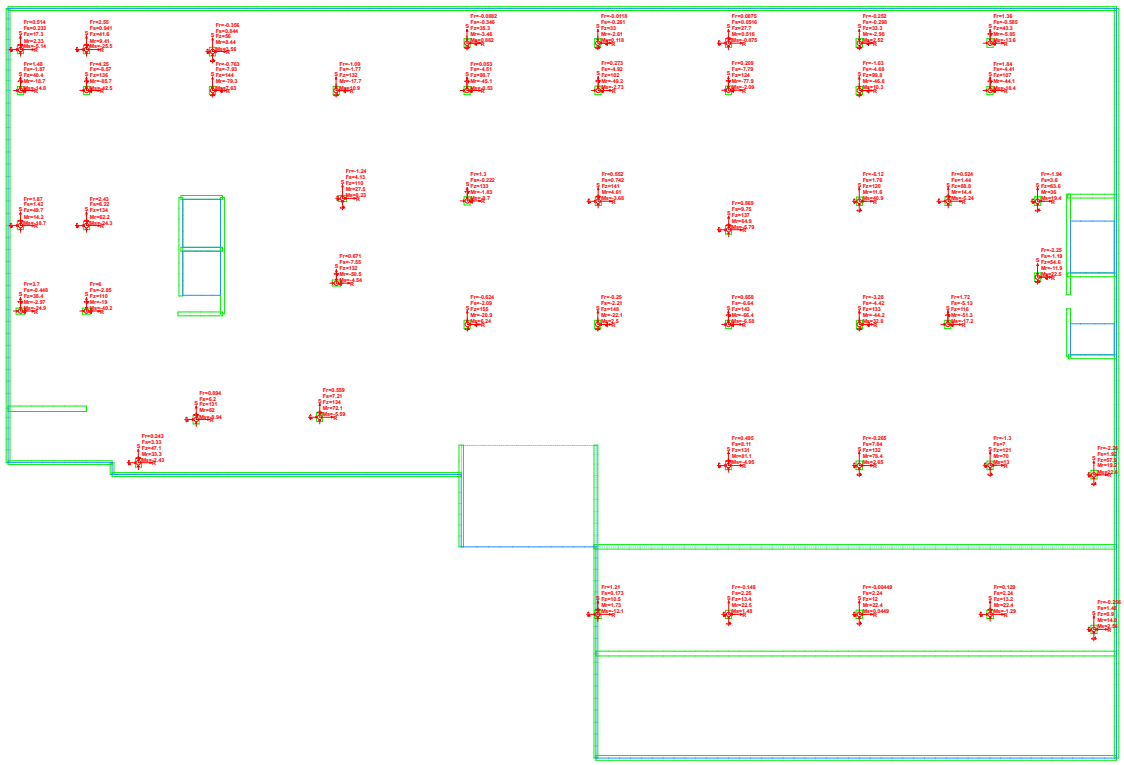
Factored LC: 1.2D + f1L + 1.6S: Std Reactions Plan

Factored LC: 1.2D + f1L + 1.6S: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:600
Factored LC: 1.2D + f1L + 1.6S - Reaction Plot: (Wall Below,Column Below,Point Spring,Line Spring,Point Support,Line Support)(Fr,Fx,Fy,Mr,Mx,My)(Standard Context)



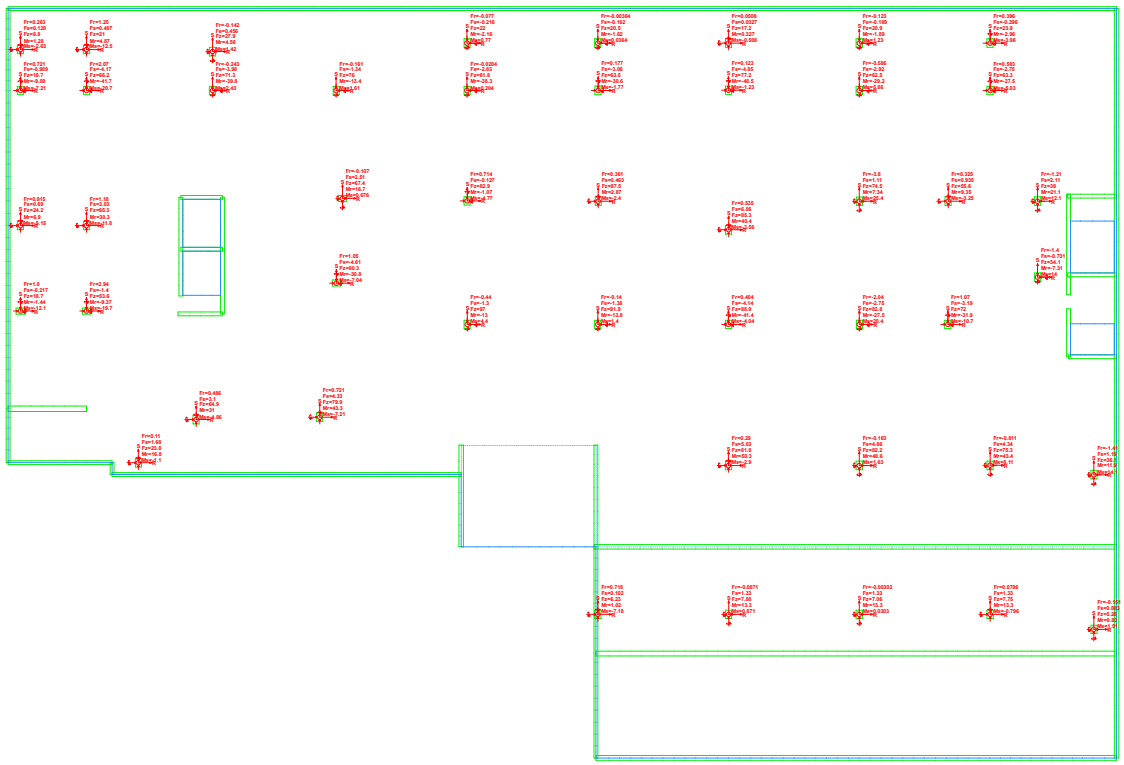
Factored LC: 1.2D + f1L + 1.6S: Max Reactions Plan

Factored LC: 1.2D + f1L + 1.6S: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:000
Factored LC: 1.2D + f1L + 1.6S - Reaction Plot: (Column Below)(Fr,Fx,Fz,Mr,Mx,Mz)(Max Fz Context)



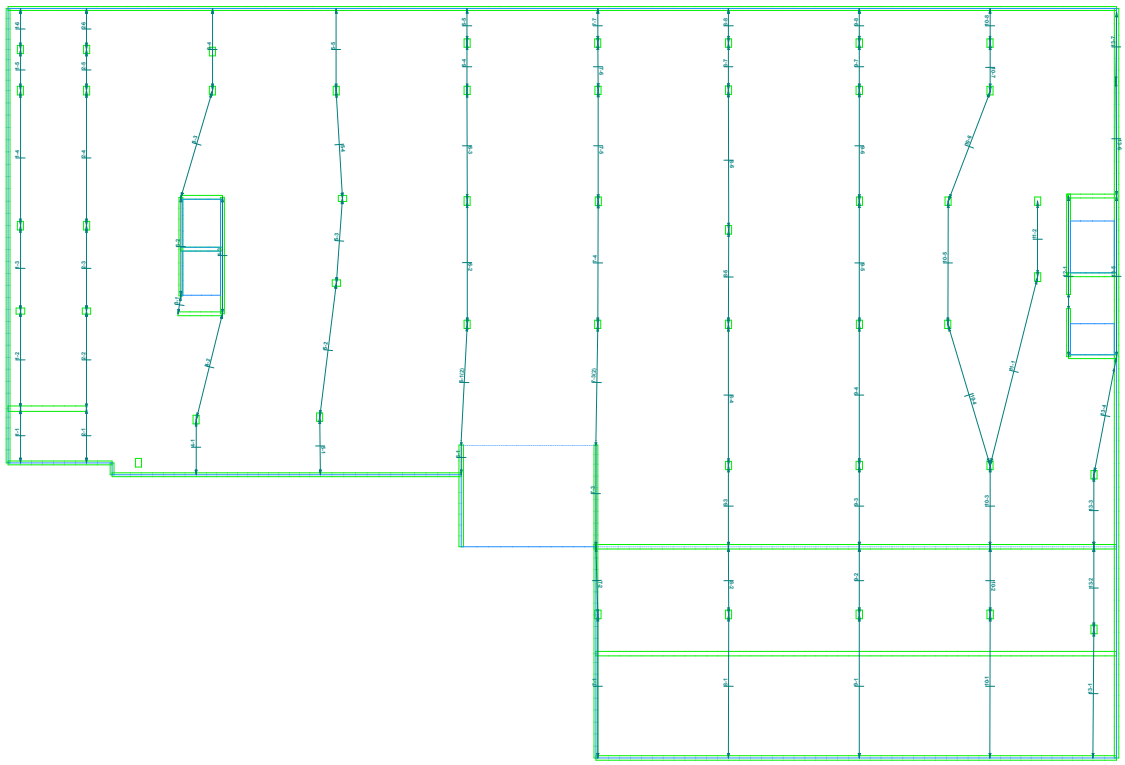
Factored LC: 1.2D + f1L + 1.6S: Min Reactions Plan

Factored LC: 1.2D + f1L + 1.6S: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:600
Factored LC: 1.2D + f1L + 1.6S - Reaction Plot: (Column Below)(Fz,Fx,Fz,Mr,Mx,My)(Min Fz Context)



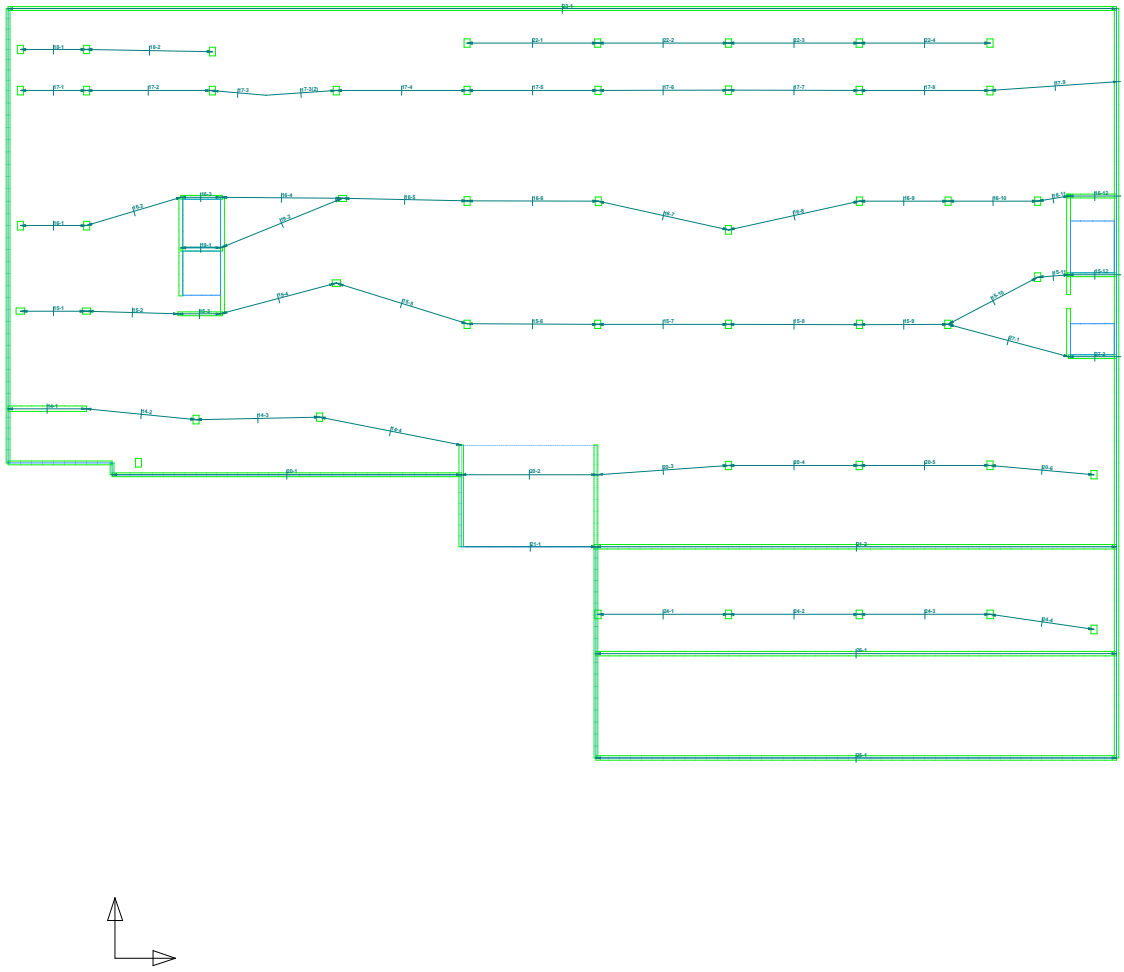
Design Strip: Latitude Design Spans Plan

Design Strip: Latitude SSs; SS Numbers; User Notes; User Dimensions;
Element: Wall Elements Above; Wall Elements Below; Wall Element Outline Only; Column Elements Above; Column Elements Below; Slab Elements; Slab Element Outline Only;
Scale = 1:500



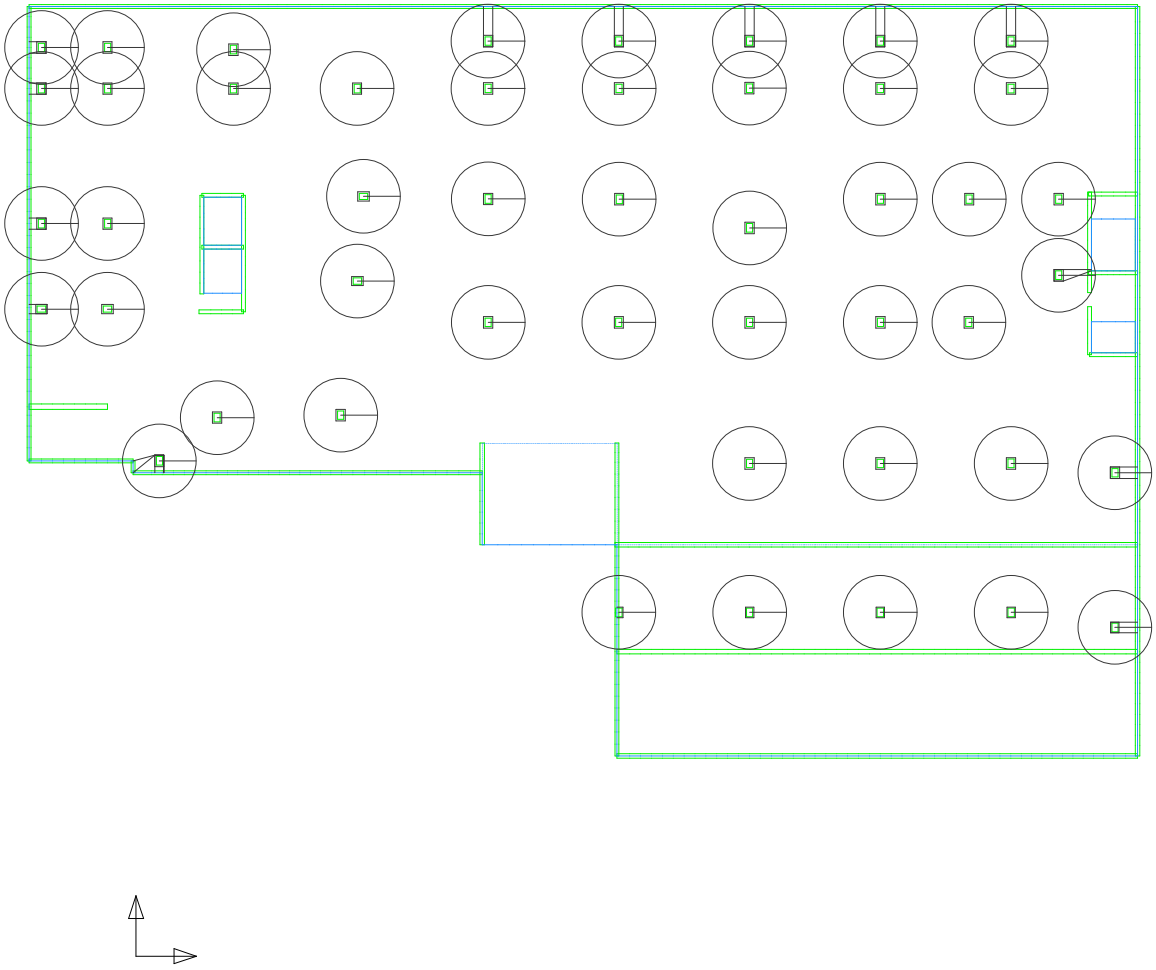
Design Strip: Longitude Design Spans Plan

Design Strip: Longitude SSs; SS Numbers; User Notes; User Lines; User Dimensions;
Element: Wall Elements Above; Wall Elements Below; Wall Element Outline Only; Column Elements Above; Column Elements Below; Slab Elements; Slab Element Outline Only;
Scale = 1:500



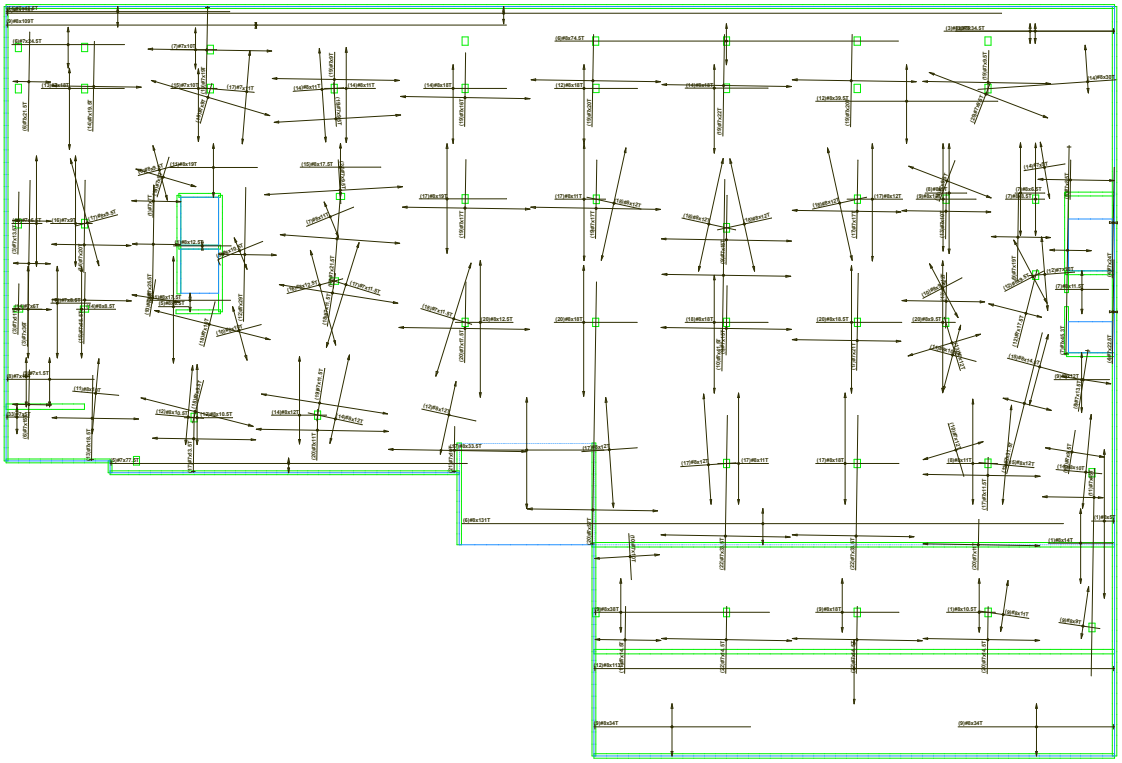
Design Strip: Punching Checks Plan

Design Strip: User Lines; User Notes; User Dimensions; Punching Checks; Punching Check Sections; Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only; Scale = 1:500



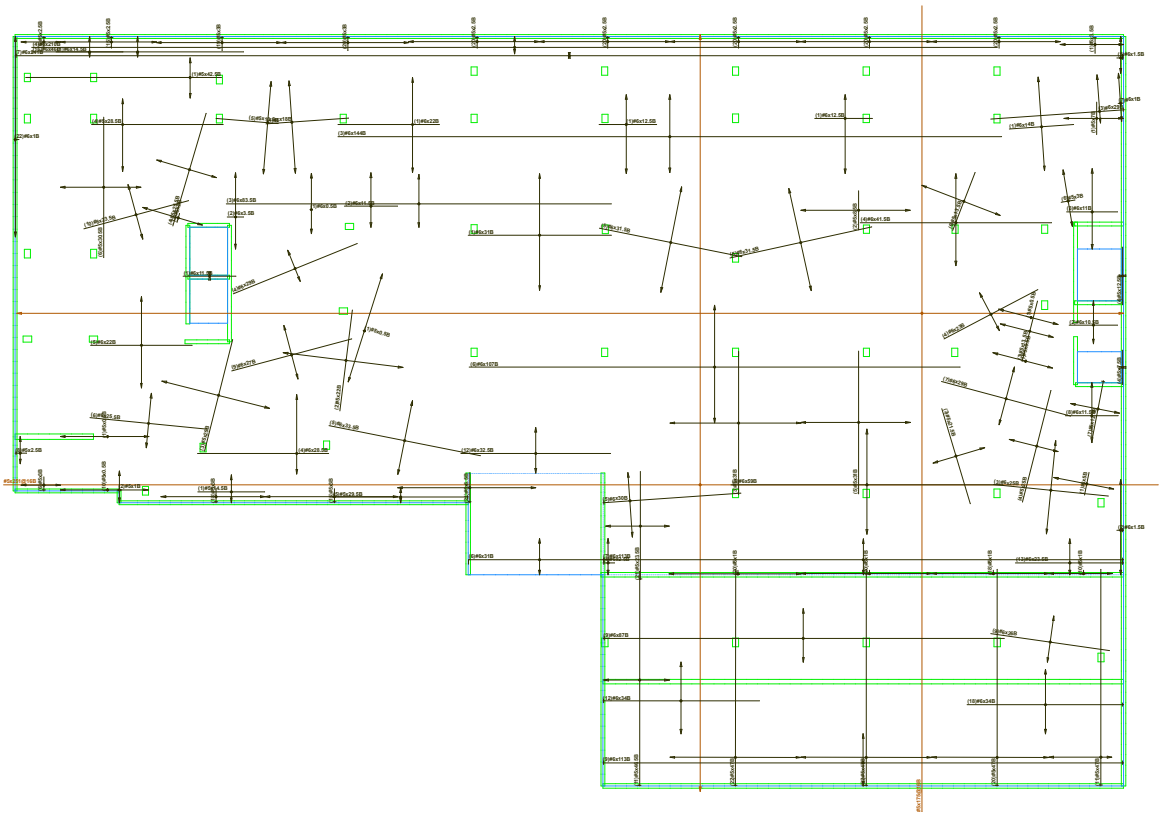
Reinforcement: Top Bars Plan

Reinforcement: User Lines; User Notes; User Dimensions; Latitude User Concentrated Reinf.; Latitude Program Concentrated Reinf.; Latitude User Distributed Reinf.; Latitude Program Distributed Reinf.; Longitude User Concentrated Reinf.; Longitude Program Concentrated Reinf.; Longitude User Distributed Reinf.; Longitude Program Distributed Reinf.; Top Face Concentrated Reinf.; Both Faces Concentrated Reinf.; Top Face Distributed Reinf.; Both Faces Distributed Reinf.; Concentrated Reinf. Descriptions; Concentrated Reinf. Extent; Distributed Reinf. Descriptions; Distributed Reinf. Extent; Wall Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:200



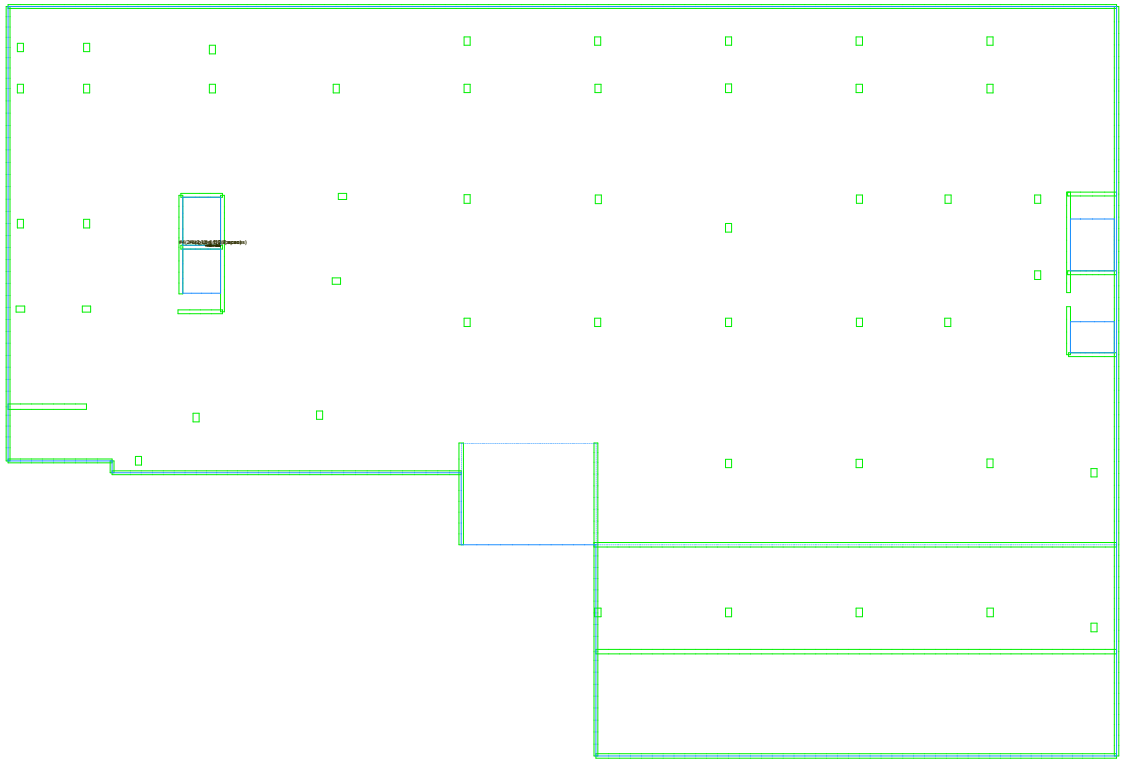
Reinforcement: Bottom Bars Plan

Reinforcement: User Lines; User Notes; User Dimensions; Latitude User Concentrated Reinf.; Latitude Program Concentrated Reinf.; Latitude User Distributed Reinf.; Latitude Program Distributed Reinf.; Longitude User Concentrated Reinf.; Longitude Program Concentrated Reinf.; Longitude User Distributed Reinf.; Longitude Program Distributed Reinf.; Bottom Face Concentrated Reinf.; Both Faces Concentrated Reinf.; Bottom Face Distributed Reinf.; Both Faces Distributed Reinf.; Concentrated Reinf. Descriptions; Concentrated Reinf. Extent; Dis
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:500



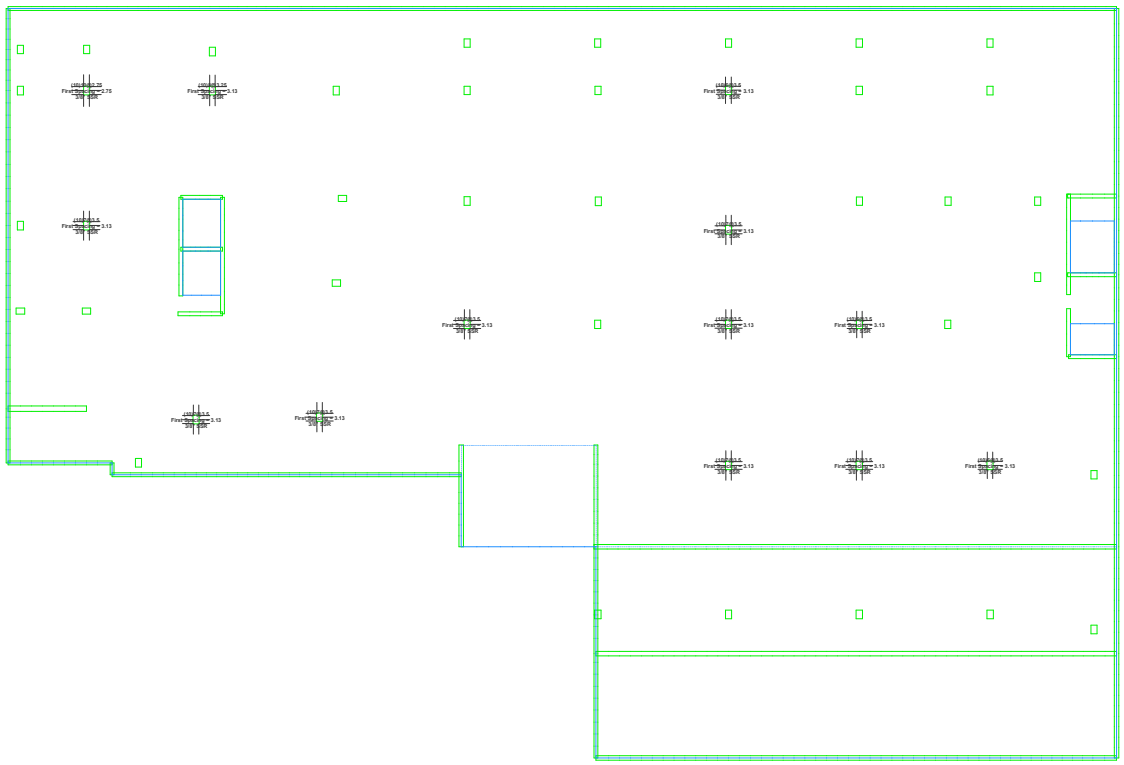
Reinforcement: Shear Bars Plan

Reinforcement: User Lines; User Notes; User Dimensions; Latitude User Transverse Reinf.; Latitude Program Transverse Reinf.; Latitude User Individual Transverse Bars; Latitude Program Individual Transverse Bars; Longitude User Transverse Reinf.; Longitude Program Transverse Reinf.; Longitude User Individual Transverse Bars; Longitude Program Individual Transverse Bars; Transverse Reinf. Descriptions; Transverse Reinf. Extent; Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:200



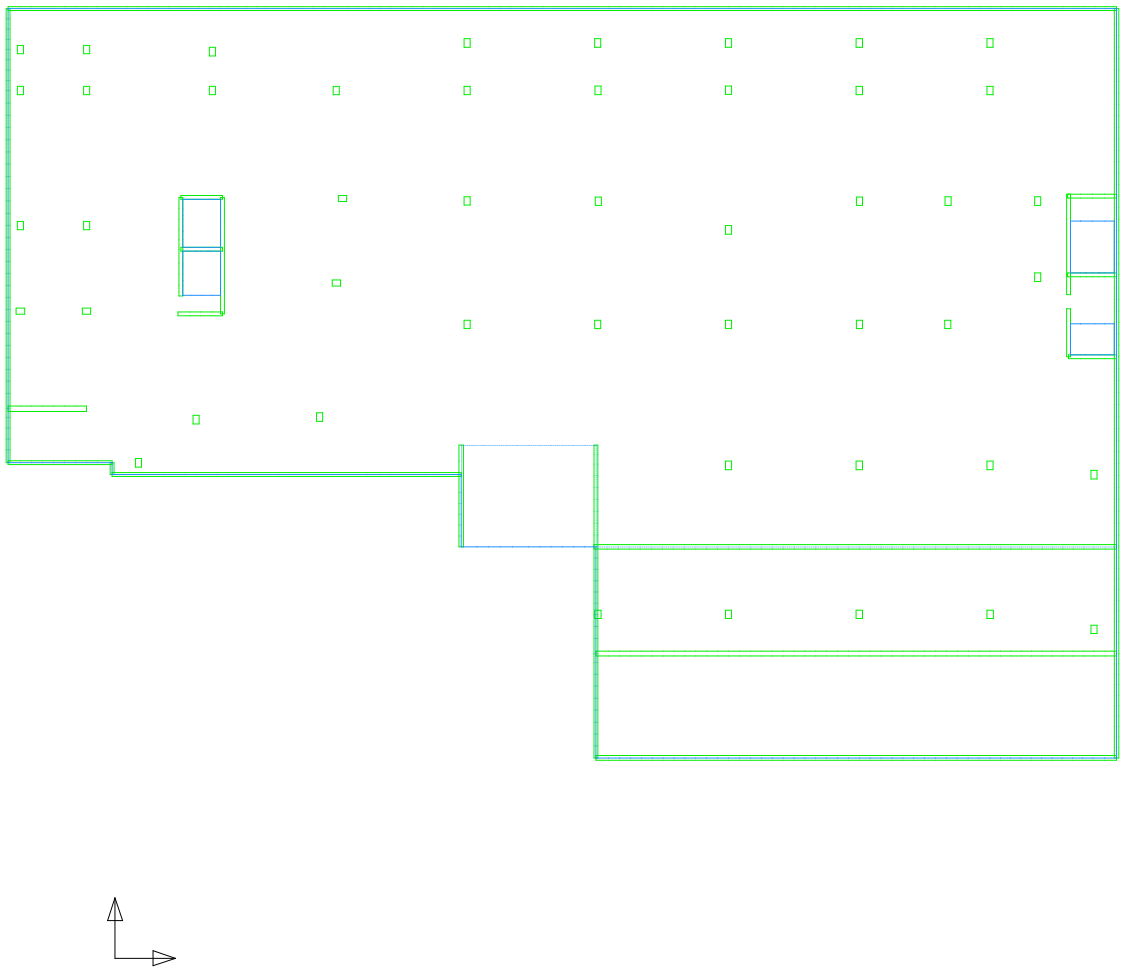
Reinforcement: SSR Plan

Reinforcement: User Lines; User Notes; User Dimensions; Program SSR Callouts; SSR Callout Details; Program SSR Rails;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:200



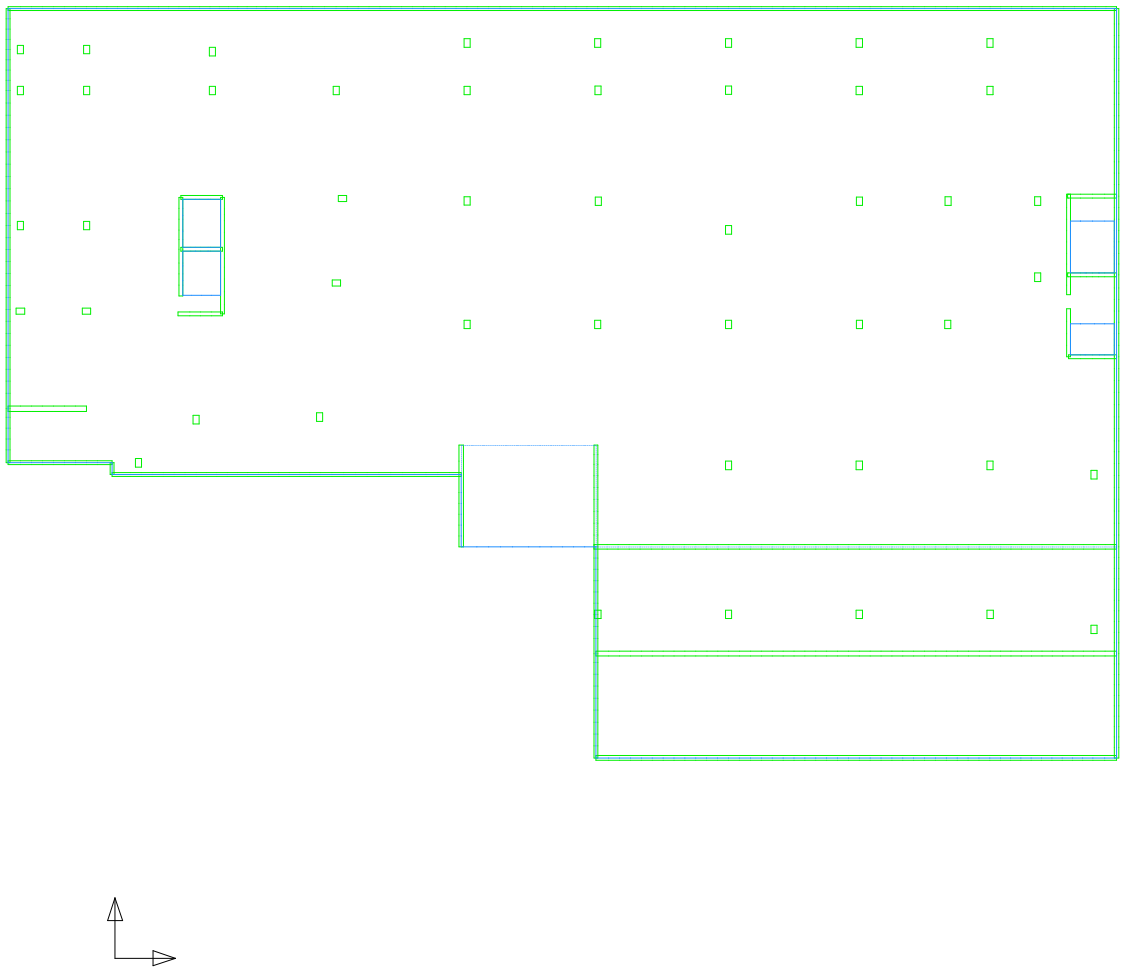
Latitude Tendon Parameters: Standard Plan

Latitude Tendon Parameters; User Lines; User Notes; User Dimensions; Distributed Tendon Quadrilateral; Distributed Tendon Description; Distributed Tendon Profile Polyline Ends; Distributed Tendon Profile Area Edge; Distributed Tendon Profile Span Changes; Distributed Tendon Profile Concrete Elevation Change; Tendon Void; Jack Region; Jack Region Hatching; Jack Region Corner Icon; Distributed Tendon Overlap Areas; Banded Tendons; Banded Tendon Description; Banded Tendon Fillet Graphics; Profile Points; Profile Elevation Values; Profil
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Manual Latitude Tendon: Tendons; Num Strands; Tendon Points; Profile Values;
Scale = 1:500



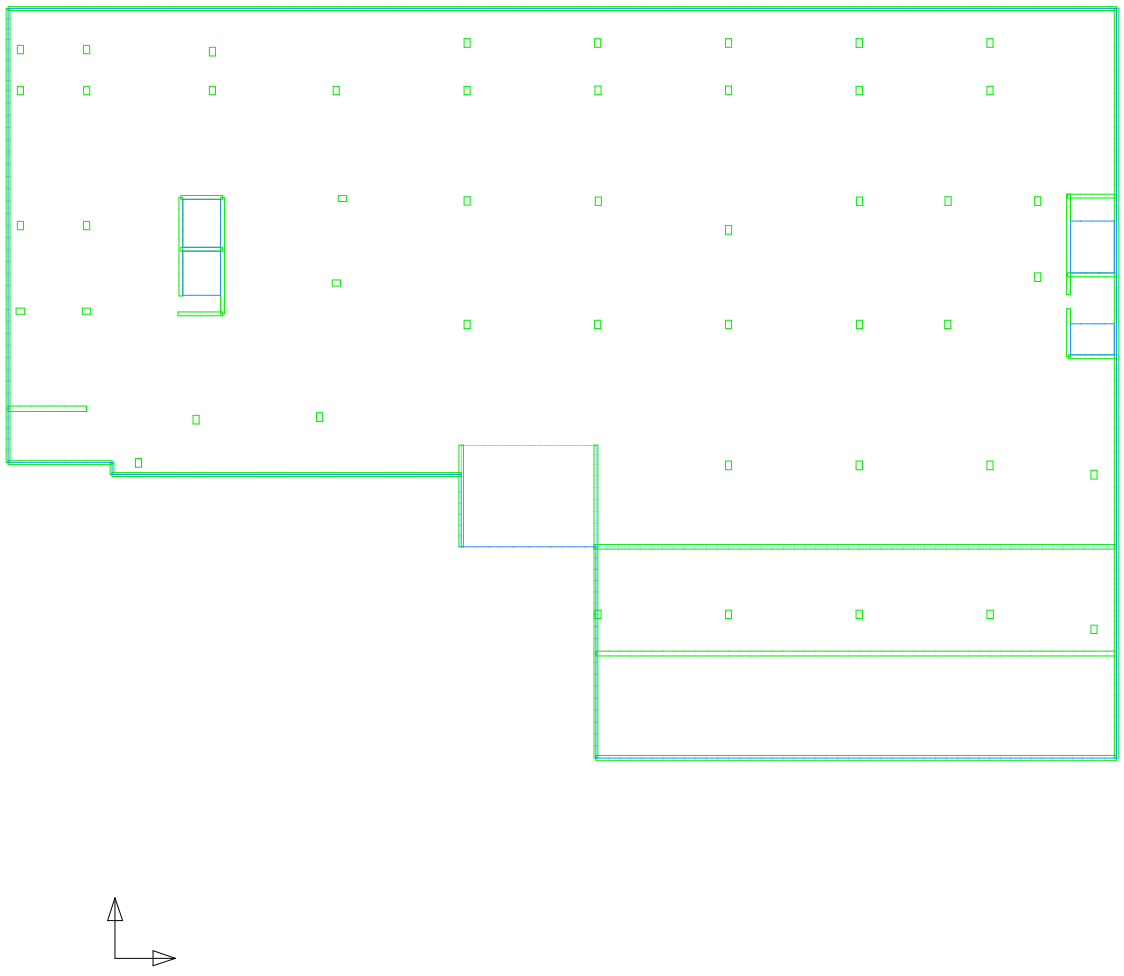
Manual Latitude Tendon: Standard Plan

Manual Latitude Tendon: User Lines; User Notes; User Dimensions; Tendons; Num Strands; Tendon Inflection Ratio; Tendon Points; Profile Values; Jacks;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Latitude Tendon Parameters: Banded Tendons; Banded Tendon Description; Distributed Tendon Quadrilateral; Distributed Tendon Description; Distributed Tendon Overlap Areas; Profile Points; Profile Elevation Values; Profile Nodes; Jack Region;
Scale = 1:500



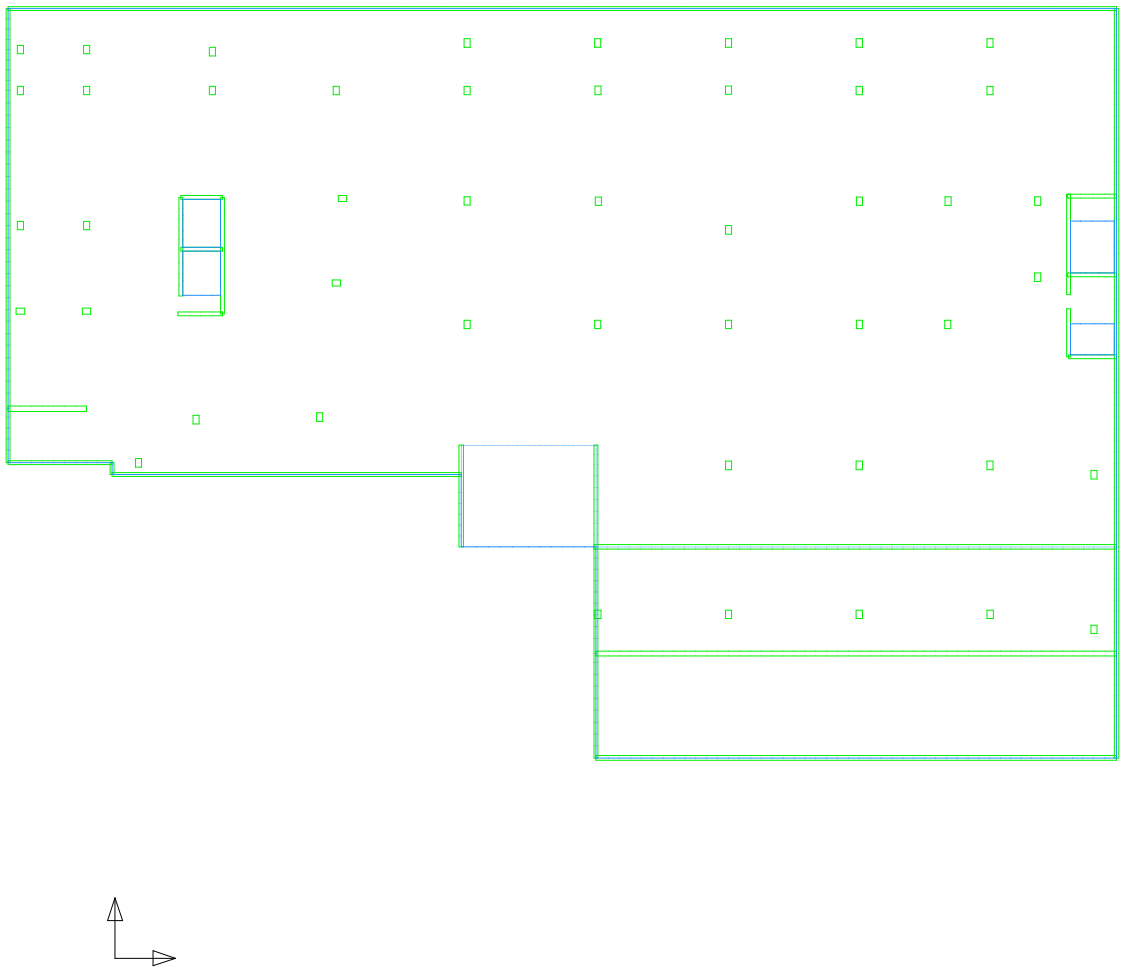
Longitude Tendon Parameters: Standard Plan

Longitude Tendon Parameters: User Lines; User Notes; User Dimensions; Distributed Tendon Quadrilateral; Distributed Tendon Description; Distributed Tendon Profile Polyline Ends; Distributed Tendon Profile Area Edge; Distributed Tendon Profile Span Changes; Distributed Tendon Profile Concrete Elevation Change; Tendon Void: Jack Region; Jack Region Hatching; Jack Region Corner Icon; Distributed Tendon Overlap Areas; Banded Tendons; Banded Tendon Description; Banded Tendon Fillet Graphics; Profile Points; Profile Elevation Values; Pro
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Manual Longitude Tendon: Tendons; Num Strands; Tendon Points; Profile Values;
Scale = 1:500

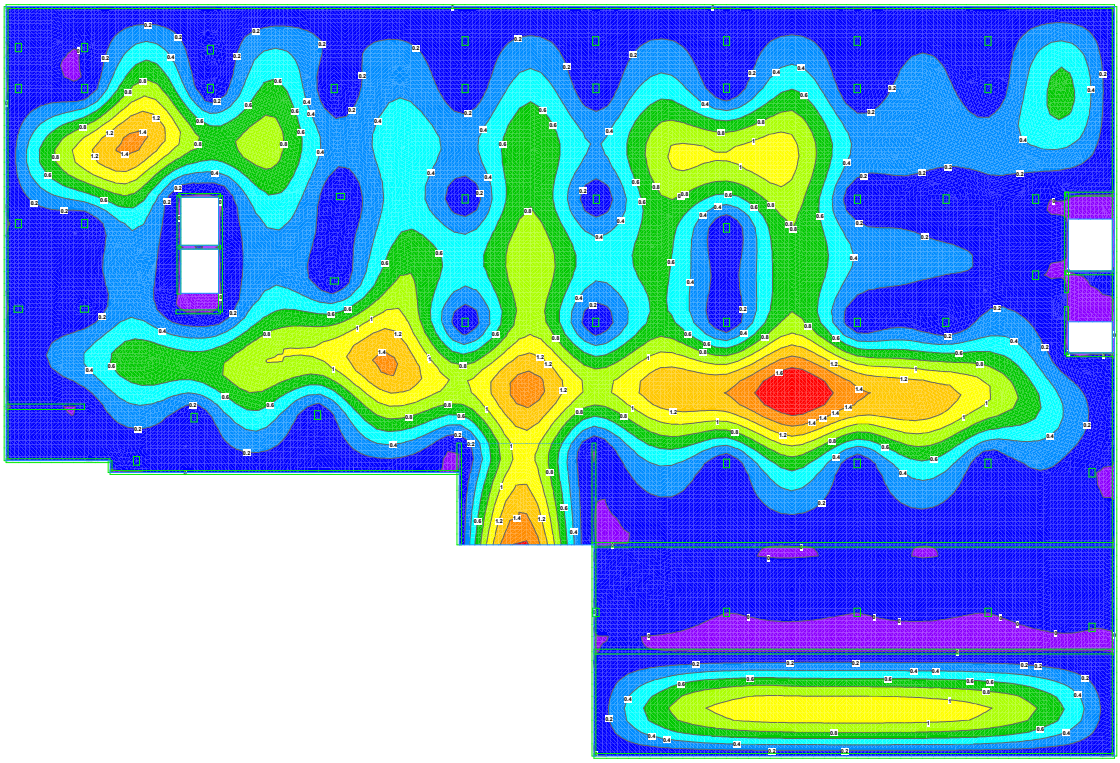


Manual Longitude Tendon: Standard Plan

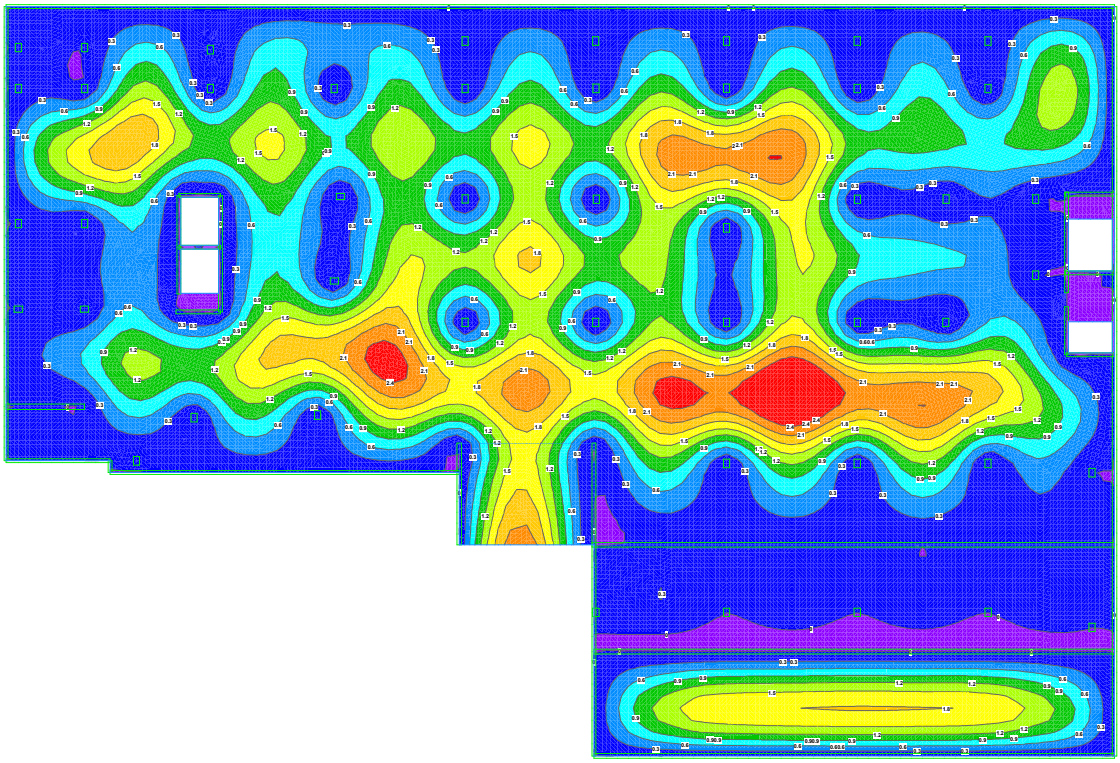
Manual Longitude Tendon: User Lines; User Notes; User Dimensions; Tendons; Num Strands; Tendon Inflection Ratio; Tendon Points; Profile Values; Jacks;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Longitude Tendon Parameters: Banded Tendons; Banded Tendon Description; Distributed Tendon Quadrilateral; Distributed Tendon Description; Distributed Tendon Overlap Areas; Profile Points; Profile Elevation Values; Profile Nodes; Jack Region;
Scale = 1:300



Maximum Short Term Load: Std Deflection Plan



Sustained Load: Std Deflection Plan

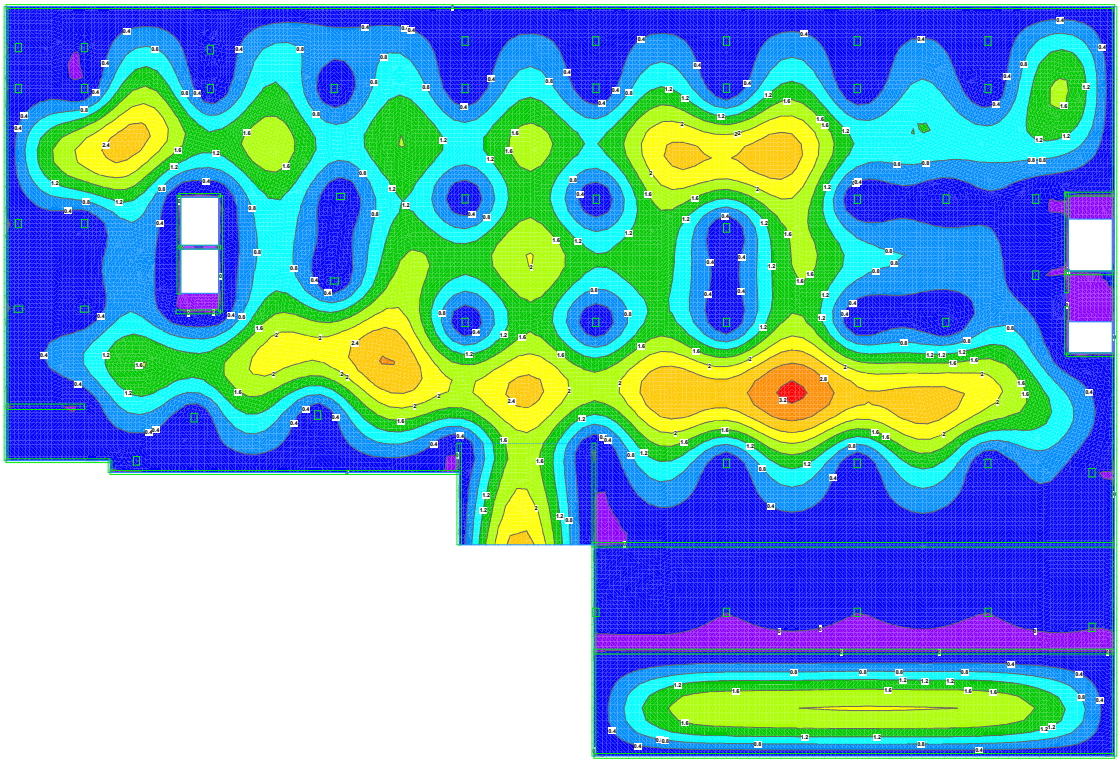


Final Instantaneous Load: Std Deflection Plan

Final Instantaneous Load: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:222
Final Instantaneous Load - Vertical Deflection Plot

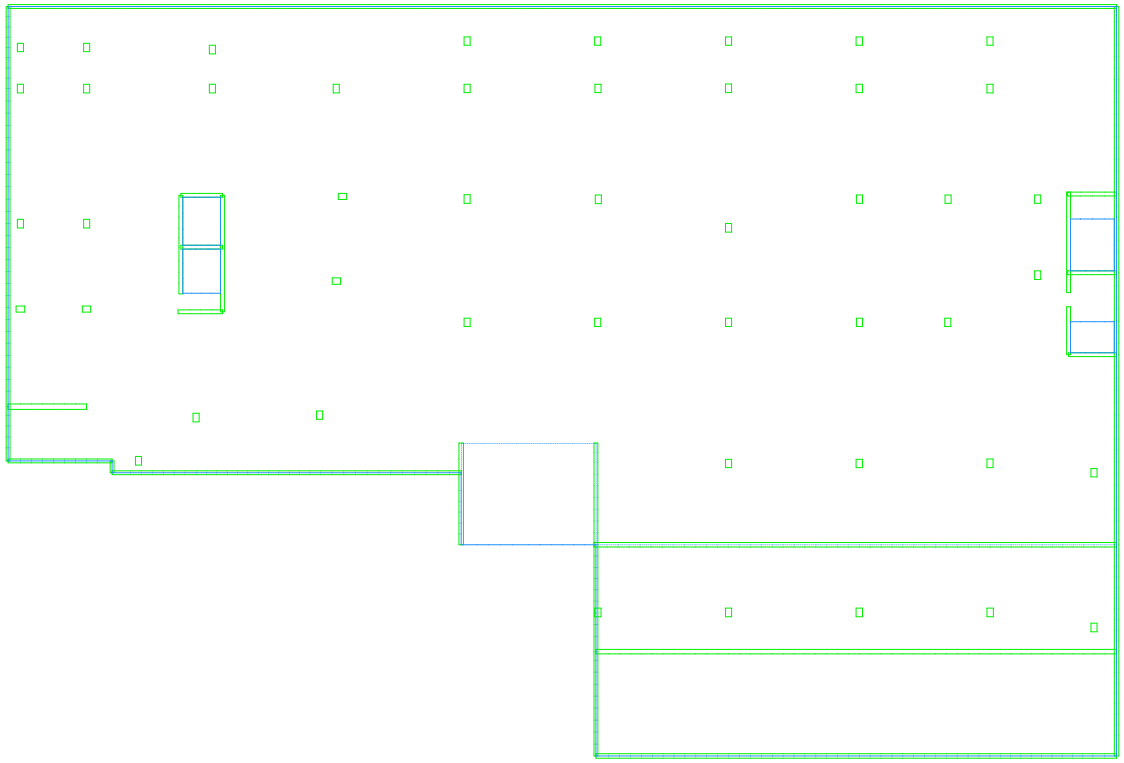
0 0.4 0.8 1.2 1.6 2 2.4 2.8 3.2

Min Value = -0.2171 inches @ (16.8,145.8) Max Value = 3.283 inches @ (147.3,122.3)



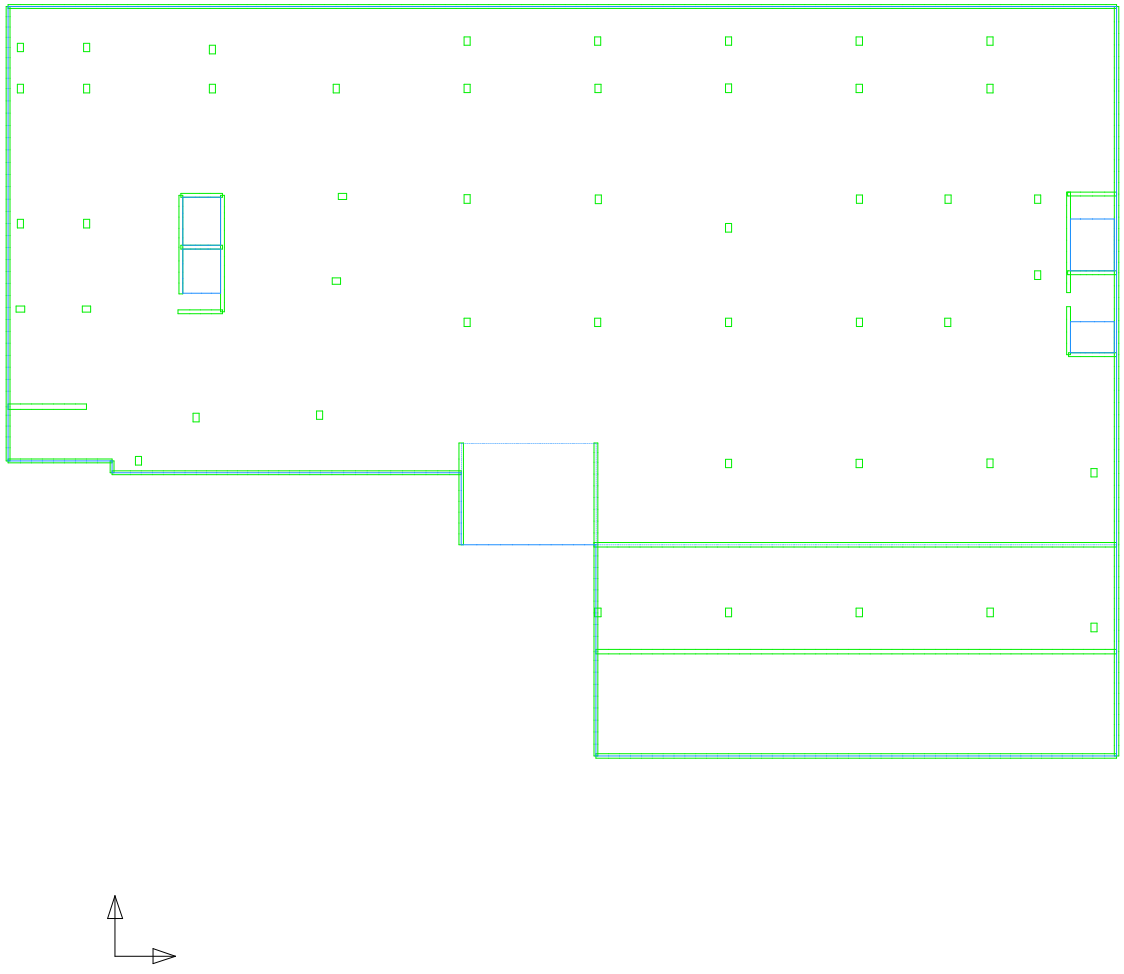
Additional Mass Loading: All Loads Plan

Additional Mass Loading: User Lines; User Notes; User Dimensions; Mass Point Loads; Mass Point Load Icons; Mass Point Load Values; Mass Line Loads; Mass Line Load Icons; Mass Line Load Values; Mass Area Loads; Mass Area Load Icons; Mass Area Load Values; Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:500



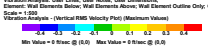
Vibration Analysis: Excitation Areas Plan

Vibration Analysis; User Lines; User Notes; User Dimensions; Vibration Excitation Area; Vibration Excitation Area Hatching;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:500

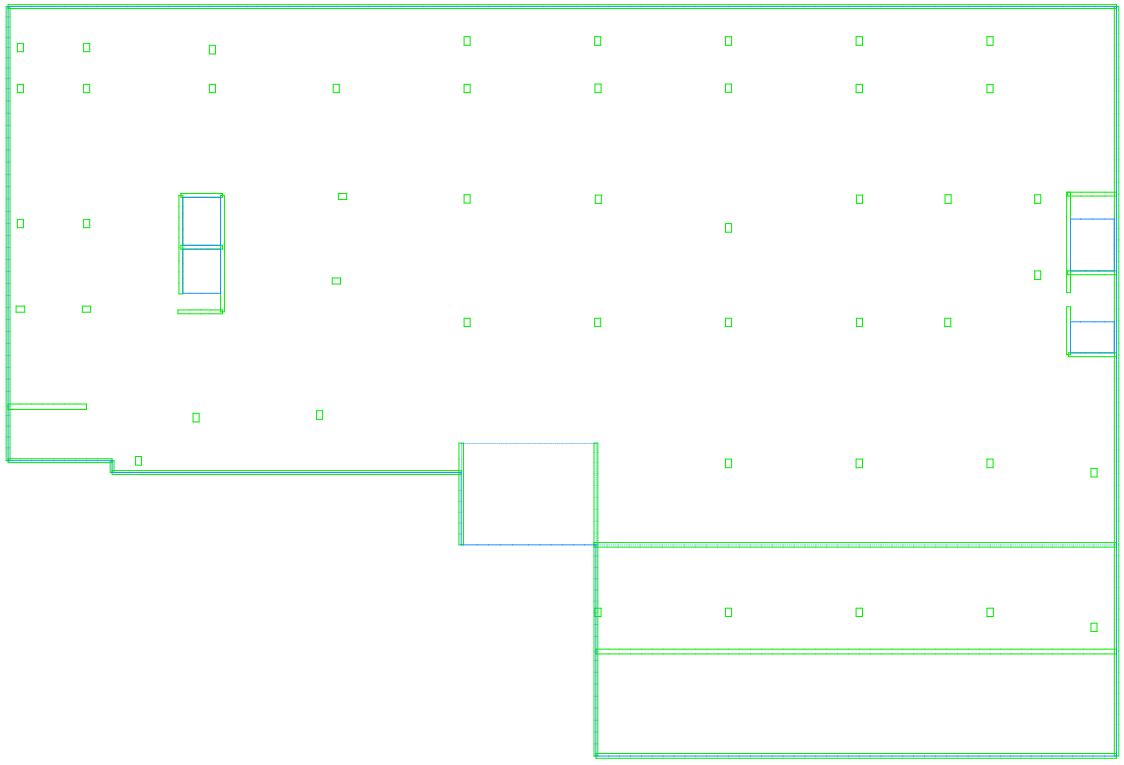


Vibration Analysis: Max RMS Velocity Plan

Vibration Analysis; User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:000
Vibration Analysis - (Vertical RMS Velocity Plot) (Maximum Values)

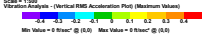


Min Value = 0 ft/sec @ (0,0) Max Value = 0 ft/sec @ (0,0)

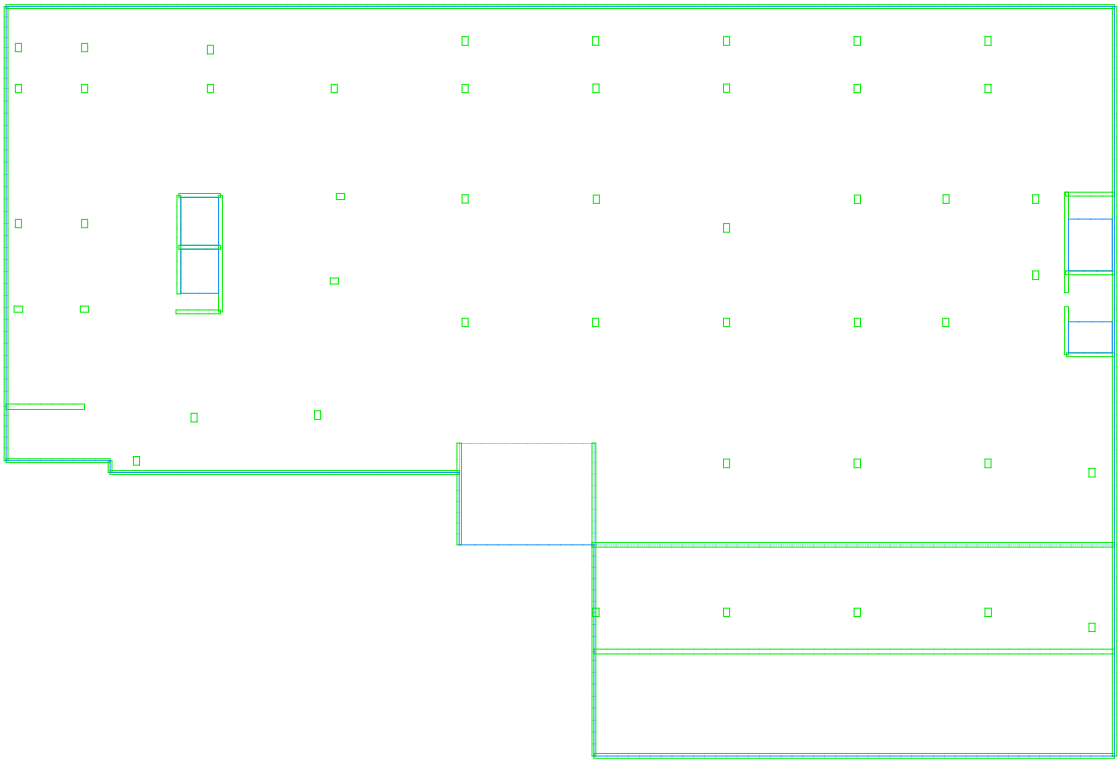


Vibration Analysis: Max RMS Acceleration Plan

Vibration Analysis; User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:200
Vibration Analysis - (Vertical RMS Acceleration Plot) (Maximum Values)

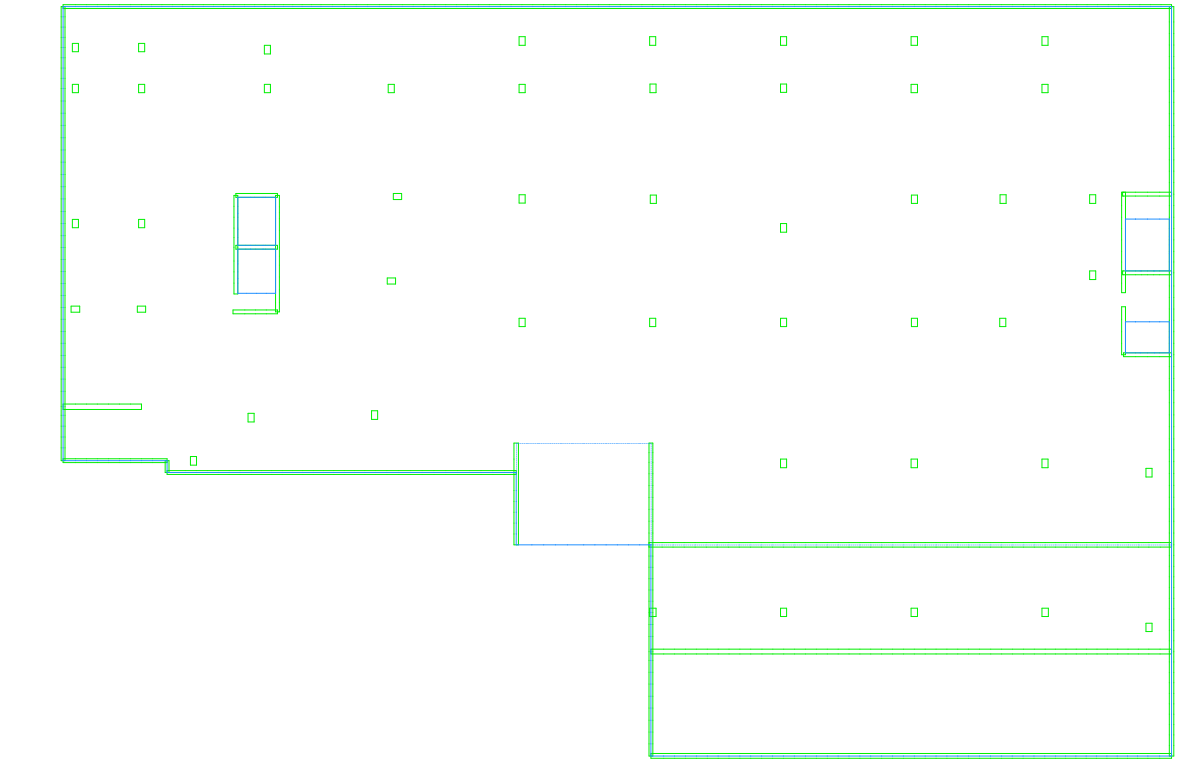


Min Value = 0 ft/sec² @ (0,0) Max Value = 0 ft/sec² @ (0,0)



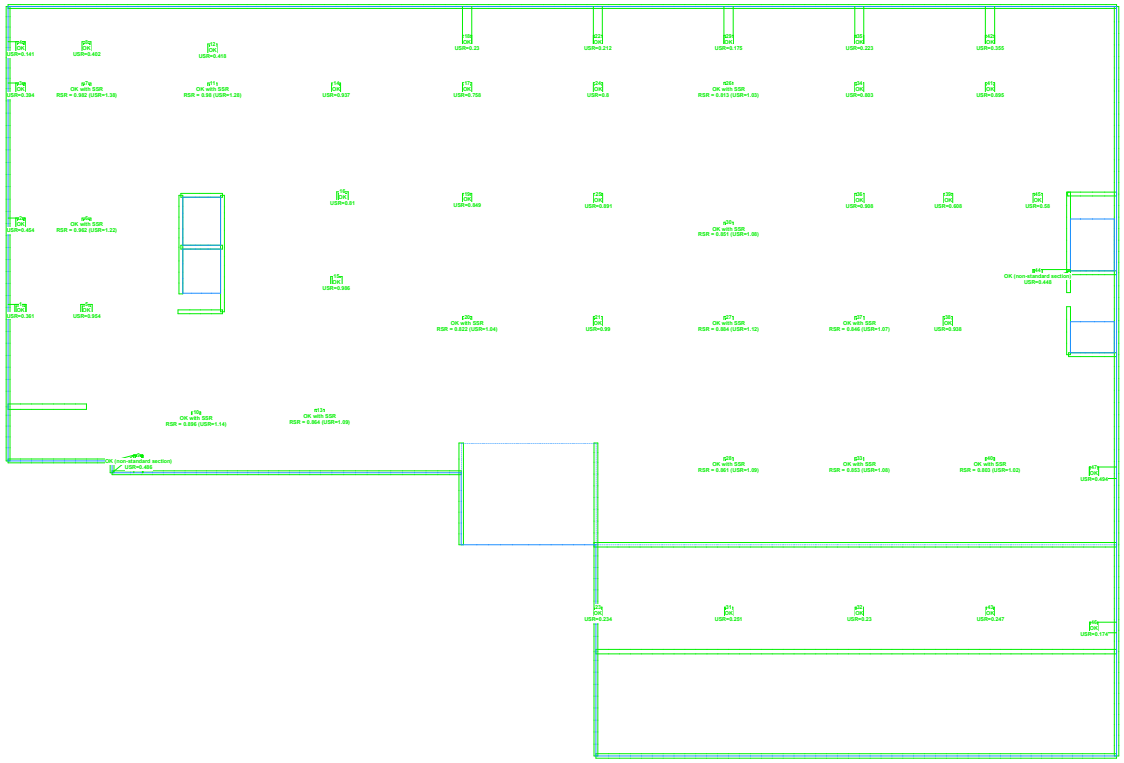
Vibration Analysis: Max Response Factor Plan

Vibration Analysis; User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:200
Vibration Analysis - (Vertical Response Factor Plot) (Maximum Values)



Design Status: Punching Shear Status Plan

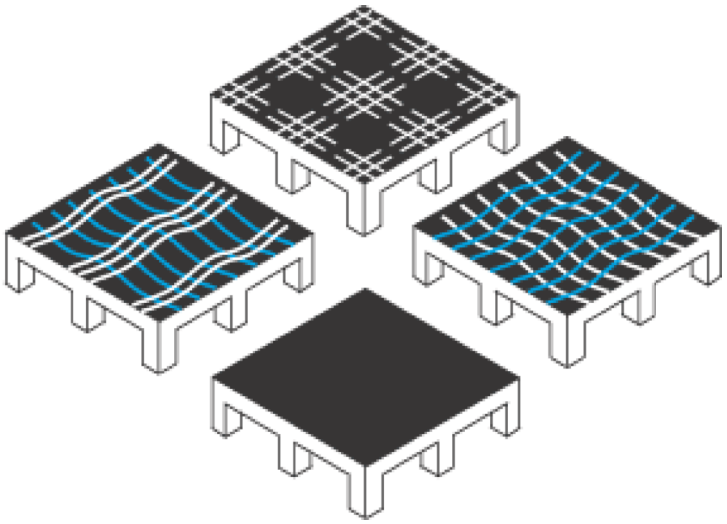
Design Status; User Lines; User Notes; User Dimensions; PC Designs; PC Design Numbers; PC Design Status; PC Design Stress Ratios; PC Design Sections; Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only; Scale = 1:200



MERCER ISLAND APARTMENTS

PERMIT CALCULATIONS

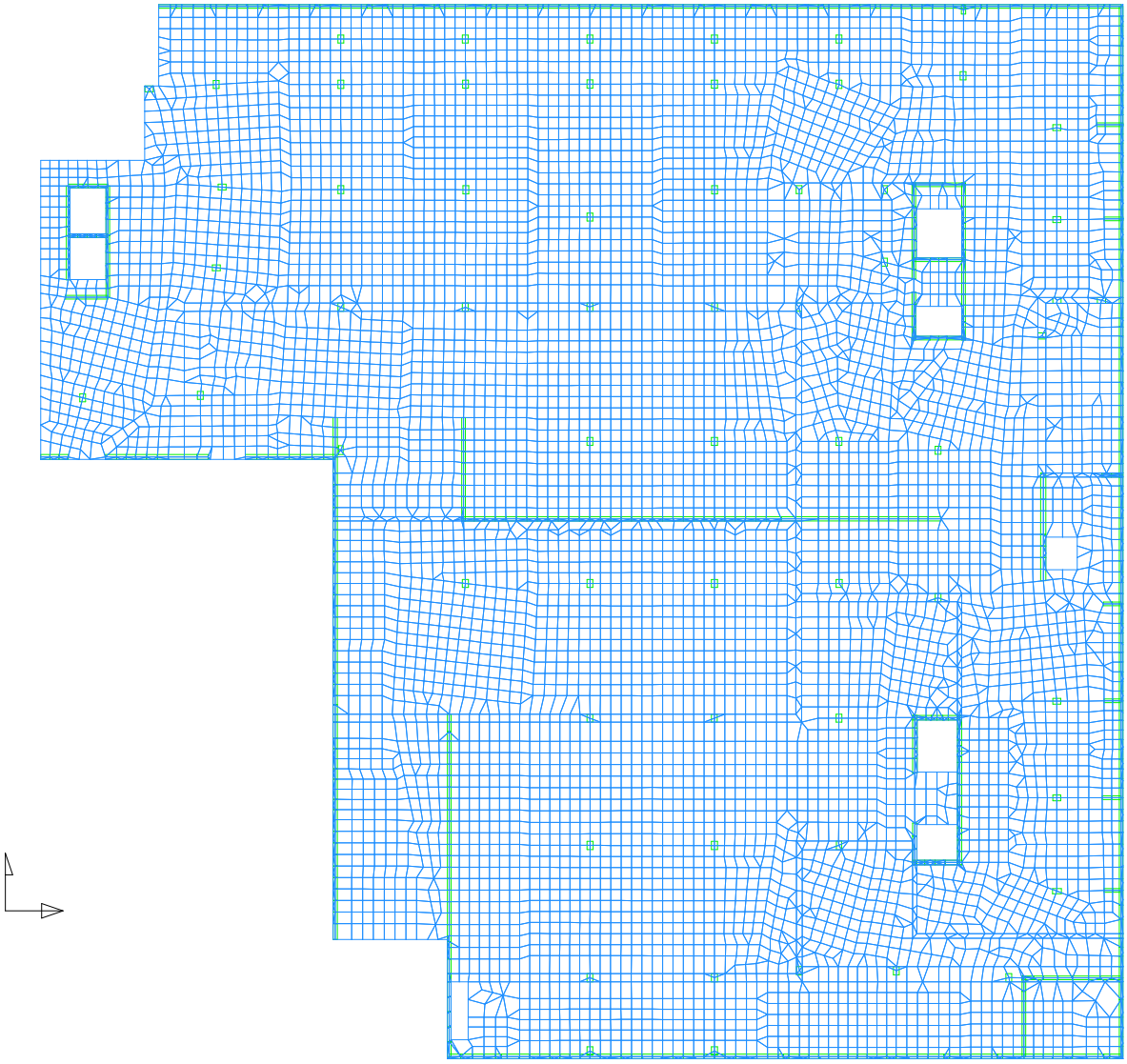
9/30/21



LEVEL 1 MILD SLAB (9-24-21)_KR v9.0.cpt
10/1/2021

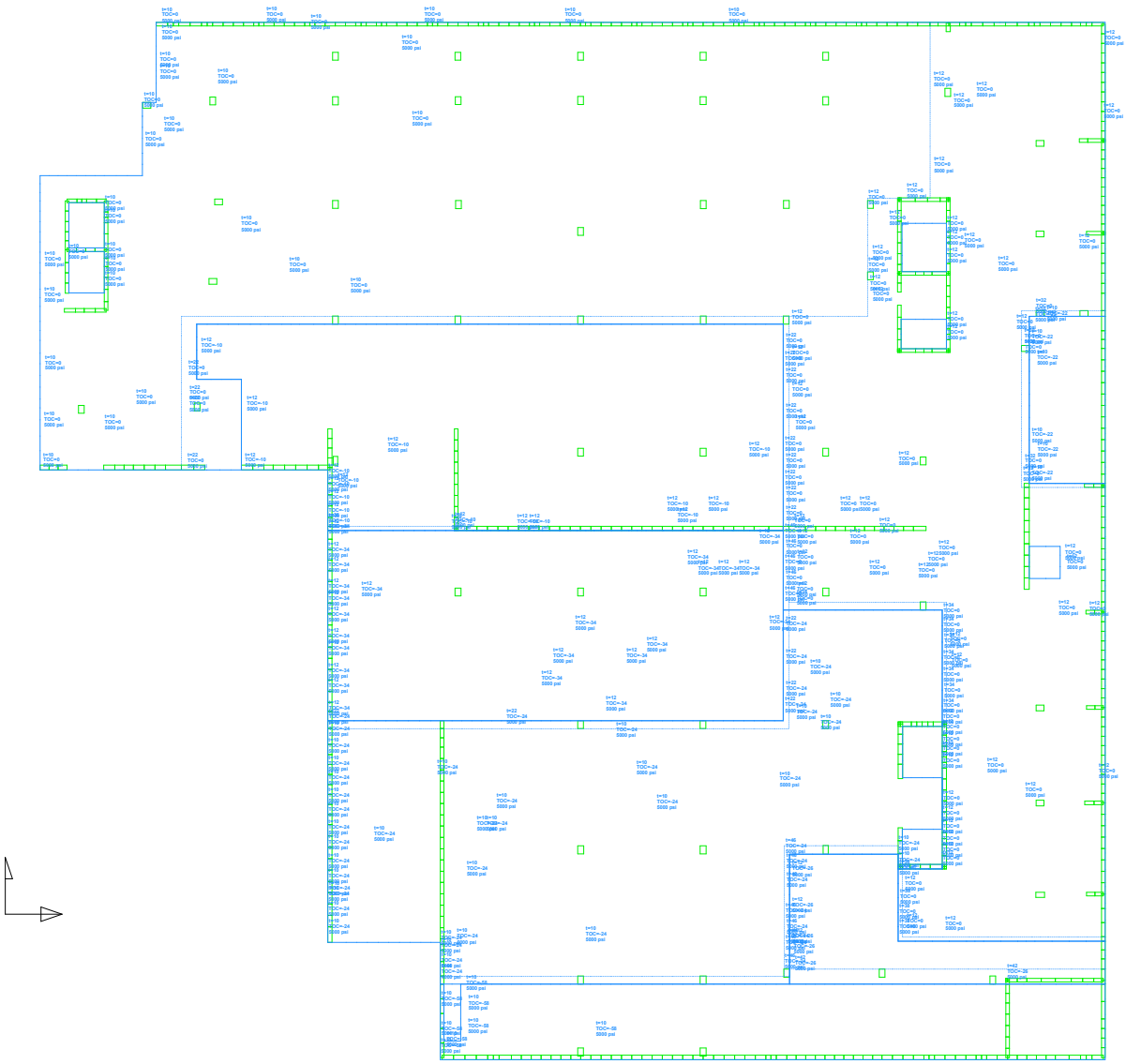
Element: Standard Plan

Element: Wall Elements Below; Column Elements Below; Slab Elements; User Notes; User Lines; User Dimensions;
Scale = 1:500



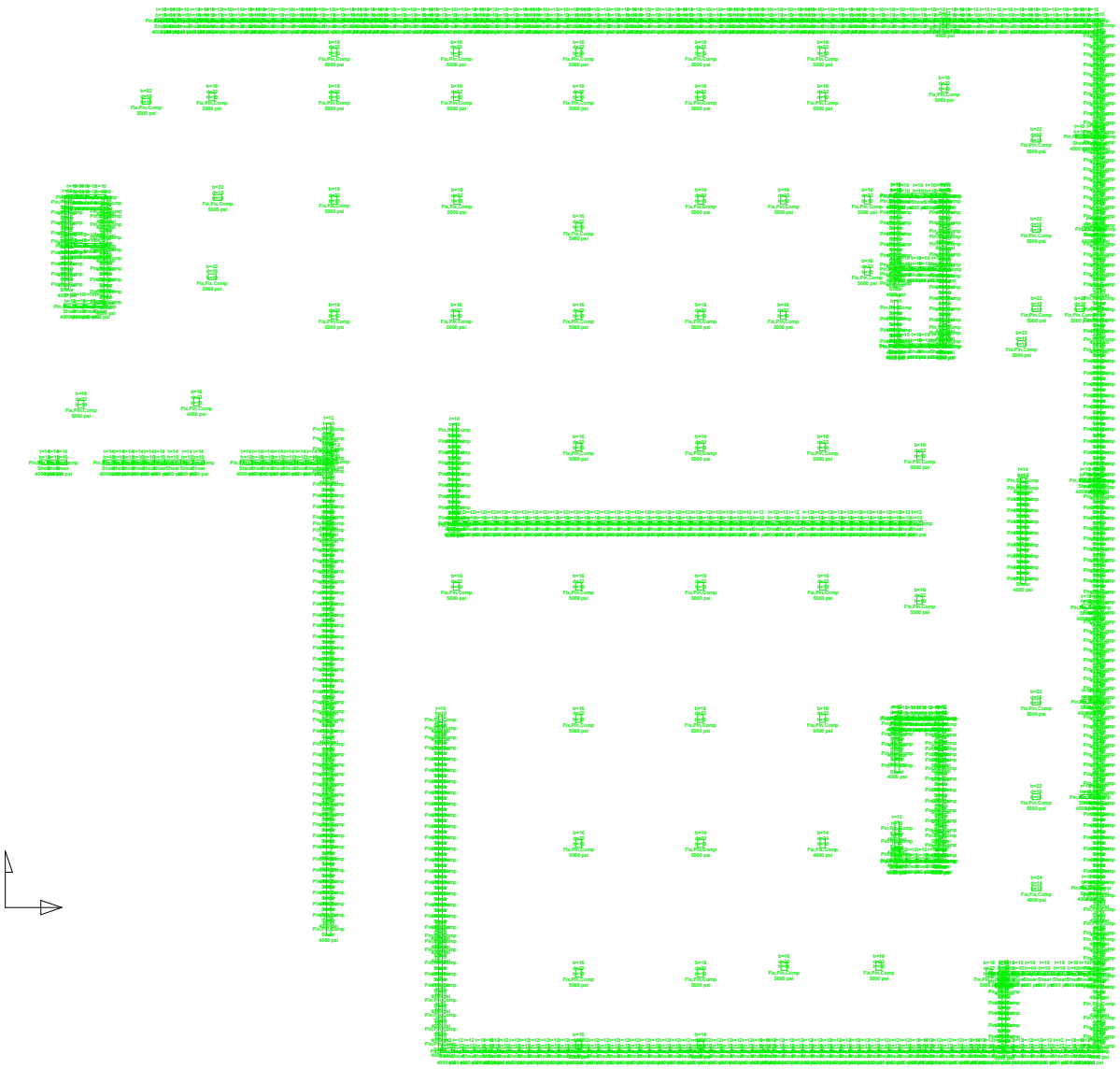
Element: Slab Summary Plan

Element; User Lines; User Notes; User Dimensions; Wall Elements Below; Wall Elements Above; Column Elements Below; Column Elements Above; Point Springs; Point Spring Icons; Line Springs; Line Spring Icons; Slab Elements; Slab Element Outline Only; Slab Element Thicknesses; Slab Element Elevations; Slab Element Concrete Models;
Scale = 1:500



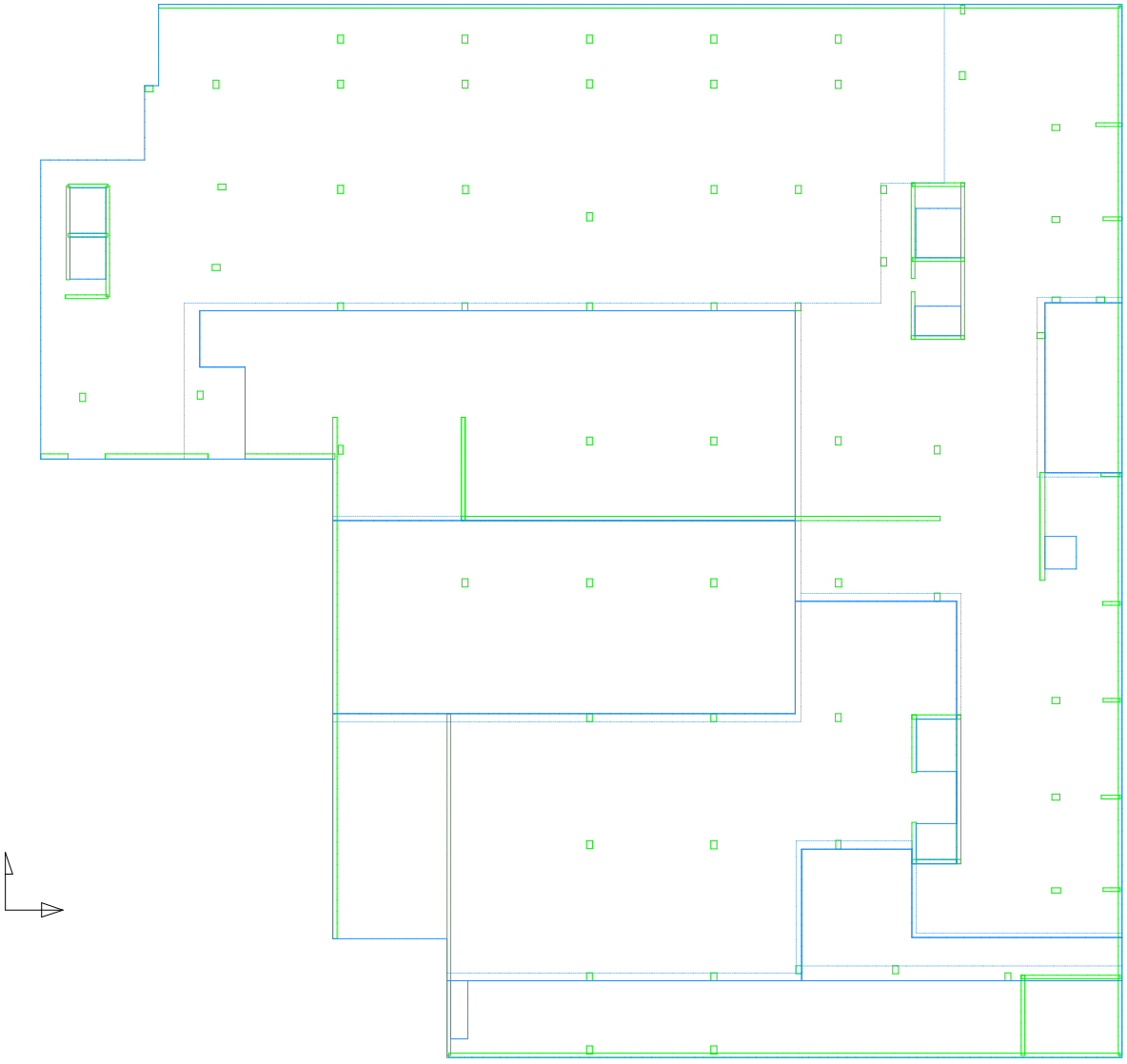
Element: Supports Below Slab Summary Plan

Element; User Lines; User Notes; User Dimensions; Wall Elements Below; Wall Element Thicknesses; Wall Element Heights; Wall Element Fixity; Wall Element Shear Fixity; Wall Element Concrete Models; Column Elements Below; Column Element Dimensions; Column Element Heights; Column Element Fixity; Column Element Concrete Models; Point Springs; Point Spring Icons; Point Spring Values; Point Spring Elevations; Line Springs; Line Spring Icons; Line Spring Values; Line Spring Elevations;
Scale = 1:500



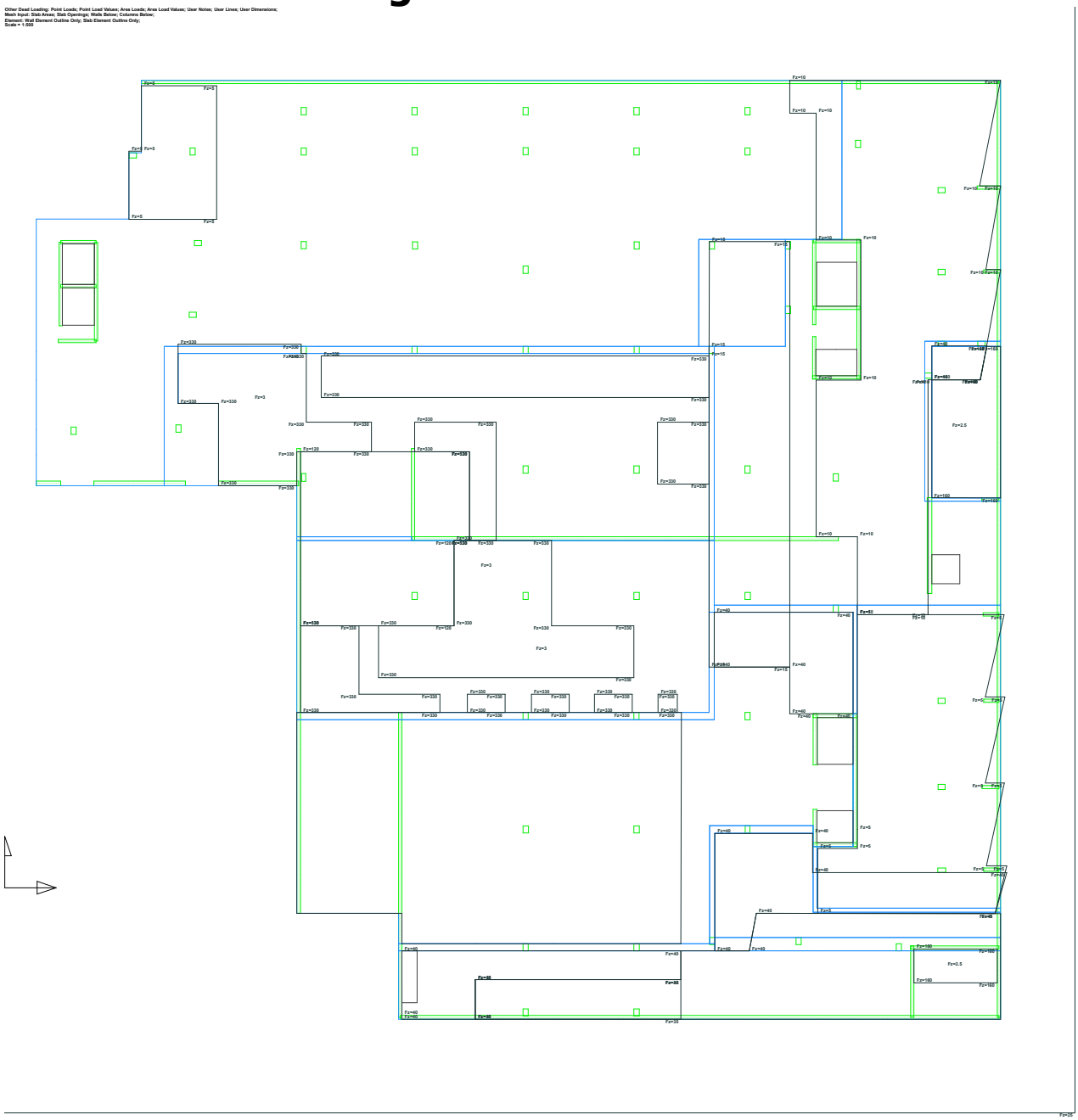
Temporary Construction (At Stressing) Loading: All Loads

Temporary Construction (At Stressing) Loading: User Lines; User Notes; User Dimensions; Point Loads; Point Load Icons; Point Load Values; Line Loads; Line Load Icons; Line Load Values; Area Loads; Area Load Icons; Area Load Values; Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:500



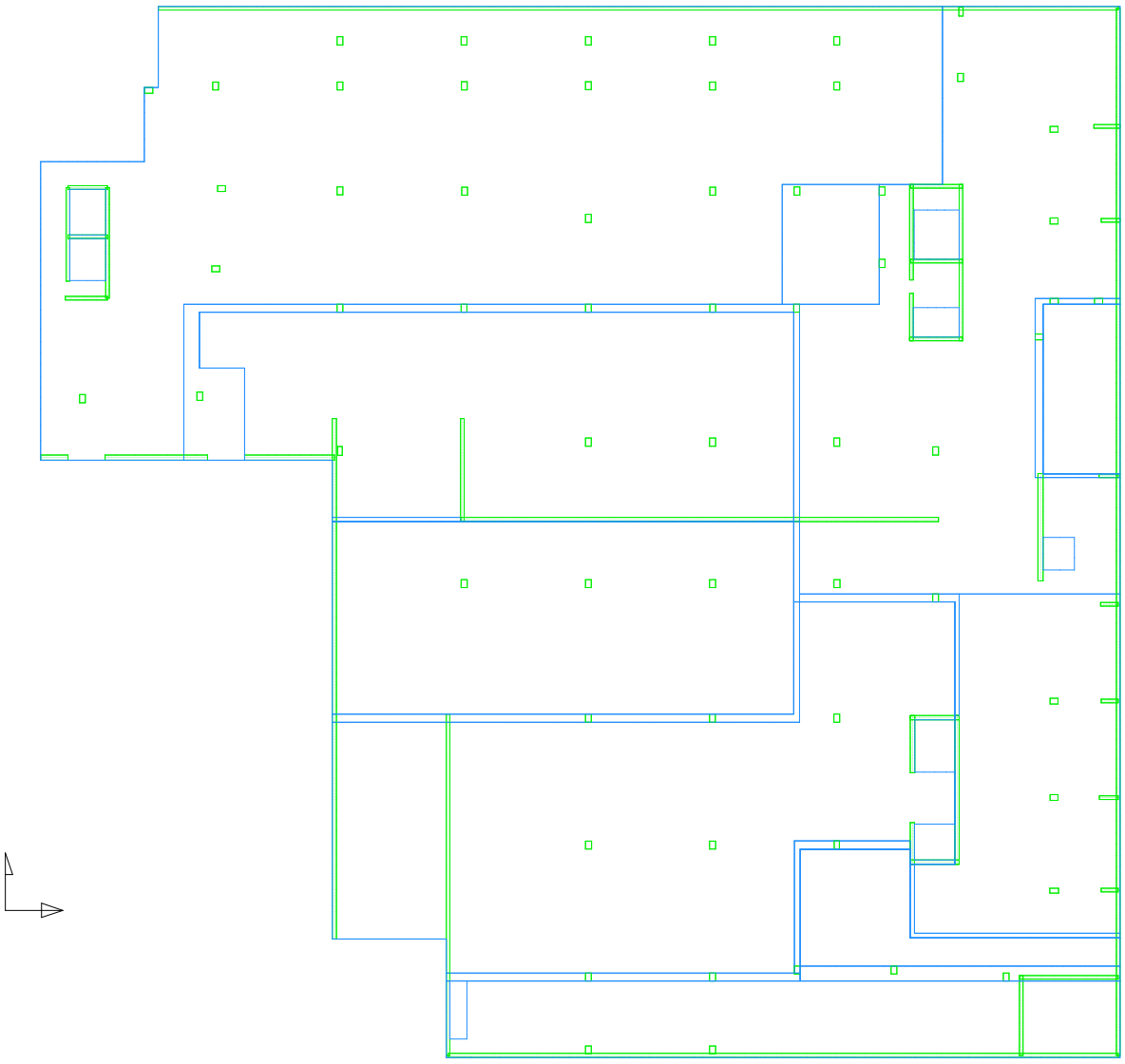
Other Dead Loading: All Loads Plan

Other Dead Loading; Point Loads; Point Load Values; Area Loads; Area Load Values; User Notes; User Lines; User Dimensions;
Mesh Input: Slab Areas; Slab Openings; Walls Below; Columns Below;
Element: Wall Element Outline Only; Slab Element Outline Only;
Scale = 1:500



Live (Reducible) Loading: All Loads Plan

Live (Reducible) Loading: Point Loads; Point Load Icons; Point Load Values; Line Loads; Line Load Icons; Line Load Values; Area Loads; Area Load Icons; Area Load Values; User Notes; User Lines; User Dimensions;
Mesh Input: Slab Areas; Walls Below; Columns Below;
Element: Wall Elements Above; Wall Elements Below; Wall Element Outline Only; Column Elements Above; Column Elements Below; Slab Elements; Slab Element Outline Only;
Scale = 1:500

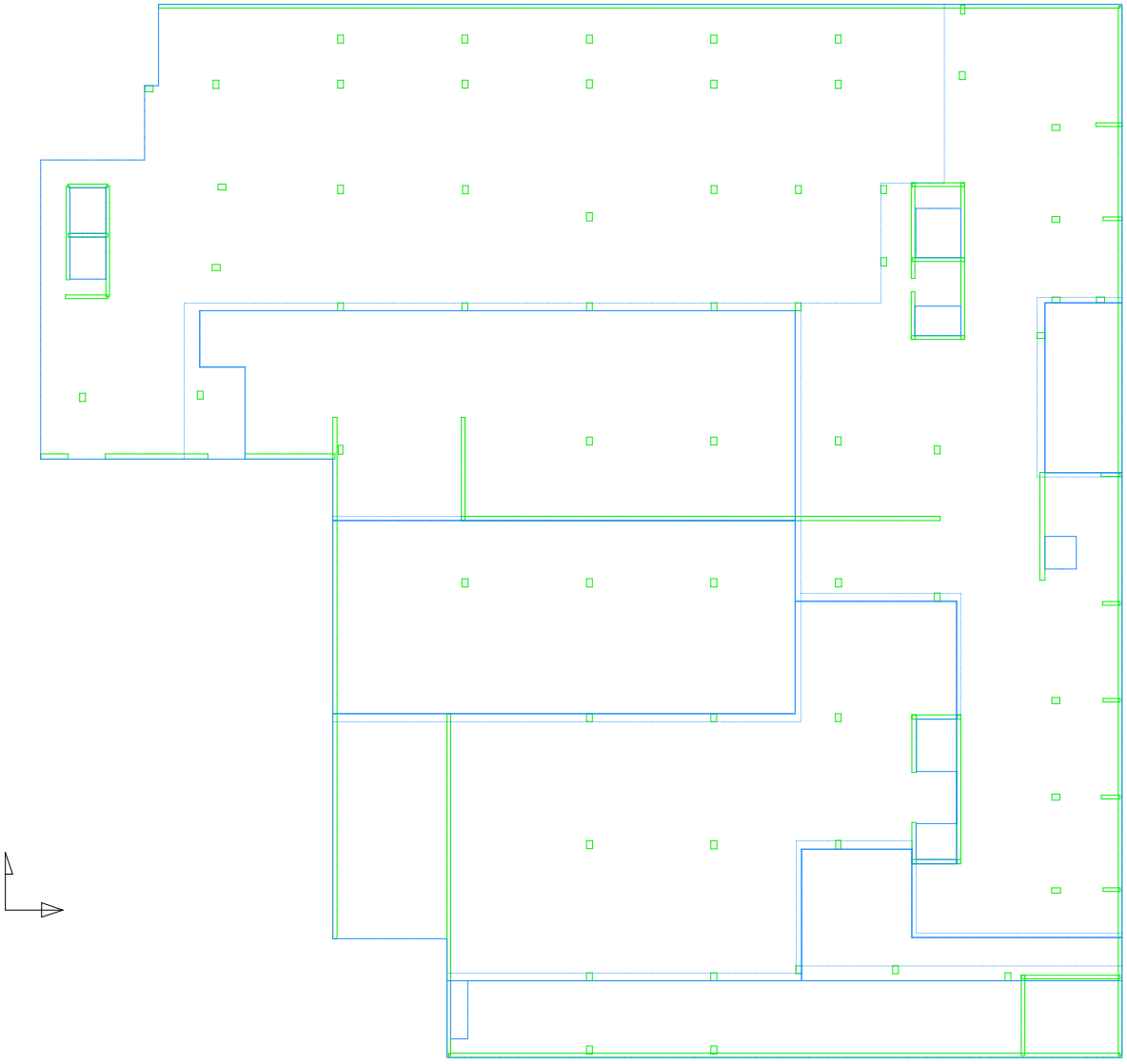


Live (Unreducible) Loading: All Loads Plan

Live (Unreducible) Loading: Area Loads; Area Load Numbers; User Lines;
Mesh Input: Slab Areas; Walls Below; Columns Below;
Element: Wall Elements Above; Wall Elements Below; Wall Element Outline Only; Column Elements Above; Column Elements Below; Slab Elements; Slab Element Outline Only;
Other Dead Loading: Area Loads;
Scale = 1:200

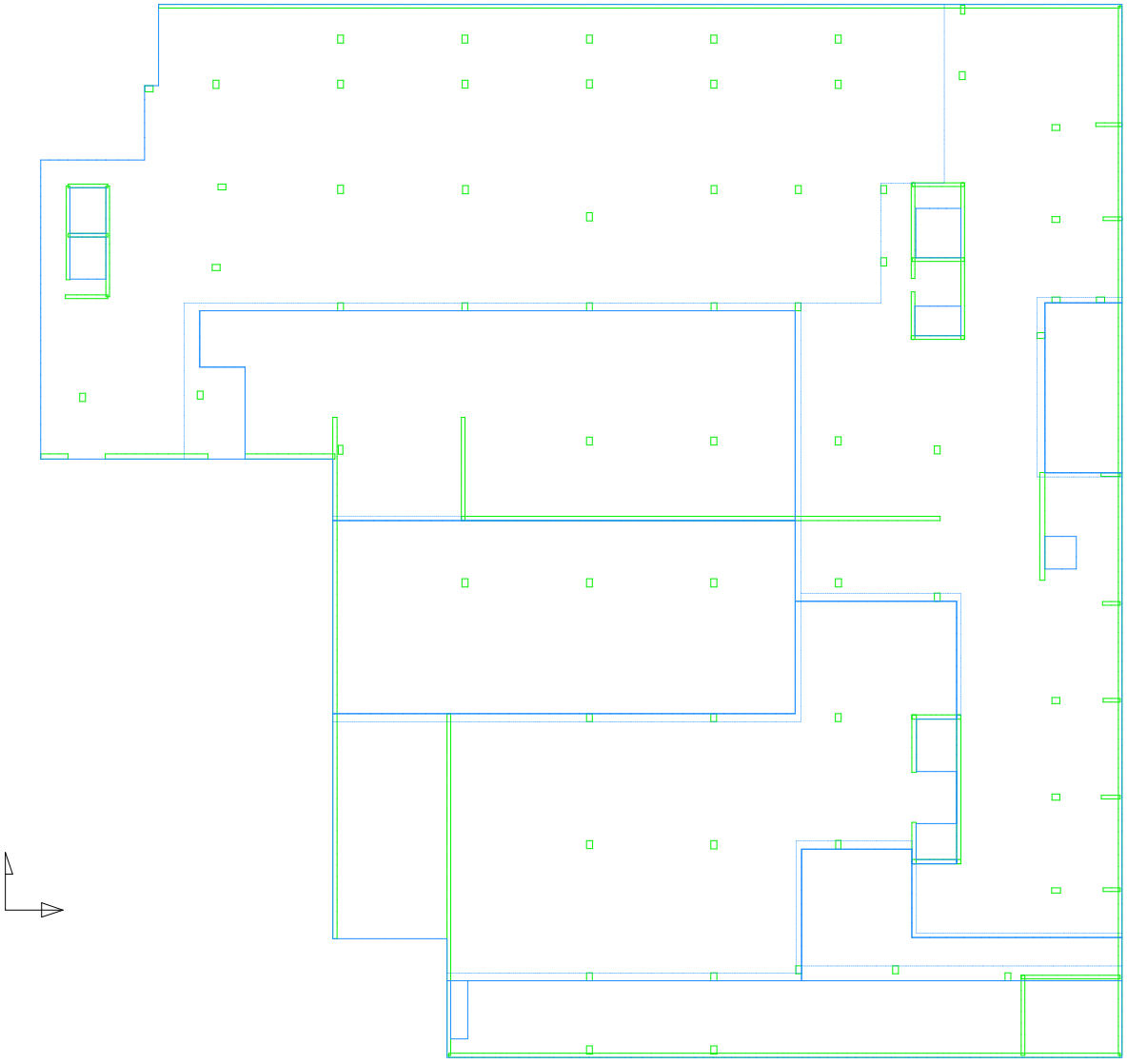
Live (Storage) Loading: All Loads Plan

Live (Storage) Loading: User Lines; User Notes; User Dimensions; Point Loads; Point Load Icons; Point Load Values; Line Loads; Line Load Icons; Line Load Values; Area Loads; Area Load Icons; Area Load Values; Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:500



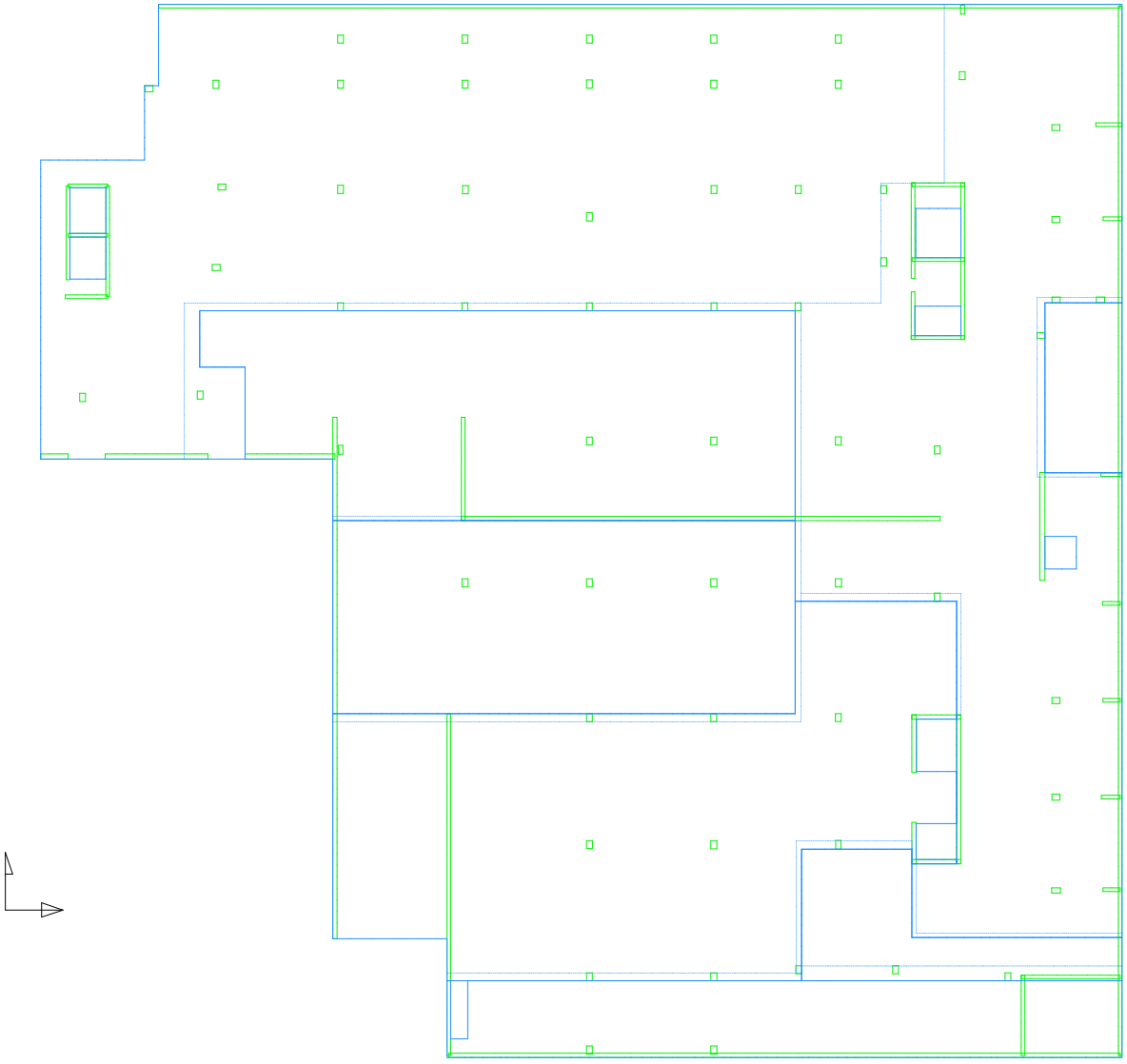
Live (Parking) Loading: All Loads Plan

Live (Parking) Loading: User Lines; User Notes; User Dimensions; Point Loads; Point Load Icons; Point Load Values; Line Loads; Line Load Icons; Line Load Values; Area Loads; Area Load Icons; Area Load Values; Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:500



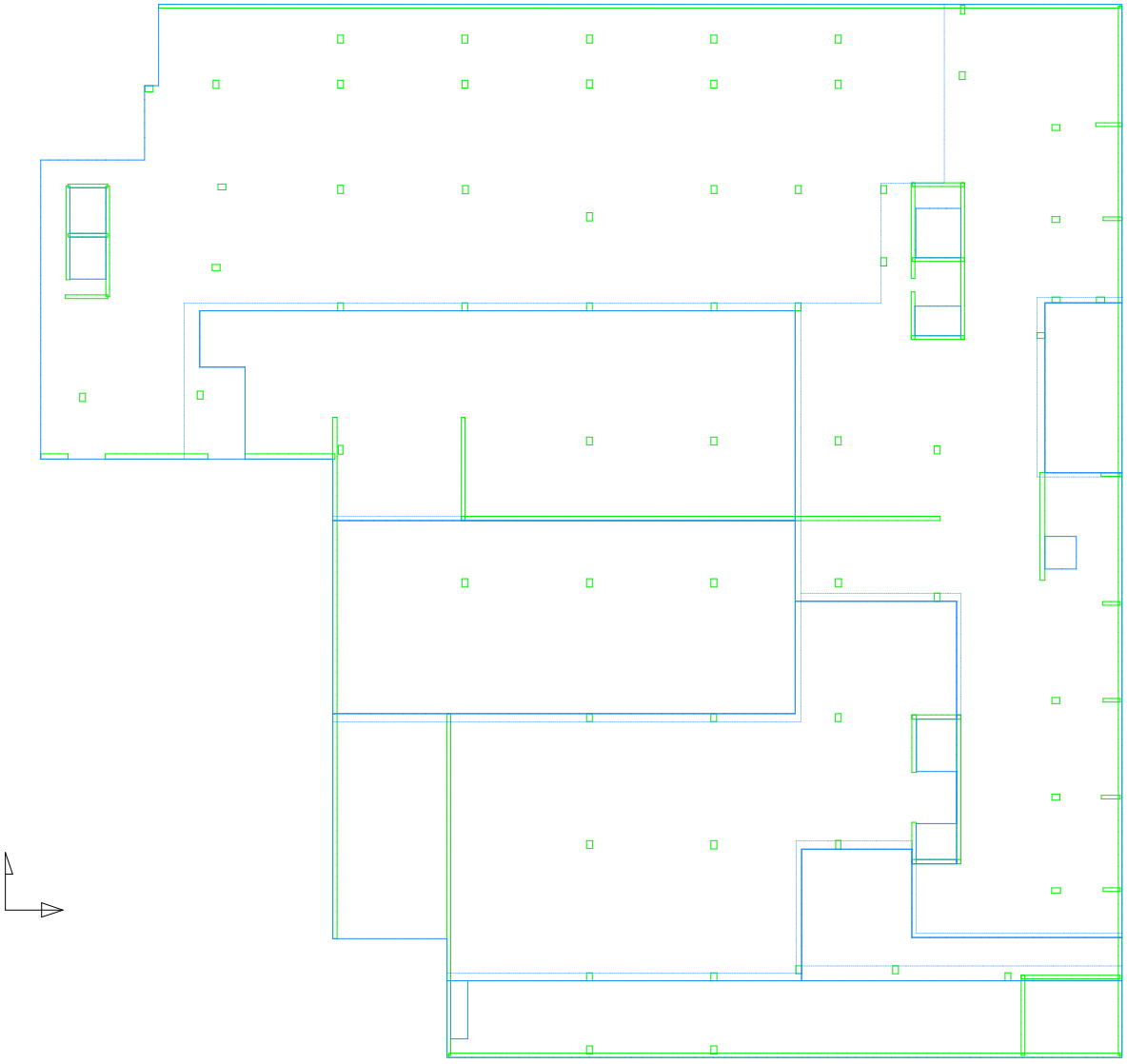
Live (Roof) Loading: All Loads Plan

Live (Roof) Loading: User Lines; User Notes; User Dimensions; Point Loads; Point Load Icons; Point Load Values; Line Loads; Line Load Icons; Line Load Values; Area Loads; Area Load Icons; Area Load Values; Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:500



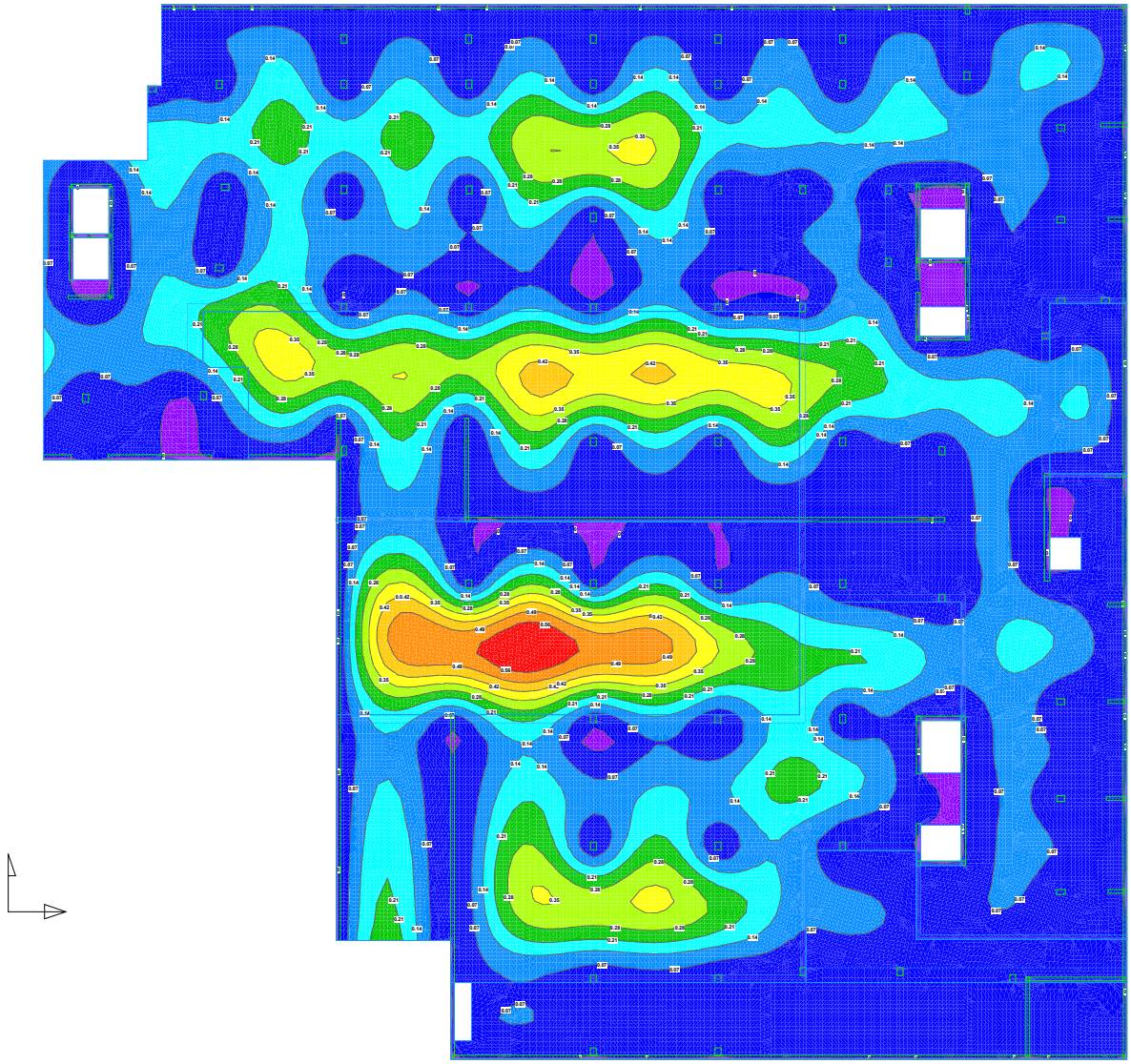
Snow Loading: All Loads Plan

Snow Loading: User Lines; User Notes; User Dimensions; Point Loads; Point Load Icons; Point Load Values; Line Loads; Line Load Icons; Line Load Values; Area Loads; Area Load Icons; Area Load Values; Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:500



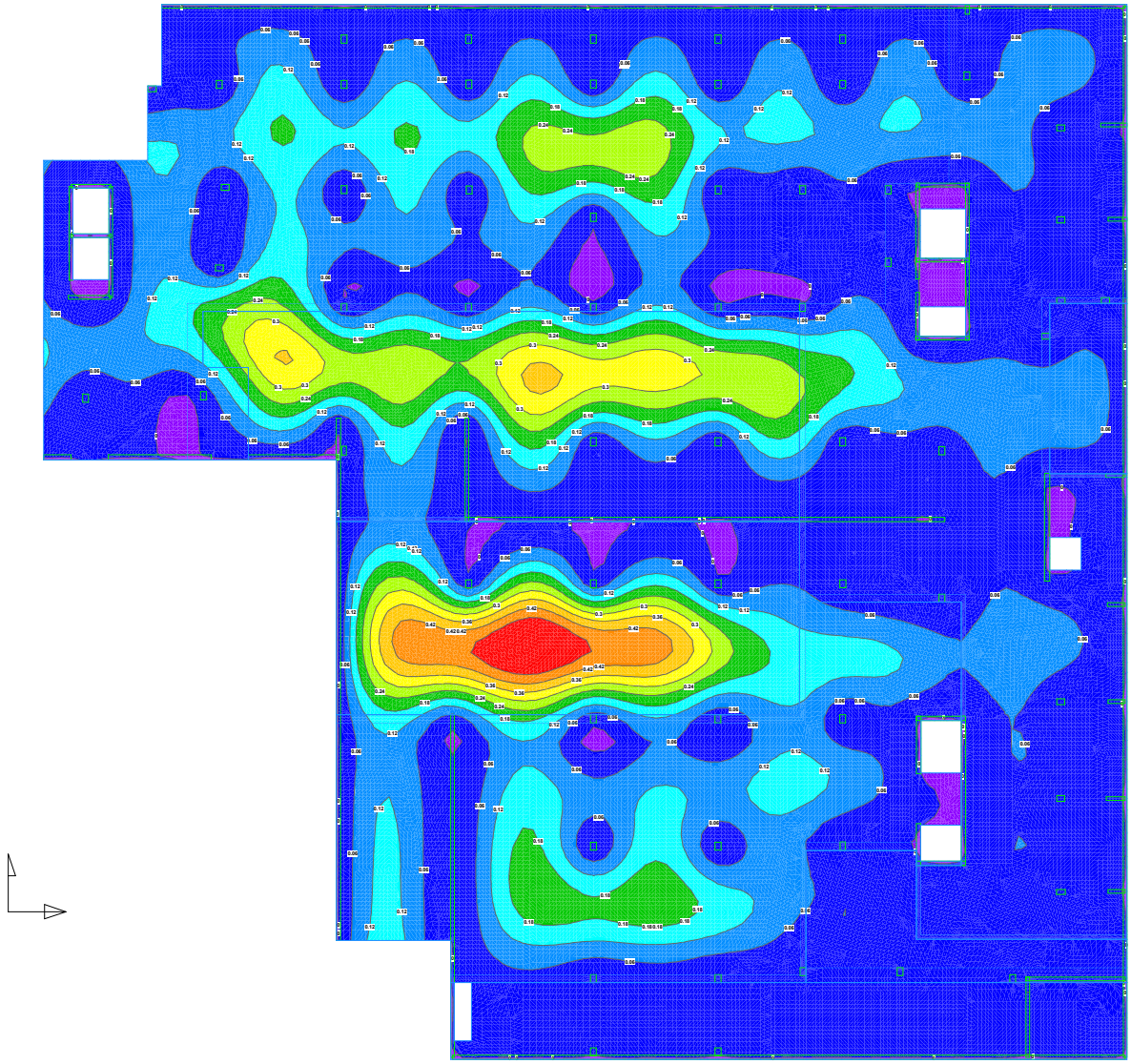
Service LC: D + L: Max Deflection Plan

Service LC: D + L: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:200
Service LC: D + L - Vertical Deflection Plot (Maximum Values)
0 0.07 0.14 0.21 0.28 0.35 0.42 0.49 0.56
Min Value = -0.02569 inches @ (120.1,142.7) Max Value = 0.6404 inches @ (118.1,60.03)



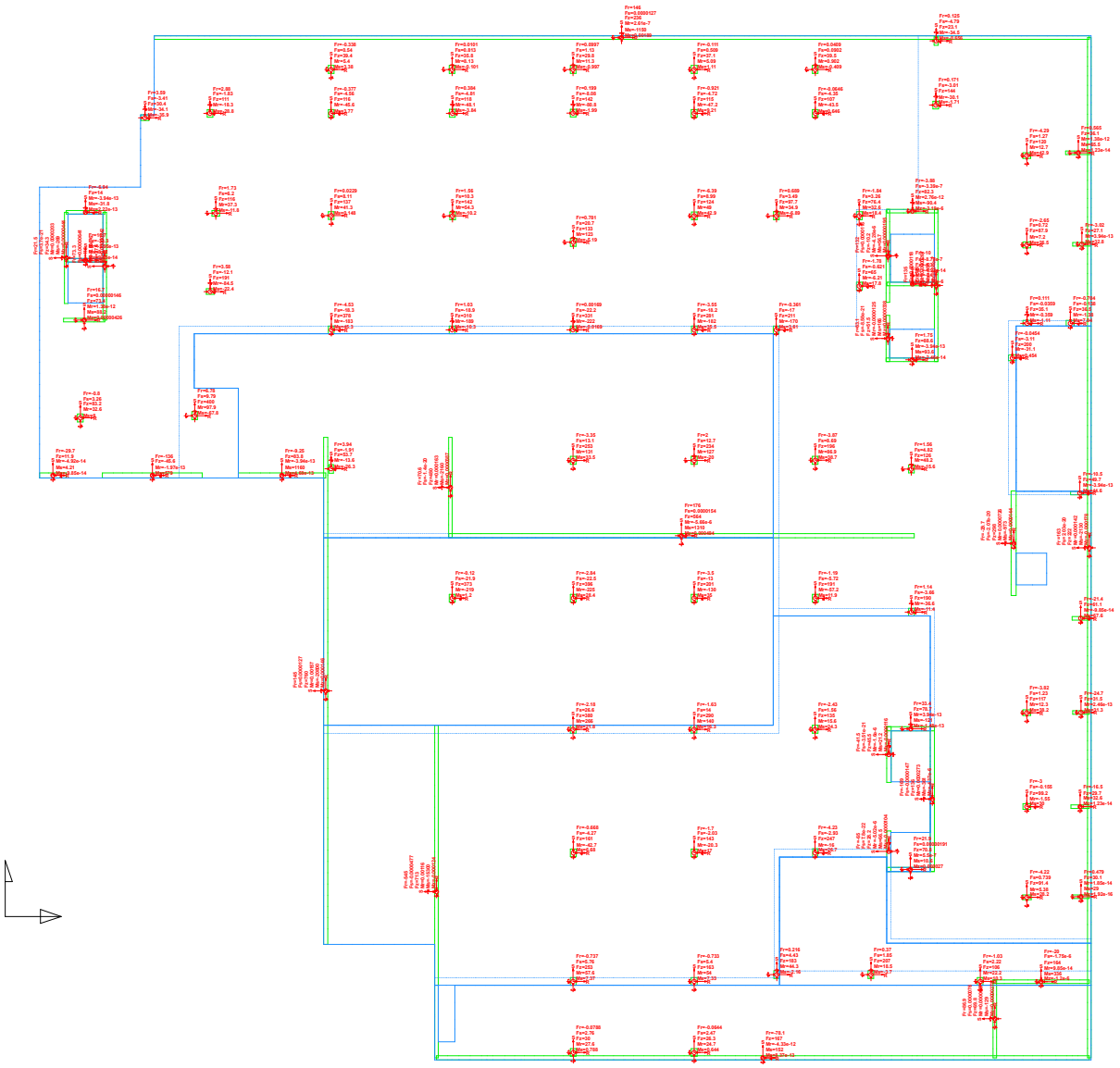
Service LC: D + L: Min Deflection Plan

Service LC: D + L: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:200
Service LC: D + L - Vertical Deflection Plot (Minimum Values)
0 0.06 0.12 0.18 0.24 0.3 0.36 0.42 0.48
Min Value = -0.03232 inches @ (133.1,142.7) Max Value = 0.0734 inches @ (118.1,60.03)



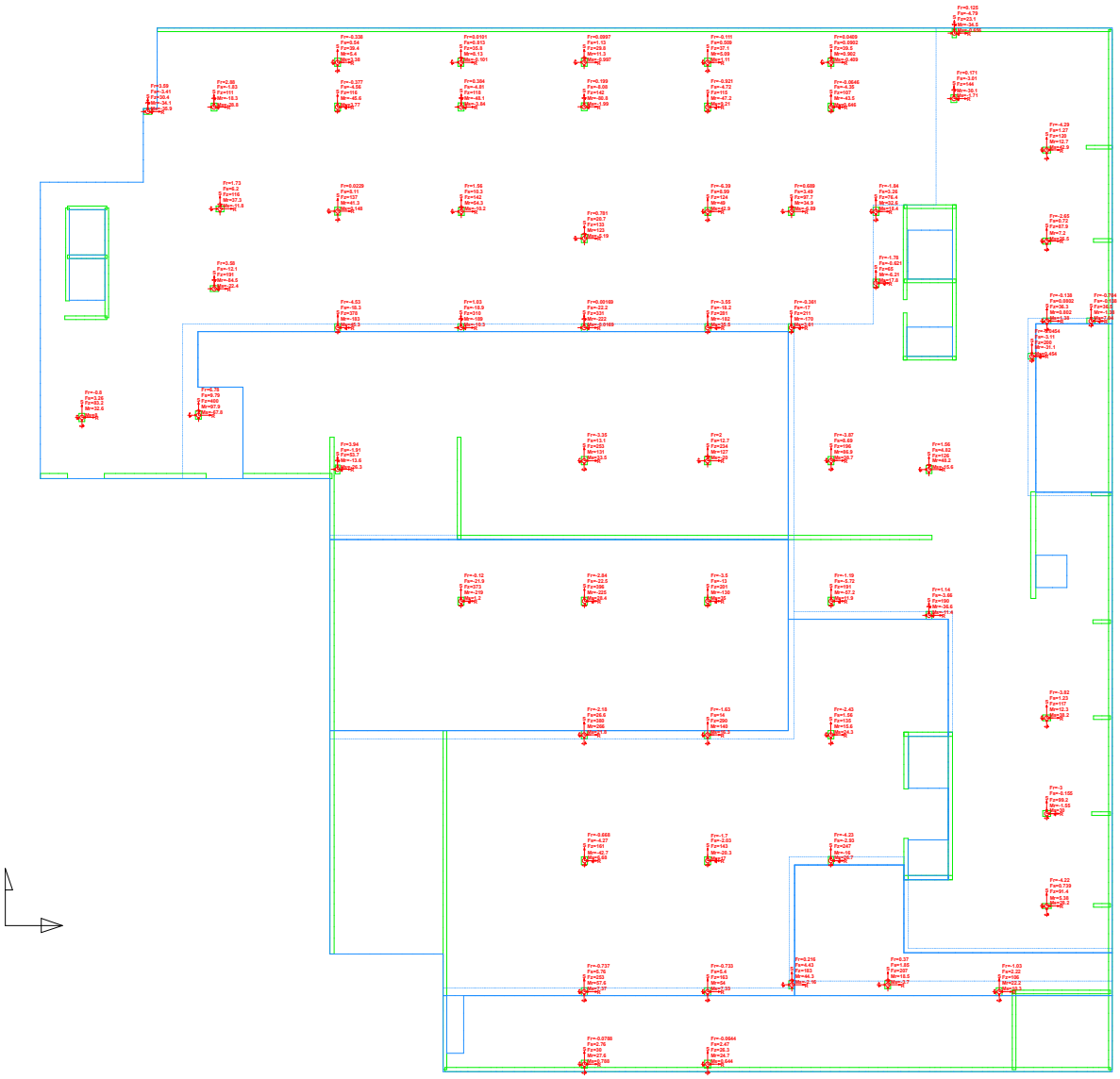
Factored LC: 1.4D: Std Reactions Plan

Factored LC: 1.4D: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:600
Factored LC: 1.4D - Reaction Plot: (Wall Below,Column Below,Point Spring,Line Spring,Point Support,Line Support)(Fr,Fa,Fz,Mr,Mx,My)(Standard Context)



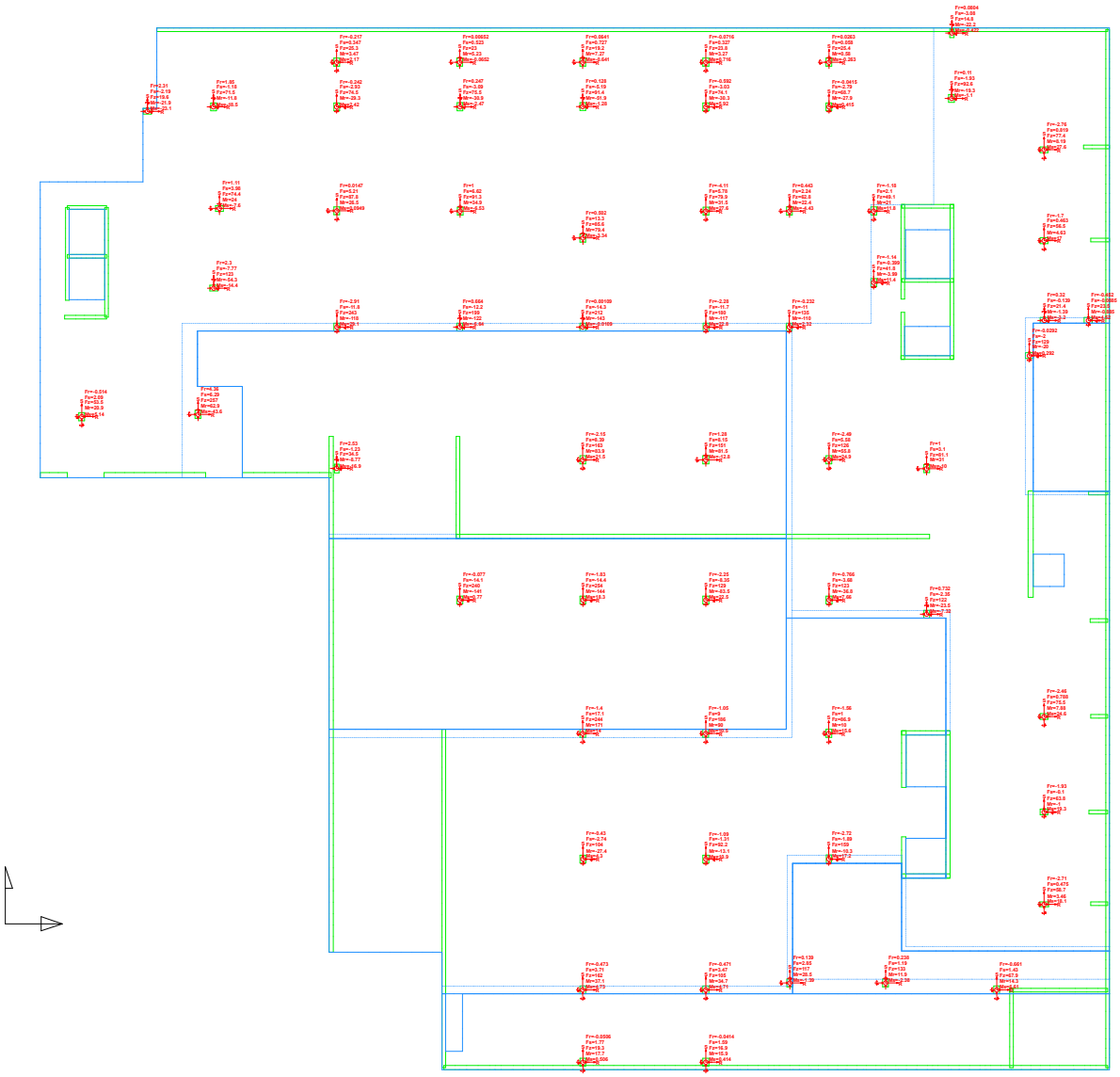
Factored LC: 1.4D: Max Reactions Plan

Factored LC: 1.4D: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:600
Factored LC: 1.4D - Reaction Plot: (Column Below)(Fz,Fx,Fz,Mr,Mx,My)(Max Fz Contest)



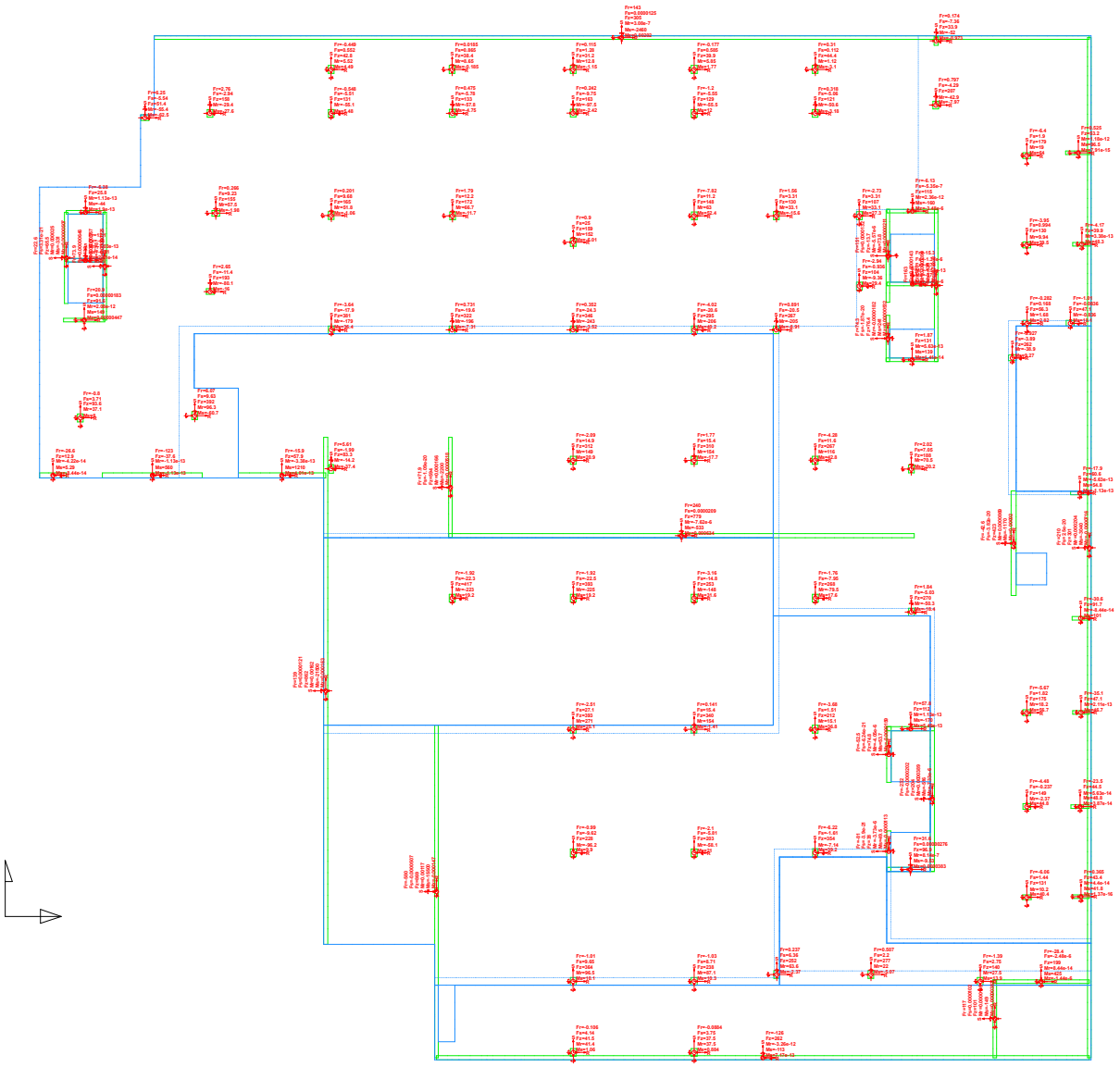
Factored LC: 1.4D: Min Reactions Plan

Factored LC: 1.4D: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:550
Factored LC: 1.4D - Reaction Plot: (Column Below)(Fz,Fx,Fz,Mr,Mx,My)(Min Fz Context)



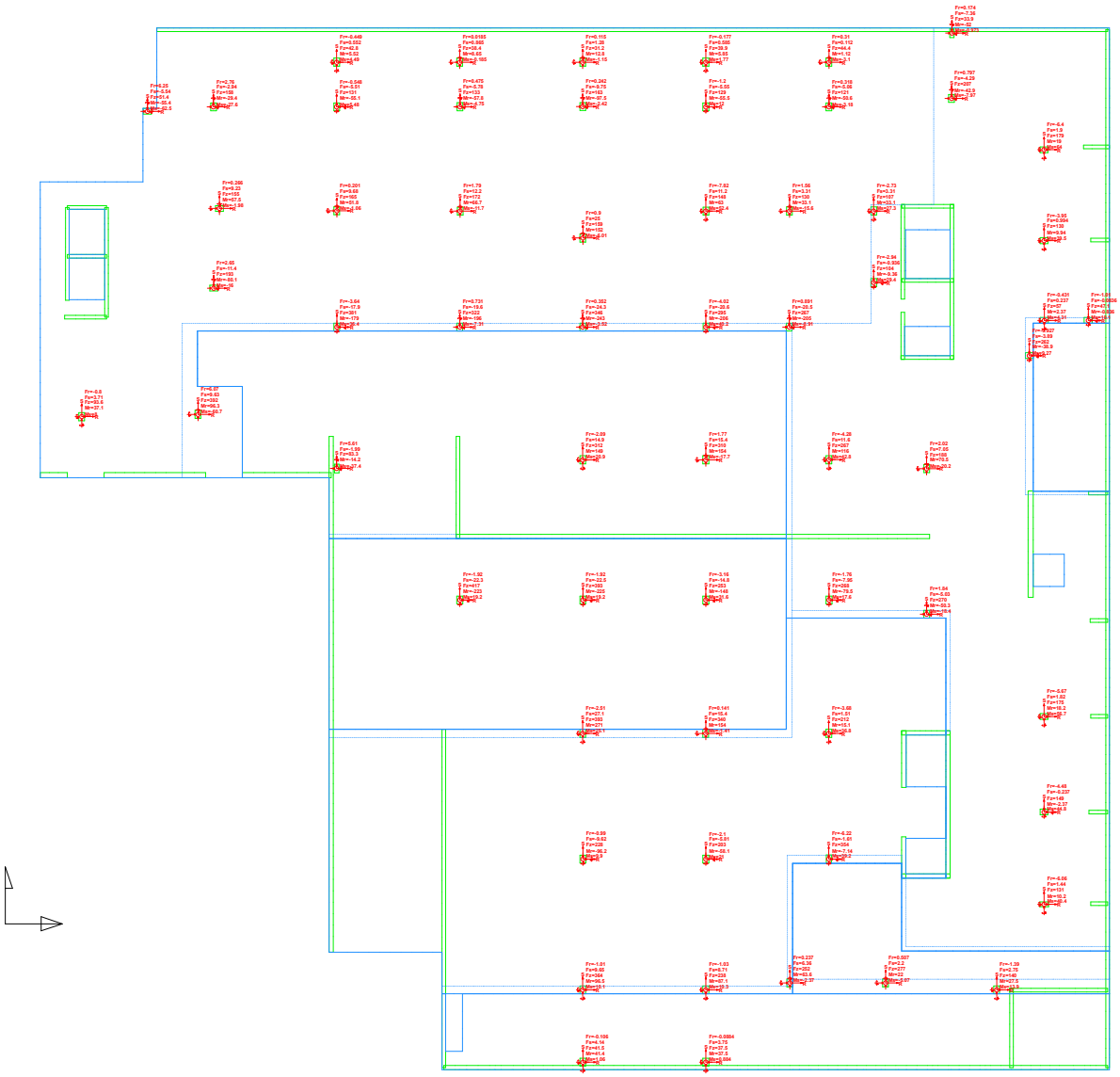
Factored LC: 1.2D + 1.6L + 0.5Lr: Std Reactions Plan

Factored LC: 1.2D + 1.6L + 0.5Lr: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:600
Factored LC: 1.2D + 1.6L + 0.5Lr - Reaction Plot: (Wall Below,Column Below,Point Spring,Line Spring,Point Support,Line Support)(Fy,Fx,Fz,Mx,My,Mz)(Standard Context)



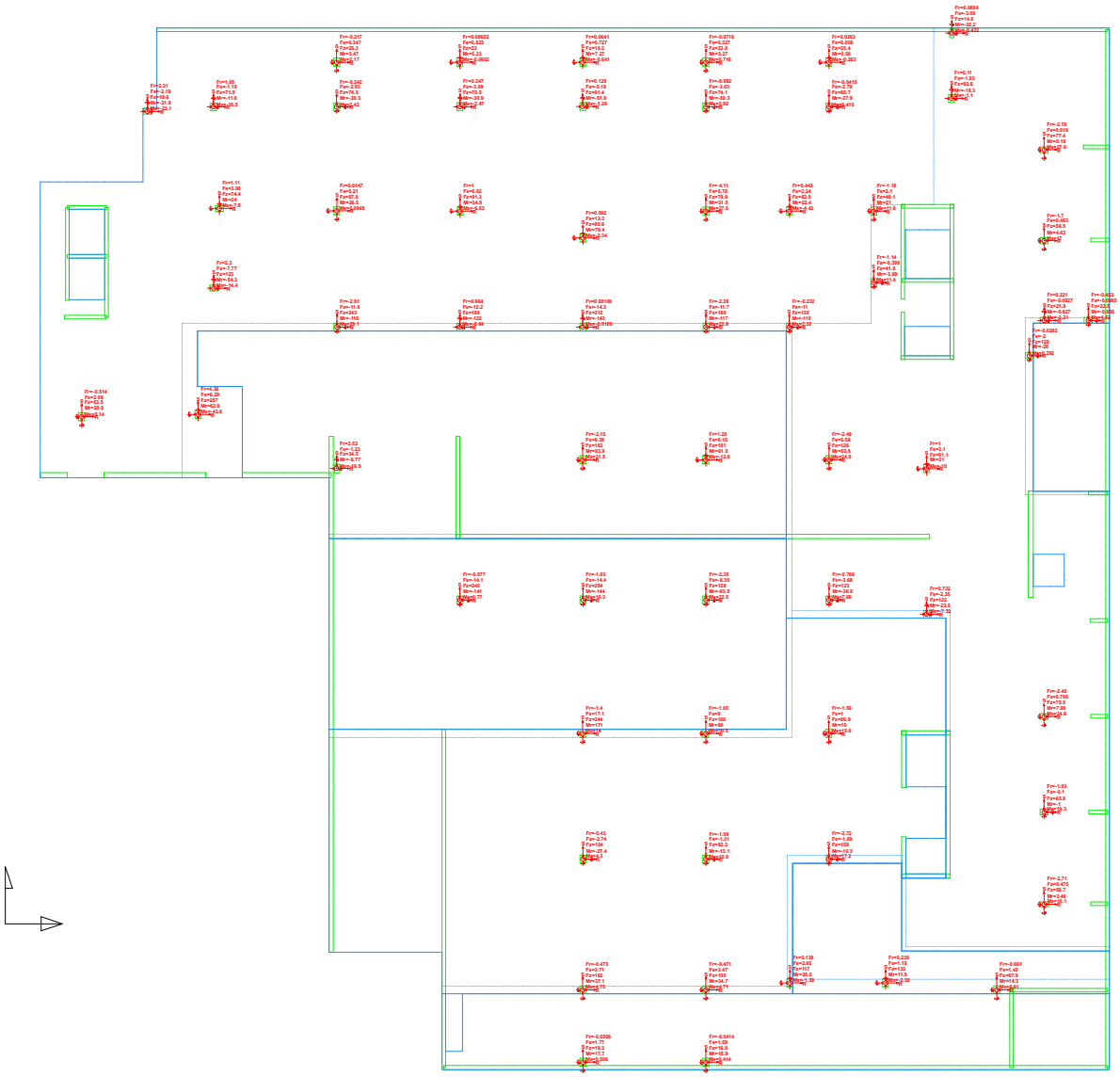
Factored LC: 1.2D + 1.6L + 0.5Lr: Max Reactions Plan

Factored LC: 1.2D + 1.6L + 0.5Lr: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:100
Factored LC: 1.2D + 1.6L + 0.5Lr - Reaction Plot: (Column Below)(Fr,Fx,Fz,Mr,My,Mz)(Max Fz Contact)



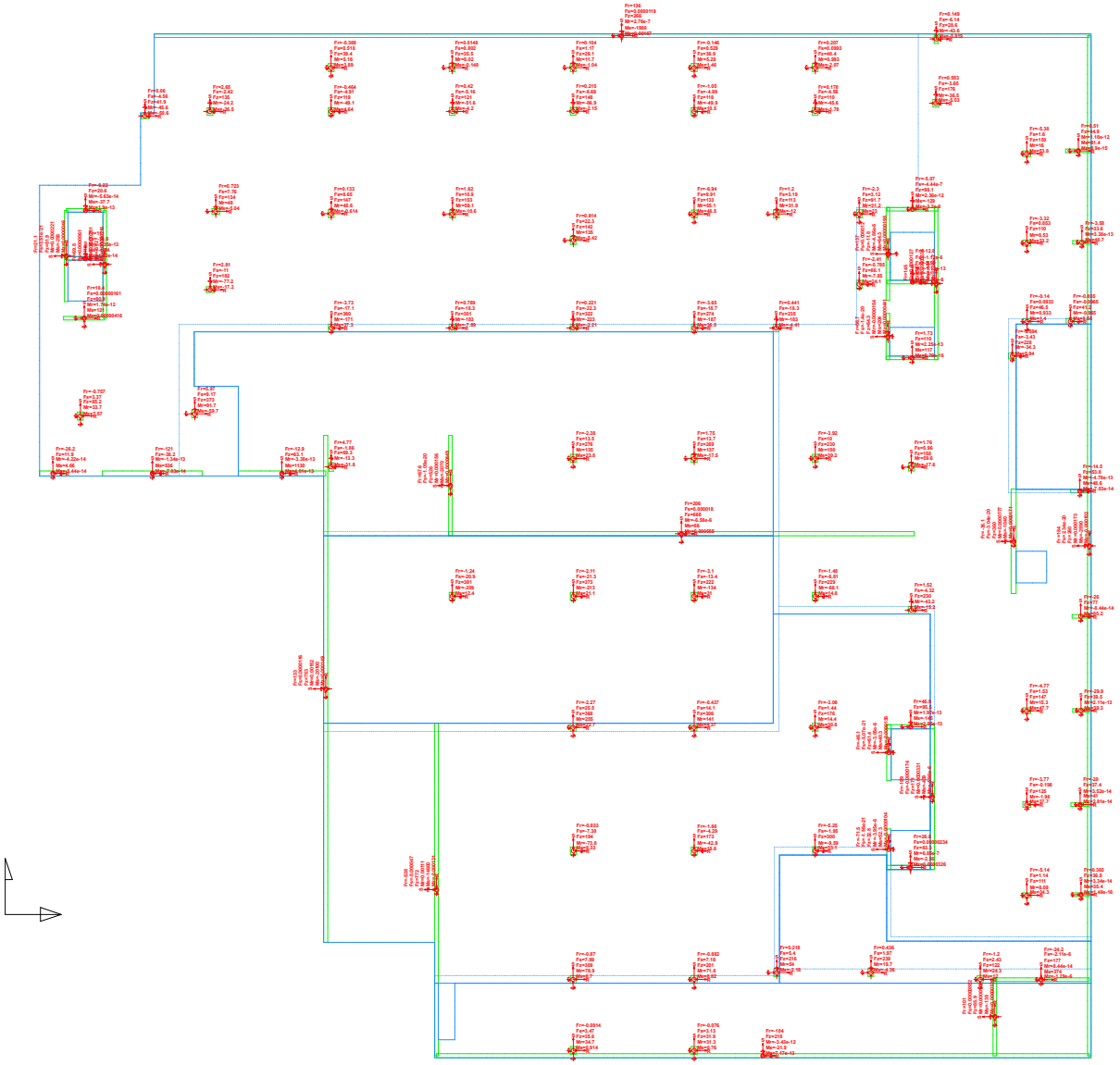
Factored LC: 1.2D + 1.6L + 0.5Lr: Min Reactions Plan

Factored LC: 1.2D + 1.6L + 0.5Lr: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:550
Factored LC: 1.2D + 1.6L + 0.5Lr - Reaction Plot: (Column Below)(Fr,Fx,Fz,Mr,My,Mx)(Min Fz Contact)



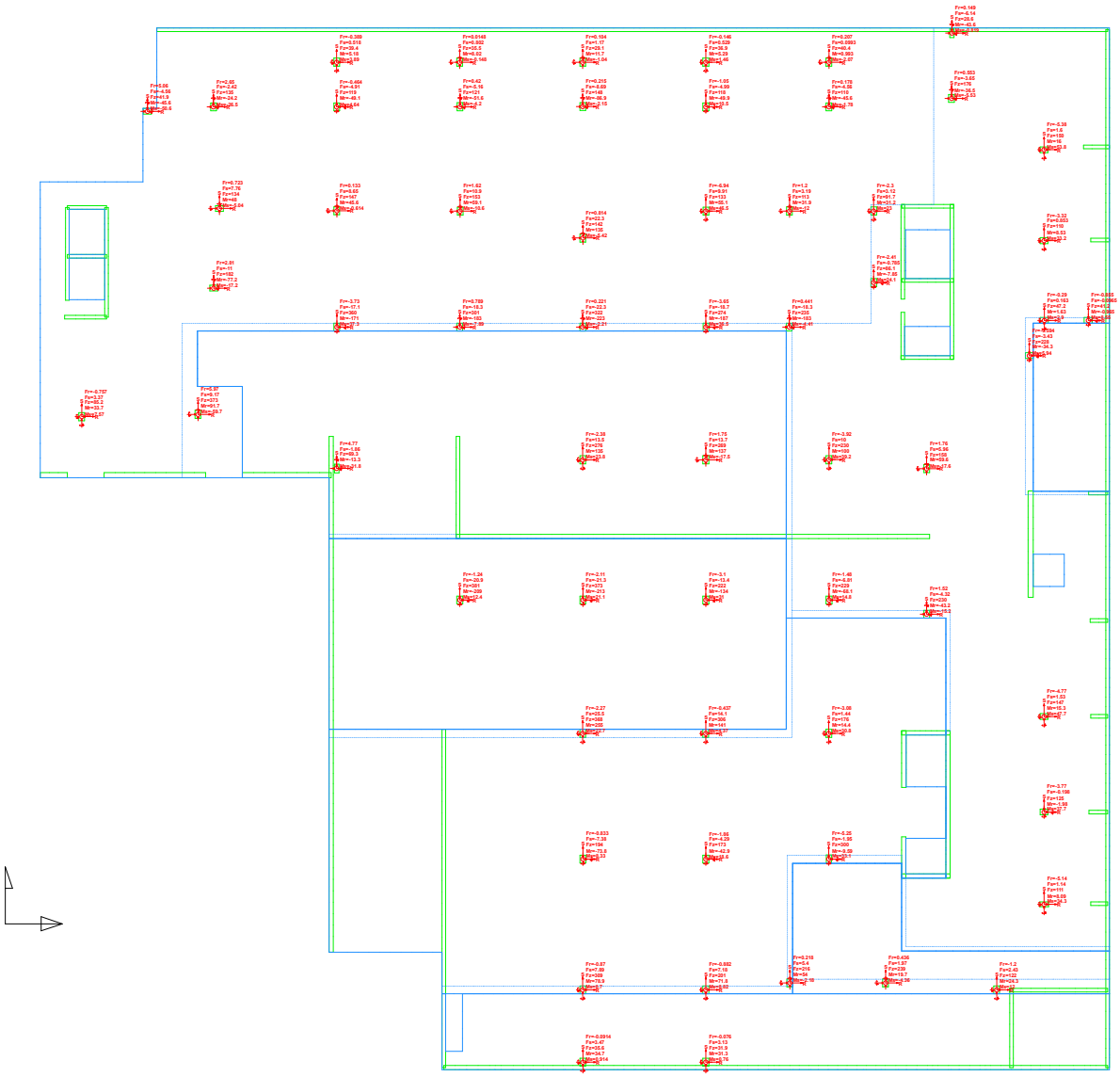
Factored LC: 1.2D + f1L + 1.6Lr: Std Reactions Plan

Factored LC: 1.2D + f1L + 1.6Lr: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:600
Factored LC: 1.2D + f1L + 1.6Lr - Reaction Plot: (Wall Below,Column Below,Point Spring,Line Spring,Point Support,Line Support)(Fr,Fx,Fz,Mr,Mx,Mz)(Standard Contest)



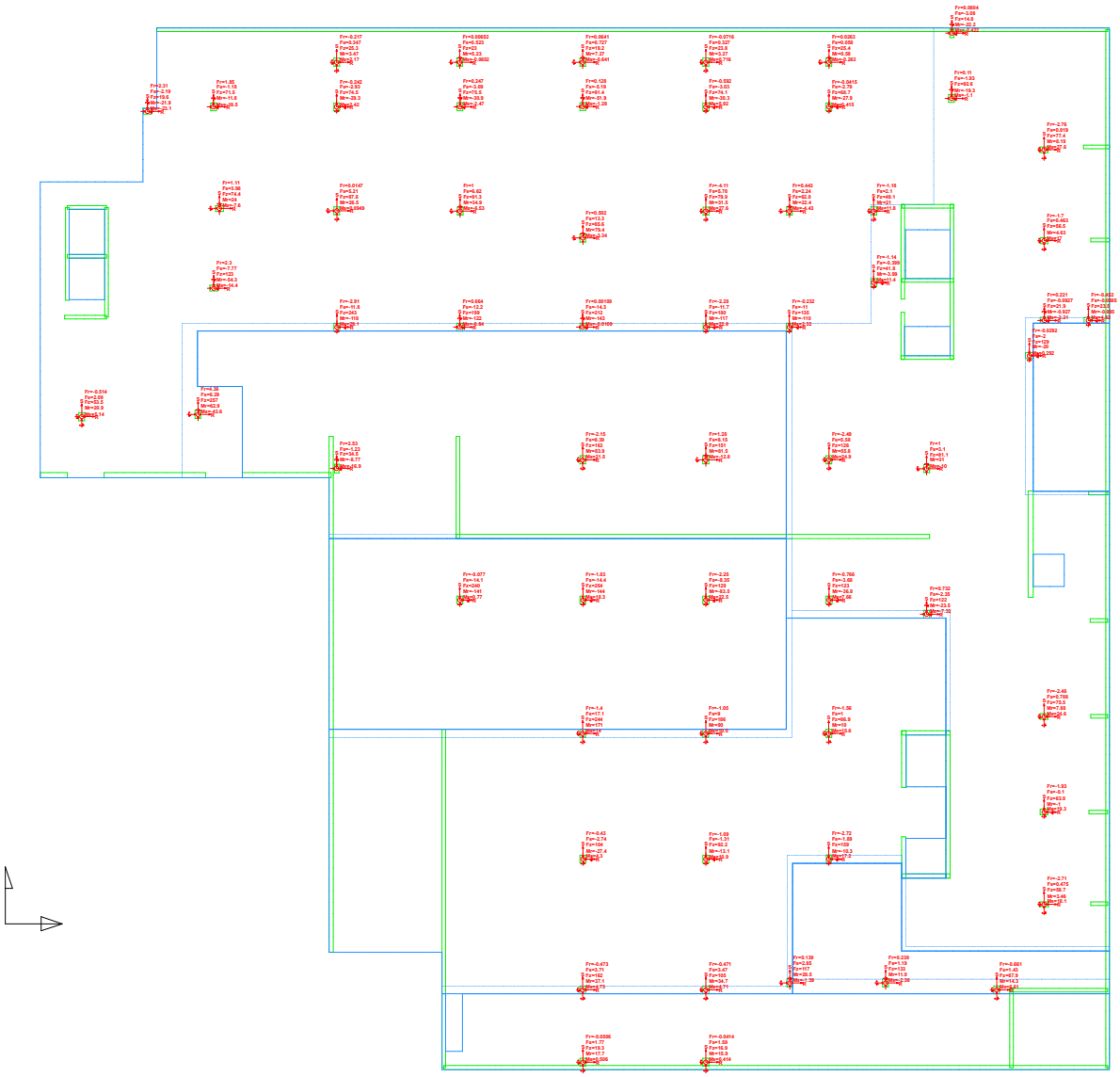
Factored LC: 1.2D + f1L + 1.6Lr: Max Reactions Plan

Factored LC: 1.2D + f1L + 1.6Lr: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:100
Factored LC: 1.2D + f1L + 1.6Lr - Reaction Plot: (Column Below)(Fz,Fx,Fz,Mr,Mx,My)(Max Fz Contest)



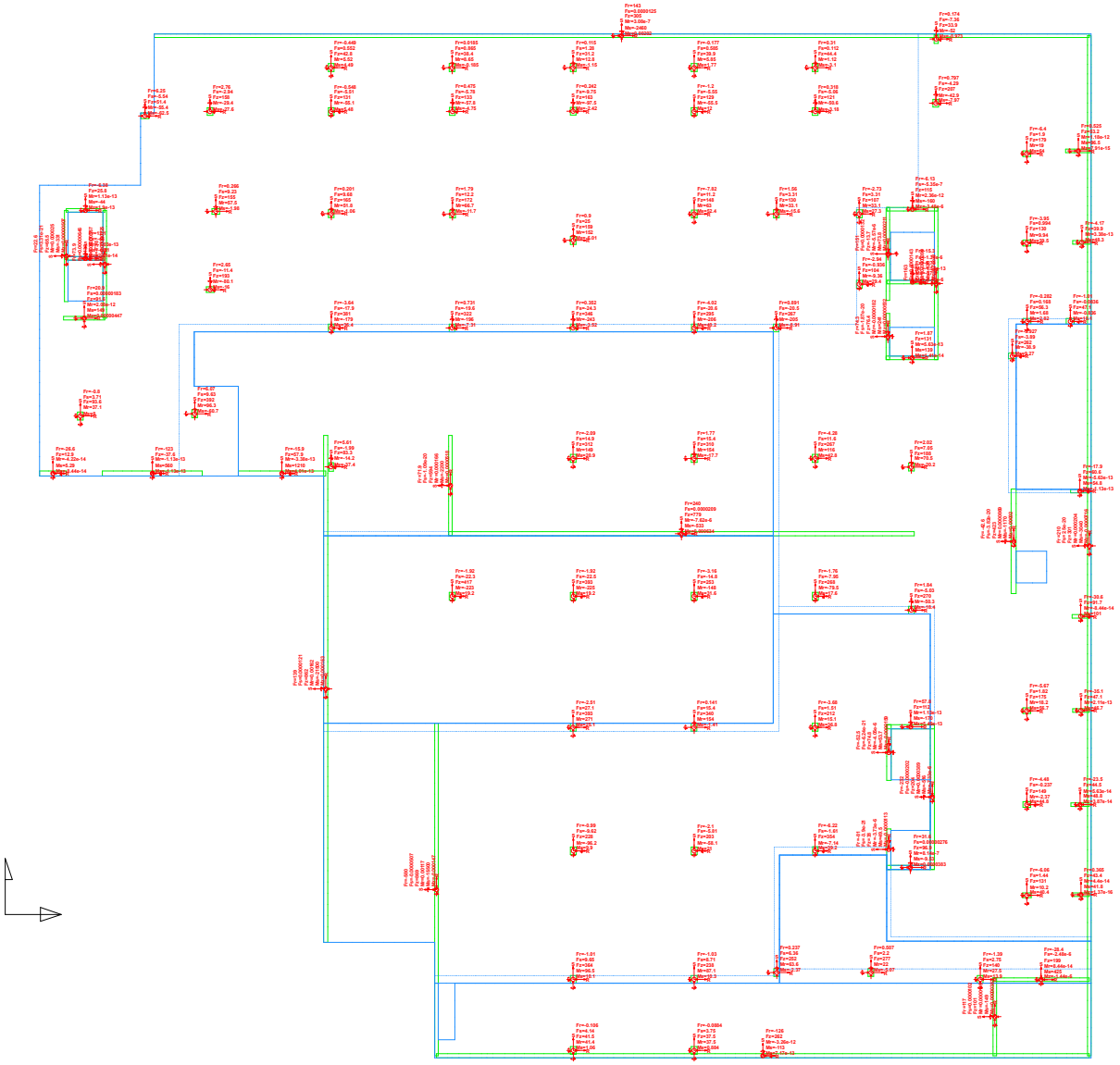
Factored LC: 1.2D + f1L + 1.6Lr: Min Reactions Plan

Factored LC: 1.2D + f1L + 1.6Lr: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:600
Factored LC: 1.2D + f1L + 1.6Lr - Reaction Plot: (Column Below)(Fz,Fx,Fz,Mr,Mx,My)(Min Fz Contest)



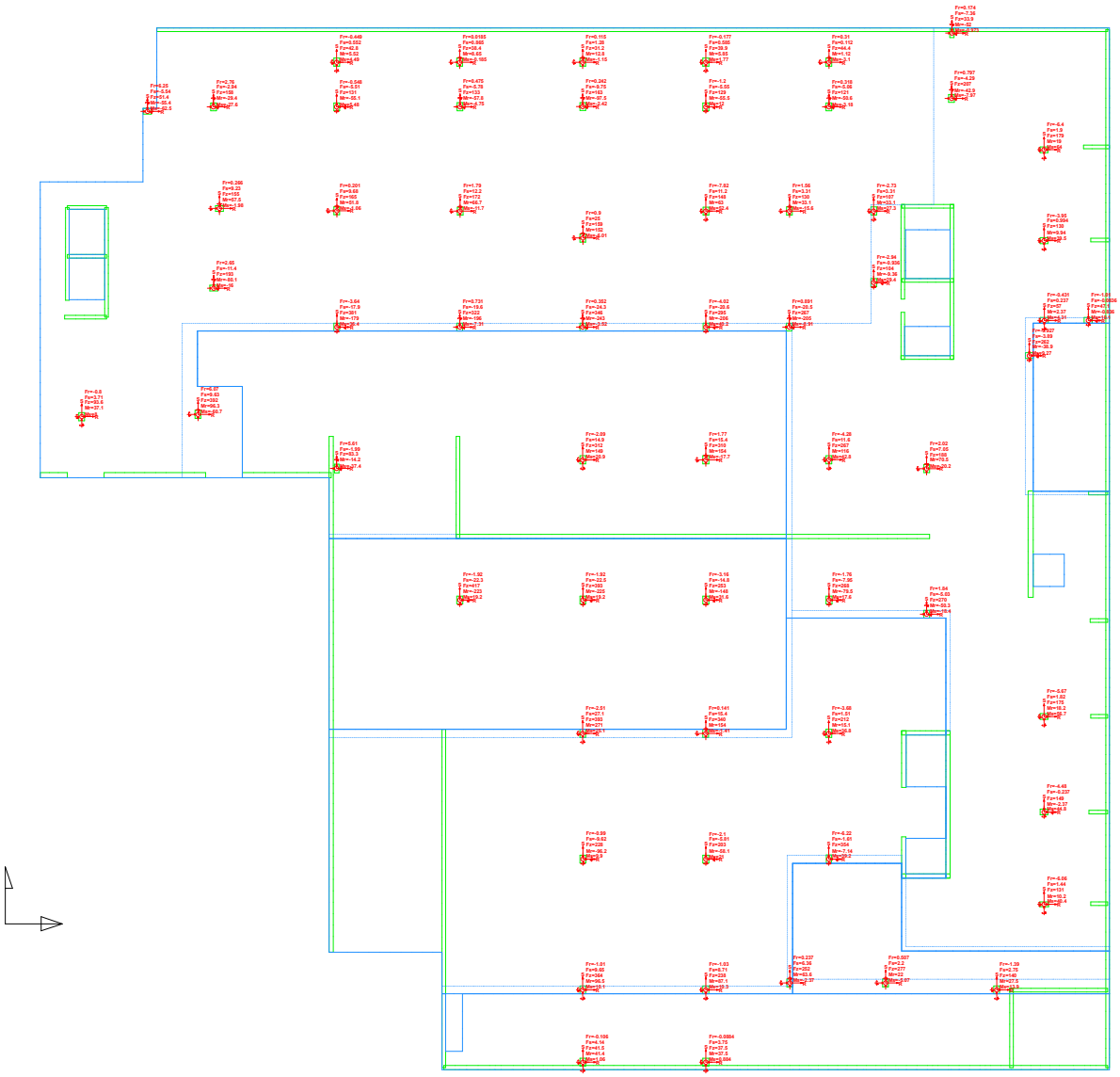
Factored LC: 1.2D + 1.6L + 0.5S: Std Reactions Plan

Factored LC: 1.2D + 1.6L + 0.5S: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:600
Factored LC: 1.2D + 1.6L + 0.5S - Reaction Plot: (Wall Below,Column Below,Point Spring,Line Spring,Point Support,Line Support)(Fz,Fx,Fz,Mx,My,Mz)(Standard Context)



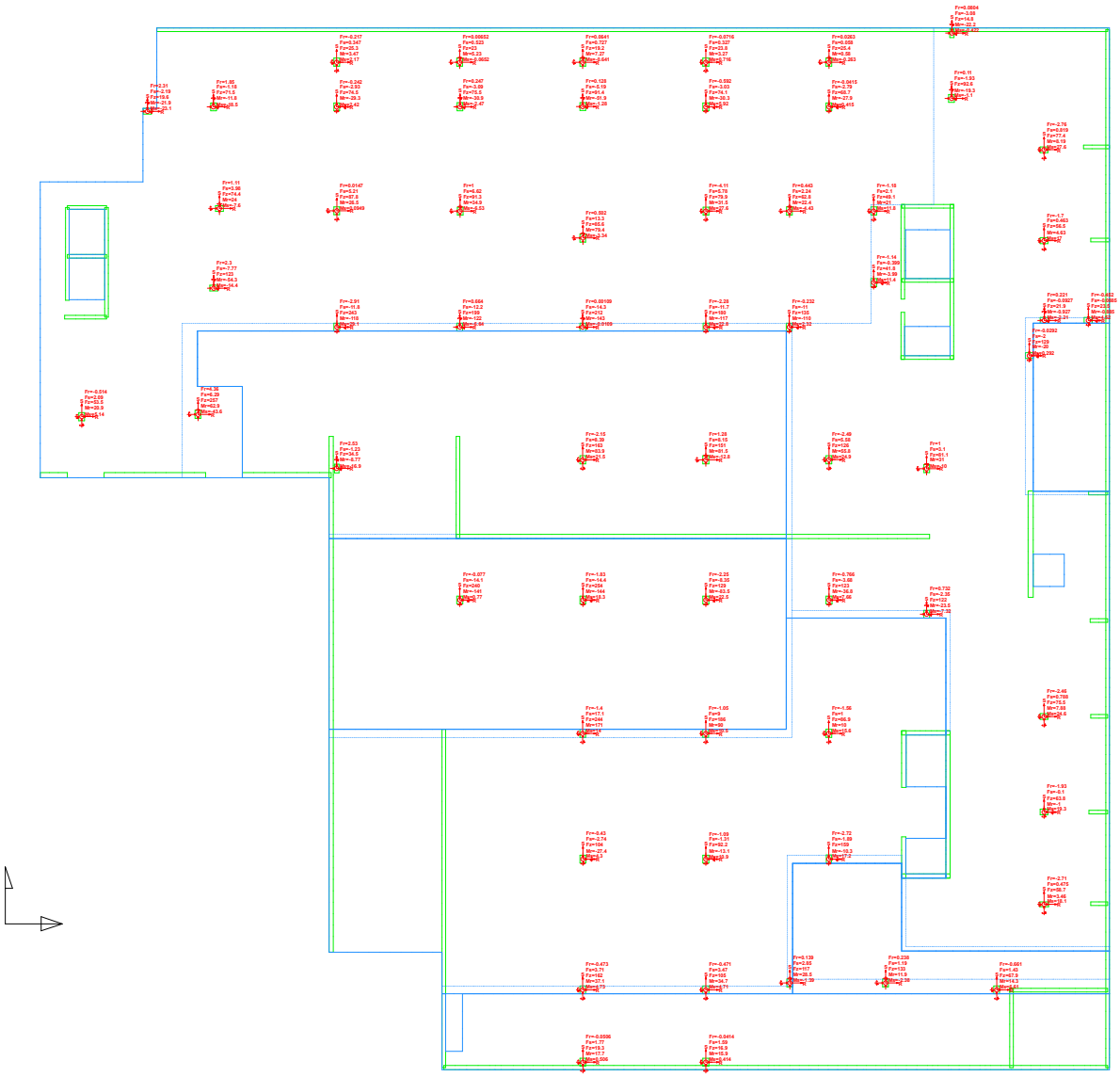
Factored LC: 1.2D + 1.6L + 0.5S: Max Reactions Plan

Factored LC: 1.2D + 1.6L + 0.5S: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:600
Factored LC: 1.2D + 1.6L + 0.5S - Reaction Plot: (Column Below)(Fr,Fx,Fz,Mr,Mx,Mz)(Max Fx Context)



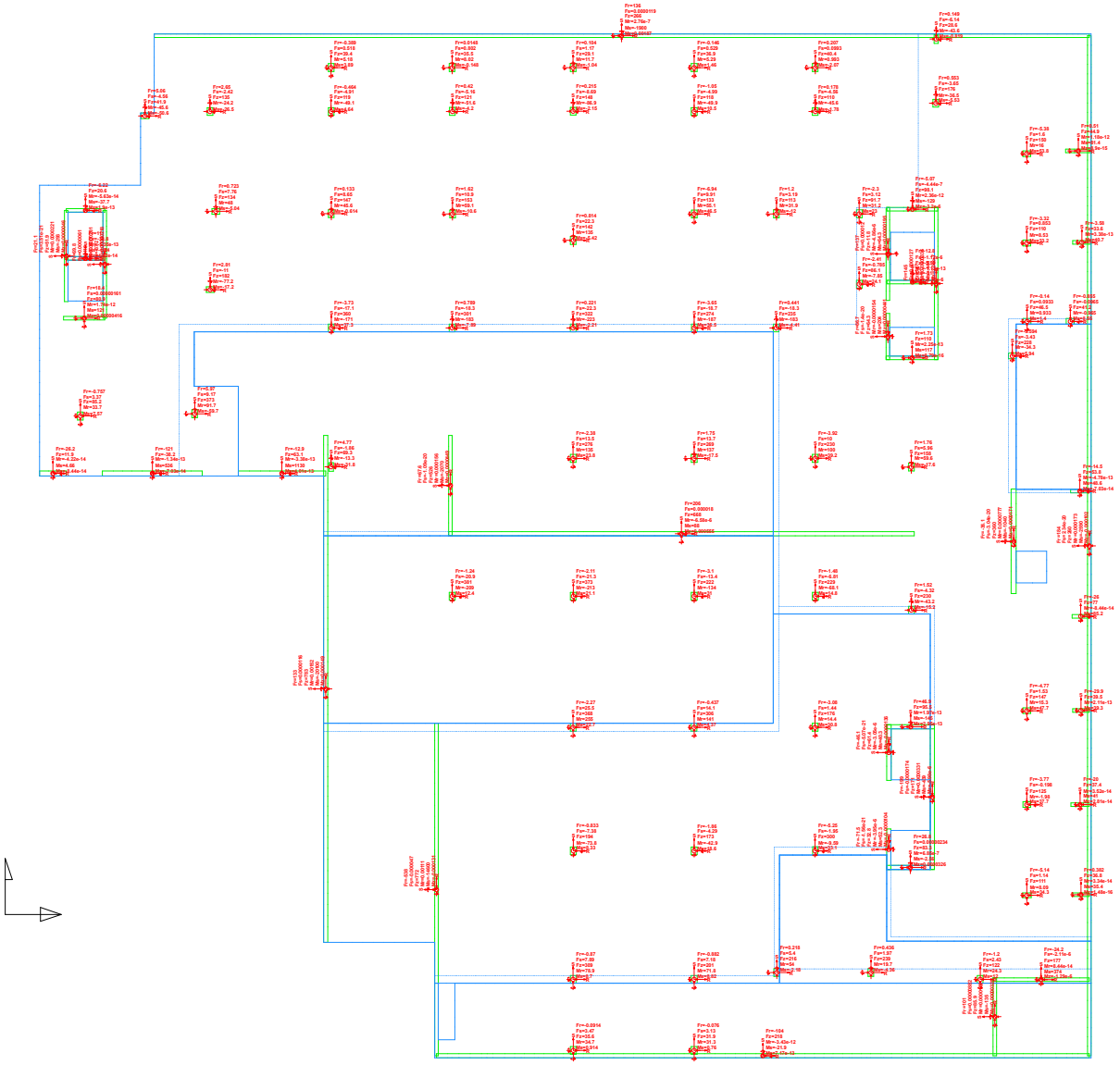
Factored LC: 1.2D + 1.6L + 0.5S: Min Reactions Plan

Factored LC: 1.2D + 1.6L + 0.5S: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:600
Factored LC: 1.2D + 1.6L + 0.5S - Reaction Plot: (Column Below)(Fr,Fx,Fz,Mr,Mx,Mz)(Min Fz Contest)



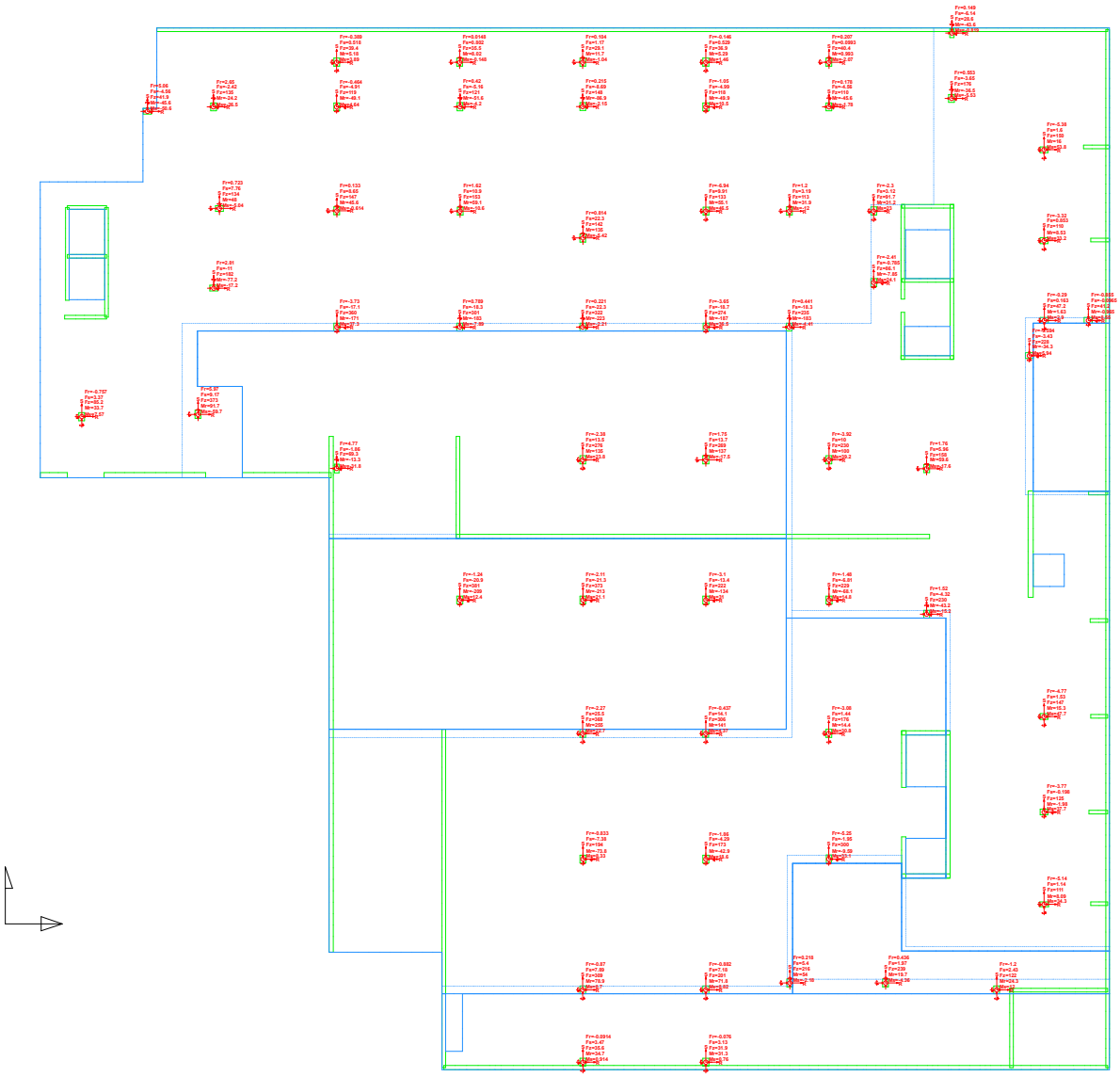
Factored LC: 1.2D + f1L + 1.6S: Std Reactions Plan

Factored LC: 1.2D + f1L + 1.6S: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:600
Factored LC: 1.2D + f1L + 1.6S - Reaction Plot: (Wall Below,Column Below,Point Spring,Line Spring,Point Support,Line Support)(Fr,Fx,Fy,Mr,Mx,My)(Standard Context)



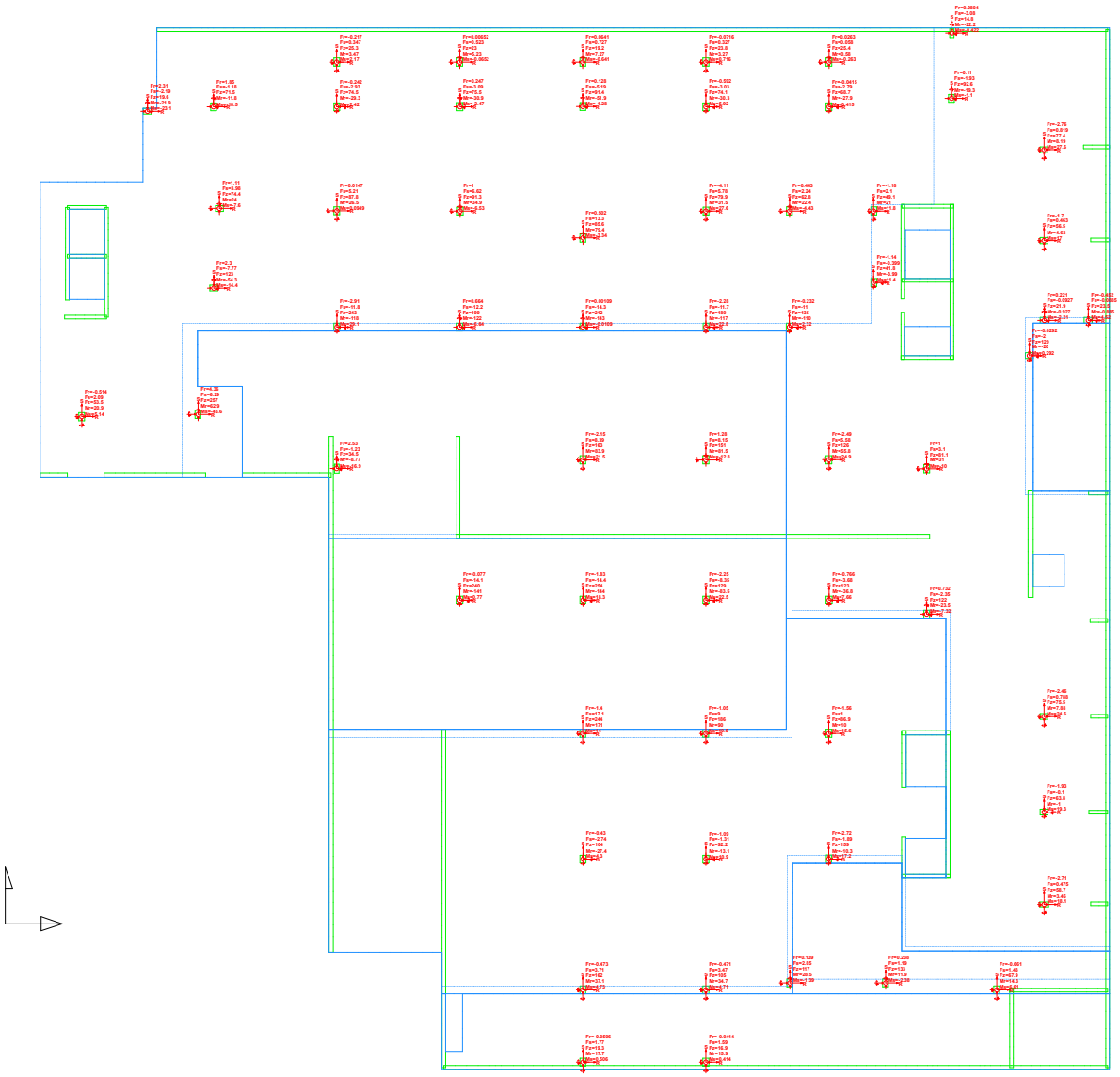
Factored LC: 1.2D + f1L + 1.6S: Max Reactions Plan

Factored LC: 1.2D + f1L + 1.6S: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:100
Factored LC: 1.2D + f1L + 1.6S - Reaction Plot: (Column Below)(Fr,Fx,Fz,Mr,Mx,Mz)(Max Fz Contest)



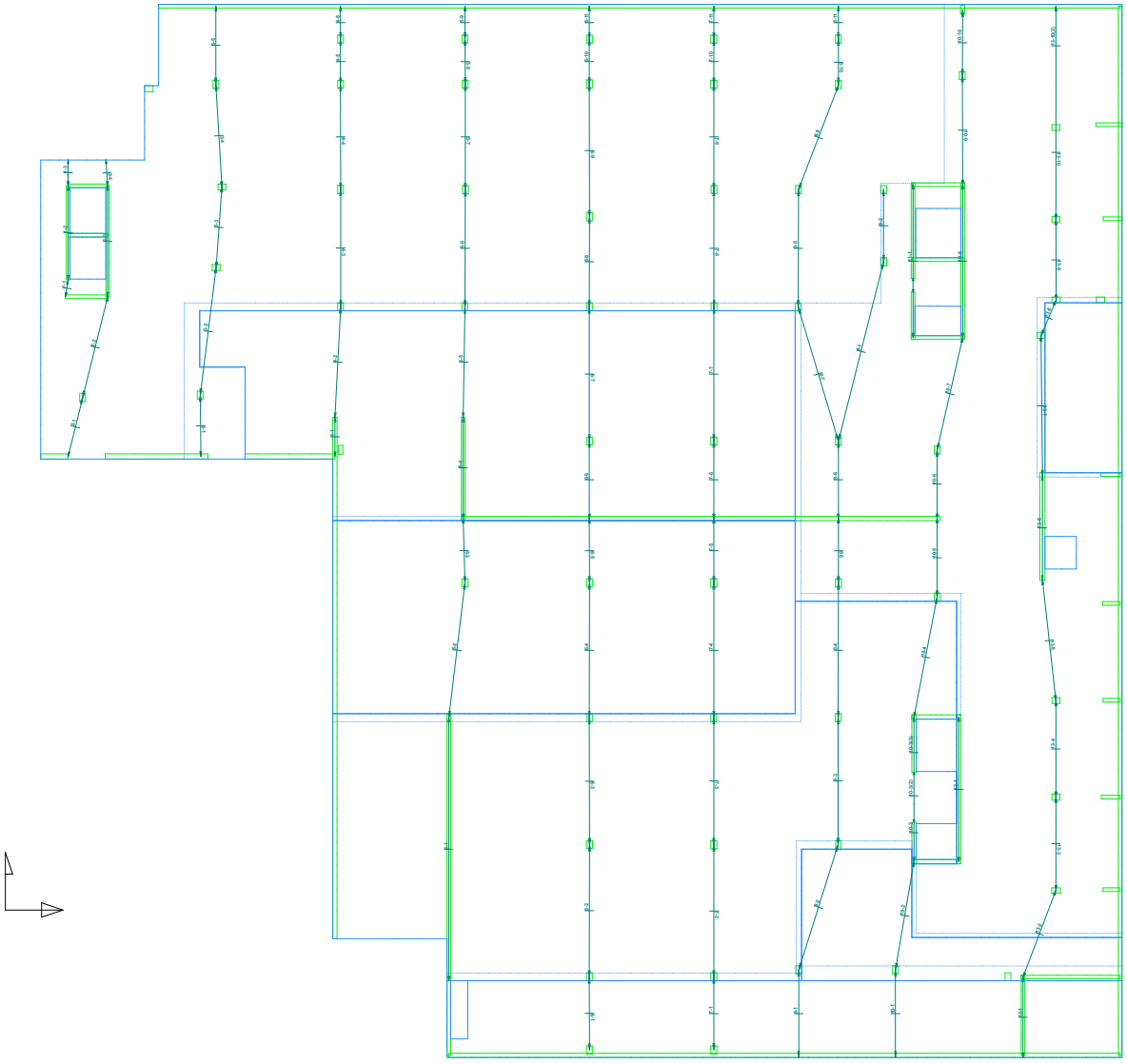
Factored LC: 1.2D + f1L + 1.6S: Min Reactions Plan

Factored LC: 1.2D + f1L + 1.6S: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:950
Factored LC: 1.2D + f1L + 1.6S - Reaction Plot: (Column Below)(Fr,Fx,Fz,Mr,Mx,Mz)(Min Fz Context)



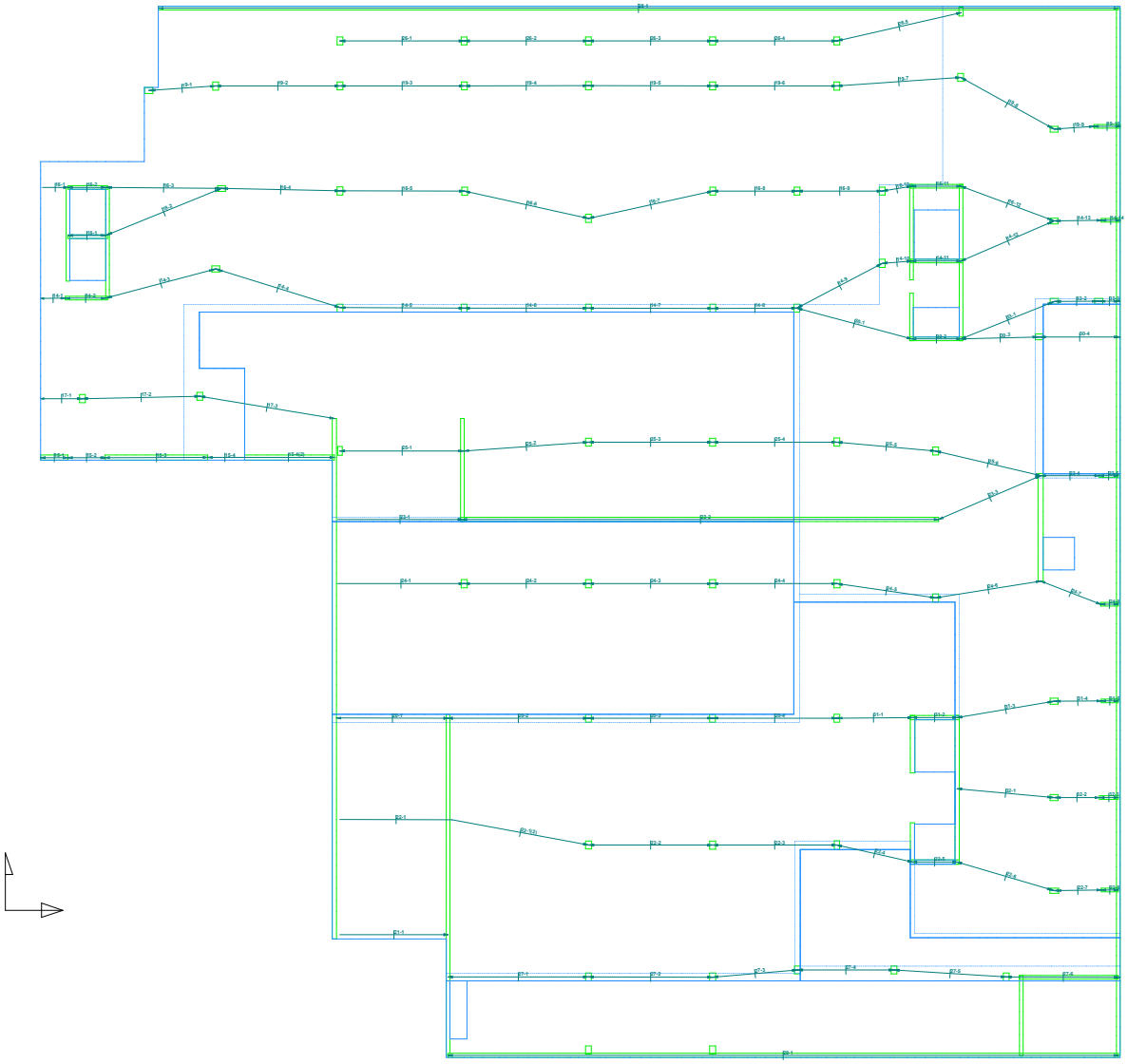
Design Strip: Latitude Design Spans Plan

Design Strip: Latitude SSs; SS Numbers; User Notes; User Dimensions;
Element: Wall Elements Above; Wall Elements Below; Wall Element Outline Only; Column Elements Above; Column Elements Below; Slab Elements; Slab Element Outline Only;
Scale = 1:500



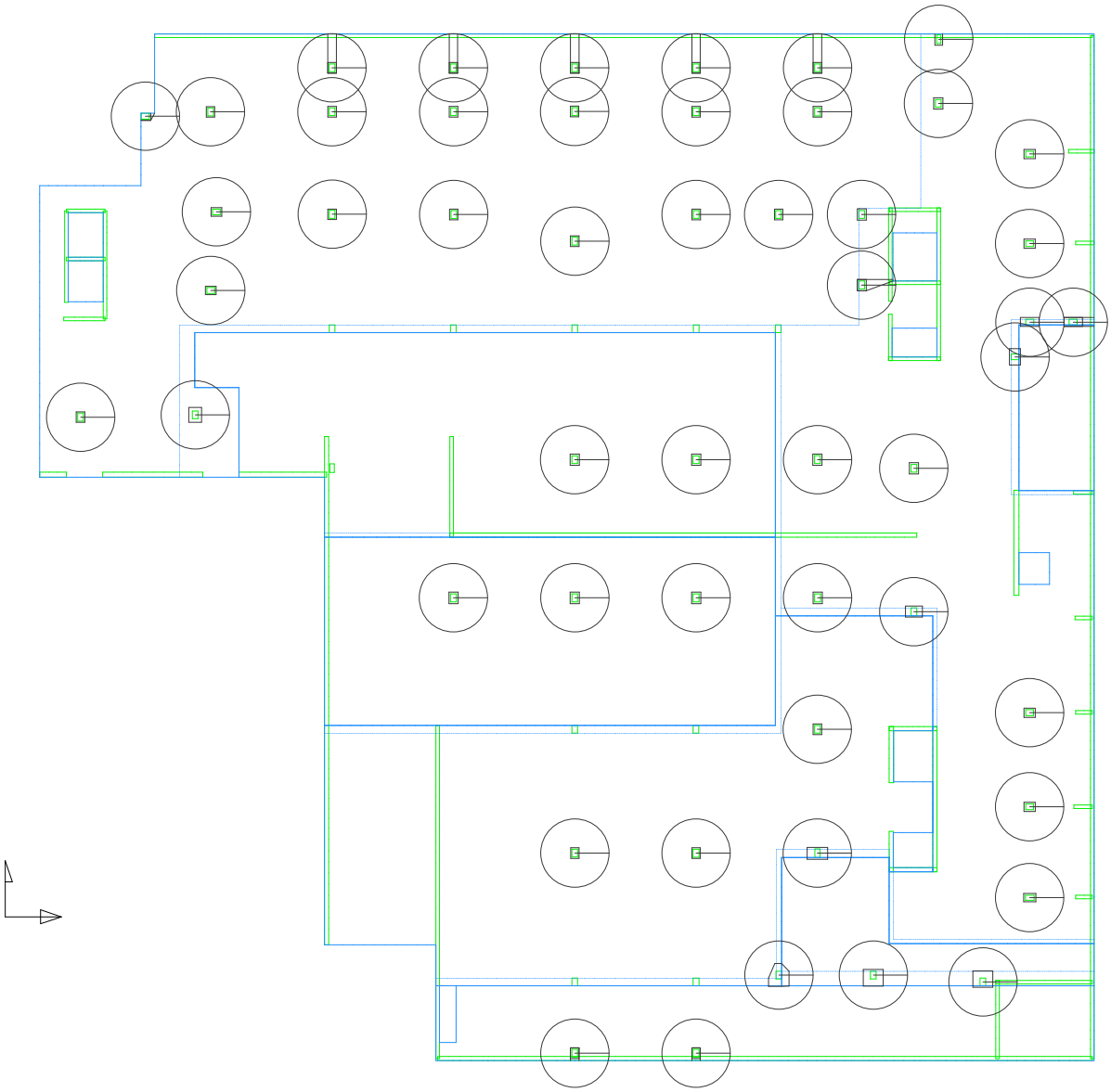
Design Strip: Longitude Design Spans Plan

Design Strip: Longitude SSs; SS Numbers; User Notes; User Lines; User Dimensions;
Element: Wall Elements Above; Wall Elements Below; Wall Element Outline Only; Column Elements Above; Column Elements Below; Slab Elements; Slab Element Outline Only;
Scale = 1:500



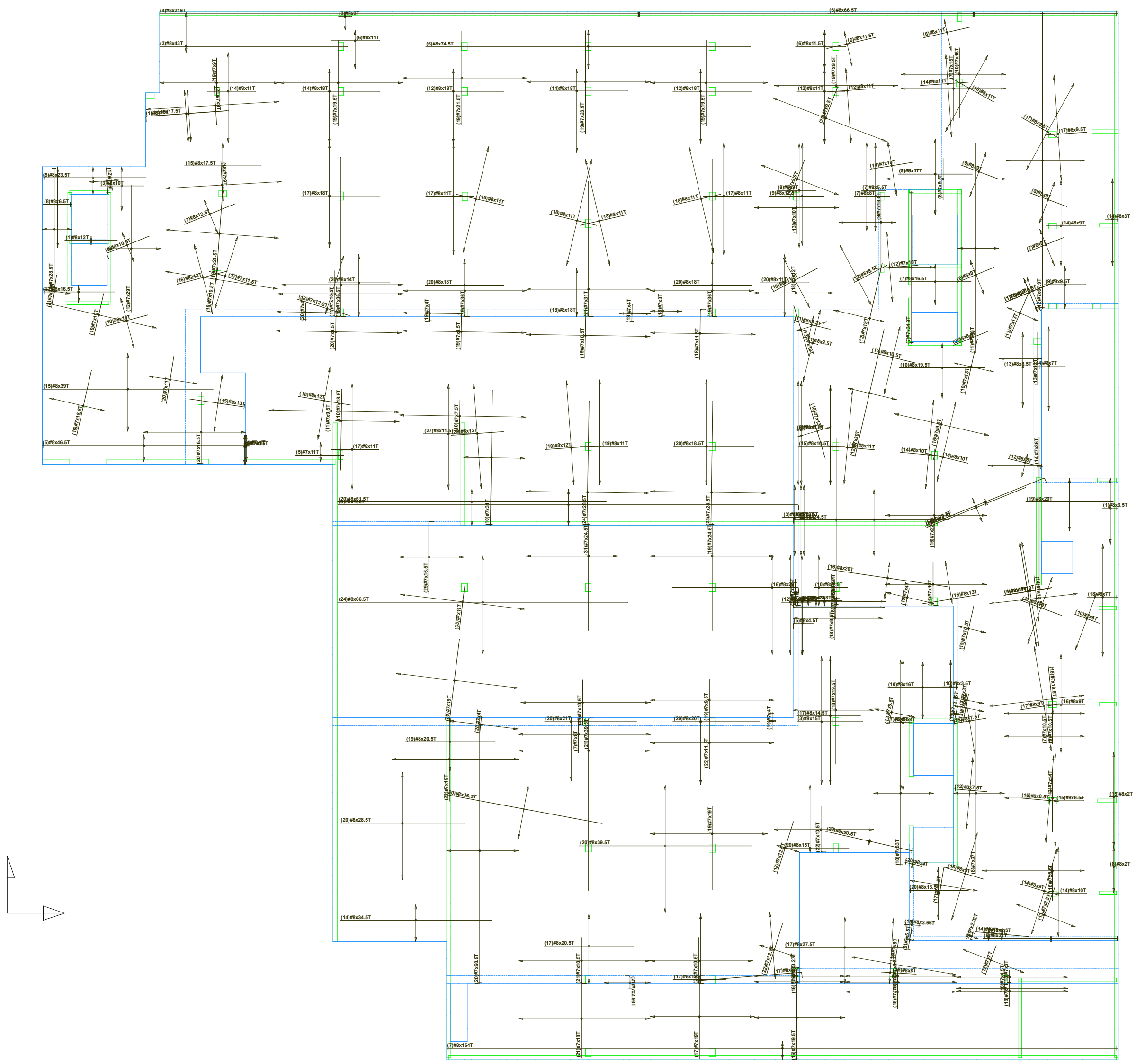
Design Strip: Punching Checks Plan

Design Strip; User Lines; User Notes; User Dimensions; Punching Checks; Punching Check Sections; Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:200



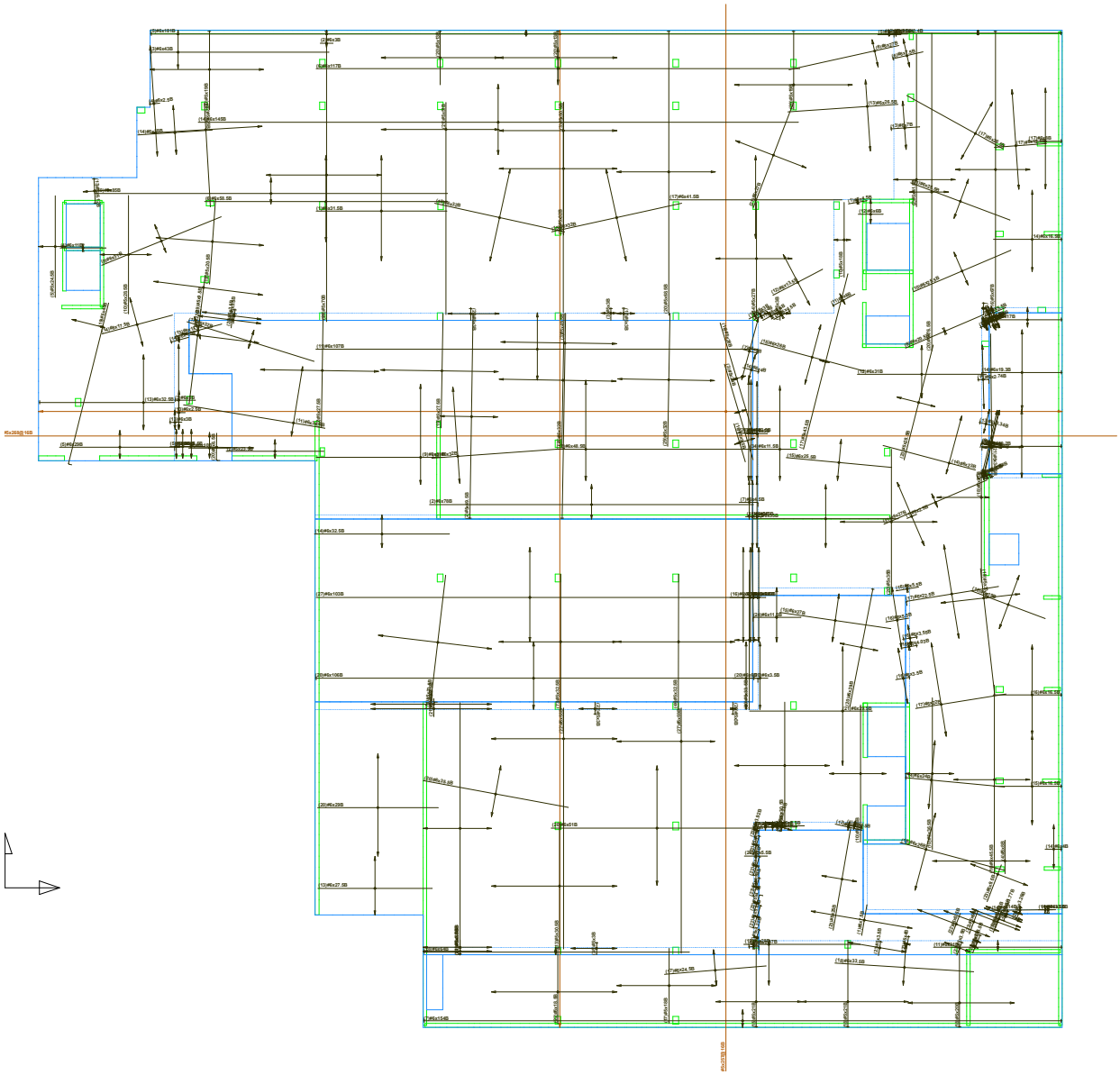
Reinforcement: Top Bars Plan

Reinforcement: User Lines; User Notes; User Dimensions; Latitude User Concentrated Reinf.; Latitude Program Concentrated Reinf.; Latitude User Distributed Reinf.; Latitude Program Distributed Reinf.; Longitude User Concentrated Reinf.; Longitude Program Concentrated Reinf.; Longitude User Distributed Reinf.; Longitude Program Distributed Reinf.; Top Face Concentrated Reinf.; Both Faces Concentrated Reinf.; Top Face Distributed Reinf.; Both Faces Distributed Reinf.; Concentrated Reinf. Descriptions; Concentrated Reinf. Extent; Distribute
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:500



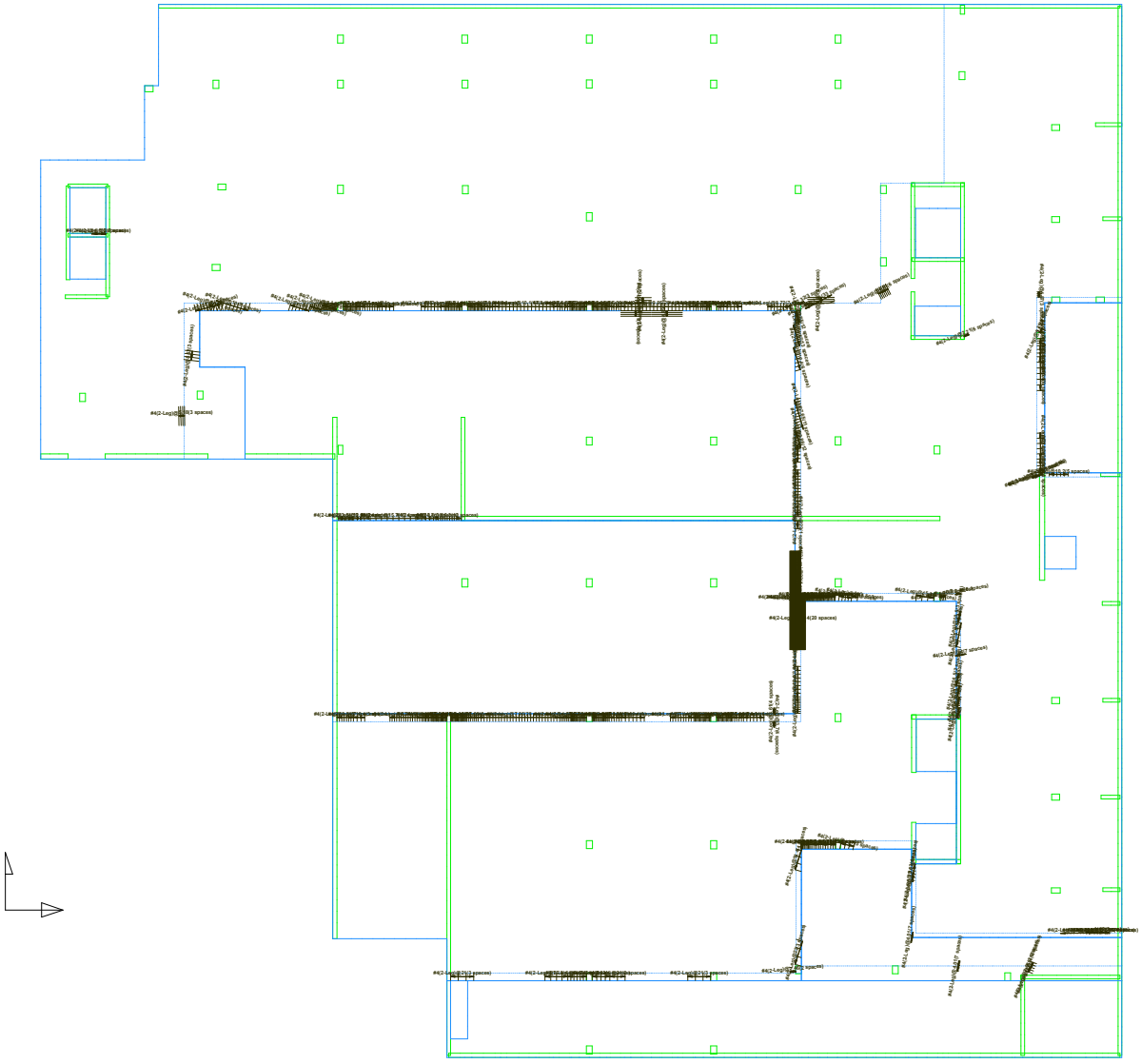
Reinforcement: Bottom Bars Plan

Reinforcement: User Lines; User Notes; User Dimensions; Latitude User Concentrated Reinf.; Latitude Program Concentrated Reinf.; Latitude User Distributed Reinf.; Latitude Program Distributed Reinf.; Longitude User Concentrated Reinf.; Longitude Program Concentrated Reinf.; Longitude User Distributed Reinf.; Longitude Program Distributed Reinf.; Bottom Face Concentrated Reinf.; Both Faces Concentrated Reinf.; Bottom Face Distributed Reinf.; Both Faces Distributed Reinf.; Concentrated Reinf. Descriptions; Concentrated Reinf. Extent; Dis
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:500



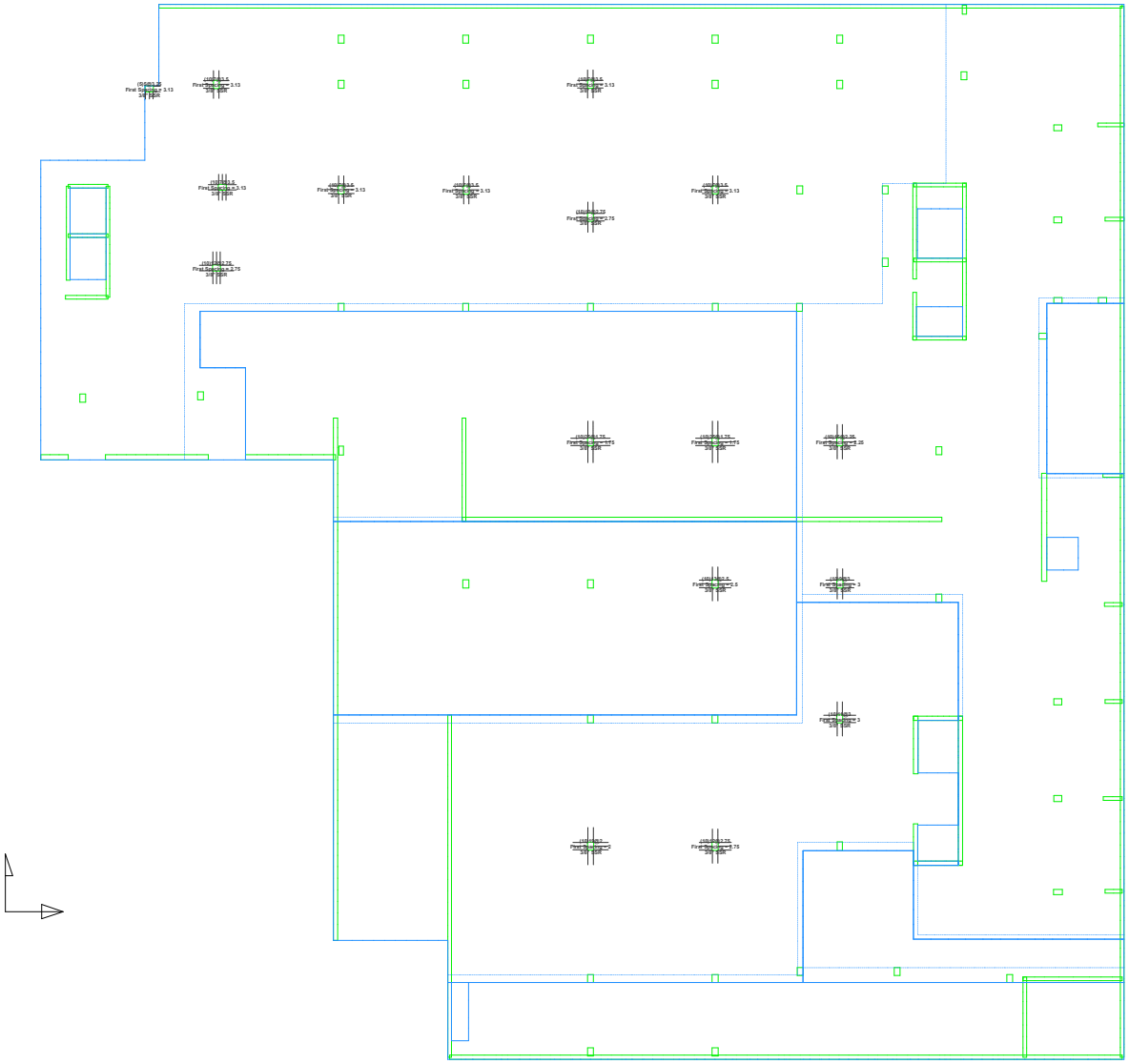
Reinforcement: Shear Bars Plan

Reinforcement: User Lines; User Notes; User Dimensions; Latitude User Transverse Reinf.; Latitude Program Transverse Reinf.; Latitude User Individual Transverse Bars; Latitude Program Individual Transverse Bars; Longitude User Transverse Reinf.; Longitude Program Transverse Reinf.; Longitude User Individual Transverse Bars; Longitude Program Individual Transverse Bars; Transverse Reinf. Descriptions; Transverse Reinf. Extent; Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:500



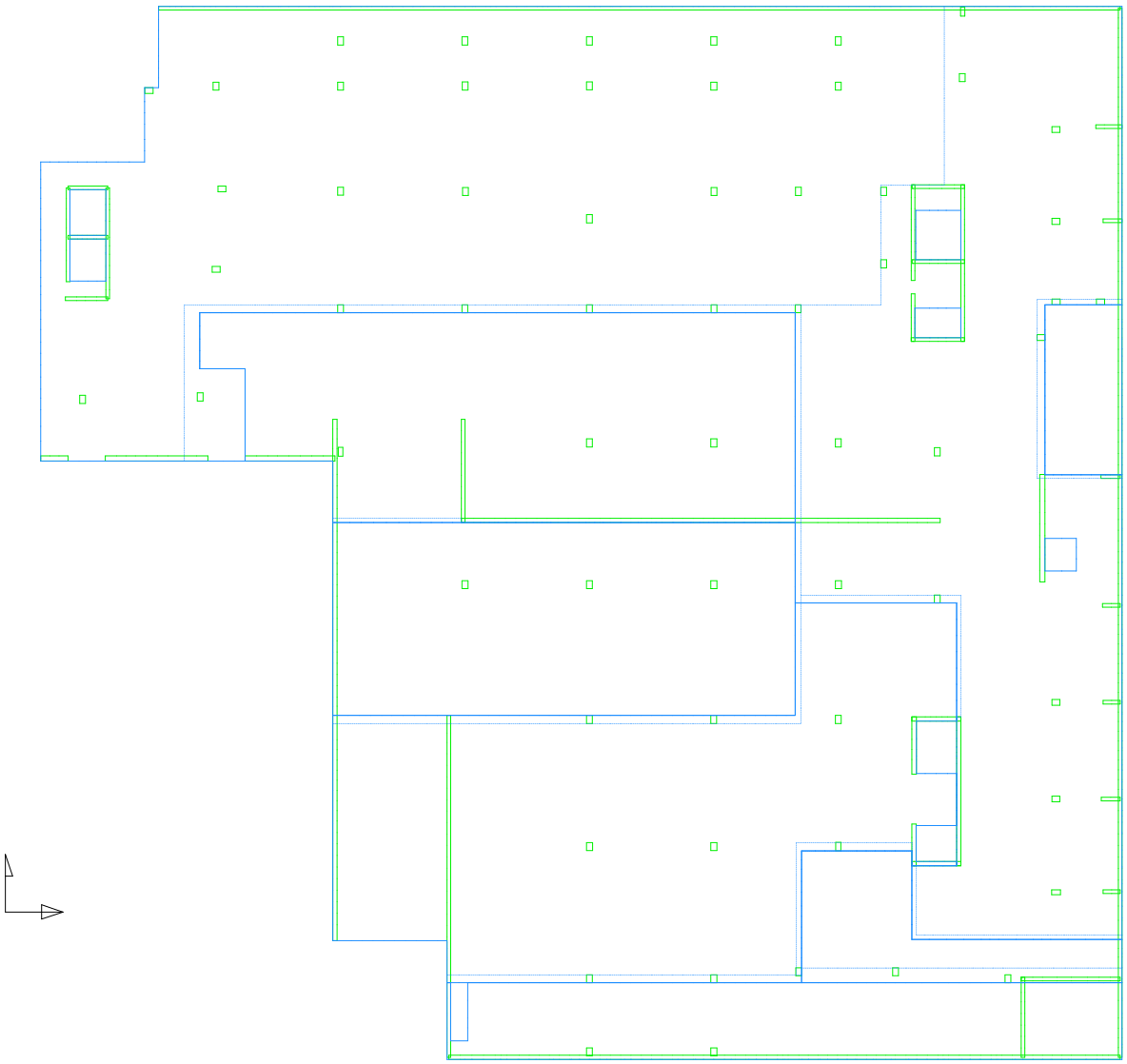
Reinforcement: SSR Plan

Reinforcement: User Lines; User Notes; User Dimensions; Program SSR Callouts; SSR Callout Details; Program SSR Rails;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:200



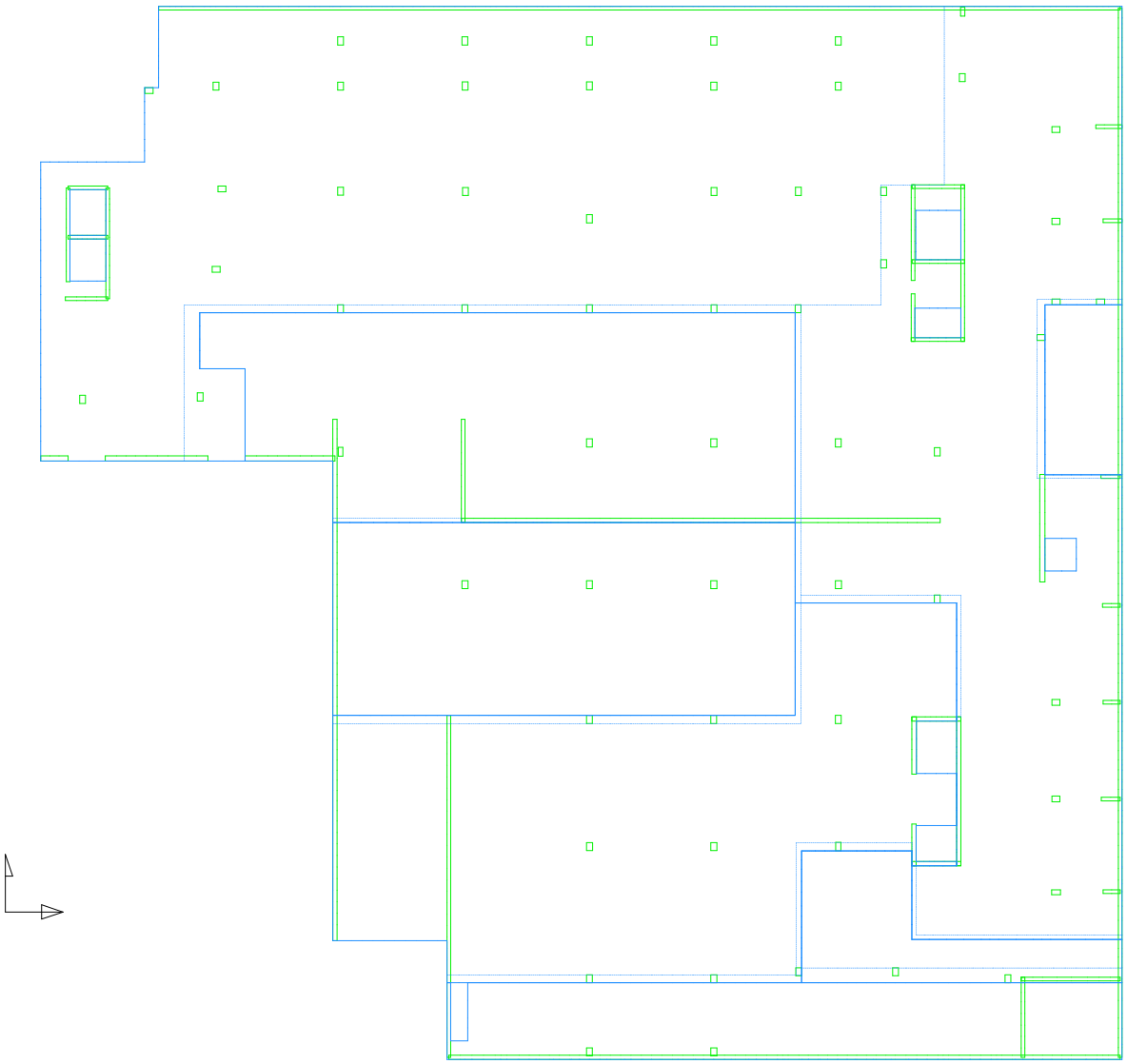
Latitude Tendon Parameters: Standard Plan

Latitude Tendon Parameters; User Lines; User Notes; User Dimensions; Distributed Tendon Quadrilateral; Distributed Tendon Description; Distributed Tendon Profile Polyline Ends; Distributed Tendon Profile Area Edge; Distributed Tendon Profile Span Changes; Distributed Tendon Profile Concrete Elevation Change; Tendon Void; Jack Region; Jack Region Hatching; Jack Region Corner Icon; Distributed Tendon Overlap Areas; Banded Tendons; Banded Tendon Description; Banded Tendon Fillet Graphics; Profile Points; Profile Elevation Values; Profil Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Manual Latitude Tendon: Tendons; Num Strands; Tendon Points; Profile Values;
Scale = 1:500



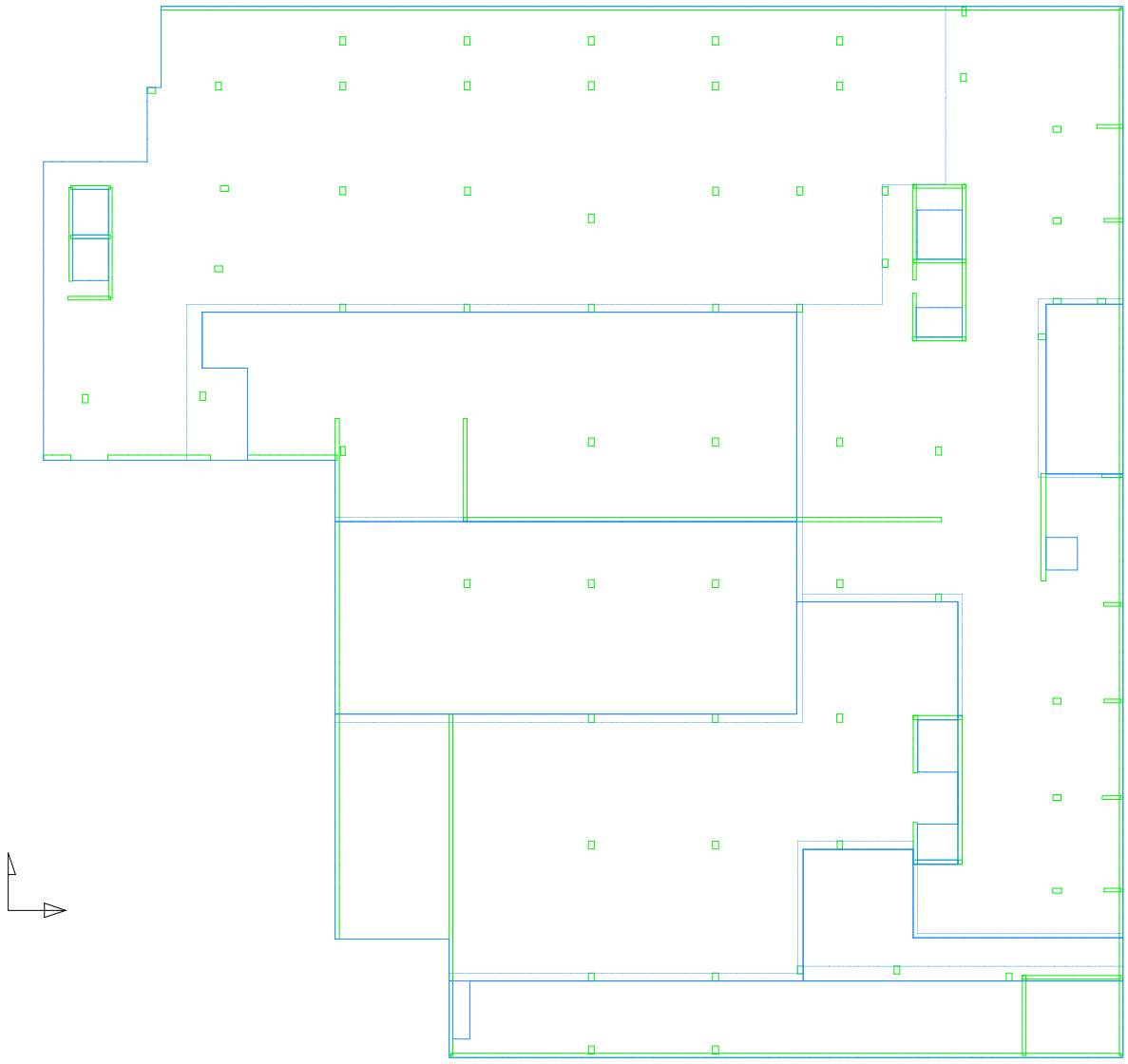
Manual Latitude Tendon: Standard Plan

Manual Latitude Tendon; User Lines; User Notes; User Dimensions; Tendons; Num Strands; Tendon Inflection Ratio; Tendon Points; Profile Values; Jacks;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Latitude Tendon Parameters: Banded Tendons; Banded Tendon Description; Distributed Tendon Quadrilateral; Distributed Tendon Description; Distributed Tendon Overlap Areas; Profile Points; Profile Elevation Values; Profile Nodes; Jack Region;
Scale = 1:500



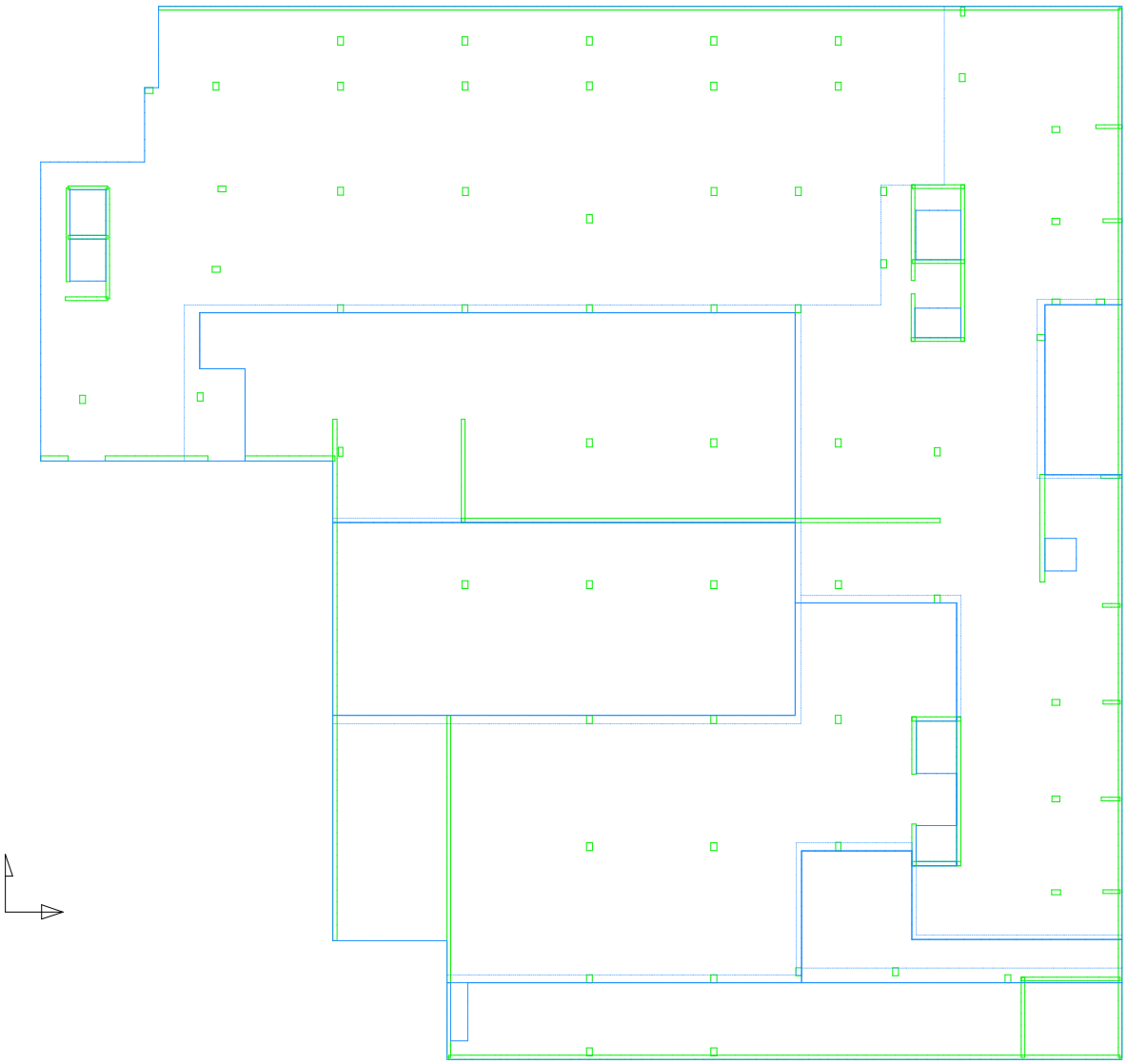
Longitude Tendon Parameters: Standard Plan

Longitude Tendon Parameters: User Lines; User Notes; User Dimensions; Distributed Tendon Quadrilateral; Distributed Tendon Description; Distributed Tendon Profile Polyline Ends; Distributed Tendon Profile Area Edge; Distributed Tendon Profile Span Changes; Distributed Tendon Profile Concrete Elevation Change; Tendon Void: Jack Region; Jack Region Hatching; Jack Region Corner Icon; Distributed Tendon Overlap Areas; Banded Tendons; Banded Tendon Description; Banded Tendon Fillet Graphics; Profile Points; Profile Elevation Values; Pro
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Manual Longitude Tendon: Tendons; Num Strands; Tendon Points; Profile Values;
Scale = 1:500

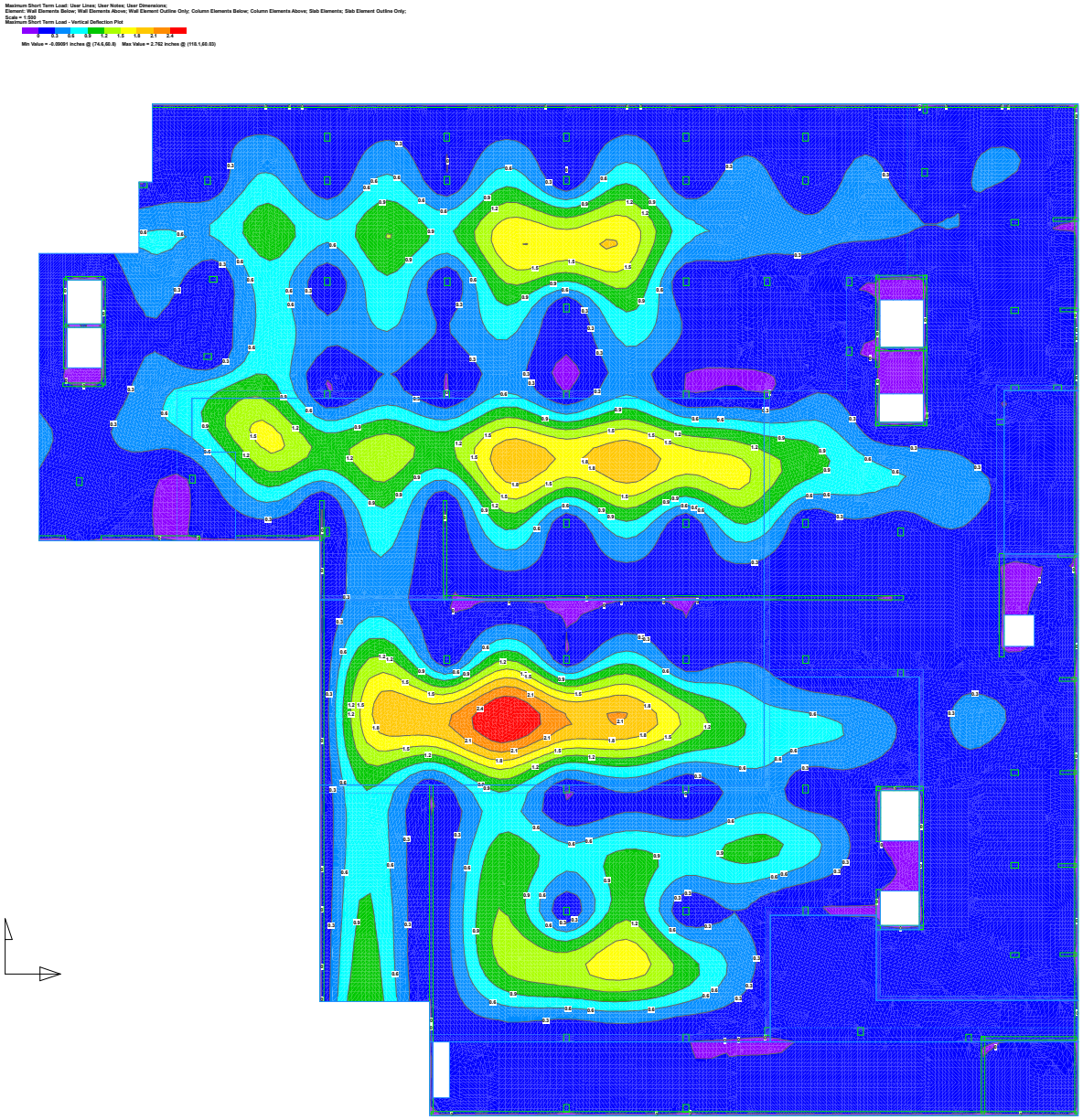


Manual Longitude Tendon: Standard Plan

Manual Longitude Tendon: User Lines; User Notes; User Dimensions; Tendons; Num Strands; Tendon Inflection Ratio; Tendon Points; Profile Values; Jacks;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Longitude Tendon Parameters: Banded Tendons; Banded Tendon Description; Distributed Tendon Quadrilateral; Distributed Tendon Description; Distributed Tendon Overlap Areas; Profile Points; Profile Elevation Values; Profile Nodes; Jack Region;
Scale = 1:300



Maximum Short Term Load: Std Deflection Plan

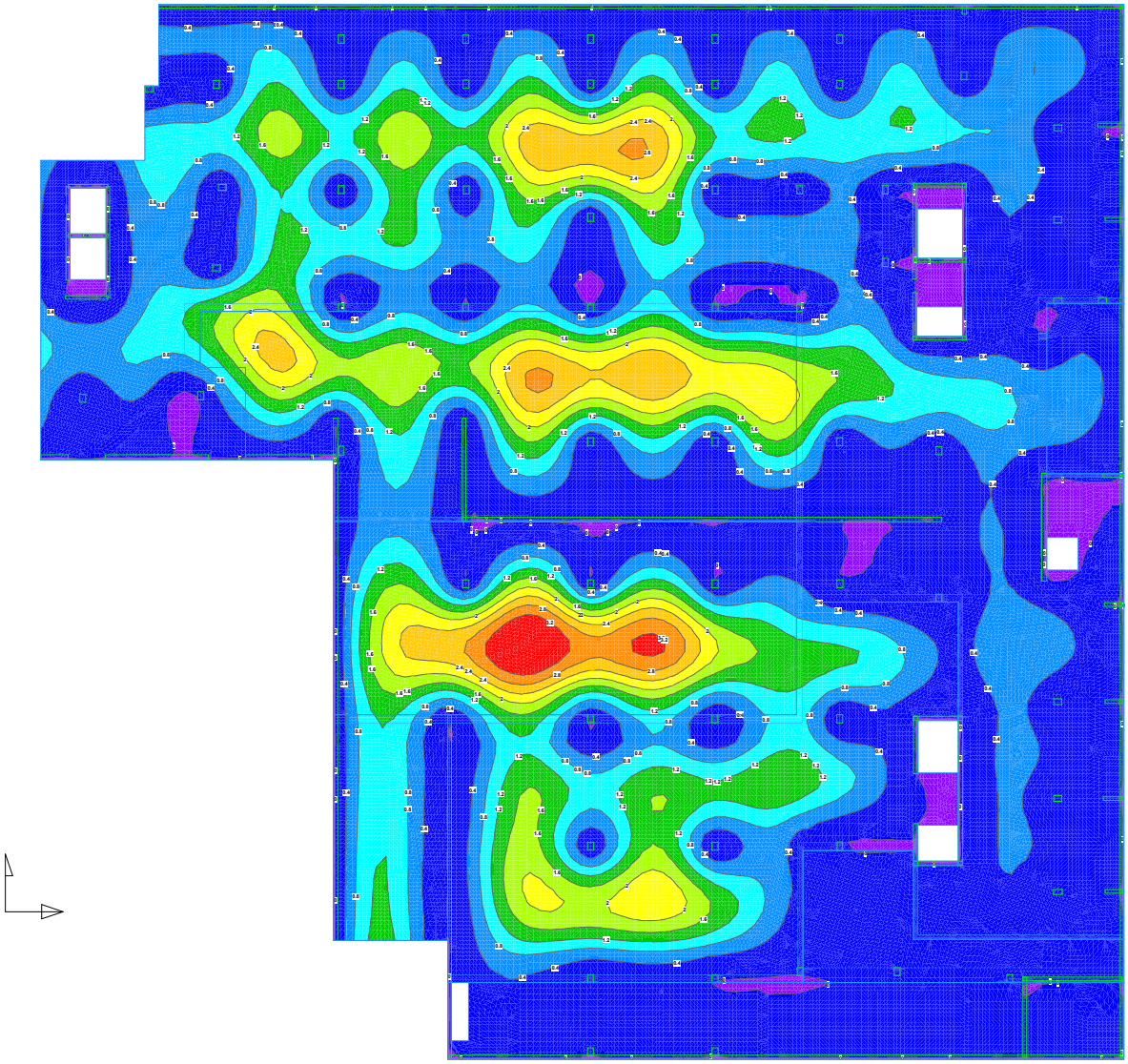


Sustained Load: Std Deflection Plan

Sustained Load: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:222
Sustained Load - Vertical Deflection Plot

0 0.4 0.8 1.2 1.6 2 2.4 2.8 3.2

Min Value = -0.1347 inches @ (16.8,143.8) Max Value = 3.633 inches @ (118.1,60.02)

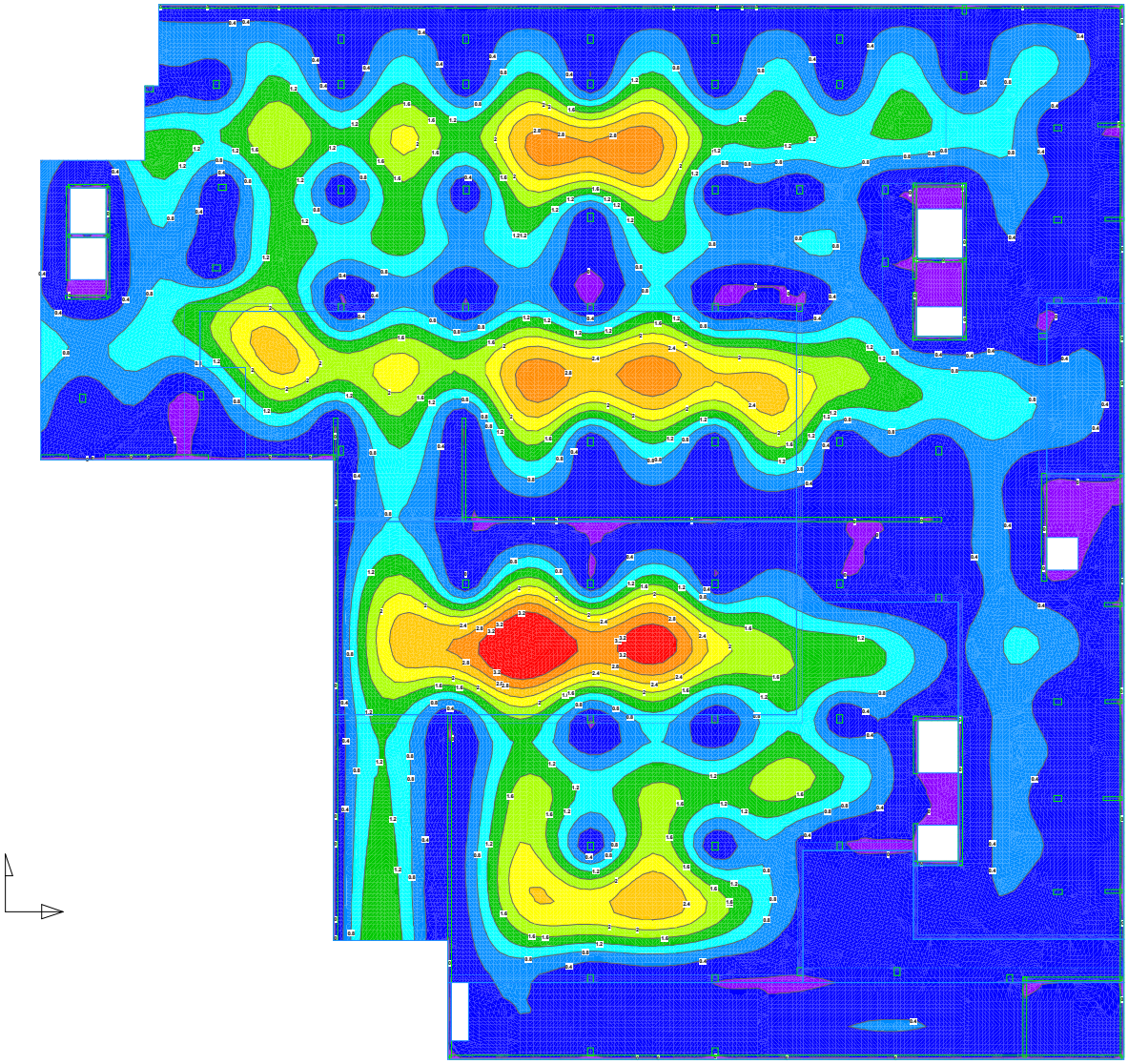


Final Instantaneous Load: Std Deflection Plan

Final Instantaneous Load: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:222
Final Instantaneous Load - Vertical Deflection Plot

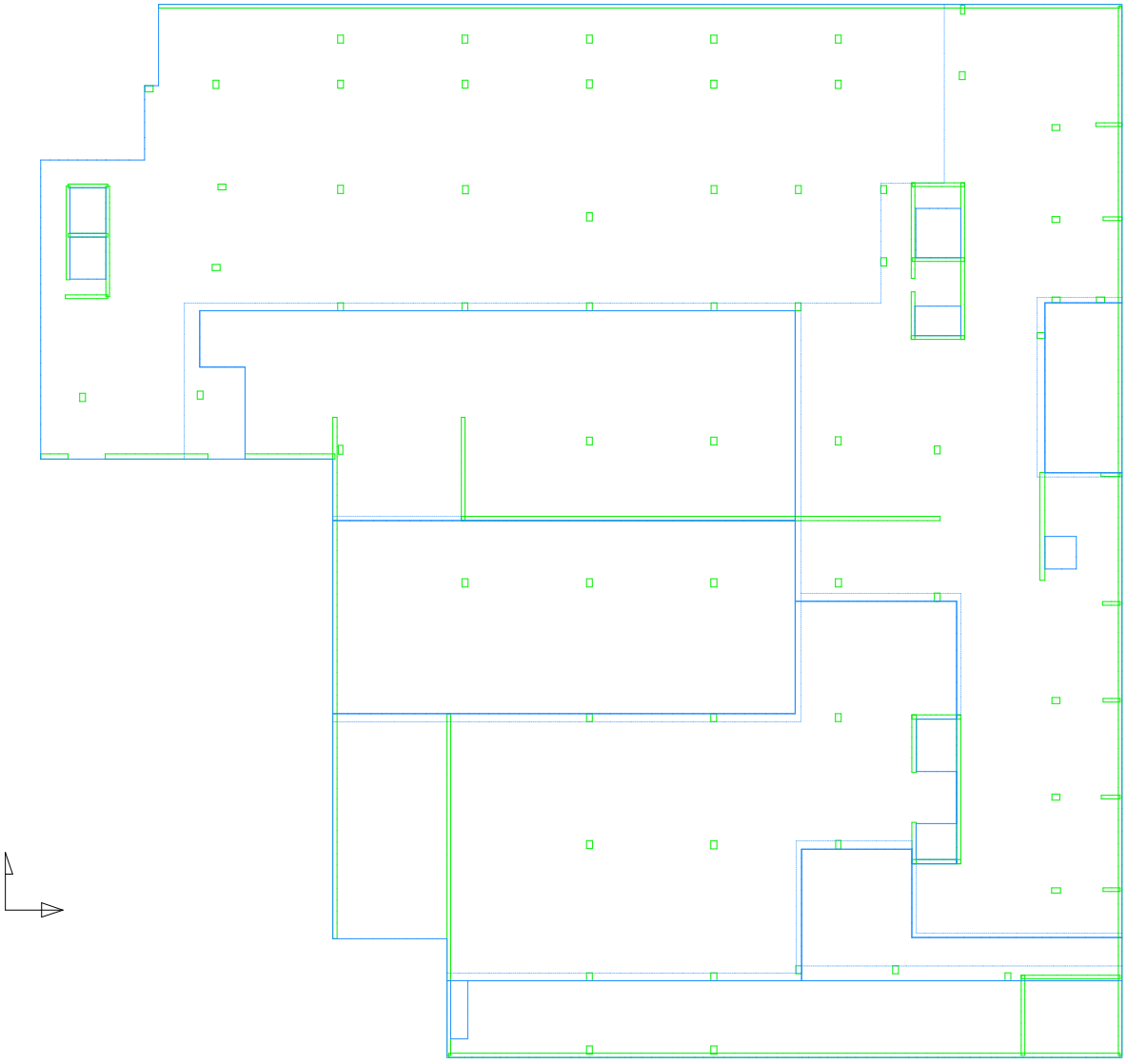
0 0.4 0.8 1.2 1.6 2 2.4 2.8 3.2

Min Value = -0.1628 inches @ (16.8,143.8) Max Value = 4.000 inches @ (118.1,60.02)



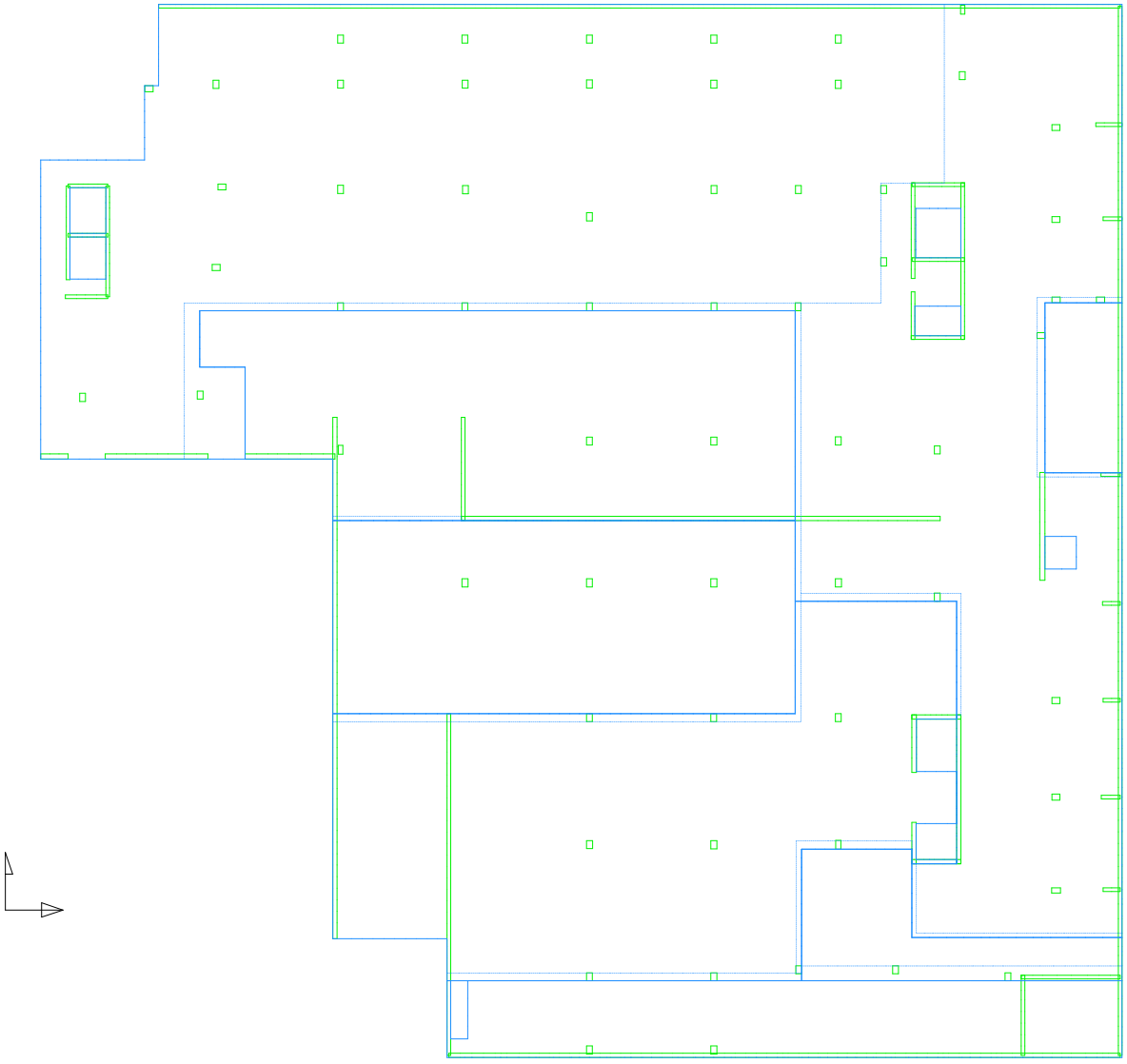
Additional Mass Loading: All Loads Plan

Additional Mass Loading: User Lines; User Notes; User Dimensions; Mass Point Loads; Mass Point Load Icons; Mass Point Load Values; Mass Line Loads; Mass Line Load Icons; Mass Line Load Values; Mass Area Loads; Mass Area Load Icons; Mass Area Load Values; Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:500



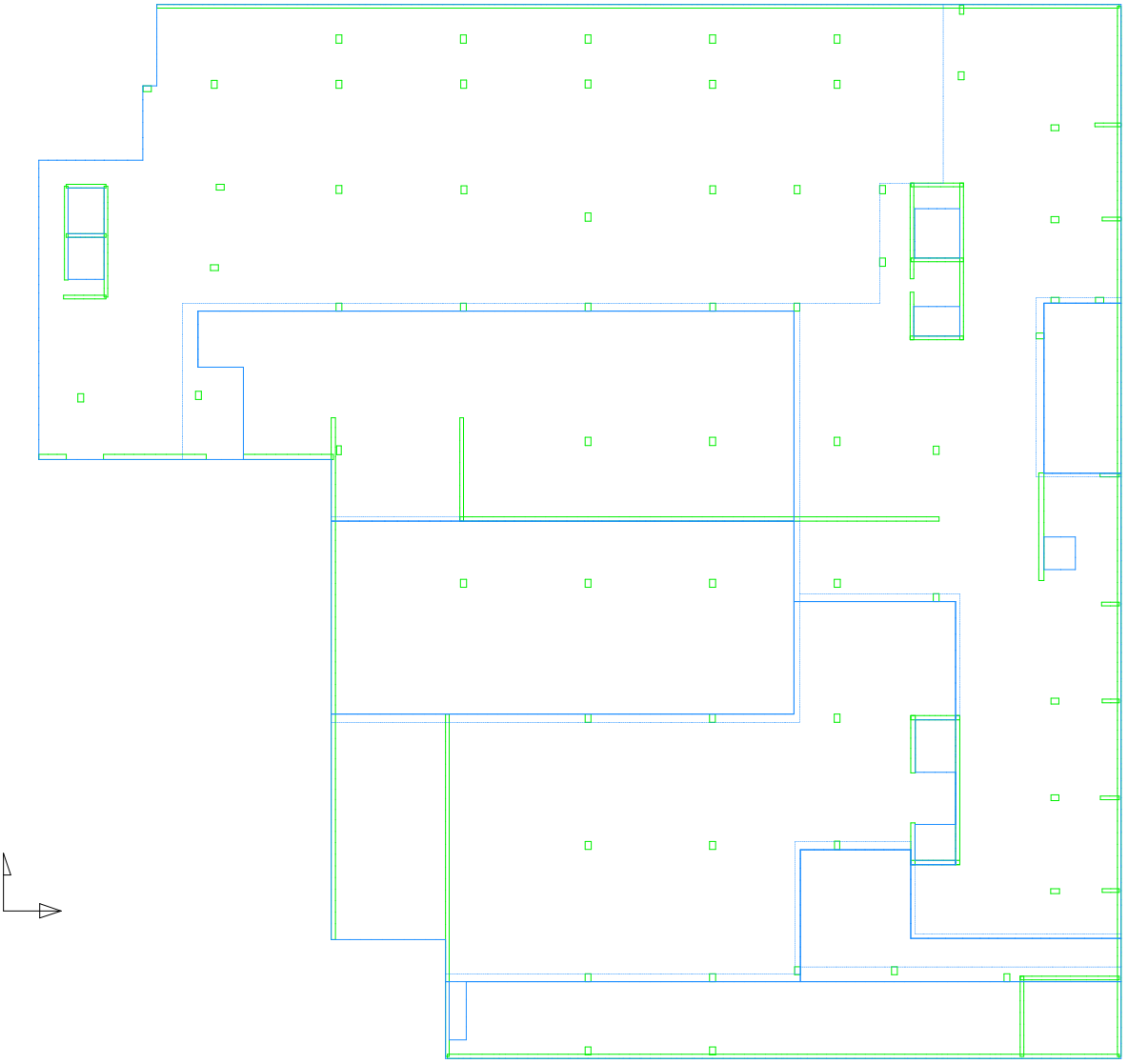
Vibration Analysis: Excitation Areas Plan

Vibration Analysis; User Lines; User Notes; User Dimensions; Vibration Excitation Area; Vibration Excitation Area Hatching; Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only; Scale = 1:500

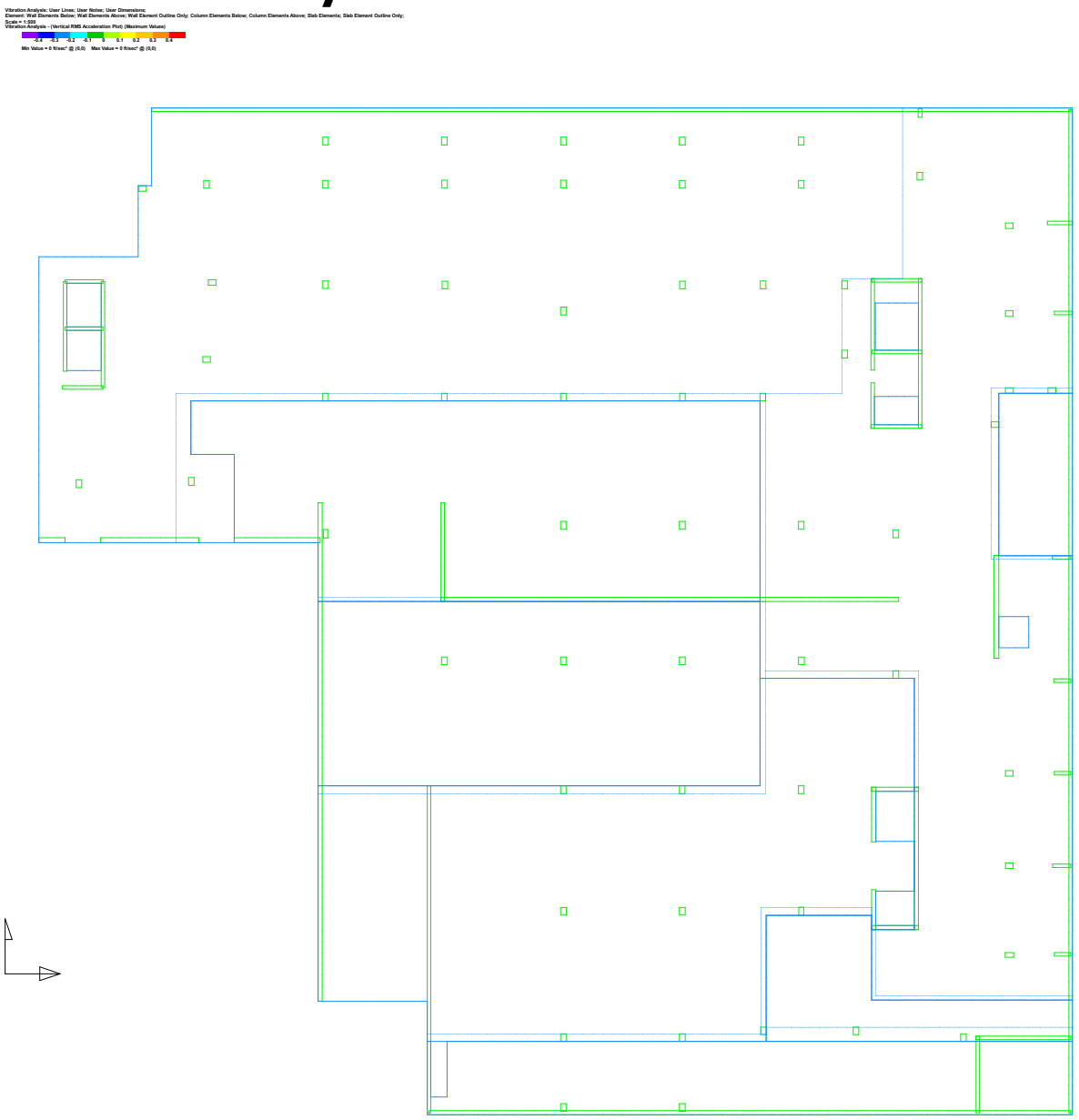


Vibration Analysis: Max RMS Velocity Plan

Vibration Analysis; User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:200
Vibration Analysis - (Vertical RMS Velocity Plot) (Maximum Values)

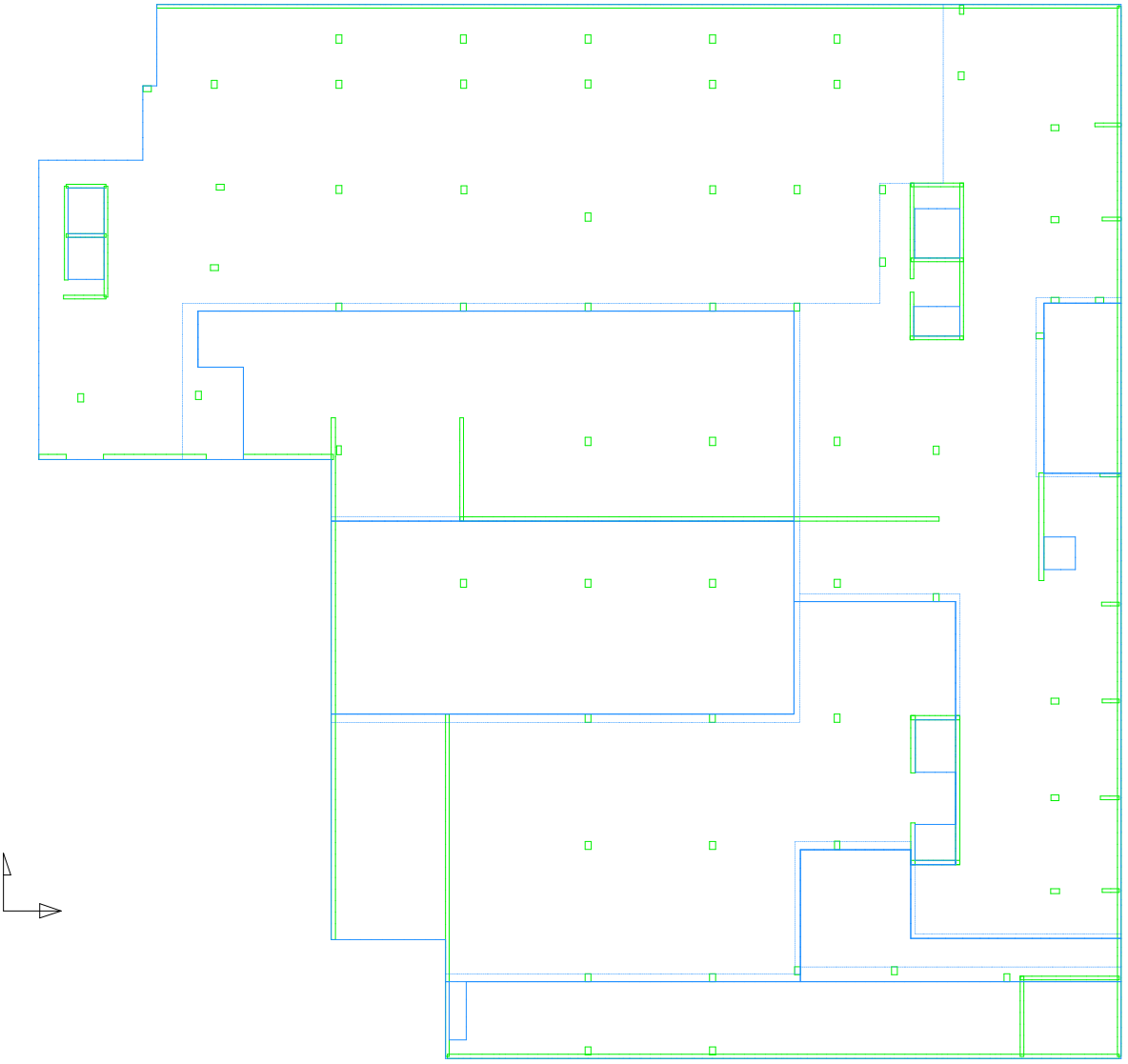


Vibration Analysis: Max RMS Acceleration Plan



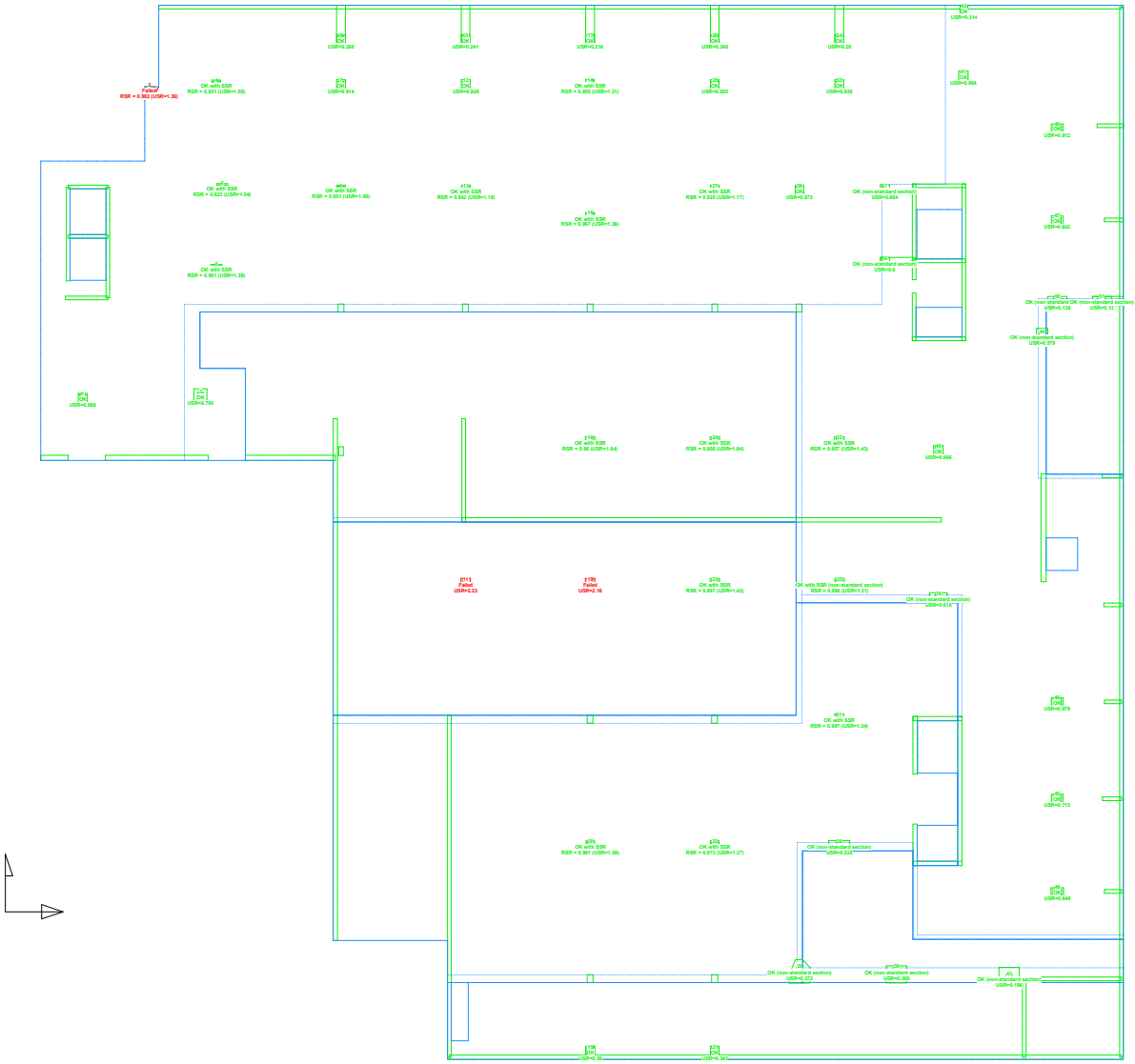
Vibration Analysis: Max Response Factor Plan

Vibration Analysis: User Lines; User Notes; User Dimensions;
Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:200
Vibration Analysis - (Vertical Response Factor Plot) (Maximum Values)



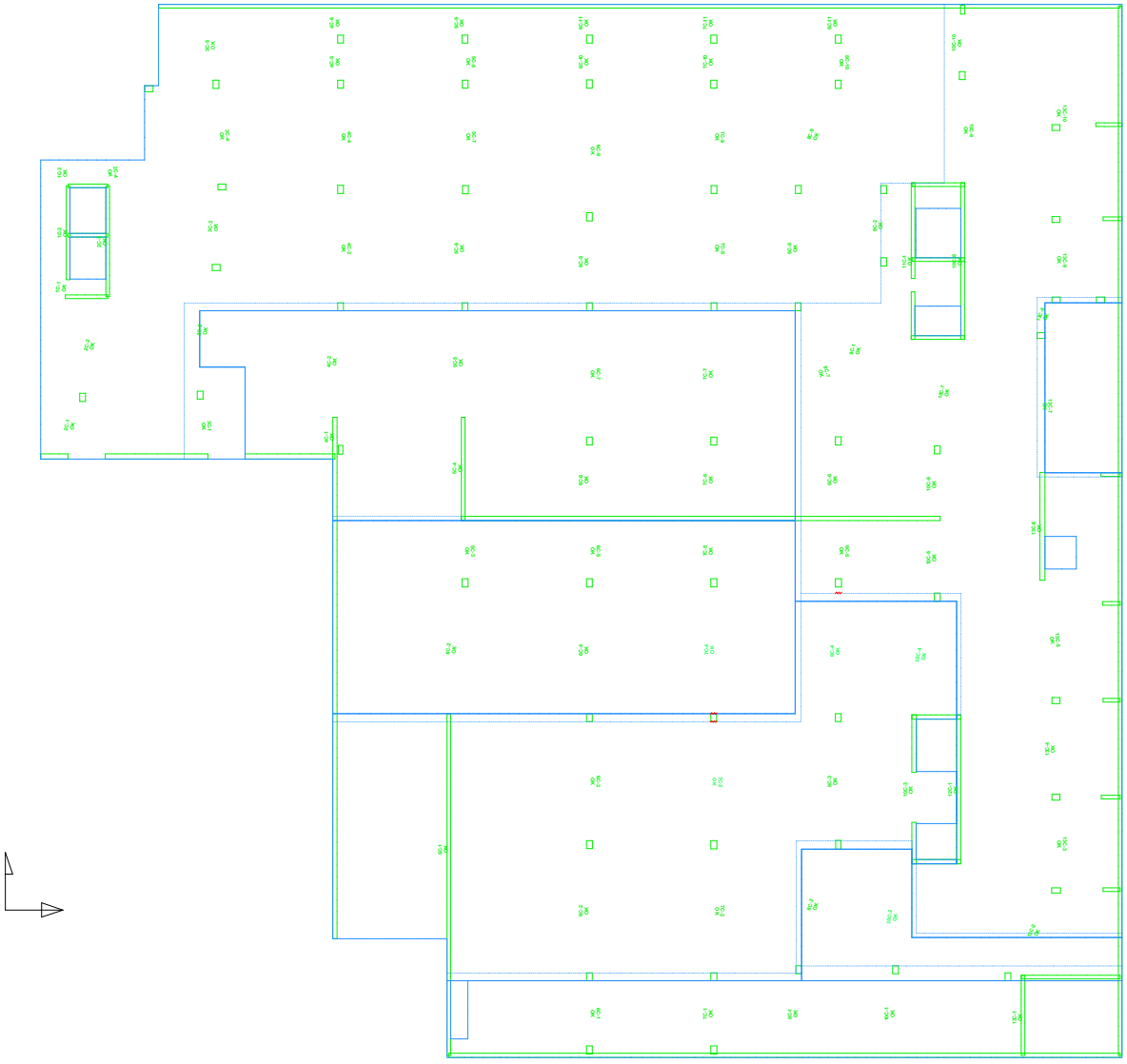
Design Status: Punching Shear Status Plan

Design Status: User Lines; User Notes; User Dimensions; PC Designs; PC Design Numbers; PC Design Status; PC Design Stress Ratios; PC Design Sections;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:500



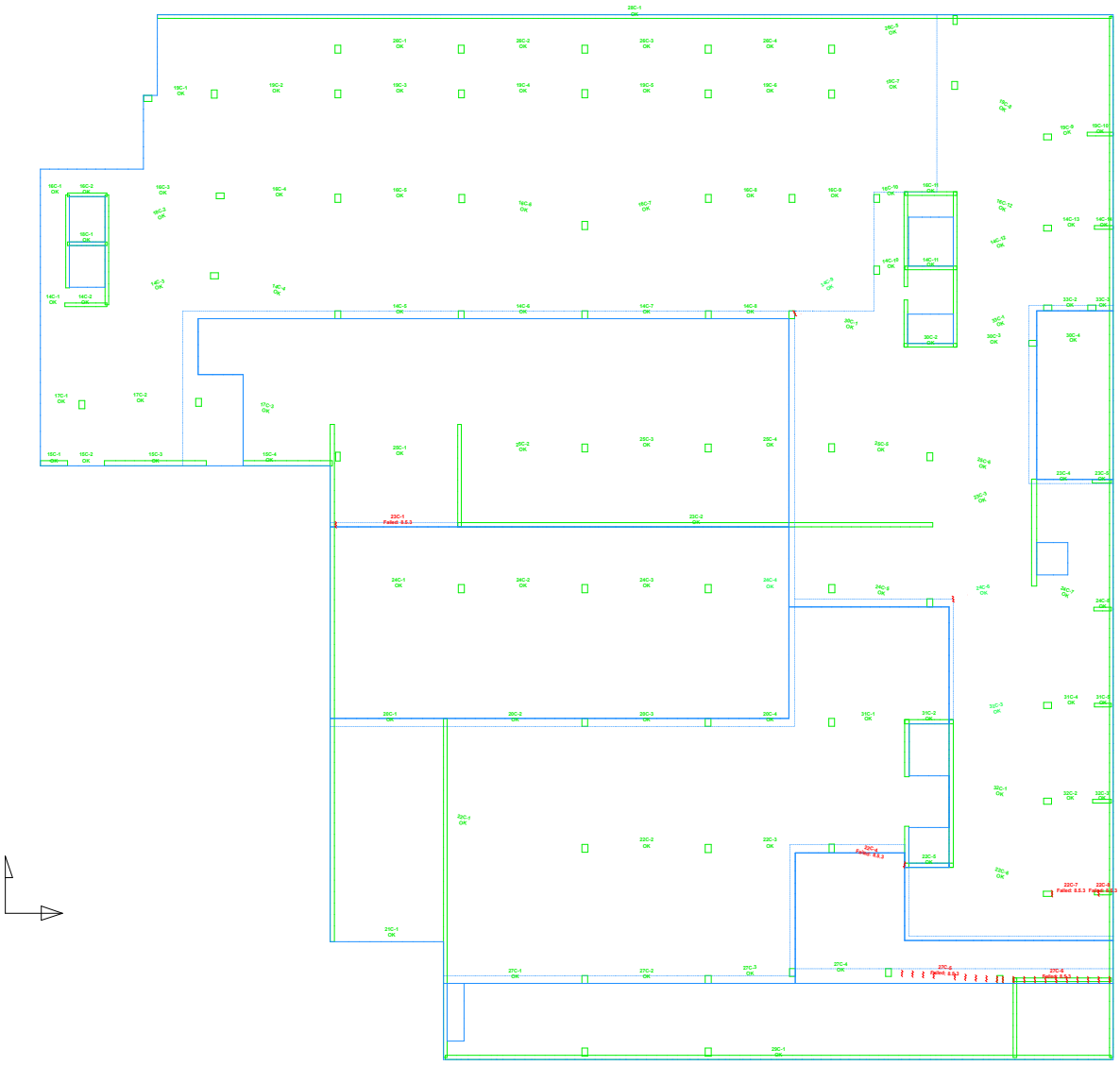
Design Status: Latitude Status Plan

Design Status: User Lines; User Notes; User Dimensions; Latitude Span Designs; Span Design Numbers; Span Design Status; Latitude DS Designs; DS Design Numbers; DS Design Status; Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:500



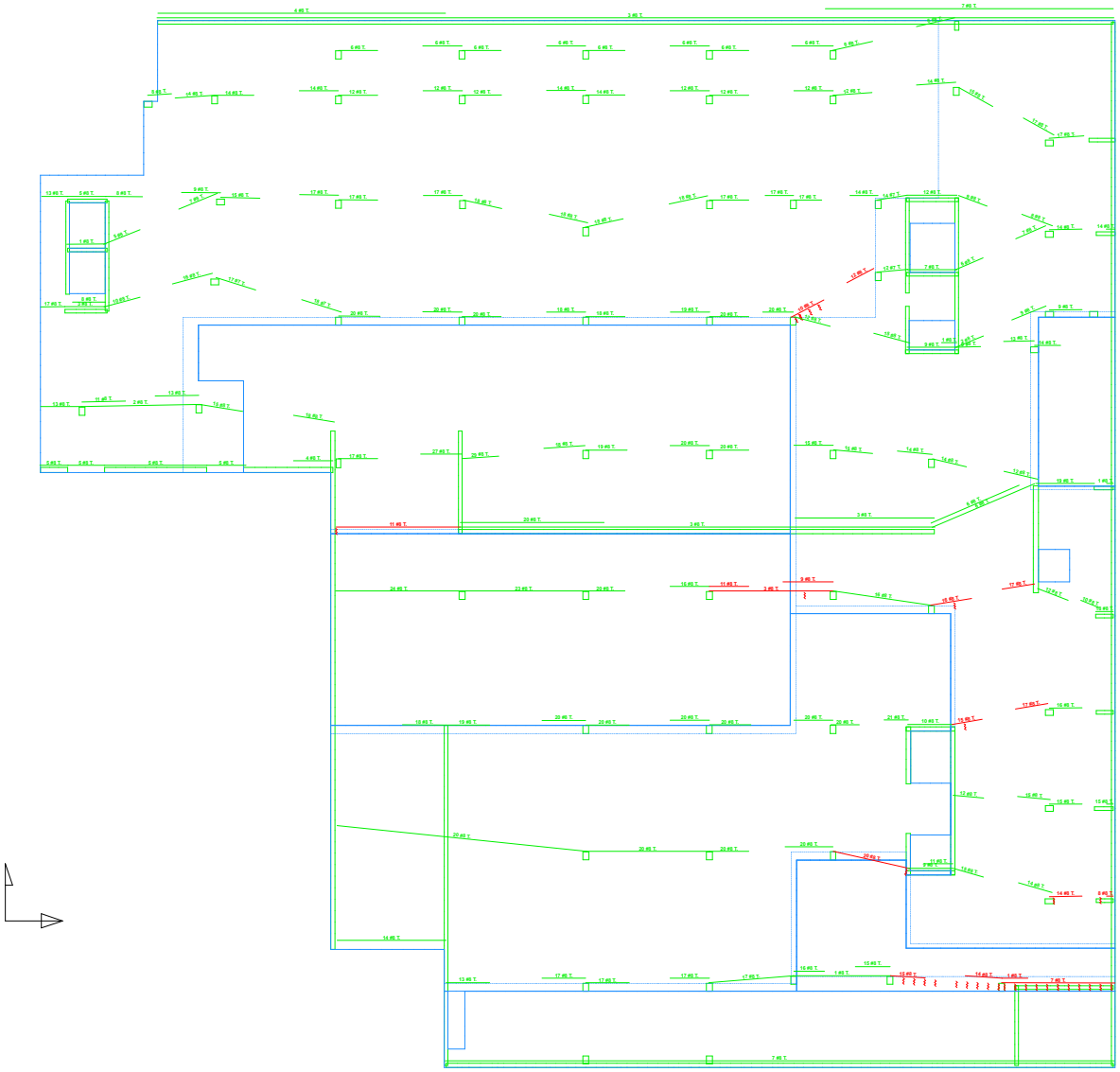
Design Status: Longitude Status Plan

Design Status: User Lines; User Notes; User Dimensions; Longitude Span Designs; Span Design Numbers; Span Design Status; Longitude DS Designs; DS Design Numbers; DS Design Status; Element; Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:500



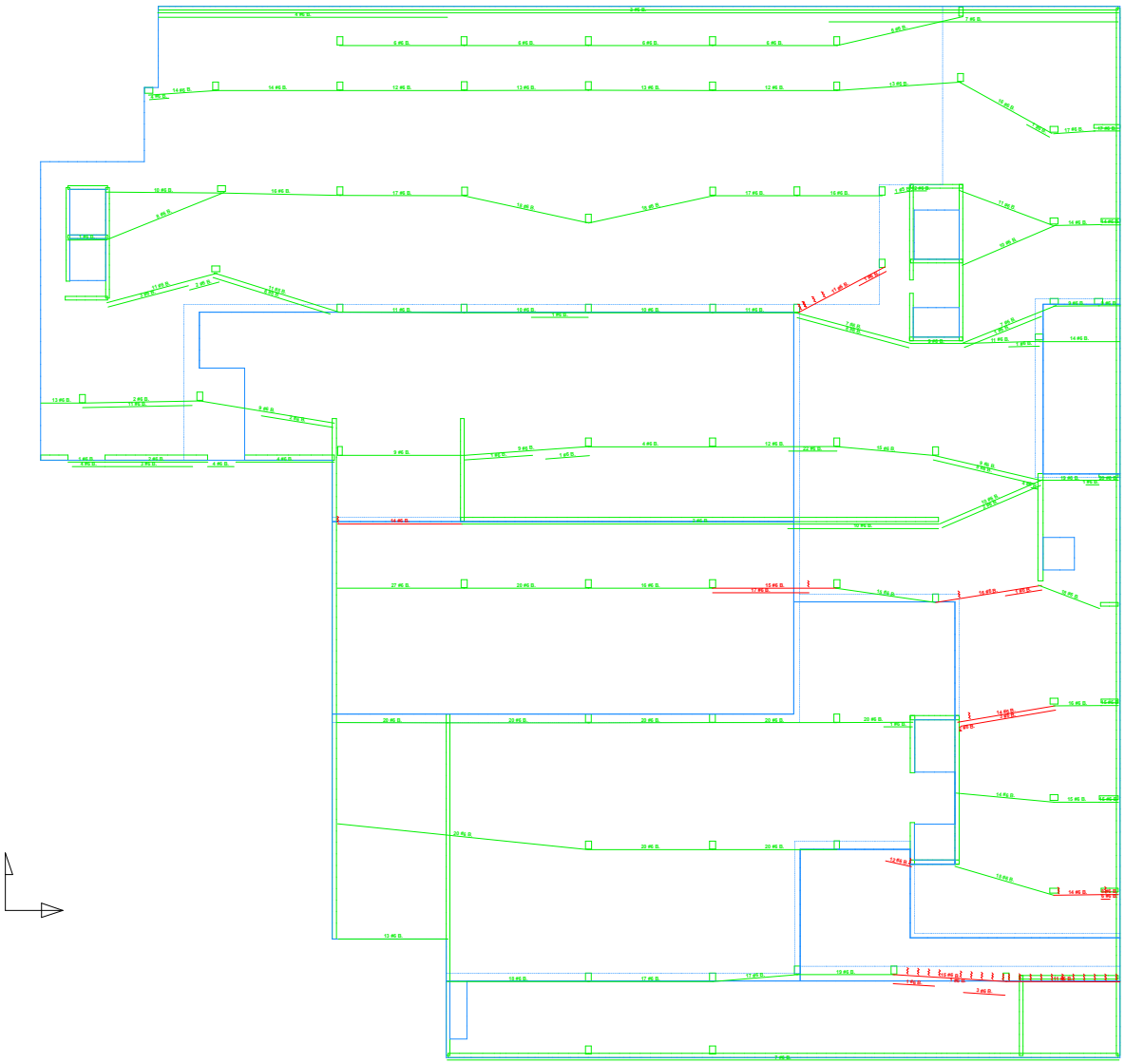
Design Status: Longitude Top Reinforcement Plan

Design Status: User Lines; User Notes; User Dimensions; Longitude Span Designs; Span Design Top Bars; Span Design Bar Descriptions; Longitude DS Designs; DS Design Top Bars;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Reinforcement: Top Face Concentrated Reinf.; Both Faces Concentrated Reinf.; Auto Face Concentrated Reinf.; Concentrated Reinf. Descriptions; Top Face Distributed Reinf.; Both Faces Distributed Reinf.; Auto Face Distributed Reinf.; Distributed Reinf. Descriptions; Longitude User Concentrated Reinf.; Longitude User Distributed Reinf.;
Scale = 1:500

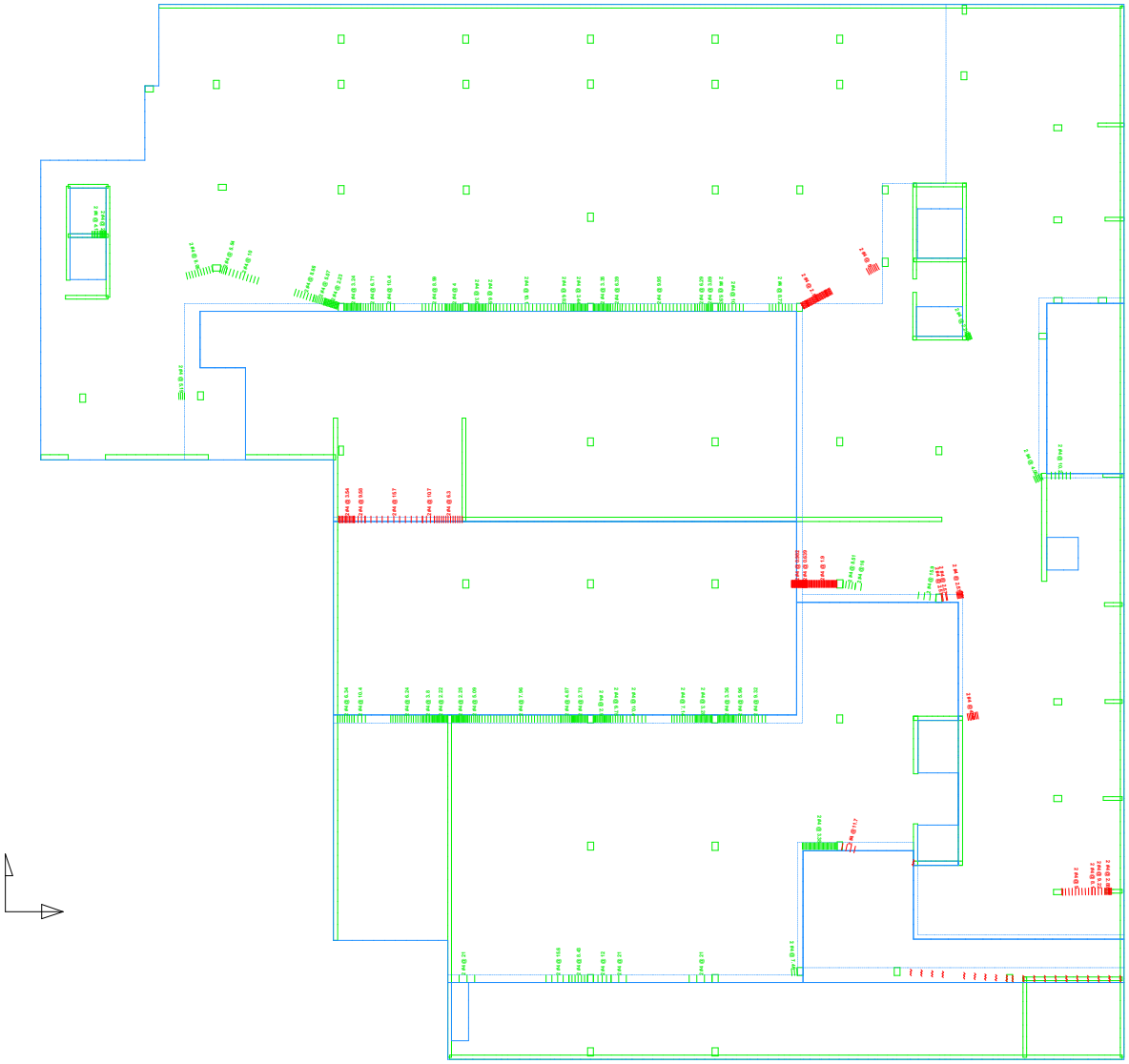


Design Status: Longitude Bottom Reinforcement Plan

Design Status; User Lines; User Notes; User Dimensions; Longitude Span Designs; Span Design Bottom Bars; Span Design Bar Descriptions; Longitude DS Designs; DS Design Bottom Bars;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Reinforcement: Bottom Face Concentrated Reinf.; Both Faces Concentrated Reinf.; Auto Face Concentrated Reinf.; Concentrated Reinf. Descriptions; Bottom Face Distributed Reinf.; Both Faces Distributed Reinf.; Auto Face Distributed Reinf.; Distributed Reinf. Descriptions; Longitude User Concentrated Reinf.; Longitude User Distributed Reinf.;
Scale = 1:500



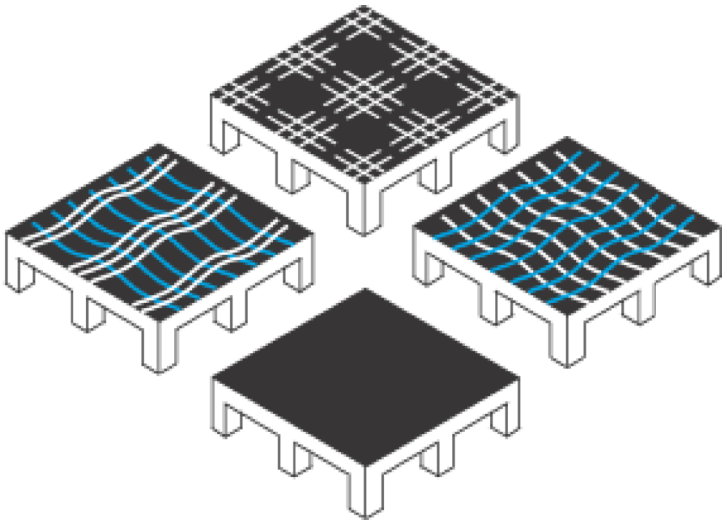
Design Status: Longitude Shear Reinforcement Plan



MERCER ISLAND APARTMENTS

PERMIT CALCULATIONS

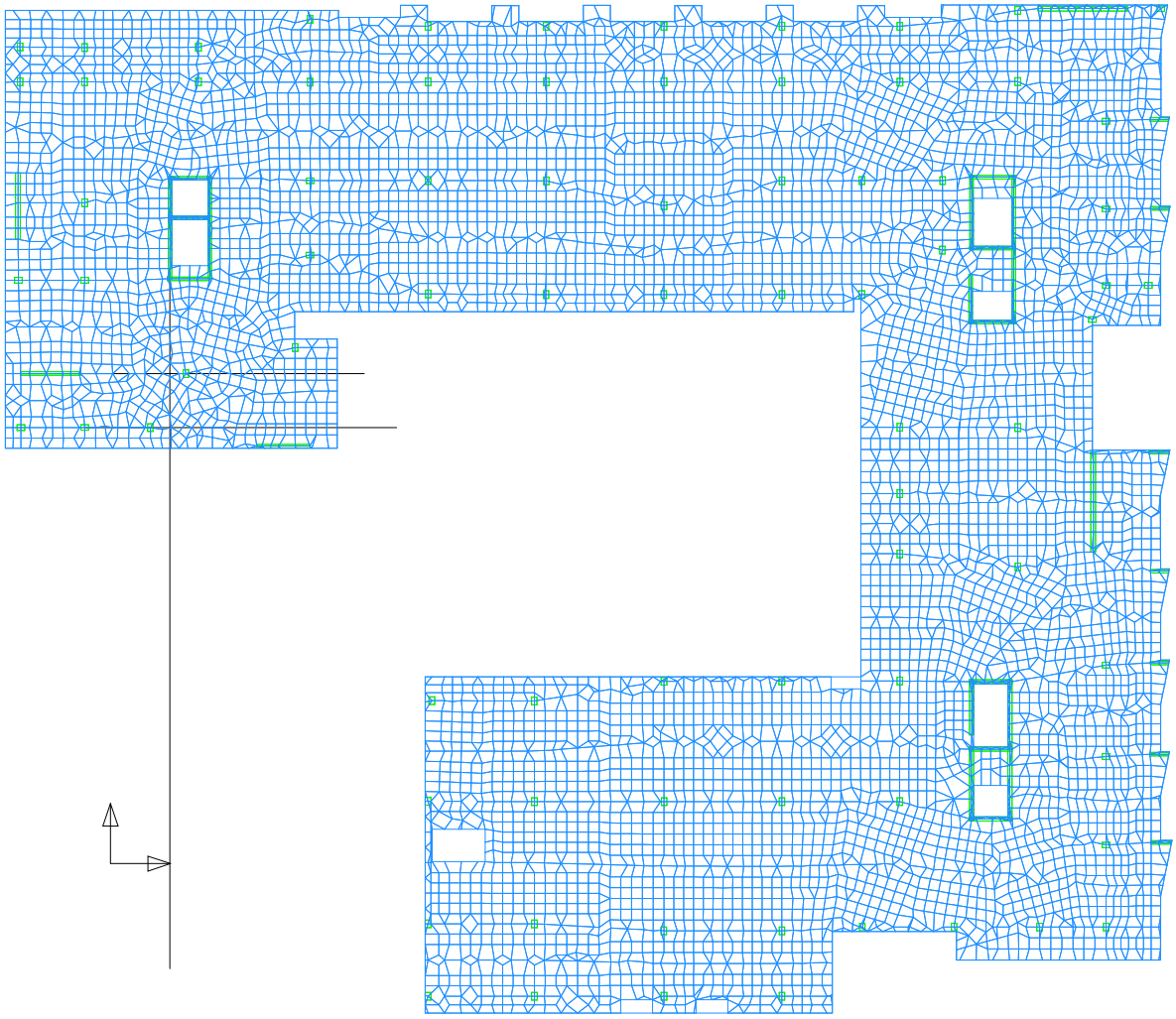
9/30/21



LEVEL 2 PT SLAB (09-24-2021)_KR v9.0.cpt
10/2/2021

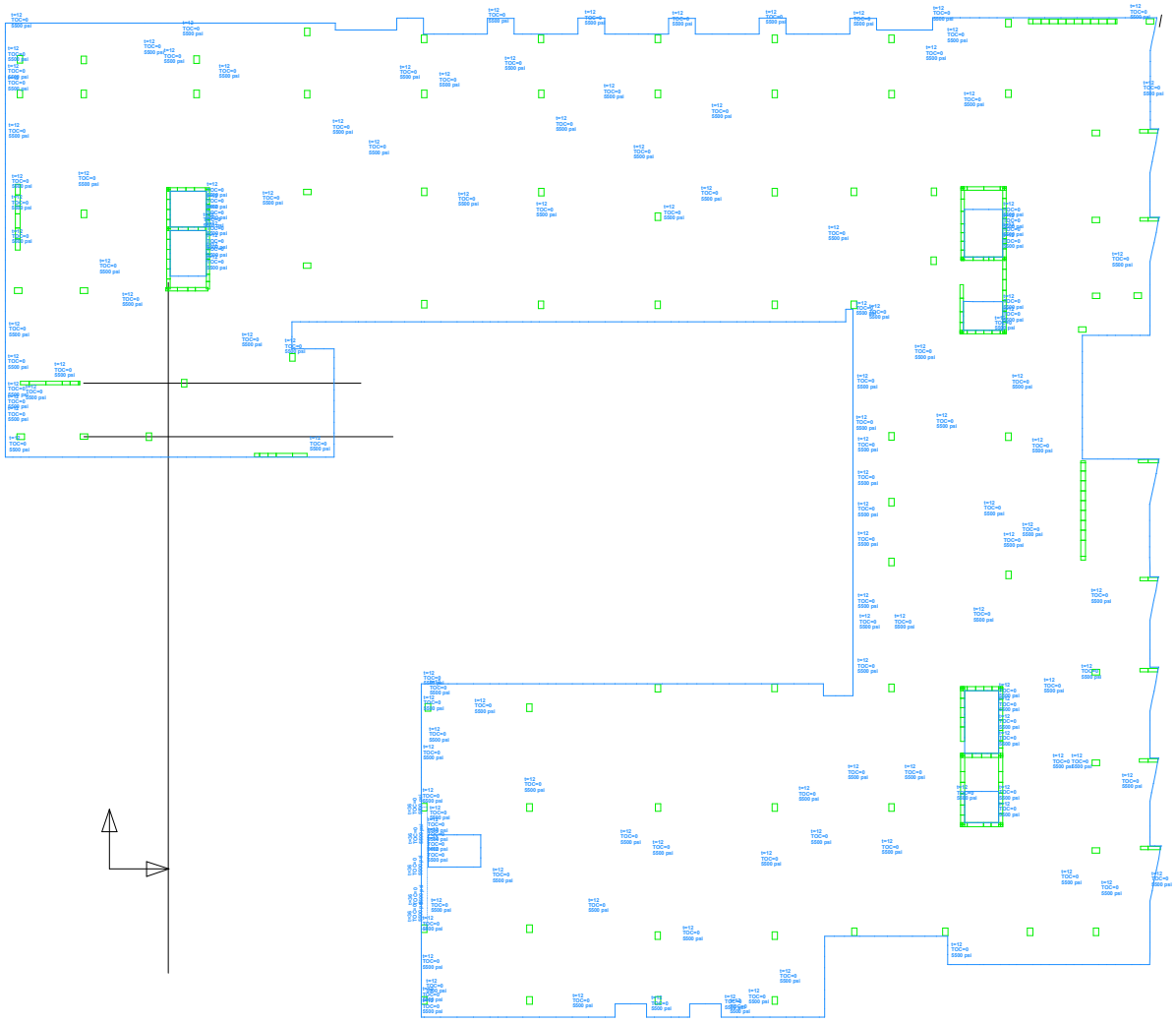
Element: Standard Plan

Element: Wall Elements Above; Wall Elements Below; Column Elements Above; Column Elements Below; Point Supports; Point Support Icons; Line Supports; Line Support Icons; Slab Elements; Point Springs; Point Spring Icons; Line Springs; Line Spring Icons; Area Springs; Area Spring Icons; User Notes; User Lines; User Dimensions; Mesh Ingrid; Slab Areas; Walls Below; Columns Below;
Scale = 1:150



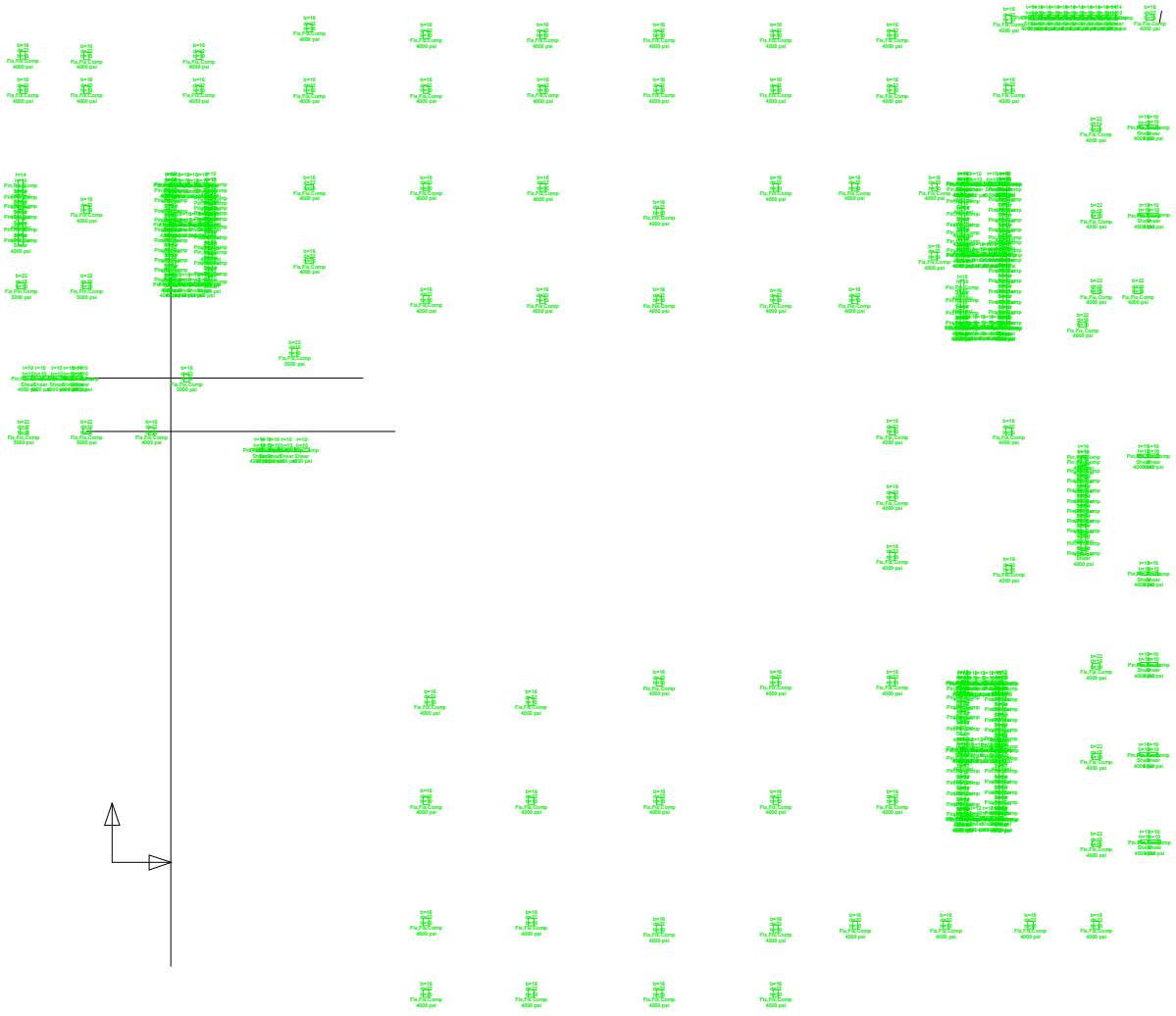
Element: Slab Summary Plan

Element: User Lines; User Notes; User Dimensions; Wall Elements Below; Wall Elements Above; Column Elements Below; Column Elements Above; Point Springs; Point Spring Icons; Line Springs; Line Spring Icons; Slab Elements; Slab Element Outline Only; Slab Element Thicknesses; Slab Element Elevations; Slab Element Concrete Models;
Drawing Import: User Lines; User Notes; User Dimensions;
Scale = 1:150



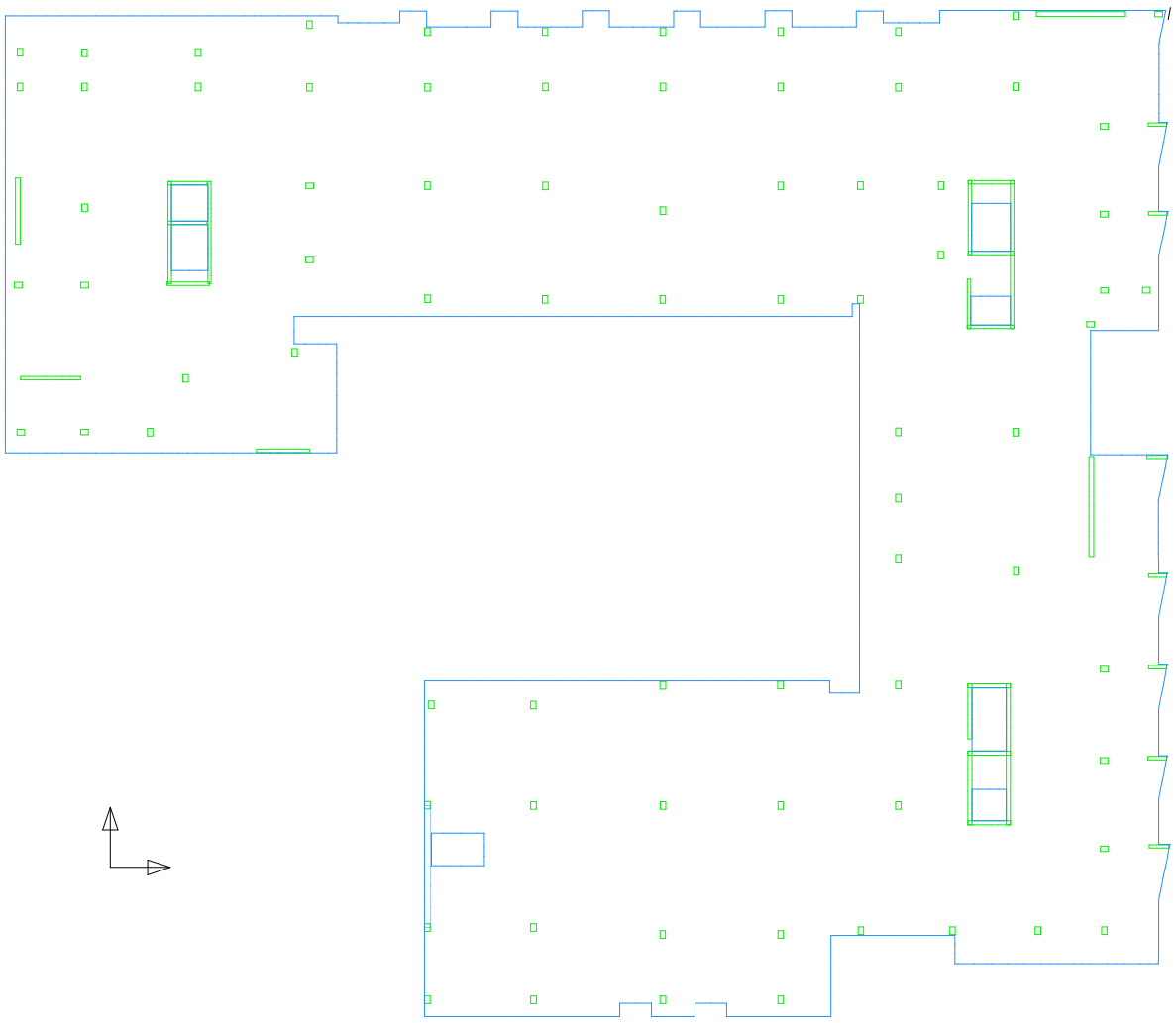
Element: Supports Below Slab Summary Plan

Element: User Lines; User Notes; User Dimensions; Wall Elements Below; Wall Element Thicknesses; Wall Element Heights; Wall Element Fixity; Wall Element Shear Fixity; Wall Element Concrete Models; Column Elements Below; Column Element Dimensions; Column Element Heights; Column Element Fixity; Column Element Concrete Models; Point Springs; Point Spring Icons; Point Spring Values; Point Spring Elevations; Line Springs; Line Spring Icons; Line Spring Values; Line Spring Elevations;
Drawing Import: User Lines; User Notes; User Dimensions;
Scale = 1:150



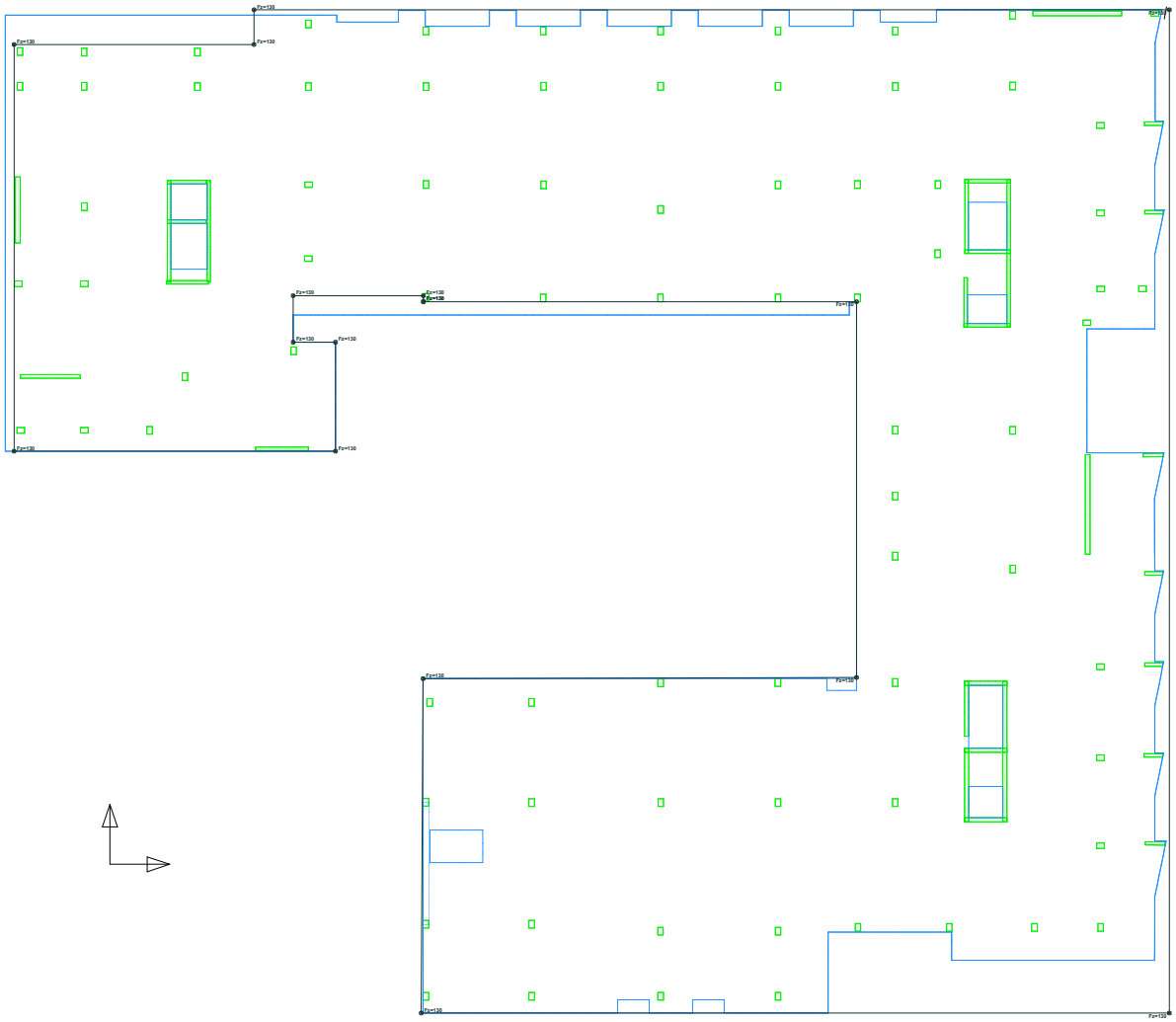
Temporary Construction (At Stressing) Loading: All Loads

Temporary Construction (At Stressing) Loading: User Lines; User Notes; User Dimensions; Point Loads; Point Load Icons; Point Load Values; Line Loads; Line Load Icons; Line Load Values; Area Loads; Area Load Icons; Area Load Values;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:550



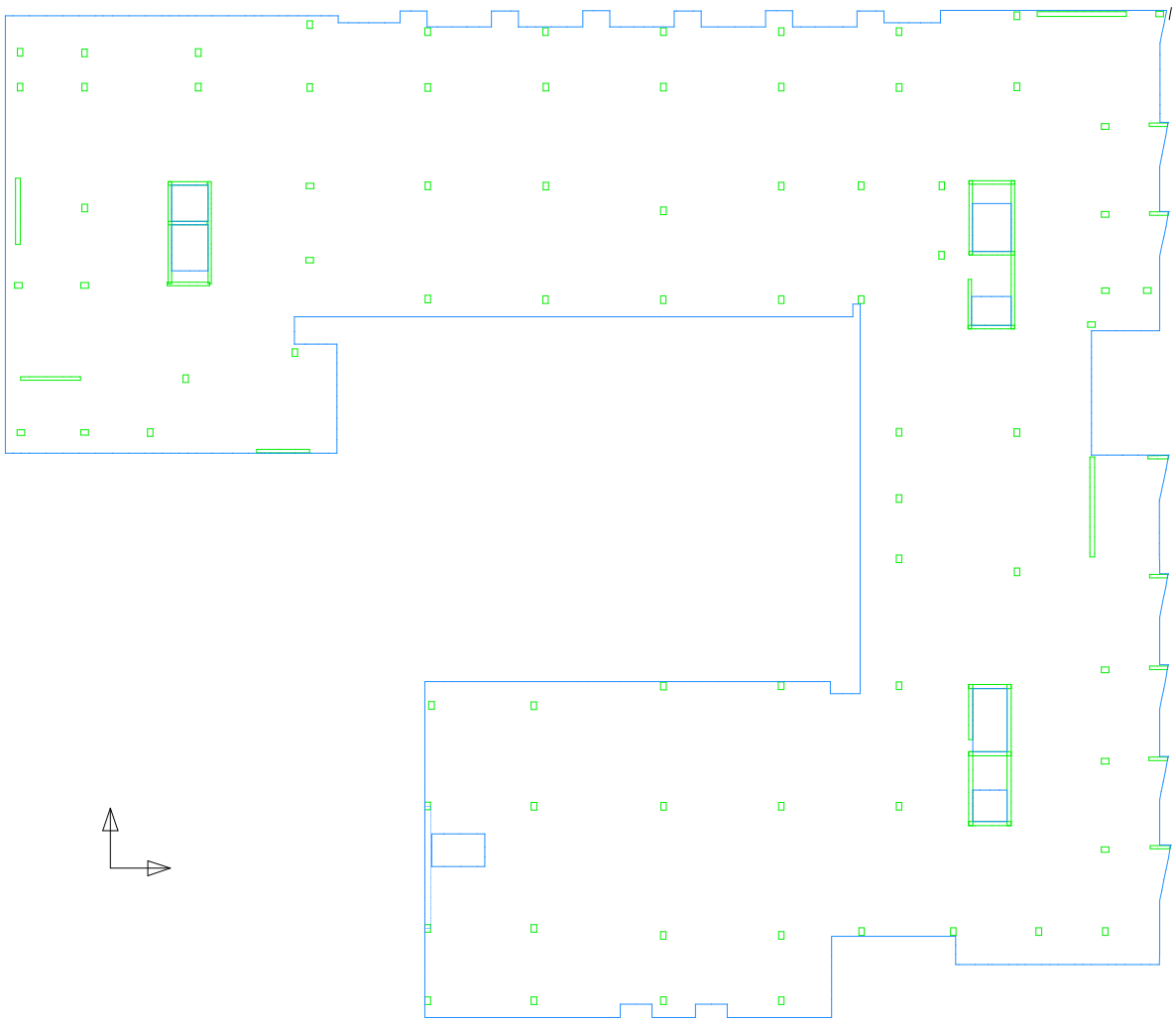
Other Dead Loading: All Loads Plan

Other Dead Loading: Point Loads; Point Load Icons; Point Load Values; Line Loads; Line Load Icons; Line Load Values; Area Loads; Area Load Icons; Area Load Values; User Notes; User Lines; User Dimensions;
Drawing Import: User Lines; User Notes; User Dimensions;
Mesh Input: Slab Areas; Walls Below; Columns Below;
Element: Wall Elements Above; Wall Elements Below; Wall Element Outline Only; Column Elements Above; Column Elements Below; Slab Elements; Slab Element Outline Only;
Scale = 1:555



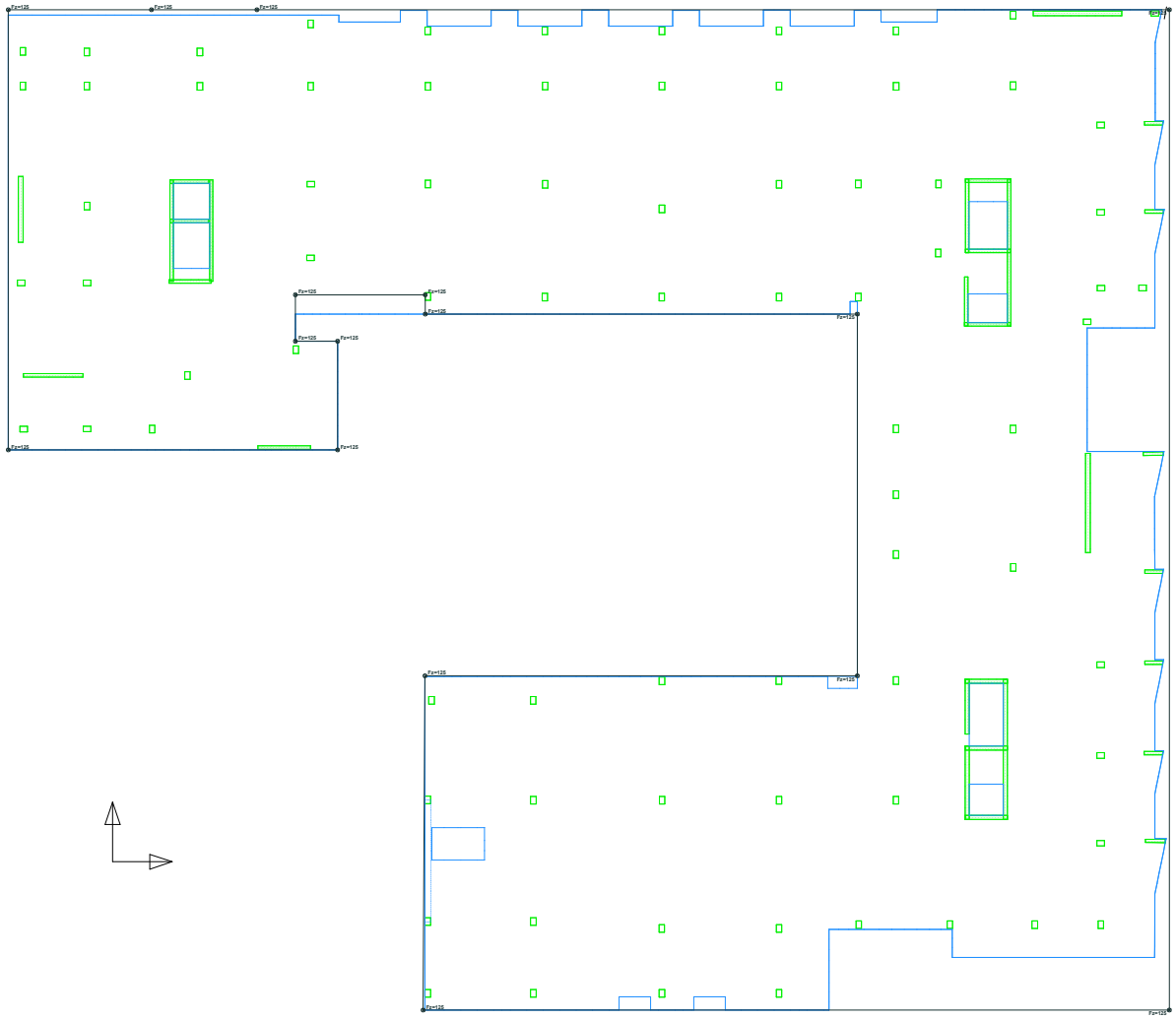
Live (Reducible) Loading: All Loads Plan

Live (Reducible) Loading: User Lines; User Notes; User Dimensions; Point Loads; Point Load Icons; Point Load Values; Line Loads; Line Load Icons; Line Load Values; Area Loads; Area Load Icons; Area Load Values;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:550



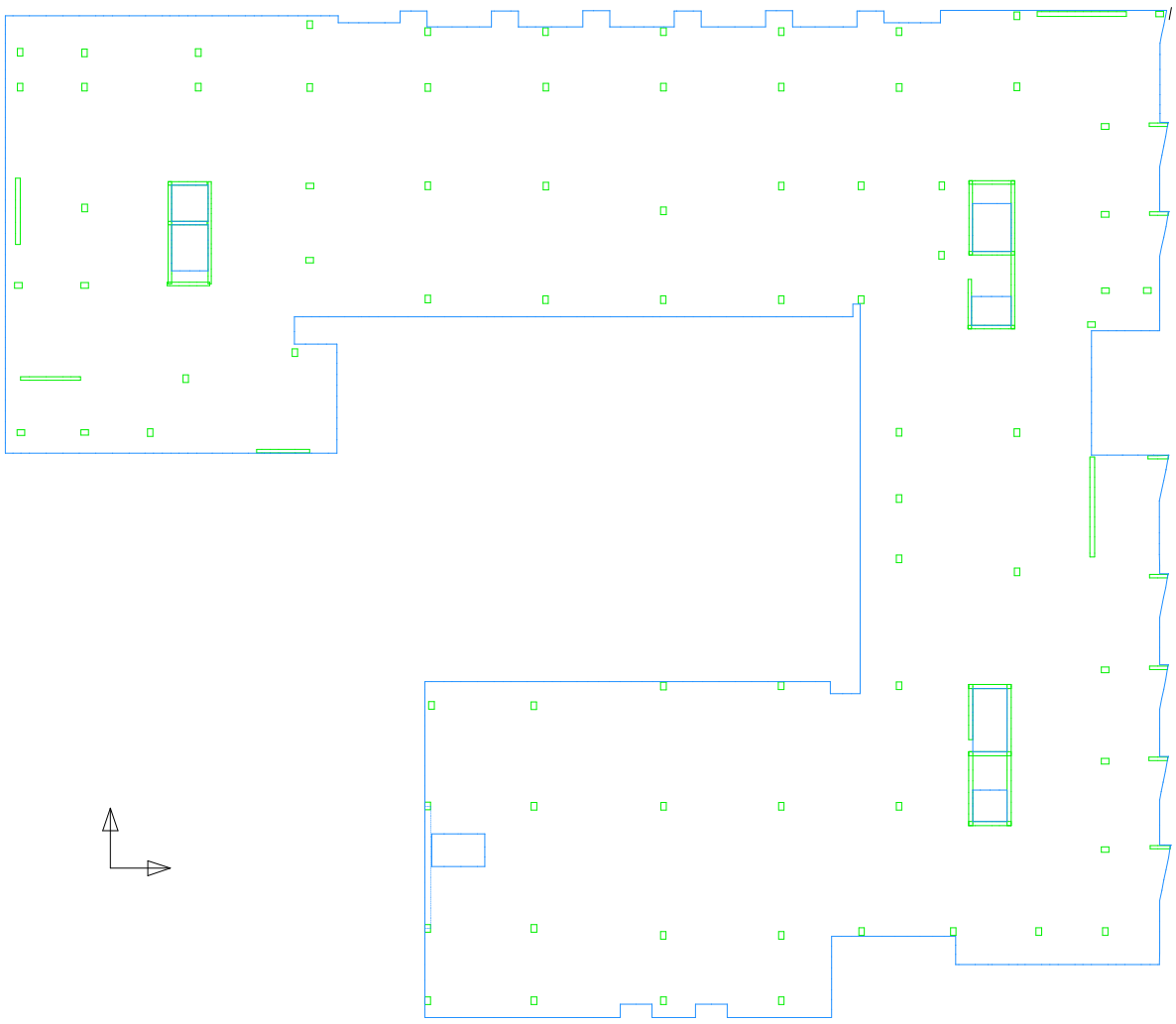
Live (Unreducible) Loading: All Loads Plan

Live (Unreducible) Loading: Point Loads; Point Load Icons; Point Load Values; Line Loads; Line Load Icons; Line Load Values; Area Loads; Area Load Icons; Area Load Values; User Notes; User Lines; User Dimensions;
Drawing Import: User Lines; User Notes; User Dimensions;
Mesh Input: Slab Areas; Walls Below; Columns Below;
Element: Wall Elements Above; Wall Elements Below; Wall Element Outline Only; Column Elements Above; Column Elements Below; Slab Elements; Slab Element Outline Only;
Scale = 1:555



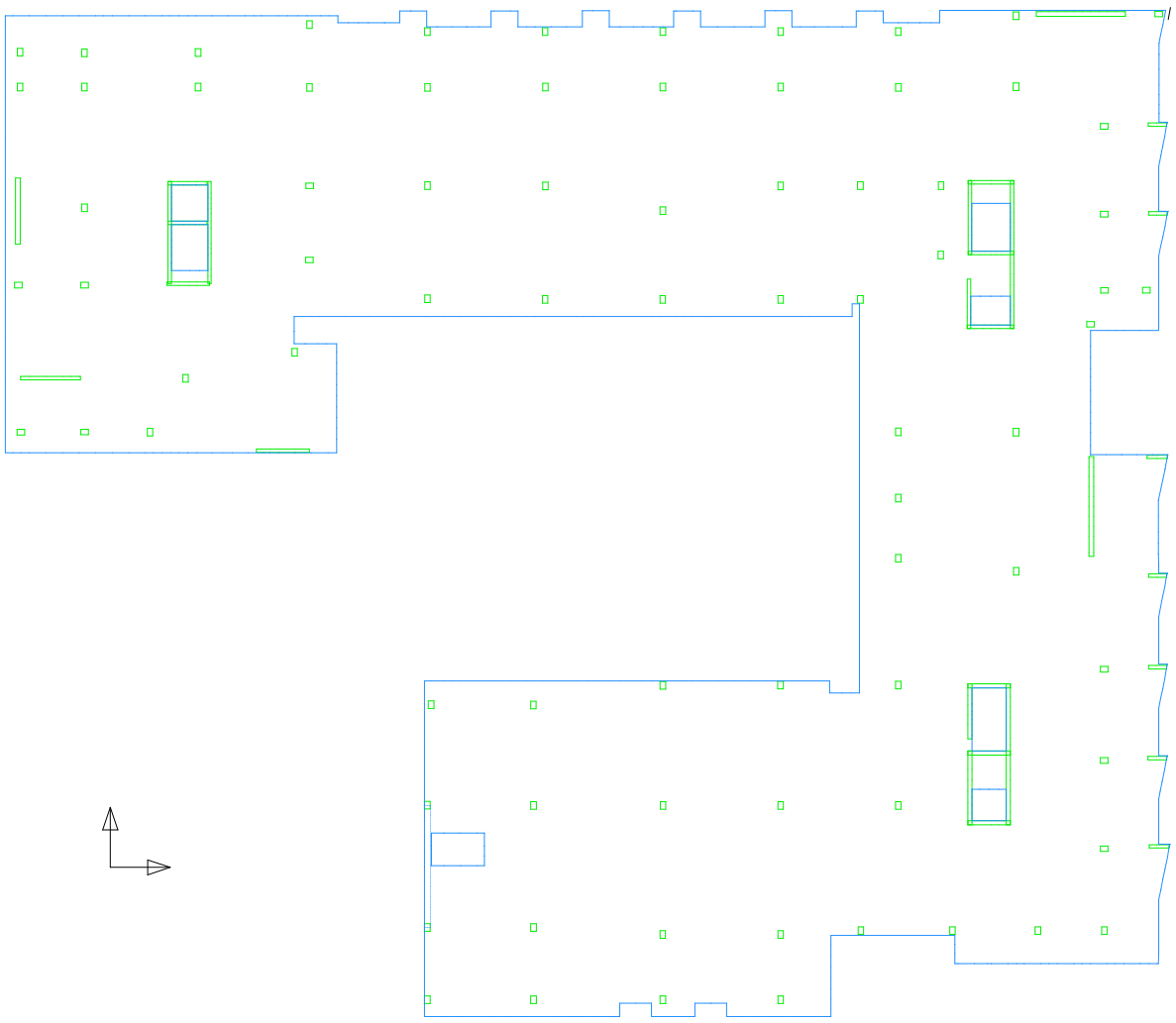
Live (Storage) Loading: All Loads Plan

Live (Storage) Loading; User Lines; User Notes; User Dimensions; Point Loads; Point Load Icons; Point Load Values; Line Loads; Line Load Icons; Line Load Values; Area Loads; Area Load Icons; Area Load Values;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:550



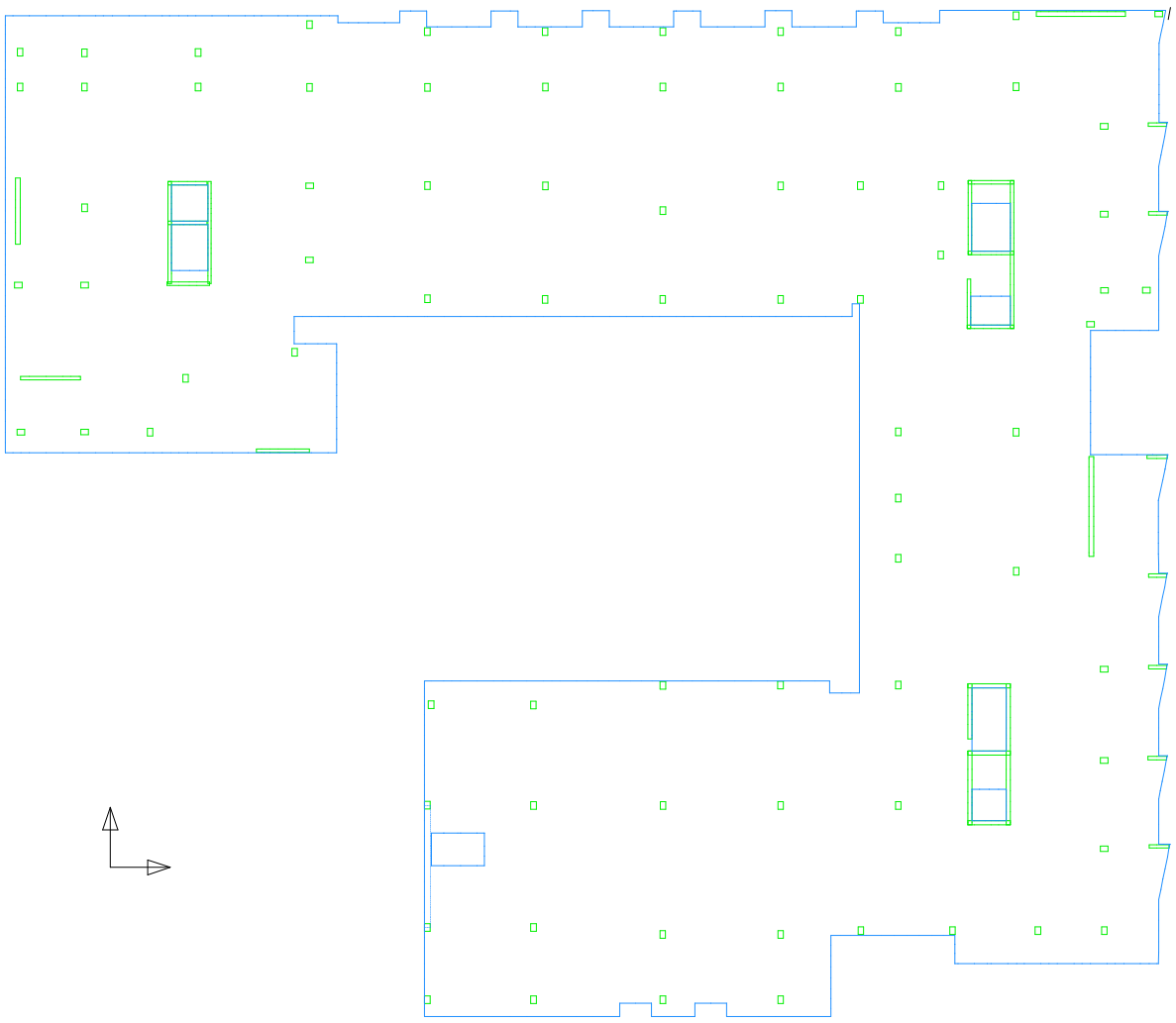
Live (Parking) Loading: All Loads Plan

Live (Parking) Loading; User Lines; User Notes; User Dimensions; Point Loads; Point Load Icons; Point Load Values; Line Loads; Line Load Icons; Line Load Values; Area Loads; Area Load Icons; Area Load Values;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:550



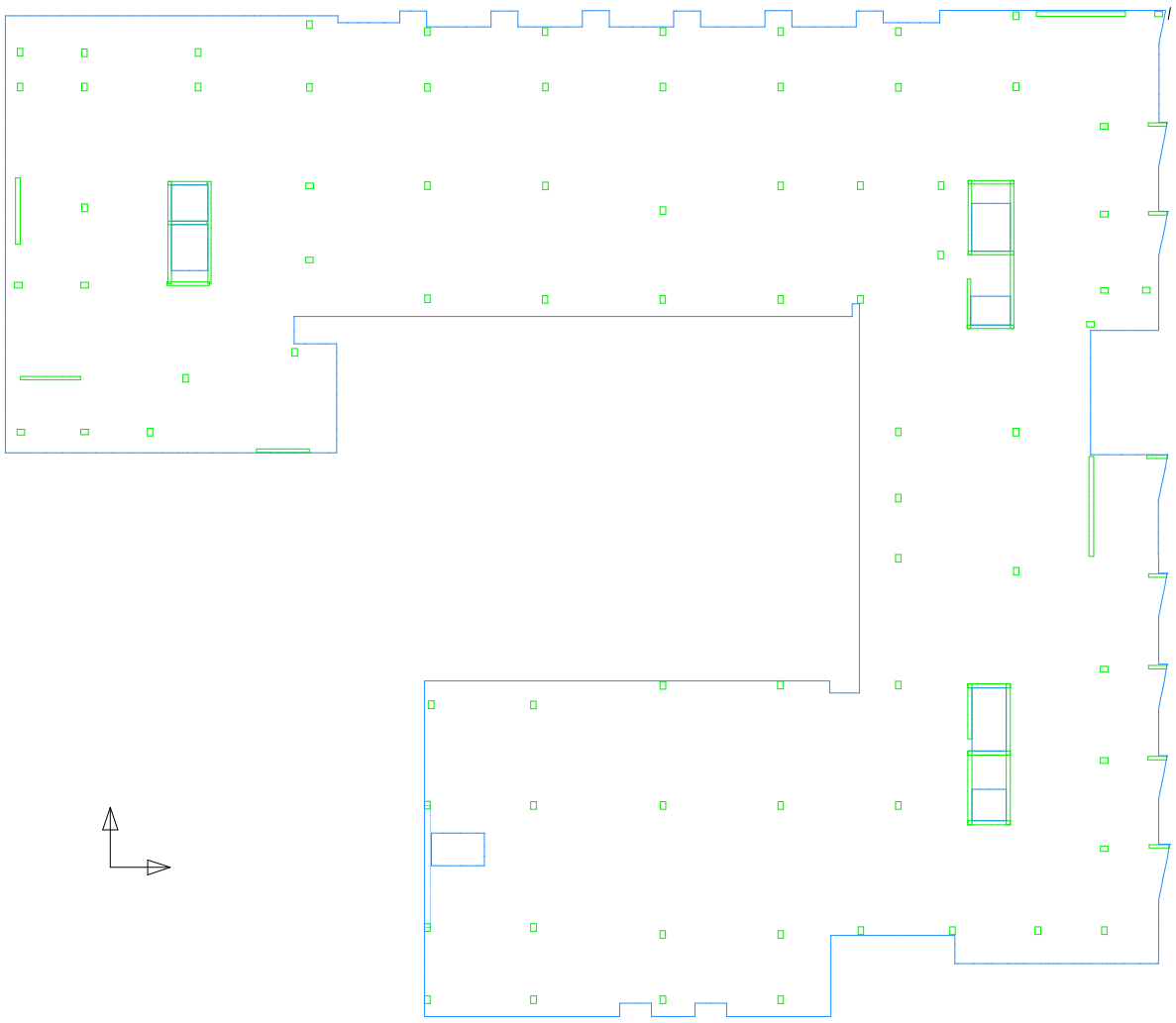
Live (Roof) Loading: All Loads Plan

Live (Roof) Loading: User Lines; User Notes; User Dimensions; Point Loads; Point Load Icons; Point Load Values; Line Loads; Line Load Icons; Line Load Values; Area Loads; Area Load Icons; Area Load Values;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:550



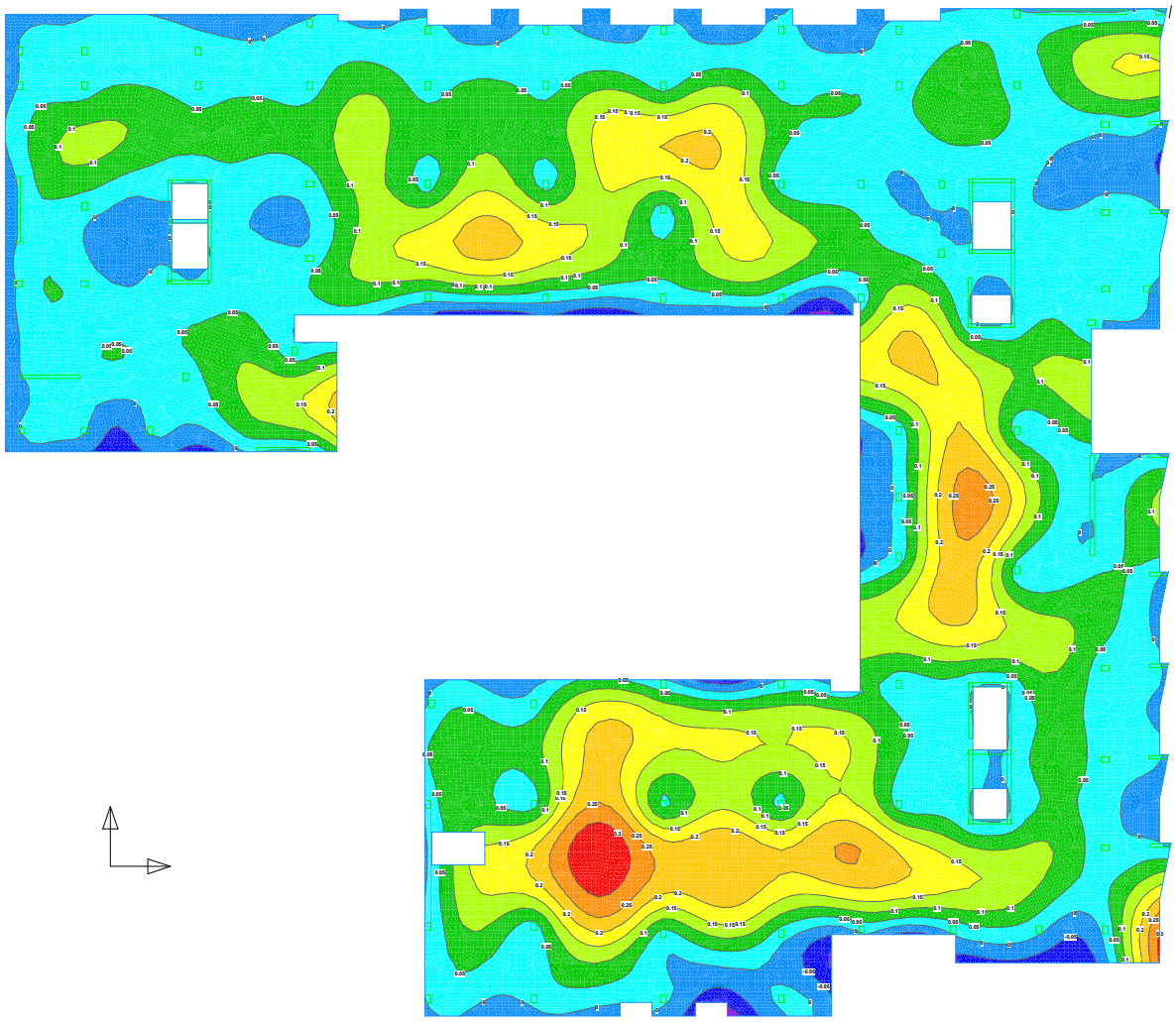
Snow Loading: All Loads Plan

Snow Loading: User Lines; User Notes; User Dimensions; Point Loads; Point Load Icons; Point Load Values; Line Loads; Line Load Icons; Line Load Values; Area Loads; Area Load Icons; Area Load Values;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:550



Service LC: D + L: Max Deflection Plan

Service LC: D + L: User Lines; User Notes; User Dimensions;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:200
Service LC: D + L - Vertical Deflection Plot (Maximum Values)
-0.1 -0.05 0 0.05 0.1 0.15 0.2 0.25 0.3
Min Value = -0.1317 inches @ (148.5,-35.99) Max Value = 0.343 inches @ (117.6,2.665)

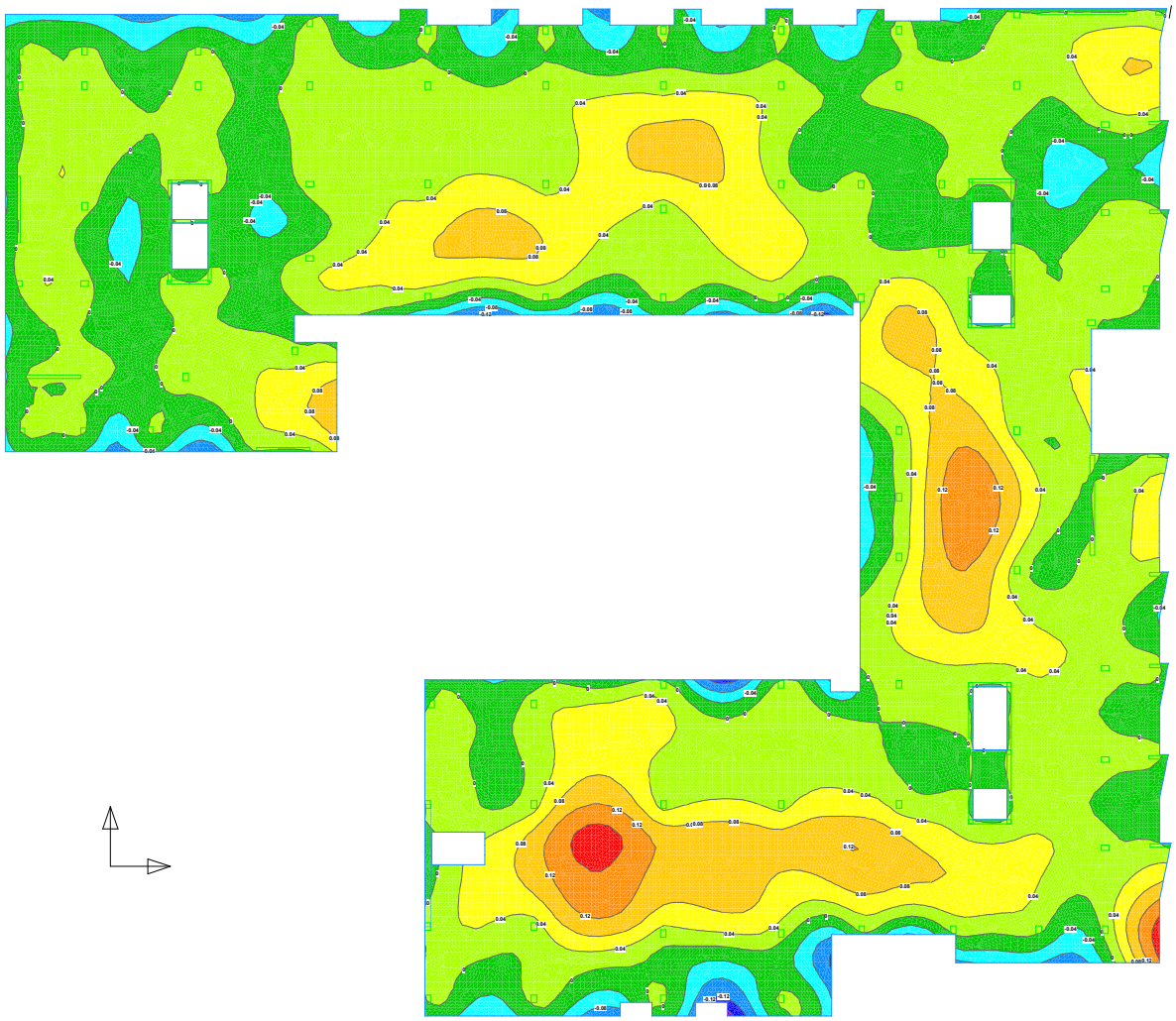


Service LC: D + L: Min Deflection Plan

Service LC: D + L: User Lines; User Notes; User Dimensions;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:200
Service LC: D + L - Vertical Deflection Plot (Minimum Values)

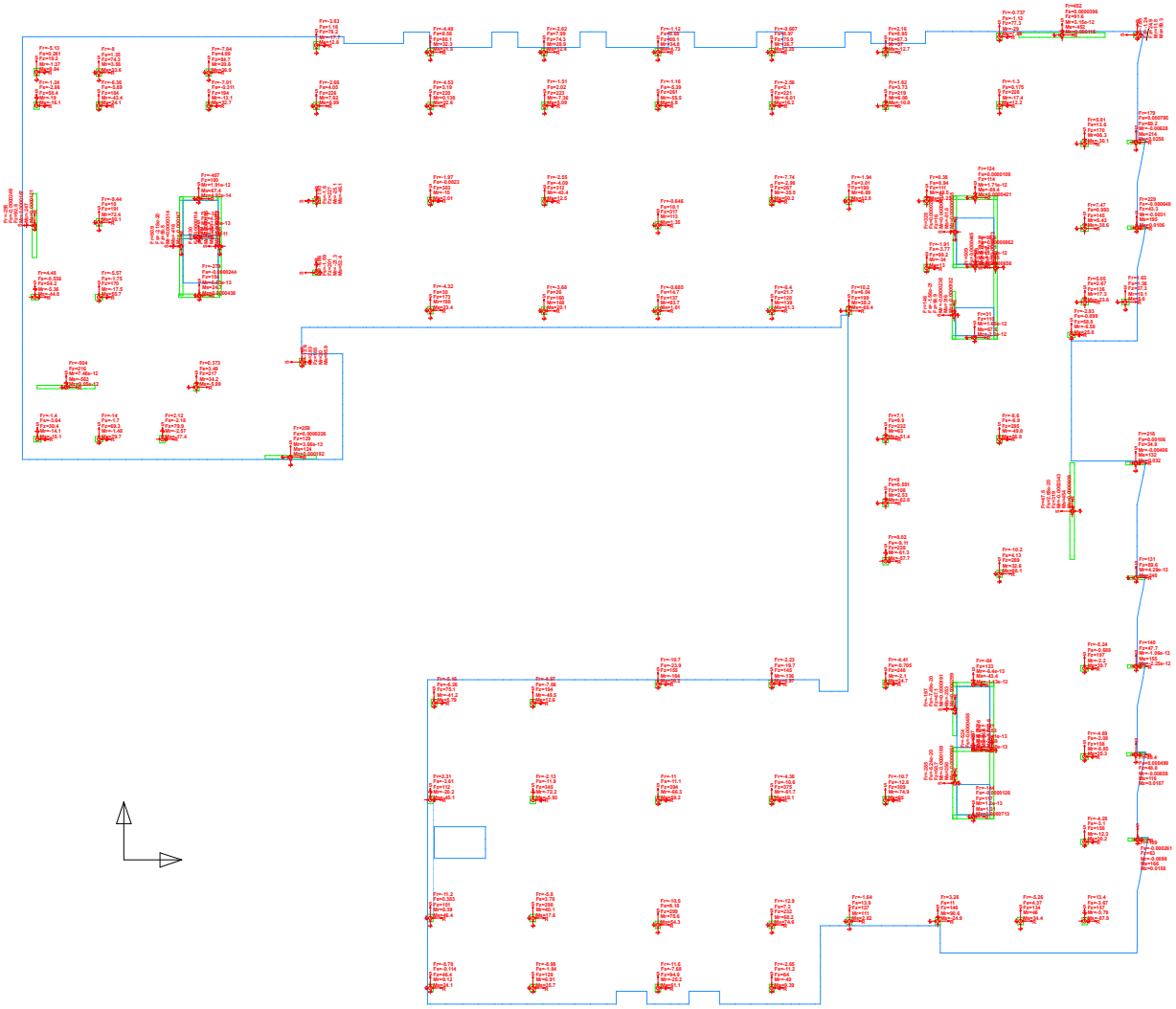
-0.16 -0.12 -0.08 -0.04 0 0.04 0.08 0.12 0.16

Min Value = -0.1915 inches @ (148.5,-35.99) Max Value = 0.1939 inches @ (252.6,-17.3)



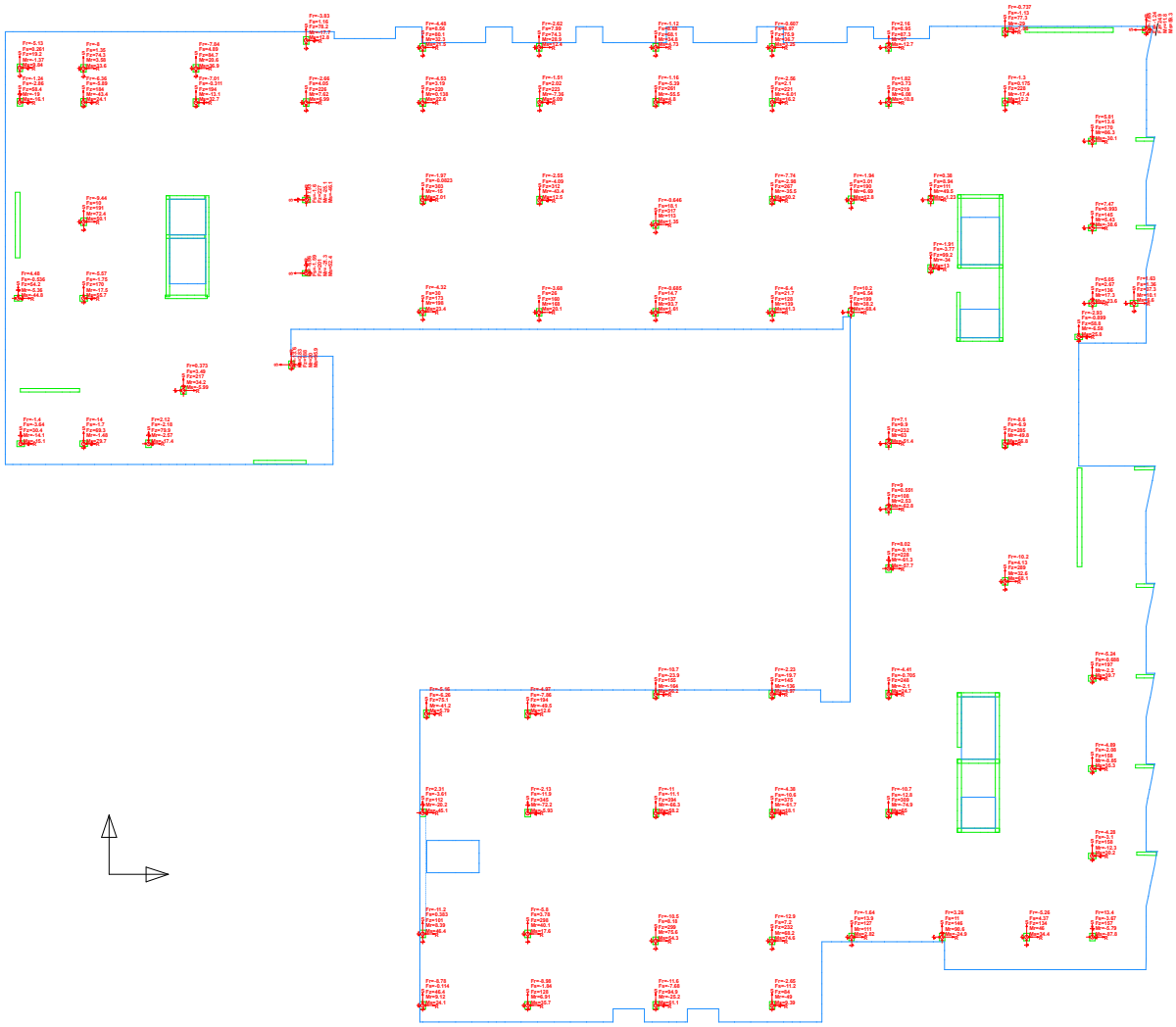
Factored LC: 1.4D: Std Reactions Plan

Factored LC: 1.4D: User Lines; User Notes; User Dimensions;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:100
Factored LC: 1.4D - Reaction Plot: (Wall Below,Column Below,Point Spring,Line Spring,Point Support,Line Support)(Fr,Fs,Fz,Mr,Ms,Mz)(Standard Contest)



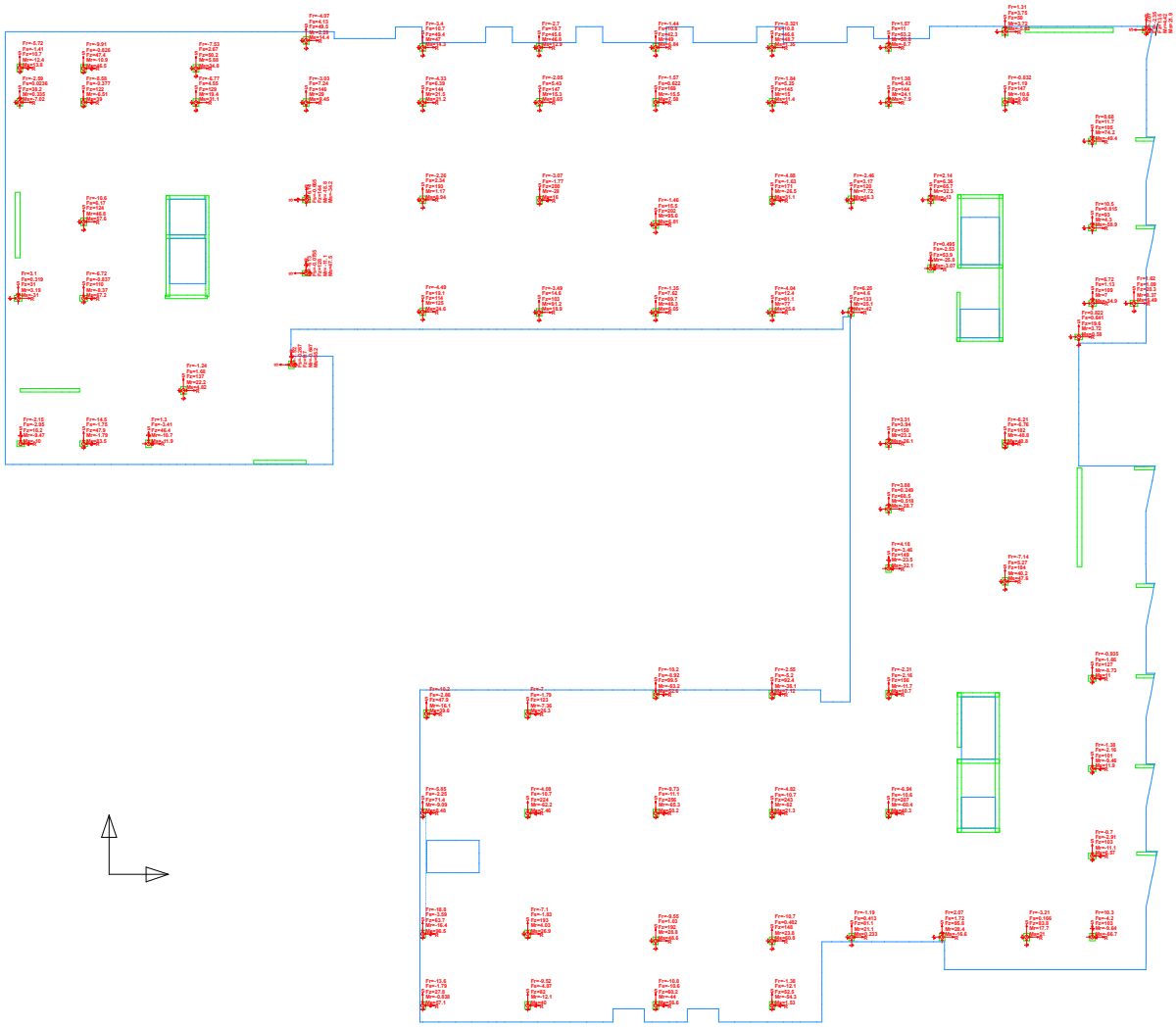
Factored LC: 1.4D: Max Reactions Plan

Factored LC: 1.4D: User Lines; User Notes; User Dimensions;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:100
Factored LC: 1.4D - Reaction Plot: (Column Below)(Fz,Fx,Fz,Mr,Mx,My)(Max Fx Context)



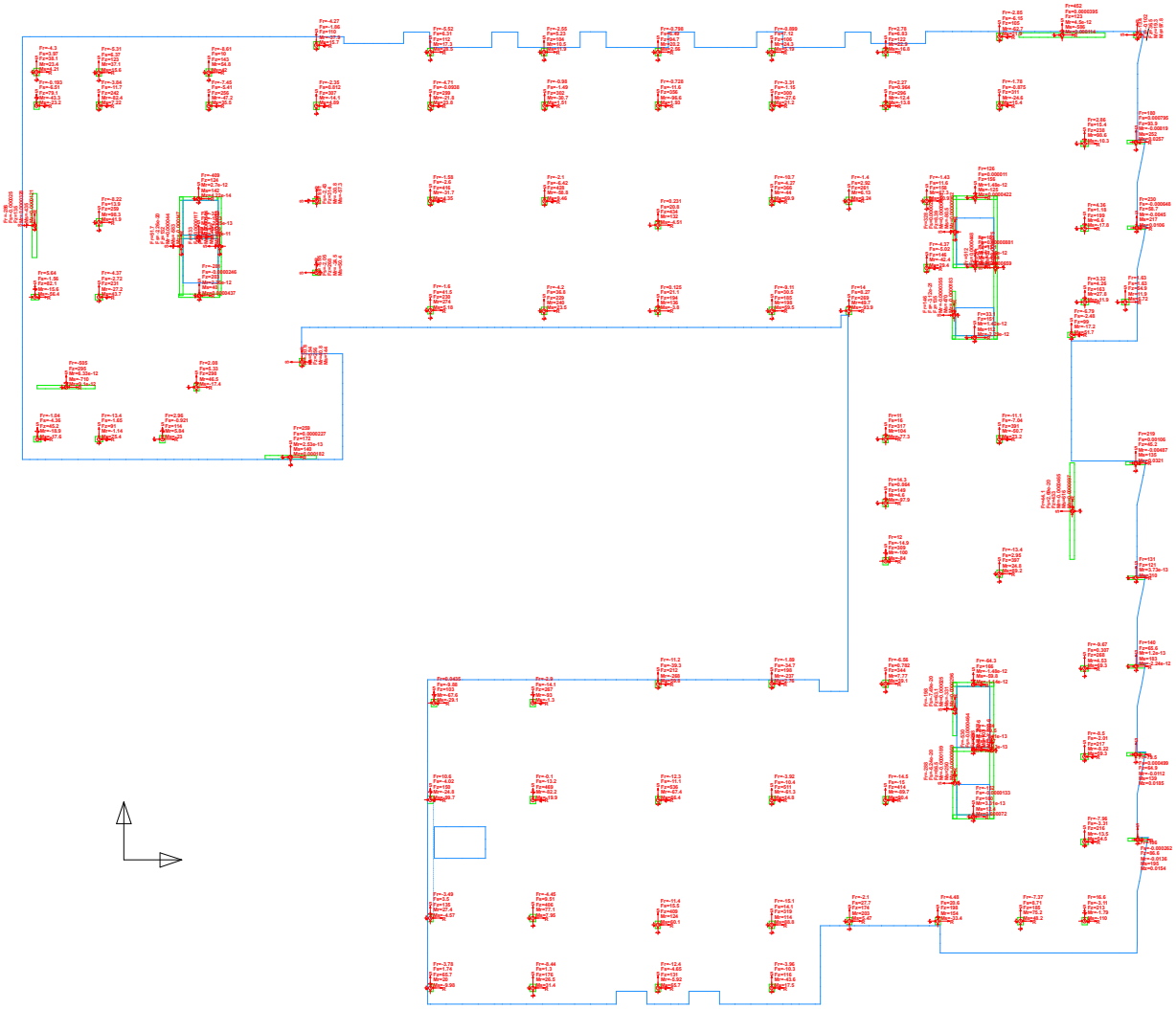
Factored LC: 1.4D: Min Reactions Plan

Factored LC: 1.4D: User Lines; User Notes; User Dimensions;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:100
Factored LC: 1.4D - Reaction Plot: (Column Below)(Fz,Fx,Fz,Mr,Mx,My)(Min Fz Context)



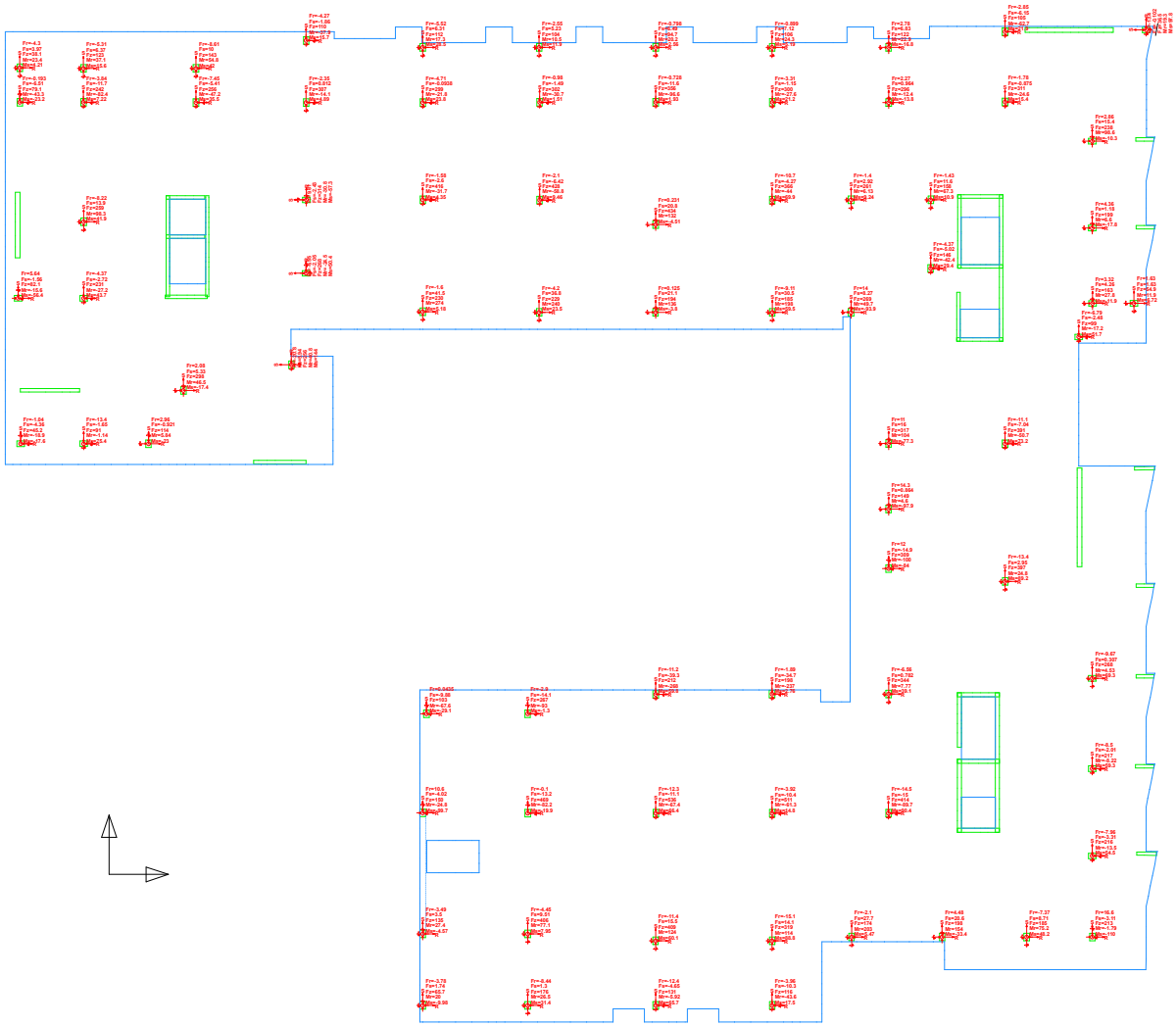
Factored LC: 1.2D + 1.6L + 0.5Lr: Std Reactions Plan

Factored LC: 1.2D + 1.6L + 0.5Lr: User Lines; User Notes; User Dimensions;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:100
Factored LC: 1.2D + 1.6L + 0.5Lr - Reaction Plot: (Wall Below,Column Below,Point Spring,Line Spring,Point Support,Line Support)(Fr,Fs,Fz,Mr,Ms,Mz)(Standard Context)



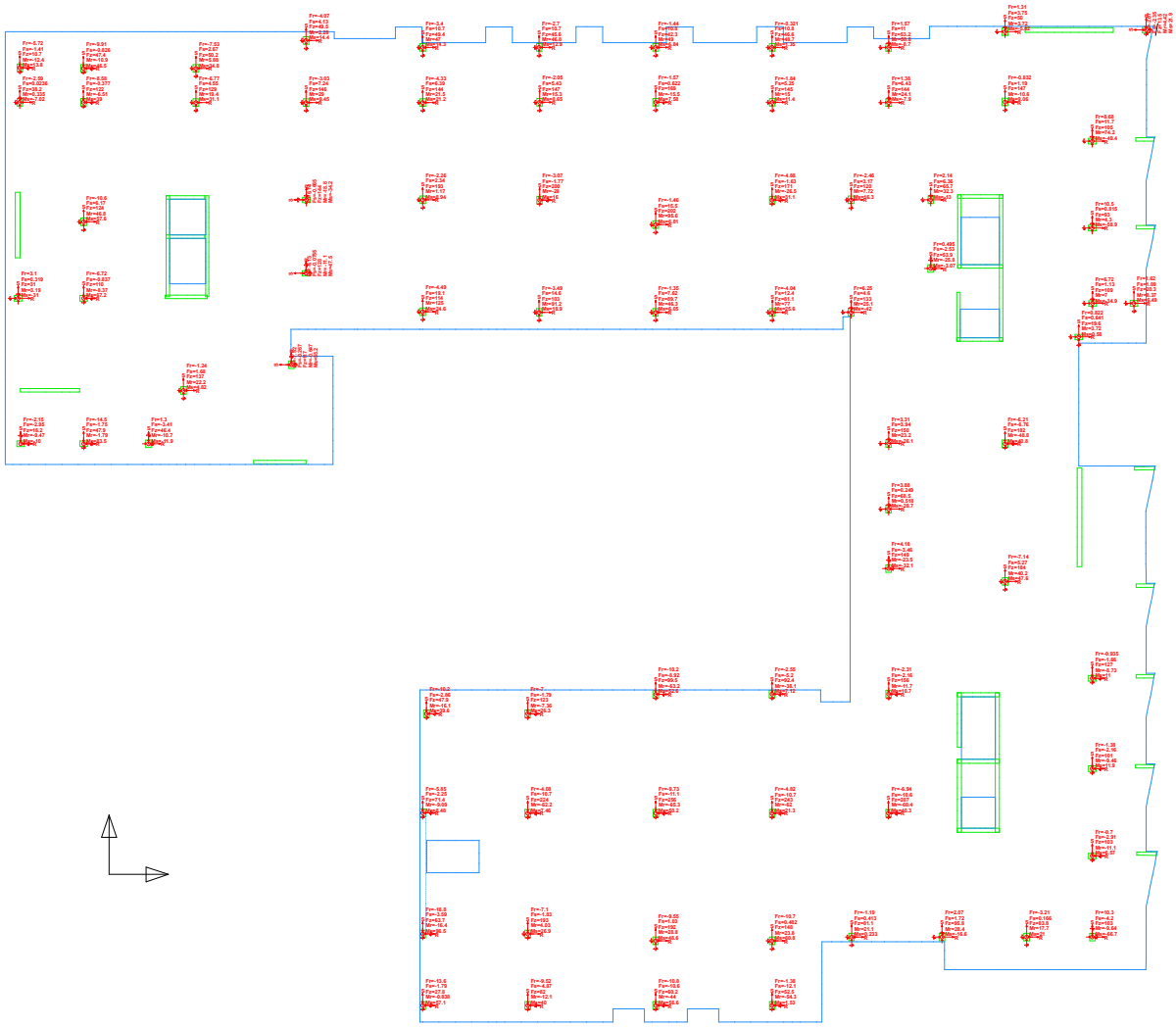
Factored LC: 1.2D + 1.6L + 0.5Lr: Max Reactions Plan

Factored LC: 1.2D + 1.6L + 0.5Lr: User Lines; User Notes; User Dimensions;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:128
Factored LC: 1.2D + 1.6L + 0.5Lr - Reaction Plot: (Column Below)(Fr,Fx,Fz,Mr,My,Mz)(Max Fz Contest)



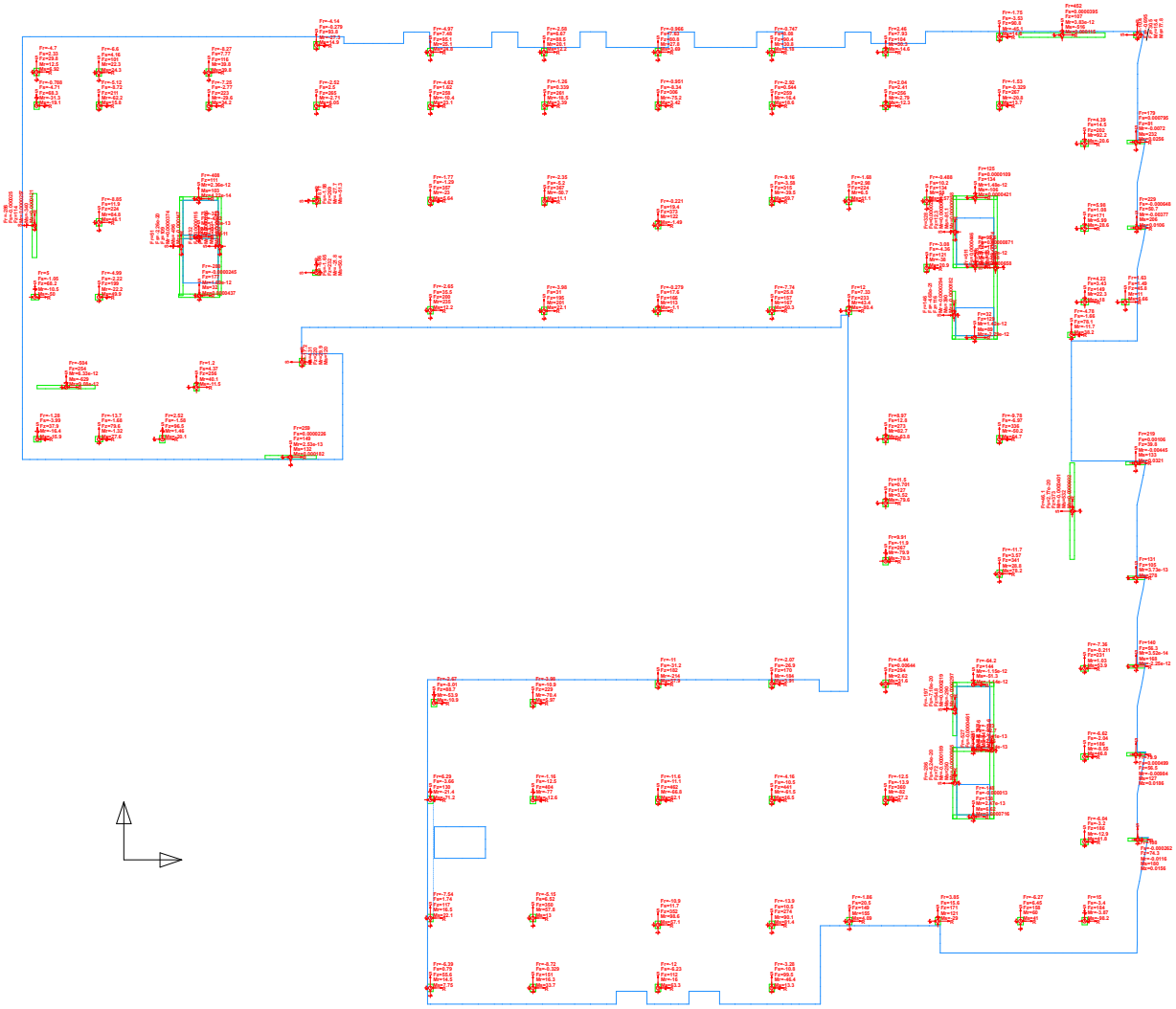
Factored LC: 1.2D + 1.6L + 0.5Lr: Min Reactions Plan

Factored LC: 1.2D + 1.6L + 0.5Lr: User Lines; User Notes; User Dimensions;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:100
Factored LC: 1.2D + 1.6L + 0.5Lr - Reaction Plot: (Column Below)(Fr,Fx,Fz,Mr,My,Mz)(Min Fz Contest)



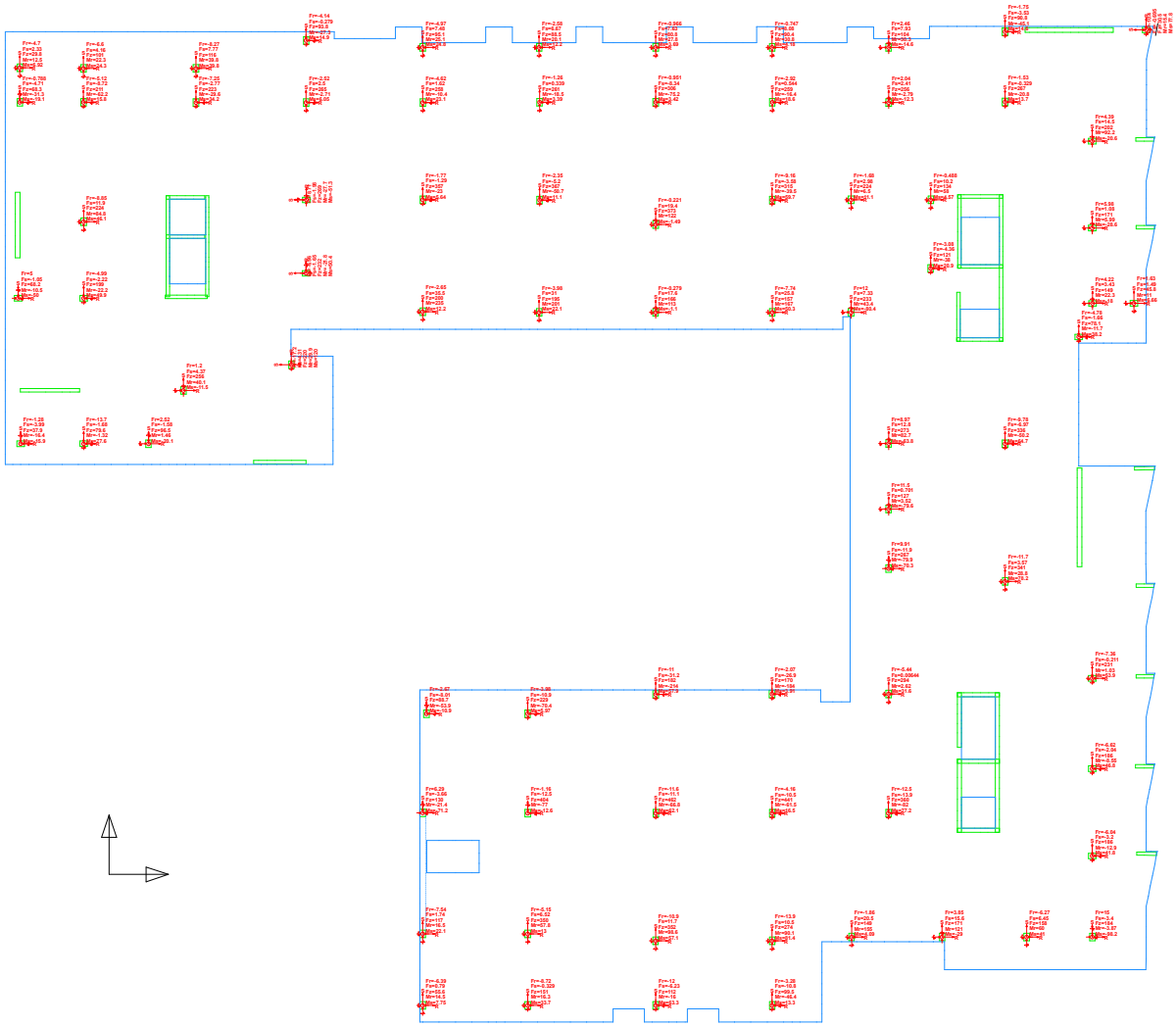
Factored LC: 1.2D + f1L + 1.6Lr: Std Reactions Plan

Factored LC: 1.2D + f1L + 1.6Lr: User Lines; User Notes; User Dimensions;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:100
Factored LC: 1.2D + f1L + 1.6Lr - Reaction Plot: (Wall Below,Column Below,Point Spring,Line Spring,Point Support,Line Support)(Fr,Fx,Fz,Mr,My,Mz)(Standard Contest)



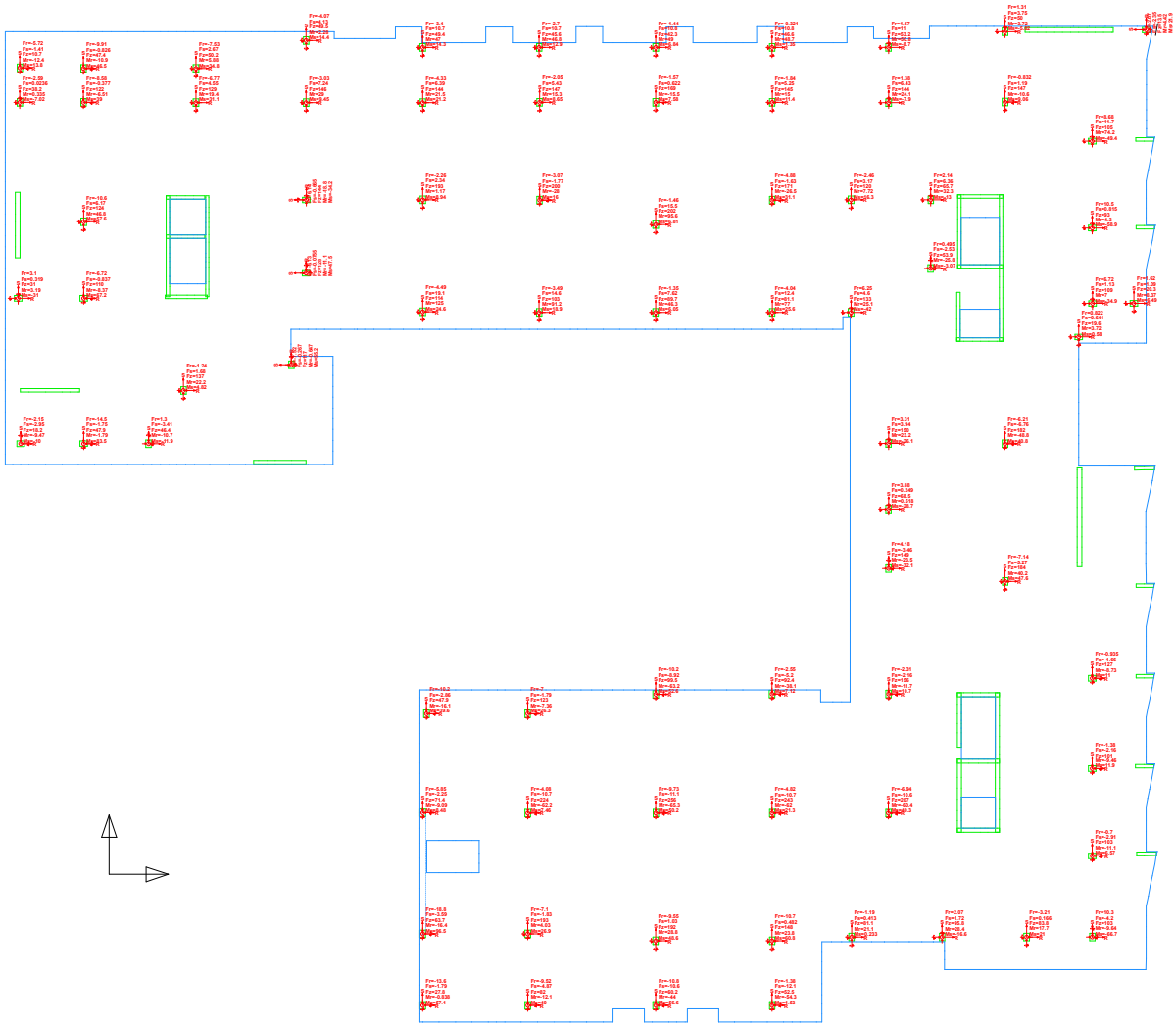
Factored LC: 1.2D + f1L + 1.6Lr: Max Reactions Plan

Factored LC: 1.2D + f1L + 1.6Lr: User Lines; User Notes; User Dimensions;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:100
Factored LC: 1.2D + f1L + 1.6Lr - Reaction Plot: (Column Below)(Fr,Fx,Fz,Mr,My,Mz)(Max Fz Contest)



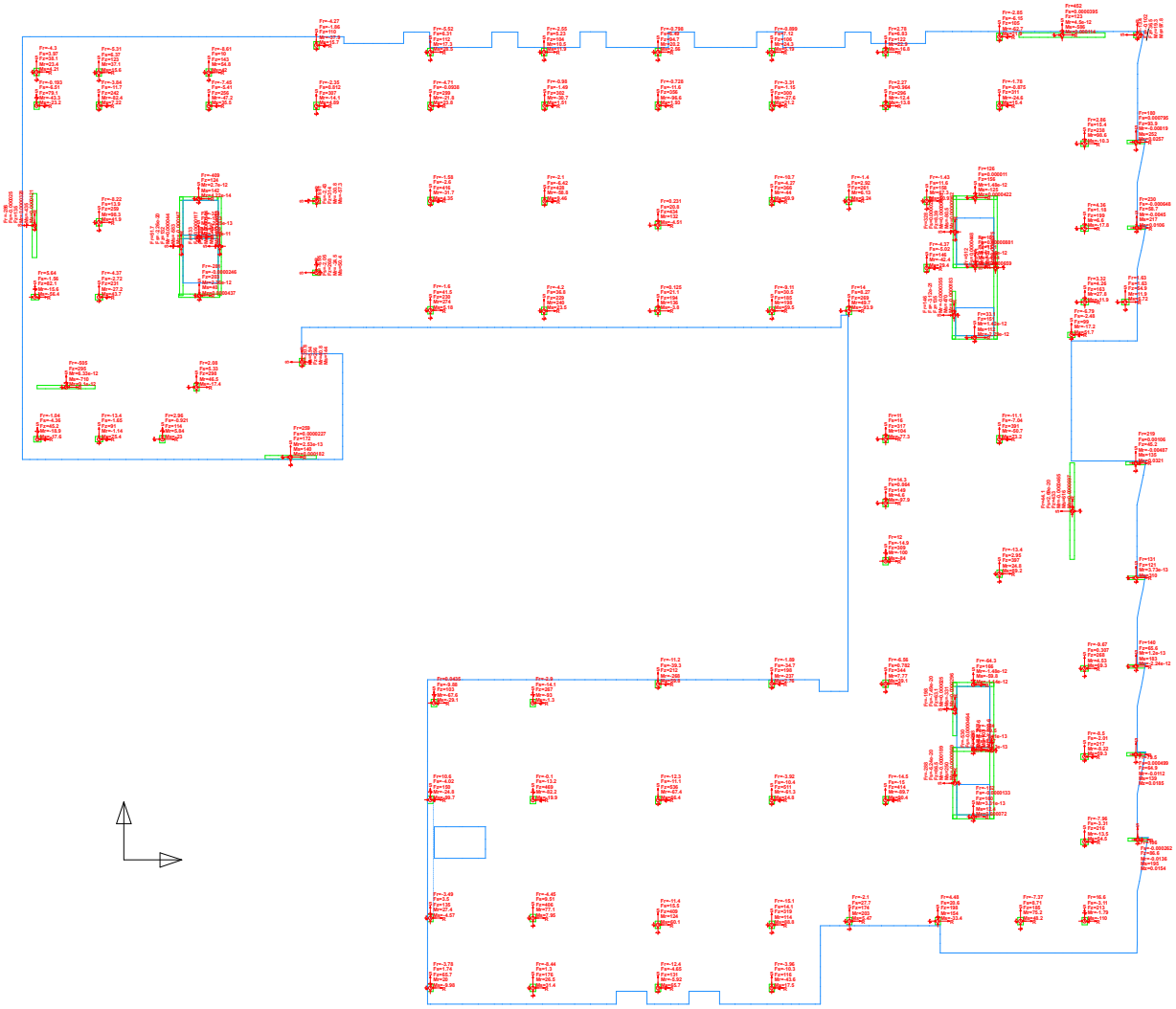
Factored LC: 1.2D + f1L + 1.6Lr: Min Reactions Plan

Factored LC: 1.2D + f1L + 1.6Lr: User Lines; User Notes; User Dimensions;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:100
Factored LC: 1.2D + f1L + 1.6Lr - Reaction Plot: (Column Below)(Fr,Fx,Fz,Mr,Mx,Mz)(Min Fz Contest)



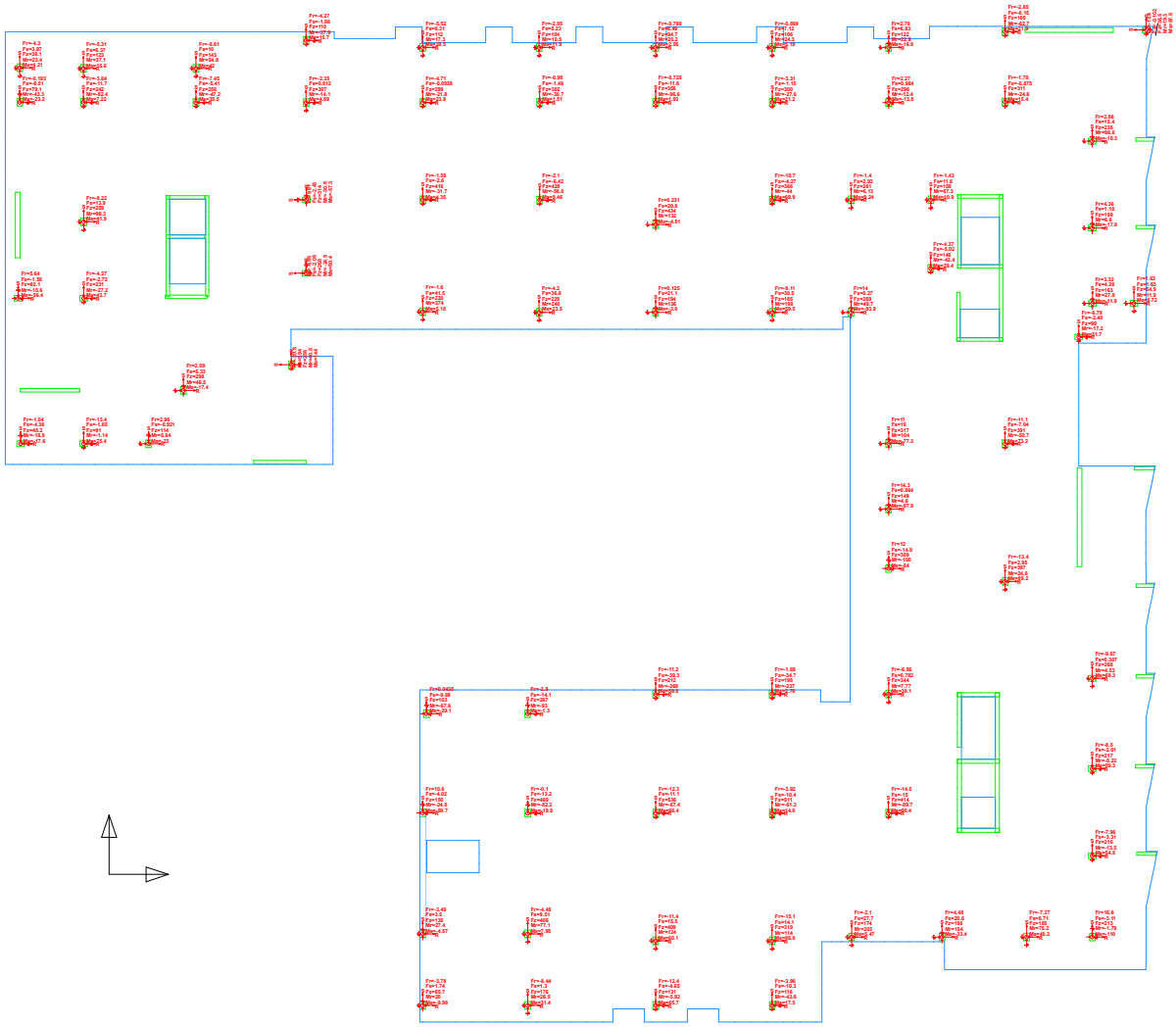
Factored LC: 1.2D + 1.6L + 0.5S: Std Reactions Plan

Factored LC: 1.2D + 1.6L + 0.5S: User Lines; User Notes; User Dimensions;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:128
Factored LC: 1.2D + 1.6L + 0.5S - Reaction Plot: (Wall Below,Column Below,Point Spring,Line Spring,Point Support,Line Support)(Fr,Fx,Fz,Mr,My,Mz)(Standard Contest)



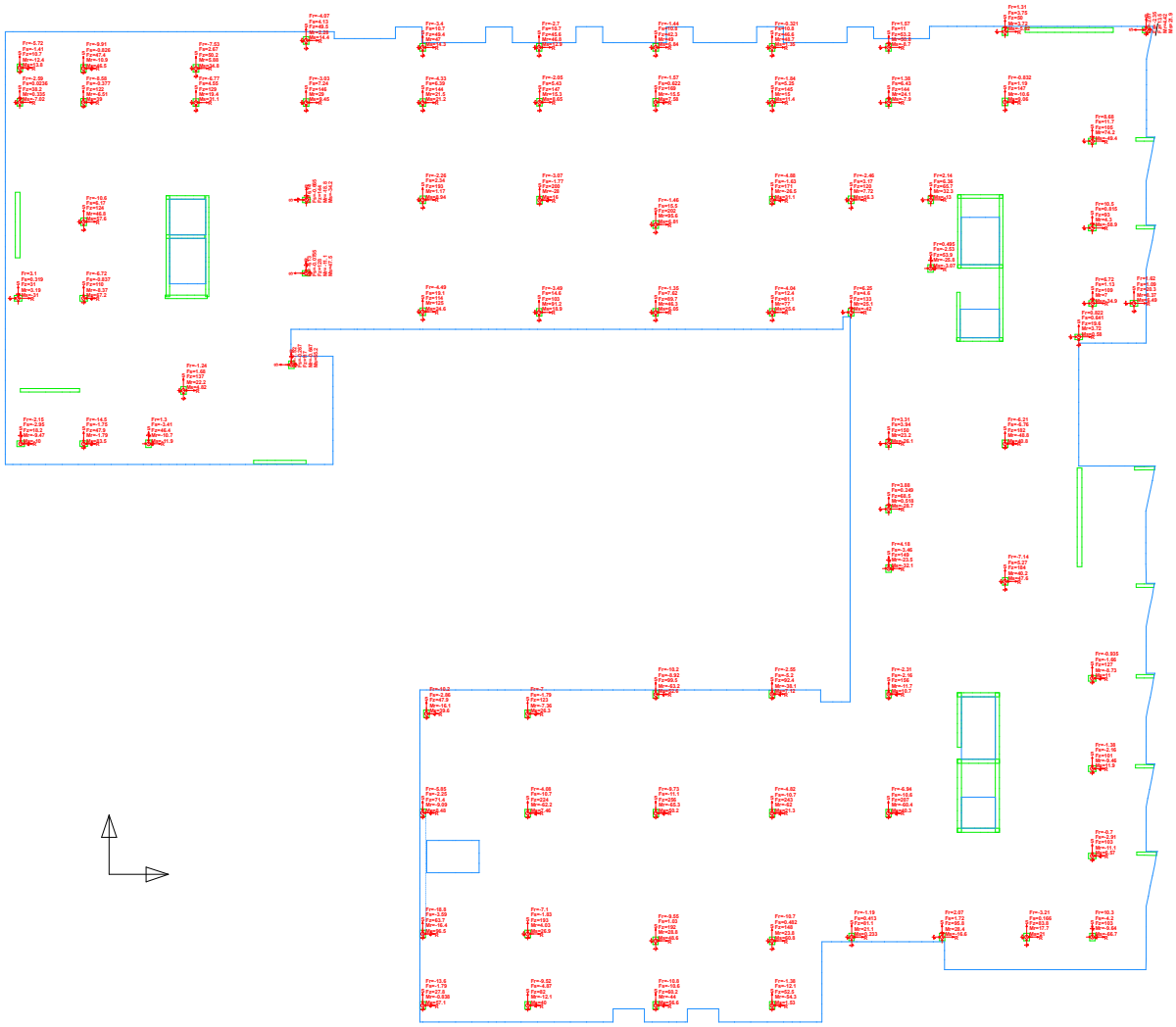
Factored LC: 1.2D + 1.6L + 0.5S: Max Reactions Plan

Factored LC: 1.2D + 1.6L + 0.5S: User Lines; User Notes; User Dimensions;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:128
Factored LC: 1.2D + 1.6L + 0.5S - Reaction Plot: (Column Below)(Fr,Fx,Fz,Mr,Mx,Mz)(Max Fz Contest)



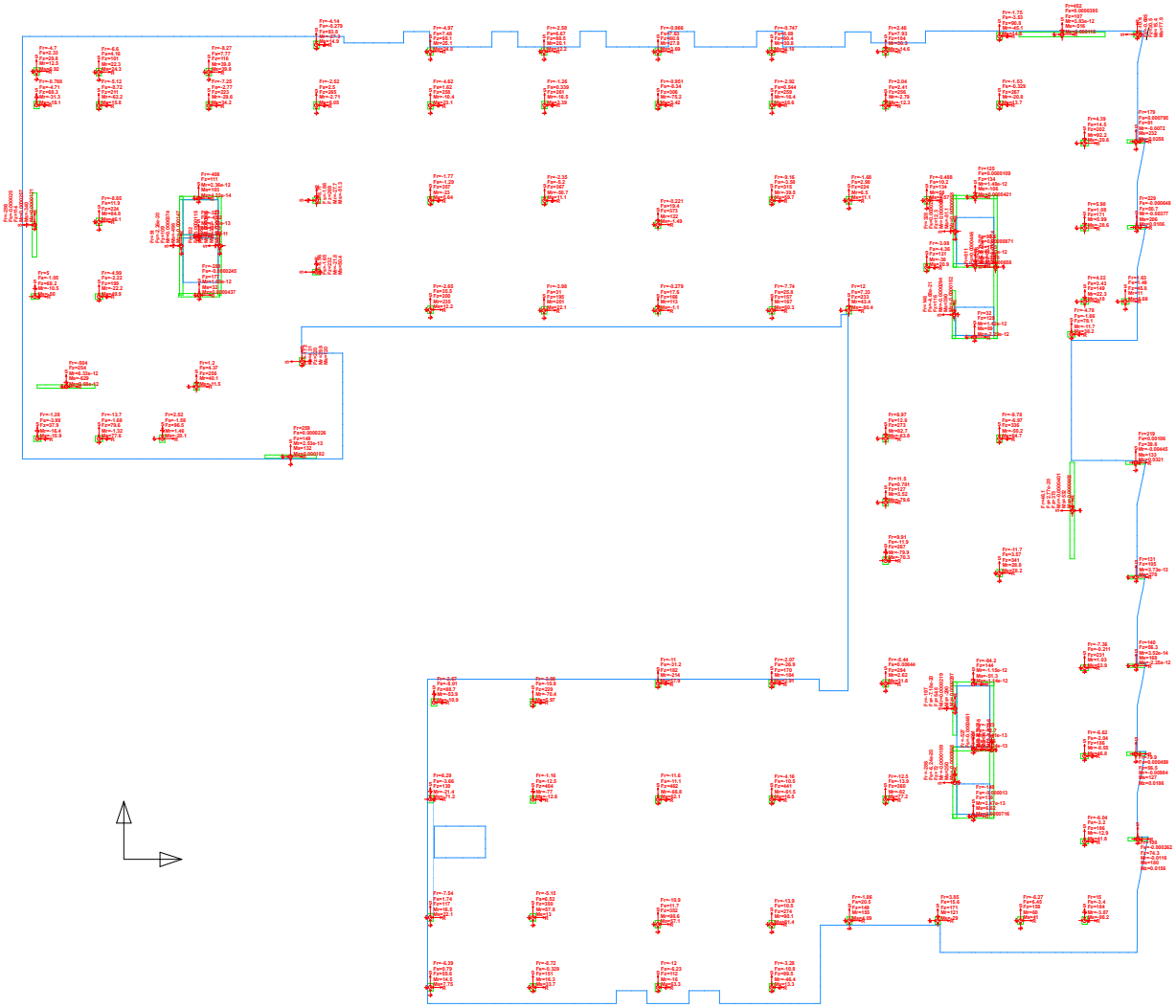
Factored LC: 1.2D + 1.6L + 0.5S: Min Reactions Plan

Factored LC: 1.2D + 1.6L + 0.5S: User Lines; User Notes; User Dimensions;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:100
Factored LC: 1.2D + 1.6L + 0.5S - Reaction Plot: (Column Below)(Fr,Fx,Fz,Mr,Mx,Mz)(Min Fz Contest)



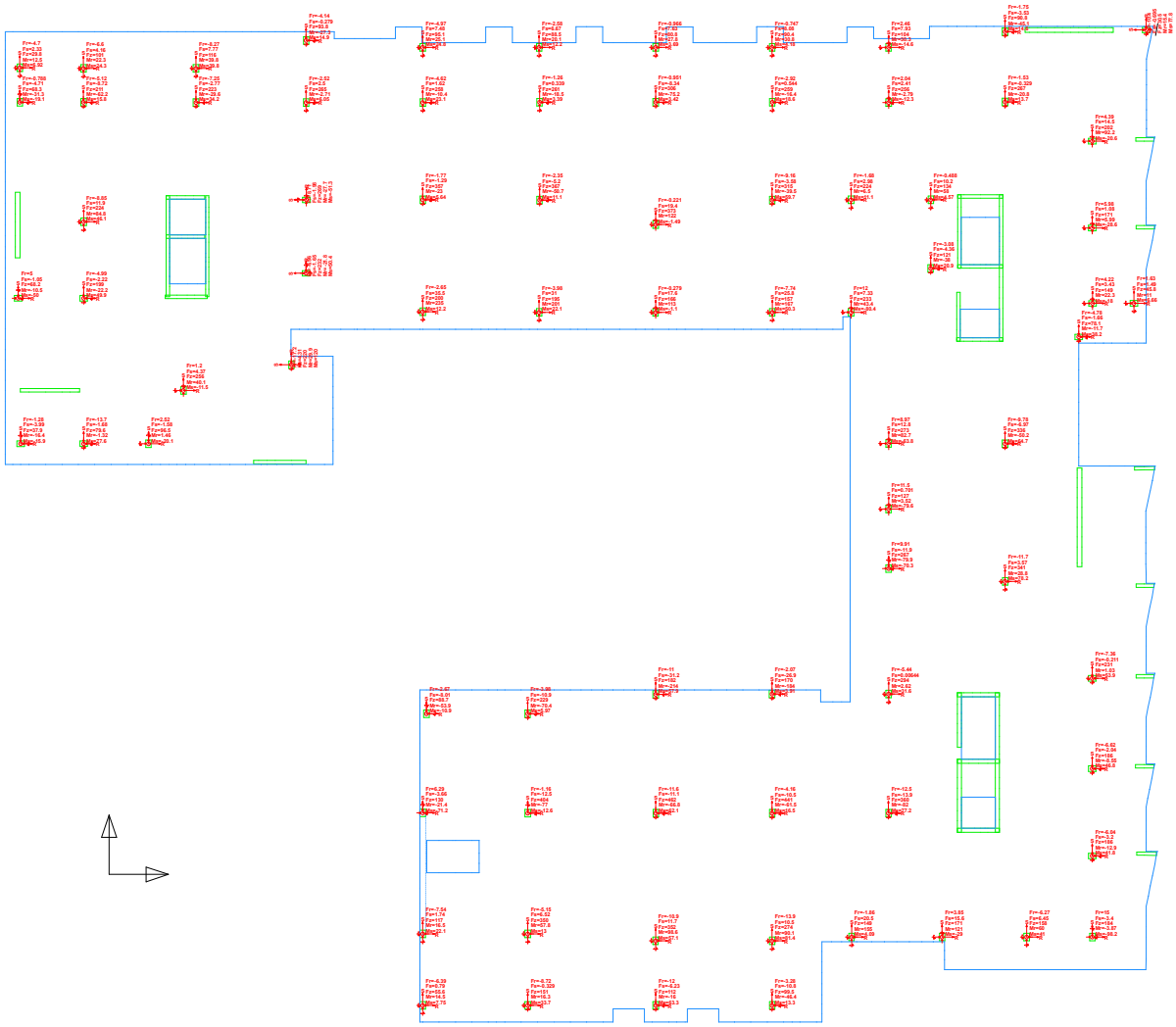
Factored LC: 1.2D + f1L + 1.6S: Std Reactions Plan

Factored LC: 1.2D + f1L + 1.6S: User Notes; User Lines; User Dimensions;
Drawing Import: User Notes; User Lines; User Dimensions;
Element: Wall Elements Above; Wall Elements Below; Wall Element Outline Only; Column Elements Above; Column Elements Below; Slab Elements; Slab Element Outline Only;
Design Status: PC Design Numbers;
Page Units: ft
Factored LC: 1.2D + f1L + 1.6S - Reaction Plot: (Wall Below,Column Below,Point Spring,Line Spring,Point Support,Line Support)(Fr,Fx,Fy,Mr,Mx,My)(Standard Context)



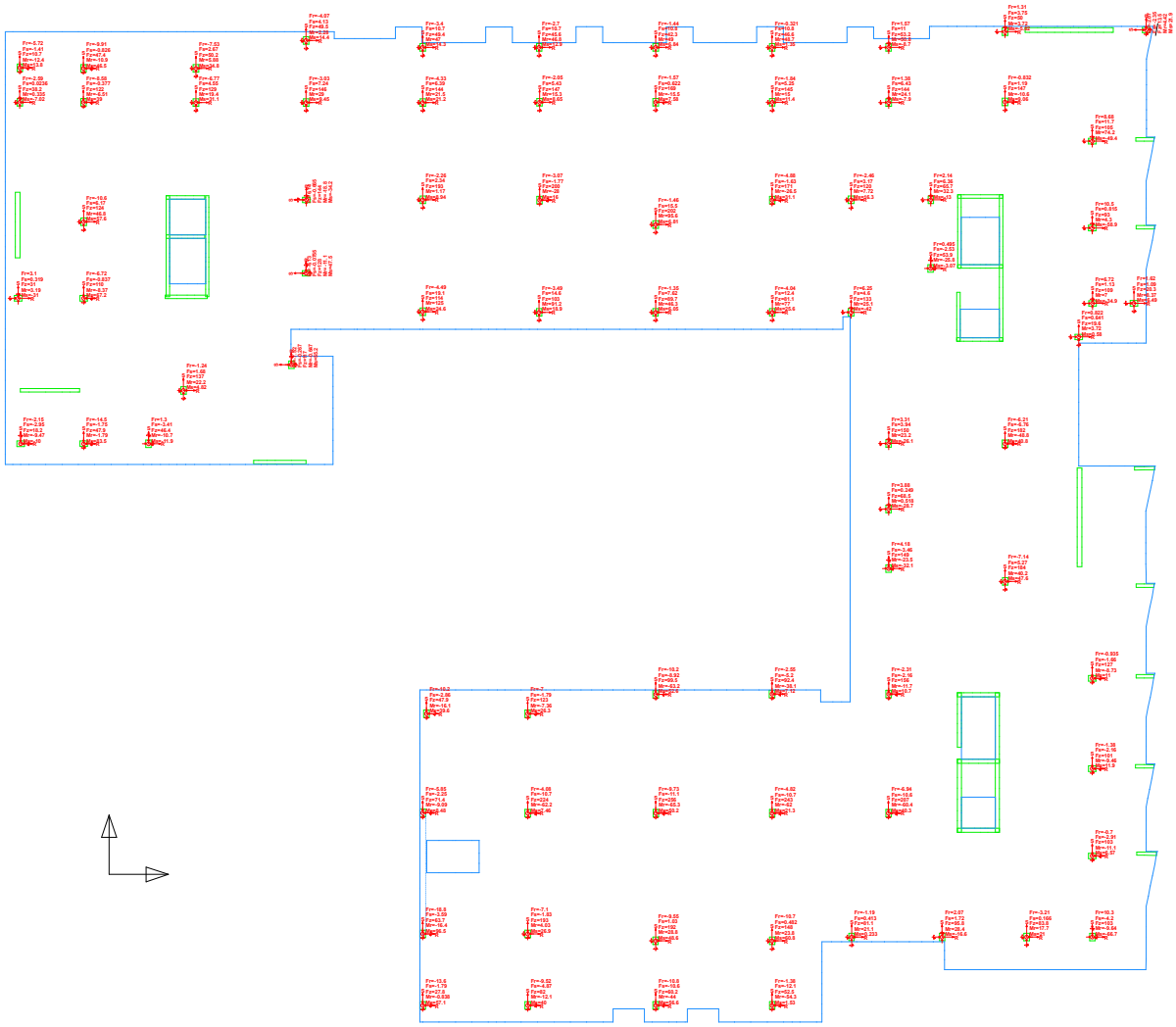
Factored LC: 1.2D + f1L + 1.6S: Max Reactions Plan

Factored LC: 1.2D + f1L + 1.6S: User Lines; User Notes; User Dimensions;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:500
Factored LC: 1.2D + f1L + 1.6S - Reaction Plot: (Column Below)(Fr,Fx,Fz,Mr,My,Mx)(Max Fz Contest)



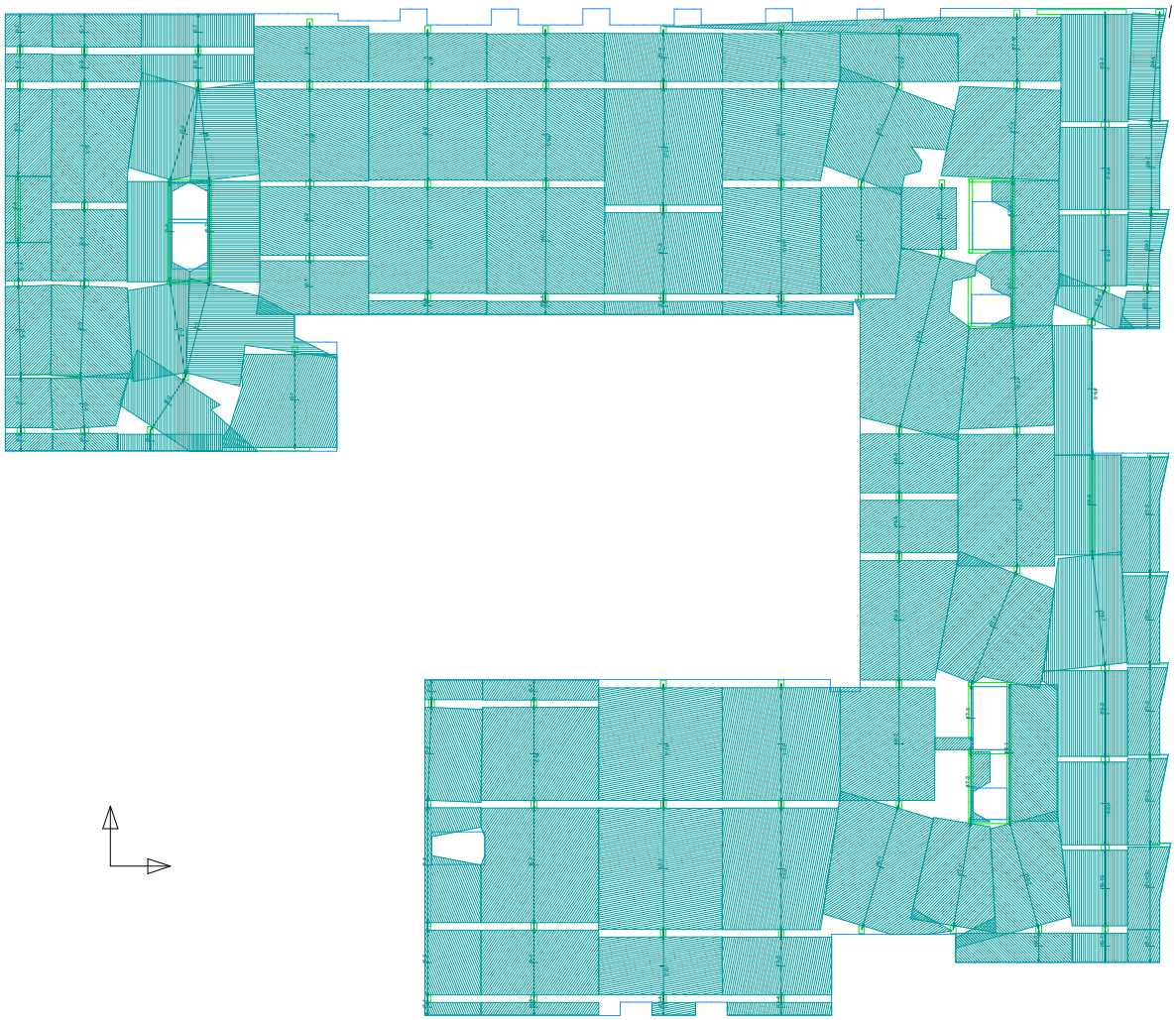
Factored LC: 1.2D + f1L + 1.6S: Min Reactions Plan

Factored LC: 1.2D + f1L + 1.6S: User Lines; User Notes; User Dimensions;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:500
Factored LC: 1.2D + f1L + 1.6S - Reaction Plot: (Column Below)(Fr,Fx,Fz,Mr,My,Mz)(Min Fz Context)



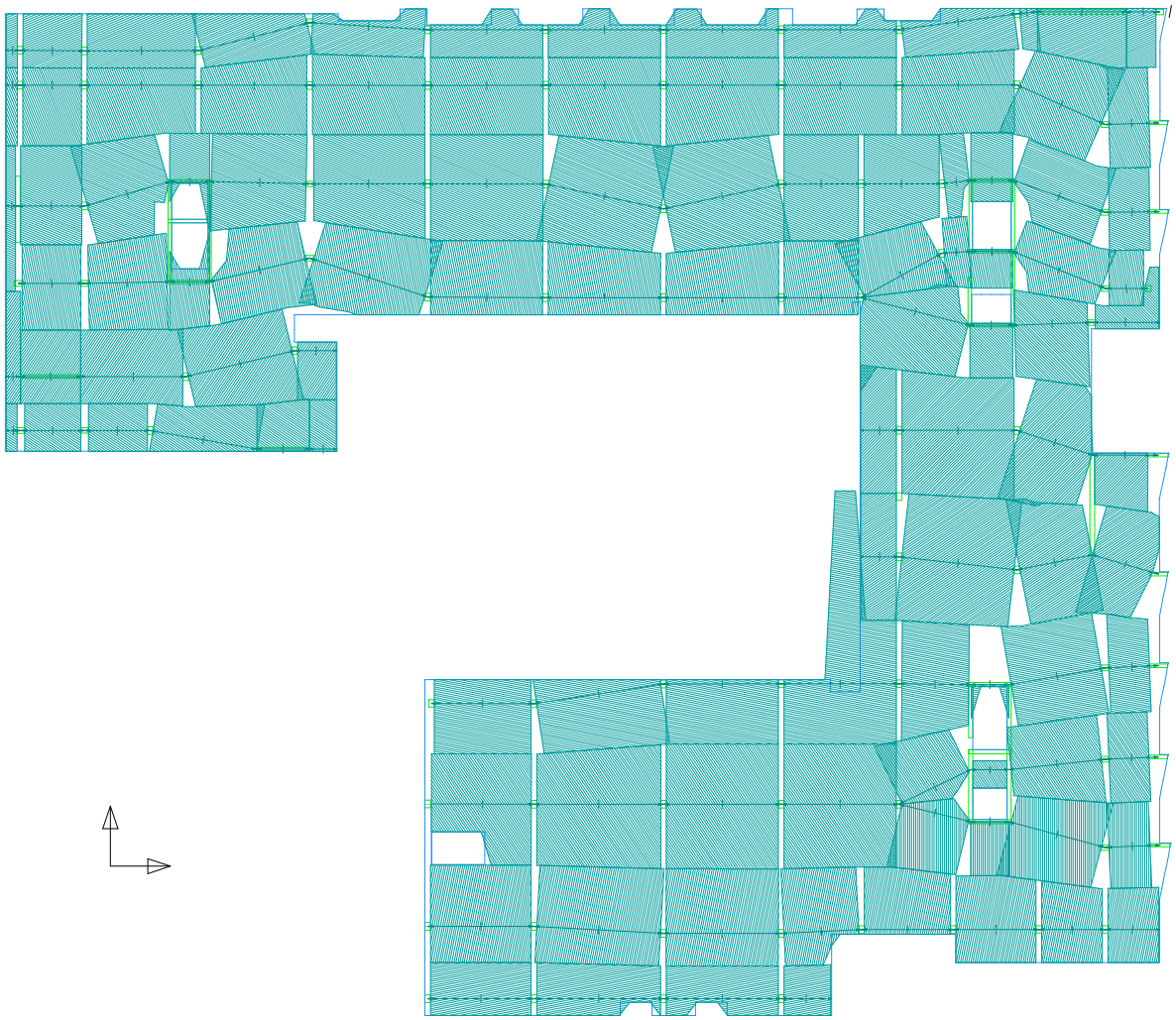
Design Strip: Latitude Design Spans Plan

Design Strip: Latitude Span Boundaries; Latitude SSs; SS Numbers; Latitude DSs; Latitude Strip Boundaries; Latitude SSSs; SSS Hatching; User Notes; User Lines; User Dimensions;
Drawing Import: User Notes; User Lines; User Dimensions;
Element: Wall Elements Above; Wall Elements Below; Wall Element Outline Only; Column Elements Above; Column Elements Below; Slab Elements; Slab Element Outline Only;
Scale = 1:550



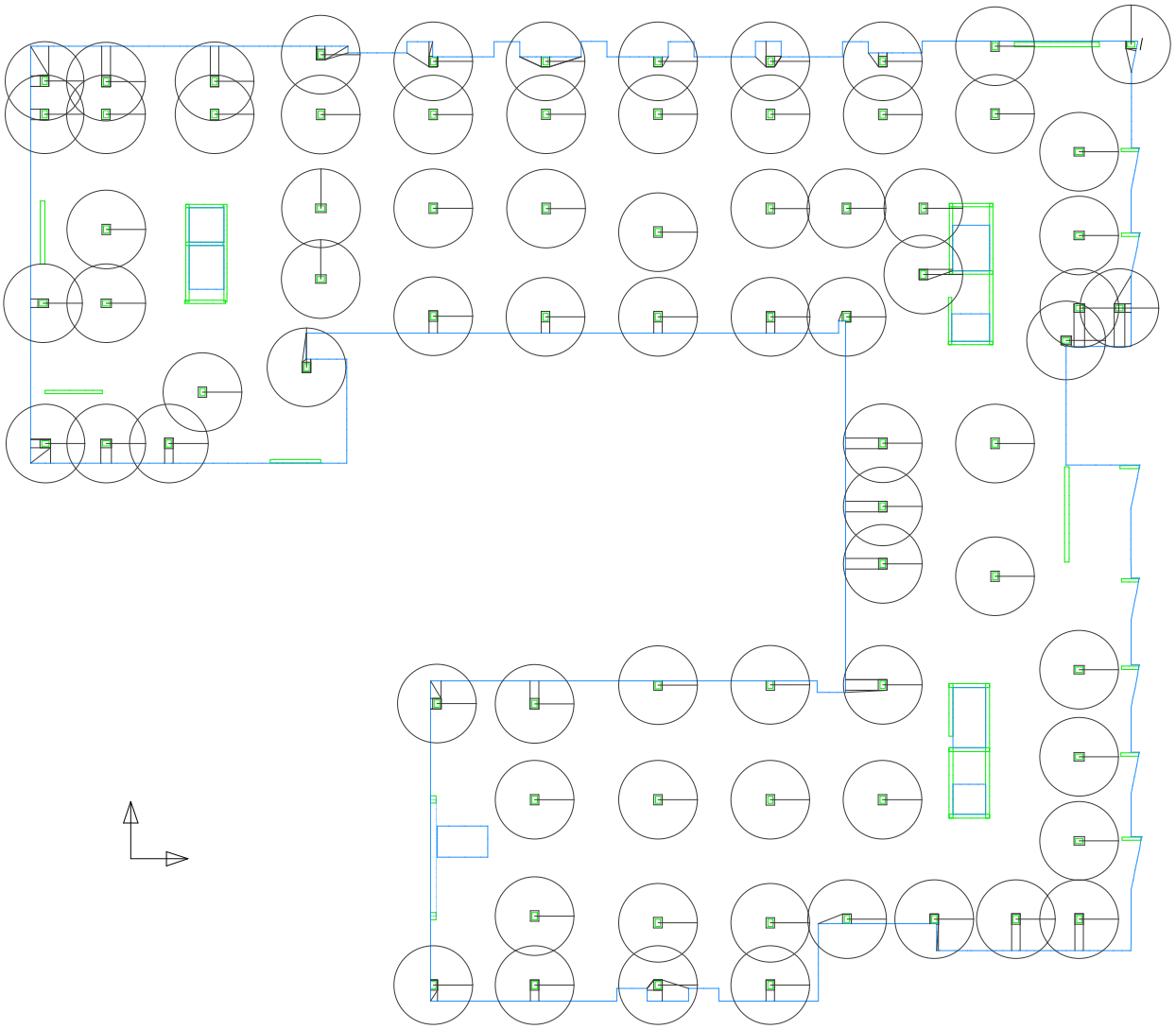
Design Strip: Longitude Design Spans Plan

Design Strip: Longitude Span Boundaries; Longitude SSs; Longitude DSs; Longitude Strip Boundaries; Longitude SSSs; SSS Hatching; User Notes; User Lines; User Dimensions; Drawing Import: User Notes; User Lines; User Dimensions; Element: Wall Elements Above; Wall Elements Below; Wall Element Outline Only; Column Elements Above; Column Elements Below; Slab Elements; Slab Element Outline Only; Scale = 1:550



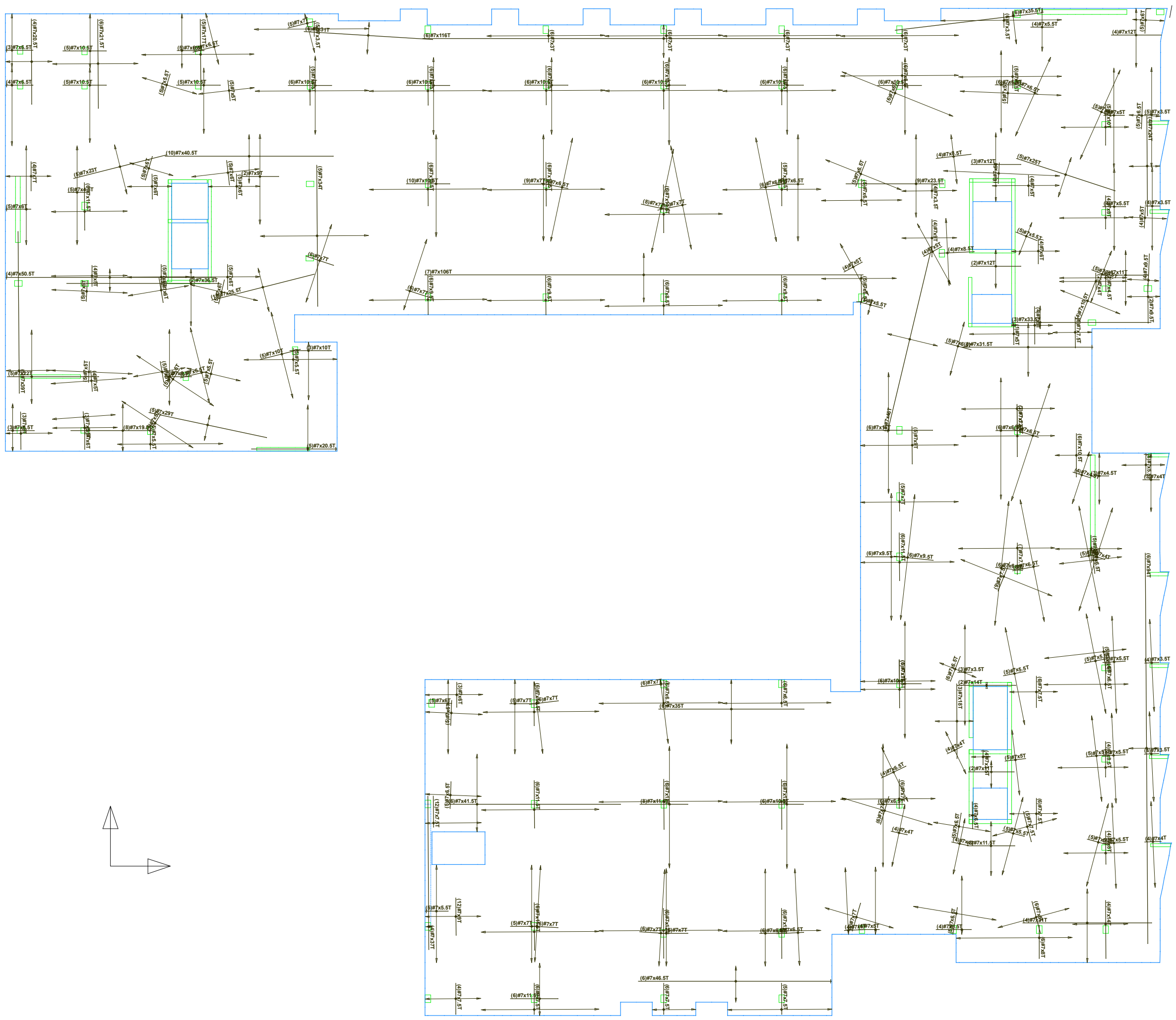
Design Strip: Punching Checks Plan

Design Strip: User Lines; User Notes; User Dimensions; Punching Checks; Punching Check Sections;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:550



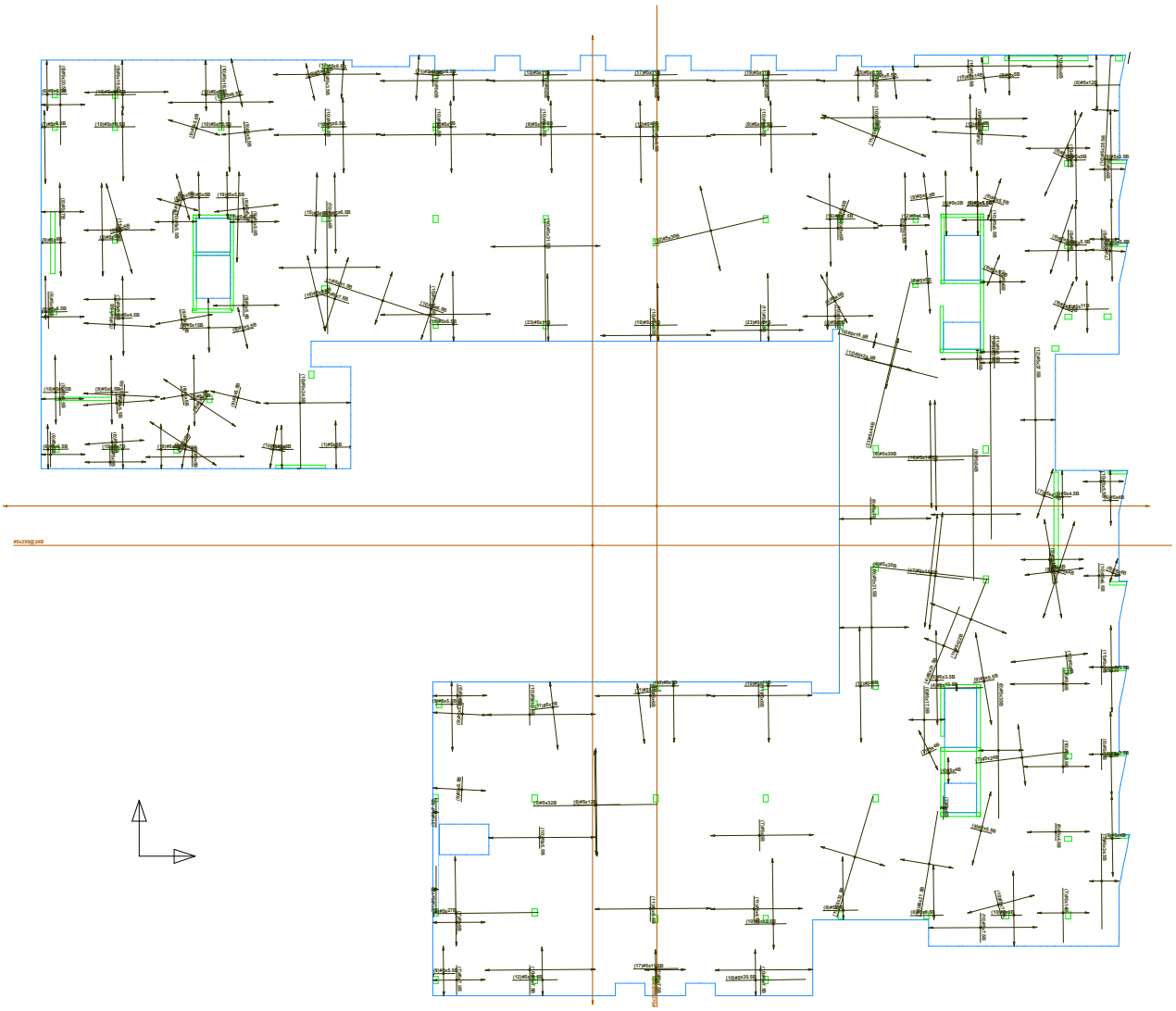
Reinforcement: Top Bars Plan

Reinforcement: User Lines; User Notes; User Dimensions; Latitude User Concentrated Reinf.; Latitude Program Concentrated Reinf.; Latitude User Distributed Reinf.; Latitude Program Distributed Reinf.; Longitude User Concentrated Reinf.; Longitude Program Concentrated Reinf.; Longitude User Distributed Reinf.; Longitude Program Distributed Reinf.; Top Face Concentrated Reinf.; Both Faces Concentrated Reinf.; Top Face Distributed Reinf.; Both Faces Distributed Reinf.; Concentrated Reinf. Descriptions; Concentrated Reinf. Extent; Distributed
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:550



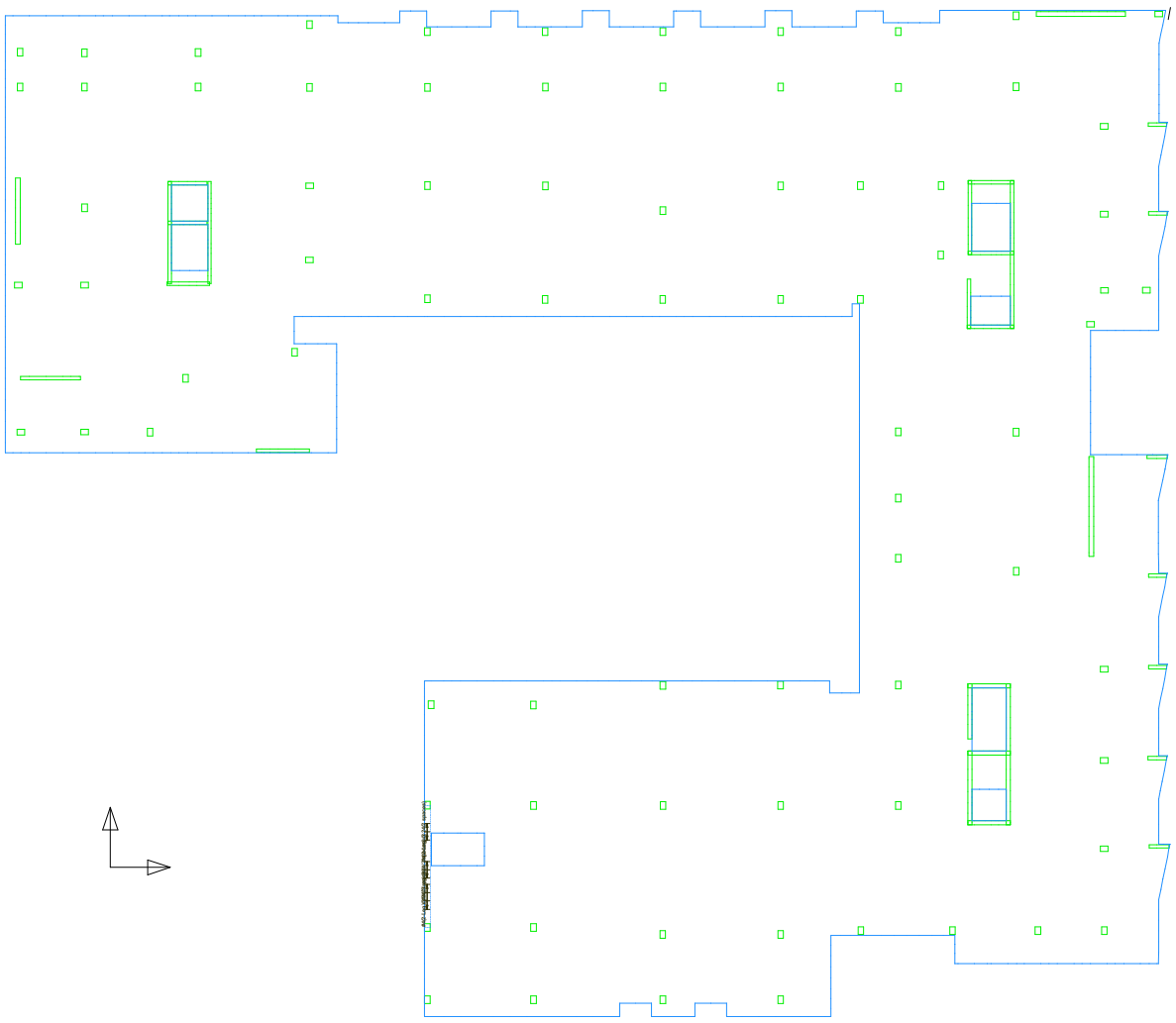
Reinforcement: Bottom Bars Plan

Reinforcement: User Lines; User Notes; User Dimensions; Latitude User Concentrated Reinf.; Latitude Program Concentrated Reinf.; Latitude User Distributed Reinf.; Latitude Program Distributed Reinf.; Longitude User Concentrated Reinf.; Longitude Program Concentrated Reinf.; Longitude User Distributed Reinf.; Longitude Program Distributed Reinf.; Bottom Face Concentrated Reinf.; Both Faces Concentrated Reinf.; Bottom Face Distributed Reinf.; Both Faces Distributed Reinf.; Concentrated Reinf. Descriptions; Concentrated Reinf. Extent; Di
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:550



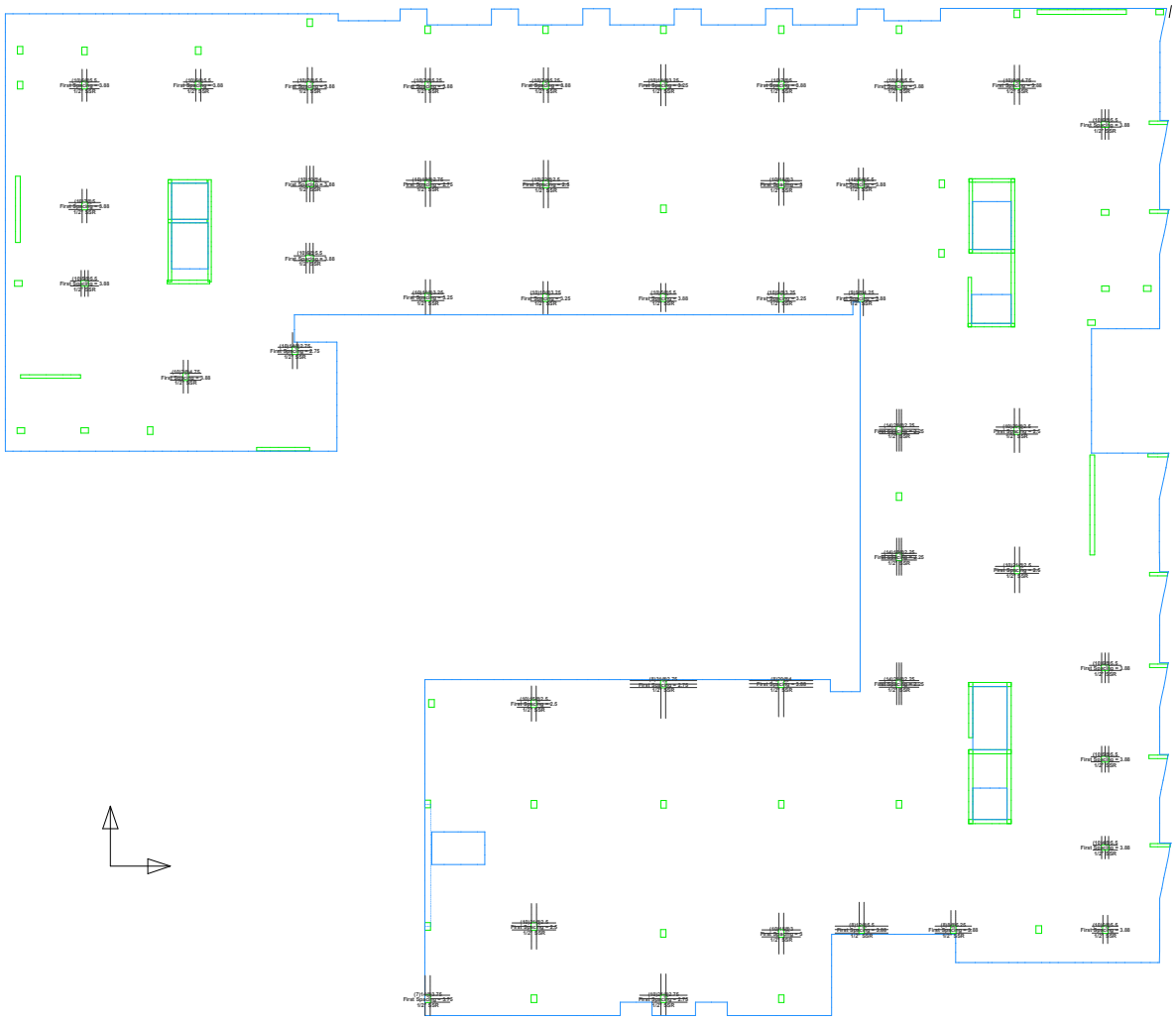
Reinforcement: Shear Bars Plan

Reinforcement: User Lines; User Notes; User Dimensions; Latitude User Transverse Reinf.; Latitude Program Transverse Reinf.; Latitude User Individual Transverse Bars; Latitude Program Individual Transverse Bars; Longitude User Transverse Reinf.; Longitude Program Transverse Reinf.; Longitude User Individual Transverse Bars; Longitude Program Individual Transverse Bars; Transverse Reinf. Descriptions; Transverse Reinf. Extent;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:550



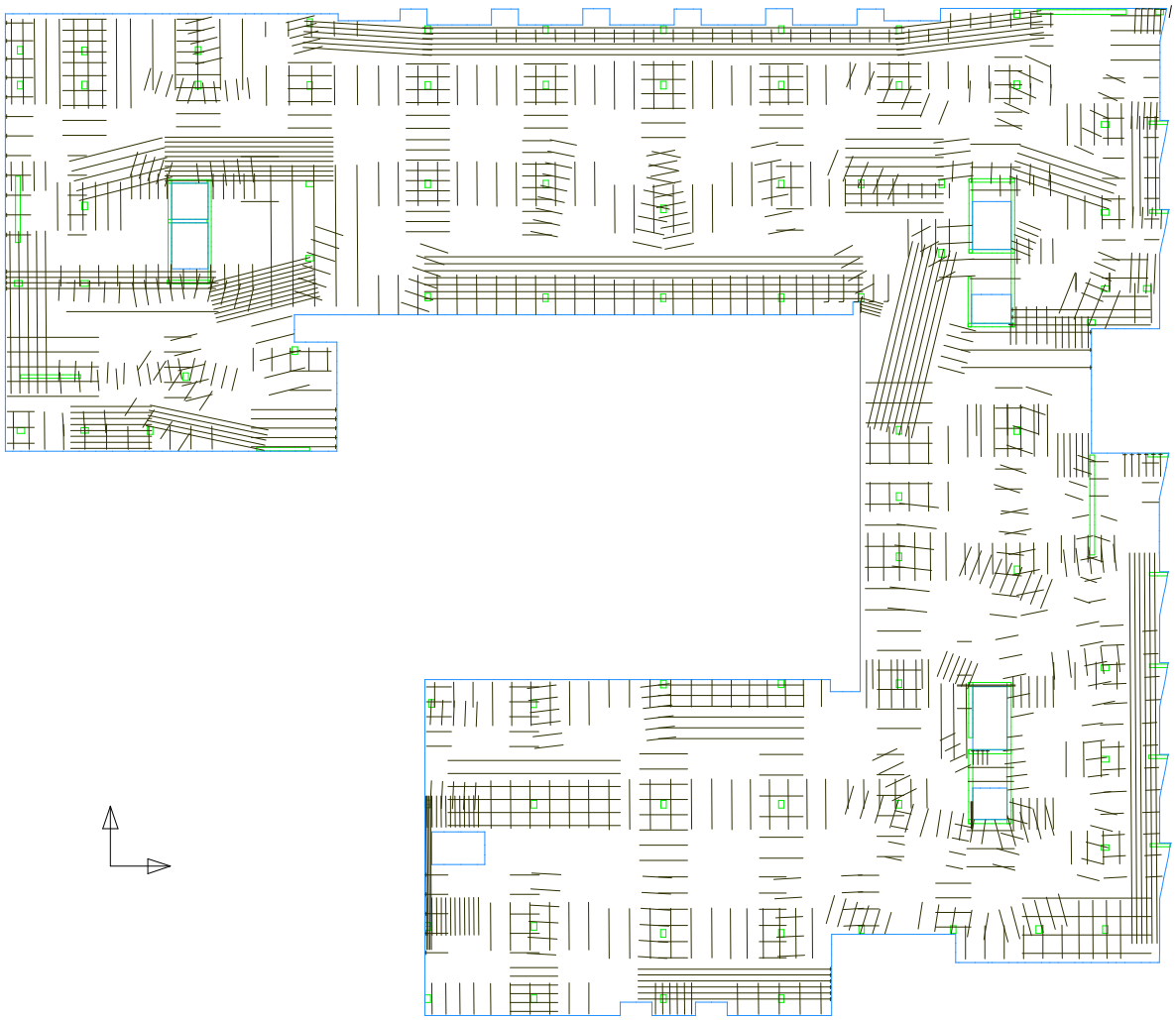
Reinforcement: SSR Plan

Reinforcement: User Lines; User Notes; User Dimensions; Program SSR Callouts; SSR Callout Details; Program SSR Rails;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:550



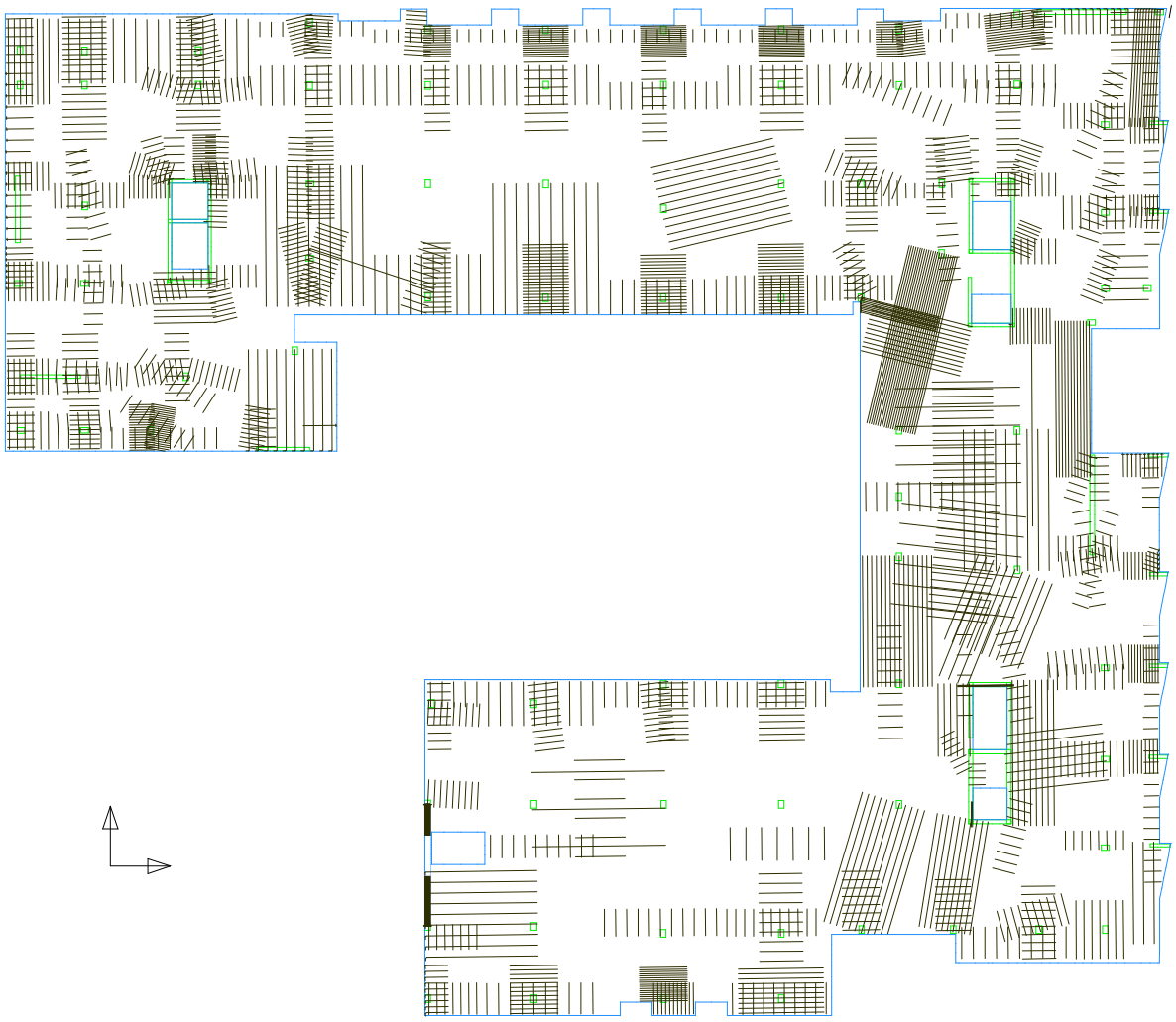
Reinforcement: Individual Top Bars Plan

Reinforcement: User Lines; User Notes; User Dimensions; Longitude User Individual Bars; Longitude Program Individual Bars; Latitude User Individual Bars; Latitude Program Individual Bars; Top Face Individual Bars; Both Faces Individual Bars;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:550



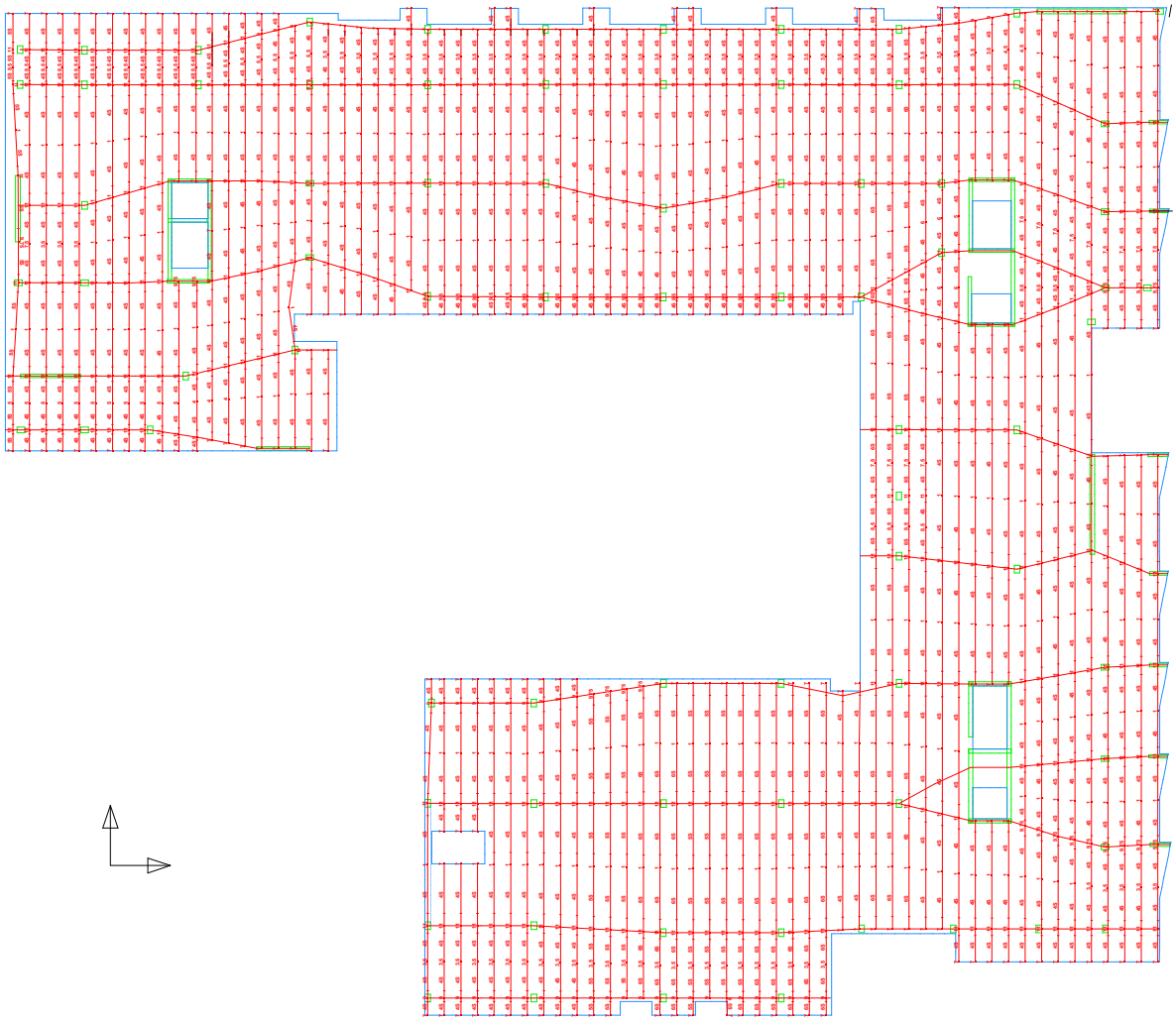
Reinforcement: Individual Bottom Bars Plan

Reinforcement: User Lines; User Notes; User Dimensions; Longitude User Individual Bars; Longitude Program Individual Bars; Latitude User Individual Bars; Latitude Program Individual Bars; Bottom Face Individual Bars; Both Faces Individual Bars;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:550



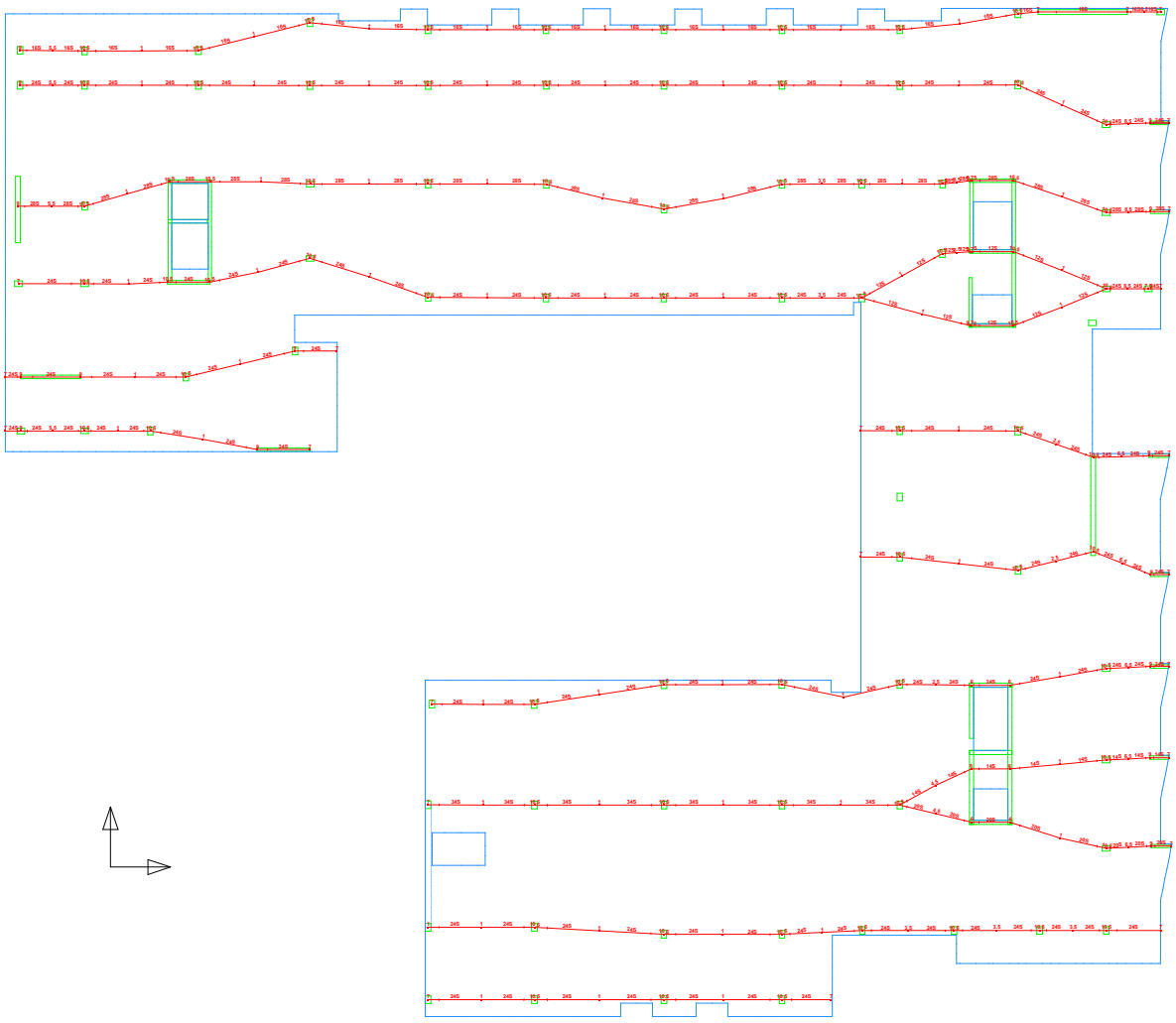
Manual Latitude Tendon: Standard Plan

Manual Latitude Tendon: Tendons; Num Strands; Tendon Inflection Ratio; Jacks; Tendon Points; Profile Values; User Notes; User Lines; User Dimensions;
Drawing Import: User Notes; User Lines; User Dimensions;
Element: Wall Elements Above; Wall Elements Below; Wall Element Outline Only; Column Elements Above; Column Elements Below; Slab Elements; Slab Element Outline Only;
Latitude Tendon Parameters: Banded Tendons; Banded Tendon Description; Distributed Tendon Quadrilateral; Distributed Tendon Description; Distributed Tendon Overlap Areas; Profile Points; Profile Elevation Values; Profile Nodes; Jack Region;
Manual Latitude Tendon: Tendons;
Manual Longitude Tendon: Tendons;
Scale = 1:500



Manual Longitude Tendon: Standard Plan

Manual Longitude Tendon: Tendons; Num Strands; Tendon Inflection Ratio; Jacks; Tendon Points; Profile Values; User Notes; User Lines; User Dimensions;
Element: Wall Elements Above; Wall Elements Below; Wall Element Outline Only; Column Elements Above; Column Elements Below; Slab Elements; Slab Element Outline Only;
Longitude Tendon Parameters; Banded Tendons; Banded Tendon Description; Distributed Tendon Quadrilateral; Distributed Tendon Description; Distributed Tendon Overlap Areas; Profile Points; Profile Elevation Values; Profile Nodes; Jack Region;
Scale = 1:550

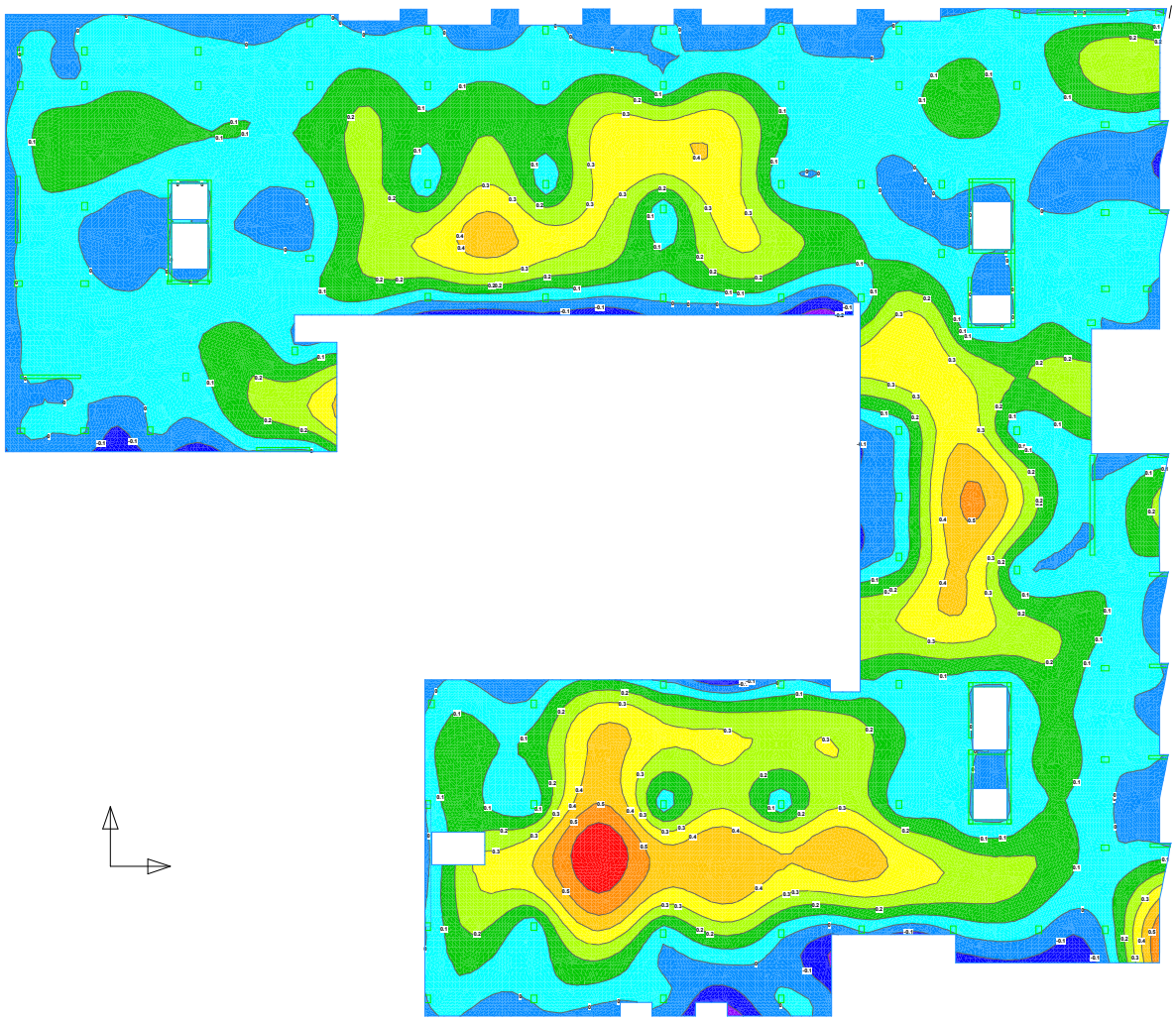


Maximum Short Term Load: Std Deflection Plan

Maximum Short Term Load: User Lines; User Notes; User Dimensions;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:550
Maximum Short Term Load - Vertical Deflection Plot

-0.2 -0.1 0 0.1 0.2 0.3 0.4 0.5 0.6

Min Value = -0.2797 inches @ (148.5,-35.99) Max Value = 0.6791 inches @ (117.6,2.665)

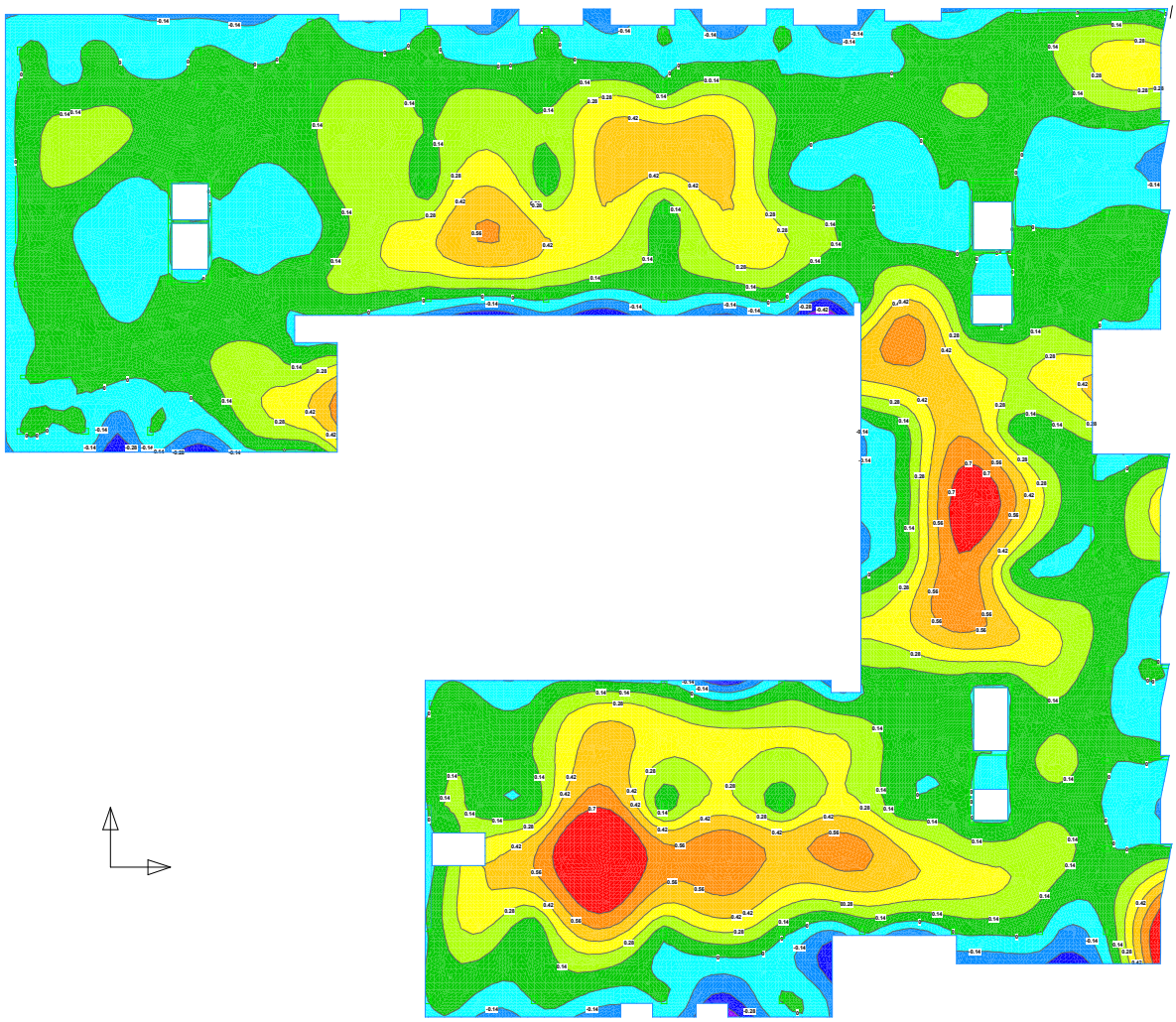


Sustained Load: Std Deflection Plan

Sustained Load: User Lines; User Notes; User Dimensions;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:224
Sustained Load - Vertical Deflection Plot

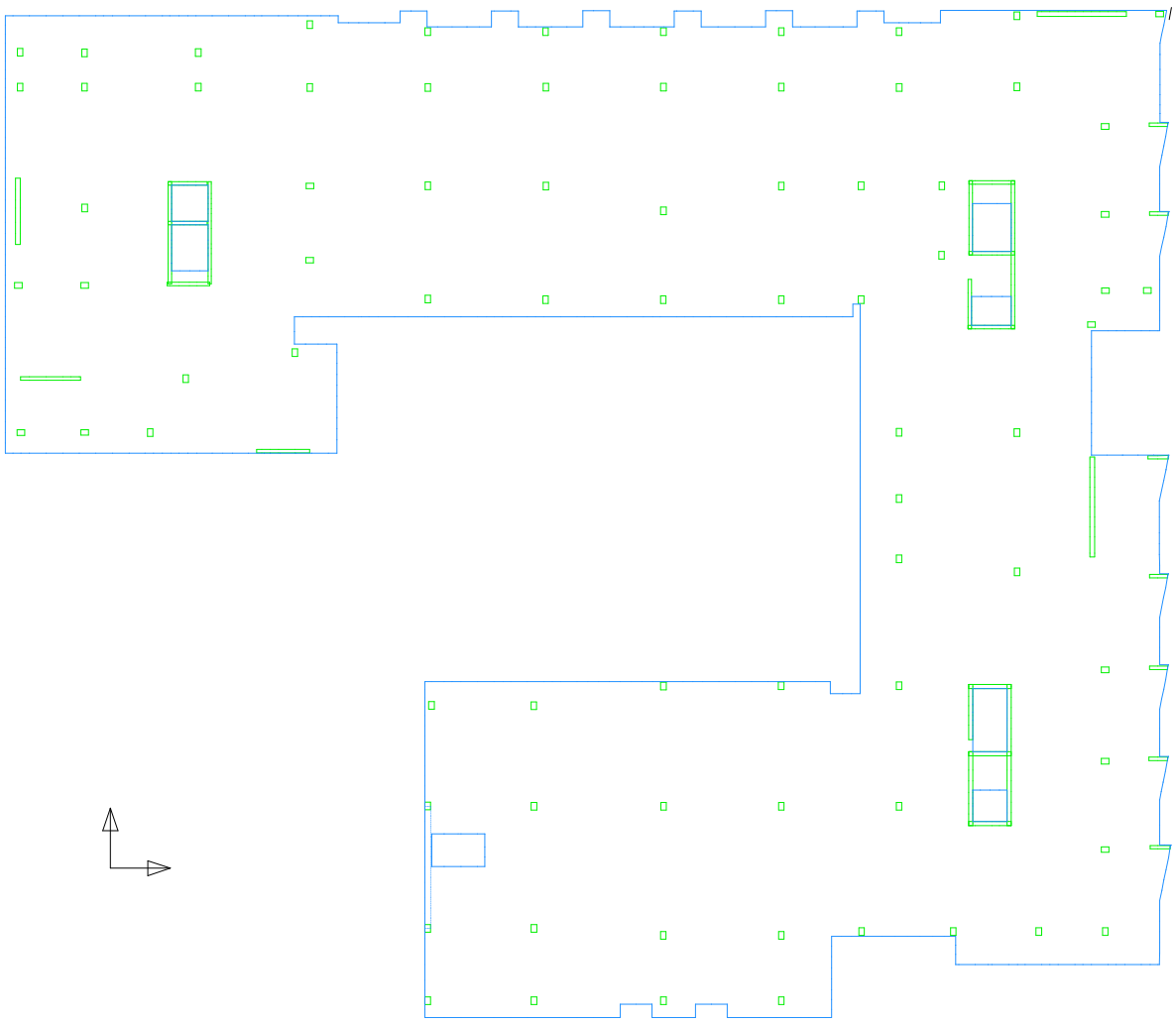
-0.42 -0.28 -0.14 0 0.14 0.28 0.42 0.56 0.7

Min Value = -0.3236 inches @ (148.5, -35.99) Max Value = 0.9471 inches @ (117.6, 5.114)



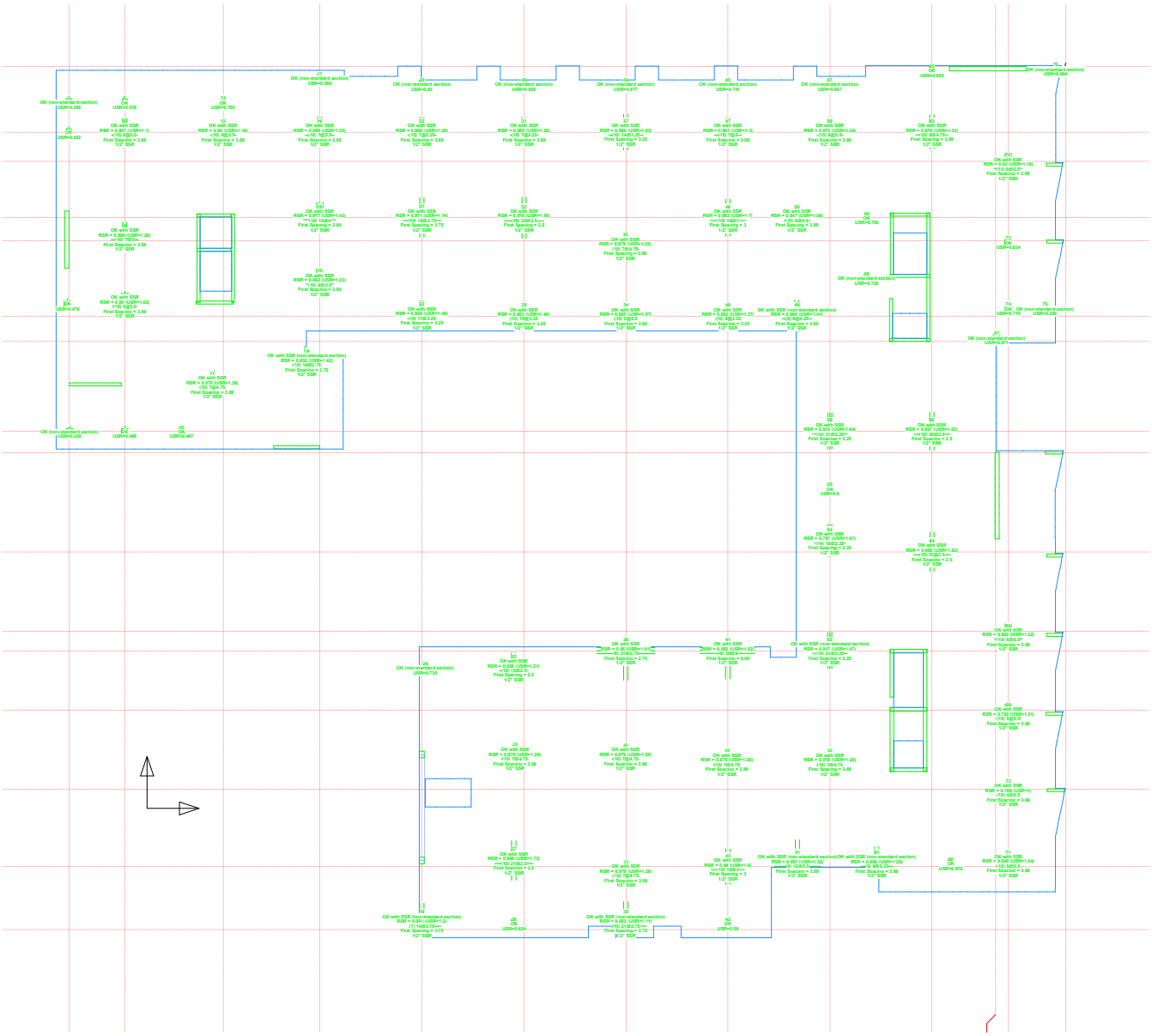
Additional Mass Loading: All Loads Plan

Additional Mass Loading: User Lines; User Notes; User Dimensions; Mass Point Loads; Mass Point Load Icons; Mass Point Load Values; Mass Line Loads; Mass Line Load Icons; Mass Line Load Values; Mass Area Loads; Mass Area Load Icons; Mass Area Load Values;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:550



Design Status: Punching Shear Status Plan

Design Status: PC Designs; PC Design Numbers; PC Design Status; PC Design Stress Ratios; PC Design Thicknesses; PC Design Column Condition; SSR; SSR Description; SSR Details; User Notes; User Lines; User Dimensions; Drawing Import: User Notes; User Lines; User Dimensions; S-GRID; Element: Wall Elements Above; Wall Elements Below; Wall Element Outline Only; Column Elements Above; Column Elements Below; Slab Elements; Slab Element Outline Only; Scale = 1:550



Design Status: Latitude Status Plan

Design Status: User Lines; User Notes; User Dimensions; Latitude Span Designs; Span Design Numbers; Span Design Status; Latitude DS Designs; DS Design Numbers; DS Design Status;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
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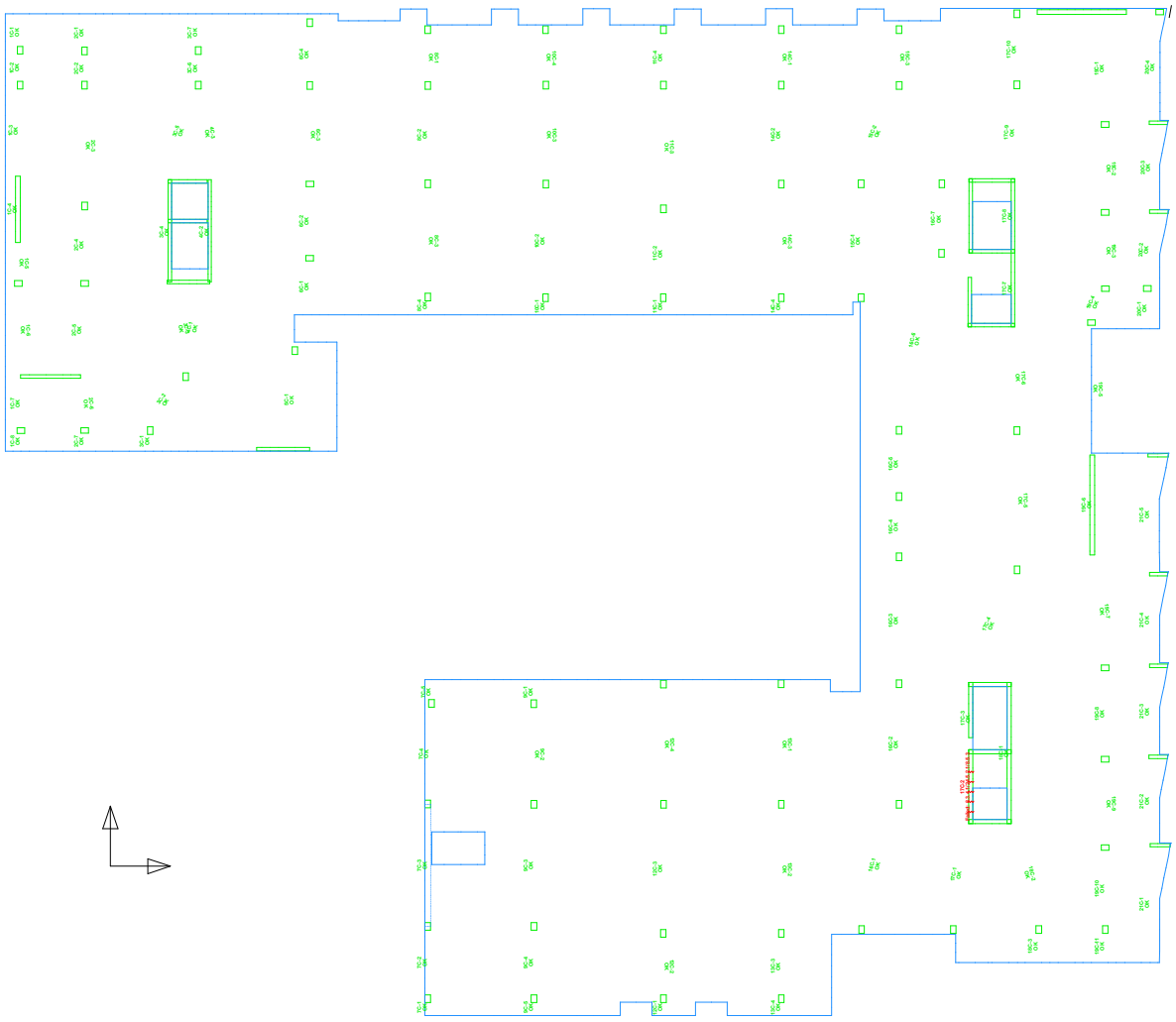

Design Status: Latitude Top Reinforcement Plan

Design Status: User Lines; User Notes; User Dimensions; Latitude Span Designs; Span Design Top Bars; Span Design Bar Descriptions; Latitude DS Designs; DS Design Top Bars;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Reinforcement: Top Face Concentrated Reinf.; Both Faces Concentrated Reinf.; Auto Face Concentrated Reinf.; Concentrated Reinf. Descriptions; Top Face Distributed Reinf.; Both Faces Distributed Reinf.; Auto Face Distributed Reinf.; Distributed Reinf. Descriptions; Latitude User Concentrated Reinf.; Latitude User Distributed Reinf.;
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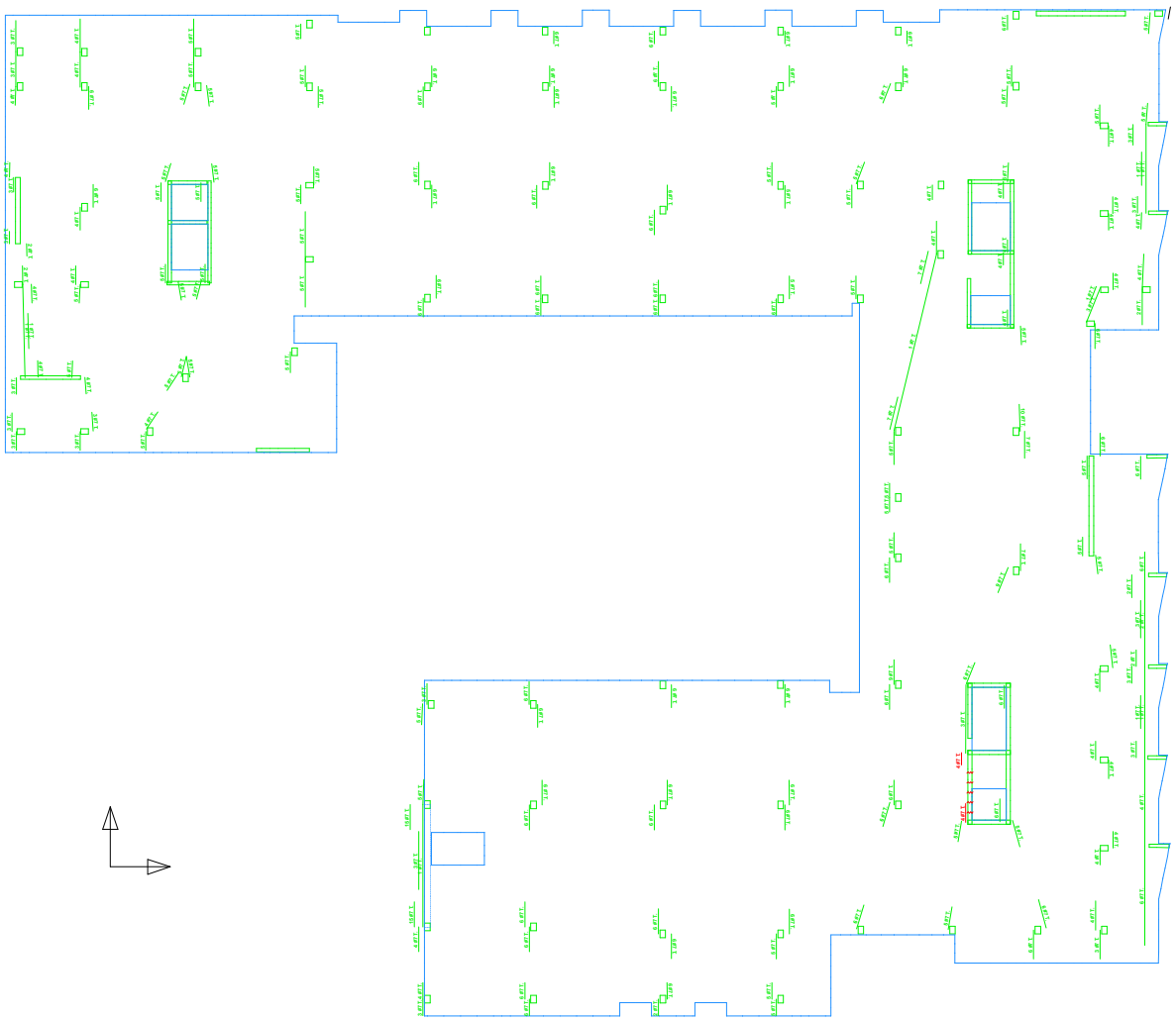
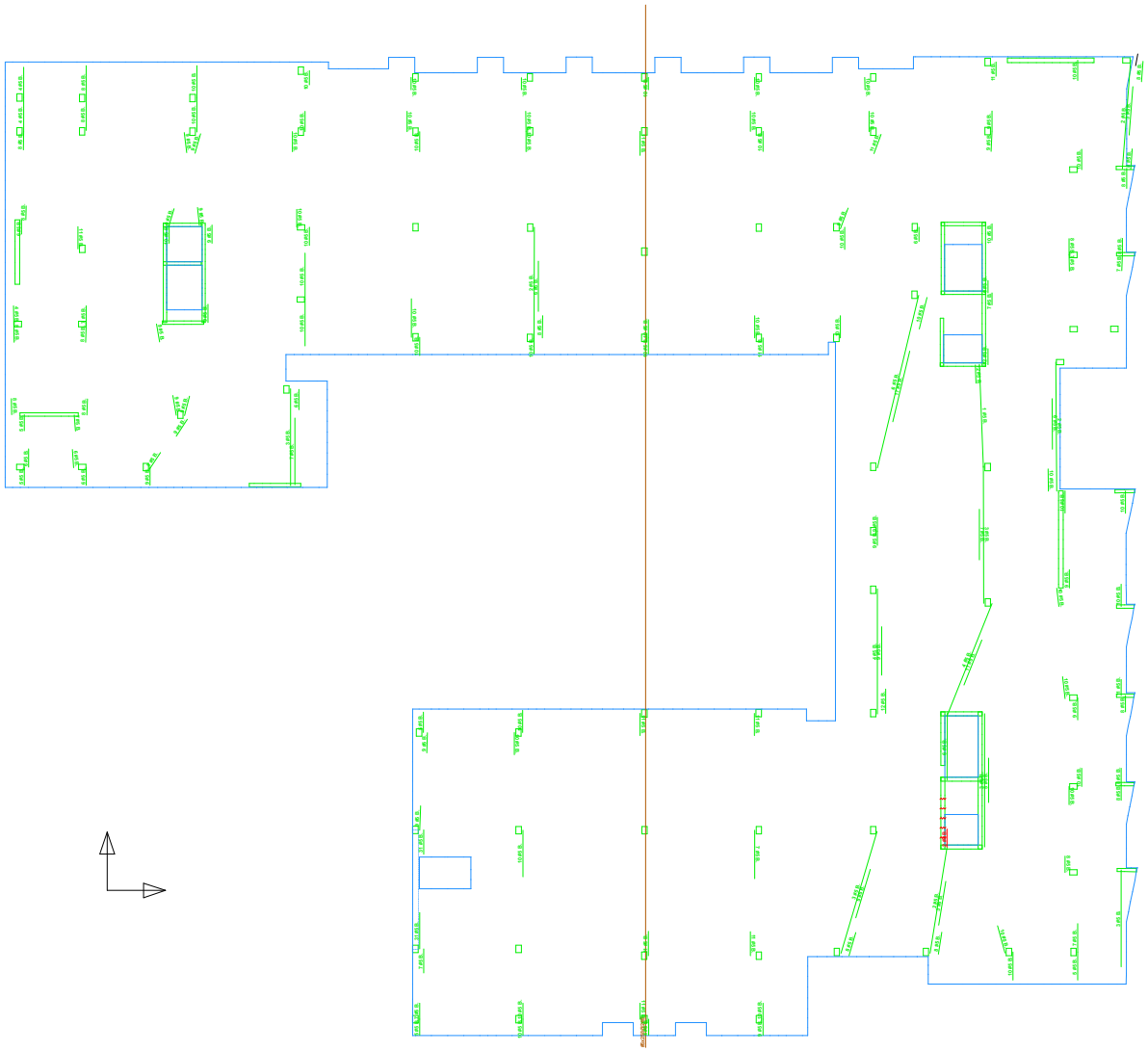


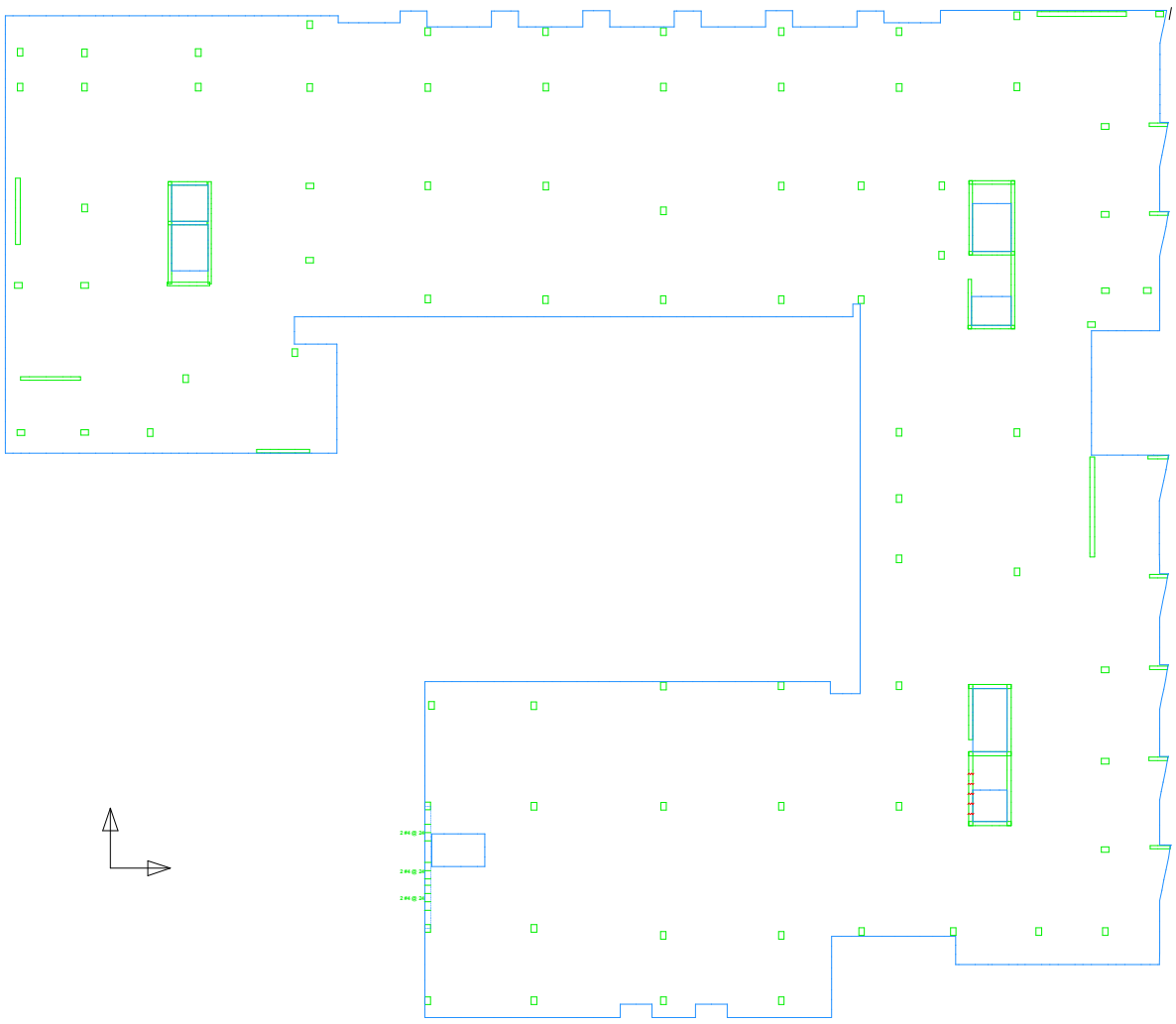
Design Status: Latitude Bottom Reinforcement Plan

Design Status: User Lines; User Notes; User Dimensions; Latitude Span Designs; Span Design Bottom Bars; Span Design Bar Descriptions; Latitude DS Designs; DS Design Bottom Bars;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Reinforcement: Bottom Face Concentrated Reinf.; Both Faces Concentrated Reinf.; Auto Face Concentrated Reinf.; Concentrated Reinf. Descriptions; Bottom Face Distributed Reinf.; Both Faces Distributed Reinf.; Auto Face Distributed Reinf.; Distributed Reinf. Descriptions; Latitude User Concentrated Reinf.; Latitude User Distributed Reinf.;
Scale = 1:100



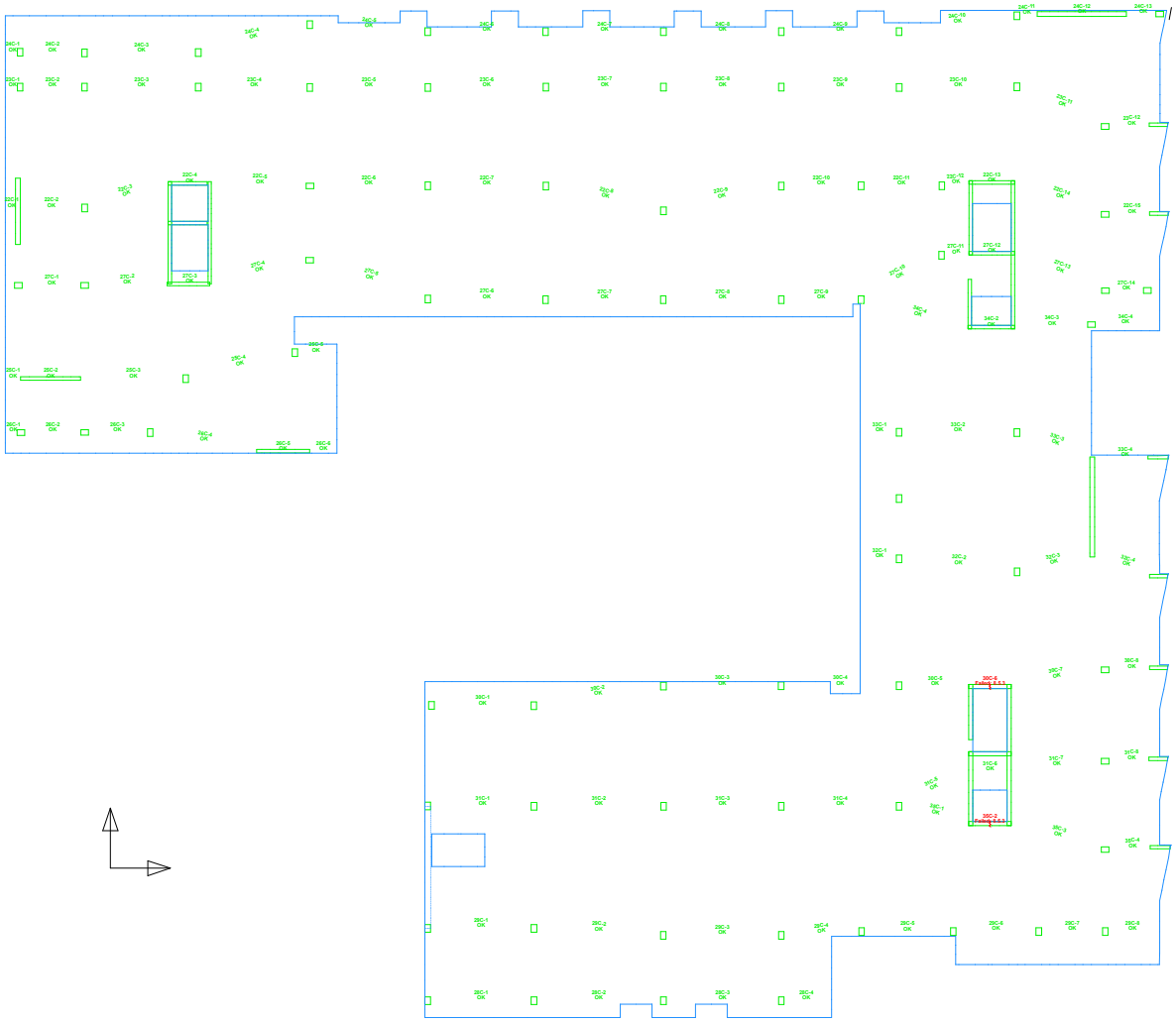
Design Status: Latitude Shear Reinforcement Plan

Design Status: User Lines; User Notes; User Dimensions; Latitude Span Designs; Span Design Shear Bars; Span Design Bar Descriptions; Latitude DS Designs; DS Design Numbers; DS Design Shear Bars;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:550



Design Status: Longitude Status Plan

Design Status: User Lines; User Notes; User Dimensions; Longitude Span Designs; Span Design Numbers; Span Design Status; Longitude DS Designs; DS Design Numbers; DS Design Status;
Drawing Import: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:550



Design Status: Longitude Top Reinforcement Plan

Design Status: User Lines; User Notes; User Dimensions; Longitude Span Designs; Span Design Top Bars; Span Design Bar Descriptions; Longitude DS Designs; DS Design Top Bars;
Drawing Import: User Lines; User Notes; User Dimensions
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Reinforcement: Top Face Concentrated Reinf.; Both Faces Concentrated Reinf.; Auto Face Concentrated Reinf.; Concentrated Reinf. Descriptions; Top Face Distributed Reinf.; Both Faces Distributed Reinf.; Auto Face Distributed Reinf.; Distributed Reinf. Descriptions; Longitude User Concentrated Reinf.; Longitude User Distributed Reinf.;
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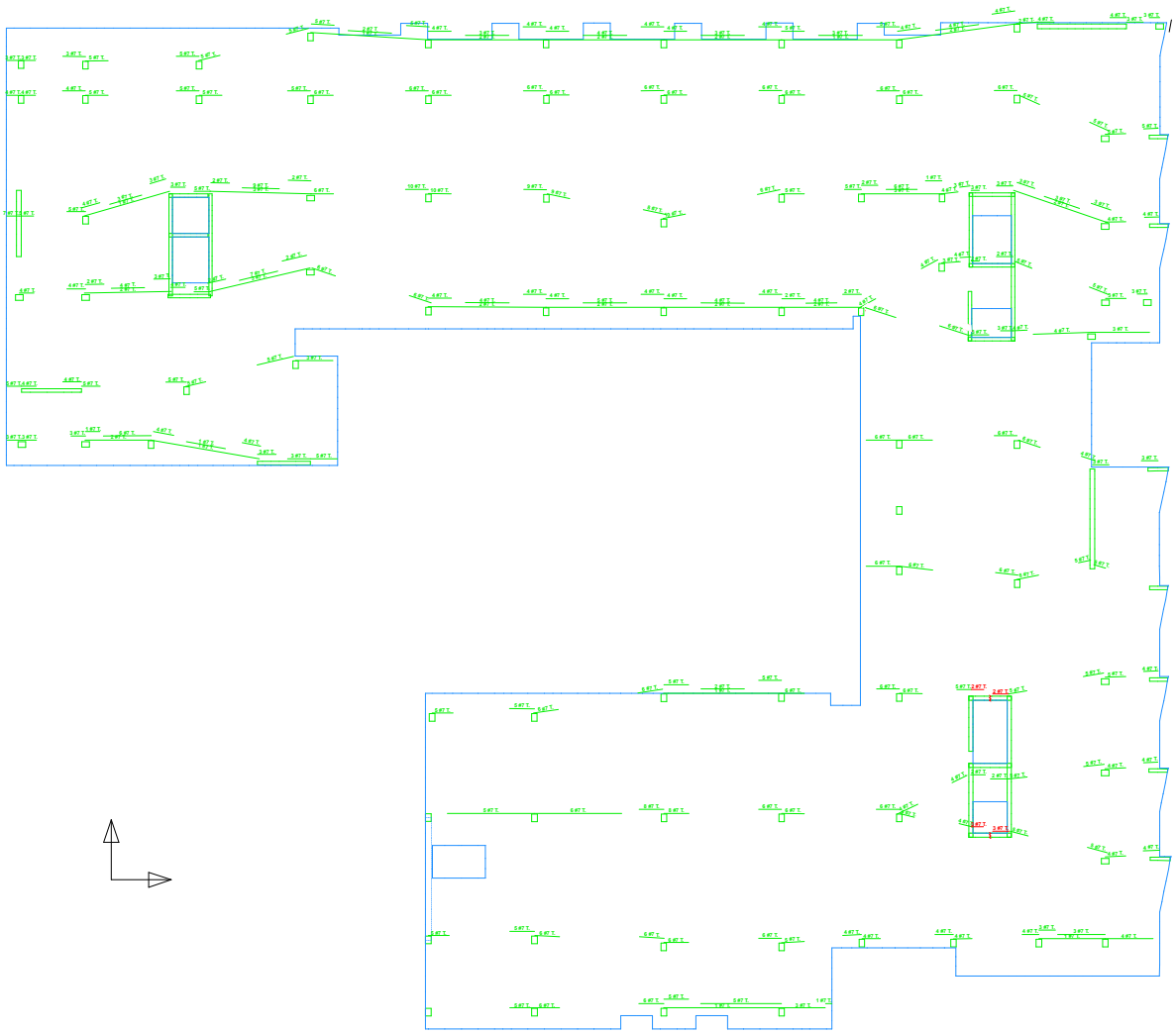


STUDRAILS

Engineer:

Project name:
Construction member:

Date: October 02, 2021

JORDAHL® EXPERT Punching shear - Design

Position: D-1

1. Input information

Column type	Rectangular corner column						
Column dimension	c_x / c_y	=	16	in	/	20	in
Edge	r_a / r_b	=	0	in	/	0	in
Slab type	Elevated concrete slab						
Slab thickness	h	=	12	in			
Concrete cover top/bottom	c_o / c_u	=	0.75	in	/	0.75	in
Effective depth	d_x / d_y	=	11.25	in	/	11.25	in
Concrete strength	5500 psi						
Density	Normal weight concrete						
Prestress	f_{pc}	=	200	psi			
Punching shear load	V_u	=	68	kip			
Unbalanced moment	M_{ux} / M_{uy}	=	40	kip-ft	/	40	kip-ft

2. Output information (ACI 318-14)

2.1 Inner Critical Section (d/2 outside of column face)

2.1.1 Common Properties

Area	A_c	=	531.6	in²
Critical section perimeter	b_0	=	47.3	in

2.1.2 Natural Axis Properties

Centroid coordinate	e_x / e_y	=	-8.676	in	/	-8.676	in
Section moment of inertia	I_x / I_y	=	$3.743 \cdot 10^4$	in⁴	/	$2.491 \cdot 10^4$	in⁴
Section product of inertia	I_{xy}	=	$-1.828 \cdot 10^4$	in⁴			

2.1.3 Principal Axis Properties

Centroid coordinate	e_1 / e_2	=	12.103	in	/	2.016	in
Section moment of inertia	I_1 / I_2	=	$5.049 \cdot 10^4$	in⁴	/	$1.185 \cdot 10^4$	in⁴
Principal axis rotation	θ	=	35.5	°			
Moment fraction	γ_1 / γ_2	=	0.4000		/	0.2759	
Unbalanced moment	M_{u1} / M_{u2}	=	55.8	kip-ft	/	9.3	kip-ft

Engineer:

Project name:
Construction member:

Date: October 02, 2021

2.1.4 Stresses

Maximum shear stress	v_u	=	400	psi			
	x / y	=	8	in	/	-15.625	in
Shear resistance (concrete only)	ϕv_c	=	228.8	psi			
Shear resistance (with studrails)	ϕv_n	=	421.2	psi			
Shear resistance (upper limit)	$\phi v_{n,max}$	=	445	psi			

2.2 Outer Critical Section (d/2 outside of reinforced zone)

2.2.1 Common Properties

Area	A_c	=	950.7	in²			
Critical section perimeter	b_0	=	84.5	in			

2.2.2 Natural Axis Properties

Centroid coordinate	e_x / e_y	=	-24.53	in	/	-24.081	in
Section moment of inertia	I_x / I_y	=	$2.674 \cdot 10^5$	in⁴	/	$2.328 \cdot 10^5$	in⁴
Section product of inertia	I_{xy}	=	$-2.316 \cdot 10^5$	in⁴			

2.2.3 Principal Axis Properties

Centroid coordinate	e_1 / e_2	=	34.361	in	/	0.966	in
Section moment of inertia	I_1 / I_2	=	$4.824 \cdot 10^5$	in⁴	/	$1.781 \cdot 10^4$	in⁴
Principal axis rotation	θ	=	42.9	°			
Moment fraction	γ_1 / γ_2	=	0.4000		/	0.0000	
Unbalanced moment	M_{u1} / M_{u2}	=	56.5	kip-ft	/	2.1	kip-ft

2.2.4 Stresses

Maximum shear stress	v_u	=	90.1	psi			
	x / y	=	8	in	/	-43.75	in
Shear resistance	ϕv_c	=	111.2	psi			

3. Elements

Number of studrails per column		=	4				
Number of studs per studrail		=	5				
Stud diameter	D	=	0.75	in			
Stud spacing	S / S_0	=	5.625	in	/	5.625	in
Overall height of studrail	OAH	=	10.5	in			
Overall length of studrail	OAL	=	33.75	in			

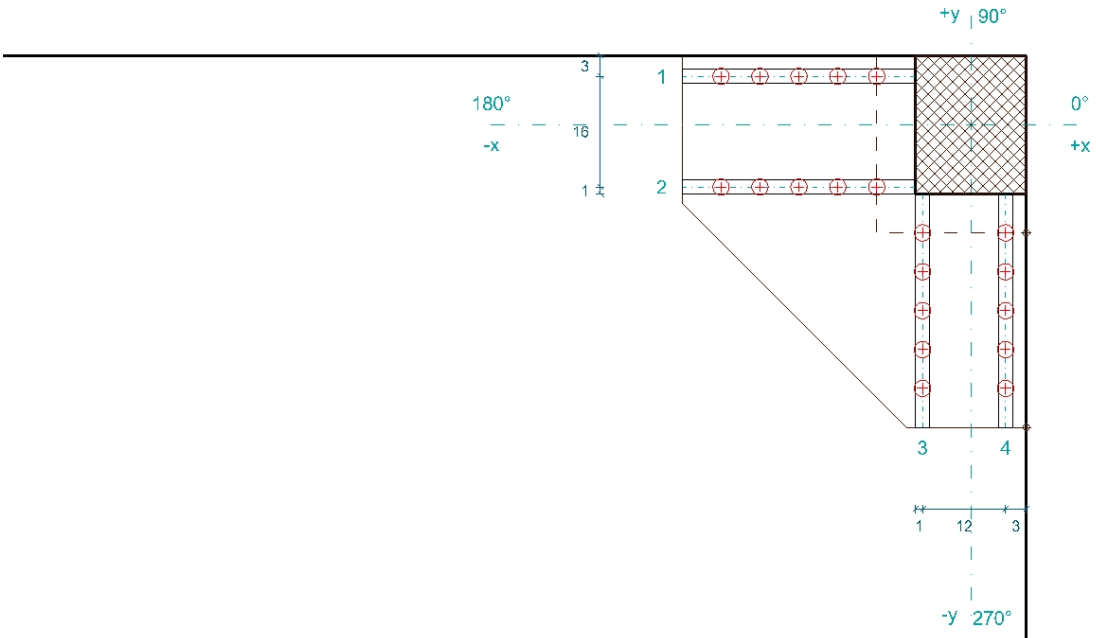
4. Note

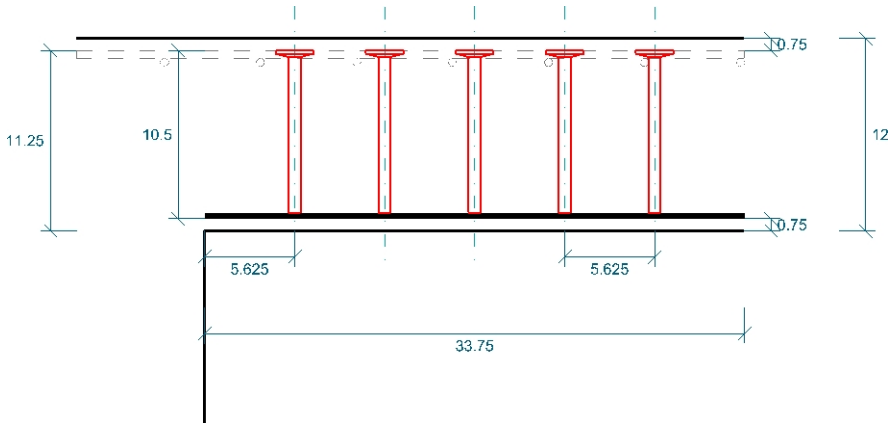
- The design against punching shear failure is based on the rules of ACI 318-14.
- This calculation is based on product specific properties of DECON® Studrails®. Changes, even to similar products, are only possible with new calculations.
- All data have to be checked with the given edge boundaries and the feasibility. DECON assumes no liability for the input data of the user.

Engineer:

Project name:
Construction member:

Date: October 02, 2021





Engineer:

Project name:
Construction member:

Date: October 02, 2021

JORDAHL® EXPERT Punching shear - Design

Position: J-3

1. Input information

Column type	Rectangular corner column						
Column dimension	c_x / c_y	=	16	in	/	20	in
Edge	r_a / r_b	=	18	in	/	54	in
Slab type	Elevated concrete slab						
Slab thickness	h	=	12	in			
Concrete cover top/bottom	c_o / c_u	=	0.75	in	/	0.75	in
Effective depth	d_x / d_y	=	11.25	in	/	11.25	in
Concrete strength	5000 psi						
Density	Normal weight concrete						
Prestress	f_{pc}	=	200	psi			
Punching shear load	V_u	=	141	kip			
Unbalanced moment	M_{ux} / M_{uy}	=	40	kip-ft	/	40	kip-ft

2. Output information (ACI 318-14)

2.1 Inner Critical Section (d/2 outside of column face)

2.1.1 Common Properties

Area	A_c	=	658.1	in²
Critical section perimeter	b_0	=	58.5	in

2.1.2 Natural Axis Properties

Centroid coordinate	e_x / e_y	=	7.278	in	/	-7.278	in
Section moment of inertia	I_x / I_y	=	$6.859 \cdot 10^4$	in⁴	/	$4.937 \cdot 10^4$	in⁴
Section product of inertia	I_{xy}	=	$3.486 \cdot 10^4$	in⁴			

2.1.3 Principal Axis Properties

Centroid coordinate	e_1 / e_2	=	-10.2	in	/	1.38	in
Section moment of inertia	I_1 / I_2	=	$9.514 \cdot 10^4$	in⁴	/	$2.282 \cdot 10^4$	in⁴
Principal axis rotation	θ	=	-37.3	°			
Moment fraction	γ_1 / γ_2	=	0.4000		/	0.2751	
Unbalanced moment	M_{u1} / M_{u2}	=	7.6	kip-ft	/	56.1	kip-ft

2.1.4 Stresses

Maximum shear stress	v_u	=	312.6	psi			
	x / y	=	-13.625	in	/	-15.625	in
Shear resistance (concrete only)	ϕv_c	=	228.8	psi			
Shear resistance (with studrails)	ϕv_n	=	313.2	psi			
Shear resistance (upper limit)	$\phi v_{n,max}$	=	424.3	psi			

2.2 Outer Critical Section (d/2 outside of reinforced zone)

2.2.1 Common Properties

Area	A_c	=	2834.6	in²			
Critical section perimeter	b_0	=	252	in			

2.2.2 Natural Axis Properties

Centroid coordinate	e_x / e_y	=	64.744	in	/	-42.098	in
Section moment of inertia	I_x / I_y	=	$8.178 \cdot 10^6$	in⁴	/	$5.213 \cdot 10^6$	in⁴
Section product of inertia	I_{xy}	=	$6.079 \cdot 10^6$	in⁴			

2.2.3 Principal Axis Properties

Centroid coordinate	e_1 / e_2	=	-76.92	in	/	-6.882	in
Section moment of inertia	I_1 / I_2	=	$1.295 \cdot 10^7$	in⁴	/	$4.385 \cdot 10^5$	in⁴
Principal axis rotation	θ	=	-38.1	°			
Moment fraction	γ_1 / γ_2	=	0.4000		/	0.0631	
Unbalanced moment	M_{u1} / M_{u2}	=	6.8	kip-ft	/	56.2	kip-ft

2.2.4 Stresses

Maximum shear stress	v_u	=	95.2	psi			
	x / y	=	-26	in	/	-111.25	in
Shear resistance	ϕv_c	=	106.1	psi			

3. Elements

Number of studrails per column		=	4				
Number of studs per studrail		=	13				
Stud diameter	D	=	0.75	in			
Stud spacing	S / S_0	=	7.5	in	/	5.625	in
Overall height of studrail	OAH	=	10.5	in			
Overall length of studrail	OAL	=	101.25	in			

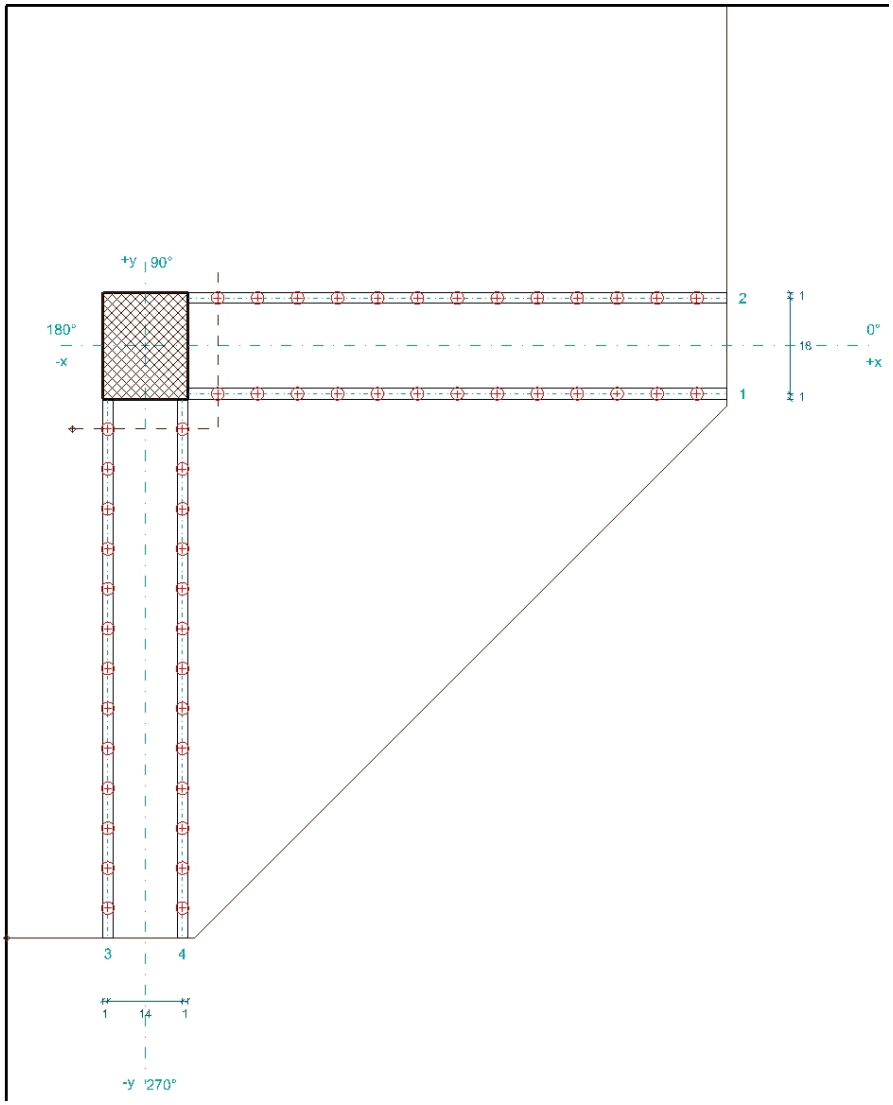
4. Note

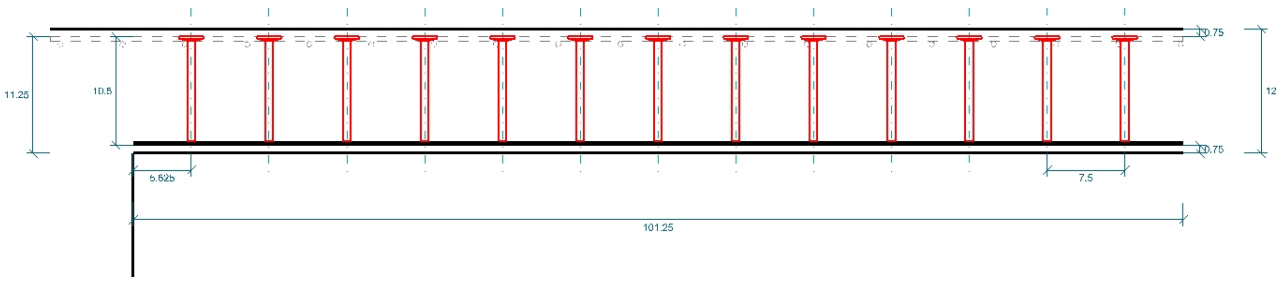
- The design against punching shear failure is based on the rules of ACI 318-14.
- This calculation is based on product specific properties of DECON® Studrails®. Changes, even to similar products, are only possible with new calculations.
- All data have to be checked with the given edge boundaries and the feasibility. DECON assumes no liability for the input data of the user.

Engineer:

Project name:
Construction member:

Date: October 02, 2021





Engineer:

Project name:
Construction member:

Date: October 02, 2021

JORDAHL® EXPERT Punching shear - Design

Position: D.1/2-1

1. Input information

Column type	Rectangular edge column						
Column dimension	c_x / c_y	=	16	in	/	20	in
Edge	r_b	=	0	in			
Slab type	Elevated concrete slab						
Slab thickness	h	=	12	in			
Concrete cover top/bottom	c_o / c_u	=	0.75	in	/	0.75	in
Effective depth	d_x / d_y	=	11.25	in	/	11.25	in
Concrete strength	5500 psi						
Density	Normal weight concrete						
Prestress	f_{pc}	=	200	psi			
Punching shear load	V_u	=	160	kip			
Unbalanced moment	M_{ux} / M_{uy}	=	40	kip-ft	/	40	kip-ft

2. Output information (ACI 318-14)

2.1 Inner Critical Section (d/2 outside of column face)

2.1.1 Common Properties

Area	A_c	=	883.1	in²			
Critical section perimeter	b_0	=	78.5	in			

2.1.2 Natural Axis Properties

Centroid coordinate	e_x / e_y	=	0	in	/	-7.26	in
Section moment of inertia	I_x / I_y	=	$6.441 \cdot 10^4$	in⁴	/	$1.260 \cdot 10^5$	in⁴
Section product of inertia	I_{xy}	=	0	in⁴			

2.1.3 Principal Axis Properties

Centroid coordinate	e_1 / e_2	=	7.26	in	/	0	in
Section moment of inertia	I_1 / I_2	=	$1.260 \cdot 10^5$	in⁴	/	$6.441 \cdot 10^4$	in⁴
Principal axis rotation	θ	=	90.0	°			
Moment fraction	γ_1 / γ_2	=	0.4074		/	0.3645	
Unbalanced moment	M_{u1} / M_{u2}	=	40	kip-ft	/	-40	kip-ft

2.1.4 Stresses

Maximum shear stress	v_u	=	268.9	psi			
	x / y	=	13.625	in	/	10	in
Shear resistance (concrete only)	ϕv_c	=	228.8	psi			
Shear resistance (with studrails)	ϕv_n	=	268.9	psi			
Shear resistance (upper limit)	$\phi v_{n,max}$	=	445	psi			

2.2 Outer Critical Section (d/2 outside of reinforced zone)

2.2.1 Common Properties

Area	A_c	=	2800.3	in²			
Critical section perimeter	b_0	=	248.9	in			

2.2.2 Natural Axis Properties

Centroid coordinate	e_x / e_y	=	0	in	/	-39.538	in
Section moment of inertia	I_x / I_y	=	$1.874 \cdot 10^6$	in⁴	/	$7.346 \cdot 10^6$	in⁴
Section product of inertia	I_{xy}	=	0	in⁴			

2.2.3 Principal Axis Properties

Centroid coordinate	e_1 / e_2	=	39.538	in	/	0	in
Section moment of inertia	I_1 / I_2	=	$7.346 \cdot 10^6$	in⁴	/	$1.874 \cdot 10^6$	in⁴
Principal axis rotation	θ	=	90.0	°			
Moment fraction	γ_1 / γ_2	=	0.4669		/	0.2911	
Unbalanced moment	M_{u1} / M_{u2}	=	40	kip-ft	/	-40	kip-ft

2.2.4 Stresses

Maximum shear stress	v_u	=	104.4	psi			
	x / y	=	75.5	in	/	10	in
Shear resistance	ϕv_c	=	111.2	psi			

3. Elements

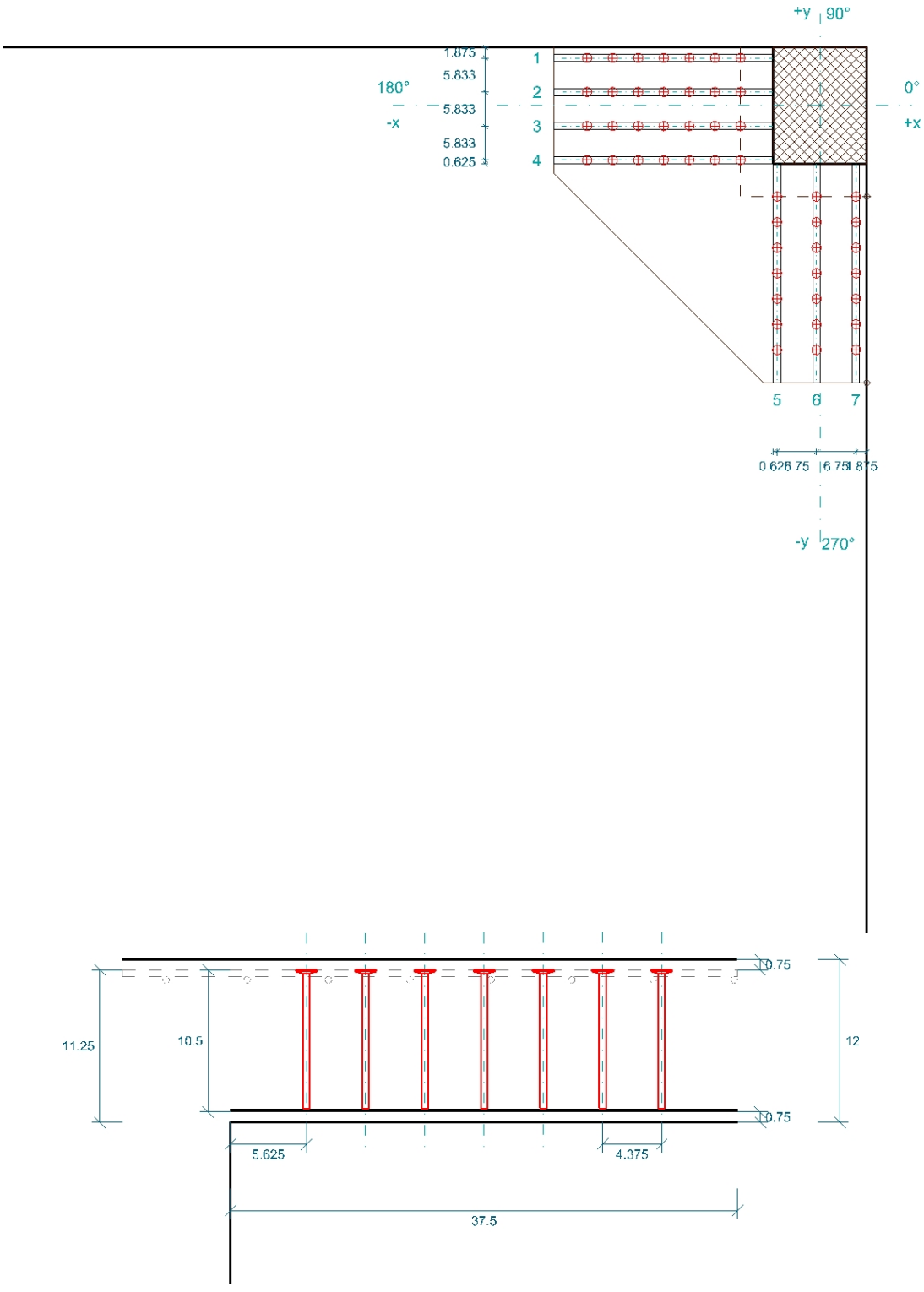
Number of studrails per column		=	6				
Number of studs per studrail		=	11				
Stud diameter	D	=	0.5	in			
Stud spacing	S / S_0	=	5.625	in	/	5.625	in
Overall height of studrail	OAH	=	10.5	in			
Overall length of studrail	OAL	=	67.5	in			

4. Note

- The design against punching shear failure is based on the rules of ACI 318-14.
- This calculation is based on product specific properties of DECON® Studrails®. Changes, even to similar products, are only possible with new calculations.
- All data have to be checked with the given edge boundaries and the feasibility. DECON assumes no liability for the input data of the user.

Engineer:

Project name:
Construction member:
Position: C-5 and C-5(1)
Date: October 02, 2021



Engineer:

Project name:
Construction member:
Position: C-5 and C-5(1)
Date: October 02, 2021

JORDAHL® EXPERT Punching shear - Design

1. Input information

Column type	Rectangular corner column						
Column dimension	c_x / c_y	=	16	in	/	20	in
Edge	r_a / r_b	=	0	in	/	0	in
Slab type	Elevated concrete slab						
Slab thickness	h	=	12	in			
Concrete cover top/bottom	c_o / c_u	=	0.75	in	/	0.75	in
Effective depth	d_x / d_y	=	11.25	in	/	11.25	in
Concrete strength	5500 psi						
Density	Normal weight concrete						
Prestress	f_{pc}	=	200	psi			
Punching shear load	V_u	=	58	kip			
Unbalanced moment	M_{ux} / M_{uy}	=	40	kip-ft	/	40	kip-ft

2. Output information (ACI 318-14)

2.1 Inner Critical Section (d/2 outside of column face)

2.1.1 Common Properties

Area	A_c	=	531.6	in²			
Critical section perimeter	b_0	=	47.3	in			

2.1.2 Natural Axis Properties

Centroid coordinate	e_x / e_y	=	-8.676	in	/	-8.676	in
Section moment of inertia	I_x / I_y	=	$3.743 \cdot 10^4$	in⁴	/	$2.491 \cdot 10^4$	in⁴
Section product of inertia	I_{xy}	=	$-1.828 \cdot 10^4$	in⁴			

2.1.3 Principal Axis Properties

Centroid coordinate	e_1 / e_2	=	12.103	in	/	2.016	in
Section moment of inertia	I_1 / I_2	=	$5.049 \cdot 10^4$	in⁴	/	$1.185 \cdot 10^4$	in⁴
Principal axis rotation	θ	=	35.5	°			
Moment fraction	γ_1 / γ_2	=	0.4000		/	0.2759	
Unbalanced moment	M_{u1} / M_{u2}	=	55.8	kip-ft	/	9.3	kip-ft

2.1.4 Stresses

Maximum shear stress	v_u	=	356.8	psi			
	x / y	=	8	in	/	-15.625	in
Shear resistance (concrete only)	ϕv_c	=	228.8	psi			
Shear resistance (with studrails)	ϕv_n	=	359.5	psi			
Shear resistance (upper limit)	$\phi v_{n,max}$	=	445	psi			

Engineer:

Project name:
Construction member:
Position: C-5 and C-5(1)
Date: October 02, 2021

2.2 Outer Critical Section (d/2 outside of reinforced zone)

2.2.1 Common Properties

Area	A_c	=	989	in²			
Critical section perimeter	b_0	=	87.9	in			

2.2.2 Natural Axis Properties

Centroid coordinate	e_x / e_y	=	-25.85	in	/	-25.393	in
Section moment of inertia	I_x / I_y	=	$3.012 \cdot 10^5$	in⁴	/	$2.641 \cdot 10^5$	in⁴
Section product of inertia	I_{xy}	=	$-2.629 \cdot 10^5$	in⁴			

2.2.3 Principal Axis Properties

Centroid coordinate	e_1 / e_2	=	36.223	in	/	0.953	in
Section moment of inertia	I_1 / I_2	=	$5.463 \cdot 10^5$	in⁴	/	$1.908 \cdot 10^4$	in⁴
Principal axis rotation	θ	=	43.0	°			
Moment fraction	γ_1 / γ_2	=	0.4000		/	0.0000	
Unbalanced moment	M_{u1} / M_{u2}	=	56.5	kip-ft	/	2	kip-ft

2.2.4 Stresses

Maximum shear stress	v_u	=	76.1	psi			
	x / y	=	8	in	/	-46	in
Shear resistance	ϕv_c	=	111.2	psi			

3. Elements

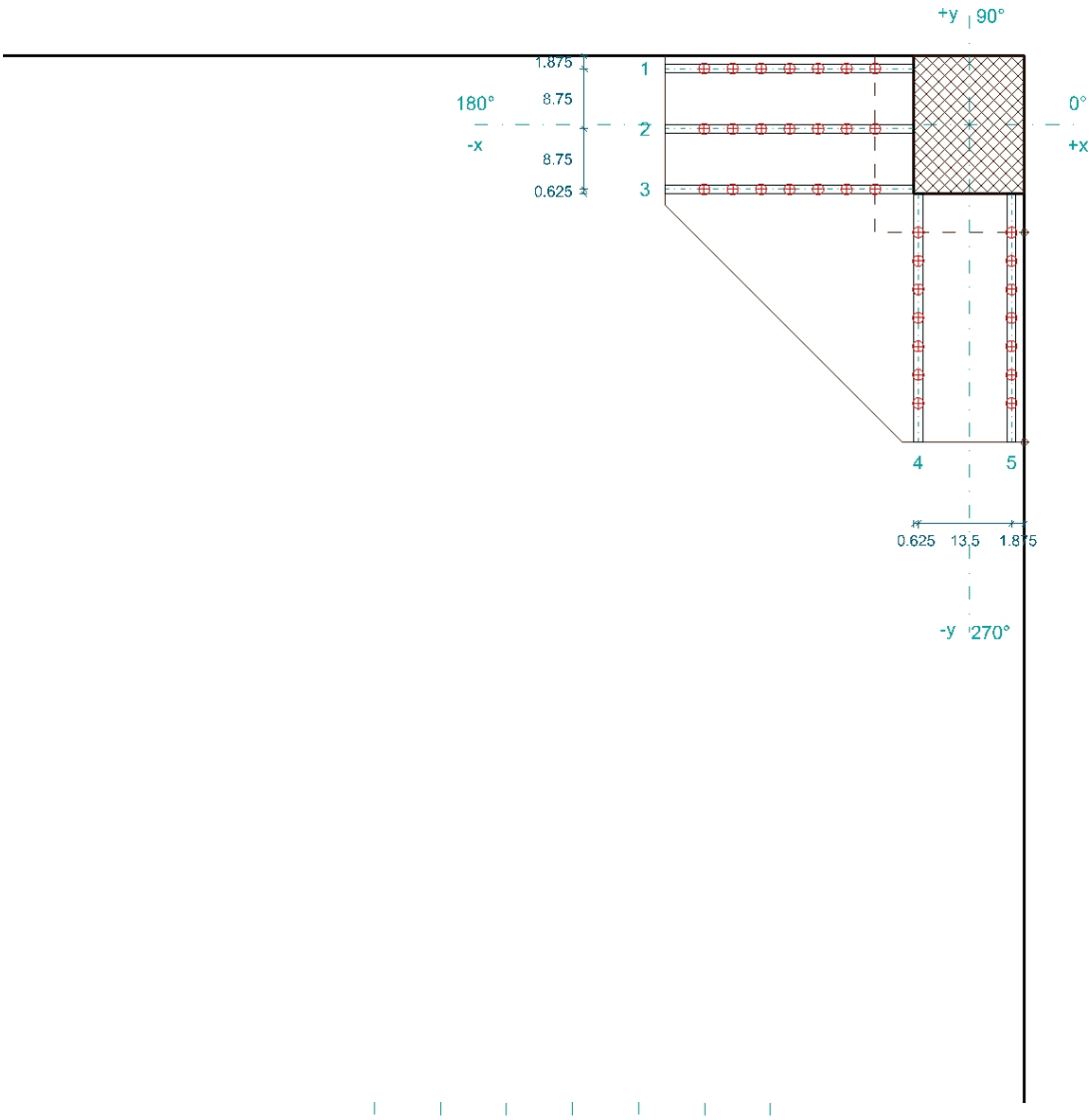
Number of studrails per column		=	5				
Number of studs per studrail		=	7				
Stud diameter	D	=	0.5	in			
Stud spacing	S / S_0	=	4.125	in	/	5.625	in
Overall height of studrail	OAH	=	10.5	in			
Overall length of studrail	OAL	=	36	in			

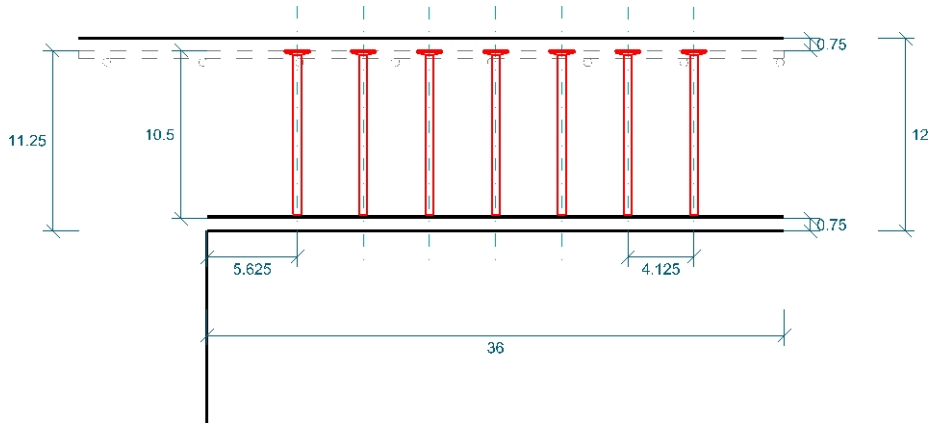
4. Note

- The design against punching shear failure is based on the rules of ACI 318-14.
- This calculation is based on product specific properties of DECON® Studrails®. Changes, even to similar products, are only possible with new calculations.
- All data have to be checked with the given edge boundaries and the feasibility. DECON assumes no liability for the input data of the user.

Engineer:

Project name:
Construction member:
Position: C-5 and C-5(1)
Date: October 02, 2021





Engineer:

Project name:
Construction member:
Position: C-5 and C-5(1)
Date: October 02, 2021

JORDAHL® EXPERT Punching shear - Design

1. Input information

Column type	Rectangular corner column						
Column dimension	c_x / c_y	=	16	in	/	20	in
Edge	r_a / r_b	=	0	in	/	0	in
Slab type	Elevated concrete slab						
Slab thickness	h	=	12	in			
Concrete cover top/bottom	c_o / c_u	=	0.75	in	/	0.75	in
Effective depth	d_x / d_y	=	11.25	in	/	11.25	in
Concrete strength	5500 psi						
Density	Normal weight concrete						
Prestress	f_{pc}	=	200	psi			
Punching shear load	V_u	=	72	kip			
Unbalanced moment	M_{ux} / M_{uy}	=	40	kip-ft	/	40	kip-ft

2. Output information (ACI 318-14)

2.1 Inner Critical Section (d/2 outside of column face)

2.1.1 Common Properties

Area	A_c	=	531.6	in²			
Critical section perimeter	b_0	=	47.3	in			

2.1.2 Natural Axis Properties

Centroid coordinate	e_x / e_y	=	-8.676	in	/	-8.676	in
Section moment of inertia	I_x / I_y	=	$3.743 \cdot 10^4$	in⁴	/	$2.491 \cdot 10^4$	in⁴
Section product of inertia	I_{xy}	=	$-1.828 \cdot 10^4$	in⁴			

2.1.3 Principal Axis Properties

Centroid coordinate	e_1 / e_2	=	12.103	in	/	2.016	in
Section moment of inertia	I_1 / I_2	=	$5.049 \cdot 10^4$	in⁴	/	$1.185 \cdot 10^4$	in⁴
Principal axis rotation	θ	=	35.5	°			
Moment fraction	γ_1 / γ_2	=	0.4000		/	0.2759	
Unbalanced moment	M_{u1} / M_{u2}	=	55.8	kip-ft	/	9.3	kip-ft

2.1.4 Stresses

Maximum shear stress	v_u	=	417.3	psi			
	x / y	=	8	in	/	-15.625	in
Shear resistance (concrete only)	ϕv_c	=	228.8	psi			
Shear resistance (with studrails)	ϕv_n	=	421.2	psi			
Shear resistance (upper limit)	$\phi v_{n,max}$	=	445	psi			

Engineer:

Project name:
Construction member:
Position: C-5 and C-5(1)
Date: October 02, 2021

2.2 Outer Critical Section (d/2 outside of reinforced zone)

2.2.1 Common Properties

Area	A_c	=	1012.9	in²		
Critical section perimeter	b_0	=	90	in		

2.2.2 Natural Axis Properties

Centroid coordinate	e_x / e_y	=	-26.657	in	/ -26.191	in
Section moment of inertia	I_x / I_y	=	$3.242 \cdot 10^5$	in⁴	/ $2.858 \cdot 10^5$	in⁴
Section product of inertia	I_{xy}	=	$-2.851 \cdot 10^5$	in⁴		

2.2.3 Principal Axis Properties

Centroid coordinate	e_1 / e_2	=	37.359	in	/ 0.927	in
Section moment of inertia	I_1 / I_2	=	$5.908 \cdot 10^5$	in⁴	/ $1.932 \cdot 10^4$	in⁴
Principal axis rotation	θ	=	43.1	°		
Moment fraction	γ_1 / γ_2	=	0.4000		/ 0.0000	
Unbalanced moment	M_{u1} / M_{u2}	=	56.5	kip-ft	/ 1.9	kip-ft

2.2.4 Stresses

Maximum shear stress	v_u	=	87.3	psi		
	x / y	=	8	in	/ -47.5	in
Shear resistance	ϕv_c	=	111.2	psi		

3. Elements

Number of studrails per column		=	7			
Number of studs per studrail		=	7			
Stud diameter	D	=	0.5	in		
Stud spacing	S / S_0	=	4.375	in	/ 5.625	in
Overall height of studrail	OAH	=	10.5	in		
Overall length of studrail	OAL	=	37.5	in		

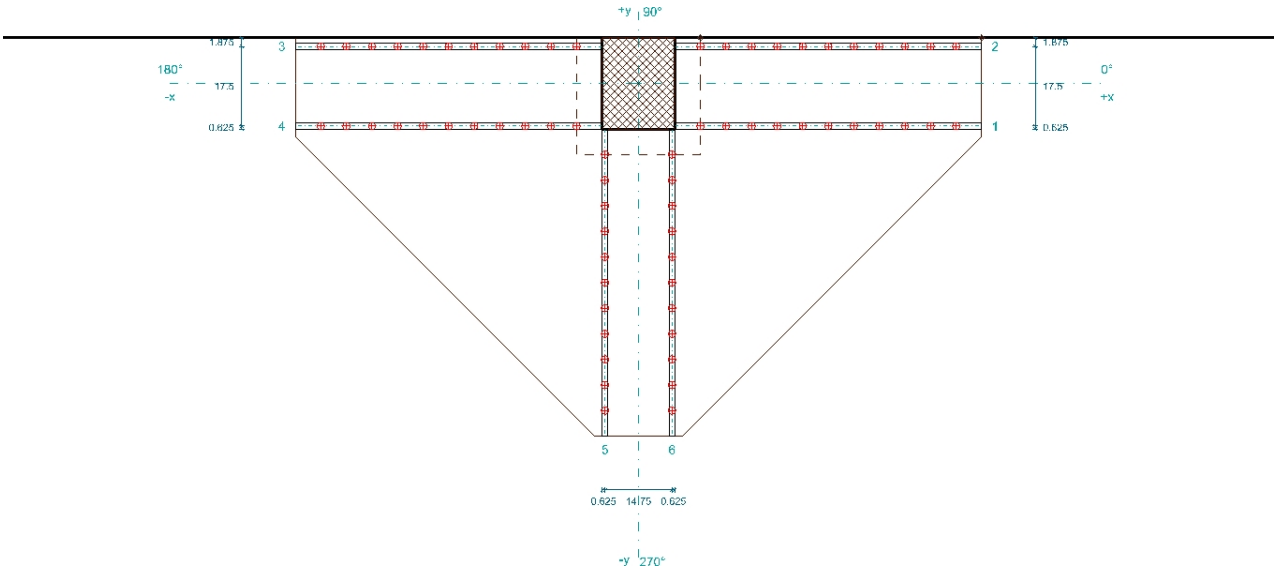
4. Note

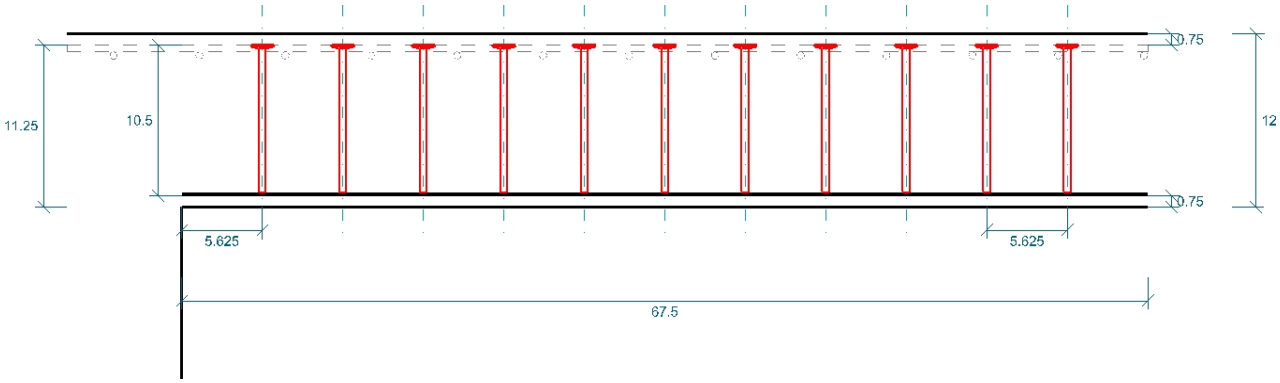
- The design against punching shear failure is based on the rules of ACI 318-14.
- This calculation is based on product specific properties of DECON® Studrails®. Changes, even to similar products, are only possible with new calculations.
- All data have to be checked with the given edge boundaries and the feasibility. DECON assumes no liability for the input data of the user.

Engineer:

Project name:
Construction member:

Date: October 02, 2021





CONCRETE LATERAL

PCS Structural Solutions
811 First Avenue, Suite 620
Seattle, Washington 98104
tel:206.292.5076
1250 Pacific Avenue, Suite 701
Tacoma, Washington 98402
tel:253.383.2797

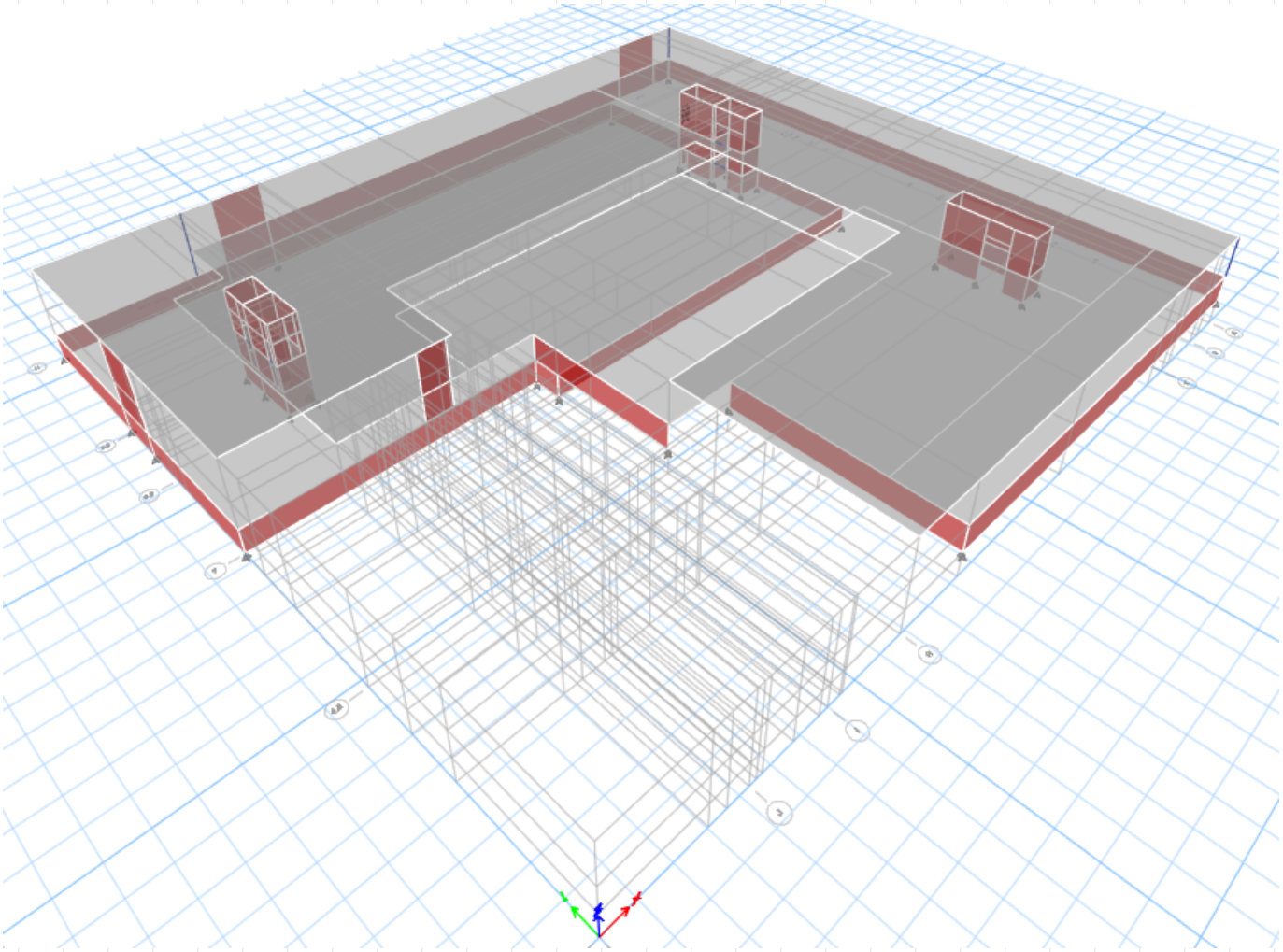
Project:	MIMU
Date Updated:	9/24/2021

BUILDING DEAD LOADS

SECTION	LOCATION	TYPE	MATERIAL		WEIGHT (psf)	*USE*
Roof	Roof West	Roofing	2 Ply Bitumen Roofing		2	
		Finish	1x Sheathing		2.3	
		Framing	2x12 @ 12"		4.4	
		Insulation	10"		2.5	
		MEP			3	
		Misc			1.5	
				Σ	**15.7**	16
Roof - PV	Photovoltaic	Floor Finish	PV		12	
		Finish	1x Sheathing		2.3	
		Framing	2x14 @ 16"		4.2	
		Ceiling	5/8" Gypsum		2.8	
		Insulation	10"		2.5	
		MEP			5	
		Misc			2.5	
					31.3	32
Floor	Level 3-5	Floor Finish	Carpet		2	
Typ Wood		Finish	1" Gypcrete Topping		9	
		Finish	1x Sheathing		3.3	
		Framing	12" TJI @ 16" oc		3	
		Ceiling	5/8" Gypsum		2.8	
		Misc			4	
				Σ	**24.1**	25
Transfer Slab	Level 2	Floor SDL	Wood framing included		120	
		Framing	12" concrete		150	
		Ceiling/Flr Allow			8	
		Misc			1.5	
				Σ	**279.5**	280
Floor	Level 1 - Retail	Floor Finish	Allowance		10	
		Framing	12" concrete		150	
		Ceiling	5/8" Gypsum		2.8	
		MEP			5	
		Misc			1.5	
				Σ	**169.3**	170
Floor	Level 1 - Units	Floor Finish	Allowance		5	
		Framing	10" concrete		125	
		Ceiling	5/8" Gypsum		2.8	
		MEP			2.5	
		Misc			4	
				Σ	**139.3**	140
Floor	Level 1 - Courtyard	Floor Finish	Allowance		7	
		Framing	12" concrete		150	
		Topping			50	
		Ceiling	5/8" Gypsum		2.8	
		MEP			3	
		Misc			2	
				Σ	**214.8**	215
Floor	Level 1 - Landscaped	Floor Finish	Waterproofing		1.5	
		Soil	36"		360	
		Framing	12" concrete		150	
		Ceiling	5/8" Gypsum		2.8	
		MEP			1.5	
		Misc			1.5	
				Σ	**517.3**	518
Ext Wall	All Levels	Ext Finish	Siding + Gypsum or Veneer		6	
		Framing	6" Wood Studs @ 16"		1.7	
		Insulation	6" Batt		1.5	
		Int Finish	5/8" Gypsum		2.8	
		Misc			0	
				Σ	**12**	13
Int. Wall	All Levels	Ext Finish	5/8" Gypsum		2.8	
		Framing	2x6 Wood Studs @ 16"		1.7	
		Int Finish	5/8" Gypsum		2.8	
		Misc			1	
				Σ	**8.3**	9

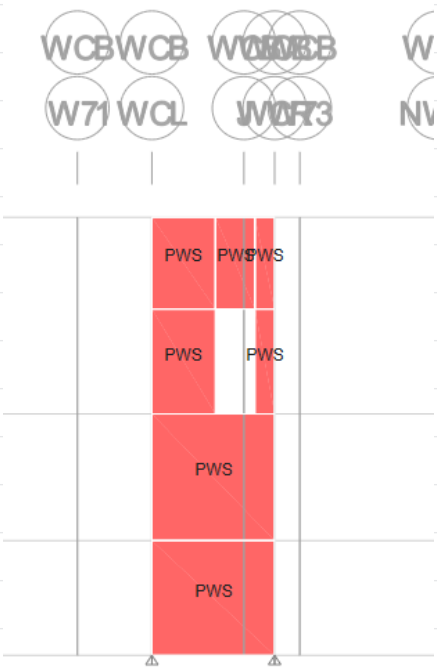
VENEER, AVERAGED WITH SIDING OVER BUILDING PERIMETER

ETABS MODEL

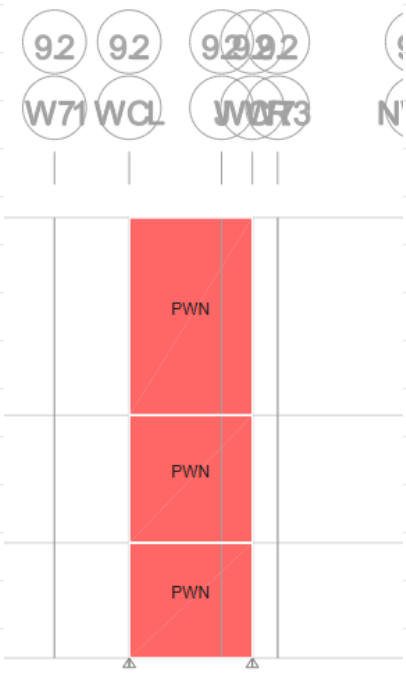


ISOMETRIC

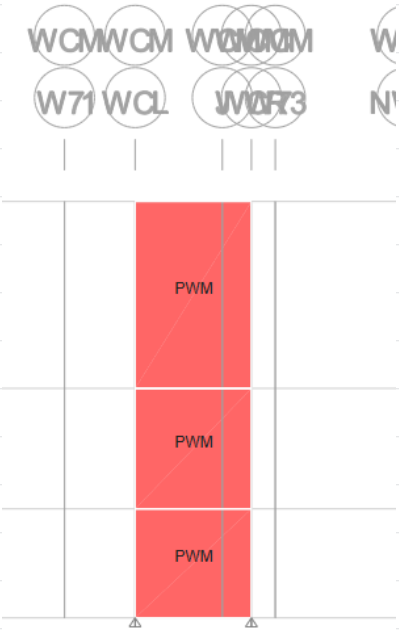
ETABS MODEL



WEST CORE SOUTH WALL



WEST CORE NORTH WALL

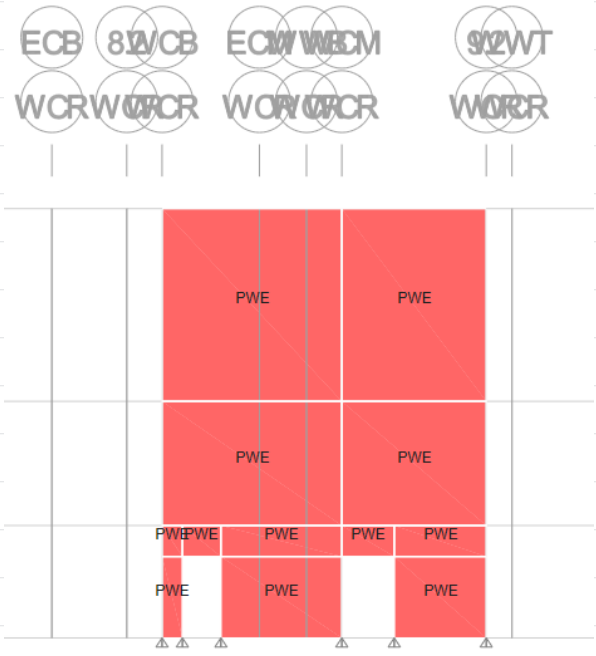


WEST CORE MIDDLE WALL

SHEAR WALLS PIER LABELS

ETABS MODEL

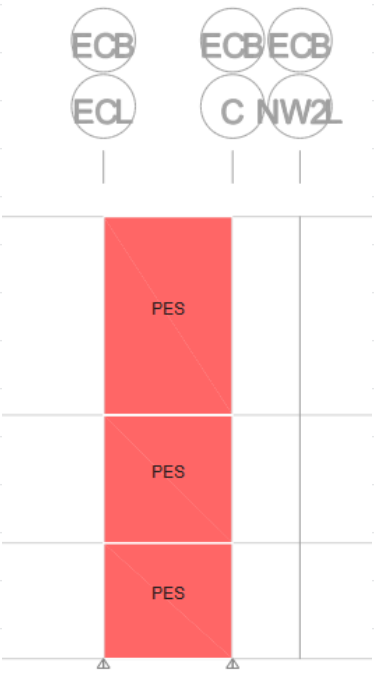
WEST CORE WEST WALL



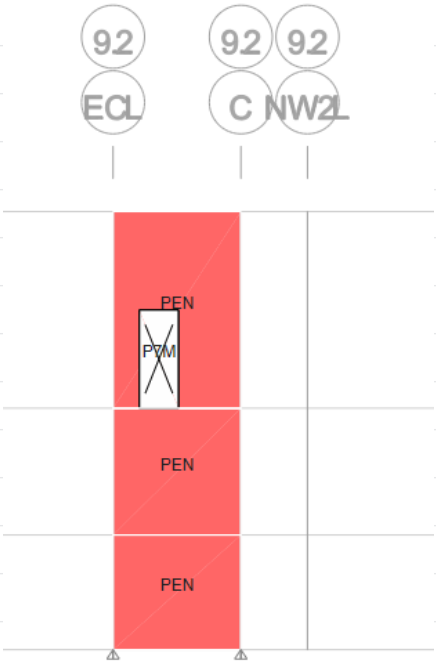
WEST CORE EAST WALL

SHEAR WALLS PIER LABELS

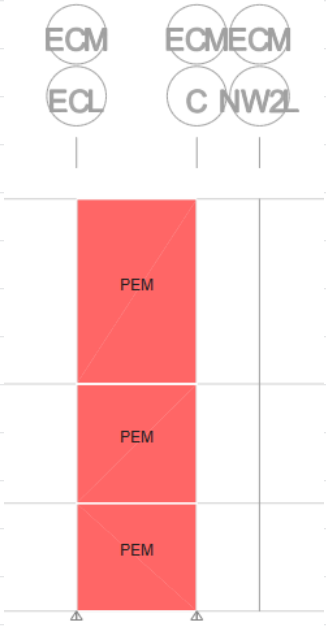
ETABS MODEL



EAST CORE SOUTH WALL



EAST CORE NORTH WALL

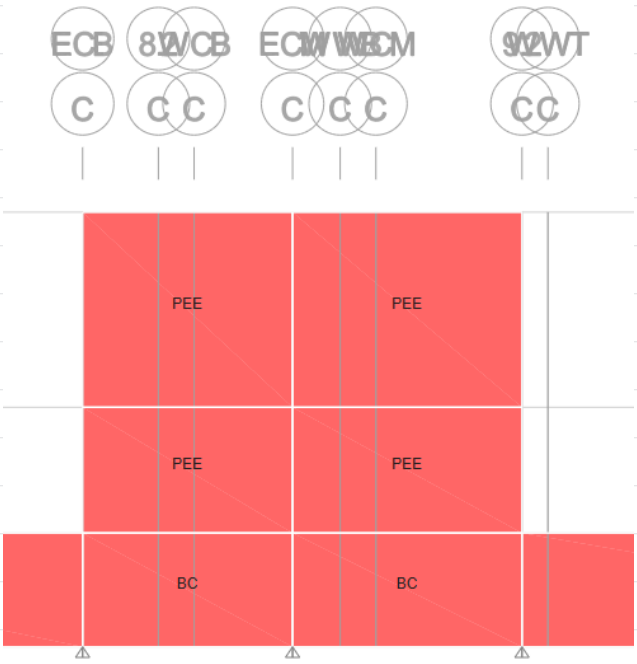


EAST CORE MIDDLE WALL

SHEAR WALLS PIER LABELS

ETABS MODEL

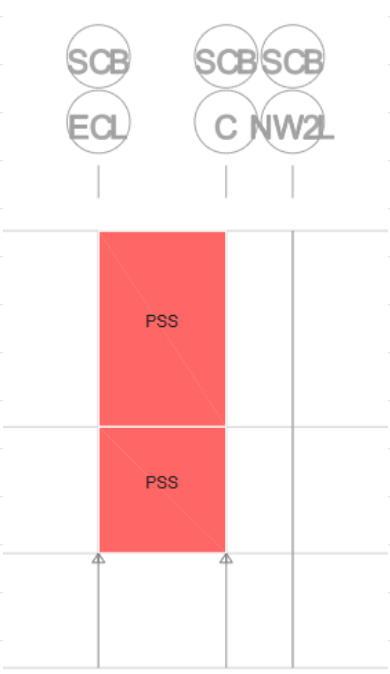
EAST CORE WEST WALL



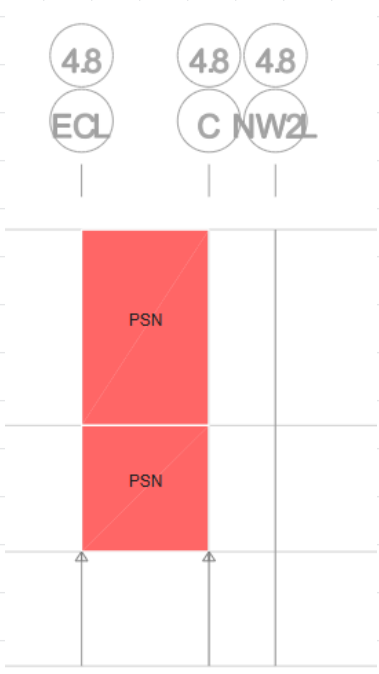
EAST CORE EAST WALL

SHEAR WALLS PIER LABELS

ETABS MODEL



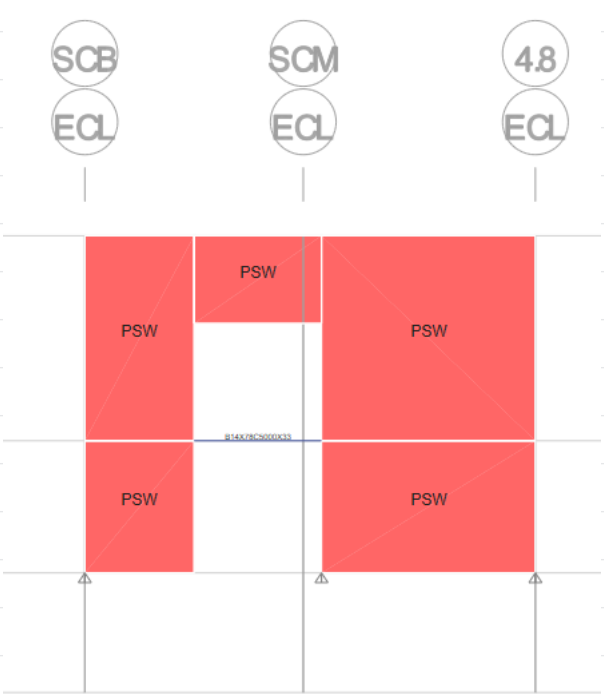
SOUTH CORE SOUTH WALL



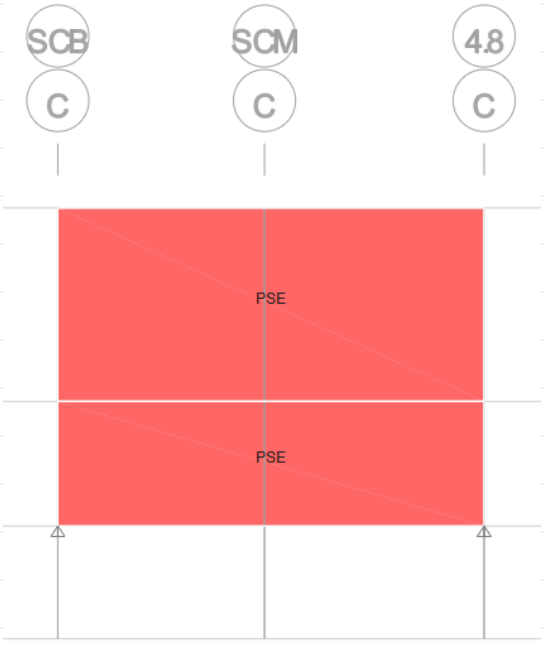
SOUTH CORE NORTH WALL

SHEAR WALLS PIER LABELS

ETABS MODEL



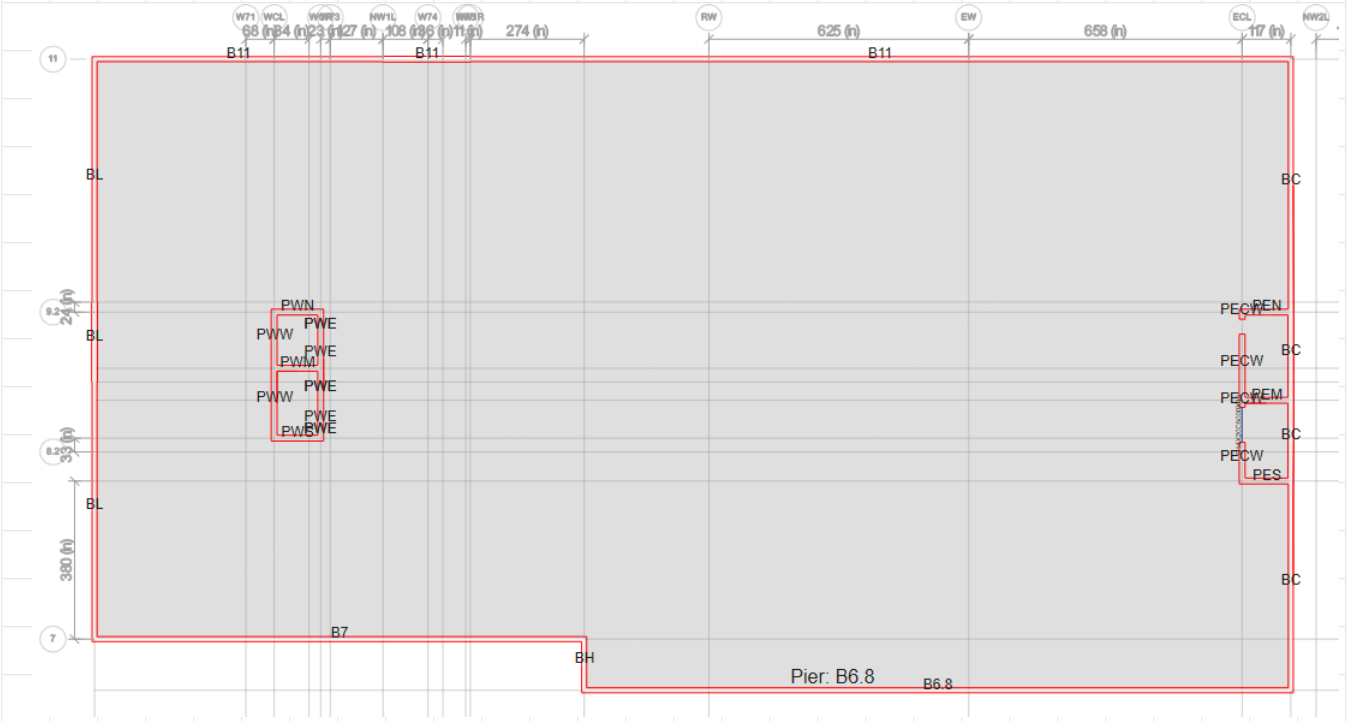
SOUTH CORE WEST WALL



SOUTH CORE EAST WALL

SHEAR WALLS PIER LABELS

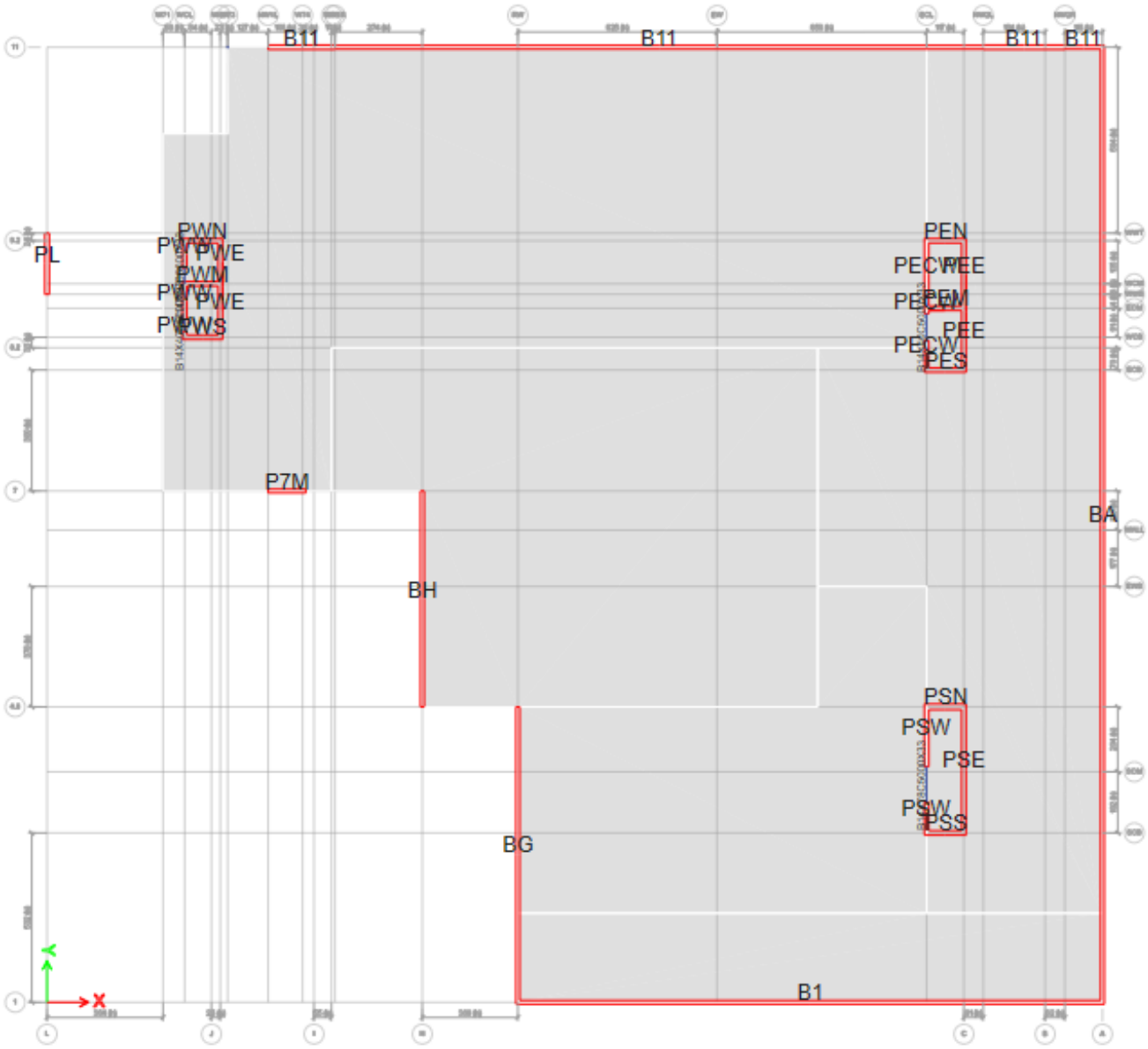
ETABS MODEL



LEVEL P1

BASEMENT WALLS PIER LABELS

ETABS MODEL



LEVEL L1

BASEMENT WALLS PIER LABELS

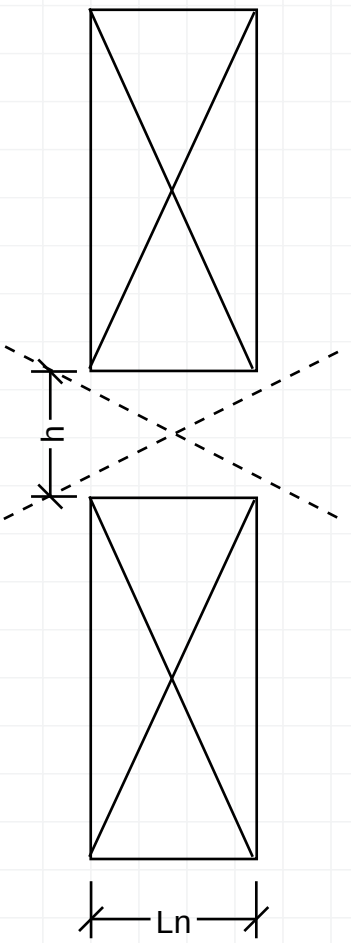
Project:	MIMU
Date Updated:	9/24/2021

Copy Down With Import Label	Pier Designations and Properties Imported from: Display -> Show Tables... -> Model -> Definitions -> Pier/Spandrel Section Properties -> Pier Section Properties (Load Case doesn't matter), k-in																	These calculations needed to be copied down to match all rows which have imported data, but not further.								fy =	60	Rebar		
																						Shear Design								
	Story	Pier																f'c	Length	Width	Area	Vu,max	K	rho,n		Reinf	Pier	Story	
			deg			in	in	in	in			in	in	in	in	in	in	ksi	ft	in	ft^2	k				in^2/ft			
PP7MSL2	L2	P7M	0	1	0	118	12	118	12	C5000X70	753	###	221	753	###	401	5	9.83	12	9.83	148	1.5	0.25%	0.36	P7M	L2	#4 @ 12" EF
PPLSL2	L2	PL	90	1	0	192	14	192	14	C5000X70	0	###	221	0	###	401	5	16.50	14	19.25	811	4.1	0.58%	0.97	PL	L2	#6 @ 8" EF
PP11WSL2	L2	P11W	0	1	0	210	14	210	14	C5000X70	799	###	221	799	###	401	5	17.50	14	20.42	701	3.4	0.43%	0.72	P11W	L2	#5 @ 8" EF
PP11ESL2	L2	P11E	0	1	0	256	14	256	14	C5000X70	###	###	221	###	###	401	5	21.33	14	24.89	1016	4.0	0.55%	0.93	P11E	L2	#5 @ 8" EF
PPESSL2	L2	PES	0	1	0	117	14	117	14	C5000X70	###	###	221	###	###	401	5	10.33	14	12.05	443	3.6	0.47%	0.80	PES	L2	#5 @ 8" EF
PPWWSL2	L2	PWW	90	8	0	303	10	303	14	C5000X70	432	###	221	432	###	401	5	25.83	10	21.68	961	4.4	0.62%	0.75	PWW	L2	#5 @ 8" EF
PPWESL2	L2	PWE	90	2	0	303	14	303	14	C5000X70	544	###	221	544	###	401	5	25.83	14	30.14	1186	3.9	0.52%	0.88	PWE	L2	#5 @ 8" EF
PPWNSL2	L2	PWN	0	1	0	112	14	112	14	C5000X70	488	###	221	488	###	401	5	9.91	14	11.57	338	2.9	0.33%	0.55	PWN	L2	#5 @ 12" EF
PPENSL2	L2	PEN	0	5	0	117	9.7	117	14	C5000X70	###	###	221	###	###	401	5	10.33	10	8.34	341	4.0	0.55%	0.64	PEN	L2	#5 @ 8" EF
PPWSSL2	L2	PWS	0	5	0	112	9.5	112	14	C5000X70	479	###	221	488	###	401	5	9.91	10	7.85	286	3.6	0.47%	0.53	PWS	L2	#5 @ 12" EF
PPECWSL2	L2	PECW	90	6	0	406	11	406	14	C5000X70	###	###	221	###	###	401	5	34.41	11	31.84	671	2.1	0.25%	0.33	PECW	L2	#4 @ 12" EF
PPEESL2	L2	PEE	90	2	0	406	14	406	14	C5000X70	###	###	221	###	###	401	5	34.41	14	40.15	909	2.2	0.25%	0.42	PEE	L2	#5 @ 12" EF
PPEMSL2	L2	PEM	0	1	0	117	14	117	14	C5000X70	###	###	221	###	###	401	5	10.33	14	12.05	503	4.1	0.57%	0.96	PEM	L2	#6 @ 8" EF
PPWMSL2	L2	PWM	0	1	0	112	14	112	14	C5000X70	488	###	221	488	###	401	5	9.91	14	11.57	415	3.5	0.46%	0.77	PWM	L2	#5 @ 8" EF
PPSWSL2	L2	PSW	90	3	0	396	10	396	14	C5000X70	###	748	221	###	730	401	5	33.58	10	28.10	713	2.5	0.25%	0.31	PSW	L2	#4 @ 12" EF
PPSESL2	L2	PSE	90	1	0	396	14	396	14	C5000X70	###	730	221	###	730	401	5	33.58	14	39.18	980	2.5	0.25%	0.42	PSE	L2	#5 @ 12" EF
PPSSSL2	L2	PSS	0	1	0	117	14	117	14	C5000X70	###	532	221	###	532	401	5	10.33	14	12.05	739	6.0	0.95%	1.59	PSS	L2	#5 @ 4" EF
PPSNSL2	L2	PSN	0	1	0	117	18	117	18	C5000X70	###	928	221	###	928	401	5	10.33	18	15.50	801	5.1	0.76%	1.65	PSN	L2	#5 @ 4" EF
PP7MSL1	L1	P7M	0	1	0	118	12	118	12	C5000X70	753	###	105	753	###	221	5	9.83	12	9.83	187	1.9	0.25%	0.36	P7M	L1	#4 @ 12" EF
PPLSL1	L1	PL	90	1	0	192	14	192	14	C5000X70	0	###	105	0	###	221	5	16.50	14	19.25	284	1.4	0.25%	0.42	PL	L1	#5 @ 12" EF
PPESSL1	L1	PES	0	1	0	117	14	117	14	C5000X70	###	###	105	###	###	221	5	10.33	14	12.05	214	1.7	0.25%	0.42	PES	L1	#5 @ 12" EF
PPWWSL1	L1	PWW	90	3	0	303	10	303	10	C5000X70	432	###	105	432	###	221	5	25.83	10	21.68	304	1.4	0.25%	0.30	PWW	L1	#4 @ 12" EF
PPWESL1	L1	PWE	90	2	0	303	14	303	14	C5000X70	544	###	105	544	###	221	5	25.83	14	30.14	382	1.2	0.25%	0.42	PWE	L1	#5 @ 12" EF
PPWNSL1	L1	PWN	0	1	0	112	14	112	14	C5000X70	488	###	105	488	###	221	5	9.91	14	11.57	212	1.8	0.25%	0.42	PWN	L1	#5 @ 12" EF
PPENSL1	L1	PEN	0	1	0	117	14	117	14	C5000X70	###	###	105	###	###	221	5	10.33	14	12.05	196	1.6	0.25%	0.42	PEN	L1	#5 @ 12" EF
PPWSSL1	L1	PWS	0	1	0	112	14	112	14	C5000X70	488	###	105	488	###	221	5	9.91	14	11.57	217	1.8	0.25%	0.42	PWS	L1	#5 @ 12" EF
PPECWSL1	L1	PECW	90	3	0	406	11	406	11	C5000X70	###	###	105	###	###	221	5	34.41	11	31.84	185	0.6	0.25%	0.33	PECW	L1	#4 @ 12" EF
PPEESL1	L1	PEE	90	2	0	406	14	406	14	C5000X70	###	###	105	###	###	221	5	34.41	14	40.15	293	0.7	0.25%	0.42	PEE	L1	#5 @ 12" EF
PPEMSL1	L1	PEM	0	1	0	117	14	117	14	C5000X70	###	###	105	###	###	221	5	10.33	14	12.05	237	1.9	0.25%	0.42	PEM	L1	#5 @ 12" EF
PPWMSL1	L1	PWM	0	1	0	112	14	112	14	C5000X70	488	###	105	488	###	221	5	9.91	14	11.57	245	2.1	0.25%	0.42	PWM	L1	#5 @ 12" EF
PPSWSL1	L1	PSW	90	2	0	396	10	396	10	C5000X70	###	748	105	###	748	221	5	33.58	10	28.10	281	1.0	0.25%	0.30	PSW	L1	#4 @ 12" EF
PPSESL1	L1	PSE	90	1	0	396	14	396	14	C5000X70	###	730	105	###	730	221	5	33.58	14	39.18	464	1.2	0.25%	0.42	PSE	L1	#5 @ 12" EF
PB11SL1	L1	B11	0	4	0	###	12	###	12	C5000X70	###	###	105	###	###	221	5	219.25	12	225.75	4955	2.2	0.25%	0.37	B11	L1	#4 @ 12" EF
PBASL1	L1	BA	90	1	0	###	12	###	12	C5000X70	###	###	105	###	###	221	5	251.00	12	251.00	3411	1.3	0.25%	0.36	BA	L1	#4 @ 12" EF
PB1SL1	L1	B1	0	1	0	###	12	###	12	C5000X70	###	0	105	###	0	221	5	153.92	12	153.92	5440	3.5	0.45%	0.64	B1	L1	#5 @ 8" EF
PBHSL1	L1	BH	90	1	0	678	12	678	12	C5000X70	###	###	105	###	###	221	5	57.50	12	57.50	1490	2.5	0.26%	0.38	BH	L1	#4 @ 12" EF
PBGSL1	L1	BG	90	1	0	928	12	928	12	C5000X70	###	464	105	###	464	221	5	78.33	12	78.33	2119	2.7	0.29%	0.41	BG	L1	#5 @ 12" EF
PPSSSL1	L1	PSS	0	1	0	117	14	117	14	C5000X70	###	532	105	###	532	221	5	10.33	14	12.05	179	1.5	0.25%	0.42	PSS	L1	#5 @ 12" EF
PPSNSL1	L1	PSN	0	1	0	117	18	117	18	C5000X70	###	928	105	###	928	221	5	10.33	18	15.50	235	1.5	0.25%	0.54	PSN	L1	#5 @ 12" EF
PPESSP1	P1	PES	0	1	0	117	14	117	14	C5000X70	###	###	0	###	###	105	5	10.33	14	12.05	63	0.5	0.25%	0.42	PES	P1	#5 @ 12" EF
PPWWSP1	P1	PWW	90	2	0	303	14	303	14	C5000X70	432	###	0	432	###	105	5	25.83	14	30.14	251	0.8	0.25%	0.42	PWW	P1	#5 @ 12" EF
PPWESP1	P1	PWE	90	8	0	303	10	303	14	C5000X70	544	###	0	544	###	105	5	25.83	10	21.68	171	0.8	0.25%	0.30	PWE	P1	#4 @ 12" EF
PPWNSP1	P1	PWN	0	1	0	112	14	112	14	C5000X70	488	###	0	488	###	105	5	9.91	14	11.57	55	0.5	0.25%	0.42	PWN	P1	#5 @ 12" EF
PPENSP1	P1	PEN	0	1	0	117	14	117	14	C5000X70	###	###	0	###	###	105	5	10.33	14	12.05	70	0.6	0.25%	0.42	PEN	P1	#5 @ 12" EF
PPWSSP1	P1	PWS	0	1	0	112	14	112	14	C5000X70	488	###	0	488	###	105	5	9.91	14	11.57	91	0.8	0.25%	0.42	PWS	P1	#5 @ 12" EF
PPECWSP1	P1	PECW	90	4	0	406	9.9	406	9.9	C5000X70	###	###	0	###	###	105	5	34.41	10	28.28	137	0.5	0.25%	0.30	PECW	P1	#4 @ 12" EF
PPEMSP1	P1	PEM	0	1	0	117	14	117	14	C5000X70	###	###	0	###	###	105	5	10.33	14	12.05	99	0.8	0.25%	0.42	PEM	P1	#5 @ 12" EF
PPWMSP1	P1	PWM	0	1	0	112	14	112	14	C5000X70	488	###	0	488	###	105	5	9.91	14	11.57	81	0.7	0.25%	0.42	PWM	P1	#5 @ 12" EF
PB11SP1	P1	B11	0	3	0	###	12	###	12	C5000X70	###	###	0	###	###	105	5	219.25	12	221.92	2853	1.3	0.25%	0.36	B11	P1	#4 @ 12" EF
PBCSP1	P1	BC	90	4	0	###	13	###	13	C5000X70	###	###	0	###	###	105	5	127.42	13	133.10	667	0.5	0.25%	0.38	BC	P1	#4 @ 12" EF
PB7SP1	P1	B7	0	1	0	###	12	###	12	C5000X70	589	###	0	589	###	105	5	99.17	12	99.17	600	0.6	0.25%	0.36	B7	P1	#4 @ 12" EF
PB6.8SP1	P1	B6.8	0	1	0	###	12	###	12	C5000X70	###	###	0	###	###	105	5	142.67	12	142.67	810	0.6	0.25%	0.36	B6.8	P1	#4 @ 12" EF
PBLSP1	P1	BL	90	3	0	###	12	###	12	C5000X70	0	###	0	0	###	105	5	117.17	12	119.86	1183	1.0	0.25%	0.37	BL	P1	#4 @ 12" EF
PBHSP1	P1	BH	90	1	0	123	12	123	12	C5000X70	###	###	0	###	###	105	5	57.50	12	57.50	50	0.1	0.25%	0.36	BH	P1	#4 @ 12" EF

BASEMENT WALLS
HORIZ REINF

COUPLING BEAMS

LINK BEAM DESIGN



fy = 60 ksi
f'c = 5 kis
b = 14"

h = 64"
Ln = 42"

$4(1)\sqrt{5000}\ bd$

$4(1)\sqrt{5000}\ (14)(61) = 242\ k$

Ln / h = 0.64 < 2 ∴ use DIAG REINF (§ACI 18.10.7.3)

$a = \tan^{-1}\left(\frac{.85(64)}{42}\right) = 44.2°$

$(Avd)_{req'd} = \frac{Vu}{\phi 2 f_y \sin(a)} = \frac{233}{.85(2)(60)(.70)}$ (ø = .85)

$= 3.26\ in^2$ ∴ (6) #8

Ver 4.0

Reinforced Concrete Beams (ACI 318-2014)

Ultimate Forces:

Mu	66	kip-ft
Vu	45	kips
Pu	0.0	kips

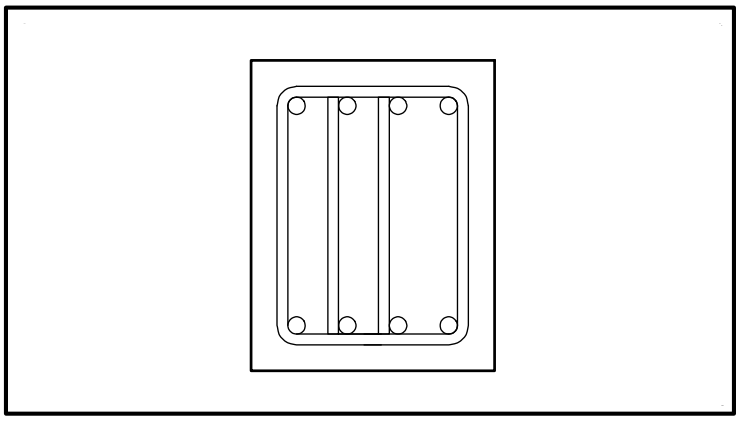
Beam ID:	**Link Beam - Type 2**
Project:	Hycroft
Date:	11/13/20
Engineer :	KAR

Reinforcement Summary

1 LAYER OF (4) #8 TENSION
1 LAYER OF (4) #8 COMPRESSION
#5 STIRRUPS @ 4 in w/ 4 VERT LEGS

Geometry:

Length	6	ft
Width	14	in
Height	18	in
Fixity Type	Fixed-Ends	
Member Type	Ductile Beam	
T-Beam Slab	0	in
B,flange	auto	auto or in
b,eff	14.0	in



Concrete:

F'c	5000	psi
β_1	0.800	
Ec	4031	ksi

Steel:

Fy	60	ksi
Es	29000	ksi
Inter-Layer Clearance	1	in
Bottom Cover	1.5	in
Side Cover	1.5	in
Consider ρ'	Yes	
As' Location	Web	

"Compression" REINF	Count	Bar Number	Depth to bar	As / bar	As / Layer	d	Diameter	Horiz Clr	Spacing Check
Extreme-most Layer	4	8	auto	0.79	3.16	2.63	1.000	1.91	(OK)
2nd Layer	0	0	auto	0.00	0.00	0.00	0.000	n/a	
3rd Layer	0	0	auto	0.00	0.00	0.00	0.000	n/a	
4th Layer	0	0	auto	0.00	0.00	0.00	0.000	n/a	
Tension REINF									
4th Layer	0	0	auto	0.00	0.00	0.00	0	n/a	
3rd Layer	0	0	auto	0.00	0.00	0.00	0	n/a	
2nd Layer	0	0	auto	0.00	0.00	0.00	0	n/a	
Extreme-most Layer	4	8	auto	0.79	3.160	15.38	1	1.91	(OK)
			in or auto	in^2	in^2	in	in	in	

Global:

d	15.38	in		d'	2.63	in	
As	3.16	in^2		As'	3.16	in^2	(OK)
As min	0.76	in^2	(OK)	ρ (rho)	1.47	%	

Internal Axial Forces:

Equilibrate
Section
Macro

s,max	9.61	in	(OK)
c	3.10	in	
Extreme Fiber Ɛs	0.0119		
ϕ	0.90	Tension Controlled	
Mn	218	kip-ft	
ϕMn	**197**	kip-ft	
Mu	**66**	kip-ft	(OK)

Strain Compatibility - Axial Force Equilibrium - Moment Capacity

Layer	depth (in)	strain	stress (ksi)	Area (in^2)	Force (kips)	Moment (k-in)
Comp Web	1.24	0.00300	4.25	34.71	148	- - -
Comp Flange						
As'1	2.63	0.00046	13.31	3.16	42	-58
As'2						
As'3						
As'4						
As4						
As3						
As2						
As1	15.38	-0.01188	-60.00	3.16	-190	2680
					Σ 0.00	2622

Transverse Shear REINF

Fy	60	ksi
Transverse Bar Mark	5	
Spacing,$_T$	4	in
# Legs,$_T$	4	Provide Tie Legs To Restrain Compression Steel Per 9.7.6.4.4
A_{VT}/layer	1.24	in^2

Shear:

Vn,max	122 kips	=	8.00*sqrt(f'c)*bw*d
Vc	0 kips	=	0.00*sqrt(f'c)*bw*d
Vs	122 kips	=	8.00*sqrt(f'c)*bw*d
ϕVn	**91** kips		
Vos	**91** kips		(OK)

Ver 3.0

Reinforced Concrete Beams (ACI 318-2014)

Ultimate Forces:

Mu	192	kip-ft
Vu	61	kips
Pu	0.0	kips

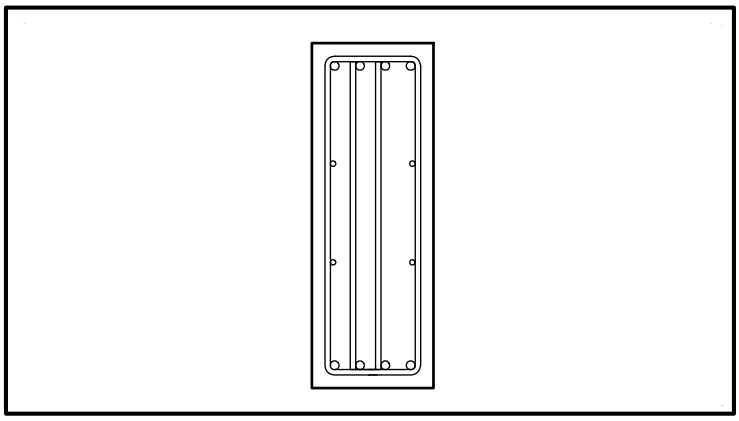
Beam ID:	**Link Beam - Type 1**
Project:	MIMU
Date:	09/28/21
Engineer :	KAR

Reinforcement Summary

1 LAYER OF (4) #8 TENSION
1 LAYER OF (4) #8 COMPRESSION
#5 STIRRUPS @ 5 in w/ 4 VERT LEGS
(2) #5 BARS EACH SIDE

Geometry:

Length	7	ft
Width	14	in
Height	40	in
Fixity Type	Fixed-Ends	
Member Type	Ductile Beam	
T-Beam Slab	0	in
B,flange	auto	auto or in
b,eff	14.0	in



Concrete:

F'c	5000	psi
β_1	0.800	
Ec	4031	ksi

Steel:

Fy	60	ksi
Es	29000	ksi
Inter-Layer Clearance	1	in
Bottom Cover	1.5	in
Side Cover	1.5	in
Consider ρ'	Yes	
As' Location	Web	

"Compression" REINF	Count	Bar Number	Depth to bar	As / bar	As / Layer	d	Diameter	Horiz Clr	Spacing Check
Extreme-most Layer	4	8	auto	0.79	3.16	2.63	1.000	1.91	(OK)
2nd Layer	0	0	auto	0.00	0.00	0.00	0.000	n/a	
3rd Layer	0	0	auto	0.00	0.00	0.00	0.000	n/a	
4th Layer	0	0	auto	0.00	0.00	0.00	0.000	n/a	
Tension REINF									
4th Layer	0	0	auto	0.00	0.00	0.00	0	n/a	
3rd Layer	0	0	auto	0.00	0.00	0.00	0	n/a	
2nd Layer	0	0	auto	0.00	0.00	0.00	0	n/a	
Extreme-most Layer	4	8	auto	0.79	3.160	37.38	1	1.91	(OK)
			in or auto	in^2	in^2	in	in	in	

Global:

d	37.38	in		d'	2.63	in	
As	3.16	in^2		As'	3.16	in^2	(OK)
As min	1.85	in^2	(OK)	ρ (rho)	0.60	%	

Internal Axial Forces:

Equilibrate
Section
Macro

s,max	9.61	in	(OK)
c	3.10	in	
Extreme Fiber Ɛs	0.0332		
ϕ	0.90	Tension Controlled	
Mn	566	kip-ft	
ϕMn	**509**	kip-ft	
Mu	**192**	kip-ft	(OK)

Strain Compatibility - Axial Force Equilibrium - Moment Capacity

Layer	depth (in)	strain	stress (ksi)	Area (in^2)	Force (kips)	Moment (k-in)
Comp Web	1.24	0.00300	4.25	34.71	148	- - -
Comp Flange						
As'1	2.63	0.00046	13.31	3.16	42	-58
As'2						
As'3						
As'4						
As4						
As3						
As2						
As1	37.38	-0.03318	-60.00	3.16	-190	6851
				Σ	0.00	6793

Transverse Shear REINF

Fy	60	ksi
Transverse Bar Mark	5	
Spacing,$_T$	5	in
# Legs,$_T$	4	Provide Tie Legs To Restrain Compression Steel Per 7.11.1
A_{VT}/layer	1.24	in^2

Shear:

Vn,max	296 kips	=	8.00*sqrt(f'c)*bw*d
Vc	0 kips	=	0.00*sqrt(f'c)*bw*d
Vs	296 kips	=	8.00*sqrt(f'c)*bw*d
ϕVn	**222** kips		
Vos	**202** kips		(OK)

LEVEL 1M

Node Coordinates

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	N1	0	0	0	
2	N2	7.25	0	0	
3	N5	0	20	0	
4	N6	7.25	20	0	
5	N7	0	10	0	
6	N8	14	0	0	
7	N9	14	14	0	
8	N10	14	20	0	
9	N11	24	0	0	
10	N12	24	20	0	
11	N13	24	10	0	
12	N12A	7.25	10	0	

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A36_L	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
2	A572Grade50_CT	29000	11154	0.3	0.65	0.49	50	1.1	58	1.2
3	A992_W	29000	11154	0.3	0.65	0.49	50	1.1	58	1.2
4	A500_42	29000	11154	0.3	0.65	0.49	42	1.3	58	1.1
5	A500_46_TS	29000	11154	0.3	0.65	0.49	46	1.2	58	1.1

General Materials Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	Plate Methodology
1	gen_Conc3NW	3155	1372	0.15	0.6	0.145	Isotropic
2	gen_Conc4NW	3644	1584	0.15	0.6	0.145	Isotropic
3	gen_Conc3LW	2085	906	0.15	0.6	0.11	Isotropic
4	gen_Conc4LW	2408	1047	0.15	0.6	0.11	Isotropic
5	gen_Alum	10600	4077	0.3	1.29	0.173	Isotropic
6	gen_Steel	29000	11154	0.3	0.65	0.49	Isotropic
7	RIGID	1e+07		0	0	0	Isotropic

Member Primary Data

	Label	I Node	J Node	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N1	N2	W8X10	Beam	Wide Flange	A992_W	Typical
2	M3	N5	N6	W8X10	Beam	Wide Flange	A992_W	Typical
3	M4	N1	N7	W10X26	Beam	Wide Flange	A992_W	Typical
4	M5	N7	N5	W10X26	Beam	Wide Flange	A992_W	Typical
5	M6	N2	N8	W8X10	Beam	Wide Flange	A992_W	Typical
6	M8	N6	N10	W8X10	Beam	Wide Flange	A992_W	Typical
7	M9	N8	N11	W8X10	Beam	Wide Flange	A992_W	Typical
8	M10	N10	N12	W8X10	Beam	Wide Flange	A992_W	Typical
9	M11	N11	N13	W10X26	Beam	Wide Flange	A992_W	Typical
10	M12	N13	N12	W10X26	Beam	Wide Flange	A992_W	Typical
11	M13	N8	N9	W10X45	Beam	Wide Flange	A992_W	Typical
12	M14	N9	N10	W10X45	Beam	Wide Flange	A992_W	Typical
13	M13A	N2	N6	W10X26	Beam	Wide Flange	A992_W	Typical

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lcomp top [ft]	Function
1	M1	W8X10	7.25	Lbyy	Lateral
2	M3	W8X10	7.25	Lbyy	Lateral
3	M4	W10X26	10	Lbyy	Lateral
4	M5	W10X26	10	Lbyy	Lateral
5	M6	W8X10	6.75	Lbyy	Lateral
6	M8	W8X10	6.75	Lbyy	Lateral
7	M9	W8X10	10	Lbyy	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [ft]	Lcomp top [ft]	Function
8	M10	W8X10	10	Lbyy	Lateral
9	M11	W10X26	10	Lbyy	Lateral
10	M12	W10X26	10	Lbyy	Lateral
11	M13	W10X45	14	Lbyy	Lateral
12	M14	W10X45	6	Lbyy	Lateral
13	M13A	W10X26	20	Lbyy	Lateral

Design Size and Code Check Parameters

	Label	Max Depth [in]	Min Depth [in]	Max Axial/Bending Chk	Max Shear Chk
1	Typical	10	9	1	1

Member Distributed Loads (BLC 8 : BLC 1 Transient Area Loads)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M4	Z	-0.199	-0.199	4.996e-16	10
2	M5	Z	-0.199	-0.199	4.441e-16	10
3	M13A	Z	-0.199	-0.199	5.551e-16	20
4	M13	Z	-0.186	-0.186	0	14
5	M14	Z	-0.186	-0.186	0	6
6	M13A	Z	-0.186	-0.186	3.553e-15	20
7	M11	Z	-0.275	-0.275	4.441e-16	10
8	M12	Z	-0.275	-0.275	4.441e-16	10
9	M13	Z	-0.275	-0.275	3.331e-15	14
10	M14	Z	-0.275	-0.275	2.665e-15	6

Member Distributed Loads (BLC 9 : BLC 2 Transient Area Loads)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M4	Z	-0.453	-0.453	4.996e-16	10
2	M5	Z	-0.453	-0.453	4.441e-16	10
3	M13A	Z	-0.453	-0.453	5.551e-16	20
4	M13	Z	-0.422	-0.422	0	14
5	M14	Z	-0.422	-0.422	0	6
6	M13A	Z	-0.422	-0.422	3.553e-15	20
7	M11	Z	-0.625	-0.625	4.441e-16	10
8	M12	Z	-0.625	-0.625	4.441e-16	10
9	M13	Z	-0.625	-0.625	3.331e-15	14
10	M14	Z	-0.625	-0.625	2.665e-15	6

Member Area Loads (BLC 1 : Dead)

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [ksf]
1	N1	N5	N6	N2	Z	B-C	-0.055
2	N2	N6	N10	N8	Z	B-C	-0.055
3	N8	N10	N12	N11	Z	B-C	-0.055

Member Area Loads (BLC 2 : Live)

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [ksf]
1	N1	N5	N6	N2	Z	B-C	-0.125
2	N2	N6	N10	N8	Z	B-C	-0.125
3	N8	N10	N12	N11	Z	B-C	-0.125

Plate Surface Loads

No Data to Print...

Basic Load Cases

	BLC Description	Category	Y Gravity	Distributed	Area(Member)
1	Dead	None	-1		3
2	Live	None			3
3	Wind	None			
4	Snow	None			
5	EQ	None			
6	Live Rf	None			
7	Wind Pos	None			
8	BLC 1 Transient Area Loads	None		10	
9	BLC 2 Transient Area Loads	None		10	

Load Combinations

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	Dead		Y	1	1						
2	Live		Y	2	1						
3	Service		Y	1	1	2	1				
4	Snow	Yes	Y	4	1						
5	Live Rf	Yes	Y	6	1						
6	Wind Pos	Yes	Y	7	1						
7	1.4D	Yes	Y	1	1.4						
8	1.2D+1.6L+.5Lr	Yes	Y	1	1.2	2	1.6	6	0.5		
9	1.2D+1.6L+.5S	Yes	Y	1	1.2	2	1.6	4	0.5		
10	1.2D+1.6Lr+.5L	Yes	Y	1	1.2	6	1.6	2	0.5		
11	1.2D+1.6Lr+.8W	Yes	Y	1	1.2	6	1.6	3	0.8		
12	1.2D+1.6S+.5L	Yes	Y	1	1.2	4	1.6	2	0.5		
13	1.2D+1.6S+.8W	Yes	Y	1	1.2	4	1.6	3	0.8		
14	1.2D+1.6W+.5L+.5Lr	Yes	Y	1	1.2	3	1.6	2	0.5	6	0.5
15	1.2D+1.6W+.5L+.5S	Yes	Y	1	1.2	3	1.6	2	0.5	4	0.5
16	1.2D+1E+.5L+.2S	Yes	Y	1	1.2	5	1	2	0.5	4	0.2
17	.9D-1.6W	Yes	Y	1	0.9	3	-1.6				
18	.9D-1E	Yes	Y	1	0.9	5	-1				
19	(.9+.2Sds)D+pQE+.5L+0.2S	Yes	Y	1	0.9	5	1	2	0.5	4	0.2
20	(.9-.2Sds)D-pQE	Yes	Y	1	0.9	5	-1				

AISC 14TH (360-10): LRFD Member Steel Code Checks

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	phi*Pnc[k]	phi*Pnt[k]	phi*Mnyy[k-ft]	phi*Mnzz[k-ft]	Cb	Eqn
1	4	M1	W8X10	0	7.25	0	7.25	y	60.828	133.2	6.119	23.486	1	H1-1b
2	4	M3	W8X10	0	7.25	0	7.25	y	60.828	133.2	6.119	23.486	1	H1-1b
3	4	M4	W10X26	0	10	0	10	y	194.001	342.45	28.125	94.78	1	H1-1b
4	4	M5	W10X26	0	10	0	10	y	194.001	342.45	28.125	94.78	1	H1-1b
5	4	M6	W8X10	0	6.75	0	6.75	y	67.521	133.2	6.119	24.628	1	H1-1b
6	4	M8	W8X10	0	6.75	0	6.75	y	67.521	133.2	6.119	24.628	1	H1-1b
7	4	M9	W8X10	0	10	0	10	y	32.789	133.2	6.119	15.96	1	H1-1b
8	4	M10	W8X10	0	10	0	10	y	32.789	133.2	6.119	15.96	1	H1-1b
9	4	M11	W10X26	0	10	0	10	y	194.001	342.45	28.125	94.78	1	H1-1b
10	4	M12	W10X26	0	10	0	10	y	194.001	342.45	28.125	94.78	1	H1-1b
11	4	M13	W10X45	0	14	0	14	y	357.968	598.5	76.125	179.028	1	H1-1b
12	4	M14	W10X45	0	6	0	6	y	544.584	598.5	76.125	205.875	1	H1-1b
13	4	M13A	W10X26	0	20	0	20	y	55.301	342.45	28.125	49.498	1	H1-1b
14	5	M1	W8X10	0	7.25	0	7.25	y	60.828	133.2	6.119	23.486	1	H1-1b
15	5	M3	W8X10	0	7.25	0	7.25	y	60.828	133.2	6.119	23.486	1	H1-1b
16	5	M4	W10X26	0	10	0	10	y	194.001	342.45	28.125	94.78	1	H1-1b
17	5	M5	W10X26	0	10	0	10	y	194.001	342.45	28.125	94.78	1	H1-1b
18	5	M6	W8X10	0	6.75	0	6.75	y	67.521	133.2	6.119	24.628	1	H1-1b
19	5	M8	W8X10	0	6.75	0	6.75	y	67.521	133.2	6.119	24.628	1	H1-1b
20	5	M9	W8X10	0	10	0	10	y	32.789	133.2	6.119	15.96	1	H1-1b
21	5	M10	W8X10	0	10	0	10	y	32.789	133.2	6.119	15.96	1	H1-1b
22	5	M11	W10X26	0	10	0	10	y	194.001	342.45	28.125	94.78	1	H1-1b

AISC 14TH (360-10): LRFD Member Steel Code Checks (Continued)

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	phi*Pnc[k]	phi*Pnt[k]	phi*Mnyy[k-ft]	phi*Mnzz[k-ft]	Cb	Eqn
23	5	M12	W10X26	0	10	0	10	y	194.001	342.45	28.125	94.78	1	H1-1b
24	5	M13	W10X45	0	14	0	14	y	357.968	598.5	76.125	179.028	1	H1-1b
25	5	M14	W10X45	0	6	0	6	y	544.584	598.5	76.125	205.875	1	H1-1b
26	5	M13A	W10X26	0	20	0	20	y	55.301	342.45	28.125	49.498	1	H1-1b
27	6	M1	W8X10	0	7.25	0	7.25	y	60.828	133.2	6.119	23.486	1	H1-1b
28	6	M3	W8X10	0	7.25	0	7.25	y	60.828	133.2	6.119	23.486	1	H1-1b
29	6	M4	W10X26	0	10	0	10	y	194.001	342.45	28.125	94.78	1	H1-1b
30	6	M5	W10X26	0	10	0	10	y	194.001	342.45	28.125	94.78	1	H1-1b
31	6	M6	W8X10	0	6.75	0	6.75	y	67.521	133.2	6.119	24.628	1	H1-1b
32	6	M8	W8X10	0	6.75	0	6.75	y	67.521	133.2	6.119	24.628	1	H1-1b
33	6	M9	W8X10	0	10	0	10	y	32.789	133.2	6.119	15.96	1	H1-1b
34	6	M10	W8X10	0	10	0	10	y	32.789	133.2	6.119	15.96	1	H1-1b
35	6	M11	W10X26	0	10	0	10	y	194.001	342.45	28.125	94.78	1	H1-1b
36	6	M12	W10X26	0	10	0	10	y	194.001	342.45	28.125	94.78	1	H1-1b
37	6	M13	W10X45	0	14	0	14	y	357.968	598.5	76.125	179.028	1	H1-1b
38	6	M14	W10X45	0	6	0	6	y	544.584	598.5	76.125	205.875	1	H1-1b
39	6	M13A	W10X26	0	20	0	20	y	55.301	342.45	28.125	49.498	1	H1-1b
40	7	M1	W8X10	0.017	0	0.004	3.625	z	60.828	133.2	6.119	32.871	2.07	H1-1b
41	7	M3	W8X10	0.017	0	0.004	3.625	z	60.828	133.2	6.119	32.871	2.087	H1-1b
42	7	M4	W10X26	0.12	10	0.012	10	z	194.001	342.45	28.125	117.375	1.668	H1-1b
43	7	M5	W10X26	0.12	0	0.012	0	z	194.001	342.45	28.125	117.375	1.666	H1-1b
44	7	M6	W8X10	0.005	6.75	0.001	6.75	y	67.521	133.2	6.119	32.871	3	H1-1b
45	7	M8	W8X10	0.021	0	0.01	3.375	z	67.521	133.2	6.119	32.871	2.935	H1-1b
46	7	M9	W8X10	0.012	10	0.002	2.604	y	32.789	133.2	6.119	32.871	2.075	H1-1b
47	7	M10	W8X10	0.015	10	0.004	5	z	32.789	133.2	6.119	32.871	2.148	H1-1b
48	7	M11	W10X26	0.166	10	0.017	10	z	194.001	342.45	28.125	117.375	1.671	H1-1b
49	7	M12	W10X26	0.166	0	0.017	0	z	194.001	342.45	28.125	117.375	1.662	H1-1b
50	7	M13	W10X45	0.157	14	0.02	14	z	357.968	598.5	76.125	205.875	1.904	H1-1b
51	7	M14	W10X45	0.157	0	0.015	0	z	544.584	598.5	76.125	205.875	1.507	H1-1b
52	7	M13A	W10X26	0.239	10	0.025	10	z	55.301	342.45	28.125	113.989	2.303	H1-1b
53	8	M1	W8X10	0.055	0	0.015	3.625	z	60.828	133.2	6.119	32.871	2.07	H1-1b
54	8	M3	W8X10	0.055	0	0.015	3.625	z	60.828	133.2	6.119	32.871	2.087	H1-1b
55	8	M4	W10X26	0.414	10	0.043	10	z	194.001	342.45	28.125	117.375	1.668	H1-1b
56	8	M5	W10X26	0.414	0	0.043	0	z	194.001	342.45	28.125	117.375	1.666	H1-1b
57	8	M6	W8X10	0.012	0	0.002	3.375	z	67.521	133.2	6.119	32.871	3	H1-1b
58	8	M8	W8X10	0.067	0	0.033	3.375	z	67.521	133.2	6.119	32.871	2.935	H1-1b
59	8	M9	W8X10	0.035	10	0.008	5	z	32.789	133.2	6.119	32.871	2.075	H1-1b
60	8	M10	W8X10	0.044	10	0.015	5	z	32.789	133.2	6.119	32.871	2.148	H1-1b
61	8	M11	W10X26	0.573	10	0.06	10	z	194.001	342.45	28.125	117.375	1.671	H1-1b
62	8	M12	W10X26	0.574	0	0.06	0	z	194.001	342.45	28.125	117.375	1.662	H1-1b
63	8	M13	W10X45	0.54	14	0.069	14	z	357.968	598.5	76.125	205.875	1.904	H1-1b
64	8	M14	W10X45	0.54	0	0.05	0	z	544.584	598.5	76.125	205.875	1.507	H1-1b
65	8	M13A	W10X26	0.826	10	0.085	10	z	55.301	342.45	28.125	113.989	2.303	H1-1b
66	9	M1	W8X10	0.055	0	0.015	3.625	z	60.828	133.2	6.119	32.871	2.07	H1-1b
67	9	M3	W8X10	0.055	0	0.015	3.625	z	60.828	133.2	6.119	32.871	2.087	H1-1b
68	9	M4	W10X26	0.414	10	0.043	10	z	194.001	342.45	28.125	117.375	1.668	H1-1b
69	9	M5	W10X26	0.414	0	0.043	0	z	194.001	342.45	28.125	117.375	1.666	H1-1b
70	9	M6	W8X10	0.012	0	0.002	3.375	z	67.521	133.2	6.119	32.871	3	H1-1b
71	9	M8	W8X10	0.067	0	0.033	3.375	z	67.521	133.2	6.119	32.871	2.935	H1-1b
72	9	M9	W8X10	0.035	10	0.008	5	z	32.789	133.2	6.119	32.871	2.075	H1-1b
73	9	M10	W8X10	0.044	10	0.015	5	z	32.789	133.2	6.119	32.871	2.148	H1-1b
74	9	M11	W10X26	0.573	10	0.06	10	z	194.001	342.45	28.125	117.375	1.671	H1-1b
75	9	M12	W10X26	0.574	0	0.06	0	z	194.001	342.45	28.125	117.375	1.662	H1-1b
76	9	M13	W10X45	0.54	14	0.069	14	z	357.968	598.5	76.125	205.875	1.904	H1-1b
77	9	M14	W10X45	0.54	0	0.05	0	z	544.584	598.5	76.125	205.875	1.507	H1-1b
78	9	M13A	W10X26	0.826	10	0.085	10	z	55.301	342.45	28.125	113.989	2.303	H1-1b
79	10	M1	W8X10	0.027	0	0.007	3.625	z	60.828	133.2	6.119	32.871	2.07	H1-1b
80	10	M3	W8X10	0.027	0	0.007	3.625	z	60.828	133.2	6.119	32.871	2.087	H1-1b

AISC 14TH (360-10): LRFD Member Steel Code Checks (Continued)

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	phi*Pnc[k]	phi*Pnt[k]	phi*Mnyy[k-ft]	phi*Mnzz[k-ft]	Cb	Eqn
81	10	M4	W10X26	0.2	10	0.021	10	z	194.001	342.45	28.125	117.375	1.668	H1-1b
82	10	M5	W10X26	0.2	0	0.021	0	z	194.001	342.45	28.125	117.375	1.666	H1-1b
83	10	M6	W8X10	0.006	0	0.001	5.344	y	67.521	133.2	6.119	32.871	3	H1-1b
84	10	M8	W8X10	0.033	0	0.016	3.375	z	67.521	133.2	6.119	32.871	2.935	H1-1b
85	10	M9	W8X10	0.018	10	0.004	5	z	32.789	133.2	6.119	32.871	2.075	H1-1b
86	10	M10	W8X10	0.023	10	0.007	5	z	32.789	133.2	6.119	32.871	2.148	H1-1b
87	10	M11	W10X26	0.277	10	0.029	10	z	194.001	342.45	28.125	117.375	1.671	H1-1b
88	10	M12	W10X26	0.277	0	0.029	0	z	194.001	342.45	28.125	117.375	1.662	H1-1b
89	10	M13	W10X45	0.261	14	0.033	14	z	357.968	598.5	76.125	205.875	1.904	H1-1b
90	10	M14	W10X45	0.261	0	0.024	0	z	544.584	598.5	76.125	205.875	1.507	H1-1b
91	10	M13A	W10X26	0.399	10	0.041	10	z	55.301	342.45	28.125	113.989	2.303	H1-1b
92	11	M1	W8X10	0.015	0	0.004	3.625	z	60.828	133.2	6.119	32.871	2.07	H1-1b
93	11	M3	W8X10	0.014	0	0.004	3.625	z	60.828	133.2	6.119	32.871	2.087	H1-1b
94	11	M4	W10X26	0.103	10	0.011	10	z	194.001	342.45	28.125	117.375	1.668	H1-1b
95	11	M5	W10X26	0.103	0	0.011	0	z	194.001	342.45	28.125	117.375	1.666	H1-1b
96	11	M6	W8X10	0.004	6.75	0.001	6.75	y	67.521	133.2	6.119	32.871	3	H1-1b
97	11	M8	W8X10	0.018	0	0.008	3.375	z	67.521	133.2	6.119	32.871	2.935	H1-1b
98	11	M9	W8X10	0.011	10	0.002	2.604	y	32.789	133.2	6.119	32.871	2.075	H1-1b
99	11	M10	W8X10	0.013	10	0.004	5	z	32.789	133.2	6.119	32.871	2.148	H1-1b
100	11	M11	W10X26	0.142	10	0.015	10	z	194.001	342.45	28.125	117.375	1.671	H1-1b
101	11	M12	W10X26	0.143	0	0.015	0	z	194.001	342.45	28.125	117.375	1.662	H1-1b
102	11	M13	W10X45	0.134	14	0.017	14	z	357.968	598.5	76.125	205.875	1.904	H1-1b
103	11	M14	W10X45	0.134	0	0.013	0	z	544.584	598.5	76.125	205.875	1.507	H1-1b
104	11	M13A	W10X26	0.205	10	0.021	10	z	55.301	342.45	28.125	113.989	2.303	H1-1b
105	12	M1	W8X10	0.027	0	0.007	3.625	z	60.828	133.2	6.119	32.871	2.07	H1-1b
106	12	M3	W8X10	0.027	0	0.007	3.625	z	60.828	133.2	6.119	32.871	2.087	H1-1b
107	12	M4	W10X26	0.2	10	0.021	10	z	194.001	342.45	28.125	117.375	1.668	H1-1b
108	12	M5	W10X26	0.2	0	0.021	0	z	194.001	342.45	28.125	117.375	1.666	H1-1b
109	12	M6	W8X10	0.006	0	0.001	5.344	y	67.521	133.2	6.119	32.871	3	H1-1b
110	12	M8	W8X10	0.033	0	0.016	3.375	z	67.521	133.2	6.119	32.871	2.935	H1-1b
111	12	M9	W8X10	0.018	10	0.004	5	z	32.789	133.2	6.119	32.871	2.075	H1-1b
112	12	M10	W8X10	0.023	10	0.007	5	z	32.789	133.2	6.119	32.871	2.148	H1-1b
113	12	M11	W10X26	0.277	10	0.029	10	z	194.001	342.45	28.125	117.375	1.671	H1-1b
114	12	M12	W10X26	0.277	0	0.029	0	z	194.001	342.45	28.125	117.375	1.662	H1-1b
115	12	M13	W10X45	0.261	14	0.033	14	z	357.968	598.5	76.125	205.875	1.904	H1-1b
116	12	M14	W10X45	0.261	0	0.024	0	z	544.584	598.5	76.125	205.875	1.507	H1-1b
117	12	M13A	W10X26	0.399	10	0.041	10	z	55.301	342.45	28.125	113.989	2.303	H1-1b
118	13	M1	W8X10	0.015	0	0.004	3.625	z	60.828	133.2	6.119	32.871	2.07	H1-1b
119	13	M3	W8X10	0.014	0	0.004	3.625	z	60.828	133.2	6.119	32.871	2.087	H1-1b
120	13	M4	W10X26	0.103	10	0.011	10	z	194.001	342.45	28.125	117.375	1.668	H1-1b
121	13	M5	W10X26	0.103	0	0.011	0	z	194.001	342.45	28.125	117.375	1.666	H1-1b
122	13	M6	W8X10	0.004	6.75	0.001	6.75	y	67.521	133.2	6.119	32.871	3	H1-1b
123	13	M8	W8X10	0.018	0	0.008	3.375	z	67.521	133.2	6.119	32.871	2.935	H1-1b
124	13	M9	W8X10	0.011	10	0.002	2.604	y	32.789	133.2	6.119	32.871	2.075	H1-1b
125	13	M10	W8X10	0.013	10	0.004	5	z	32.789	133.2	6.119	32.871	2.148	H1-1b
126	13	M11	W10X26	0.142	10	0.015	10	z	194.001	342.45	28.125	117.375	1.671	H1-1b
127	13	M12	W10X26	0.143	0	0.015	0	z	194.001	342.45	28.125	117.375	1.662	H1-1b
128	13	M13	W10X45	0.134	14	0.017	14	z	357.968	598.5	76.125	205.875	1.904	H1-1b
129	13	M14	W10X45	0.134	0	0.013	0	z	544.584	598.5	76.125	205.875	1.507	H1-1b
130	13	M13A	W10X26	0.205	10	0.021	10	z	55.301	342.45	28.125	113.989	2.303	H1-1b
131	14	M1	W8X10	0.027	0	0.007	3.625	z	60.828	133.2	6.119	32.871	2.07	H1-1b
132	14	M3	W8X10	0.027	0	0.007	3.625	z	60.828	133.2	6.119	32.871	2.087	H1-1b
133	14	M4	W10X26	0.2	10	0.021	10	z	194.001	342.45	28.125	117.375	1.668	H1-1b
134	14	M5	W10X26	0.2	0	0.021	0	z	194.001	342.45	28.125	117.375	1.666	H1-1b
135	14	M6	W8X10	0.006	0	0.001	5.344	y	67.521	133.2	6.119	32.871	3	H1-1b
136	14	M8	W8X10	0.033	0	0.016	3.375	z	67.521	133.2	6.119	32.871	2.935	H1-1b
137	14	M9	W8X10	0.018	10	0.004	5	z	32.789	133.2	6.119	32.871	2.075	H1-1b
138	14	M10	W8X10	0.023	10	0.007	5	z	32.789	133.2	6.119	32.871	2.148	H1-1b

AISC 14TH (360-10): LRFD Member Steel Code Checks (Continued)

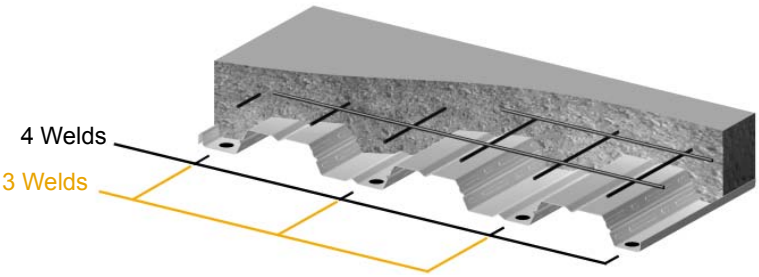
	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	phi*Pnc[k]	phi*Pnt[k]	phi*Mnyy[k-ft]	phi*Mnzz[k-ft]	Cb	Eqn
139	14	M11	W10X26	0.277	10	0.029	10	z	194.001	342.45	28.125	117.375	1.671	H1-1b
140	14	M12	W10X26	0.277	0	0.029	0	z	194.001	342.45	28.125	117.375	1.662	H1-1b
141	14	M13	W10X45	0.261	14	0.033	14	z	357.968	598.5	76.125	205.875	1.904	H1-1b
142	14	M14	W10X45	0.261	0	0.024	0	z	544.584	598.5	76.125	205.875	1.507	H1-1b
143	14	M13A	W10X26	0.399	10	0.041	10	z	55.301	342.45	28.125	113.989	2.303	H1-1b
144	15	M1	W8X10	0.027	0	0.007	3.625	z	60.828	133.2	6.119	32.871	2.07	H1-1b
145	15	M3	W8X10	0.027	0	0.007	3.625	z	60.828	133.2	6.119	32.871	2.087	H1-1b
146	15	M4	W10X26	0.2	10	0.021	10	z	194.001	342.45	28.125	117.375	1.668	H1-1b
147	15	M5	W10X26	0.2	0	0.021	0	z	194.001	342.45	28.125	117.375	1.666	H1-1b
148	15	M6	W8X10	0.006	0	0.001	5.344	y	67.521	133.2	6.119	32.871	3	H1-1b
149	15	M8	W8X10	0.033	0	0.016	3.375	z	67.521	133.2	6.119	32.871	2.935	H1-1b
150	15	M9	W8X10	0.018	10	0.004	5	z	32.789	133.2	6.119	32.871	2.075	H1-1b
151	15	M10	W8X10	0.023	10	0.007	5	z	32.789	133.2	6.119	32.871	2.148	H1-1b
152	15	M11	W10X26	0.277	10	0.029	10	z	194.001	342.45	28.125	117.375	1.671	H1-1b
153	15	M12	W10X26	0.277	0	0.029	0	z	194.001	342.45	28.125	117.375	1.662	H1-1b
154	15	M13	W10X45	0.261	14	0.033	14	z	357.968	598.5	76.125	205.875	1.904	H1-1b
155	15	M14	W10X45	0.261	0	0.024	0	z	544.584	598.5	76.125	205.875	1.507	H1-1b
156	15	M13A	W10X26	0.399	10	0.041	10	z	55.301	342.45	28.125	113.989	2.303	H1-1b
157	16	M1	W8X10	0.027	0	0.007	3.625	z	60.828	133.2	6.119	32.871	2.07	H1-1b
158	16	M3	W8X10	0.027	0	0.007	3.625	z	60.828	133.2	6.119	32.871	2.087	H1-1b
159	16	M4	W10X26	0.2	10	0.021	10	z	194.001	342.45	28.125	117.375	1.668	H1-1b
160	16	M5	W10X26	0.2	0	0.021	0	z	194.001	342.45	28.125	117.375	1.666	H1-1b
161	16	M6	W8X10	0.006	0	0.001	5.344	y	67.521	133.2	6.119	32.871	3	H1-1b
162	16	M8	W8X10	0.033	0	0.016	3.375	z	67.521	133.2	6.119	32.871	2.935	H1-1b
163	16	M9	W8X10	0.018	10	0.004	5	z	32.789	133.2	6.119	32.871	2.075	H1-1b
164	16	M10	W8X10	0.023	10	0.007	5	z	32.789	133.2	6.119	32.871	2.148	H1-1b
165	16	M11	W10X26	0.277	10	0.029	10	z	194.001	342.45	28.125	117.375	1.671	H1-1b
166	16	M12	W10X26	0.277	0	0.029	0	z	194.001	342.45	28.125	117.375	1.662	H1-1b
167	16	M13	W10X45	0.261	14	0.033	14	z	357.968	598.5	76.125	205.875	1.904	H1-1b
168	16	M14	W10X45	0.261	0	0.024	0	z	544.584	598.5	76.125	205.875	1.507	H1-1b
169	16	M13A	W10X26	0.399	10	0.041	10	z	55.301	342.45	28.125	113.989	2.303	H1-1b
170	17	M1	W8X10	0.011	0	0.003	3.625	z	60.828	133.2	6.119	32.871	2.07	H1-1b
171	17	M3	W8X10	0.011	0	0.003	3.625	z	60.828	133.2	6.119	32.871	2.087	H1-1b
172	17	M4	W10X26	0.077	10	0.008	10	z	194.001	342.45	28.125	117.375	1.668	H1-1b
173	17	M5	W10X26	0.077	0	0.008	0	z	194.001	342.45	28.125	117.375	1.666	H1-1b
174	17	M6	W8X10	0.003	6.75	0	6.75	y	67.521	133.2	6.119	32.871	3	H1-1b
175	17	M8	W8X10	0.013	0	0.006	3.375	z	67.521	133.2	6.119	32.871	2.935	H1-1b
176	17	M9	W8X10	0.008	10	0.002	2.604	y	32.789	133.2	6.119	32.871	2.075	H1-1b
177	17	M10	W8X10	0.01	10	0.003	5	z	32.789	133.2	6.119	32.871	2.148	H1-1b
178	17	M11	W10X26	0.107	10	0.011	10	z	194.001	342.45	28.125	117.375	1.671	H1-1b
179	17	M12	W10X26	0.107	0	0.011	0	z	194.001	342.45	28.125	117.375	1.662	H1-1b
180	17	M13	W10X45	0.101	14	0.013	14	z	357.968	598.5	76.125	205.875	1.904	H1-1b
181	17	M14	W10X45	0.101	0	0.009	0	z	544.584	598.5	76.125	205.875	1.507	H1-1b
182	17	M13A	W10X26	0.154	10	0.016	10	z	55.301	342.45	28.125	113.989	2.303	H1-1b
183	18	M1	W8X10	0.011	0	0.003	3.625	z	60.828	133.2	6.119	32.871	2.07	H1-1b
184	18	M3	W8X10	0.011	0	0.003	3.625	z	60.828	133.2	6.119	32.871	2.087	H1-1b
185	18	M4	W10X26	0.077	10	0.008	10	z	194.001	342.45	28.125	117.375	1.668	H1-1b
186	18	M5	W10X26	0.077	0	0.008	0	z	194.001	342.45	28.125	117.375	1.666	H1-1b
187	18	M6	W8X10	0.003	6.75	0	6.75	y	67.521	133.2	6.119	32.871	3	H1-1b
188	18	M8	W8X10	0.013	0	0.006	3.375	z	67.521	133.2	6.119	32.871	2.935	H1-1b
189	18	M9	W8X10	0.008	10	0.002	2.604	y	32.789	133.2	6.119	32.871	2.075	H1-1b
190	18	M10	W8X10	0.01	10	0.003	5	z	32.789	133.2	6.119	32.871	2.148	H1-1b
191	18	M11	W10X26	0.107	10	0.011	10	z	194.001	342.45	28.125	117.375	1.671	H1-1b
192	18	M12	W10X26	0.107	0	0.011	0	z	194.001	342.45	28.125	117.375	1.662	H1-1b
193	18	M13	W10X45	0.101	14	0.013	14	z	357.968	598.5	76.125	205.875	1.904	H1-1b
194	18	M14	W10X45	0.101	0	0.009	0	z	544.584	598.5	76.125	205.875	1.507	H1-1b
195	18	M13A	W10X26	0.154	10	0.016	10	z	55.301	342.45	28.125	113.989	2.303	H1-1b
196	19	M1	W8X10	0.024	0	0.006	3.625	z	60.828	133.2	6.119	32.871	2.07	H1-1b

AISC 14TH (360-10): LRFD Member Steel Code Checks (Continued)

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	phi*Pnc[k]	phi*Pnt[k]	phi*Mnyy[k-ft]	phi*Mnzz[k-ft]	Cb	Eqn
197	19	M3	W8X10	0.023	0	0.006	3.625	z	60.828	133.2	6.119	32.871	2.087	H1-1b
198	19	M4	W10X26	0.174	10	0.018	10	z	194.001	342.45	28.125	117.375	1.668	H1-1b
199	19	M5	W10X26	0.174	0	0.018	0	z	194.001	342.45	28.125	117.375	1.666	H1-1b
200	19	M6	W8X10	0.005	0	0.001	5.063	y	67.521	133.2	6.119	32.871	3	H1-1b
201	19	M8	W8X10	0.029	0	0.014	3.375	z	67.521	133.2	6.119	32.871	2.935	H1-1b
202	19	M9	W8X10	0.015	10	0.003	5	z	32.789	133.2	6.119	32.871	2.075	H1-1b
203	19	M10	W8X10	0.019	10	0.006	5	z	32.789	133.2	6.119	32.871	2.148	H1-1b
204	19	M11	W10X26	0.242	10	0.025	10	z	194.001	342.45	28.125	117.375	1.671	H1-1b
205	19	M12	W10X26	0.242	0	0.025	0	z	194.001	342.45	28.125	117.375	1.662	H1-1b
206	19	M13	W10X45	0.228	14	0.029	14	z	357.968	598.5	76.125	205.875	1.904	H1-1b
207	19	M14	W10X45	0.227	0	0.021	0	z	544.584	598.5	76.125	205.875	1.507	H1-1b
208	19	M13A	W10X26	0.348	10	0.036	10	z	55.301	342.45	28.125	113.989	2.303	H1-1b
209	20	M1	W8X10	0.011	0	0.003	3.625	z	60.828	133.2	6.119	32.871	2.07	H1-1b
210	20	M3	W8X10	0.011	0	0.003	3.625	z	60.828	133.2	6.119	32.871	2.087	H1-1b
211	20	M4	W10X26	0.077	10	0.008	10	z	194.001	342.45	28.125	117.375	1.668	H1-1b
212	20	M5	W10X26	0.077	0	0.008	0	z	194.001	342.45	28.125	117.375	1.666	H1-1b
213	20	M6	W8X10	0.003	6.75	0	6.75	y	67.521	133.2	6.119	32.871	3	H1-1b
214	20	M8	W8X10	0.013	0	0.006	3.375	z	67.521	133.2	6.119	32.871	2.935	H1-1b
215	20	M9	W8X10	0.008	10	0.002	2.604	y	32.789	133.2	6.119	32.871	2.075	H1-1b
216	20	M10	W8X10	0.01	10	0.003	5	z	32.789	133.2	6.119	32.871	2.148	H1-1b
217	20	M11	W10X26	0.107	10	0.011	10	z	194.001	342.45	28.125	117.375	1.671	H1-1b
218	20	M12	W10X26	0.107	0	0.011	0	z	194.001	342.45	28.125	117.375	1.662	H1-1b
219	20	M13	W10X45	0.101	14	0.013	14	z	357.968	598.5	76.125	205.875	1.904	H1-1b
220	20	M14	W10X45	0.101	0	0.009	0	z	544.584	598.5	76.125	205.875	1.507	H1-1b
221	20	M13A	W10X26	0.154	10	0.016	10	z	55.301	342.45	28.125	113.989	2.303	H1-1b

PLW2™ or W2 FORMLOK™

- 5¼ in. TOTAL SLAB DEPTH
- Light Weight Concrete (110 pcf)
  39.0 psf
- Galvanized or Phosphatized/Painted
- 2 Hour Fire Rating



Deck Weight and Section Properties

Gage	Weight (psf)		I_d for Deflection		Moment		Allowable Reactions per ft of Width (lb)					
							End Bearing			Interior Bearing		
	Galv G60	Phos/ Painted	Single Span ($in.^4/ft$)	Multiple Spans ($in.^4/ft$)	$+S_{eff}$ ($in.^3/ft$)	$-S_{eff}$ ($in.^3/ft$)	2"	3"	4"	4"	5"	6"
22	1.8	1.7	0.340	0.340	0.246	0.256	412	475	527	793	855	911
21	2.0	1.9	0.381	0.381	0.283	0.294	492	565	626	945	1018	1084
20	2.1	2.0	0.422	0.422	0.323	0.333	577	661	732	1109	1193	1269
19	2.4	2.3	0.503	0.503	0.405	0.415	765	874	966	1472	1580	1678
18	2.7	2.5	0.564	0.564	0.471	0.481	940	1071	1182	1808	1939	2056
16	3.3	3.1	0.707	0.707	0.623	0.638	1424	1613	1773	2738	2926	3097

W 2 5¼" LW

Allowable Superimposed Loads (psf)

Gage	Spans	Max. UCS[1]	Span (ft-in.)										
			7'-0"	7'-6"	8'-0"	8'-6"	9'-0"	9'-6"	10'-0"	10'-6"	11'-0"	11'-6"	12'-0"
22	1	7'-8"	347	309	240	213	190	171	154	139	125	114	103
	2	8'-11"	347	309	277	251	190	171	154	139	125	114	103
	3	9'-0"	347	309	277	251	228	171	154	139	125	114	103
21	1	8'-5"	388	345	310	242	217	195	176	159	145	132	120
	2	9'-6"	388	345	310	280	255	233	176	159	145	132	120
	3	9'-10"	388	345	310	280	255	233	176	159	145	132	120
20	1	9'-1"	400	382	343	310	282	220	199	180	164	150	137
	2	10'-2"	400	382	343	310	282	258	237	180	164	150	137
	3	10'-6"	400	382	343	310	282	258	237	218	164	150	137
19	1	9'-11"	400	400	400	372	338	309	245	223	204	186	171
	2	11'-3"	400	400	400	372	338	309	283	261	242	186	171
	3	11'-8"	400	400	400	372	338	309	283	261	242	225	171
18	1	10'-3"	400	400	400	400	385	352	323	260	237	218	200
	2	12'-2"	400	400	400	400	385	352	323	298	276	251	221
	3	12'-4"	400	400	400	400	385	352	323	298	276	251	221
16	1	11'-0"	400	400	400	400	383	350	321	296	274	215	198
	2	13'-10"	400	400	400	400	383	350	321	296	274	254	237
	3	13'-0"	400	400	400	400	383	350	321	296	274	254	237

[1] Max. UCS = Maximum Unshored Clear Span (ft-in.)

Shoring required in shaded areas to right of heavy line.

Allowable Diaphragm Shear Values, q (plf)

Gage	Welds	Span (ft-in.)										
		7'-0"	7'-6"	8'-0"	8'-6"	9'-0"	9'-6"	10'-0"	10'-6"	11'-0"	11'-6"	12'-0"
22	q3	1705	1690	1676	1664	1653	1644	1635	1627	1620	1614	1608
	q4	1833	1804	1779	1757	1737	1719	1703	1689	1676	1664	1653
21	q3	1708	1691	1676	1663	1651	1640	1631	1622	1614	1607	1601
	q4	1858	1827	1799	1775	1753	1734	1716	1700	1686	1673	1661
20	q3	1713	1694	1678	1664	1651	1639	1629	1620	1611	1604	1596
	q4	1886	1852	1822	1795	1771	1750	1731	1714	1698	1684	1671
19	q3	1730	1708	1689	1672	1657	1644	1632	1621	1611	1602	1594
	q4	1947	1907	1872	1841	1813	1788	1766	1746	1728	1711	1696
18	q3	1748	1724	1702	1684	1667	1652	1638	1626	1615	1605	1596
	q4	2002	1957	1917	1882	1852	1824	1799	1776	1756	1737	1720
16	q3	1803	1773	1746	1722	1701	1682	1666	1650	1636	1624	1612
	q4	2142	2085	2036	1992	1953	1919	1887	1859	1834	1810	1789

PLW2 and W2 FORMLOK decks with structural concrete fill may be assumed to have a Flexibility Factor, F < 1.

PCS Structural Solutions

WOOD GRAVITY

Job:	MERCER ISLAND MIXED USE	Job No.:	19-028		
Subject:	TOWNHOUSE SNOW DRIFT	Date:	9/28/2021	By:	AED

Per ASCE 7-10-Code for Buildings with Flat or Low Slope Roofs (<= 5 deg. or 1 in./ft.)
for Balanced Snow, Drift, and Rain-on-Snow Surcharge Loadings

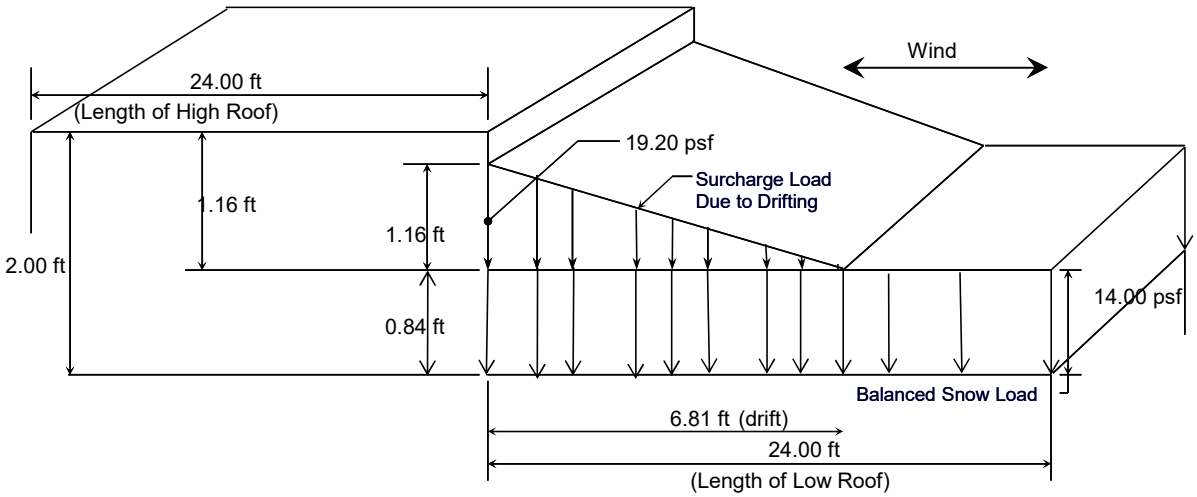
➡ **Input Data:**

Building Risk Category =	II	Table 1.5-1, page 2
Ground Snow Load, p_g =	20.00 psf	Figure 7-1, page 32 and Table 7-1, page 30,(Verify w/ local juridiction)
Roof Snow P_{fj}=	14.00 psf	As per local juridiction
Length of High Roof, L_u =	24.00 ft	Length of Roof Upwind of the Snow Drift
Length of Low Roof, L_L =	24.00 ft	Length of Roof Downwind of the Snow Drift
Obstruction Height, h_o =	2.00 ft	High Roof - Low Roof Elevations
Exposure Factor, C_e =	1	Table 7-2, page 30
Thermal Factor, C_t =	1	Table 7-3, page 30

➡ **Results:**

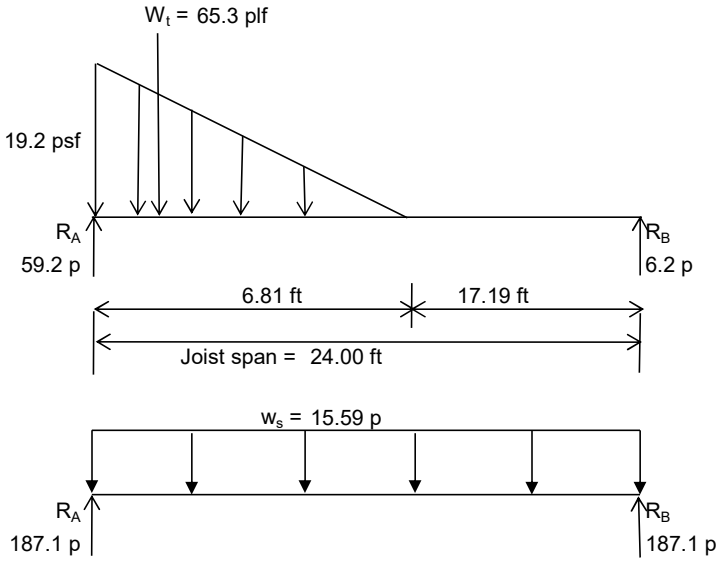
Importance Factor, I_s =	1.00	Table 1.5-2, page 5
Snow Density, g =	16.60 pcf	g = 0.13*pg+14 <= 30 (Eqn. 7.7-1, page 33)
Flat Roof Snow Load, p_f =	14.00 psf	p_f = 0.7*Ce*Ct*I_s*pg (Eqn. 7.3-1, page 29)
$p_{f(use)}$ =	14.00 psf	$p_{f(use)}$ = maximum of: pf or pfj
Balanced Snow Load Ht., h_b =	0.84 ft	h_b = pf(use)/g (Section 7.1, page 29)
Clear Height, h_c =	1.16 ft	h_c = ho-hb >= 0 (Section 7.1, page 29)
Leeward Drift Height, h_{dL} =	1.40 ft	h_{dL} = 0.43*Lu^1/3*(pg+10)^1/4-1.5, with Lu>=20' (Figure 7-9)
Windward Drift Height, h_{dw} =	1.05 ft	h_{dw} = 0.75*(0.43*LL^1/3*(pg+10)^1/4-1.5), with LL>=20'
Design Drift Height, h_d =	1.16 ft	h_d = minimum of: (maximum of: (hdL or hdw)) or hc
Ratio, h_c/h_b =	1.37	If hc/hb >= 0.2 , then snow drifts are required to be applied
Drift Length, w =	6.81 ft	If hd <= hc: w = 4*hd , if hd> hc: w = 4*hd^2/hc (Sect. 7.7.1)
Drift Length, $w_{(max)}$ =	9.25 ft	$w_{(max)}$ = minimum of: 8*hc or LL
Drift Length, $w_{(use)}$ =	6.81 ft	$w_{(use)}$ = minimum of: w or w(max)
Wt. of Drift at High End, p_d =	19.20 psf	p_d =hd*g (maximum value)
*Total Snow Load, $p_{(total)}$ =	33.20 psf	$p_{(total)}$ = pf(use)+pd

Job:	MERCER ISLAND MIXED USE	Job No.:	19-028		
Subject:	TOWNHOUSE SNOW DRIFT	Date:	9/28/2021	By:	AED



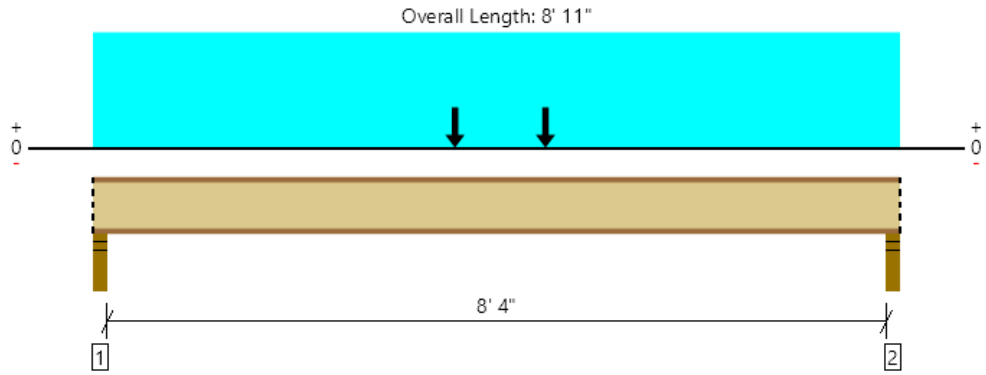
Configuration of Snow Drift on Lower Roof

➡ **Equivalent uniform load on low roof joist due to snow drift:**



Location of max. moment, L_i =	4.71 ft
Maximum moment, M_{max} =	114.80 pft
Equivalent uniform load due to drift, w_e =	1.59 psf
Total snow load on joist, w_s =	15.59 psf

Level, Res. Storage Joists
1 piece(s) 11 7/8" TJI® 110 @ 16" OC



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	983 @ 8' 8 1/2"	1375 (3.50")	Passed (71%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	924 @ 8' 7 1/2"	1560	Passed (59%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2144 @ 4' 5 7/16"	3160	Passed (68%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.085 @ 4' 5 1/2"	0.213	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.120 @ 4' 5 1/2"	0.425	Passed (L/849)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	68	45	Passed	--	--

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Weyerhaeuser Edge™ Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: 5/8" Gypsum ceiling, Pour Flooring Overlay.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - DF	3.50"	3.50"	2.02"	238	743	981	Blocking
2 - Stud wall - DF	3.50"	3.50"	2.03"	239	743	982	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	3' 10" o/c	
Bottom Edge (Lu)	8' 11" o/c	

•TJI joists are only analyzed using Maximum Allowable bracing solutions.
•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 8' 11"	16"	25.0	125.0	Default Load
2 - Point (lb)	4'	N/A	90	-	
3 - Point (lb)	5'	N/A	90	-	

Member Notes

Joists at Residential Storage

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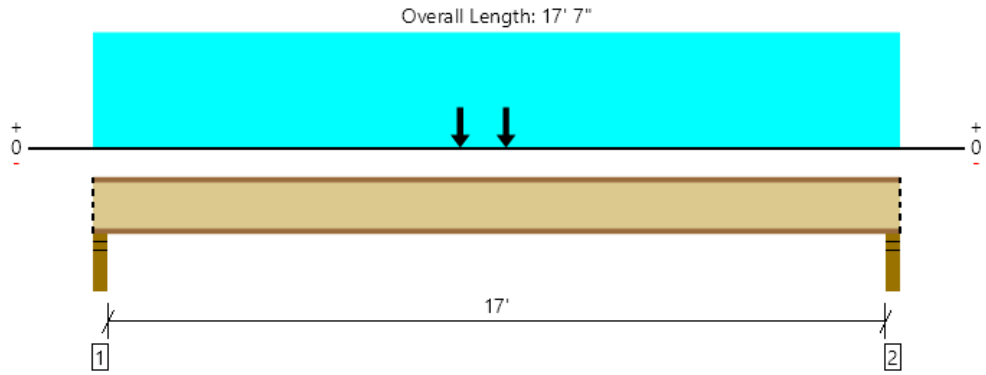
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Alex Davis PCS Structural Solutions (206) 292-5076 adavis@pcs-structural.com	

Weyerhaeuser

Level, RF J1

1 piece(s) 11 7/8" TJI® 110 @ 16" OC



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	656 @ 2 1/2"	1581 (3.50")	Passed (41%)	1.15	1.0 D + 1.0 S (All Spans)
Shear (lbs)	637 @ 3 1/2"	1794	Passed (36%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	3085 @ 8' 10 1/16"	3634	Passed (85%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.266 @ 8' 9 1/2"	0.572	Passed (L/774)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.646 @ 8' 9 1/4"	0.858	Passed (L/319)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - DF	3.50"	3.50"	1.75"	363	293	656	Blocking
2 - Stud wall - DF	3.50"	3.50"	1.75"	357	293	650	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	3' 2" o/c	
Bottom Edge (Lu)	17' 7" o/c	

•TJI joists are only analyzed using Maximum Allowable bracing solutions.
•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 17' 7"	16"	23.0	25.0	Default Load
2 - Point (lb)	8'	N/A	90	-	
3 - Point (lb)	9'	N/A	90	-	

Member Notes

16.75' SPAN

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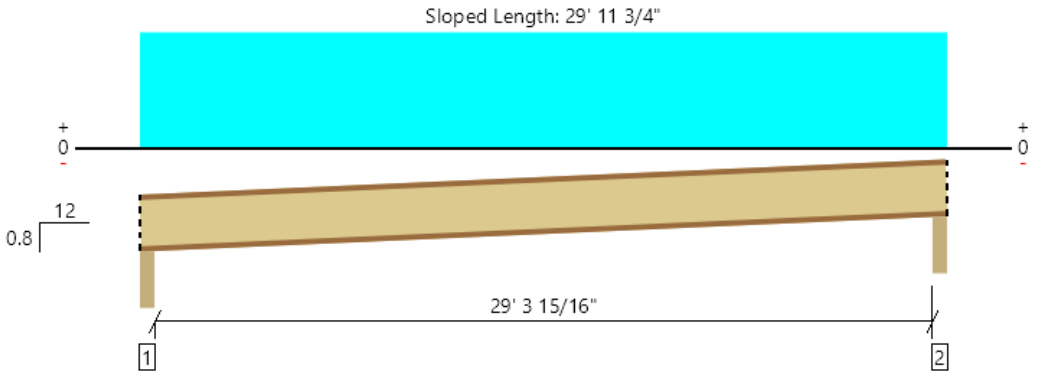
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Alex Davis PCS Structural Solutions (206) 292-5076 adavis@pcs-structural.com	

Weyerhaeuser

Level, RF SLOPED J2

1 piece(s) 11 7/8" TJI® 560 @ 16" OC



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Member Length : 30' 9/16"

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0.8/12

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	958 @ 2 1/2"	1984 (3.50")	Passed (48%)	1.15	1.0 D + 1.0 S (All Spans)
Shear (lbs)	940 @ 3 1/2"	2358	Passed (40%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	6968 @ 14' 11 1/2"	10925	Passed (64%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.952 @ 14' 11 1/2"	1.478	Passed (L/372)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	1.831 @ 14' 11 1/2"	1.971	Passed (L/194)	--	1.0 D + 1.0 S (All Spans)

- Deflection criteria: LL (L/240) and TL (L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Beveled Plate - DF	3.50"	3.50"	1.75"	460	499	959	Blocking
2 - Beveled Plate - DF	3.50"	3.50"	1.75"	460	499	959	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6' 7" o/c	
Bottom Edge (Lu)	30' o/c	

•TJI joists are only analyzed using Maximum Allowable bracing solutions.
•Maximum allowable bracing intervals based on applied load.

Vertical Load	Location	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 29' 10 15/16"	16"	23.0	25.0	Default Load

Member Notes

29.33' SPAN

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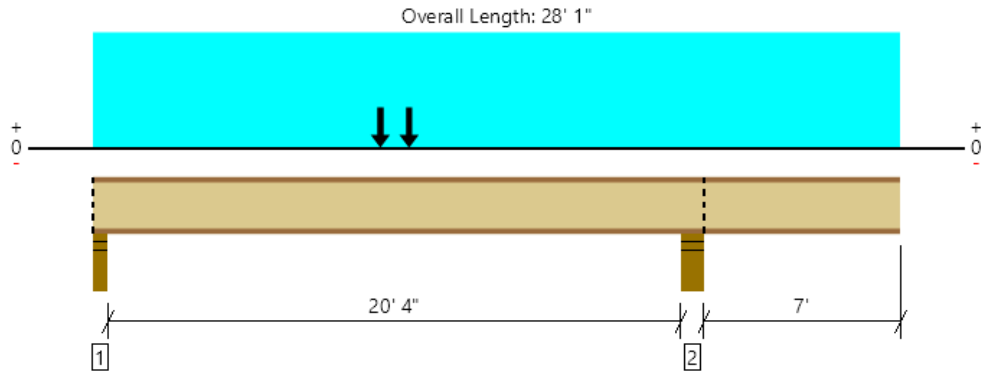
ForteWEB Software Operator	Job Notes
Alex Davis PCS Structural Solutions (206) 292-5076 adavis@pcs-structural.com	

Weyerhaeuser

Level, RF J4

1 piece(s) 11 7/8" TJI® 560 @ 24" OC



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1011 @ 2 1/2"	1984 (3.50")	Passed (51%)	1.15	1.0 D + 1.0 S (Alt Spans)
Shear (lbs)	1125 @ 20' 7 1/2"	2358	Passed (48%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	5105 @ 10'	10925	Passed (47%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.315 @ 10' 3 1/2"	0.688	Passed (L/786)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	0.665 @ 10' 2 9/16"	1.032	Passed (L/372)	--	1.0 D + 1.0 S (Alt Spans)

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Upward deflection on right cantilever exceeds 0.4".

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - DF	3.50"	3.50"	1.75"	516	495	1011	Blocking
2 - Stud wall - DF	5.50"	5.50"	3.50"	955	941	1896	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	7' 10" o/c	
Bottom Edge (Lu)	11' 4" o/c	

•TJI joists are only analyzed using Maximum Allowable bracing solutions.
•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 28' 1"	24"	23.0	25.0	Default Load
2 - Point (lb)	10'	N/A	90	-	
3 - Point (lb)	11'	N/A	90	-	

Member Notes

7' cantilever

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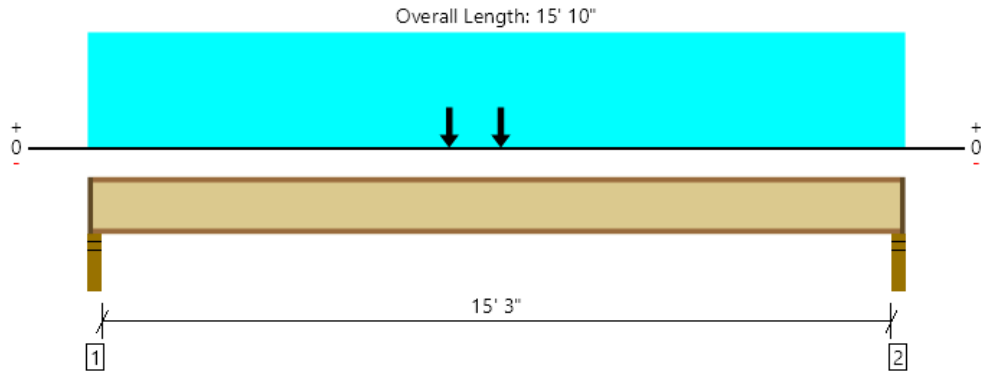
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Alex Davis PCS Structural Solutions (206) 292-5076 adavis@pcs-structural.com	

Weyerhaeuser

Level, J1

1 piece(s) 11 7/8" TJI® 110 @ 16" OC



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	772 @ 2 1/2"	1041 (2.25")	Passed (74%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	756 @ 3 1/2"	1560	Passed (48%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	3224 @ 7' 11 11/16"	3160	Passed (102%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.230 @ 7' 11"	0.385	Passed (L/803)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.456 @ 7' 10 11/16"	0.771	Passed (L/406)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	50	45	Passed	--	--

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Weyerhaeuser Edge™ Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: 5/8" Gypsum ceiling, Pour Flooring Overlay.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - DF	3.50"	2.25"	1.75"	359	422	781	1 1/4" Rim Board
2 - Stud wall - DF	3.50"	2.25"	1.75"	349	422	771	1 1/4" Rim Board

• Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	3' o/c	
Bottom Edge (Lu)	15' 8" o/c	

•TJI joists are only analyzed using Maximum Allowable bracing solutions.
•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 15' 10"	16"	25.0	40.0	Default Load
2 - Point (lb)	7'	N/A	90	-	
3 - Point (lb)	8'	N/A	90	-	

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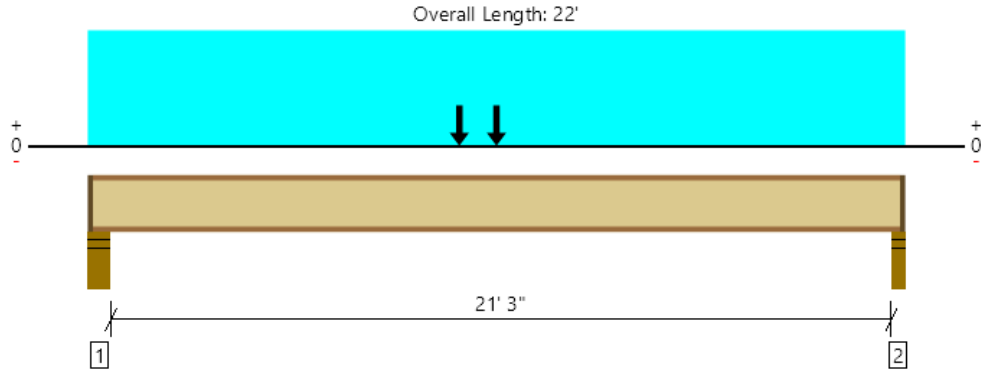
ForteWEB Software Operator	Job Notes
Alex Davis PCS Structural Solutions (206) 292-5076 adavis@pcs-structural.com	

Weyerhaeuser

Level, J2

1 piece(s) 11 7/8" TJI® 560 @ 12" OC



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	788 @ 21' 9 1/2"	1396 (2.25")	Passed (56%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	786 @ 5 1/2"	2050	Passed (38%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4645 @ 11'	9500	Passed (49%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.304 @ 11' 1"	0.535	Passed (L/844)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.599 @ 11'	1.071	Passed (L/429)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	45	45	Passed	--	--

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Weyerhaeuser Edge™ Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: 5/8" Gypsum ceiling, Pour Flooring Overlay.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - DF	5.50"	4.25"	1.75"	372	443	815	1 1/4" Rim Board
2 - Stud wall - DF	3.50"	2.25"	1.75"	358	437	795	1 1/4" Rim Board

• Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	8' 2" o/c	
Bottom Edge (Lu)	21' 10" o/c	

•TJI joists are only analyzed using Maximum Allowable bracing solutions.
•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 22'	12"	25.0	40.0	Default Load
2 - Point (lb)	10'	N/A	90	-	
3 - Point (lb)	11'	N/A	90	-	

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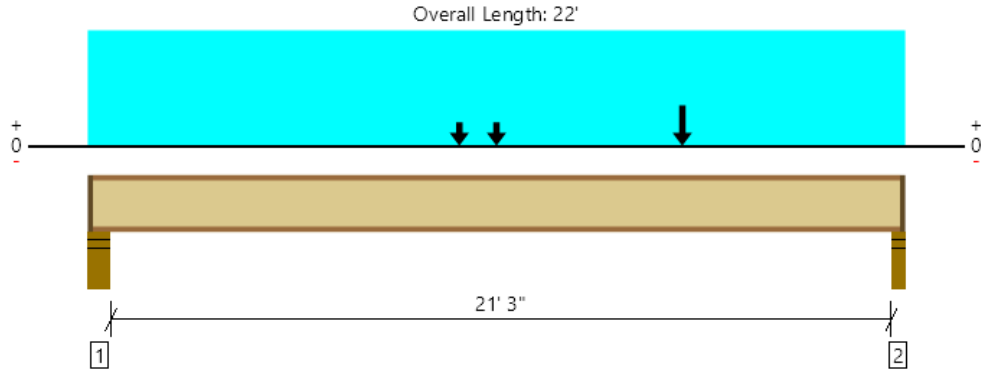
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Alex Davis PCS Structural Solutions (206) 292-5076 adavis@pcs-structural.com	

Weyerhaeuser

Level, J2 @ Lofts
1 piece(s) 11 7/8" TJI® 560 @ 12" OC



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	978 @ 21' 9 1/2"	1396 (2.25")	Passed (70%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	965 @ 21' 8 1/2"	2050	Passed (47%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	5392 @ 11'	9500	Passed (57%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.350 @ 11' 2 13/16"	0.535	Passed (L/734)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.706 @ 11' 2 3/4"	1.071	Passed (L/364)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	45	45	Passed	--	--

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Weyerhaeuser Edge™ Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: 5/8" Gypsum ceiling, Pour Flooring Overlay.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - DF	5.50"	4.25"	1.75"	413	473	886	1 1/4" Rim Board
2 - Stud wall - DF	3.50"	2.25"	1.75"	467	517	984	1 1/4" Rim Board

• Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	7' 6" o/c	
Bottom Edge (Lu)	21' 10" o/c	

•TJI joists are only analyzed using Maximum Allowable bracing solutions.
•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 22'	12"	25.0	40.0	Default Load
2 - Point (PLF)	16'	12"	150.0	110.0	
3 - Point (lb)	10'	N/A	90	-	
4 - Point (lb)	11'	N/A	90	-	

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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Alex Davis PCS Structural Solutions (206) 292-5076 adavis@pcs-structural.com	

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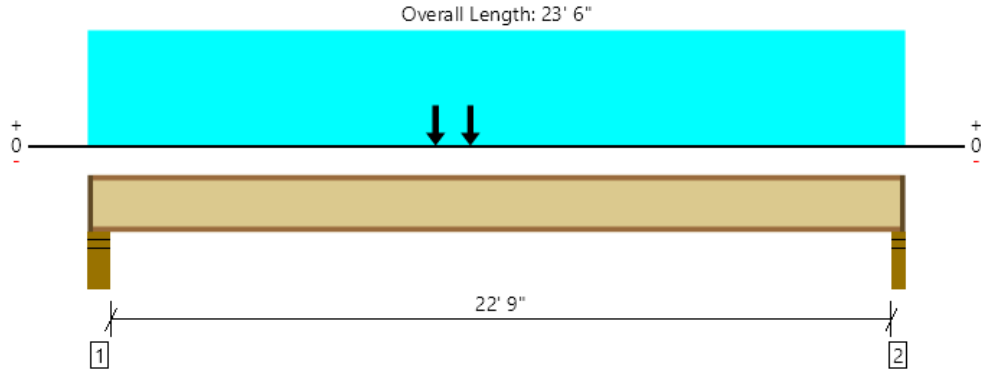
Level, J3

2 piece(s) 11 7/8" TJI® 560 @ 16" OC



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1082 @ 23' 3 1/2"	2793 (2.25")	Passed (39%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1086 @ 5 1/2"	4100	Passed (26%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	6637 @ 11'	19000	Passed (35%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.269 @ 11' 10"	0.573	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.500 @ 11' 9 3/8"	1.146	Passed (L/550)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	47	45	Passed	--	--

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Weyerhaeuser Edge™ Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: 5/8" Gypsum ceiling, Pour Flooring Overlay.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - DF	5.50"	4.25"	1.75"	495	631	1126	1 1/4" Rim Board
2 - Stud wall - DF	3.50"	2.25"	1.75"	468	622	1090	1 1/4" Rim Board

• Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	9' 9" o/c	
Bottom Edge (Lu)	23' 4" o/c	

•TJI joists are only analyzed using Maximum Allowable bracing solutions.
•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 23' 6"	16"	25.0	40.0	Default Load
2 - Point (lb)	10'	N/A	90	-	
3 - Point (lb)	11'	N/A	90	-	

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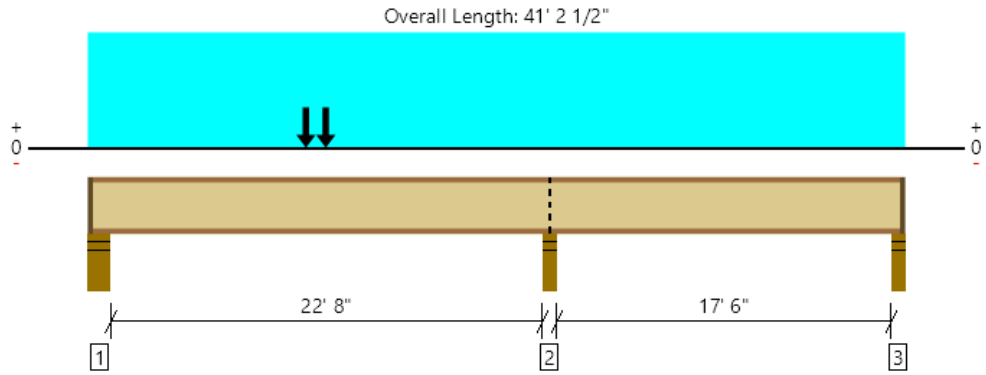
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Alex Davis PCS Structural Solutions (206) 292-5076 adavis@pcs-structural.com	

Weyerhaeuser

Level, J4

2 piece(s) 11 7/8" TJI® 560 @ 16" OC



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2360 @ 23' 3 1/4"	6000 (3.50")	Passed (39%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1236 @ 23' 1 1/2"	4510	Passed (27%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	-5117 @ 23' 3 1/4"	19000	Passed (27%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.187 @ 11' 1"	0.572	Passed (L/999+)	--	1.0 D + 1.0 L (Alt Spans)
Total Load Defl. (in)	0.328 @ 11'	1.145	Passed (L/838)	--	1.0 D + 1.0 L (Alt Spans)
TJ-Pro™ Rating	48	45	Passed	--	--

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Weyerhaeuser Edge™ Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: 5/8" Gypsum ceiling, Pour Flooring Overlay.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - DF	5.50"	4.25"	1.75"	389	545/-34	934/-34	1 1/4" Rim Board
2 - Stud wall - DF	3.50"	3.50"	3.50"	988	1372	2360	Blocking
3 - Stud wall - DF	3.50"	2.25"	1.75"	176	432/-106	608/-106	1 1/4" Rim Board

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.
- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	11' 9" o/c	
Bottom Edge (Lu)	11' 2" o/c	

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 41' 2 1/2"	16"	25.0	40.0	Default Load
2 - Point (lb)	11'	N/A	90	-	
3 - Point (lb)	12'	N/A	90	-	

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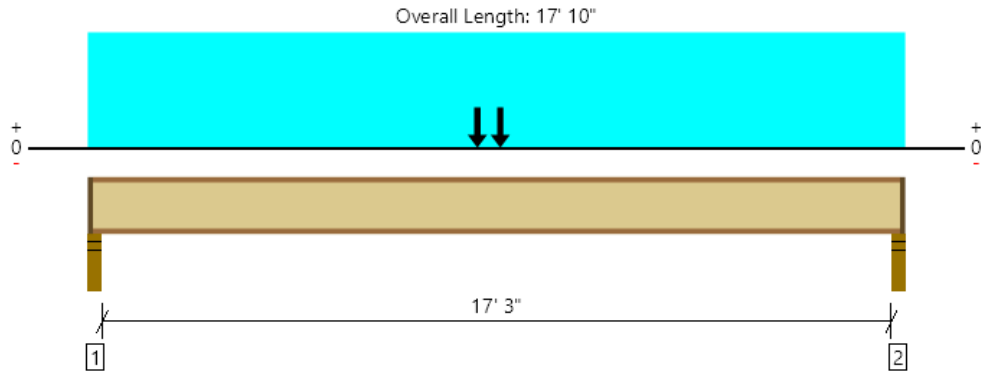
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Alex Davis PCS Structural Solutions (206) 292-5076 adavis@pcs-structural.com	

Weyerhaeuser

Level, J5

1 piece(s) 11 7/8" TJI® 360 @ 16" OC



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	855 @ 2 1/2"	1202 (2.25")	Passed (71%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	839 @ 3 1/2"	1705	Passed (49%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4047 @ 8' 11 1/4"	6180	Passed (65%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.259 @ 8' 11"	0.435	Passed (L/808)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.503 @ 8' 10 7/8"	0.871	Passed (L/416)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	48	45	Passed	--	--

System : Floor
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Weyerhaeuser Edge™ Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: 5/8" Gypsum ceiling, Pour Flooring Overlay.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - DF	3.50"	2.25"	1.75"	389	476	865	1 1/4" Rim Board
2 - Stud wall - DF	3.50"	2.25"	1.75"	385	476	861	1 1/4" Rim Board

• Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	4' 7" o/c	
Bottom Edge (Lu)	17' 8" o/c	

•TJI joists are only analyzed using Maximum Allowable bracing solutions.
•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 17' 10"	16"	25.0	40.0	Default Load
2 - Point (lb)	8' 6"	N/A	90	-	
3 - Point (lb)	9'	N/A	90	-	

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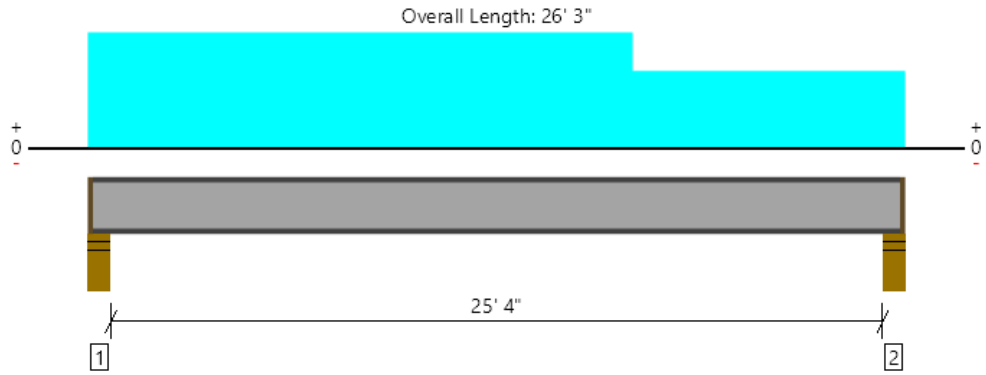
ForteWEB Software Operator	Job Notes
Alex Davis PCS Structural Solutions (206) 292-5076 adavis@pcs-structural.com	

Weyerhaeuser

Level, WF @ Loft
1 piece(s) W10X68 (A992) ASTM Steel



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	17447 @ 4"	26828 (4.25")	Passed (65%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	16823 @ 5 1/2"	97760	Passed (17%)	--	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	104949 @ 12' 8 3/16"	170761	Passed (61%)	--	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.624 @ 12' 11 15/16"	0.640	Passed (L/492)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	1.072 @ 13' 1/16"	1.279	Passed (L/286)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Applicable calculations are based on ANSI/AISC 360-16.
- A lateral-torsional buckling factor (Cb) of 1.0 has been assumed.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - DF	5.50"	4.25"	4.25"	7255	10192	17447	1 1/4" Rim Board
2 - Stud wall - DF	5.50"	4.25"	4.25"	6246	8577	14823	1 1/4" Rim Board

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	End Bearing Points	
Bottom Edge (Lu)	End Bearing Points	

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	1 1/4" to 26' 1 3/4"	N/A	68.0	--	
1 - Uniform (PSF)	0 to 26' 3"	13' 4 1/2"	25.0	40.0	Default Load
2 - Uniform (PSF)	0 to 17' 6"	6' 9"	25.0	40.0	

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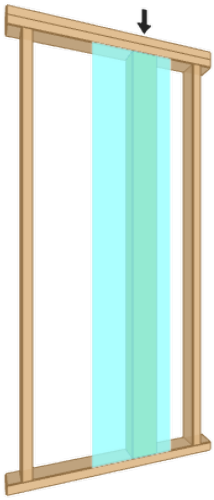
Level, Loft WF Support

1 piece(s) 5 1/4" x 5 1/4" 1.8E Parallam® PSL

Wall Height: 10' Member Height: 9' 7 1/2" Tributary Width: 1'



Drawing is Conceptual

Design Results	Actual	Allowed	Result	LDF	Load: Combination
Slenderness	19	50	Passed (37%)	--	--
Compression (lbs)	17447	48128	Passed (36%)	1.00	1.0 D + 1.0 L
Plate Bearing (lbs)	17447	17227	Passed (101%)	--	1.0 D + 1.0 L
Lateral Reaction (lbs)	71	--	--	1.60	1.0 D + 0.6 W
Lateral Shear (lbs)	65	6762	Passed (1%)	1.60	1.0 D + 0.6 W
Lateral Moment (ft-lbs)	172 @ mid-span	8812	Passed (2%)	1.60	1.0 D + 0.6 W
Total Deflection (in)	0.11 @ mid-span	0.96	Passed (L/1007)	--	1.0 D + 1.0 L
Bending/Compression	0.48	1	Passed (48%)	1.00	1.0 D + 1.0 L

- Lateral deflection criteria: Wind (L/120)
- Input axial load eccentricity for this design is 16.67% of applicable member side dimension.
- Applicable calculations are based on NDS.
- Bearing shall be on a metal plate or strap, or on other equivalently durable, rigid, homogeneous material with sufficient stiffness to distribute applied load.
- This product has a square cross section. The analysis engine has checked both edge and plank orientations to allow for either installation.

Supports	Type	Material
Top	Dbl 2X	Douglas Fir-Larch
Base	2X	Douglas Fir-Larch

System : Wall
Member Type : Column
Building Code : IBC 2015
Design Methodology : ASD

Max Unbraced Length	Comments
8'	

Lateral Connections

Supports	Connector	Type/Model	Quantity	Connector Nailing
Top	Nails	8d x 2.5" Box (Toe)	1	N/A
Base	Nails	8d x 2.5" Box (Toe)	1	N/A

- Nailed connection at the top of the member is assumed to be nailed through the bottom 2x plate prior to placement of the top 2x of the double top plate assembly.

Vertical Load	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
1 - Point (lb)	N/A	7255	10192	Default Load

Lateral Load	Location	Tributary Width	Wind (1.60)	Comments
1 - Uniform (PSF)	Full Length	1'	24.7	

- ASCE/SEI 7 Sec. 30.4: Exposure Category (B), Mean Roof Height (33'), Topographic Factor (1.0), Wind Directionality Factor (0.85), Basic Wind Speed (115), Risk Category(II), Effective Wind Area determined using full member span and trib. width.
- IBC Table 1604.3, footnote f: Deflection checks are performed using 42% of this lateral wind load.

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ForteWEB Software Operator	Job Notes
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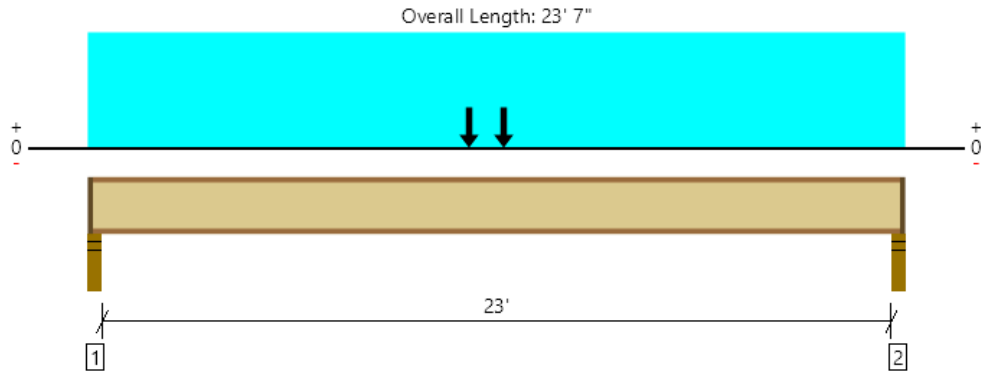
Weyerhaeuser

Level, RF FLAT J2 w/ PV
1 piece(s) 11 7/8" TJI® 560 @ 24" OC



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1214 @ 2 1/2"	1606 (2.25")	Passed (76%)	1.15	1.0 D + 1.0 S (All Spans)
Shear (lbs)	1196 @ 3 1/2"	2358	Passed (51%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	7438 @ 11' 9 13/16"	10925	Passed (68%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.561 @ 11' 9 1/2"	1.158	Passed (L/495)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	1.219 @ 11' 9 3/8"	1.544	Passed (L/228)	--	1.0 D + 1.0 S (All Spans)

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Stud wall - DF	3.50"	2.25"	1.75"	635	590	1225	1 1/4" Rim Board
2 - Stud wall - DF	3.50"	2.25"	1.75"	630	590	1220	1 1/4" Rim Board

• Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6' 4" o/c	
Bottom Edge (Lu)	23' 5" o/c	

•TJI joists are only analyzed using Maximum Allowable bracing solutions.
•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 23' 7"	24"	23.0	25.0	Default Load
2 - Point (lb)	11'	N/A	90	-	
3 - Point (lb)	12'	N/A	90	-	

Member Notes

23' SPAN

Weyerhaeuser Notes

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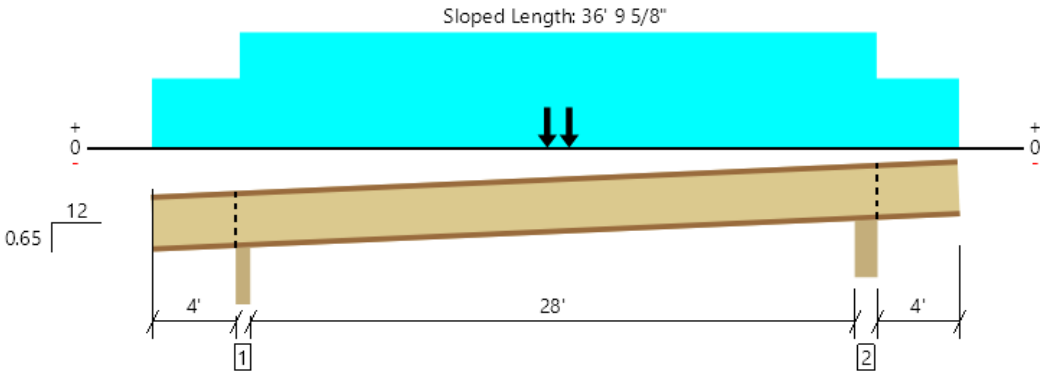
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Alex Davis PCS Structural Solutions (206) 292-5076 adavis@pcs-structural.com	

Weyerhaeuser

Level, Townhome RF J4

2 piece(s) 11 7/8" TJI® 560 @ 16" OC



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Member Length : 36' 10 5/16"

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0.65/12

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1815 @ 4' 1 3/4"	6910 (3.50")	Passed (26%)	1.15	1.0 D + 1.0 S (Adj Spans)
Shear (lbs)	1518 @ 4' 3 1/2"	4715	Passed (32%)	1.15	1.0 D + 1.0 S (Adj Spans)
Moment (Ft-lbs)	11663 @ 18' 3 13/16"	21850	Passed (53%)	1.15	1.0 D + 1.0 S (Alt Spans)
Live Load Defl. (in)	0.394 @ 18' 4"	0.947	Passed (L/865)	--	1.0 D + 1.0 S (Alt Spans)
Total Load Defl. (in)	1.393 @ 18' 4 1/16"	1.421	Passed (L/245)	--	1.0 D + 1.0 S (Alt Spans)

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240). Upward deflection on left and right cantilevers exceeds overhang deflection criteria.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Upward deflection on left and right cantilevers exceeds 0.4".

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Snow	Total	
1 - Beveled Plate - DF	3.50"	3.50"	3.50"	1233	581	1814	Blocking
2 - Beveled Plate - DF	5.50"	5.50"	3.50"	1255	587	1842	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	7' 3" o/c	
Bottom Edge (Lu)	14' 7" o/c	

•TJI joists are only analyzed using Maximum Allowable bracing solutions.
•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Spacing	Dead (0.90)	Snow (1.15)	Comments
1 - Uniform (PSF)	4' to 33'	16"	55.0	25.0	Default Load
2 - Uniform (PLF)	0 to 4'	N/A	23.0	25.0	
3 - Uniform (PLF)	33' to 36' 9"	N/A	23.0	25.0	
4 - Point (lb)	18'	N/A	90	-	
5 - Point (lb)	19'	N/A	90	-	

Member Notes

7' cantilever

Weyerhaeuser Notes

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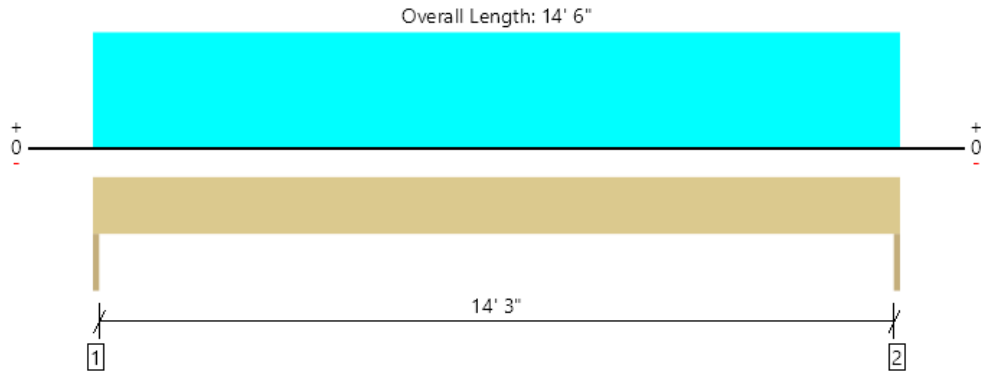
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Alex Davis PCS Structural Solutions (206) 292-5076 adavis@pcs-structural.com	

Weyerhaeuser

Level, Rim 1

1 piece(s) 1 1/2" x 11 7/8" 1.5E TimberStrand® LSL



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1308 @ 0	1406 (1.50")	Passed (93%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1107 @ 1' 1 3/8"	5997	Passed (18%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4742 @ 7' 3"	6616	Passed (72%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.136 @ 7' 3"	0.483	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.612 @ 7' 3"	0.725	Passed (L/284)	--	1.0 D + 1.0 L (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Plate - DF	1.50"	1.50"	1.50"	1018	290	1308	None
2 - Plate - DF	1.50"	1.50"	1.50"	1018	290	1308	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	3' 10" o/c	
Bottom Edge (Lu)	14' 6" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 14' 6"	N/A	5.4	--	
1 - Uniform (PSF)	0 to 14' 6"	1'	25.0	40.0	Default Load
2 - Uniform (PLF)	0 to 14' 6"	N/A	110.0	-	

Member Notes

Longest Span

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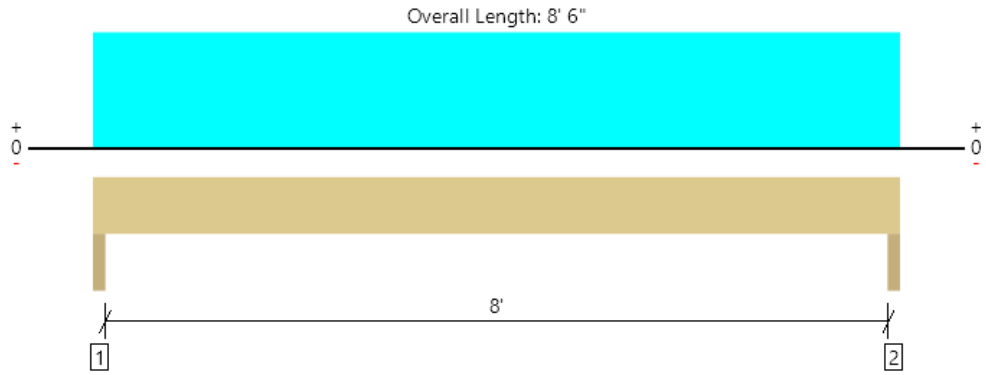
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Alex Davis PCS Structural Solutions (206) 292-5076 adavis@pcs-structural.com	

Weyerhaeuser

Level, Rim 2

1 piece(s) 3 1/2" x 11 7/8" 2.0E Parallam® PSL



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	3653 @ 1 1/2"	6563 (3.00")	Passed (56%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	2587 @ 1' 2 7/8"	8035	Passed (32%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	7312 @ 4' 3"	19902	Passed (37%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.059 @ 4' 3"	0.275	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.112 @ 4' 3"	0.412	Passed (L/884)	--	1.0 D + 1.0 L (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Plate - DF	3.00"	3.00"	1.67"	1726	1926	3652	None
2 - Plate - DF	3.00"	3.00"	1.67"	1726	1926	3652	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	8' 6" o/c	
Bottom Edge (Lu)	8' 6" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 8' 6"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 8' 6"	11' 3 15/16"	25.0	40.0	Default Load
2 - Uniform (PLF)	0 to 8' 6"	N/A	110.0	-	

Member Notes

Worst Case Load & Span

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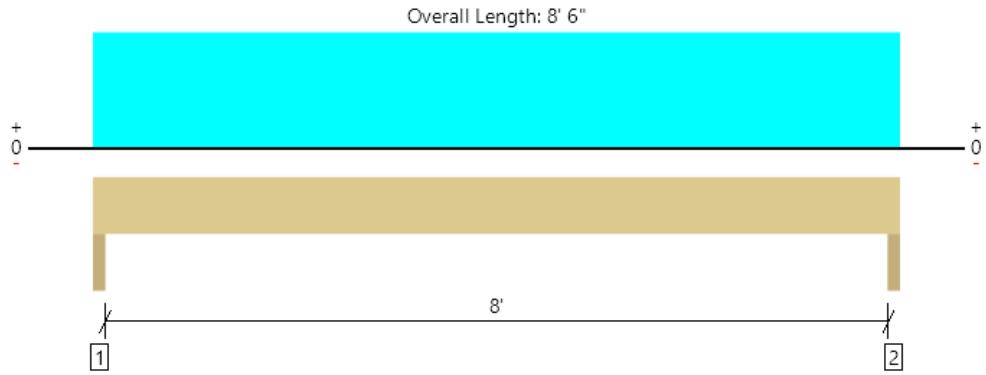
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Alex Davis PCS Structural Solutions (206) 292-5076 adavis@pcs-structural.com	

Weyerhaeuser

Level, Rim 3

1 piece(s) 1 1/2" x 11 7/8" 1.5E TimberStrand® LSL



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2563 @ 1 1/2"	2813 (3.00")	Passed (91%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1815 @ 1' 2 7/8"	5997	Passed (30%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	5130 @ 4' 3"	6616	Passed (78%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.122 @ 4' 3"	0.275	Passed (L/814)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.244 @ 4' 3"	0.412	Passed (L/405)	--	1.0 D + 1.0 L (All Spans)

System : Wall
Member Type : Header
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Plate - DF	3.00"	3.00"	2.73"	1288	1275	2563	None
2 - Plate - DF	3.00"	3.00"	2.73"	1288	1275	2563	None

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	3' 5" o/c	
Bottom Edge (Lu)	8' 6" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	0 to 8' 6"	N/A	5.4	--	
1 - Uniform (PSF)	0 to 8' 6"	7' 6"	25.0	40.0	Default Load
2 - Uniform (PLF)	0 to 8' 6"	N/A	110.0	-	

Member Notes

J1 Joists Framing Into Rim

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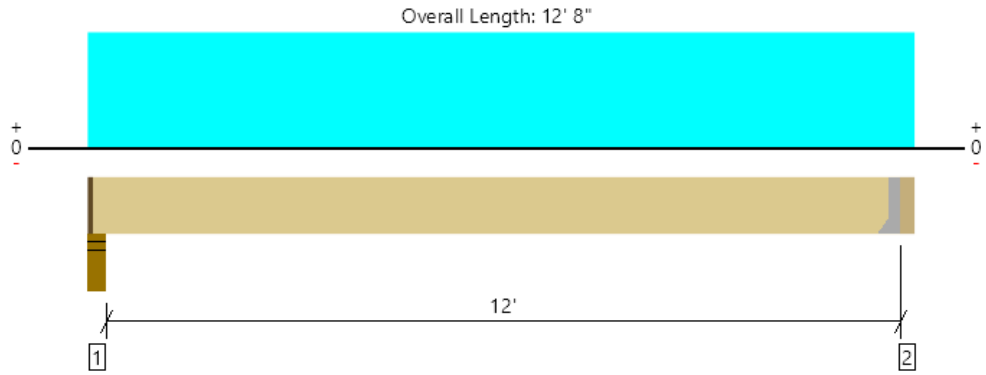
ForteWEB Software Operator	Job Notes
Alex Davis PCS Structural Solutions (206) 292-5076 adavis@pcs-structural.com	

Weyerhaeuser

Level, B4

1 piece(s) 3 1/2" x 11 7/8" 2.0E Parallam® PSL



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	5465 @ 12' 4 1/2"	5465 (2.50")	Passed (100%)	--	1.0 D + 1.0 L (All Spans)
Shear (lbs)	4573 @ 11' 4 5/8"	8035	Passed (57%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	16567 @ 6' 3 3/4"	19902	Passed (83%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.300 @ 6' 3 3/4"	0.303	Passed (L/485)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.495 @ 6' 3 3/4"	0.606	Passed (L/294)	--	1.0 D + 1.0 L (All Spans)

System : Floor
Member Type : Flush Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - DF	4.50"	3.25"	2.56"	2238	3452	5690	1 1/4" Rim Board
2 - Hanger on 11 7/8" DF beam	3.50"	Hanger[1]	2.50"	2250	3474	5724	See note [1]

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	12' 3" o/c	
Bottom Edge (Lu)	12' 3" o/c	

•Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
2 - Face Mount Hanger	HHUS410	3.00"	N/A	30-16d	10-16d	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
0 - Self Weight (PLF)	1 1/4" to 12' 4 1/2"	N/A	13.0	--	
1 - Uniform (PSF)	0 to 12' 8" (Front)	13' 8 1/16"	25.0	40.0	Default Load

Member Notes

Worst Case B4

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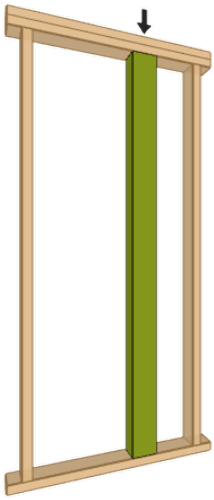
ForteWEB Software Operator	Job Notes
Alex Davis PCS Structural Solutions (206) 292-5076 adavis@pcs-structural.com	

Weyerhaeuser

Level, Wall: Column

1 piece(s) 3 1/2" x 5 1/4" 1.8E Parallam® PSL

Wall Height: 9' 6" Member Height: 9' 1 1/2" Tributary Width: 1'



Drawing is Conceptual

Design Results	Actual	Allowed	Result	LDF	Load: Combination
Slenderness	31	50	Passed (63%)	--	--
Compression (lbs)	11380	13551	Passed (84%)	1.00	1.0 D + 1.0 L
Plate Bearing (lbs)	11380	11484	Passed (99%)	--	1.0 D + 1.0 L
Lateral Reaction (lbs)	0	--	--	--	N/A
Lateral Shear (lbs)	0	N/A	Passed (N/A)	--	N/A
Lateral Moment (ft-lbs)	0 @ mid-span	N/A	Passed (N/A)	--	N/A
Total Deflection (in)	0.06 @ mid-span	0.91	Passed (L/1810)	--	1.0 D + 1.0 L
Bending/Compression	0.90	1	Passed (90%)	1.00	1.0 D + 1.0 L

- Lateral deflection criteria: Wind (L/120)
- Input axial load eccentricity for this design is 10% of applicable member side dimension.
- Applicable calculations are based on NDS.
- Bearing shall be on a metal plate or strap, or on other equivalently durable, rigid, homogeneous material with sufficient stiffness to distribute applied load.

Supports	Type	Material
Top	Dbl 2X	Douglas Fir-Larch
Base	2X	Douglas Fir-Larch

System : Wall
Member Type : Column
Building Code : IBC 2015
Design Methodology : ASD

Max Unbraced Length	Comments
9' 1 1/2"	

Vertical Load	Tributary Width	Dead (0.90)	Floor Live (1.00)	Comments
1 - Point (lb)	N/A	4476	6904	Default Load

Weyerhaeuser Notes

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ForteWEB Software Operator	Job Notes
Alex Davis PCS Structural Solutions (206) 292-5076 adavis@pcs-structural.com	

Weyerhaeuser

PCS Structural Solutions

Project: MERGER ISLAND MIXED USE Job Number: 19-028

Sheet: ____ of ____ Name: AED

Originating Office: ☐ Tacoma ☐ Seattle Date: 09/29/21

BUILT-UP COLUMNS

2015 NDS/2015 IBC

Doug-Fir #2	F_b =	900 psi	Cr =	1.15 for 3+ studs
or Hem-Fir #1	F_v =	150 psi	C_F =	1.5 size - bending
	F_c =	1350 psi	C_F =	1.15 size - axial
	$F_{c\perp}$ =	405 psi	E =	1.50E+06 psi

$V_{allow} = A * F_v * C_D / 1.5$

$M_{allow} = S * F_b * C_D * C_F * C_r$

$P_{allow} = A * F_c * C_D * C_F * C_P$

$V_{applied}$ (#) = 50

$M_{applied}$ (ft-#) = 100

$P_{applied}$ (#) = 1500

A = 5.25 in^2

S = 3.06 in^3

I = 5.36 in^4

2 X 4 ~ FLOOR (Cd =1.0)

8'-0"		2x4	(2) 2x4	(3) 2x4	(4) 2x4
Cp = 0.348	V_{allow} (#) =	525	1050	1575	2100
	M_{allow} (ft - #) =	345	689	1189	1585
	P_{allow} (#) =	2836	5673	8509	11346
	Interaction =	0.84	0.26	0.13	0.09
	$P_{c\perp allow}$ (#) =	2126	4253	6379	8505
10'-0"		2x4	(2) 2x4	(3) 2x4	(4) 2x4
Cp = 0.232	V_{allow} (#) =	525	1050	1575	2100
	M_{allow} (ft - #) =	345	689	1189	1585
	P_{allow} (#) =	1891	3782	5673	7564
	Interaction =	N.G.	0.39	0.18	0.12
	$P_{c\perp allow}$ (#) =	2126	4253	6379	8505
12'-0"		2x4	(2) 2x4	(3) 2x4	(4) 2x4
Cp = 0.165	V_{allow} (#) =	525	1050	1575	2100
	M_{allow} (ft - #) =	345	689	1189	1585
	P_{allow} (#) =	1345	2690	4035	5379
	Interaction =	N.G.	0.62	0.27	0.16
	$P_{c\perp allow}$ (#) =	2126	4253	6379	8505

2 X 4 ~ ROOF (Cd = 1.15)

8'-0"		2x4	(2) 2x4	(3) 2x4	(4) 2x4
Cp = 0.308	V_{allow} (#) =	604	1208	1811	2415
	M_{allow} (ft - #) =	396	792	1367	1823
	P_{allow} (#) =	2887	5774	8661	11548
	Interaction =	0.75	0.23	0.12	0.08
	$P_{c\perp allow}$ (#) =	2126	4253	6379	8505
10'-0"		2x4	(2) 2x4	(3) 2x4	(4) 2x4
Cp = 0.204	V_{allow} (#) =	604	1208	1811	2415
	M_{allow} (ft - #) =	396	792	1367	1823
	P_{allow} (#) =	1912	3824	5736	7649
	Interaction =	N.G.	0.36	0.17	0.11
	$P_{c\perp allow}$ (#) =	2126	4253	6379	8505
12'-0"		2x4	(2) 2x4	(3) 2x4	(4) 2x4
Cp = 0.144	V_{allow} (#) =	604	1208	1811	2415
	M_{allow} (ft - #) =	396	792	1367	1823
	P_{allow} (#) =	1350	2699	4049	5399
	Interaction =	N.G.	0.58	0.25	0.15
	$P_{c\perp allow}$ (#) =	2126	4253	6379	8505

PCS Structural Solutions

Project: MERGER ISLAND MIXED USE Job Number: 19-028

Sheet: _____ of _____ Name: AED

Originating Office: ☐ Tacoma ☑ Seattle Date: 09/29/21

BUILT-UP COLUMNS

2015 NDS/2015 IBC

Doug-Fir #2	F_b =	900 psi	Cr =	1.15	for 3+ studs
or Hem-Fir #1	F_v =	150 psi	C_F =	1.3	size - bending
	F_c =	1350 psi	C_F =	1.1	size - axial
	$F_{c\perp}$ =	405 psi	E =	1.50E+06	psi

$V_{allow} = A * F_v * C_D / 1.5$	$V_{applied}$ (#) =	50	A =	8.25 in^2
$M_{allow} = S * F_b * C_D * C_F * C_r$	$M_{applied}$ (ft-#) =	100	S =	7.56 in^3
$P_{allow} = A * F_c * C_D * C_F * C_P$	$P_{applied}$ (#) =	1500	I =	20.80 in^4

2 X 6 ~ FLOOR (Cd =1.0)

8'-0"		2x6	(2) 2x6	(3) 2x6	(4) 2x6
Cp = 0.689	V_{allow} (#) =	825	1650	2475	3300
	M_{allow} (ft - #) =	737	1475	2544	3392
	P_{allow} (#) =	8441	16882	25323	33764
	Interaction =	0.19	0.08	0.04	0.03
	$P_{c\perp allow}$ (#) =	3341	6683	10024	13365
10'-0"		2x6	(2) 2x6	(3) 2x6	(4) 2x6
Cp = 0.522	V_{allow} (#) =	825	1650	2475	3300
	M_{allow} (ft - #) =	737	1475	2544	3392
	P_{allow} (#) =	6395	12790	19185	25581
	Interaction =	0.22	0.09	0.05	0.03
	$P_{c\perp allow}$ (#) =	3341	6683	10024	13365
12'-0"		2x6	(2) 2x6	(3) 2x6	(4) 2x6
Cp = 0.392	V_{allow} (#) =	825	1650	2475	3300
	M_{allow} (ft - #) =	737	1475	2544	3392
	P_{allow} (#) =	4802	9605	14407	19210
	Interaction =	0.29	0.10	0.05	0.04
	$P_{c\perp allow}$ (#) =	3341	6683	10024	13365

2 X 6 ~ ROOF (Cd = 1.15)

8'-0"		2x6	(2) 2x6	(3) 2x6	(4) 2x6
Cp = 0.639	V_{allow} (#) =	949	1898	2846	3795
	M_{allow} (ft - #) =	848	1696	2925	3901
	P_{allow} (#) =	9003	18006	27008	36011
	Interaction =	0.16	0.07	0.04	0.03
	$P_{c\perp allow}$ (#) =	3341	6683	10024	13365
10'-0"		2x6	(2) 2x6	(3) 2x6	(4) 2x6
Cp = 0.47	V_{allow} (#) =	949	1898	2846	3795
	M_{allow} (ft - #) =	848	1696	2925	3901
	P_{allow} (#) =	6622	13244	19865	26487
	Interaction =	0.20	0.08	0.04	0.03
	$P_{c\perp allow}$ (#) =	3341	6683	10024	13365
12'-0"		2x6	(2) 2x6	(3) 2x6	(4) 2x6
Cp = 0.347	V_{allow} (#) =	949	1898	2846	3795
	M_{allow} (ft - #) =	848	1696	2925	3901
	P_{allow} (#) =	4889	9778	14667	19555
	Interaction =	0.26	0.09	0.05	0.03
	$P_{c\perp allow}$ (#) =	3341	6683	10024	13365

PCS Structural *Solutions*

WOOD LATERAL

LATERAL - WIND:

Worst-Case = North Elevation (Max Area)

BLDG. Length on North Elevation = 279.5'

V_{ULT} = 110 mph, Exposure = B, K_{ZT} = 1.3

$$q_z = 0.00256\, K_z (1.3)(0.85)(110^2)$$

$$q_z = 34.23\, K_z$$

LEVEL	K_z	(PSF) q_z	(SF) AREA	(K) V
ROOF (50')	0.81	27.73	3167	87.82
L4 (38.33')	0.76	26.02	2608	67.86
L3 (29')	0.7	23.96	2608	62.49
			Σ:	218.2K

V_{wind} = 218.2 K (LRFD)

V_{wind} = 152.8 K (ASD) < $V_{SEISMIC}$ = 391 K

∴ SEISMIC CONTROLS

Project:	Mercer Island
Engineer:	AK/AED
Date Updated:	9/27/2021

PARAPET HEIGHT (FT)	3.5
ROOF FLOOR AREA (SF)	39368
TYP. FLOOR AREA (SF)	39368
Exterior Walls w/ Veneer (FT)	236
Typ. Exterior Walls (FT)	414

Load Summary

Level	Weight (K)	Note
RF	961.9	
L4	1493.6	
L3	1478.5	
∑	**3934**	

Story Heights

Level	Height (ft)	Elev (ft)
Roof	11.33	29.99
L4	9.33	18.66
L3	9.33	9.33

*SEISMIC BASE IS AT TRANSFER SLAB

Wood Floor, Wall, & Roof Weights

Level	Decription	SDL (PSF)	Area (SF)	SDL (LBS)
RF	Typ. Roof	18	39350	708300
	Mezzanine	23	956	21988
	PV Ready	5	4054	20270
	-	0	0	0
	Exterior Walls W/ Veneer	48	2163	0
	Interior Walls	9	39368	177156
	Exterior Walls (No Veneer)	9	3794	34148.79
		Roof ∑	**46523**	**750558**
		Wall ∑	**43162**	**211305**
L4	Typ. Residential Floor	25	39350	983750
	-	0	0	0
	-	0	0	0
	-	0	0	0
	Exterior Walls W/ Veneer	48	2438	117018.24
	Interior Walls	9	39368	354312
	Exterior Walls (No Veneer)	9	4277	38490
		Floor ∑	**41787.88**	**1100768.2**
		Wall ∑	**43645**	**392802**
L3	Typ. Residential Floor	25	39350	983750
	-	0	0	0
	-	0	0	0
	Exterior Walls W/ Veneer	48	2202	105690.24
	Interior Walls	9	39368	354312
	Exterior Walls (No Veneer)	9	3863	34764
		Floor ∑	**41551.88**	**1089440.2**
		Wall ∑	**43231**	**389076**
L2 - Transfer Slab (Not Included)	Typ. Residential Floor	10	39350	393500
	-	0	0	0
	-	0	0	0
	-	0	0	0
	Exterior Walls W/ Veneer	48	1101	52845.12
	Interior Walls	9	39368	354312
	Exterior Walls (No Veneer)	9	1931	17382
		Floor ∑	**39350**	**393500**
		Wall ∑	**41299**	**371694**

Project Title:
Engineer:
Project ID:
Project Descr:

Torsional Analysis of Rigid Diaphragm

Project Filename: Semi-Rigid Diaphragm Enercalc.ec6

DESCRIPTION: Mercer Island - Diaphragm

General Information

IBC 2015, CBC 2016, ASCE 7-10

Applied Lateral Force in "X" DIrection	391.0 k
Applied Lateral Force in "Y" DIrection	391.0 k

Note: These loads are resolved into X & Y components when applied to the system of elements at angular increm

Load Orientation Angular Increment	15.0 deg
Load Location Angular Increment	15.0 deg

Center of Rigidity Location (calculated) . . .

"X" dist. from Datum	160.148 ft
"Y" dist. from Datum	138.852 ft

Center of Shear Application :

Distance from "X" datum point	160.50 ft
Distance from "Y" datum point	140.150 ft

Accidental Torsion values per ASCE 7-05 12.8.4.2

Ecc. as % of Maximum Dimension	5.00 %

Maximum Dimensions :

Along "X" Axis	279.50 ft
Along "Y" Axis	240.250 ft

Accidental Eccentricity +/- from "Y" Coord. of Center of Load Application : 13.975 ft

Accidental Eccentricity +/- from "X" Coord. of Center of Load Application : 12.013 ft

Wall Information

Label : 1.1		X Wall C.G. Location	19.5 ft	Length	28.5 ft
		Y Wall C.G. Location	214.25 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	1.2335E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.4735E+001 in			E - Shear	0.0104 Mpsi
Label : 1.10		X Wall C.G. Location	260.33 ft	Length	26.25 ft
		Y Wall C.G. Location	214 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	1.3691E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.5998E+001 in			E - Shear	0.0104 Mpsi
Label : 1.2		X Wall C.G. Location	57.25 ft	Length	20.5 ft
		Y Wall C.G. Location	204.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	1.9148E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	2.0486E+001 in			E - Shear	0.0104 Mpsi
Label : 1.3		X Wall C.G. Location	80 ft	Length	19 ft
		Y Wall C.G. Location	204.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	2.1393E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	2.2103E+001 in			E - Shear	0.0104 Mpsi
Label : 1.4		X Wall C.G. Location	102 ft	Length	19 ft
		Y Wall C.G. Location	204.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	2.1393E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	2.2103E+001 in			E - Shear	0.0104 Mpsi
Label : 1.5		X Wall C.G. Location	124 ft	Length	19 ft
		Y Wall C.G. Location	204.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	2.1393E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	2.2103E+001 in			E - Shear	0.0104 Mpsi
Label : 1.6		X Wall C.G. Location	146 ft	Length	19 ft
		Y Wall C.G. Location	204.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	2.1393E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	2.2103E+001 in			E - Shear	0.0104 Mpsi
Label : 1.7		X Wall C.G. Location	168 ft	Length	19 ft
		Y Wall C.G. Location	204.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	2.1393E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	2.2103E+001 in			E - Shear	0.0104 Mpsi

Wall Information

Project Title:
Engineer:
Project ID:
Project Descr:

Torsional Analysis of Rigid Diaphragm

Project Filename: Semi-Rigid Diaphragm Enercalc.ec6

DESCRIPTION: Mercer Island - Diaphragm

Label : 1.8		X Wall C.G. Location	190 ft	Length	19 ft
		Y Wall C.G. Location	204.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	2.1393E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	2.2103E+001 in			E - Shear	0.0104 Mpsi
Label : 1.9		X Wall C.G. Location	212 ft	Length	16.67 ft
		Y Wall C.G. Location	204.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	2.6158E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	2.5193E+001 in			E - Shear	0.0104 Mpsi
Label : 10.1		X Wall C.G. Location	107.75 ft	Length	15.5 ft
		Y Wall C.G. Location	42.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	2.9431E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	2.7094E+001 in			E - Shear	0.0104 Mpsi
Label : 10.2		X Wall C.G. Location	129.67 ft	Length	15 ft
		Y Wall C.G. Location	39.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	3.1083E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	2.7997E+001 in			E - Shear	0.0104 Mpsi
Label : 10.3		X Wall C.G. Location	165 ft	Length	22.75 ft
		Y Wall C.G. Location	39.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	1.6552E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.8460E+001 in			E - Shear	0.0104 Mpsi
Label : 10.4		X Wall C.G. Location	197 ft	Length	22.75 ft
		Y Wall C.G. Location	39.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	1.6552E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.8460E+001 in			E - Shear	0.0104 Mpsi
Label : 10.5		X Wall C.G. Location	260.67 ft	Length	26.25 ft
		Y Wall C.G. Location	39.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	1.3691E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.5998E+001 in			E - Shear	0.0104 Mpsi
Label : 11.1		X Wall C.G. Location	107.75 ft	Length	15.5 ft
		Y Wall C.G. Location	33.75 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	2.9431E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	2.7094E+001 in			E - Shear	0.0104 Mpsi
Label : 11.2		X Wall C.G. Location	132.75 ft	Length	21.5 ft
		Y Wall C.G. Location	33.75 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	1.7898E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.9533E+001 in			E - Shear	0.0104 Mpsi
Label : 11.3		X Wall C.G. Location	156.25 ft	Length	19 ft
		Y Wall C.G. Location	33.75 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	2.1393E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	2.2103E+001 in			E - Shear	0.0104 Mpsi
Label : 11.4		X Wall C.G. Location	188 ft	Length	38.5 ft
		Y Wall C.G. Location	33.75 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	8.6147E-003 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.0908E+001 in			E - Shear	0.0104 Mpsi
Label : 2.1		X Wall C.G. Location	17 ft	Length	32.75 ft
		Y Wall C.G. Location	192.25 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	1.0408E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.2823E+001 in			E - Shear	0.0104 Mpsi

Wall Information

Project Title:
Engineer:
Project ID:
Project Descr:

Torsional Analysis of Rigid Diaphragm

Project Filename: Semi-Rigid Diaphragm Enercalc.ec6

DESCRIPTION: Mercer Island - Diaphragm

Label : 2.10		X Wall C.G. Location	260 ft	Length	26.25 ft
		Y Wall C.G. Location	192 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	1.3691E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.5998E+001 in			E - Shear	0.0104 Mpsi
Label : 2.2		X Wall C.G. Location	72.5 ft	Length	26.5 ft
		Y Wall C.G. Location	199 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	1.3525E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.5848E+001 in			E - Shear	0.0104 Mpsi
Label : 2.3		X Wall C.G. Location	100 ft	Length	22.5 ft
		Y Wall C.G. Location	199 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	1.6804E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.8665E+001 in			E - Shear	0.0104 Mpsi
Label : 2.4		X Wall C.G. Location	124 ft	Length	19 ft
		Y Wall C.G. Location	199 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	2.1393E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	2.2103E+001 in			E - Shear	0.0104 Mpsi
Label : 2.5		X Wall C.G. Location	146 ft	Length	19 ft
		Y Wall C.G. Location	199 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	2.1393E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	2.2103E+001 in			E - Shear	0.0104 Mpsi
Label : 2.6		X Wall C.G. Location	168 ft	Length	19 ft
		Y Wall C.G. Location	199 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	2.1393E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	2.2103E+001 in			E - Shear	0.0104 Mpsi
Label : 2.7		X Wall C.G. Location	186 ft	Length	11.25 ft
		Y Wall C.G. Location	199 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	5.2414E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	3.7330E+001 in			E - Shear	0.0104 Mpsi
Label : 2.8		X Wall C.G. Location	204.67 ft	Length	19.75 ft
		Y Wall C.G. Location	199 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	2.0208E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	2.1264E+001 in			E - Shear	0.0104 Mpsi
Label : 2.9		X Wall C.G. Location	224.67 ft	Length	14.25 ft
		Y Wall C.G. Location	199 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	3.3922E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	2.9471E+001 in			E - Shear	0.0104 Mpsi
Label : 3.1		X Wall C.G. Location	19.33 ft	Length	26.25 ft
		Y Wall C.G. Location	170 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	1.3691E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.5998E+001 in			E - Shear	0.0104 Mpsi
Label : 3.2		X Wall C.G. Location	58.5 ft	Length	20 ft
		Y Wall C.G. Location	157.33 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	1.9842E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	2.0998E+001 in			E - Shear	0.0104 Mpsi
Label : 4.1		X Wall C.G. Location	223.25 ft	Length	17.5 ft
		Y Wall C.G. Location	165.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	2.4237E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	2.3998E+001 in			E - Shear	0.0104 Mpsi

Wall Information

Project Title:
Engineer:
Project ID:
Project Descr:

Torsional Analysis of Rigid Diaphragm

Project Filename: Semi-Rigid Diaphragm Enercalc.ec6

DESCRIPTION: Mercer Island - Diaphragm

Label : 5.1		X Wall C.G. Location	225.75 ft	Length	30.5 ft
		Y Wall C.G. Location	143.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	1.1343E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.3769E+001 in			E - Shear	0.0104 Mpsi
Label : 5.2		X Wall C.G. Location	252.75 ft	Length	11.75 ft
		Y Wall C.G. Location	148.33 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	4.8184E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	3.5741E+001 in			E - Shear	0.0104 Mpsi
Label : 6.1		X Wall C.G. Location	225.75 ft	Length	30.5 ft
		Y Wall C.G. Location	121.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	1.1343E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.3769E+001 in			E - Shear	0.0104 Mpsi
Label : 7.1		X Wall C.G. Location	225.75 ft	Length	30.5 ft
		Y Wall C.G. Location	99.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	1.1343E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.3769E+001 in			E - Shear	0.0104 Mpsi
Label : 7.2		X Wall C.G. Location	260.5 ft	Length	26.25 ft
		Y Wall C.G. Location	105.25 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	1.3691E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.5998E+001 in			E - Shear	0.0104 Mpsi
Label : 8.1		X Wall C.G. Location	222.75 ft	Length	18.67 ft
		Y Wall C.G. Location	77.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	2.1960E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	2.2494E+001 in			E - Shear	0.0104 Mpsi
Label : 8.2		X Wall C.G. Location	260 ft	Length	26.25 ft
		Y Wall C.G. Location	83.25 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	1.3691E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.5998E+001 in			E - Shear	0.0104 Mpsi
Label : 9.1		X Wall C.G. Location	260 ft	Length	26.25 ft
		Y Wall C.G. Location	61.25 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Thickness	3.5 in
Along Wall "y" Dir	1.3691E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.5998E+001 in			E - Shear	0.0104 Mpsi
Label : A.1		X Wall C.G. Location	33.75 ft	Length	17.5 ft
		Y Wall C.G. Location	192.1 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	2.4237E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	2.3998E+001 in			E - Shear	0.0104 Mpsi
Label : A.2		X Wall C.G. Location	33.75 ft	Length	9.75 ft
		Y Wall C.G. Location	170.8 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	7.0064E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	4.3073E+001 in			E - Shear	0.0104 Mpsi
Label : A.3		X Wall C.G. Location	33.75 ft	Length	22.5 ft
		Y Wall C.G. Location	145.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	1.6804E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.8665E+001 in			E - Shear	0.0104 Mpsi
Label : B.1		X Wall C.G. Location	41.5 ft	Length	35 ft
		Y Wall C.G. Location	222.33 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	9.6207E-003 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.1999E+001 in			E - Shear	0.0104 Mpsi

Wall Information

Project Title:
Engineer:
Project ID:
Project Descr:

Torsional Analysis of Rigid Diaphragm

Project Filename: Semi-Rigid Diaphragm Enercalc.ec6

DESCRIPTION: Mercer Island - Diaphragm

Label : B.2		X Wall C.G. Location	39.5 ft	Length	12 ft
		Y Wall C.G. Location	183 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	4.6291E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	3.4997E+001 in			E - Shear	0.0104 Mpsi
Label : C.1		X Wall C.G. Location	57.5 ft	Length	35 ft
		Y Wall C.G. Location	222.33 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	9.6207E-003 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.1999E+001 in			E - Shear	0.0104 Mpsi
Label : C.2		X Wall C.G. Location	62.25 ft	Length	25.25 ft
		Y Wall C.G. Location	186.25 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	1.4399E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.6632E+001 in			E - Shear	0.0104 Mpsi
Label : D.1		X Wall C.G. Location	79.5 ft	Length	31 ft
		Y Wall C.G. Location	220.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	1.1120E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.3547E+001 in			E - Shear	0.0104 Mpsi
Label : E.1		X Wall C.G. Location	101.5 ft	Length	31 ft
		Y Wall C.G. Location	220.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	1.1120E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.3547E+001 in			E - Shear	0.0104 Mpsi
Label : E.2		X Wall C.G. Location	101.5 ft	Length	25.25 ft
		Y Wall C.G. Location	186.25 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	1.4399E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.6632E+001 in			E - Shear	0.0104 Mpsi
Label : F.1		X Wall C.G. Location	123.5 ft	Length	31 ft
		Y Wall C.G. Location	220.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	1.1120E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.3547E+001 in			E - Shear	0.0104 Mpsi
Label : F.2		X Wall C.G. Location	123.5 ft	Length	31.5 ft
		Y Wall C.G. Location	183 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	1.0907E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.3332E+001 in			E - Shear	0.0104 Mpsi
Label : G.1		X Wall C.G. Location	145.5 ft	Length	31 ft
		Y Wall C.G. Location	220.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	1.1120E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.3547E+001 in			E - Shear	0.0104 Mpsi
Label : G.2		X Wall C.G. Location	145.5 ft	Length	31.5 ft
		Y Wall C.G. Location	183 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	1.0907E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.3332E+001 in			E - Shear	0.0104 Mpsi
Label : H.1		X Wall C.G. Location	167.5 ft	Length	31 ft
		Y Wall C.G. Location	220.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	1.1120E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.3547E+001 in			E - Shear	0.0104 Mpsi
Label : H.2		X Wall C.G. Location	167.5 ft	Length	31.5 ft
		Y Wall C.G. Location	183 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	1.0907E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.3332E+001 in			E - Shear	0.0104 Mpsi

Wall Information

Project Title:
Engineer:
Project ID:
Project Descr:

Torsional Analysis of Rigid Diaphragm

Project Filename: Semi-Rigid Diaphragm Enercalc.ec6

DESCRIPTION: Mercer Island - Diaphragm

Label : I.1		X Wall C.G. Location	189.5 ft	Length	31 ft
		Y Wall C.G. Location	220.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	1.1120E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.3547E+001 in			E - Shear	0.0104 Mpsi
Label : I.2		X Wall C.G. Location	189.5 ft	Length	31.5 ft
		Y Wall C.G. Location	183 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	1.0907E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.3332E+001 in			E - Shear	0.0104 Mpsi
Label : J.1		X Wall C.G. Location	211.5 ft	Length	31 ft
		Y Wall C.G. Location	220.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	1.1120E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.3547E+001 in			E - Shear	0.0104 Mpsi
Label : J.2		X Wall C.G. Location	203.67 ft	Length	25.25 ft
		Y Wall C.G. Location	186.33 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	1.4399E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.6632E+001 in			E - Shear	0.0104 Mpsi
Label : K.1		X Wall C.G. Location	239.5 ft	Length	34.75 ft
		Y Wall C.G. Location	223.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	9.7020E-003 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.2085E+001 in			E - Shear	0.0104 Mpsi
Label : K.2		X Wall C.G. Location	241.5 ft	Length	16.25 ft
		Y Wall C.G. Location	190 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	2.7248E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	2.5844E+001 in			E - Shear	0.0104 Mpsi
Label : K.3		X Wall C.G. Location	241.5 ft	Length	9.67 ft
		Y Wall C.G. Location	160.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	7.1289E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	4.3429E+001 in			E - Shear	0.0104 Mpsi
Label : K.4		X Wall C.G. Location	241.5 ft	Length	18 ft
		Y Wall C.G. Location	143.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	2.3209E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	2.3331E+001 in			E - Shear	0.0104 Mpsi
Label : K.5		X Wall C.G. Location	241.5 ft	Length	19.67 ft
		Y Wall C.G. Location	121.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	2.0328E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	2.1350E+001 in			E - Shear	0.0104 Mpsi
Label : K.6		X Wall C.G. Location	241.5 ft	Length	17.5 ft
		Y Wall C.G. Location	99.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	2.4237E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	2.3998E+001 in			E - Shear	0.0104 Mpsi
Label : K.7		X Wall C.G. Location	241.5 ft	Length	14 ft
		Y Wall C.G. Location	68.67 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	3.4980E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	2.9997E+001 in			E - Shear	0.0104 Mpsi
Label : L.1		X Wall C.G. Location	247 ft	Length	20.5 ft
		Y Wall C.G. Location	192.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	1.9148E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	2.0486E+001 in			E - Shear	0.0104 Mpsi

Wall Information

Project Title:
Engineer:
Project ID:
Project Descr:

Torsional Analysis of Rigid Diaphragm

Project Filename: Semi-Rigid Diaphragm Enercalc.ec6

DESCRIPTION: Mercer Island - Diaphragm

Label : L.2		X Wall C.G. Location	247 ft	Length	66 ft
		Y Wall C.G. Location	146.25 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	4.7845E-003 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	6.3630E+000 in			E - Shear	0.0104 Mpsi
Label : L.3		X Wall C.G. Location	247 ft	Length	19 ft
		Y Wall C.G. Location	84 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	2.1393E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	2.2103E+001 in			E - Shear	0.0104 Mpsi
Label : L.4		X Wall C.G. Location	247 ft	Length	19 ft
		Y Wall C.G. Location	62 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	2.1393E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	2.2103E+001 in			E - Shear	0.0104 Mpsi
Label : M.1		X Wall C.G. Location	127 ft	Length	30 ft
		Y Wall C.G. Location	54.75 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	1.1575E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.3999E+001 in			E - Shear	0.0104 Mpsi
Label : M.2		X Wall C.G. Location	133.25 ft	Length	34.75 ft
		Y Wall C.G. Location	15.67 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	9.7020E-003 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.2085E+001 in			E - Shear	0.0104 Mpsi
Label : N.1		X Wall C.G. Location	149 ft	Length	30 ft
		Y Wall C.G. Location	54.75 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	1.1575E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.3999E+001 in			E - Shear	0.0104 Mpsi
Label : N.2		X Wall C.G. Location	155.25 ft	Length	30 ft
		Y Wall C.G. Location	18.33 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	1.1575E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.3999E+001 in			E - Shear	0.0104 Mpsi
Label : O.1		X Wall C.G. Location	181 ft	Length	30 ft
		Y Wall C.G. Location	54.75 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	1.1575E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.3999E+001 in			E - Shear	0.0104 Mpsi
Label : O.2		X Wall C.G. Location	177.25 ft	Length	30 ft
		Y Wall C.G. Location	18.33 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	1.1575E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.3999E+001 in			E - Shear	0.0104 Mpsi
Label : P.1		X Wall C.G. Location	197 ft	Length	30 ft
		Y Wall C.G. Location	54.75 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	1.1575E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	1.3999E+001 in			E - Shear	0.0104 Mpsi
Label : Q.1		X Wall C.G. Location	213.25 ft	Length	20.67 ft
		Y Wall C.G. Location	59.5 ft	Height	9.33 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Thickness	3.5 in
Along Wall "y" Dir	1.8923E-002 in	Wall Fixity	Fix-Pin	E - Bending	0.026 Mpsi
Along Wall "x" Dir	2.0317E+001 in			E - Shear	0.0104 Mpsi

ANALYSIS SUMMARY

Maximum shear forces applied to resisting elements. Eccentricity with respect to Center of Rigidity

		Max Shear along Member Local "y-y" Axis			Max Shear along Member Local "x-x" Axis			
Resisting Element	Load Angle	X-Ecc (ft)	Y-Ecc (ft)	Shear Force (k)	Load Angle	X-Ecc (ft)	Y-Ecc (ft)	Shear Force (k)
1.1	0	-0.35	13.31	**15.166**	90	-14.33	1.30	**0.011**
1.10	0	-0.35	13.31	**13.659**	90	13.62	1.30	**0.010**

Project Title:
Engineer:
Project ID:
Project Descr:

Torsional Analysis of Rigid Diaphragm

Project Filename: Semi-Rigid Diaphragm Enercalc.ec6

DESCRIPTION: Mercer Island - Diaphragm

ANALYSIS SUMMARY

Maximum shear forces applied to resisting elements. Eccentricity with respect to Center of Rigidity

	Max Shear along Member Local "y-y" Axis				Max Shear along Member Local "x-x" Axis			
Resisting Element	Load Angle	X-Ecc (ft)	Y-Ecc (ft)	Shear Force (k)	Load Angle	X-Ecc (ft)	Y-Ecc (ft)	Shear Force (k)
1.2	0	-0.35	13.31	**9.657**	90	-14.33	1.30	**0.008**
1.3	0	-0.35	13.31	**8.643**	90	-14.33	1.30	**0.007**
1.4	0	-0.35	13.31	**8.643**	90	-14.33	1.30	**0.007**
1.5	0	-0.35	13.31	**8.643**	90	-14.33	1.30	**0.006**
1.6	0	-0.35	13.31	**8.643**	90	-14.33	1.30	**0.006**
1.7	0	-0.35	13.31	**8.643**	90	13.62	1.30	**0.006**
1.8	0	-0.35	13.31	**8.643**	90	13.62	1.30	**0.006**
1.9	0	-0.35	13.31	**7.069**	90	13.62	1.30	**0.006**
10.1	0	-0.35	-10.71	**6.372**	90	-14.33	1.30	**0.005**
10.2	0	-0.35	-10.71	**6.051**	90	-14.33	1.30	**0.005**
10.3	0	-0.35	-10.71	**11.363**	90	13.62	1.30	**0.007**
10.4	0	-0.35	-10.71	**11.363**	90	13.62	1.30	**0.008**
10.5	0	-0.35	-10.71	**13.738**	90	13.62	1.30	**0.010**
11.1	0	-0.35	-10.71	**6.426**	90	-14.33	1.30	**0.005**
11.2	0	-0.35	-10.71	**10.566**	90	-14.33	1.30	**0.007**
11.3	0	-0.35	-10.71	**8.840**	90	-14.33	1.30	**0.006**
11.4	0	-0.35	-10.71	**21.952**	90	13.62	1.30	**0.013**
2.1	0	-0.35	13.31	**17.504**	90	-14.33	1.30	**0.013**
2.10	0	-0.35	13.31	**13.303**	90	13.62	1.30	**0.010**
2.2	0	-0.35	13.31	**13.581**	90	-14.33	1.30	**0.010**
2.3	0	-0.35	13.31	**10.930**	90	-14.33	1.30	**0.008**
2.4	0	-0.35	13.31	**8.586**	90	-14.33	1.30	**0.006**
2.5	0	-0.35	13.31	**8.586**	90	-14.33	1.30	**0.006**
2.6	0	-0.35	13.31	**8.586**	90	13.62	1.30	**0.006**
2.7	0	-0.35	13.31	**3.504**	90	13.62	1.30	**0.004**
2.8	0	-0.35	13.31	**9.090**	90	13.62	1.30	**0.007**
2.9	0	-0.35	13.31	**5.415**	90	13.62	1.30	**0.005**
3.1	0	-0.35	13.31	**12.946**	90	-14.33	1.30	**0.011**
3.2	0	-0.35	13.31	**8.791**	90	-14.33	1.30	**0.008**
4.1	0	-0.35	13.31	**7.271**	90	13.62	1.30	**0.006**
5.1	0	-0.35	13.31	**15.107**	90	13.62	1.30	**0.011**
5.2	0	-0.35	13.31	**3.579**	90	13.62	1.30	**0.004**
6.1	0	-0.35	-10.71	**15.289**	90	13.62	1.30	**0.011**
7.1	0	-0.35	-10.71	**15.636**	90	13.62	1.30	**0.011**
7.2	0	-0.35	-10.71	**12.879**	90	13.62	1.30	**0.010**
8.1	0	-0.35	-10.71	**8.255**	90	13.62	1.30	**0.007**
8.2	0	-0.35	-10.71	**13.166**	90	13.62	1.30	**0.010**
9.1	0	-0.35	-10.71	**13.454**	90	13.62	1.30	**0.010**
A.1	90	-14.33	1.30	**6.817**	0	-0.35	13.31	**0.008**
A.2	90	-14.33	1.30	**2.358**	0	-0.35	13.31	**0.004**
A.3	90	-14.33	1.30	**9.832**	0	-0.35	13.31	**0.009**
B.1	90	-14.33	1.30	**16.981**	0	-0.35	13.31	**0.016**
B.2	90	-14.33	1.30	**3.539**	0	-0.35	13.31	**0.005**
C.1	90	-14.33	1.30	**16.583**	0	-0.35	13.31	**0.016**
C.2	90	-14.33	1.30	**11.001**	0	-0.35	13.31	**0.011**
D.1	90	-14.33	1.30	**13.874**	0	-0.35	13.31	**0.014**
E.1	90	-14.33	1.30	**13.401**	0	-0.35	13.31	**0.014**
E.2	90	-14.33	1.30	**10.350**	0	-0.35	13.31	**0.011**
F.1	90	-14.33	1.30	**12.928**	0	-0.35	13.31	**0.014**
F.2	90	-14.33	1.30	**13.182**	0	-0.35	13.31	**0.014**
G.1	90	-14.33	1.30	**12.456**	0	-0.35	13.31	**0.014**
G.2	90	-14.33	1.30	**12.700**	0	-0.35	13.31	**0.014**
H.1	90	13.62	1.30	**12.291**	0	-0.35	13.31	**0.014**

Project Title:
Engineer:
Project ID:
Project Descr:

Torsional Analysis of Rigid Diaphragm

Project Filename: Semi-Rigid Diaphragm Enercalc.ec6

DESCRIPTION: Mercer Island - Diaphragm

ANALYSIS SUMMARY

Maximum shear forces applied to resisting elements. Eccentricity with respect to Center of Rigidity

	Max Shear along Member Local "y-y" Axis				Max Shear along Member Local "x-x" Axis			
Resisting Element	Load Angle	X-Ecc (ft)	Y-Ecc (ft)	Shear Force (k)	Load Angle	X-Ecc (ft)	Y-Ecc (ft)	Shear Force (k)
H.2	90	13.62	1.30	**12.532**	0	-0.35	13.31	**0.014**
I.1	90	13.62	1.30	**12.741**	0	-0.35	13.31	**0.014**
I.2	90	13.62	1.30	**12.990**	0	-0.35	13.31	**0.014**
J.1	90	13.62	1.30	**13.190**	0	-0.35	13.31	**0.014**
J.2	90	13.62	1.30	**10.063**	0	-0.35	13.31	**0.011**
K.1	90	13.62	1.30	**15.774**	0	-0.35	13.31	**0.016**
K.2	90	13.62	1.30	**5.633**	0	-0.35	13.31	**0.007**
K.3	90	13.62	1.30	**2.153**	0	-0.35	13.31	**0.004**
K.4	90	13.62	1.30	**6.614**	0	-0.35	13.31	**0.007**
K.5	90	13.62	1.30	**7.551**	0	-0.35	-10.71	**0.008**
K.6	90	13.62	1.30	**6.333**	0	-0.35	-10.71	**0.007**
K.7	90	13.62	1.30	**4.388**	0	-0.35	-10.71	**0.006**
L.1	90	13.62	1.30	**8.082**	0	-0.35	13.31	**0.009**
L.2	90	13.62	1.30	**32.344**	0	-0.35	13.31	**0.027**
L.3	90	13.62	1.30	**7.234**	0	-0.35	-10.71	**0.008**
L.4	90	13.62	1.30	**7.234**	0	-0.35	-10.71	**0.008**
M.1	90	-14.33	1.30	**12.348**	0	-0.35	-10.71	**0.013**
M.2	90	-14.33	1.30	**14.578**	0	-0.35	-10.71	**0.016**
N.1	90	-14.33	1.30	**11.894**	0	-0.35	-10.71	**0.013**
N.2	90	-14.33	1.30	**11.765**	0	-0.35	-10.71	**0.014**
O.1	90	13.62	1.30	**12.073**	0	-0.35	-10.71	**0.013**
O.2	90	13.62	1.30	**12.000**	0	-0.35	-10.71	**0.014**
P.1	90	13.62	1.30	**12.387**	0	-0.35	-10.71	**0.013**
Q.1	90	13.62	1.30	**7.772**	0	-0.35	-10.71	**0.009**

Project Title:
Engineer:
Project ID:
Project Descr:

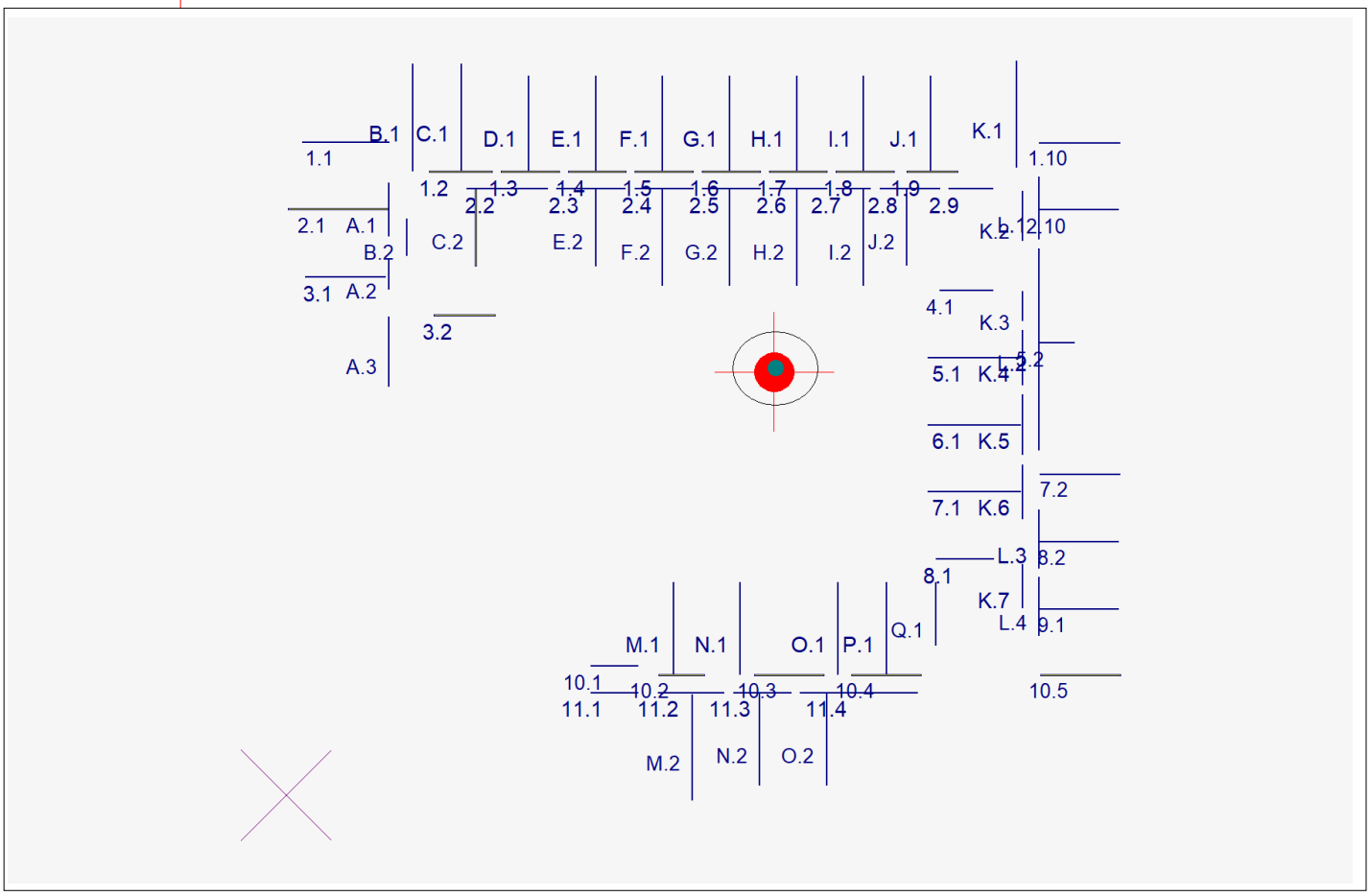
Torsional Analysis of Rigid Diaphragm

Project Filename: Semi-Rigid Diaphragm Enercalc.ec6

DESCRIPTION: Mercer Island - Diaphragm

Layout of Resisting Elements

Legend : Defined Wall | Datum | Center of Rigidity | Center of Mass | Accidental eccentricity application boundary



Project Title:
Engineer:
Project ID:
Project Descr:

Torsional Analysis of Rigid Diaphragm

Project Filename: Semi-Rigid Diaphragm Enercalc.ec6

DESCRIPTION: Mercer Island - Diaphragm

Analysis Notes

This program is designed to distribute an applied shear load to a set of resisting elements.

Each resisting element data entry specifies a deflection along a "major" and "minor" axis due to a 1,000 lb load. Each resisting element may be entered as a wall or a column (whereby the deflection is calculated), or as a generic resisting element with specified deflection. The deflections define the stiffness of each resisting element.

Each resisting element is defined at an (X,Y) location from a datum the user has previously defined. A counter-clockwise rotation of the element can be entered with respect to a traditional "+X" axis line.

A main "shear" load and an optional orthogonal shear load are specified for distribution to the system of resisting elements. In addition the maximum orthogonal dimensions of the structure and minimum accidental eccentricity percentage are specified.

From the entered loads the program calculates resultant force vectors for each angular orientation that is requested. The force is applied to the resisting elements in angular increments to generate a series of resulting direct and torsional shear loads on each element. This application of force is then repeated at angular intervals along an elliptical path defined by the minimum accidental eccentricity.

The end result is a table of direct shear and torsional shear values for each element from the iterated angles of load application and accidental eccentricity. These values are then searched to find the maximum major and minor axis shears applied to each resisting element.

PROJECT # 19028
ENGR: AED
DATE: 9/28/2021

VERTICAL DISTRIBUTION OF SEISMIC FORCES (ASD)

Level	h_x (ft)	w_x(k)	$w_x h_x^k$ (k-ft)	$w_x h_x^k / \Sigma w_i h_i^k$ (%)	F_x (k) (ASD)	F_{tot} (k) (ASD)
Roof	29.99	961.9	28846.27	41%	159.97	159.97
4	18.66	1493.6	27870.01	40%	154.56	314.53
3	9.33	1478.5	13794.55	20%	76.50	391.03
Sum Σ		3933.9	70510.83			

INPUTS
OUTPUTS

k= 1 (T<0.5 Sec)
C_s= 0.142 (ASD)

801.1
1319.2
1316.1

S_{DS}= 0.92
I= 1

MAX F_{px} (k)= $0.4 S_{DS} I w_{px}$= 0.368 $*w_{px}$
MIN F_{px} (k)= $0.2 S_{DS} I w_{px}$= 0.184 $*w_{px}$

DIAPHRAGM DESIGN SEISMIC FORCES (ASD)

					Diaphragm Force				
Level	w_{px} (k)	Σw_i (k)	F_x (k)	ΣF_i (k)	$\Sigma F_x / \Sigma w_{px}$	F_{px} (k)	$\gamma = F_{px}/F_x$	Max F_{px} (k)	Min F_{px} (k)
Roof	961.8628	961.8628	159.97	159.97	0.184	176.98	1.11	353.97	176.98
4	1493.57	2455.433	154.56	314.53	0.184	274.82	1.78	549.63	274.82
3	1478.516	3933.948	76.50	391.03	0.184	272.05	3.56	544.09	272.05
Sum Σ	3933.948		391.03	ASD					

PROJECT # 19028
ENGR: AED
DATE: 9/28/2021

V (K)	391.0	ASD	
E/W			
LABEL	% TOTAL MASS	TRIBUTARY (FT)	DISTRIBUTED SHEAR (KLF)
W(A)	50%	75	2.59
W(B)	7%	41	0.62
W(C)	15%	93.5	0.61
W(D)	30%	72.34	1.59
∑	100%	281	

V (K)	391.0	ASD	
N/S			
LABEL	% TOTAL MASS	TRIBUTARY (FT)	DISTRIBUTED SHEAR (KLF)
W(1)	21%	80	1.03
W(2)	23%	132	0.68
W(3)	36%	66	2.14
W(4)	20%	115	0.68
∑	100%	392	

LVL 3				
E/W				
GRID	DISTRIBUTED SHEAR (KLF)	TRIBUTARY (FT)	AVAILABLE SHEAR WALL LENGTH (FT)	Vu (PLF)
1	2.59	37.3	205.92	469.4
2	2.59	28.4	199	369.2
3	0.62	40.9	48.5	524.1
4	0.61	8.8	17.5	303.2
5	0.61	22.1	30.5	439.1
6	0.61	21.5	30.5	427.5
7	0.61	19.3	56.75	205.7
8	0.61	22.0	44.75	298.1
9	0.61	11.0	26.25	254.1
10	1.59	34.2	101	539.5
11	1.59	37.0	95.5	617.8
	∑	282	856	

LVL 3				
N/S				
GRID	DISTRIBUTED SHEAR (KLF)	TRIBUTARY (FT)	AVAILABLE SHEAR WALL LENGTH (FT)	Vu (PLF)
A	1.03	37.875	61.8	629.6
B	1.03	11.75	35	347.1
C	1.03	19.125	60	327.2
D	1.03	11.25	31	610.8
	0.68	10.835		
E	0.68	21.96	56	266.2
F	0.68	22.125	62.33	242.0
G	0.68	22	62.33	240.6
H	0.68	22	62.33	240.6
I	0.68	22	62.33	240.6
J	0.68	11	56	133.3
K	2.14	32.08	129.59	529.4

Note:
Values reported for walls where flexible diaphragm loading controls. If rigid diaphragm loading controls, these values are multiplied by the corresponding multiplier.

PROJECT # 19028
ENGR: AED
DATE: 9/28/2021

(ASD)

460	**15/32" (1) Side**	10d @ 4"
600	**15/32" (1) Side**	10d @ 3"
920	**15/32" (2) Side**	10d @ 4"
1200	**15/32" (2) Side**	10d @ 3"

LVL 2

E-W

F.tot = 391.03 kips (ASD) If Skewed 1.25

GRID	v (plf)	Sheathing	Spacing
1	469	10d @ 4"	15/32" (1) Side
2	369	10d @ 4"	15/32" (1) Side
3	524	10d @ 3"	15/32" (1) Side
4	303	10d @ 4"	15/32" (1) Side
5	439	10d @ 4"	15/32" (1) Side
6	427	10d @ 4"	15/32" (1) Side
7	206	10d @ 4"	15/32" (1) Side
8	298	10d @ 4"	15/32" (1) Side
9	254	10d @ 4"	15/32" (1) Side
10	539	10d @ 3"	15/32" (1) Side
11	618	10d @ 3"	15/32" (1) Side

N-S

F.tot = 391.03 kips (ASD) Skewed 1.25

GRID	v (plf)	Sheathing	Spacing
A	630	10d @ 3"	15/32" (1) Side
B	347	10d @ 4"	15/32" (1) Side
C	327	10d @ 4"	15/32" (1) Side
D	611	10d @ 3"	15/32" (1) Side
E	266	10d @ 4"	15/32" (1) Side
F	242	10d @ 4"	15/32" (1) Side
G	241	10d @ 4"	15/32" (1) Side
H	241	10d @ 4"	15/32" (1) Side
I	241	10d @ 4"	15/32" (1) Side
J	133	10d @ 4"	15/32" (1) Side
K	529	10d @ 3"	15/32" (1) Side
L	580	10d @ 3"	15/32" (1) Side
M	408	10d @ 4"	15/32" (1) Side
N	309	10d @ 4"	15/32" (1) Side
O	271	10d @ 4"	15/32" (1) Side
P	372	10d @ 4"	15/32" (1) Side
Q	281	10d @ 4"	15/32" (1) Side

LVL 3

E-W

F.tot = 314.53 kips (ASD) ratio 1.24

GRID	v (plf)	Sheathing	Spacing
1	378	10d @ 4"	15/32" (1) Side
2	297	10d @ 4"	15/32" (1) Side
3	422	10d @ 4"	15/32" (1) Side
4	244	10d @ 4"	15/32" (1) Side
5	353	10d @ 4"	15/32" (1) Side
6	344	10d @ 4"	15/32" (1) Side
7	165	10d @ 4"	15/32" (1) Side
8	240	10d @ 4"	15/32" (1) Side
9	204	10d @ 4"	15/32" (1) Side
10	434	10d @ 4"	15/32" (1) Side
11	497	10d @ 3"	15/32" (1) Side

N-S

F.tot = 314.53 kips (ASD) ratio 1.24

GRID	v (plf)	Sheathing	Spacing
A	506	10d @ 3"	15/32" (1) Side
B	279	10d @ 4"	15/32" (1) Side
C	263	10d @ 4"	15/32" (1) Side
D	491	10d @ 3"	15/32" (1) Side
E	214	10d @ 4"	15/32" (1) Side
F	195	10d @ 4"	15/32" (1) Side
G	194	10d @ 4"	15/32" (1) Side
H	194	10d @ 4"	15/32" (1) Side
I	194	10d @ 4"	15/32" (1) Side
J	107	10d @ 4"	15/32" (1) Side
K	426	10d @ 4"	15/32" (1) Side
L	466	10d @ 4"	15/32" (1) Side
M	328	10d @ 4"	15/32" (1) Side
N	249	10d @ 4"	15/32" (1) Side
0	218	10d @ 4"	15/32" (1) Side
P	299	10d @ 4"	15/32" (1) Side
Q	226	10d @ 4"	15/32" (1) Side

LVL 4

E-W

F.tot = 159.97 kips (ASD) ratio 2.44

GRID	v (plf)	Sheathing	Spacing
1	192	10d @ 4"	15/32" (1) Side
2	151	10d @ 4"	15/32" (1) Side
3	214	10d @ 4"	15/32" (1) Side
4	124	10d @ 4"	15/32" (1) Side
5	180	10d @ 4"	15/32" (1) Side
6	175	10d @ 4"	15/32" (1) Side
7	84	10d @ 4"	15/32" (1) Side
8	122	10d @ 4"	15/32" (1) Side
9	104	10d @ 4"	15/32" (1) Side
10	221	10d @ 4"	15/32" (1) Side
11	253	10d @ 4"	15/32" (1) Side

N-S

F.tot = 159.97 kips (ASD) ratio 2.44

GRID	v (plf)	Sheathing	Spacing
A	258	10d @ 4"	15/32" (1) Side
B	142	10d @ 4"	15/32" (1) Side
C	134	10d @ 4"	15/32" (1) Side
D	250	10d @ 4"	15/32" (1) Side
E	109	10d @ 4"	15/32" (1) Side
F	99	10d @ 4"	15/32" (1) Side
G	98	10d @ 4"	15/32" (1) Side
H	98	10d @ 4"	15/32" (1) Side
I	98	10d @ 4"	15/32" (1) Side
J	55	10d @ 4"	15/32" (1) Side
K	217	10d @ 4"	15/32" (1) Side
L	237	10d @ 4"	15/32" (1) Side
M	167	10d @ 4"	15/32" (1) Side
N	127	10d @ 4"	15/32" (1) Side
O	111	10d @ 4"	15/32" (1) Side
P	152	10d @ 4"	15/32" (1) Side
Q	115	10d @ 4"	15/32" (1) Side

			RIGID		FLEXIBLE					
	Wall	Length	V (k)	v (plf)	v (plf)	Difference	Capacity (plf)	DCR_{Rigid}	$DCR_{Flexible}$	Multiplier
	1.1	28.5	15.17	532.3	467	14%	600	0.89	0.78	1.14
	1.2	20.5	9.7	473.2	467	1%	600	0.79	0.78	1.01
	1.3	19	8.64	454.7	467	-3%	600	0.76	0.78	N/A
	1.4	19	8.64	454.7	467	-3%	600	0.76	0.78	N/A
	1.5	19	8.64	454.7	467	-3%	600	0.76	0.78	N/A
	1.6	19	8.64	454.7	467	-3%	600	0.76	0.78	N/A
	1.7	19	8.64	454.7	467	-3%	600	0.76	0.78	N/A
	1.8	19	8.64	454.7	467	-3%	600	0.76	0.78	N/A
	1.9	16.67	7.1	425.9	467	-9%	600	0.71	0.78	N/A
	1.10	26.25	13.66	520.4	467	11%	600	0.87	0.78	1.11
	2.1	32.75	17.5	534.4	367	46%	600	0.89	0.61	1.46
	2.2	26.5	13.58	512.5	367	40%	600	0.85	0.61	1.40
	2.3	22.5	10.93	485.8	367	32%	600	0.81	0.61	1.32
	2.4	19	8.59	452.1	367	23%	600	0.75	0.61	1.23
	2.5	19	8.59	452.1	367	23%	600	0.75	0.61	1.23
	2.6	19	8.59	452.1	367	23%	600	0.75	0.61	1.23
	2.7	11.25	3.5	311.1	367	-15%	600	0.52	0.61	N/A
	2.8	19.75	9.1	460.8	367	26%	600	0.77	0.61	1.26
	2.9	14.25	5.42	380.4	367	4%	600	0.63	0.61	1.04
E/W	2.10	26.25	13.3	506.7	367	38%	600	0.84	0.61	1.38
	3.1	26.25	12.95	493.3	521	-5%	600	0.82	0.87	N/A
	3.2	20	8.79	439.5	521	-16%	600	0.73	0.87	N/A
	4.1	17.5	7.27	415.4	302	38%	600	0.69	0.50	1.38
	5.1	30.5	15.11	495.4	437	13%	600	0.83	0.73	1.13
	5.2	11.75	3.58	304.7	437	-30%	600	0.51	0.73	N/A
	6.1	30.5	15.29	501.3	425	18%	600	0.84	0.71	1.18
	7.1	30.5	15.64	512.8	205	150%	600	0.85	0.34	2.50
	7.2	26.25	12.88	490.7	205	139%	600	0.82	0.34	2.39
	8.1	18.67	8.26	442.4	297	49%	600	0.74	0.50	1.49
	8.2	26.25	13.17	501.7	297	69%	600	0.84	0.50	1.69
	9.1	26.25	13.45	512.4	253	103%	600	0.85	0.42	2.03
	10.1	15.5	6.37	411.0	537	-23%	600	0.68	0.90	N/A
	10.2	15	6.05	403.3	537	-25%	600	0.67	0.90	N/A
	10.3	22.75	11.36	499.3	537	-7%	600	0.83	0.90	N/A
	10.4	22.75	11.36	499.3	537	-7%	600	0.83	0.90	N/A
	10.5	26.25	13.74	523.4	537	-3%	600	0.87	0.90	N/A
	11.1	15.5	6.43	414.8	615	-33%	600	0.69	1.03	N/A
	11.2	21.5	10.57	491.6	615	-20%	600	0.82	1.03	N/A
	11.3	19	8.84	465.3	615	-24%	600	0.78	1.03	N/A
	11.4	38.5	21.95	570.1	615	-7%	600	0.95	1.03	N/A
	A.1	17.5	6.82	389.7	626	-38%	600	0.65	1.04	N/A
	A.2	9.75	2.36	242.1	626	-61%	600	0.40	1.04	N/A
	A.3	22.5	9.83	436.9	626	-30%	600	0.73	1.04	N/A
	B.1	35	16.98	485.1	345	41%	600	0.81	0.58	1.41
	B.2	12	3.54	295.0	345	-14%	600	0.49	0.58	N/A
	C.1	35	16.58	473.7	326	45%	600	0.79	0.54	1.45
	C.2	25.25	11	435.6	326	34%	600	0.73	0.54	1.34
	D.1	31	13.87	447.4	608	-26%	600	0.75	1.01	N/A
	E.1	31	13.4	432.3	265	63%	600	0.72	0.44	1.63
	E.2	25.25	10.35	409.9	265	55%	600	0.68	0.44	1.55
	F.1	31	12.93	417.1	241	73%	600	0.70	0.40	1.73
	F.2	31.5	13.18	418.4	241	74%	600	0.70	0.40	1.74
	G.1	31	12.46	401.9	239	68%	600	0.67	0.40	1.68
	G.2	31.5	12.7	403.2	239	69%	600	0.67	0.40	1.69
	H.1	31	12.29	396.5	239	66%	600	0.66	0.40	1.66
	H.2	31.5	12.53	397.8	239	66%	600	0.66	0.40	1.66
	I.1	31	12.74	411.0	239	72%	600	0.68	0.40	1.72
	I.2	31.5	12.99	412.4	239	73%	600	0.69	0.40	1.73
	J.1	31	13.19	425.5	133	220%	600	0.71	0.22	3.20
N/S	J.2	25.25	10.06	398.4	133	200%	600	0.66	0.22	3.00
	K.1	34.75	15.77	453.8	527	-14%	600	0.76	0.88	N/A
	K.2	16.25	5.63	346.5	527	-34%	600	0.58	0.88	N/A
	K.3	9.67	2.15	222.3	527	-58%	600	0.37	0.88	N/A
	K.4	18	6.61	367.2	527	-30%	600	0.61	0.88	N/A
	K.5	19.67	7.55	383.8	527	-27%	600	0.64	0.88	N/A
	K.6	17.5	6.33	361.7	527	-31%	600	0.60	0.88	N/A
	K.7	14	4.39	313.6	527	-40%	600	0.52	0.88	N/A
	L.1	20.5	8.08	394.1	577	-32%	600	0.66	0.96	N/A
	L.2	66	32.34	490.0	577	-15%	600	0.82	0.96	N/A
	L.3	19	7.23	380.5	577	-34%	600	0.63	0.96	N/A
	L.4	19	7.23	380.5	577	-34%	600	0.63	0.96	N/A
	M.1	30	12.35	411.7	406	1%	600	0.69	0.68	1.01
	M.2	34.75	14.58	419.6	406	3%	600	0.70	0.68	1.03
	N.1	30	11.89	396.3	308	29%	600	0.66	0.51	1.29
	N.2	30	11.77	392.3	308	27%	600	0.65	0.51	1.27
	O.1	30	12.07	402.3	270	49%	600	0.67	0.45	1.49
	O.2	30	12	400.0	270	48%	600	0.67	0.45	1.48
	P.1	30	12.39	413.0	370	12%	600	0.69	0.62	1.12
	Q.1	20.67	7.77	375.9	279	35%	600	0.63	0.47	1.35

PCS Structural Solutions

Project: Mercer Island Mixed Use | Job Number: 19028

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MULTISTORY SHEARWALL DESIGN

ENTER ALL LOADS UNFACTORED

Cs =	0.142	
SDS =	0.92	
ROOF DL =	18	psf
FLOOR DL =	25	psf
WALL WT =	9	psf
FLOOR DEPTH =	1	ft

Drift Limit

D =	0.02
C_d=	4.0

LOAD COMBOS - ALLOWABLE STRESS DESIGN

	D	L	S	E	
LC 1	0.9	0	0	0.714	HOLDOWN DESIGN
LC 2	1.0	1	1	0.714	POST DESIGN
LC 3	1.0	0	0	0.714	POST DESIGN

SPECIES	Fcp	G
HF	405 psi	0.43
DF	625 psi	0.5
DFpl	625 psi	0.43

SHEARWALL TYPES

TYPE	V_{ALLOW}	G_a
A	460 plf	15.00 k-in
B	600 plf	18.50 k-in
C	920 plf	30.00 k-in
D	1200 plf	37.00 k-in

CONT. ROD HOLDOWNS

TYPE	T_{ALLOW}	GRADE
0.500 in	4270 lbs	ASTM A307
0.625 in	6675 lbs	ASTM A307
0.750 in	9610 lbs	ASTM A307
0.875 in	13080 lbs	ASTM A307
1.000 in	17080 lbs	ASTM A307
1.125 in	21620 lbs	ASTM A307
1.250 in	26690 lbs	ASTM A307
1.500 in	38495 lbs	ASTM A307
1.750 in	52315 lbs	ASTM A307
HDU-02	3075 lbs	0.088 in
HDU-04	4565 lbs	0.114 in
HDU-05	5645 lbs	0.115 in
HDU-08	7870 lbs	0.113 in
HDU-11	11175 lbs	0.137 in
HDU-14	14445 lbs	0.177 in

POST TYPES

TYPE	E	AREA	D	CF	Fc	Ft
2x6	1.50E+06	8.25 in2	5.500 in	1.1	1350 psi	575 psi
3x6	1.50E+06	13.75 in2	5.500 in	1.1	1350 psi	575 psi
4x6	1.50E+06	19.25 in2	5.500 in	1.1	1350 psi	575 psi
6x6	1.60E+06	30.25 in2	5.500 in	1.1	1000 psi	825 psi
6x8	1.60E+06	41.25 in2	5.500 in	1.1	1000 psi	825 psi
6x10	1.60E+06	52.25 in2	5.500 in	1.0	925 psi	675 psi

PCS Structural Solutions

Project: Mercer Island Mixed Use | Job Number: 19028

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Originating Office: Seattle | Date: 09/27/21

MULTISTORY SHEARWALL DESIGN - SUMMARY

LABEL	STATUS	Tmax (K)	Vmax (plf)	D/C - (1) SIDED SW	SHEATHING	CONT. HOLDOWN ROD DIAMETER	Cmax (K)
W(A.1)	OK	11.2	629.8	105%	(1) SIDE	0.875	13.5
W(A.2)	OK	13.8	630	105%	(1) SIDE	0.875	13.5
W(A.3)	OK	9.9	630	105%	(1) SIDE	0.875	13.5
W(B.1)	OK	3.3	490	82%	(1) SIDE	0.500	10.5
W(B.2)	OK	4.3	347	58%	(1) SIDE	0.625	7.4
W(C.1)	OK	0.0	475	79%	(1) SIDE	NONE	10.2
W(C.2)	OK	1.6	439	73%	(1) SIDE	0.500	9.4
W(D.1)	OK	1.1	611	102%	(1) SIDE	0.500	13.1
W(E.1)	OK	0.0	434	72%	(1) SIDE	NONE	9.3
W(E.2)	OK	0.0	413	69%	(1) SIDE	NONE	8.8
W(J.2)	OK	2.6	400	67%	(1) SIDE	0.500	8.6
W(K.1)	OK	3.9	530	88%	(1) SIDE	0.500	11.3
W(K.2)	OK	11.5	530	88%	(1) SIDE	0.875	11.3
W(L.1)	OK	9.7	580	97%	(1) SIDE	0.875	12.4
W(L.2)	OK	0.1	580	97%	(1) SIDE	NONE	12.4
W(L.3)	OK	9.3	580	97%	(1) SIDE	0.875	12.4
W(M.1)	OK	0.0	420	70%	(1) SIDE	NONE	9.0
W(N.1)	OK	0.0	399	67%	(1) SIDE	NONE	8.5
W(O.1)	OK	0.0	404	67%	(1) SIDE	NONE	8.7
W(P.1)	OK	0.0	417	69%	(1) SIDE	NONE	8.9
W(Q.1)	OK	1.0	379	63%	(1) SIDE	0.500	8.1

PCS Structural Solutions

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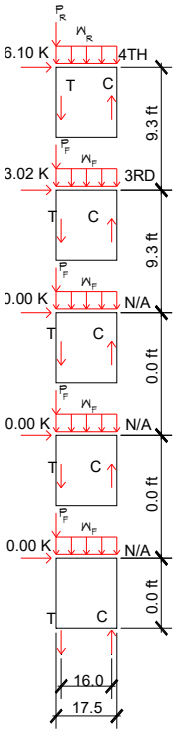
Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL WA.1

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	3.17	ft	1+ 0.14Sds =	1.13	
Trib Area =	0.00	ft^2	*Resists uplift only (due to near walls)*		
L =	17.5 ft		*Total Wall Length*		
L_{HD} =	16.0 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	258	A	0.56	0.5	0.47	(4)	2x6	0.141	0.015	OK
4TH	DF	507	B	0.84	0.625	0.89	(4)	2x6	0.370	0.015	OK
3RD	DF	630	B	1.05	0.875	0.85	(4)	2x6	0.654	0.018	OK
N/A	DF	630	B	0.00	NONE	0.00	(4)	2x6	0.000	0.000	OK
N/A	DF	630	B	0.00	NONE	0.00	(4)	2x6	0.000	0.000	OK
N/A	DF	630	B	0.00	NONE	0.00	(4)	2x6	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	361	0	6.31 K	6.31	0.00	0.16	11.3 ft	11.3	71.3	24.3	**2.0**
4TH	349	0	6.10 K	12.41	0.00	0.16	9.3 ft	20.6	186.8	49.2	**6.0**
3RD	173	0	3.02 K	15.43	0.00	0.16	9.3 ft	29.9	330.2	74.2	**11.2**
N/A	0	0	0.00 K	15.43	0.00	0.08	0.0 ft	29.9	330.2	86.3	**0.0**
N/A	0	0	0.00 K	15.43	0.00	0.08	0.0 ft	29.9	330.2	98.4	**0.0**
N/A	0	0	0.00 K	15.43	0.00	0.08	0.0 ft	29.9	330.2	110.5	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	361	15	0.180	33	1.50E+06	10.3	0.252	0.975	0.127	26.9	0.452	1.427	**0.180**
4TH	709	19	0.180	33	1.50E+06	8.3	0.322	0.723	0.105	16.6	0.198	0.921	**0.180**
3RD	882	19	0.180	33	1.50E+06	8.3	0.401	0.401	0.105	8.3	0.105	0.505	**0.180**
N/A	882	19	0.000	33	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	882	19	0.000	33	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	882	19	0.000	33	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	4.1	2.911	10.3	0.340	88	625	808	0.141	0.109	0.141
4TH	0.00	0.00	0.00	10.7	7.622	8.3	0.486	231	625	1154	0.370	0.200	0.370
3RD	0.00	0.00	0.00	18.9	13.479	8.3	0.486	408	625	1154	0.654	0.354	0.654
N/A	0.00	0.00	0.00	18.9	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	18.9	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	18.9	0.000	0.0	0.000	0	625	0			0.000

PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

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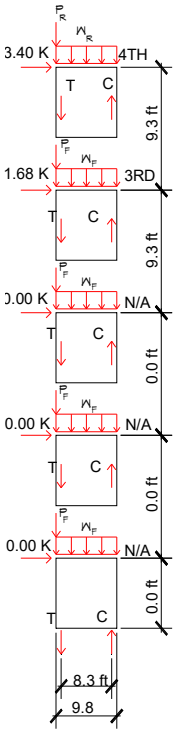

STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL WA.2

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	3.17	ft	1+ 0.14Sds =	1.13	
Trib Area =	0.00	ft^2	*Resists uplift only (due to near walls)*		
L =	9.8 ft		*Total Wall Length*		
L_{HD} =	8.3 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	258	A	0.56	0.5	0.64	(4)	2x6	0.141	0.019	OK
4TH	DF	507	B	0.84	0.75	0.79	(4)	2x6	0.370	0.017	OK
3RD	DF	630	B	1.05	0.875	1.05	(4)	2x6	0.654	0.020	OK
N/A	DF	630	B	0.00	NONE	0.00	(4)	2x6	0.000	0.000	OK
N/A	DF	630	B	0.00	NONE	0.00	(4)	2x6	0.000	0.000	OK
N/A	DF	630	B	0.00	NONE	0.00	(4)	2x6	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	361	0	3.52 K	3.52	0.00	0.16	11.3 ft	11.3	39.7	7.5	**2.7**
4TH	349	0	3.40 K	6.91	0.00	0.16	9.3 ft	20.6	104.0	15.3	**7.6**
3RD	173	0	1.68 K	8.60	0.00	0.16	9.3 ft	29.9	184.0	23.0	**13.8**
N/A	0	0	0.00 K	8.60	0.00	0.08	0.0 ft	29.9	184.0	26.8	**0.0**
N/A	0	0	0.00 K	8.60	0.00	0.08	0.0 ft	29.9	184.0	30.5	**0.0**
N/A	0	0	0.00 K	8.60	0.00	0.08	0.0 ft	29.9	184.0	34.3	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	361	15	0.160	33	1.50E+06	10.3	0.255	0.987	0.219	26.9	0.700	1.686	**0.160**
4TH	709	19	0.150	33	1.50E+06	8.3	0.326	0.732	0.169	16.6	0.300	1.031	**0.150**
3RD	882	19	0.130	33	1.50E+06	8.3	0.405	0.405	0.147	8.3	0.147	0.552	**0.130**
N/A	882	19	0.000	33	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	882	19	0.000	33	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	882	19	0.000	33	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	4.1	2.911	10.3	0.340	88	625	808	0.141	0.109	0.141
4TH	0.00	0.00	0.00	10.7	7.622	8.3	0.486	231	625	1154	0.370	0.200	0.370
3RD	0.00	0.00	0.00	18.9	13.479	8.3	0.486	408	625	1154	0.654	0.354	0.654
N/A	0.00	0.00	0.00	18.9	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	18.9	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	18.9	0.000	0.0	0.000	0	625	0			0.000

PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

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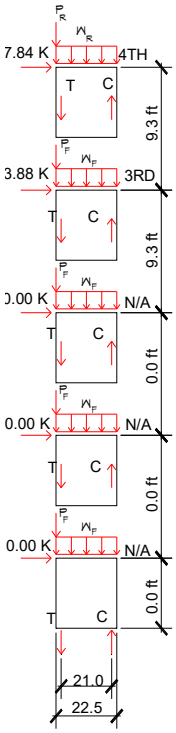


STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL WA.3

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	3.17	ft	1+ 0.14Sds =	1.13	
Trib Area =	0.00	ft^2	*Resists uplift only (due to near walls)*		
L =	22.5 ft		*Total Wall Length*		
L_{HD} =	21.0 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	258	A	0.56	0.5	0.39	(4)	2x4	0.397	0.013	OK
4TH	DF	507	B	0.84	0.625	0.78	(4)	2x4	0.690	0.014	OK
3RD	DF	630	B	1.05	0.875	0.76	(5)	2x4	0.977	0.017	OK
N/A	DF	630	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	630	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	630	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	361	0	8.12 K	8.12	0.00	0.16	11.3 ft	11.3	91.7	40.2	**1.6**
4TH	349	0	7.84 K	15.96	0.00	0.16	9.3 ft	20.6	240.1	81.4	**5.2**
3RD	173	0	3.88 K	19.84	0.00	0.16	9.3 ft	29.9	424.6	122.6	**9.9**
N/A	0	0	0.00 K	19.84	0.00	0.08	0.0 ft	29.9	424.6	142.6	**0.0**
N/A	0	0	0.00 K	19.84	0.00	0.08	0.0 ft	29.9	424.6	162.7	**0.0**
N/A	0	0	0.00 K	19.84	0.00	0.08	0.0 ft	29.9	424.6	182.7	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	361	15	0.180	21	1.50E+06	10.3	0.252	0.976	0.097	26.9	0.345	1.321	**0.180**
4TH	709	19	0.180	21	1.50E+06	8.3	0.323	0.724	0.080	16.6	0.151	0.874	**0.180**
3RD	882	19	0.180	26	1.50E+06	8.3	0.400	0.400	0.080	8.3	0.080	0.480	**0.180**
N/A	882	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	882	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	882	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	4.1	2.911	10.3	0.147	139	625	349	0.222	0.397	0.397
4TH	0.00	0.00	0.00	10.7	7.622	8.3	0.221	363	625	526	0.581	0.690	0.690
3RD	0.00	0.00	0.00	18.9	13.479	8.3	0.221	514	625	526	0.822	0.977	0.977
N/A	0.00	0.00	0.00	18.9	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	18.9	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	18.9	0.000	0.0	0.000	0	625	0			0.000

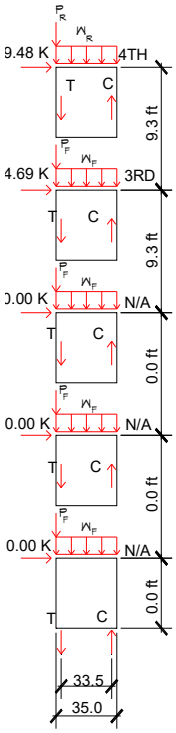
PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL WB.1

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	3.75	ft	1+ 0.14Sds =	1.13	
Trib Area =	5.00	ft^2	*Resists uplift only (due to near walls)*		
L =	35.0 ft		*Total Wall Length*		
L_{HD} =	33.5 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	200	A	0.44	0.5	0.00	(4)	2x4	0.309	0.009	OK
4TH	DF	394	A	0.86	0.5	0.27	(4)	2x4	0.537	0.013	OK
3RD	DF	490	B	0.82	0.5	0.77	(4)	2x4	0.949	0.013	OK
N/A	DF	490	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	490	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	490	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	280	0	9.82 K	9.82	0.09	0.17	11.3 ft	11.3	110.9	106.8	**0.0**
4TH	271	0	9.48 K	19.30	0.13	0.18	9.3 ft	20.6	290.4	219.8	**1.1**
3RD	134	0	4.69 K	23.99	0.13	0.18	9.3 ft	29.9	513.5	332.9	**3.3**
N/A	0	0	0.00 K	23.99	0.13	0.09	0.0 ft	29.9	513.5	394.7	**0.0**
N/A	0	0	0.00 K	23.99	0.13	0.09	0.0 ft	29.9	513.5	456.5	**0.0**
N/A	0	0	0.00 K	23.99	0.13	0.09	0.0 ft	29.9	513.5	518.3	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	280	15	0.180	21	1.50E+06	10.3	0.195	0.813	0.061	26.9	0.216	1.029	**0.180**
4TH	551	15	0.180	21	1.50E+06	8.3	0.307	0.618	0.050	16.6	0.095	0.712	**0.180**
3RD	685	19	0.180	21	1.50E+06	8.3	0.310	0.310	0.050	8.3	0.050	0.360	**0.180**
N/A	685	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	685	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	685	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	3.2	2.264	10.3	0.147	108	625	349	0.172	0.309	0.309
4TH	0.00	0.00	0.00	8.3	5.926	8.3	0.221	282	625	526	0.451	0.537	0.537
3RD	0.00	0.00	0.00	14.7	10.479	8.3	0.221	499	625	526	0.798	0.949	0.949
N/A	0.00	0.00	0.00	14.7	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	14.7	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	14.7	0.000	0.0	0.000	0	625	0			0.000

PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

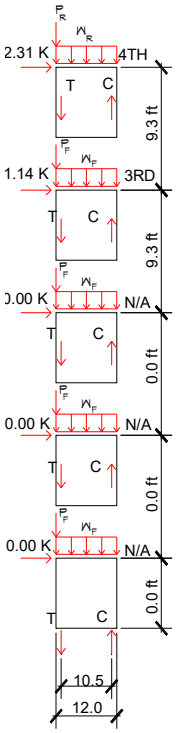
Multiplier:

STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL WB.2

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	7.00	ft	1+ 0.14Sds =	1.13	
Trib Area =	5.00	ft^2	*Resists uplift only (due to near walls)*		
L =	12.0 ft		*Total Wall Length*		
L_{HD} =	10.5 ft		*Distance from Holdown to comp post*		



WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	142	A	0.31	0.5	0.13	(4)	2x6	0.078	0.016	OK
4TH	DF	279	A	0.61	0.5	0.48	(4)	2x6	0.204	0.013	OK
3RD	DF	347	A	0.75	0.625	0.64	(4)	2x6	0.360	0.016	OK
N/A	DF	347	B	0.00	NONE	0.00	(4)	2x6	0.000	0.000	OK
N/A	DF	347	B	0.00	NONE	0.00	(4)	2x6	0.000	0.000	OK
N/A	DF	347	B	0.00	NONE	0.00	(4)	2x6	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	199	0	2.39 K	2.39	0.09	0.23	11.3 ft	11.3	27.0	17.5	**0.6**
4TH	192	0	2.31 K	4.69	0.13	0.26	9.3 ft	20.6	70.6	37.6	**2.0**
3RD	95	0	1.14 K	5.83	0.13	0.26	9.3 ft	29.9	124.9	57.7	**4.3**
N/A	0	0	0.00 K	5.83	0.13	0.18	0.0 ft	29.9	124.9	71.8	**0.0**
N/A	0	0	0.00 K	5.83	0.13	0.18	0.0 ft	29.9	124.9	85.9	**0.0**
N/A	0	0	0.00 K	5.83	0.13	0.18	0.0 ft	29.9	124.9	100.0	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	199	15	0.180	33	1.50E+06	10.3	0.140	0.633	0.194	26.9	0.689	1.322	**0.180**
4TH	391	15	0.180	33	1.50E+06	8.3	0.220	0.493	0.159	16.6	0.302	0.795	**0.180**
3RD	486	15	0.180	33	1.50E+06	8.3	0.273	0.273	0.159	8.3	0.159	0.433	**0.180**
N/A	486	19	0.000	33	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	486	19	0.000	33	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	486	19	0.000	33	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	2.2	1.605	10.3	0.340	49	625	808	0.078	0.060	0.078
4TH	0.00	0.00	0.00	5.9	4.203	8.3	0.486	127	625	1154	0.204	0.110	0.204
3RD	0.00	0.00	0.00	10.4	7.432	8.3	0.486	225	625	1154	0.360	0.195	0.360
N/A	0.00	0.00	0.00	10.4	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	10.4	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	10.4	0.000	0.0	0.000	0	625	0			0.000

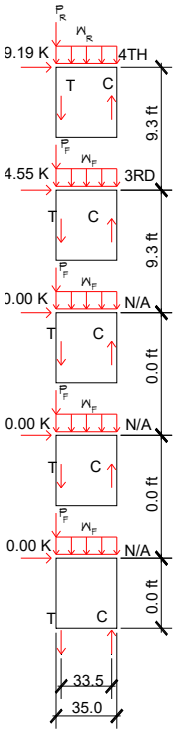
PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL WC.1

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	10.50	ft	1+ 0.14Sds =	1.13	
Trib Area =	5.00	ft^2	*Resists uplift only (due to near walls)*		
L =	35.0 ft		*Total Wall Length*		
L_{HD} =	33.5 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	194	A	0.42	NONE	0.00	(4)	2x4	0.300	0.006	OK
4TH	DF	382	A	0.83	NONE	0.00	(4)	2x4	0.520	0.011	OK
3RD	DF	475	B	0.79	NONE	0.00	(4)	2x4	0.920	0.011	OK
N/A	DF	475	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	475	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	475	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	272	0	9.52 K	9.52	0.09	0.29	11.3 ft	11.3	107.5	181.2	**0.0**
4TH	263	0	9.19 K	18.71	0.13	0.35	9.3 ft	20.6	281.5	397.6	**0.0**
3RD	130	0	4.55 K	23.25	0.13	0.35	9.3 ft	29.9	497.8	614.0	**0.0**
N/A	0	0	0.00 K	23.25	0.13	0.26	0.0 ft	29.9	497.8	779.2	**0.0**
N/A	0	0	0.00 K	23.25	0.13	0.26	0.0 ft	29.9	497.8	944.4	**0.0**
N/A	0	0	0.00 K	23.25	0.13	0.26	0.0 ft	29.9	497.8	1109.5	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	272	15	0.088	21	1.50E+06	10.3	0.189	0.788	0.030	26.9	0.030	0.818	**0.088**
4TH	534	15	0.000	21	1.50E+06	8.3	0.298	0.599	0.000	16.6	0.000	0.599	**0.000**
3RD	664	19	0.000	21	1.50E+06	8.3	0.301	0.301	0.000	8.3	0.000	0.301	**0.000**
N/A	664	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	664	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	664	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	3.1	2.194	10.3	0.147	104	625	349	0.167	0.300	0.300
4TH	0.00	0.00	0.00	8.0	5.745	8.3	0.221	274	625	526	0.438	0.520	0.520
3RD	0.00	0.00	0.00	14.2	10.158	8.3	0.221	484	625	526	0.774	0.920	0.920
N/A	0.00	0.00	0.00	14.2	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	14.2	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	14.2	0.000	0.0	0.000	0	625	0			0.000

PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

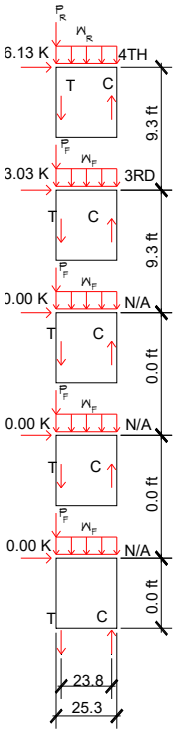
Multiplier:

STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL WC.2

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	7.63	ft	1+ 0.14Sds =	1.13	
Trib Area =	5.00	ft^2	*Resists uplift only (due to near walls)*		
L =	25.3 ft		*Total Wall Length*		
L_{HD} =	23.8 ft		*Distance from Holdown to comp post*		



WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	179	A	0.39	0.5	0.00	(4)	2x4	0.277	0.010	OK
4TH	DF	353	A	0.77	0.5	0.04	(4)	2x4	0.481	0.012	OK
3RD	DF	439	A	0.95	0.5	0.37	(4)	2x4	0.850	0.015	OK
N/A	DF	439	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	439	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	439	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	251	0	6.34 K	6.34	0.09	0.24	11.3 ft	11.3	71.7	78.4	**0.0**
4TH	243	0	6.13 K	12.47	0.13	0.27	9.3 ft	20.6	187.7	169.1	**0.2**
3RD	120	0	3.03 K	15.50	0.13	0.27	9.3 ft	29.9	331.9	259.7	**1.6**
N/A	0	0	0.00 K	15.50	0.13	0.19	0.0 ft	29.9	331.9	323.6	**0.0**
N/A	0	0	0.00 K	15.50	0.13	0.19	0.0 ft	29.9	331.9	387.5	**0.0**
N/A	0	0	0.00 K	15.50	0.13	0.19	0.0 ft	29.9	331.9	451.4	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	251	15	0.180	21	1.50E+06	10.3	0.175	0.795	0.086	26.9	0.305	1.100	**0.180**
4TH	494	15	0.180	21	1.50E+06	8.3	0.276	0.620	0.070	16.6	0.133	0.753	**0.180**
3RD	614	15	0.180	21	1.50E+06	8.3	0.343	0.343	0.070	8.3	0.070	0.414	**0.180**
N/A	614	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	614	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	614	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	2.8	2.028	10.3	0.147	97	625	349	0.155	0.277	0.277
4TH	0.00	0.00	0.00	7.4	5.309	8.3	0.221	253	625	526	0.404	0.481	0.481
3RD	0.00	0.00	0.00	13.1	9.388	8.3	0.221	447	625	526	0.715	0.850	0.850
N/A	0.00	0.00	0.00	13.1	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	13.1	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	13.1	0.000	0.0	0.000	0	625	0			0.000

PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

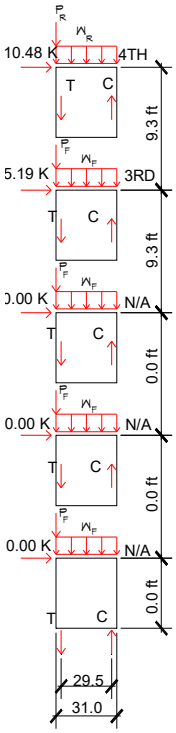
Multiplier:

STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL WD.1

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	10.50	ft	1+ 0.14Sds =	1.13	
Trib Area =	5.00	ft^2	*Resists uplift only (due to near walls)*		
L =	31.0 ft		*Total Wall Length*		
L_{HD} =	29.5 ft		*Distance from Holdown to comp post*		



WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	250	A	0.54	0.5	0.00	(2)	2x4	0.771	0.008	OK
4TH	DF	492	B	0.82	0.5	0.00	(3)	2x4	0.893	0.011	OK
3RD	DF	611	B	1.02	0.5	0.27	(5)	2x4	0.948	0.014	OK
N/A	DF	611	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	611	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	611	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	350	0	10.85 K	10.85	0.09	0.29	11.3 ft	11.3	122.6	142.5	**0.0**
4TH	338	0	10.48 K	21.33	0.13	0.35	9.3 ft	20.6	321.0	312.7	**0.0**
3RD	167	0	5.19 K	26.52	0.13	0.35	9.3 ft	29.9	567.6	482.9	**1.1**
N/A	0	0	0.00 K	26.52	0.13	0.26	0.0 ft	29.9	567.6	612.9	**0.0**
N/A	0	0	0.00 K	26.52	0.13	0.26	0.0 ft	29.9	567.6	742.9	**0.0**
N/A	0	0	0.00 K	26.52	0.13	0.26	0.0 ft	29.9	567.6	872.9	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	350	15	0.088	11	1.50E+06	10.3	0.247	0.947	0.034	26.9	0.034	0.981	**0.088**
4TH	688	19	0.000	16	1.50E+06	8.3	0.313	0.700	0.000	16.6	0.000	0.700	**0.000**
3RD	856	19	0.000	26	1.50E+06	8.3	0.387	0.387	0.000	8.3	0.000	0.387	**0.000**
N/A	856	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	856	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	856	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	4.0	2.825	10.3	0.147	269	625	349	0.430	0.771	0.771
4TH	0.00	0.00	0.00	10.4	7.396	8.3	0.221	470	625	526	0.751	0.893	0.893
3RD	0.00	0.00	0.00	18.3	13.079	8.3	0.221	498	625	526	0.797	0.948	0.948
N/A	0.00	0.00	0.00	18.3	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	18.3	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	18.3	0.000	0.0	0.000	0	625	0			0.000

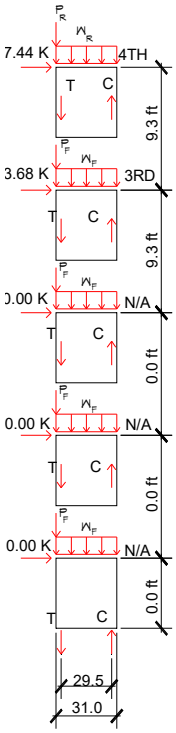
PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL WE.1, WF.1, WF.2, WG.1, WG.2, WH.1, WH.2, WI.1, WI.2, WJ.1

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	10.50	ft	1+ 0.14Sds =	1.13	
Trib Area =	5.00	ft^2	*Resists uplift only (due to near walls)*		
L =	31.0 ft		*Total Wall Length*		
L_{HD} =	29.5 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	178	A	0.39	NONE	0.00	(2)	2x4	0.548	0.006	OK
4TH	DF	349	A	0.76	NONE	0.00	(3)	2x4	0.634	0.010	OK
3RD	DF	434	A	0.94	NONE	0.00	(5)	2x4	0.673	0.012	OK
N/A	DF	434	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	434	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	434	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	249	0	7.71 K	7.71	0.09	0.29	11.3 ft	11.3	87.1	142.5	**0.0**
4TH	240	0	7.44 K	15.15	0.13	0.35	9.3 ft	20.6	228.0	312.7	**0.0**
3RD	119	0	3.68 K	18.83	0.13	0.35	9.3 ft	29.9	403.1	482.9	**0.0**
N/A	0	0	0.00 K	18.83	0.13	0.26	0.0 ft	29.9	403.1	612.9	**0.0**
N/A	0	0	0.00 K	18.83	0.13	0.26	0.0 ft	29.9	403.1	742.9	**0.0**
N/A	0	0	0.00 K	18.83	0.13	0.26	0.0 ft	29.9	403.1	872.9	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	249	15	0.088	11	1.50E+06	10.3	0.175	0.788	0.034	26.9	0.034	0.821	**0.088**
4TH	489	15	0.000	16	1.50E+06	8.3	0.274	0.612	0.000	16.6	0.000	0.612	**0.000**
3RD	608	15	0.000	26	1.50E+06	8.3	0.339	0.339	0.000	8.3	0.000	0.339	**0.000**
N/A	608	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	608	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	608	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	2.8	2.006	10.3	0.147	191	625	349	0.306	0.548	0.548
4TH	0.00	0.00	0.00	7.4	5.253	8.3	0.221	333	625	526	0.534	0.634	0.634
3RD	0.00	0.00	0.00	13.0	9.288	8.3	0.221	354	625	526	0.566	0.673	0.673
N/A	0.00	0.00	0.00	13.0	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	13.0	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	13.0	0.000	0.0	0.000	0	625	0			0.000

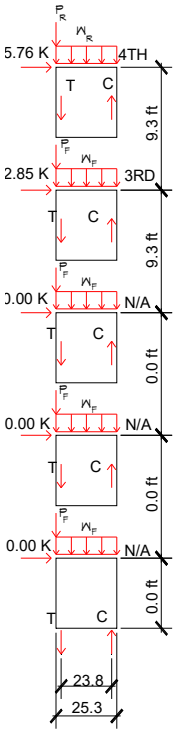
PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL WE.2

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	10.50	ft	1+ 0.14Sds =	1.13	
Trib Area =	5.00	ft^2	*Resists uplift only (due to near walls)*		
L =	25.3 ft		*Total Wall Length*		
L_{HD} =	23.8 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	169	A	0.37	NONE	0.00	(4)	2x4	0.260	0.010	OK
4TH	DF	332	A	0.72	NONE	0.00	(4)	2x4	0.452	0.012	OK
3RD	DF	413	A	0.90	NONE	0.00	(4)	2x4	0.800	0.014	OK
N/A	DF	413	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	413	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	413	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	236	0	5.97 K	5.97	0.09	0.29	11.3 ft	11.3	67.4	94.9	0.0
4TH	228	0	5.76 K	11.73	0.13	0.35	9.3 ft	20.6	176.6	208.5	0.0
3RD	113	0	2.85 K	14.59	0.13	0.35	9.3 ft	29.9	312.2	322.0	0.0
N/A	0	0	0.00 K	14.59	0.13	0.26	0.0 ft	29.9	312.2	408.8	0.0
N/A	0	0	0.00 K	14.59	0.13	0.26	0.0 ft	29.9	312.2	495.7	0.0
N/A	0	0	0.00 K	14.59	0.13	0.26	0.0 ft	29.9	312.2	582.5	0.0

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	236	15	0.180	21	1.50E+06	10.3	0.165	0.748	0.086	26.9	0.305	1.053	**0.180**
4TH	465	15	0.180	21	1.50E+06	8.3	0.260	0.583	0.070	16.6	0.133	0.717	**0.180**
3RD	578	15	0.180	21	1.50E+06	8.3	0.323	0.323	0.070	8.3	0.070	0.394	**0.180**
N/A	578	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	578	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	578	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	2.7	1.908	10.3	0.147	91	625	349	0.145	0.260	0.260
4TH	0.00	0.00	0.00	7.0	4.995	8.3	0.221	238	625	526	0.381	0.452	0.452
3RD	0.00	0.00	0.00	12.4	8.832	8.3	0.221	421	625	526	0.673	0.800	0.800
N/A	0.00	0.00	0.00	12.4	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	12.4	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	12.4	0.000	0.0	0.000	0	625	0			0.000

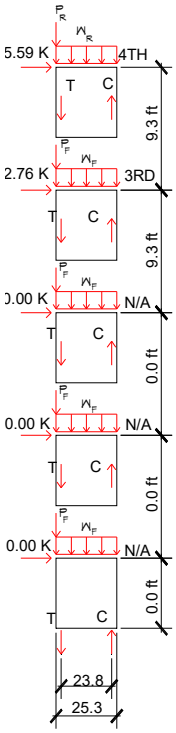
PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL WJ.2

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.145ds =	0.77		Floor Dead =	25	psf
Trib Width =	4.88	ft	1+ 0.145ds =	1.13	
Trib Area =	5.00	ft^2	*Resists uplift only (due to near walls)*		
L =	25.3 ft		*Total Wall Length*		
L_{HD} =	23.8 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	164	A	0.36	0.5	0.00	(4)	2x4	0.253	0.010	OK
4TH	DF	322	A	0.70	0.5	0.21	(4)	2x4	0.439	0.011	OK
3RD	DF	400	A	0.87	0.5	0.61	(4)	2x4	0.776	0.014	OK
N/A	DF	400	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	400	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	400	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	229	0	5.79 K	5.79	0.09	0.19	11.3 ft	11.3	65.4	62.7	**0.0**
4TH	221	0	5.59 K	11.38	0.13	0.21	9.3 ft	20.6	171.2	131.4	**0.9**
3RD	110	0	2.76 K	14.14	0.13	0.21	9.3 ft	29.9	302.7	200.0	**2.6**
N/A	0	0	0.00 K	14.14	0.13	0.12	0.0 ft	29.9	302.7	242.1	**0.0**
N/A	0	0	0.00 K	14.14	0.13	0.12	0.0 ft	29.9	302.7	284.1	**0.0**
N/A	0	0	0.00 K	14.14	0.13	0.12	0.0 ft	29.9	302.7	326.1	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	229	15	0.180	21	1.50E+06	10.3	0.160	0.725	0.086	26.9	0.305	1.030	**0.180**
4TH	451	15	0.180	21	1.50E+06	8.3	0.252	0.565	0.070	16.6	0.133	0.699	**0.180**
3RD	560	15	0.180	21	1.50E+06	8.3	0.313	0.313	0.070	8.3	0.070	0.384	**0.180**
N/A	560	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	560	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	560	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	2.6	1.850	10.3	0.147	88	625	349	0.141	0.253	0.253
4TH	0.00	0.00	0.00	6.8	4.843	8.3	0.221	231	625	526	0.369	0.439	0.439
3RD	0.00	0.00	0.00	12.0	8.564	8.3	0.221	408	625	526	0.652	0.776	0.776
N/A	0.00	0.00	0.00	12.0	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	12.0	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	12.0	0.000	0.0	0.000	0	625	0			0.000

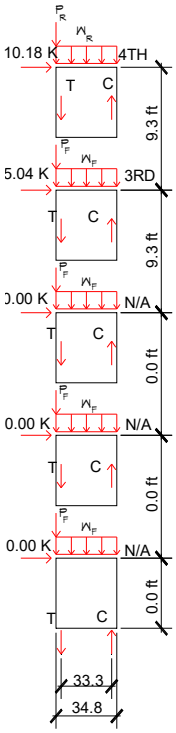
PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL WK.1

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	4.13	ft	1+ 0.14Sds =	1.13	
Trib Area =	5.00	ft^2	*Resists uplift only (due to near walls)*		
L =	34.8 ft		*Total Wall Length*		
L_{HD} =	33.3 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	217	A	0.47	0.5	0.01	(4)	2x4	0.334	0.010	OK
4TH	DF	426	A	0.93	0.5	0.34	(4)	2x4	0.580	0.014	OK
3RD	DF	530	B	0.88	0.5	0.91	(4)	2x4	1.026	0.014	OK
N/A	DF	530	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	530	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	530	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	303	0	10.54 K	10.54	0.09	0.18	11.3 ft	11.3	119.1	109.4	**0.0**
4TH	293	0	10.18 K	20.72	0.13	0.19	9.3 ft	20.6	311.8	226.5	**1.5**
3RD	145	0	5.04 K	25.76	0.13	0.19	9.3 ft	29.9	551.4	343.7	**3.9**
N/A	0	0	0.00 K	25.76	0.13	0.10	0.0 ft	29.9	551.4	410.3	**0.0**
N/A	0	0	0.00 K	25.76	0.13	0.10	0.0 ft	29.9	551.4	476.9	**0.0**
N/A	0	0	0.00 K	25.76	0.13	0.10	0.0 ft	29.9	551.4	543.5	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	303	15	0.180	21	1.50E+06	10.3	0.211	0.879	0.061	26.9	0.218	1.097	**0.180**
4TH	596	15	0.180	21	1.50E+06	8.3	0.333	0.668	0.050	16.6	0.095	0.764	**0.180**
3RD	741	19	0.180	21	1.50E+06	8.3	0.336	0.336	0.050	8.3	0.050	0.386	**0.180**
N/A	741	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	741	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	741	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	3.4	2.448	10.3	0.147	117	625	349	0.187	0.334	0.334
4TH	0.00	0.00	0.00	9.0	6.409	8.3	0.221	305	625	526	0.488	0.580	0.580
3RD	0.00	0.00	0.00	15.9	11.334	8.3	0.221	540	625	526	0.864	1.026	1.026
N/A	0.00	0.00	0.00	15.9	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	15.9	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	15.9	0.000	0.0	0.000	0	625	0			0.000

PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

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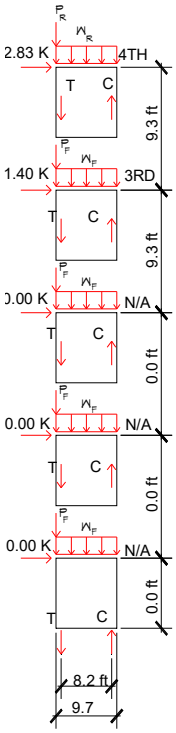

STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL WK.2, WK.3, WK.4, WK.5, WK.6, WK.7

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	2.50	ft	1+ 0.14Sds =	1.13	
Trib Area =	0.00	ft^2	*Resists uplift only (due to near walls)*		
L =	9.7 ft		*Total Wall Length*		
L_{HD} =	8.2 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	217	A	0.47	0.5	0.53	(4)	2x4	0.334	0.020	OK
4TH	DF	426	A	0.93	0.75	0.66	(4)	2x4	0.580	0.019	OK
3RD	DF	530	B	0.88	0.875	0.88	(4)	2x4	1.026	0.020	OK
N/A	DF	530	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	530	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	530	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	303	0	2.93 K	2.93	0.00	0.15	11.3 ft	11.3	33.1	6.9	**2.3**
4TH	293	0	2.83 K	5.77	0.00	0.15	9.3 ft	20.6	86.8	13.7	**6.3**
3RD	145	0	1.40 K	7.17	0.00	0.15	9.3 ft	29.9	153.4	20.5	**11.5**
N/A	0	0	0.00 K	7.17	0.00	0.06	0.0 ft	29.9	153.4	23.5	**0.0**
N/A	0	0	0.00 K	7.17	0.00	0.06	0.0 ft	29.9	153.4	26.4	**0.0**
N/A	0	0	0.00 K	7.17	0.00	0.06	0.0 ft	29.9	153.4	29.3	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	303	15	0.150	21	1.50E+06	10.3	0.219	0.905	0.207	26.9	0.844	1.749	**0.150**
4TH	596	15	0.180	21	1.50E+06	8.3	0.341	0.686	0.205	16.6	0.388	1.074	**0.180**
3RD	741	19	0.180	21	1.50E+06	8.3	0.346	0.346	0.205	8.3	0.205	0.551	**0.180**
N/A	741	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	741	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	741	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	3.4	2.448	10.3	0.147	117	625	349	0.187	0.334	0.334
4TH	0.00	0.00	0.00	9.0	6.409	8.3	0.221	305	625	526	0.488	0.580	0.580
3RD	0.00	0.00	0.00	15.9	11.334	8.3	0.221	540	625	526	0.864	1.026	1.026
N/A	0.00	0.00	0.00	15.9	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	15.9	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	15.9	0.000	0.0	0.000	0	625	0			0.000

PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

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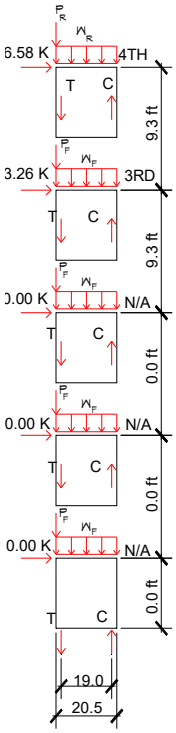

STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL WL.1

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	2.50	ft	1+ 0.14Sds =	1.13	
Trib Area =	0.00	ft^2	*Resists uplift only (due to near walls)*		
L =	20.5 ft		*Total Wall Length*		
L_{HD} =	19.0 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	237	A	0.52	0.5	0.38	(4)	2x6	0.130	0.013	OK
4TH	DF	466	B	0.78	0.75	0.53	(4)	2x6	0.340	0.013	OK
3RD	DF	580	B	0.97	0.875	0.74	(4)	2x6	0.602	0.016	OK
N/A	DF	580	B	0.00	NONE	0.00	(4)	2x6	0.000	0.000	OK
N/A	DF	580	B	0.00	NONE	0.00	(4)	2x6	0.000	0.000	OK
N/A	DF	580	B	0.00	NONE	0.00	(4)	2x6	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	332	0	6.81 K	6.81	0.00	0.15	11.3 ft	11.3	76.9	30.8	**1.6**
4TH	321	0	6.58 K	13.39	0.00	0.15	9.3 ft	20.6	201.4	61.5	**5.1**
3RD	159	0	3.26 K	16.64	0.00	0.15	9.3 ft	29.9	356.2	92.3	**9.7**
N/A	0	0	0.00 K	16.64	0.00	0.06	0.0 ft	29.9	356.2	105.4	**0.0**
N/A	0	0	0.00 K	16.64	0.00	0.06	0.0 ft	29.9	356.2	118.5	**0.0**
N/A	0	0	0.00 K	16.64	0.00	0.06	0.0 ft	29.9	356.2	131.7	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	332	15	0.180	33	1.50E+06	10.3	0.231	0.895	0.107	26.9	0.381	1.276	**0.180**
4TH	653	19	0.180	33	1.50E+06	8.3	0.296	0.664	0.088	16.6	0.167	0.831	**0.180**
3RD	812	19	0.180	33	1.50E+06	8.3	0.368	0.368	0.088	8.3	0.088	0.456	**0.180**
N/A	812	19	0.000	33	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	812	19	0.000	33	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	812	19	0.000	33	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	3.8	2.681	10.3	0.340	81	625	808	0.130	0.101	0.130
4TH	0.00	0.00	0.00	9.8	7.018	8.3	0.486	213	625	1154	0.340	0.184	0.340
3RD	0.00	0.00	0.00	17.4	12.411	8.3	0.486	376	625	1154	0.602	0.326	0.602
N/A	0.00	0.00	0.00	17.4	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	17.4	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	17.4	0.000	0.0	0.000	0	625	0			0.000

PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

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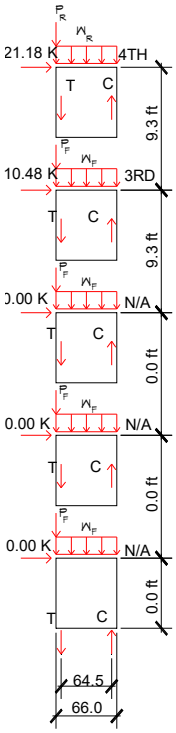

STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL WL.2

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	3.17	ft	1+ 0.14Sds =	1.13	
Trib Area =	0.00	ft^2	*Resists uplift only (due to near walls)*		
L =	66.0 ft		*Total Wall Length*		
L_{HD} =	64.5 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	237	A	0.52	NONE	0.00	(4)	2x6	0.130	0.009	OK
4TH	DF	466	B	0.78	NONE	0.00	(4)	2x6	0.340	0.011	OK
3RD	DF	580	B	0.97	NONE	0.16	(4)	2x6	0.602	0.014	OK
N/A	DF	580	B	0.00	NONE	0.00	(4)	2x6	0.000	0.000	OK
N/A	DF	580	B	0.00	NONE	0.00	(4)	2x6	0.000	0.000	OK
N/A	DF	580	B	0.00	NONE	0.00	(4)	2x6	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	332	0	21.92 K	21.92	0.00	0.16	11.3 ft	11.3	247.7	345.6	**0.0**
4TH	321	0	21.18 K	43.10	0.00	0.16	9.3 ft	20.6	648.5	700.2	**0.0**
3RD	159	0	10.48 K	53.58	0.00	0.16	9.3 ft	29.9	1146.8	1054.8	**0.1**
N/A	0	0	0.00 K	53.58	0.00	0.08	0.0 ft	29.9	1146.8	1227.2	**0.0**
N/A	0	0	0.00 K	53.58	0.00	0.08	0.0 ft	29.9	1146.8	1399.5	**0.0**
N/A	0	0	0.00 K	53.58	0.00	0.08	0.0 ft	29.9	1146.8	1571.9	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	332	15	0.180	33	1.50E+06	10.3	0.229	0.888	0.032	26.9	0.112	1.000	**0.180**
4TH	653	19	0.180	33	1.50E+06	8.3	0.294	0.659	0.026	16.6	0.049	0.708	**0.180**
3RD	812	19	0.180	33	1.50E+06	8.3	0.365	0.365	0.026	8.3	0.026	0.391	**0.180**
N/A	812	19	0.000	33	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	812	19	0.000	33	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	812	19	0.000	33	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	3.8	2.681	10.3	0.340	81	625	808	0.130	0.101	0.130
4TH	0.00	0.00	0.00	9.8	7.018	8.3	0.486	213	625	1154	0.340	0.184	0.340
3RD	0.00	0.00	0.00	17.4	12.411	8.3	0.486	376	625	1154	0.602	0.326	0.602
N/A	0.00	0.00	0.00	17.4	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	17.4	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	17.4	0.000	0.0	0.000	0	625	0			0.000

PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

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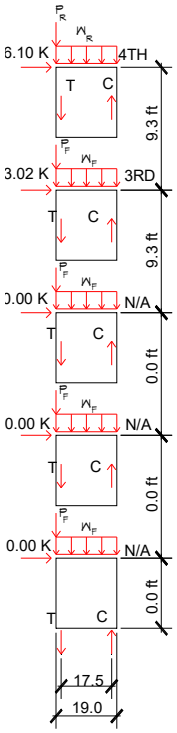


STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL WL.3, WL.4

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	3.17	ft	1+ 0.14Sds =	1.13	
Trib Area =	5.00	ft^2	*Resists uplift only (due to near walls)*		
L =	19.0 ft		*Total Wall Length*		
L_{HD} =	17.5 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	237	A	0.52	0.5	0.37	(4)	2x6	0.130	0.014	OK
4TH	DF	466	B	0.78	0.75	0.51	(4)	2x6	0.340	0.014	OK
3RD	DF	580	B	0.97	0.875	0.71	(4)	2x6	0.602	0.017	OK
N/A	DF	580	B	0.00	NONE	0.00	(4)	2x6	0.000	0.000	OK
N/A	DF	580	B	0.00	NONE	0.00	(4)	2x6	0.000	0.000	OK
N/A	DF	580	B	0.00	NONE	0.00	(4)	2x6	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	332	0	6.31 K	6.31	0.09	0.16	11.3 ft	11.3	71.3	30.3	**1.6**
4TH	321	0	6.10 K	12.41	0.13	0.16	9.3 ft	20.6	186.7	62.1	**4.9**
3RD	159	0	3.02 K	15.42	0.13	0.16	9.3 ft	29.9	330.1	93.9	**9.3**
N/A	0	0	0.00 K	15.42	0.13	0.08	0.0 ft	29.9	330.1	110.5	**0.0**
N/A	0	0	0.00 K	15.42	0.13	0.08	0.0 ft	29.9	330.1	127.2	**0.0**
N/A	0	0	0.00 K	15.42	0.13	0.08	0.0 ft	29.9	330.1	143.9	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	332	15	0.180	33	1.50E+06	10.3	0.231	0.896	0.116	26.9	0.413	1.310	**0.180**
4TH	653	19	0.180	33	1.50E+06	8.3	0.296	0.665	0.096	16.6	0.181	0.846	**0.180**
3RD	812	19	0.180	33	1.50E+06	8.3	0.368	0.368	0.096	8.3	0.096	0.464	**0.180**
N/A	812	19	0.000	33	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	812	19	0.000	33	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	812	19	0.000	33	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	3.8	2.681	10.3	0.340	81	625	808	0.130	0.101	0.130
4TH	0.00	0.00	0.00	9.8	7.018	8.3	0.486	213	625	1154	0.340	0.184	0.340
3RD	0.00	0.00	0.00	17.4	12.411	8.3	0.486	376	625	1154	0.602	0.326	0.602
N/A	0.00	0.00	0.00	17.4	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	17.4	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	17.4	0.000	0.0	0.000	0	625	0			0.000

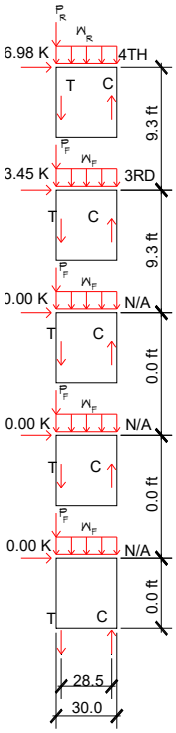
PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL WM.1, WM.2

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	10.50	ft	1+ 0.14Sds =	1.13	
Trib Area =	5.00	ft^2	*Resists uplift only (due to near walls)*		
L =	30.0 ft		*Total Wall Length*		
L_{HD} =	28.5 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	172	A	0.37	NONE	0.00	(4)	2x4	0.265	0.009	OK
4TH	DF	338	B	0.56	NONE	0.00	(4)	2x4	0.461	0.010	OK
3RD	DF	420	B	0.70	NONE	0.00	(5)	2x4	0.652	0.012	OK
N/A	DF	420	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	420	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	420	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	241	0	7.22 K	7.22	0.09	0.29	11.3 ft	11.3	81.6	133.5	**0.0**
4TH	233	0	6.98 K	14.20	0.13	0.35	9.3 ft	20.6	213.6	293.1	**0.0**
3RD	115	0	3.45 K	17.65	0.13	0.35	9.3 ft	29.9	377.8	452.6	**0.0**
N/A	0	0	0.00 K	17.65	0.13	0.26	0.0 ft	29.9	377.8	574.5	**0.0**
N/A	0	0	0.00 K	17.65	0.13	0.26	0.0 ft	29.9	377.8	696.3	**0.0**
N/A	0	0	0.00 K	17.65	0.13	0.26	0.0 ft	29.9	377.8	818.2	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	241	15	0.180	21	1.50E+06	10.3	0.168	0.649	0.071	26.9	0.254	0.903	**0.180**
4TH	473	19	0.180	21	1.50E+06	8.3	0.215	0.481	0.059	16.6	0.111	0.592	**0.180**
3RD	588	19	0.180	26	1.50E+06	8.3	0.266	0.266	0.059	8.3	0.059	0.325	**0.180**
N/A	588	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	588	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	588	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	2.7	1.943	10.3	0.147	93	625	349	0.148	0.265	0.265
4TH	0.00	0.00	0.00	7.1	5.087	8.3	0.221	242	625	526	0.388	0.461	0.461
3RD	0.00	0.00	0.00	12.6	8.996	8.3	0.221	343	625	526	0.548	0.652	0.652
N/A	0.00	0.00	0.00	12.6	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	12.6	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	12.6	0.000	0.0	0.000	0	625	0			0.000

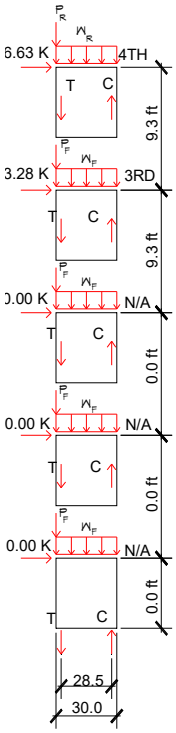
PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL WN.1, WN.2

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	8.00	ft	1+ 0.14Sds =	1.13	
Trib Area =	5.00	ft^2	*Resists uplift only (due to near walls)*		
L =	30.0 ft		*Total Wall Length*		
L_{HD} =	28.5 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	163	A	0.35	NONE	0.00	(4)	2x4	0.252	0.005	OK
4TH	DF	321	A	0.70	NONE	0.00	(4)	2x4	0.437	0.009	OK
3RD	DF	399	A	0.87	NONE	0.00	(4)	2x4	0.774	0.011	OK
N/A	DF	399	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	399	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	399	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	229	0	6.86 K	6.86	0.09	0.25	11.3 ft	11.3	77.5	113.3	**0.0**
4TH	221	0	6.63 K	13.48	0.13	0.28	9.3 ft	20.6	202.9	244.7	**0.0**
3RD	109	0	3.28 K	16.76	0.13	0.28	9.3 ft	29.9	358.8	376.1	**0.0**
N/A	0	0	0.00 K	16.76	0.13	0.20	0.0 ft	29.9	358.8	469.8	**0.0**
N/A	0	0	0.00 K	16.76	0.13	0.20	0.0 ft	29.9	358.8	563.6	**0.0**
N/A	0	0	0.00 K	16.76	0.13	0.20	0.0 ft	29.9	358.8	657.3	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	229	15	0.000	21	1.50E+06	10.3	0.159	0.722	0.000	26.9	0.000	0.722	**0.000**
4TH	449	15	0.000	21	1.50E+06	8.3	0.251	0.563	0.000	16.6	0.000	0.563	**0.000**
3RD	559	15	0.000	21	1.50E+06	8.3	0.312	0.312	0.000	8.3	0.000	0.312	**0.000**
N/A	559	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	559	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	559	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	2.6	1.845	10.3	0.147	88	625	349	0.141	0.252	0.252
4TH	0.00	0.00	0.00	6.8	4.831	8.3	0.221	230	625	526	0.368	0.437	0.437
3RD	0.00	0.00	0.00	12.0	8.542	8.3	0.221	407	625	526	0.651	0.774	0.774
N/A	0.00	0.00	0.00	12.0	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	12.0	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	12.0	0.000	0.0	0.000	0	625	0			0.000

PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

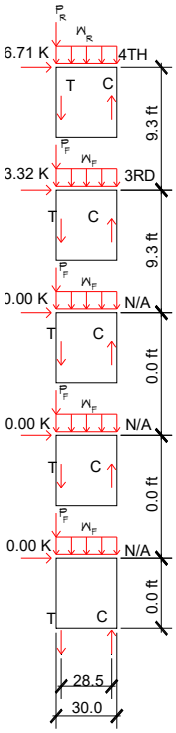
Multiplier:

STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL WO.1, WO.2

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	8.00	ft	1+ 0.14Sds =	1.13	
Trib Area =	5.00	ft^2	*Resists uplift only (due to near walls)*		
L =	30.0 ft		*Total Wall Length*		
L_{HD} =	28.5 ft		*Distance from Holdown to comp post*		



WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	165	A	0.36	NONE	0.00	(4)	2x4	0.255	0.009	OK
4TH	DF	325	A	0.71	NONE	0.00	(4)	2x4	0.443	0.011	OK
3RD	DF	404	A	0.88	NONE	0.00	(4)	2x4	0.784	0.013	OK
N/A	DF	404	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	404	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	404	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	232	0	6.95 K	6.95	0.09	0.25	11.3 ft	11.3	78.5	113.3	0.0
4TH	224	0	6.71 K	13.66	0.13	0.28	9.3 ft	20.6	205.6	244.7	0.0
3RD	111	0	3.32 K	16.99	0.13	0.28	9.3 ft	29.9	363.6	376.1	0.0
N/A	0	0	0.00 K	16.99	0.13	0.20	0.0 ft	29.9	363.6	469.8	0.0
N/A	0	0	0.00 K	16.99	0.13	0.20	0.0 ft	29.9	363.6	563.6	0.0
N/A	0	0	0.00 K	16.99	0.13	0.20	0.0 ft	29.9	363.6	657.3	0.0

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	232	15	0.180	21	1.50E+06	10.3	0.161	0.732	0.071	26.9	0.254	0.986	0.180
4TH	455	15	0.180	21	1.50E+06	8.3	0.254	0.571	0.059	16.6	0.111	0.682	0.180
3RD	566	15	0.180	21	1.50E+06	8.3	0.316	0.316	0.059	8.3	0.059	0.375	0.180
N/A	566	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	0.000
N/A	566	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	0.000
N/A	566	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	0.000

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	2.6	1.870	10.3	0.147	89	625	349	0.142	0.255	0.255
4TH	0.00	0.00	0.00	6.9	4.896	8.3	0.221	233	625	526	0.373	0.443	0.443
3RD	0.00	0.00	0.00	12.1	8.657	8.3	0.221	412	625	526	0.660	0.784	0.784
N/A	0.00	0.00	0.00	12.1	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	12.1	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	12.1	0.000	0.0	0.000	0	625	0			0.000

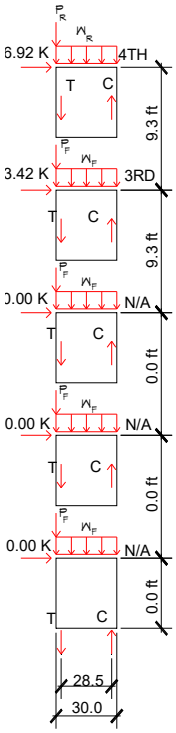
PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL WP.1

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	8.00	ft	1+ 0.14Sds =	1.13	
Trib Area =	5.00	ft^2	*Resists uplift only (due to near walls)*		
L =	30.0 ft		*Total Wall Length*		
L_{HD} =	28.5 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	170	A	0.37	NONE	0.00	(4)	2x4	0.263	0.009	OK
4TH	DF	335	A	0.73	NONE	0.00	(4)	2x4	0.457	0.011	OK
3RD	DF	417	A	0.91	NONE	0.00	(4)	2x4	0.808	0.014	OK
N/A	DF	417	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	417	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	417	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	239	0	7.16 K	7.16	0.09	0.25	11.3 ft	11.3	80.9	113.3	**0.0**
4TH	231	0	6.92 K	14.08	0.13	0.28	9.3 ft	20.6	211.8	244.7	**0.0**
3RD	114	0	3.42 K	17.50	0.13	0.28	9.3 ft	29.9	374.6	376.1	**0.0**
N/A	0	0	0.00 K	17.50	0.13	0.20	0.0 ft	29.9	374.6	469.8	**0.0**
N/A	0	0	0.00 K	17.50	0.13	0.20	0.0 ft	29.9	374.6	563.6	**0.0**
N/A	0	0	0.00 K	17.50	0.13	0.20	0.0 ft	29.9	374.6	657.3	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	239	15	0.180	21	1.50E+06	10.3	0.166	0.754	0.071	26.9	0.254	1.008	**0.180**
4TH	469	15	0.180	21	1.50E+06	8.3	0.262	0.588	0.059	16.6	0.111	0.699	**0.180**
3RD	583	15	0.180	21	1.50E+06	8.3	0.326	0.326	0.059	8.3	0.059	0.385	**0.180**
N/A	583	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	583	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	583	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	2.7	1.926	10.3	0.147	92	625	349	0.147	0.263	0.263
4TH	0.00	0.00	0.00	7.1	5.044	8.3	0.221	240	625	526	0.384	0.457	0.457
3RD	0.00	0.00	0.00	12.5	8.919	8.3	0.221	425	625	526	0.680	0.808	0.808
N/A	0.00	0.00	0.00	12.5	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	12.5	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	12.5	0.000	0.0	0.000	0	625	0			0.000

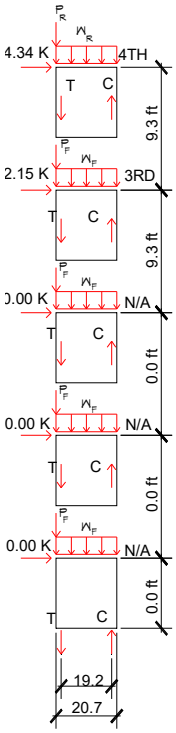
PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL WQ.1

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	9.34	ft	1+ 0.14Sds =	1.13	
Trib Area =	0.00	ft^2	*Resists uplift only (due to near walls)*		
L =	20.7 ft		*Total Wall Length*		
L_{HD} =	19.2 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	155	A	0.34	0.5	0.00	(4)	2x4	0.239	0.011	OK
4TH	DF	305	A	0.66	0.5	0.00	(4)	2x4	0.416	0.011	OK
3RD	DF	379	A	0.82	0.5	0.23	(4)	2x4	0.735	0.014	OK
N/A	DF	379	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	379	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	379	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	217	0	4.49 K	4.49	0.00	0.27	11.3 ft	11.3	50.7	57.6	**0.0**
4TH	210	0	4.34 K	8.83	0.00	0.32	9.3 ft	20.6	132.8	125.4	**0.0**
3RD	104	0	2.15 K	10.98	0.00	0.32	9.3 ft	29.9	234.9	193.1	**1.0**
N/A	0	0	0.00 K	10.98	0.00	0.23	0.0 ft	29.9	234.9	242.9	**0.0**
N/A	0	0	0.00 K	10.98	0.00	0.23	0.0 ft	29.9	234.9	292.8	**0.0**
N/A	0	0	0.00 K	10.98	0.00	0.23	0.0 ft	29.9	234.9	342.7	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	217	15	0.180	21	1.50E+06	10.3	0.152	0.690	0.106	26.9	0.377	1.067	**0.180**
4TH	427	15	0.180	21	1.50E+06	8.3	0.240	0.537	0.087	16.6	0.165	0.703	**0.180**
3RD	531	15	0.180	21	1.50E+06	8.3	0.298	0.298	0.087	8.3	0.087	0.385	**0.180**
N/A	531	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	531	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	531	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	2.5	1.753	10.3	0.147	83	625	349	0.134	0.239	0.239
4TH	0.00	0.00	0.00	6.4	4.591	8.3	0.221	219	625	526	0.350	0.416	0.416
3RD	0.00	0.00	0.00	11.4	8.119	8.3	0.221	387	625	526	0.619	0.735	0.735
N/A	0.00	0.00	0.00	11.4	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	11.4	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	11.4	0.000	0.0	0.000	0	625	0			0.000

PCS Structural Solutions

Project: Mercer Island Mixed Use | Job Number: 19028

Sheet: _____ of _____ | Name: AED

Originating Office: Seattle | Date: 9/27/2021

MULTISTORY SHEARWALL DESIGN

ENTER ALL LOADS UNFACTORED

Cs =	0.142	
SDS =	0.92	
ROOF DL =	18	psf
FLOOR DL =	25	psf
WALL WT =	9	psf
FLOOR DEPTH =	1	ft

Drift Limit

D =	0.02
C_d=	4.0

LOAD COMBOS - ALLOWABLE STRESS DESIGN

	D	L	S	E	
LC 1	0.9	0	0	0.714	HOLDOWN DESIGN
LC 2	1.0	1	1	0.714	POST DESIGN
LC 3	1.0	0	0	0.714	POST DESIGN

SPECIES	Fcp	G
HF	405 psi	0.43
DF	625 psi	0.5
DFpl	625 psi	0.43

SHEARWALL TYPES

TYPE	V_{ALLOW}	G_a
A	460 plf	15.00 k-in
B	600 plf	18.50 k-in
C	920 plf	30.00 k-in
D	1200 plf	37.00 k-in

CONT. ROD HOLDOWNS

TYPE	T_{ALLOW}	GRADE
0.500 in	4270 lbs	ASTM A307
0.625 in	6675 lbs	ASTM A307
0.750 in	9610 lbs	ASTM A307
0.875 in	13080 lbs	ASTM A307
1.000 in	17080 lbs	ASTM A307
1.125 in	21620 lbs	ASTM A307
1.250 in	26690 lbs	ASTM A307
1.500 in	38495 lbs	ASTM A307
1.750 in	52315 lbs	ASTM A307
HDU-02	3075 lbs	0.088 in
HDU-04	4565 lbs	0.114 in
HDU-05	5645 lbs	0.115 in
HDU-08	7870 lbs	0.113 in
HDU-11	11175 lbs	0.137 in
HDU-14	14445 lbs	0.177 in

POST TYPES

TYPE	E	AREA	D	CF	Fc	Ft
2x6	1.50E+06	8.25 in2	5.500 in	1.1	1350 psi	575 psi
3x6	1.50E+06	13.75 in2	5.500 in	1.1	1350 psi	575 psi
4x6	1.50E+06	19.25 in2	5.500 in	1.1	1350 psi	575 psi
6x6	1.60E+06	30.25 in2	5.500 in	1.1	1000 psi	825 psi
6x8	1.60E+06	41.25 in2	5.500 in	1.1	1000 psi	825 psi
6x10	1.60E+06	52.25 in2	5.500 in	1.0	925 psi	675 psi

PCS Structural Solutions

Project: Mercer Island Mixed Use | Job Number: 19028

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Originating Office: Seattle | Date: 09/27/21

MULTISTORY SHEARWALL DESIGN - SUMMARY

LABEL	STATUS	Tmax (K)	Vmax (plf)	D/C - (1) SIDED SW	SHEATHING	CONT. HOLDOWN ROD DIAMETER	Cmax (K)
W(1.1)	OK	8.2	535.4	89%	(1) SIDE	0.875	11.5
W(1.2)	OK	7.2	474	79%	(1) SIDE	0.875	10.2
W(1.9)	OK	7.6	470	78%	(1) SIDE	0.875	10.1
W(1.10)	OK	8.6	521	87%	(1) SIDE	0.875	11.2
W(2.1)	OK	0.0	539	90%	(1) SIDE	NONE	11.5
W(2.2)	OK	6.5	517	86%	(1) SIDE	0.625	11.1
W(2.3)	OK	6.7	488	81%	(1) SIDE	0.625	10.4
W(2.4)	OK	6.7	454	76%	(1) SIDE	0.625	9.7
W(2.7)	OK	6.7	369	62%	(1) SIDE	0.625	7.9
W(2.8)	OK	6.8	465	78%	(1) SIDE	0.875	10.0
W(2.9)	OK	6.2	384	64%	(1) SIDE	0.625	8.2
W(2.10)	OK	0.0	510	85%	(1) SIDE	NONE	10.9
W(3.1)	OK	1.3	524	87%	(1) SIDE	0.500	11.2
W(3.2)	OK	5.6	524	87%	(1) SIDE	0.625	11.2
W(4.1)	OK	2.2	419	70%	(1) SIDE	0.500	9.0
W(5.1)	OK	0.0	496	83%	(1) SIDE	NONE	10.6
W(5.2)	OK	8.4	439	73%	(1) SIDE	0.750	9.4
W(6.1)	OK	0.0	505	84%	(1) SIDE	NONE	10.8
W(7.1)	OK	0.0	515	86%	(1) SIDE	NONE	11.0
W(7.2)	OK	2.3	492	82%	(1) SIDE	0.500	10.5
W(8.1)	OK	2.1	444	74%	(1) SIDE	0.500	9.5
W(8.2)	OK	2.5	504	84%	(1) SIDE	0.500	10.8
W(9.1)	OK	2.7	516	86%	(1) SIDE	0.500	11.0
W(10.1)	OK	10.1	540	90%	(1) SIDE	0.875	11.6
W(10.3)	OK	7.8	540	90%	(1) SIDE	0.875	11.6
W(10.5)	OK	3.3	540	90%	(1) SIDE	0.500	11.6
W(11.1)	OK	11.2	618	103%	(1) SIDE	0.875	13.2
W(11.2)	OK	10.2	618	103%	(1) SIDE	0.875	13.2
W(11.4)	OK	6.0	618	103%	(1) SIDE	0.625	13.2

PCS Structural Solutions

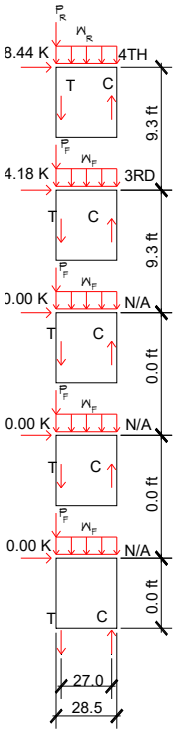
Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:

STATUS: OK



MULTI-STORY SHEARWALL DESIGN:

WALL W1.1

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.145ds =	0.77		Floor Dead =	25	psf
Trib Width =	1.00	ft	1+ 0.145ds =	1.13	
Trib Area =	0.00	ft^2	*Resists uplift only (due to near walls)*		
L =	28.5 ft		*Total Wall Length*		
L_{HD} =	27.0 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	219	A	0.48	0.5	0.29	(4)	2x4	0.338	0.011	OK
4TH	DF	431	A	0.94	0.75	0.44	(4)	2x4	0.587	0.014	OK
3RD	DF	535	B	0.89	0.875	0.63	(4)	2x4	1.038	0.014	OK
N/A	DF	535	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	535	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	535	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	307	0	8.74 K	8.74	0.00	0.12	11.3 ft	11.3	98.8	48.6	**1.2**
4TH	296	0	8.44 K	17.18	0.00	0.11	9.3 ft	20.6	258.6	92.8	**4.2**
3RD	147	0	4.18 K	21.36	0.00	0.11	9.3 ft	29.9	457.2	136.9	**8.2**
N/A	0	0	0.00 K	21.36	0.00	0.03	0.0 ft	29.9	457.2	147.1	**0.0**
N/A	0	0	0.00 K	21.36	0.00	0.03	0.0 ft	29.9	457.2	157.2	**0.0**
N/A	0	0	0.00 K	21.36	0.00	0.03	0.0 ft	29.9	457.2	167.4	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	307	15	0.180	21	1.50E+06	10.3	0.214	0.891	0.075	26.9	0.268	1.159	**0.180**
4TH	603	15	0.180	21	1.50E+06	8.3	0.337	0.677	0.062	16.6	0.117	0.795	**0.180**
3RD	750	19	0.180	21	1.50E+06	8.3	0.340	0.340	0.062	8.3	0.062	0.402	**0.180**
N/A	750	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	750	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	750	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	3.5	2.475	10.3	0.147	118	625	349	0.189	0.338	0.338
4TH	0.00	0.00	0.00	9.1	6.480	8.3	0.221	309	625	526	0.494	0.587	0.587
3RD	0.00	0.00	0.00	16.0	11.460	8.3	0.221	546	625	526	0.873	1.038	1.038
N/A	0.00	0.00	0.00	16.0	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	16.0	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	16.0	0.000	0.0	0.000	0	625	0			0.000

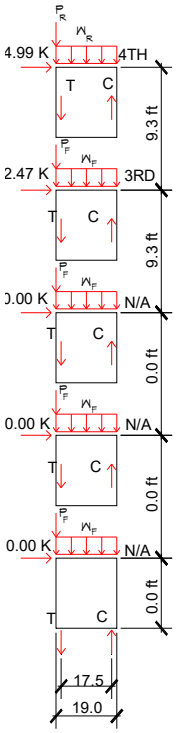
Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL W1.2, W1.3, W1.4, W1.5, W1.6, W1.7, W1.8

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	3.17	ft	1+ 0.14Sds =	1.13	
Trib Area =	0.00	ft^2	*Resists uplift only (due to near walls)*		
L =	19.0 ft		*Total Wall Length*		
L_{HD} =	17.5 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	194	A	0.42	0.5	0.26	(4)	2x4	0.299	0.012	OK
4TH	DF	382	A	0.83	0.75	0.38	(4)	2x4	0.520	0.014	OK
3RD	DF	474	B	0.79	0.875	0.55	(4)	2x4	0.919	0.014	OK
N/A	DF	474	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	474	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	474	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	272	0	5.16 K	5.16	0.00	0.16	11.3 ft	11.3	58.3	28.6	**1.1**
4TH	262	0	4.99 K	10.15	0.00	0.16	9.3 ft	20.6	152.7	58.0	**3.7**
3RD	130	0	2.47 K	12.62	0.00	0.16	9.3 ft	29.9	270.1	87.4	**7.2**
N/A	0	0	0.00 K	12.62	0.00	0.08	0.0 ft	29.9	270.1	101.7	**0.0**
N/A	0	0	0.00 K	12.62	0.00	0.08	0.0 ft	29.9	270.1	116.0	**0.0**
N/A	0	0	0.00 K	12.62	0.00	0.08	0.0 ft	29.9	270.1	130.3	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	272	15	0.180	21	1.50E+06	10.3	0.191	0.794	0.116	26.9	0.413	1.208	**0.180**
4TH	534	15	0.180	21	1.50E+06	8.3	0.300	0.603	0.096	16.6	0.181	0.784	**0.180**
3RD	664	19	0.180	21	1.50E+06	8.3	0.303	0.303	0.096	8.3	0.096	0.399	**0.180**
N/A	664	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	664	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	664	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	3.1	2.193	10.3	0.147	104	625	349	0.167	0.299	0.299
4TH	0.00	0.00	0.00	8.0	5.741	8.3	0.221	273	625	526	0.437	0.520	0.520
3RD	0.00	0.00	0.00	14.2	10.153	8.3	0.221	483	625	526	0.774	0.919	0.919
N/A	0.00	0.00	0.00	14.2	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	14.2	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	14.2	0.000	0.0	0.000	0	625	0			0.000

PCS Structural Solutions

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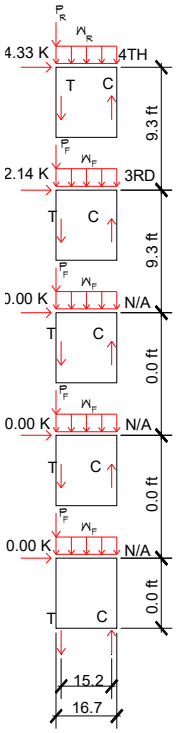


STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL W1.9

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	3.17	ft	1+ 0.14Sds =	1.13	
Trib Area =	0.00	ft^2	*Resists uplift only (due to near walls)*		
L =	16.7 ft		*Total Wall Length*		
L_{HD} =	15.2 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	192	A	0.42	0.5	0.30	(4)	2x4	0.296	0.014	OK
4TH	DF	378	A	0.82	0.75	0.41	(4)	2x4	0.515	0.014	OK
3RD	DF	470	B	0.78	0.875	0.58	(4)	2x4	0.910	0.015	OK
N/A	DF	470	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	470	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	470	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	269	0	4.48 K	4.48	0.00	0.16	11.3 ft	11.3	50.7	22.0	**1.3**
4TH	260	0	4.33 K	8.82	0.00	0.16	9.3 ft	20.6	132.7	44.7	**4.0**
3RD	129	0	2.14 K	10.96	0.00	0.16	9.3 ft	29.9	234.6	67.3	**7.6**
N/A	0	0	0.00 K	10.96	0.00	0.08	0.0 ft	29.9	234.6	78.3	**0.0**
N/A	0	0	0.00 K	10.96	0.00	0.08	0.0 ft	29.9	234.6	89.3	**0.0**
N/A	0	0	0.00 K	10.96	0.00	0.08	0.0 ft	29.9	234.6	100.3	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	269	15	0.180	21	1.50E+06	10.3	0.190	0.789	0.134	26.9	0.477	1.266	**0.180**
4TH	529	15	0.180	21	1.50E+06	8.3	0.298	0.599	0.110	16.6	0.209	0.808	**0.180**
3RD	658	19	0.180	21	1.50E+06	8.3	0.301	0.301	0.110	8.3	0.110	0.412	**0.180**
N/A	658	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	658	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	658	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	3.0	2.171	10.3	0.147	103	625	349	0.165	0.296	0.296
4TH	0.00	0.00	0.00	8.0	5.685	8.3	0.221	271	625	526	0.433	0.515	0.515
3RD	0.00	0.00	0.00	14.1	10.052	8.3	0.221	479	625	526	0.766	0.910	0.910
N/A	0.00	0.00	0.00	14.1	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	14.1	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	14.1	0.000	0.0	0.000	0	625	0			0.000

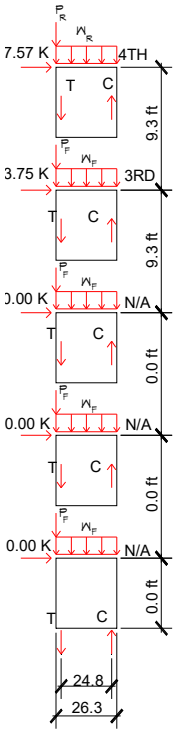
PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL W1.10

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	1	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	0.67	ft	1+ 0.14Sds =	1.13	
Trib Area =	0.00	ft^2	*Resists uplift only (due to near walls)*		
L =	26.3 ft		*Total Wall Length*		
L_{HD} =	24.8 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	213	A	0.46	0.5	0.34	(4)	2x4	0.329	0.011	OK
4TH	DF	419	A	0.91	0.75	0.47	(4)	2x4	0.571	0.014	OK
3RD	DF	521	B	0.87	0.875	0.66	(4)	2x4	1.011	0.014	OK
N/A	DF	521	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	521	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	521	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	299	0	7.84 K	7.84	0.00	0.10	11.3 ft	11.3	88.6	35.3	**1.5**
4TH	288	0	7.57 K	15.41	0.00	0.10	9.3 ft	20.6	231.9	69.8	**4.5**
3RD	143	0	3.75 K	19.16	0.00	0.10	9.3 ft	29.9	410.1	104.4	**8.6**
N/A	0	0	0.00 K	19.16	0.00	0.02	0.0 ft	29.9	410.1	110.1	**0.0**
N/A	0	0	0.00 K	19.16	0.00	0.02	0.0 ft	29.9	410.1	115.9	**0.0**
N/A	0	0	0.00 K	19.16	0.00	0.02	0.0 ft	29.9	410.1	121.6	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	299	15	0.180	21	1.50E+06	10.3	0.208	0.868	0.082	26.9	0.292	1.161	**0.180**
4TH	587	15	0.180	21	1.50E+06	8.3	0.328	0.660	0.068	16.6	0.128	0.788	**0.180**
3RD	730	19	0.180	21	1.50E+06	8.3	0.332	0.332	0.068	8.3	0.068	0.399	**0.180**
N/A	730	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	730	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	730	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	3.4	2.410	10.3	0.147	115	625	349	0.184	0.329	0.329
4TH	0.00	0.00	0.00	8.8	6.310	8.3	0.221	300	625	526	0.481	0.571	0.571
3RD	0.00	0.00	0.00	15.6	11.158	8.3	0.221	531	625	526	0.850	1.011	1.011
N/A	0.00	0.00	0.00	15.6	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	15.6	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	15.6	0.000	0.0	0.000	0	625	0			0.000

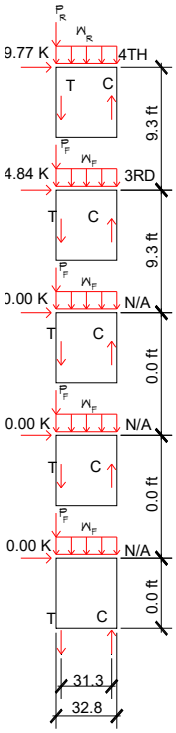
Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL W2.1

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	10.67	ft	1+ 0.14Sds =	1.13	
Trib Area =	0.00	ft^2	*Resists uplift only (due to near walls)*		
L =	32.8 ft		*Total Wall Length*		
L_{HD} =	31.3 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	221	A	0.48	NONE	0.00	(4)	2x4	0.340	0.010	OK
4TH	DF	434	A	0.94	NONE	0.00	(4)	2x4	0.591	0.014	OK
3RD	DF	539	B	0.90	NONE	0.00	(5)	2x4	0.836	0.014	OK
N/A	DF	539	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	539	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	539	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	309	0	10.12 K	10.12	0.00	0.29	11.3 ft	11.3	114.3	157.5	0.0
4TH	298	0	9.77 K	19.89	0.00	0.35	9.3 ft	20.6	299.3	345.4	0.0
3RD	148	0	4.84 K	24.73	0.00	0.35	9.3 ft	29.9	529.3	533.2	0.0
N/A	0	0	0.00 K	24.73	0.00	0.27	0.0 ft	29.9	529.3	676.2	0.0
N/A	0	0	0.00 K	24.73	0.00	0.27	0.0 ft	29.9	529.3	819.2	0.0
N/A	0	0	0.00 K	24.73	0.00	0.27	0.0 ft	29.9	529.3	962.2	0.0

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	309	15	0.180	21	1.50E+06	10.3	0.215	0.895	0.065	26.9	0.232	1.127	**0.180**
4TH	607	15	0.180	21	1.50E+06	8.3	0.339	0.680	0.054	16.6	0.101	0.782	**0.180**
3RD	755	19	0.180	26	1.50E+06	8.3	0.342	0.342	0.054	8.3	0.054	0.395	**0.180**
N/A	755	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	755	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	755	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	3.5	2.494	10.3	0.147	119	625	349	0.190	0.340	0.340
4TH	0.00	0.00	0.00	9.1	6.528	8.3	0.221	311	625	526	0.497	0.591	0.591
3RD	0.00	0.00	0.00	16.2	11.544	8.3	0.221	440	625	526	0.704	0.836	0.836
N/A	0.00	0.00	0.00	16.2	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	16.2	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	16.2	0.000	0.0	0.000	0	625	0			0.000

PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

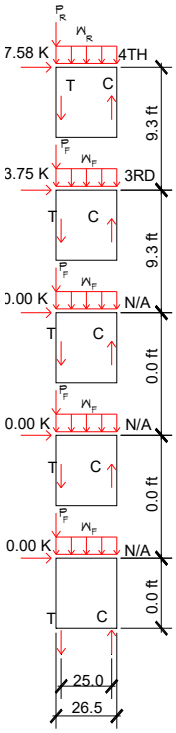
Multiplier:

STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL W2.2

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	3.17	ft	1+ 0.14Sds =	1.13	
Trib Area =	0.00	ft^2	*Resists uplift only (due to near walls)*		
L =	26.5 ft		*Total Wall Length*		
L_{HD} =	25.0 ft		*Distance from Holdown to comp post*		



WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	212	A	0.46	0.5	0.19	(3)	2x6	0.155	0.011	OK
4TH	DF	416	A	0.90	0.5	0.74	(3)	2x6	0.405	0.014	OK
3RD	DF	517	B	0.86	0.625	0.97	(3)	2x6	0.716	0.014	OK
N/A	DF	517	B	0.00	NONE	0.00	(3)	2x6	0.000	0.000	OK
N/A	DF	517	B	0.00	NONE	0.00	(3)	2x6	0.000	0.000	OK
N/A	DF	517	B	0.00	NONE	0.00	(3)	2x6	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	296	0	7.85 K	7.85	0.00	0.16	11.3 ft	11.3	88.7	55.7	**0.8**
4TH	286	0	7.58 K	15.43	0.00	0.16	9.3 ft	20.6	232.2	112.9	**3.2**
3RD	142	0	3.75 K	19.19	0.00	0.16	9.3 ft	29.9	410.7	170.1	**6.5**
N/A	0	0	0.00 K	19.19	0.00	0.08	0.0 ft	29.9	410.7	197.8	**0.0**
N/A	0	0	0.00 K	19.19	0.00	0.08	0.0 ft	29.9	410.7	225.6	**0.0**
N/A	0	0	0.00 K	19.19	0.00	0.08	0.0 ft	29.9	410.7	253.4	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	296	15	0.180	25	1.50E+06	10.3	0.206	0.860	0.081	26.9	0.289	1.149	**0.180**
4TH	582	15	0.180	25	1.50E+06	8.3	0.325	0.654	0.067	16.6	0.127	0.780	**0.180**
3RD	724	19	0.180	25	1.50E+06	8.3	0.328	0.328	0.067	8.3	0.067	0.395	**0.180**
N/A	724	19	0.000	25	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	724	19	0.000	25	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	724	19	0.000	25	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	3.3	2.391	10.3	0.340	97	625	808	0.155	0.120	0.155
4TH	0.00	0.00	0.00	8.8	6.260	8.3	0.486	253	625	1154	0.405	0.219	0.405
3RD	0.00	0.00	0.00	15.5	11.070	8.3	0.486	447	625	1154	0.716	0.388	0.716
N/A	0.00	0.00	0.00	15.5	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	15.5	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	15.5	0.000	0.0	0.000	0	625	0			0.000

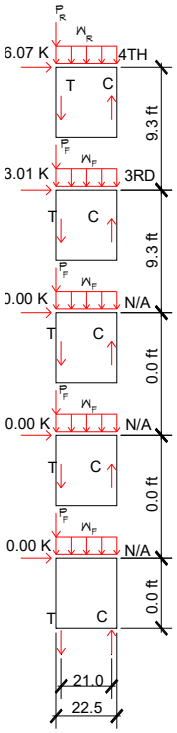
PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL W2.3

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	3.17	ft	1+ 0.14Sds =	1.13	
Trib Area =	0.00	ft^2	*Resists uplift only (due to near walls)*		
L =	22.5 ft		*Total Wall Length*		
L_{HD} =	21.0 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	200	A	0.43	0.5	0.22	(3)	2x6	0.146	0.011	OK
4TH	DF	392	A	0.85	0.5	0.78	(3)	2x6	0.382	0.014	OK
3RD	DF	488	B	0.81	0.625	1.00	(3)	2x6	0.675	0.014	OK
N/A	DF	488	B	0.00	NONE	0.00	(3)	2x6	0.000	0.000	OK
N/A	DF	488	B	0.00	NONE	0.00	(3)	2x6	0.000	0.000	OK
N/A	DF	488	B	0.00	NONE	0.00	(3)	2x6	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	279	0	6.28 K	6.28	0.00	0.16	11.3 ft	11.3	71.0	40.2	**0.9**
4TH	270	0	6.07 K	12.36	0.00	0.16	9.3 ft	20.6	185.9	81.4	**3.3**
3RD	134	0	3.01 K	15.36	0.00	0.16	9.3 ft	29.9	328.8	122.6	**6.7**
N/A	0	0	0.00 K	15.36	0.00	0.08	0.0 ft	29.9	328.8	142.6	**0.0**
N/A	0	0	0.00 K	15.36	0.00	0.08	0.0 ft	29.9	328.8	162.7	**0.0**
N/A	0	0	0.00 K	15.36	0.00	0.08	0.0 ft	29.9	328.8	182.7	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	279	15	0.180	25	1.50E+06	10.3	0.195	0.812	0.097	26.9	0.345	1.157	**0.180**
4TH	549	15	0.180	25	1.50E+06	8.3	0.307	0.617	0.080	16.6	0.151	0.768	**0.180**
3RD	683	19	0.180	25	1.50E+06	8.3	0.310	0.310	0.080	8.3	0.080	0.390	**0.180**
N/A	683	19	0.000	25	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	683	19	0.000	25	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	683	19	0.000	25	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	3.2	2.254	10.3	0.340	91	625	808	0.146	0.113	0.146
4TH	0.00	0.00	0.00	8.3	5.902	8.3	0.486	238	625	1154	0.382	0.207	0.382
3RD	0.00	0.00	0.00	14.6	10.437	8.3	0.486	422	625	1154	0.675	0.365	0.675
N/A	0.00	0.00	0.00	14.6	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	14.6	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	14.6	0.000	0.0	0.000	0	625	0			0.000

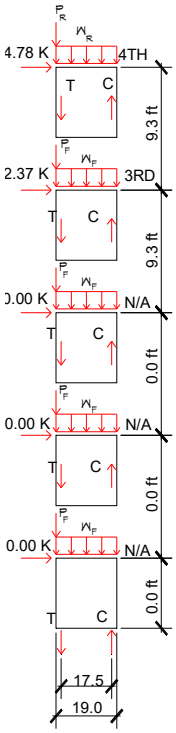
PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL W2.4, W2.5, W2.6

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	3.17	ft	1+ 0.14Sds =	1.13	
Trib Area =	0.00	ft^2	*Resists uplift only (due to near walls)*		
L =	19.0 ft		*Total Wall Length*		
L_{HD} =	17.5 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	186	A	0.40	0.5	0.24	(3)	2x6	0.136	0.012	OK
4TH	DF	365	A	0.79	0.5	0.80	(3)	2x6	0.356	0.013	OK
3RD	DF	454	B	0.76	0.625	1.01	(3)	2x6	0.629	0.014	OK
N/A	DF	454	B	0.00	NONE	0.00	(3)	2x6	0.000	0.000	OK
N/A	DF	454	B	0.00	NONE	0.00	(3)	2x6	0.000	0.000	OK
N/A	DF	454	B	0.00	NONE	0.00	(3)	2x6	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	260	0	4.95 K	4.95	0.00	0.16	11.3 ft	11.3	55.9	28.6	**1.0**
4TH	251	0	4.78 K	9.72	0.00	0.16	9.3 ft	20.6	146.3	58.0	**3.4**
3RD	124	0	2.37 K	12.09	0.00	0.16	9.3 ft	29.9	258.7	87.4	**6.7**
N/A	0	0	0.00 K	12.09	0.00	0.08	0.0 ft	29.9	258.7	101.7	**0.0**
N/A	0	0	0.00 K	12.09	0.00	0.08	0.0 ft	29.9	258.7	116.0	**0.0**
N/A	0	0	0.00 K	12.09	0.00	0.08	0.0 ft	29.9	258.7	130.3	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	260	15	0.180	25	1.50E+06	10.3	0.182	0.759	0.116	26.9	0.413	1.172	**0.180**
4TH	512	15	0.180	25	1.50E+06	8.3	0.287	0.577	0.096	16.6	0.181	0.758	**0.180**
3RD	636	19	0.180	25	1.50E+06	8.3	0.290	0.290	0.096	8.3	0.096	0.386	**0.180**
N/A	636	19	0.000	25	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	636	19	0.000	25	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	636	19	0.000	25	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	2.9	2.101	10.3	0.340	85	625	808	0.136	0.105	0.136
4TH	0.00	0.00	0.00	7.7	5.500	8.3	0.486	222	625	1154	0.356	0.193	0.356
3RD	0.00	0.00	0.00	13.6	9.726	8.3	0.486	393	625	1154	0.629	0.340	0.629
N/A	0.00	0.00	0.00	13.6	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	13.6	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	13.6	0.000	0.0	0.000	0	625	0			0.000

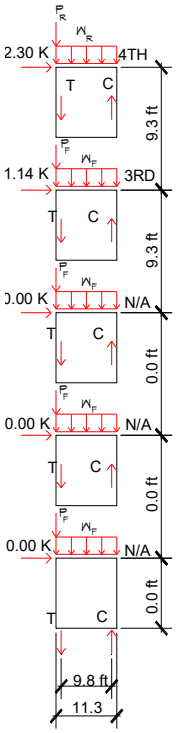
PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL W2.7

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	3.17	ft	1+ 0.14Sds =	1.13	
Trib Area =	0.00	ft^2	*Resists uplift only (due to near walls)*		
L =	11.3 ft		*Total Wall Length*		
L_{HD} =	9.8 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	151	A	0.33	0.5	0.28	(2)	2x6	0.166	0.017	OK
4TH	DF	297	A	0.65	0.5	0.83	(2)	2x6	0.434	0.014	OK
3RD	DF	369	A	0.80	0.625	1.00	(2)	2x6	0.767	0.017	OK
N/A	DF	369	B	0.00	NONE	0.00	(2)	2x6	0.000	0.000	OK
N/A	DF	369	B	0.00	NONE	0.00	(2)	2x6	0.000	0.000	OK
N/A	DF	369	B	0.00	NONE	0.00	(2)	2x6	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	212	0	2.38 K	2.38	0.00	0.16	11.3 ft	11.3	26.9	10.0	**1.2**
4TH	204	0	2.30 K	4.68	0.00	0.16	9.3 ft	20.6	70.4	20.3	**3.6**
3RD	101	0	1.14 K	5.82	0.00	0.16	9.3 ft	29.9	124.5	30.6	**6.7**
N/A	0	0	0.00 K	5.82	0.00	0.08	0.0 ft	29.9	124.5	35.7	**0.0**
N/A	0	0	0.00 K	5.82	0.00	0.08	0.0 ft	29.9	124.5	40.7	**0.0**
N/A	0	0	0.00 K	5.82	0.00	0.08	0.0 ft	29.9	124.5	45.7	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	212	15	0.180	17	1.50E+06	10.3	0.153	0.687	0.209	26.9	0.742	1.429	**0.180**
4TH	416	15	0.180	17	1.50E+06	8.3	0.238	0.534	0.172	16.6	0.325	0.859	**0.180**
3RD	517	15	0.180	17	1.50E+06	8.3	0.296	0.296	0.172	8.3	0.172	0.468	**0.180**
N/A	517	19	0.000	17	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	517	19	0.000	17	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	517	19	0.000	17	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	2.4	1.708	10.3	0.340	104	625	808	0.166	0.128	0.166
4TH	0.00	0.00	0.00	6.3	4.471	8.3	0.486	271	625	1154	0.434	0.235	0.434
3RD	0.00	0.00	0.00	11.1	7.907	8.3	0.486	479	625	1154	0.767	0.415	0.767
N/A	0.00	0.00	0.00	11.1	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	11.1	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	11.1	0.000	0.0	0.000	0	625	0			0.000

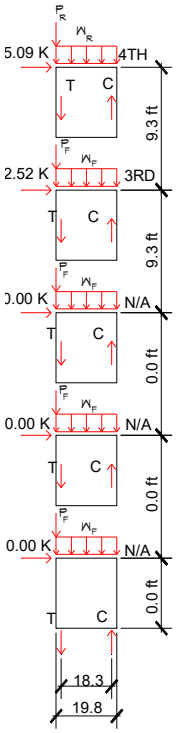
PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL W2.8

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	3.17	ft	1+ 0.14Sds =	1.13	
Trib Area =	0.00	ft^2	*Resists uplift only (due to near walls)*		
L =	19.8	ft	*Total Wall Length*		
L_{HD} =	18.3	ft	*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	190	A	0.41	0.5	0.24	(2)	2x6	0.209	0.012	OK
4TH	DF	374	A	0.81	0.75	0.36	(2)	2x6	0.546	0.014	OK
3RD	DF	465	B	0.78	0.875	0.52	(2)	2x6	0.966	0.014	OK
N/A	DF	465	B	0.00	NONE	0.00	(2)	2x6	0.000	0.000	OK
N/A	DF	465	B	0.00	NONE	0.00	(2)	2x6	0.000	0.000	OK
N/A	DF	465	B	0.00	NONE	0.00	(2)	2x6	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	267	0	5.27 K	5.27	0.00	0.16	11.3 ft	11.3	59.5	30.9	**1.0**
4TH	258	0	5.09 K	10.35	0.00	0.16	9.3 ft	20.6	155.8	62.7	**3.5**
3RD	128	0	2.52 K	12.87	0.00	0.16	9.3 ft	29.9	275.5	94.5	**6.8**
N/A	0	0	0.00 K	12.87	0.00	0.08	0.0 ft	29.9	275.5	109.9	**0.0**
N/A	0	0	0.00 K	12.87	0.00	0.08	0.0 ft	29.9	275.5	125.3	**0.0**
N/A	0	0	0.00 K	12.87	0.00	0.08	0.0 ft	29.9	275.5	140.8	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	267	15	0.180	17	1.50E+06	10.3	0.188	0.783	0.111	26.9	0.396	1.179	**0.180**
4TH	524	15	0.180	17	1.50E+06	8.3	0.295	0.594	0.092	16.6	0.174	0.768	**0.180**
3RD	652	19	0.180	17	1.50E+06	8.3	0.299	0.299	0.092	8.3	0.092	0.391	**0.180**
N/A	652	19	0.000	17	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	652	19	0.000	17	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	652	19	0.000	17	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	3.0	2.152	10.3	0.340	130	625	808	0.209	0.161	0.209
4TH	0.00	0.00	0.00	7.9	5.634	8.3	0.486	341	625	1154	0.546	0.296	0.546
3RD	0.00	0.00	0.00	13.9	9.963	8.3	0.486	604	625	1154	0.966	0.523	0.966
N/A	0.00	0.00	0.00	13.9	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	13.9	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	13.9	0.000	0.0	0.000	0	625	0			0.000

PCS Structural Solutions

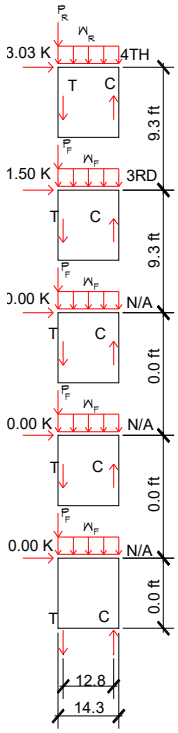
Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:

STATUS: OK



MULTI-STORY SHEARWALL DESIGN:

WALL W2.9

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	3.17	ft	1+ 0.14Sds =	1.13	
Trib Area =	0.00	ft^2	*Resists uplift only (due to near walls)*		
L =	14.3 ft		*Total Wall Length*		
L_{HD} =	12.8 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	157	A	0.34	0.5	0.24	(2)	2x6	0.172	0.014	OK
4TH	DF	309	A	0.67	0.5	0.76	(2)	2x6	0.451	0.013	OK
3RD	DF	384	A	0.84	0.625	0.93	(2)	2x6	0.797	0.016	OK
N/A	DF	384	B	0.00	NONE	0.00	(2)	2x6	0.000	0.000	OK
N/A	DF	384	B	0.00	NONE	0.00	(2)	2x6	0.000	0.000	OK
N/A	DF	384	B	0.00	NONE	0.00	(2)	2x6	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	220	0	3.14 K	3.14	0.00	0.16	11.3 ft	11.3	35.4	16.1	**1.0**
4TH	213	0	3.03 K	6.17	0.00	0.16	9.3 ft	20.6	92.8	32.6	**3.2**
3RD	105	0	1.50 K	7.66	0.00	0.16	9.3 ft	29.9	164.1	49.2	**6.2**
N/A	0	0	0.00 K	7.66	0.00	0.08	0.0 ft	29.9	164.1	57.2	**0.0**
N/A	0	0	0.00 K	7.66	0.00	0.08	0.0 ft	29.9	164.1	65.2	**0.0**
N/A	0	0	0.00 K	7.66	0.00	0.08	0.0 ft	29.9	164.1	73.3	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	220	15	0.180	17	1.50E+06	10.3	0.157	0.708	0.160	26.9	0.568	1.276	**0.180**
4TH	433	15	0.180	17	1.50E+06	8.3	0.246	0.551	0.131	16.6	0.248	0.800	**0.180**
3RD	538	15	0.180	17	1.50E+06	8.3	0.305	0.305	0.131	8.3	0.131	0.437	**0.180**
N/A	538	19	0.000	17	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	538	19	0.000	17	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	538	19	0.000	17	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	2.5	1.776	10.3	0.340	108	625	808	0.172	0.133	0.172
4TH	0.00	0.00	0.00	6.5	4.650	8.3	0.486	282	625	1154	0.451	0.244	0.451
3RD	0.00	0.00	0.00	11.5	8.223	8.3	0.486	498	625	1154	0.797	0.432	0.797
N/A	0.00	0.00	0.00	11.5	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	11.5	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	11.5	0.000	0.0	0.000	0	625	0			0.000

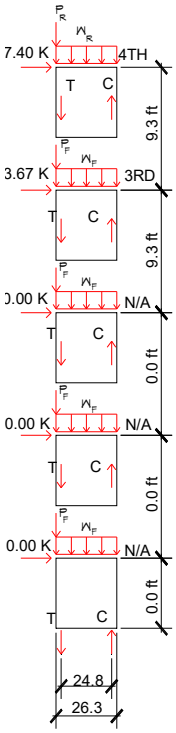
PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL W2.10

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	1	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	19.50	ft	1+ 0.14Sds =	1.13	
Trib Area =	0.00	ft^2	*Resists uplift only (due to near walls)*		
L =	26.3 ft		*Total Wall Length*		
L_{HD} =	24.8 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	209	A	0.45	HDU-02	0.39	(2)	2x4	0.643	0.011	OK
4TH	DF	410	A	0.89	NONE	0.00	(3)	2x4	0.745	0.014	OK
3RD	DF	510	B	0.85	NONE	0.00	(4)	2x4	0.988	0.014	OK
N/A	DF	510	B	0.00	NONE	0.00	(2)	2x4	0.000	0.000	OK
N/A	DF	510	B	0.00	NONE	0.00	(2)	2x4	0.000	0.000	OK
N/A	DF	510	B	0.00	NONE	0.00	(2)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	292	0	7.67 K	7.67	0.00	0.12	11.3 ft	11.3	86.6	41.8	**1.2**
4TH	282	0	7.40 K	15.07	0.00	0.57	9.3 ft	20.6	226.8	238.6	**0.0**
3RD	140	0	3.67 K	18.74	0.00	0.57	9.3 ft	29.9	401.0	435.3	**0.0**
N/A	0	0	0.00 K	18.74	0.00	0.49	0.0 ft	29.9	401.0	603.3	**0.0**
N/A	0	0	0.00 K	18.74	0.00	0.49	0.0 ft	29.9	401.0	771.3	**0.0**
N/A	0	0	0.00 K	18.74	0.00	0.49	0.0 ft	29.9	401.0	939.2	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	292	15	0.180	11	1.50E+06	10.3	0.207	0.854	0.082	26.9	0.292	1.146	**0.180**
4TH	574	15	0.180	16	1.50E+06	8.3	0.322	0.647	0.068	16.6	0.128	0.775	**0.180**
3RD	714	19	0.180	21	1.50E+06	8.3	0.324	0.324	0.068	8.3	0.068	0.392	**0.180**
N/A	714	19	0.000	11	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	714	19	0.000	11	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	714	19	0.000	11	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	3.3	2.357	10.3	0.147	224	625	349	0.359	0.643	0.643
4TH	0.00	0.00	0.00	8.6	6.170	8.3	0.221	392	625	526	0.627	0.745	0.745
3RD	0.00	0.00	0.00	15.3	10.912	8.3	0.221	520	625	526	0.831	0.988	0.988
N/A	0.00	0.00	0.00	15.3	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	15.3	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	15.3	0.000	0.0	0.000	0	625	0			0.000

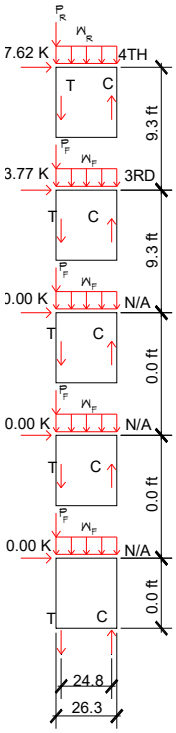
PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL W3.1

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.145ds =	0.77		Floor Dead =	25	psf
Trib Width =	10.63	ft	1+ 0.145ds =	1.13	
Trib Area =	0.00	ft^2	*Resists uplift only (due to near walls)*		
L =	26.3 ft		*Total Wall Length*		
L_{HD} =	24.8 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	215	A	0.47	0.5	0.00	(2)	2x4	0.662	0.011	OK
4TH	DF	422	A	0.92	0.5	0.00	(3)	2x4	0.766	0.014	OK
3RD	DF	524	B	0.87	0.5	0.30	(4)	2x4	1.016	0.014	OK
N/A	DF	524	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	524	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	524	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	300	0	7.88 K	7.88	0.00	0.29	11.3 ft	11.3	89.1	100.9	**0.0**
4TH	290	0	7.62 K	15.50	0.00	0.35	9.3 ft	20.6	233.2	221.3	**0.0**
3RD	144	0	3.77 K	19.27	0.00	0.35	9.3 ft	29.9	412.4	341.6	**1.3**
N/A	0	0	0.00 K	19.27	0.00	0.27	0.0 ft	29.9	412.4	433.2	**0.0**
N/A	0	0	0.00 K	19.27	0.00	0.27	0.0 ft	29.9	412.4	524.7	**0.0**
N/A	0	0	0.00 K	19.27	0.00	0.27	0.0 ft	29.9	412.4	616.2	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	300	15	0.180	11	1.50E+06	10.3	0.213	0.878	0.082	26.9	0.292	1.170	**0.180**
4TH	590	15	0.180	16	1.50E+06	8.3	0.331	0.665	0.068	16.6	0.128	0.793	**0.180**
3RD	734	19	0.180	21	1.50E+06	8.3	0.334	0.334	0.068	8.3	0.068	0.401	**0.180**
N/A	734	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	734	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	734	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	3.4	2.424	10.3	0.147	231	625	349	0.369	0.662	0.662
4TH	0.00	0.00	0.00	8.9	6.346	8.3	0.221	403	625	526	0.645	0.766	0.766
3RD	0.00	0.00	0.00	15.7	11.222	8.3	0.221	534	625	526	0.855	1.016	1.016
N/A	0.00	0.00	0.00	15.7	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	15.7	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	15.7	0.000	0.0	0.000	0	625	0			0.000

PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

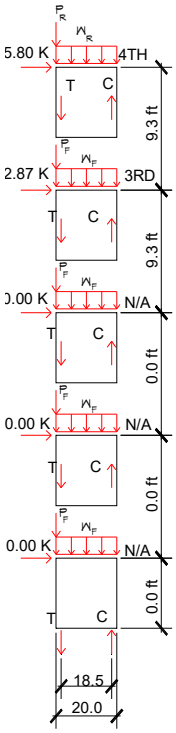
Multiplier:

STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL W3.2

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	7.50	ft	1+ 0.14Sds =	1.13	
Trib Area =	0.00	ft^2	*Resists uplift only (due to near walls)*		
L =	20.0 ft		*Total Wall Length*		
L_{HD} =	18.5 ft		*Distance from Holdown to comp post*		



WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	215	A	0.47	0.5	0.15	(2)	2x4	0.662	0.013	OK
4TH	DF	422	A	0.92	0.5	0.62	(3)	2x4	0.766	0.015	OK
3RD	DF	524	B	0.87	0.625	0.85	(4)	2x4	1.016	0.015	OK
N/A	DF	524	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	524	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	524	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	300	0	6.01 K	6.01	0.00	0.24	11.3 ft	11.3	67.9	47.3	**0.7**
4TH	290	0	5.80 K	11.81	0.00	0.27	9.3 ft	20.6	177.7	101.6	**2.6**
3RD	144	0	2.87 K	14.68	0.00	0.27	9.3 ft	29.9	314.2	155.8	**5.6**
N/A	0	0	0.00 K	14.68	0.00	0.19	0.0 ft	29.9	314.2	193.3	**0.0**
N/A	0	0	0.00 K	14.68	0.00	0.19	0.0 ft	29.9	314.2	230.8	**0.0**
N/A	0	0	0.00 K	14.68	0.00	0.19	0.0 ft	29.9	314.2	268.3	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	300	15	0.180	11	1.50E+06	10.3	0.215	0.883	0.110	26.9	0.391	1.274	**0.180**
4TH	590	15	0.180	16	1.50E+06	8.3	0.333	0.668	0.090	16.6	0.171	0.839	**0.180**
3RD	734	19	0.180	21	1.50E+06	8.3	0.335	0.335	0.090	8.3	0.090	0.426	**0.180**
N/A	734	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	734	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	734	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	3.4	2.424	10.3	0.147	231	625	349	0.369	0.662	0.662
4TH	0.00	0.00	0.00	8.9	6.346	8.3	0.221	403	625	526	0.645	0.766	0.766
3RD	0.00	0.00	0.00	15.7	11.222	8.3	0.221	534	625	526	0.855	1.016	1.016
N/A	0.00	0.00	0.00	15.7	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	15.7	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	15.7	0.000	0.0	0.000	0	625	0			0.000

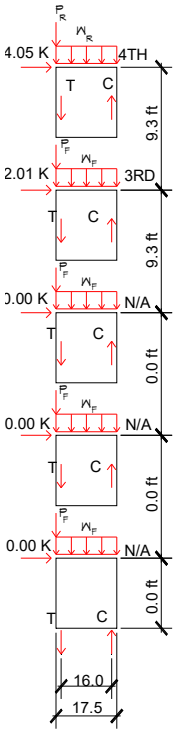
PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL W4.1

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	10.63	ft	1+ 0.14Sds =	1.13	
Trib Area =	5.00	ft^2	*Resists uplift only (due to near walls)*		
L =	17.5 ft		*Total Wall Length*		
L_{HD} =	16.0 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	171	A	0.37	0.5	0.00	(2)	2x4	0.528	0.013	OK
4TH	DF	337	A	0.73	0.5	0.15	(3)	2x4	0.612	0.013	OK
3RD	DF	419	A	0.91	0.5	0.52	(4)	2x4	0.811	0.016	OK
N/A	DF	419	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	419	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	419	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	240	0	4.19 K	4.19	0.09	0.29	11.3 ft	11.3	47.4	46.4	**0.0**
4TH	232	0	4.05 K	8.25	0.13	0.35	9.3 ft	20.6	124.1	102.1	**0.6**
3RD	115	0	2.01 K	10.26	0.13	0.35	9.3 ft	29.9	219.5	157.8	**2.2**
N/A	0	0	0.00 K	10.26	0.13	0.27	0.0 ft	29.9	219.5	200.7	**0.0**
N/A	0	0	0.00 K	10.26	0.13	0.27	0.0 ft	29.9	219.5	243.5	**0.0**
N/A	0	0	0.00 K	10.26	0.13	0.27	0.0 ft	29.9	219.5	286.4	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	240	15	0.180	11	1.50E+06	10.3	0.173	0.769	0.127	26.9	0.452	1.221	**0.180**
4TH	471	15	0.180	16	1.50E+06	8.3	0.267	0.596	0.105	16.6	0.198	0.794	**0.180**
3RD	586	15	0.180	21	1.50E+06	8.3	0.330	0.330	0.105	8.3	0.105	0.434	**0.180**
N/A	586	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	586	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	586	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	2.7	1.935	10.3	0.147	184	625	349	0.295	0.528	0.528
4TH	0.00	0.00	0.00	7.1	5.066	8.3	0.221	322	625	526	0.515	0.612	0.612
3RD	0.00	0.00	0.00	12.5	8.960	8.3	0.221	427	625	526	0.683	0.811	0.811
N/A	0.00	0.00	0.00	12.5	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	12.5	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	12.5	0.000	0.0	0.000	0	625	0			0.000

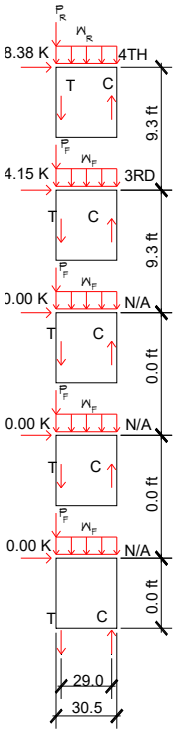
PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL W5.1

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.145ds =	0.77		Floor Dead =	25	psf
Trib Width =	10.63	ft	1+ 0.145ds =	1.13	
Trib Area =	5.00	ft^2	*Resists uplift only (due to near walls)*		
L =	30.5 ft		*Total Wall Length*		
L_{HD} =	29.0 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	203	A	0.44	NONE	0.00	(2)	2x4	0.627	0.010	OK
4TH	DF	399	A	0.87	NONE	0.00	(3)	2x4	0.726	0.013	OK
3RD	DF	496	B	0.83	NONE	0.00	(4)	2x4	0.962	0.013	OK
N/A	DF	496	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	496	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	496	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	284	0	8.67 K	8.67	0.09	0.29	11.3 ft	11.3	98.0	139.0	**0.0**
4TH	275	0	8.38 K	17.05	0.13	0.35	9.3 ft	20.6	256.6	305.3	**0.0**
3RD	136	0	4.15 K	21.20	0.13	0.35	9.3 ft	29.9	453.7	471.6	**0.0**
N/A	0	0	0.00 K	21.20	0.13	0.27	0.0 ft	29.9	453.7	598.9	**0.0**
N/A	0	0	0.00 K	21.20	0.13	0.27	0.0 ft	29.9	453.7	726.3	**0.0**
N/A	0	0	0.00 K	21.20	0.13	0.27	0.0 ft	29.9	453.7	853.7	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	284	15	0.180	11	1.50E+06	10.3	0.201	0.829	0.070	26.9	0.250	1.079	**0.180**
4TH	559	15	0.180	16	1.50E+06	8.3	0.313	0.628	0.058	16.6	0.109	0.738	**0.180**
3RD	695	19	0.180	21	1.50E+06	8.3	0.315	0.315	0.058	8.3	0.058	0.373	**0.180**
N/A	695	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	695	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	695	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	3.2	2.295	10.3	0.147	219	625	349	0.350	0.627	0.627
4TH	0.00	0.00	0.00	8.4	6.008	8.3	0.221	381	625	526	0.610	0.726	0.726
3RD	0.00	0.00	0.00	14.9	10.625	8.3	0.221	506	625	526	0.809	0.962	0.962
N/A	0.00	0.00	0.00	14.9	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	14.9	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	14.9	0.000	0.0	0.000	0	625	0			0.000

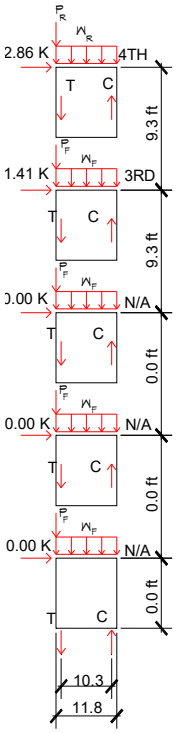
PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL W5.2

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	2.00	ft	1+ 0.14Sds =	1.13	
Trib Area =	5.00	ft^2	*Resists uplift only (due to near walls)*		
L =	11.8 ft		*Total Wall Length*		
L_{HD} =	10.3 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	180	A	0.39	0.5	0.36	(2)	2x4	0.554	0.017	OK
4TH	DF	353	A	0.77	0.625	0.67	(3)	2x4	0.642	0.015	OK
3RD	DF	439	A	0.95	0.75	0.87	(4)	2x4	0.852	0.018	OK
N/A	DF	439	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	439	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	439	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	252	0	2.96 K	2.96	0.09	0.14	11.3 ft	11.3	33.4	10.6	**1.5**
4TH	243	0	2.86 K	5.81	0.13	0.13	9.3 ft	20.6	87.5	21.3	**4.5**
3RD	120	0	1.41 K	7.23	0.13	0.13	9.3 ft	29.9	154.7	32.0	**8.4**
N/A	0	0	0.00 K	7.23	0.13	0.05	0.0 ft	29.9	154.7	36.9	**0.0**
N/A	0	0	0.00 K	7.23	0.13	0.05	0.0 ft	29.9	154.7	41.8	**0.0**
N/A	0	0	0.00 K	7.23	0.13	0.05	0.0 ft	29.9	154.7	46.7	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	252	15	0.180	11	1.50E+06	10.3	0.186	0.818	0.198	26.9	0.706	1.524	**0.180**
4TH	495	15	0.180	16	1.50E+06	8.3	0.283	0.632	0.163	16.6	0.309	0.941	**0.180**
3RD	615	15	0.180	21	1.50E+06	8.3	0.349	0.349	0.163	8.3	0.163	0.512	**0.180**
N/A	615	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	615	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	615	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	2.8	2.031	10.3	0.147	193	625	349	0.309	0.554	0.554
4TH	0.00	0.00	0.00	7.4	5.317	8.3	0.221	338	625	526	0.540	0.642	0.642
3RD	0.00	0.00	0.00	13.2	9.402	8.3	0.221	448	625	526	0.716	0.852	0.852
N/A	0.00	0.00	0.00	13.2	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	13.2	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	13.2	0.000	0.0	0.000	0	625	0			0.000

PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

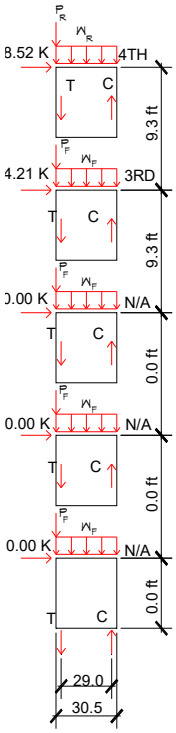
Multiplier:

STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL W6.1

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	10.63	ft	1+ 0.14Sds =	1.13	
Trib Area =	5.00	ft^2	*Resists uplift only (due to near walls)*		
L =	30.5 ft		*Total Wall Length*		
L_{HD} =	29.0 ft		*Distance from Holdown to comp post*		



WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	206	A	0.45	NONE	0.00	(2)	2x4	0.637	0.010	OK
4TH	DF	406	A	0.88	NONE	0.00	(3)	2x4	0.737	0.013	OK
3RD	DF	505	B	0.84	NONE	0.00	(4)	2x4	0.978	0.014	OK
N/A	DF	505	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	505	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	505	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	289	0	8.81 K	8.81	0.09	0.29	11.3 ft	11.3	99.6	139.0	**0.0**
4TH	279	0	8.52 K	17.33	0.13	0.35	9.3 ft	20.6	260.8	305.3	**0.0**
3RD	138	0	4.21 K	21.54	0.13	0.35	9.3 ft	29.9	461.1	471.6	**0.0**
N/A	0	0	0.00 K	21.54	0.13	0.27	0.0 ft	29.9	461.1	598.9	**0.0**
N/A	0	0	0.00 K	21.54	0.13	0.27	0.0 ft	29.9	461.1	726.3	**0.0**
N/A	0	0	0.00 K	21.54	0.13	0.27	0.0 ft	29.9	461.1	853.7	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	289	15	0.180	11	1.50E+06	10.3	0.204	0.843	0.070	26.9	0.250	1.092	**0.180**
4TH	568	15	0.180	16	1.50E+06	8.3	0.318	0.639	0.058	16.6	0.109	0.748	**0.180**
3RD	706	19	0.180	21	1.50E+06	8.3	0.320	0.320	0.058	8.3	0.058	0.378	**0.180**
N/A	706	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	706	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	706	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	3.3	2.332	10.3	0.147	222	625	349	0.355	0.637	0.637
4TH	0.00	0.00	0.00	8.5	6.107	8.3	0.221	388	625	526	0.620	0.737	0.737
3RD	0.00	0.00	0.00	15.1	10.799	8.3	0.221	514	625	526	0.823	0.978	0.978
N/A	0.00	0.00	0.00	15.1	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	15.1	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	15.1	0.000	0.0	0.000	0	625	0			0.000

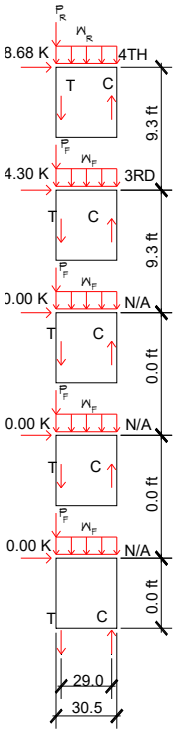
PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL W7.1

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	10.63	ft	1+ 0.14Sds =	1.13	
Trib Area =	5.00	ft^2	*Resists uplift only (due to near walls)*		
L =	30.5 ft		*Total Wall Length*		
L_{HD} =	29.0 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	211	A	0.46	NONE	0.00	(2)	2x4	0.650	0.010	OK
4TH	DF	414	A	0.90	NONE	0.00	(3)	2x4	0.752	0.013	OK
3RD	DF	515	B	0.86	NONE	0.00	(4)	2x4	0.998	0.014	OK
N/A	DF	515	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	515	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	515	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	295	0	8.99 K	8.99	0.09	0.29	11.3 ft	11.3	101.6	139.0	**0.0**
4TH	285	0	8.68 K	17.67	0.13	0.35	9.3 ft	20.6	266.0	305.3	**0.0**
3RD	141	0	4.30 K	21.98	0.13	0.35	9.3 ft	29.9	470.3	471.6	**0.0**
N/A	0	0	0.00 K	21.98	0.13	0.27	0.0 ft	29.9	470.3	598.9	**0.0**
N/A	0	0	0.00 K	21.98	0.13	0.27	0.0 ft	29.9	470.3	726.3	**0.0**
N/A	0	0	0.00 K	21.98	0.13	0.27	0.0 ft	29.9	470.3	853.7	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	295	15	0.180	11	1.50E+06	10.3	0.208	0.859	0.070	26.9	0.250	1.109	**0.180**
4TH	580	15	0.180	16	1.50E+06	8.3	0.325	0.651	0.058	16.6	0.109	0.761	**0.180**
3RD	721	19	0.180	21	1.50E+06	8.3	0.327	0.327	0.058	8.3	0.058	0.385	**0.180**
N/A	721	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	721	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	721	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	3.3	2.379	10.3	0.147	227	625	349	0.363	0.650	0.650
4TH	0.00	0.00	0.00	8.7	6.229	8.3	0.221	395	625	526	0.633	0.752	0.752
3RD	0.00	0.00	0.00	15.4	11.015	8.3	0.221	525	625	526	0.839	0.998	0.998
N/A	0.00	0.00	0.00	15.4	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	15.4	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	15.4	0.000	0.0	0.000	0	625	0			0.000

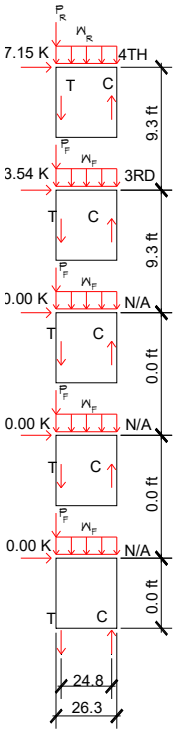
PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL W7.2

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	1	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	10.63	ft	1+ 0.14Sds =	1.13	
Trib Area =	5.00	ft^2	*Resists uplift only (due to near walls)*		
L =	26.3 ft		*Total Wall Length*		
L_{HD} =	24.8 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	201	A	0.44	0.5	0.28	(2)	2x4	0.621	0.011	OK
4TH	DF	396	A	0.86	0.5	0.30	(3)	2x4	0.719	0.013	OK
3RD	DF	492	B	0.82	0.5	0.53	(4)	2x4	0.954	0.014	OK
N/A	DF	492	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	492	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	492	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	282	0	7.40 K	7.40	0.01	0.11	11.3 ft	11.3	83.6	38.8	**1.2**
4TH	272	0	7.15 K	14.54	0.13	0.35	9.3 ft	20.6	218.8	162.5	**1.3**
3RD	135	0	3.54 K	18.08	0.13	0.35	9.3 ft	29.9	387.0	286.1	**2.3**
N/A	0	0	0.00 K	18.08	0.13	0.27	0.0 ft	29.9	387.0	380.9	**0.0**
N/A	0	0	0.00 K	18.08	0.13	0.27	0.0 ft	29.9	387.0	475.7	**0.0**
N/A	0	0	0.00 K	18.08	0.13	0.27	0.0 ft	29.9	387.0	570.5	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	282	15	0.180	11	1.50E+06	10.3	0.200	0.824	0.082	26.9	0.292	1.116	**0.180**
4TH	554	15	0.180	16	1.50E+06	8.3	0.311	0.624	0.068	16.6	0.128	0.752	**0.180**
3RD	689	19	0.180	21	1.50E+06	8.3	0.313	0.313	0.068	8.3	0.068	0.381	**0.180**
N/A	689	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	689	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	689	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	3.2	2.274	10.3	0.147	217	625	349	0.347	0.621	0.621
4TH	0.00	0.00	0.00	8.3	5.955	8.3	0.221	378	625	526	0.605	0.719	0.719
3RD	0.00	0.00	0.00	14.7	10.530	8.3	0.221	501	625	526	0.802	0.954	0.954
N/A	0.00	0.00	0.00	14.7	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	14.7	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	14.7	0.000	0.0	0.000	0	625	0			0.000

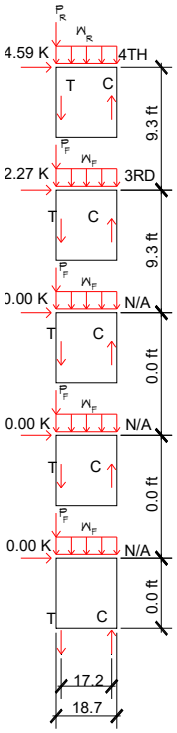
PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL W8.1

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	11.00	ft	1+ 0.14Sds =	1.13	
Trib Area =	5.00	ft^2	*Resists uplift only (due to near walls)*		
L =	18.7 ft		*Total Wall Length*		
L_{HD} =	17.2 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	182	A	0.40	0.5	0.00	(2)	2x4	0.561	0.012	OK
4TH	DF	357	A	0.78	0.5	0.12	(3)	2x4	0.649	0.013	OK
3RD	DF	444	A	0.97	0.5	0.49	(4)	2x4	0.861	0.016	OK
N/A	DF	444	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	444	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	444	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	254	0	4.75 K	4.75	0.09	0.30	11.3 ft	11.3	53.7	53.9	**0.0**
4TH	246	0	4.59 K	9.34	0.13	0.36	9.3 ft	20.6	140.6	118.8	**0.5**
3RD	122	0	2.27 K	11.61	0.13	0.36	9.3 ft	29.9	248.6	183.6	**2.1**
N/A	0	0	0.00 K	11.61	0.13	0.28	0.0 ft	29.9	248.6	233.9	**0.0**
N/A	0	0	0.00 K	11.61	0.13	0.28	0.0 ft	29.9	248.6	284.1	**0.0**
N/A	0	0	0.00 K	11.61	0.13	0.28	0.0 ft	29.9	248.6	334.4	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	254	15	0.180	11	1.50E+06	10.3	0.183	0.815	0.118	26.9	0.421	1.236	**0.180**
4TH	500	15	0.180	16	1.50E+06	8.3	0.282	0.632	0.097	16.6	0.185	0.816	**0.180**
3RD	622	15	0.180	21	1.50E+06	8.3	0.349	0.349	0.097	8.3	0.097	0.447	**0.180**
N/A	622	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	622	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	622	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	2.9	2.054	10.3	0.147	196	625	349	0.313	0.561	0.561
4TH	0.00	0.00	0.00	7.5	5.378	8.3	0.221	341	625	526	0.546	0.649	0.649
3RD	0.00	0.00	0.00	13.3	9.510	8.3	0.221	453	625	526	0.725	0.861	0.861
N/A	0.00	0.00	0.00	13.3	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	13.3	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	13.3	0.000	0.0	0.000	0	625	0			0.000

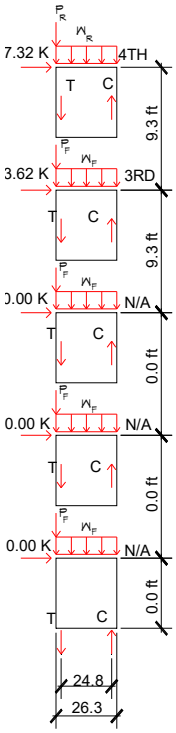
PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL W8.2

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	1	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	10.75	ft	1+ 0.14Sds =	1.13	
Trib Area =	5.00	ft^2	*Resists uplift only (due to near walls)*		
L =	26.3 ft		*Total Wall Length*		
L_{HD} =	24.8 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	206	A	0.45	0.5	0.30	(2)	2x4	0.636	0.011	OK
4TH	DF	405	A	0.88	0.5	0.32	(3)	2x4	0.737	0.014	OK
3RD	DF	504	B	0.84	0.5	0.58	(4)	2x4	0.977	0.014	OK
N/A	DF	504	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	504	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	504	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	289	0	7.58 K	7.58	0.01	0.11	11.3 ft	11.3	85.6	38.9	**1.3**
4TH	279	0	7.32 K	14.90	0.13	0.35	9.3 ft	20.6	224.2	163.6	**1.4**
3RD	138	0	3.62 K	18.52	0.13	0.35	9.3 ft	29.9	396.4	288.3	**2.5**
N/A	0	0	0.00 K	18.52	0.13	0.27	0.0 ft	29.9	396.4	384.2	**0.0**
N/A	0	0	0.00 K	18.52	0.13	0.27	0.0 ft	29.9	396.4	480.0	**0.0**
N/A	0	0	0.00 K	18.52	0.13	0.27	0.0 ft	29.9	396.4	575.9	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	289	15	0.180	11	1.50E+06	10.3	0.205	0.844	0.082	26.9	0.292	1.136	**0.180**
4TH	568	15	0.180	16	1.50E+06	8.3	0.318	0.639	0.068	16.6	0.128	0.767	**0.180**
3RD	706	19	0.180	21	1.50E+06	8.3	0.321	0.321	0.068	8.3	0.068	0.388	**0.180**
N/A	706	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	706	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	706	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	3.3	2.330	10.3	0.147	222	625	349	0.355	0.636	0.636
4TH	0.00	0.00	0.00	8.5	6.100	8.3	0.221	387	625	526	0.620	0.737	0.737
3RD	0.00	0.00	0.00	15.1	10.787	8.3	0.221	514	625	526	0.822	0.977	0.977
N/A	0.00	0.00	0.00	15.1	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	15.1	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	15.1	0.000	0.0	0.000	0	625	0			0.000

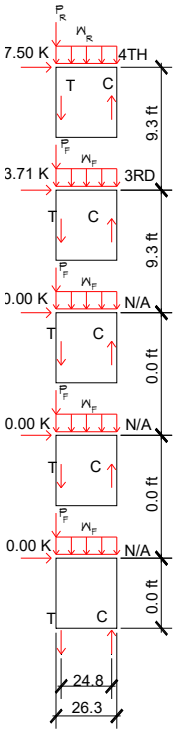
PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL W9.1

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	1	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	10.75	ft	1+ 0.14Sds =	1.13	
Trib Area =	5.00	ft^2	*Resists uplift only (due to near walls)*		
L =	26.3 ft		*Total Wall Length*		
L_{HD} =	24.8 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	211	A	0.46	0.5	0.31	(2)	2x4	0.651	0.011	OK
4TH	DF	415	A	0.90	0.5	0.36	(3)	2x4	0.754	0.014	OK
3RD	DF	516	B	0.86	0.5	0.64	(4)	2x4	1.000	0.014	OK
N/A	DF	516	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	516	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	516	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	296	0	7.76 K	7.76	0.01	0.11	11.3 ft	11.3	87.7	38.9	**1.3**
4TH	286	0	7.50 K	15.26	0.13	0.35	9.3 ft	20.6	229.6	163.6	**1.5**
3RD	141	0	3.71 K	18.97	0.13	0.35	9.3 ft	29.9	405.9	288.3	**2.7**
N/A	0	0	0.00 K	18.97	0.13	0.27	0.0 ft	29.9	405.9	384.2	**0.0**
N/A	0	0	0.00 K	18.97	0.13	0.27	0.0 ft	29.9	405.9	480.0	**0.0**
N/A	0	0	0.00 K	18.97	0.13	0.27	0.0 ft	29.9	405.9	575.9	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	296	15	0.180	11	1.50E+06	10.3	0.210	0.864	0.082	26.9	0.292	1.156	**0.180**
4TH	581	15	0.180	16	1.50E+06	8.3	0.326	0.655	0.068	16.6	0.128	0.783	**0.180**
3RD	722	19	0.180	21	1.50E+06	8.3	0.328	0.328	0.068	8.3	0.068	0.396	**0.180**
N/A	722	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	722	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	722	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	3.3	2.386	10.3	0.147	227	625	349	0.364	0.651	0.651
4TH	0.00	0.00	0.00	8.7	6.246	8.3	0.221	397	625	526	0.635	0.754	0.754
3RD	0.00	0.00	0.00	15.5	11.046	8.3	0.221	526	625	526	0.842	1.000	1.000
N/A	0.00	0.00	0.00	15.5	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	15.5	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	15.5	0.000	0.0	0.000	0	625	0			0.000

Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

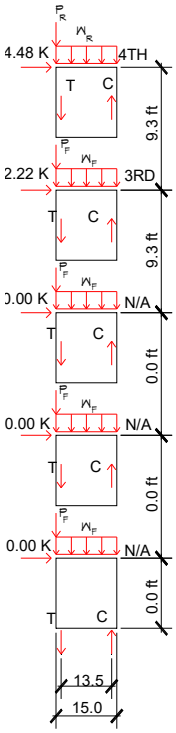
Multiplier:

STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL W10.1, W10.2

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	1	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	3.17	ft	1+ 0.14Sds =	1.13	
Trib Area =	0.00	ft^2	*Resists uplift only (due to near walls)*		
L =	15.0 ft		*Total Wall Length*		
L_{HD} =	13.5 ft		*Distance from Holdown to comp post*		



WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	221	A	0.48	0.5	0.49	(1)	2x6	0.484	0.016	OK
4TH	DF	434	A	0.94	0.75	0.58	(2)	2x6	0.633	0.016	OK
3RD	DF	540	B	0.90	0.875	0.77	(3)	2x6	0.747	0.017	OK
N/A	DF	540	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	540	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	540	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	309	0	4.64 K	4.64	0.00	0.10	11.3 ft	11.3	52.4	11.8	**2.1**
4TH	299	0	4.48 K	9.12	0.00	0.16	9.3 ft	20.6	137.2	30.1	**5.5**
3RD	148	0	2.22 K	11.33	0.00	0.16	9.3 ft	29.9	242.6	48.4	**10.1**
N/A	0	0	0.00 K	11.33	0.00	0.08	0.0 ft	29.9	242.6	57.3	**0.0**
N/A	0	0	0.00 K	11.33	0.00	0.08	0.0 ft	29.9	242.6	66.2	**0.0**
N/A	0	0	0.00 K	11.33	0.00	0.08	0.0 ft	29.9	242.6	75.1	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	309	15	0.180	8.3	1.50E+06	10.3	0.228	0.919	0.151	26.9	0.536	1.455	**0.180**
4TH	608	15	0.180	17	1.50E+06	8.3	0.345	0.691	0.124	16.6	0.235	0.925	**0.180**
3RD	756	19	0.180	25	1.50E+06	8.3	0.346	0.346	0.124	8.3	0.124	0.470	**0.180**
N/A	756	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	756	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	756	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	3.5	2.495	10.3	0.340	302	625	808	0.484	0.374	0.484
4TH	0.00	0.00	0.00	9.1	6.532	8.3	0.486	396	625	1154	0.633	0.343	0.633
3RD	0.00	0.00	0.00	16.2	11.552	8.3	0.486	467	625	1154	0.747	0.404	0.747
N/A	0.00	0.00	0.00	16.2	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	16.2	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	16.2	0.000	0.0	0.000	0	625	0			0.000

PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

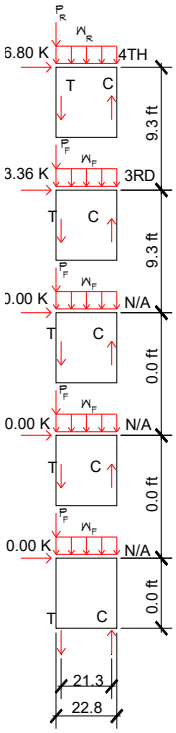
Multiplier:

STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL W10.3, W10.4

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	3.17	ft	1+ 0.14Sds =	1.13	
Trib Area =	0.00	ft^2	*Resists uplift only (due to near walls)*		
L =	22.8 ft		*Total Wall Length*		
L_{HD} =	21.3 ft		*Distance from Holdown to comp post*		



WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	221	A	0.48	0.5	0.28	(1)	2x6	0.484	0.012	OK
4TH	DF	434	A	0.94	0.75	0.41	(2)	2x6	0.633	0.015	OK
3RD	DF	540	B	0.90	0.875	0.60	(3)	2x6	0.747	0.015	OK
N/A	DF	540	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	540	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	540	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	309	0	7.03 K	7.03	0.00	0.16	11.3 ft	11.3	79.5	41.1	**1.2**
4TH	299	0	6.80 K	13.83	0.00	0.16	9.3 ft	20.6	208.1	83.2	**4.0**
3RD	148	0	3.36 K	17.19	0.00	0.16	9.3 ft	29.9	367.9	125.3	**7.8**
N/A	0	0	0.00 K	17.19	0.00	0.08	0.0 ft	29.9	367.9	145.8	**0.0**
N/A	0	0	0.00 K	17.19	0.00	0.08	0.0 ft	29.9	367.9	166.3	**0.0**
N/A	0	0	0.00 K	17.19	0.00	0.08	0.0 ft	29.9	367.9	186.8	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	309	15	0.180	8.3	1.50E+06	10.3	0.223	0.908	0.096	26.9	0.341	1.248	**0.180**
4TH	608	15	0.180	17	1.50E+06	8.3	0.342	0.685	0.079	16.6	0.149	0.834	**0.180**
3RD	756	19	0.180	25	1.50E+06	8.3	0.343	0.343	0.079	8.3	0.079	0.422	**0.180**
N/A	756	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	756	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	756	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	3.5	2.495	10.3	0.340	302	625	808	0.484	0.374	0.484
4TH	0.00	0.00	0.00	9.1	6.532	8.3	0.486	396	625	1154	0.633	0.343	0.633
3RD	0.00	0.00	0.00	16.2	11.552	8.3	0.486	467	625	1154	0.747	0.404	0.747
N/A	0.00	0.00	0.00	16.2	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	16.2	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	16.2	0.000	0.0	0.000	0	625	0			0.000

PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

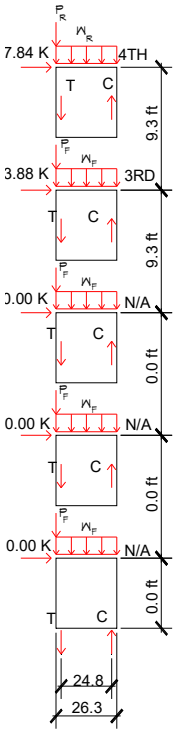
Multiplier:

STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL W10.5

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	1	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	10.75	ft	1+ 0.14Sds =	1.13	
Trib Area =	5.00	ft^2	*Resists uplift only (due to near walls)*		
L =	26.3 ft		*Total Wall Length*		
L_{HD} =	24.8 ft		*Distance from Holdown to comp post*		



WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	221	A	0.48	0.5	0.34	(4)	2x4	0.341	0.011	OK
4TH	DF	434	A	0.94	0.5	0.43	(4)	2x4	0.592	0.014	OK
3RD	DF	540	B	0.90	0.5	0.77	(5)	2x4	0.837	0.015	OK
N/A	DF	540	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	540	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	540	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	309	0	8.11 K	8.11	0.01	0.11	11.3 ft	11.3	91.7	38.9	**1.4**
4TH	299	0	7.84 K	15.95	0.13	0.35	9.3 ft	20.6	240.1	163.6	**1.8**
3RD	148	0	3.88 K	19.83	0.13	0.35	9.3 ft	29.9	424.5	288.3	**3.3**
N/A	0	0	0.00 K	19.83	0.13	0.27	0.0 ft	29.9	424.5	384.2	**0.0**
N/A	0	0	0.00 K	19.83	0.13	0.27	0.0 ft	29.9	424.5	480.0	**0.0**
N/A	0	0	0.00 K	19.83	0.13	0.27	0.0 ft	29.9	424.5	575.9	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	309	15	0.180	21	1.50E+06	10.3	0.216	0.898	0.082	26.9	0.292	1.191	**0.180**
4TH	608	15	0.180	21	1.50E+06	8.3	0.340	0.682	0.068	16.6	0.128	0.810	**0.180**
3RD	756	19	0.180	26	1.50E+06	8.3	0.343	0.343	0.068	8.3	0.068	0.410	**0.180**
N/A	756	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	756	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	756	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	3.5	2.495	10.3	0.147	119	625	349	0.190	0.341	0.341
4TH	0.00	0.00	0.00	9.1	6.532	8.3	0.221	311	625	526	0.498	0.592	0.592
3RD	0.00	0.00	0.00	16.2	11.552	8.3	0.221	440	625	526	0.704	0.837	0.837
N/A	0.00	0.00	0.00	16.2	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	16.2	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	16.2	0.000	0.0	0.000	0	625	0			0.000

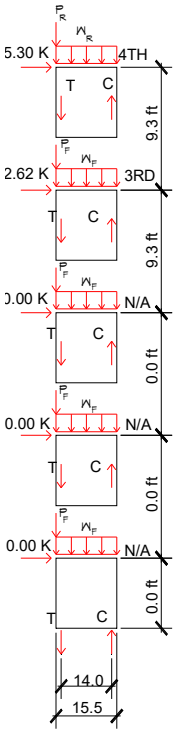
PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL W11.1

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.145ds =	0.77		Floor Dead =	25	psf
Trib Width =	3.17	ft	1+ 0.145ds =	1.13	
Trib Area =	5.00	ft^2	*Resists uplift only (due to near walls)*		
L =	15.5 ft		*Total Wall Length*		
L_{HD} =	14.0 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	253	A	0.55	0.5	0.48	(1)	2x6	0.554	0.016	OK
4TH	DF	497	B	0.83	0.75	0.62	(2)	2x6	0.725	0.015	OK
3RD	DF	618	B	1.03	0.875	0.85	(3)	2x6	0.855	0.018	OK
N/A	DF	618	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	618	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	618	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	354	0	5.49 K	5.49	0.09	0.16	11.3 ft	11.3	62.0	20.5	**2.0**
4TH	342	0	5.30 K	10.79	0.13	0.16	9.3 ft	20.6	162.3	42.0	**6.0**
3RD	169	0	2.62 K	13.41	0.13	0.16	9.3 ft	29.9	287.1	63.4	**11.2**
N/A	0	0	0.00 K	13.41	0.13	0.08	0.0 ft	29.9	287.1	74.9	**0.0**
N/A	0	0	0.00 K	13.41	0.13	0.08	0.0 ft	29.9	287.1	86.3	**0.0**
N/A	0	0	0.00 K	13.41	0.13	0.08	0.0 ft	29.9	287.1	97.8	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	354	15	0.180	8.3	1.50E+06	10.3	0.261	0.978	0.145	26.9	0.517	1.495	**0.180**
4TH	696	19	0.180	17	1.50E+06	8.3	0.321	0.717	0.120	16.6	0.226	0.944	**0.180**
3RD	865	19	0.180	25	1.50E+06	8.3	0.396	0.396	0.120	8.3	0.120	0.515	**0.180**
N/A	865	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	865	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	865	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	4.0	2.857	10.3	0.340	346	625	808	0.554	0.429	0.554
4TH	0.00	0.00	0.00	10.5	7.481	8.3	0.486	453	625	1154	0.725	0.393	0.725
3RD	0.00	0.00	0.00	18.5	13.229	8.3	0.486	534	625	1154	0.855	0.463	0.855
N/A	0.00	0.00	0.00	18.5	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	18.5	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	18.5	0.000	0.0	0.000	0	625	0			0.000

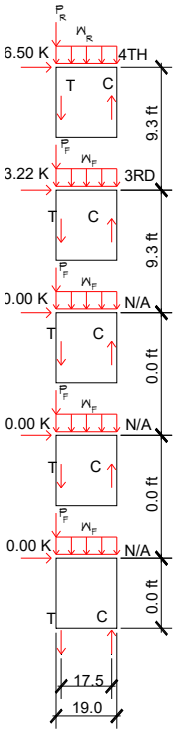
Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL W11.2, W11.3

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	3.17	ft	1+ 0.14Sds =	1.13	
Trib Area =	5.00	ft^2	*Resists uplift only (due to near walls)*		
L =	19.0 ft		*Total Wall Length*		
L_{HD} =	17.5 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	253	A	0.55	0.5	0.41	(1)	2x6	0.554	0.014	OK
4TH	DF	497	B	0.83	0.625	0.81	(2)	2x6	0.725	0.015	OK
3RD	DF	618	B	1.03	0.875	0.78	(3)	2x6	0.855	0.018	OK
N/A	DF	618	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	618	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	618	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	354	0	6.73 K	6.73	0.09	0.16	11.3 ft	11.3	76.0	30.3	**1.8**
4TH	342	0	6.50 K	13.22	0.13	0.16	9.3 ft	20.6	199.0	62.1	**5.4**
3RD	169	0	3.22 K	16.44	0.13	0.16	9.3 ft	29.9	351.9	93.9	**10.2**
N/A	0	0	0.00 K	16.44	0.13	0.08	0.0 ft	29.9	351.9	110.5	**0.0**
N/A	0	0	0.00 K	16.44	0.13	0.08	0.0 ft	29.9	351.9	127.2	**0.0**
N/A	0	0	0.00 K	16.44	0.13	0.08	0.0 ft	29.9	351.9	143.9	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	354	15	0.180	8.3	1.50E+06	10.3	0.257	0.971	0.116	26.9	0.413	1.385	**0.180**
4TH	696	19	0.180	17	1.50E+06	8.3	0.320	0.714	0.096	16.6	0.181	0.895	**0.180**
3RD	865	19	0.180	25	1.50E+06	8.3	0.394	0.394	0.096	8.3	0.096	0.490	**0.180**
N/A	865	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	865	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	865	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	4.0	2.857	10.3	0.340	346	625	808	0.554	0.429	0.554
4TH	0.00	0.00	0.00	10.5	7.481	8.3	0.486	453	625	1154	0.725	0.393	0.725
3RD	0.00	0.00	0.00	18.5	13.229	8.3	0.486	534	625	1154	0.855	0.463	0.855
N/A	0.00	0.00	0.00	18.5	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	18.5	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	18.5	0.000	0.0	0.000	0	625	0			0.000

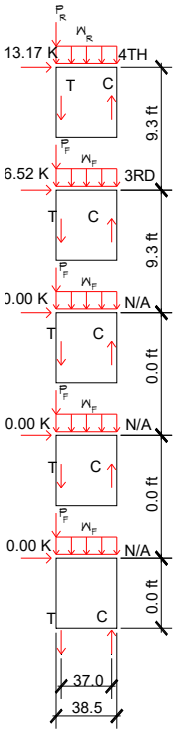
PCS Structural Solutions

Project: Mercer Island Mixed Use Job Number: 19028

Sheet: of Name: AED

Originating Office: Seattle Date: 09/27/21

Multiplier:



STATUS: OK

MULTI-STORY SHEARWALL DESIGN:

WALL W11.4

C_s =	0.142		Wall Weight =	9	psf
S_{DS} =	0.92	sec	Roof Dead =	18	psf
0.9- 0.14Sds =	0.77		Floor Dead =	25	psf
Trib Width =	3.17	ft	1+ 0.14Sds =	1.13	
Trib Area =	5.00	ft^2	*Resists uplift only (due to near walls)*		
L =	38.5 ft		*Total Wall Length*		
L_{HD} =	37.0 ft		*Distance from Holdown to comp post*		

WALL SUMMARY

Level	DF?	Sv	WALL	%	HOLDOWN	%	Post		%	Drift	CHECKS
ROOF	DF	253	A	0.55	0.5	0.11	(1)	2x6	0.554	0.011	OK
4TH	DF	497	B	0.83	0.5	0.62	(4)	2x4	0.677	0.013	OK
3RD	DF	618	B	1.03	0.625	0.90	(5)	2x4	0.958	0.016	OK
N/A	DF	618	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	618	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK
N/A	DF	618	B	0.00	NONE	0.00	(4)	2x4	0.000	0.000	OK

HOLDOWN

Level	v_u	Add Load	V	SV	P'	W'	h	Sh	M_{OT}	M_R	T_{ASD}
	plf	lbs	k	k	k	klf	ft	ft	kft	kft	k
ROOF	354	0	13.63 K	13.63	0.09	0.16	11.3 ft	11.3	154.0	121.1	**0.5**
4TH	342	0	13.17 K	26.80	0.13	0.16	9.3 ft	20.6	403.2	246.5	**2.7**
3RD	169	0	6.52 K	33.31	0.13	0.16	9.3 ft	29.9	713.0	372.0	**6.0**
N/A	0	0	0.00 K	33.31	0.13	0.08	0.0 ft	29.9	713.0	435.5	**0.0**
N/A	0	0	0.00 K	33.31	0.13	0.08	0.0 ft	29.9	713.0	498.9	**0.0**
N/A	0	0	0.00 K	33.31	0.13	0.08	0.0 ft	29.9	713.0	562.4	**0.0**

DEFLECTION - PER SDPWS 4.3.2

Level	v_u	G_a	D_s	A_{chord}	E	h	d_{WALL}	Sd_{WALL}	d_{HD}	Sh	Sd_{HD}	d_{TOT}	Stretch
	plf	k-in	in	in2	psi	ft	in	in	in	ft	in	in	in
ROOF	354	15	0.180	8.3	1.50E+06	10.3	0.250	0.956	0.055	26.9	0.196	1.151	**0.180**
4TH	696	19	0.180	21	1.50E+06	8.3	0.315	0.706	0.045	16.6	0.086	0.792	**0.180**
3RD	865	19	0.180	26	1.50E+06	8.3	0.391	0.391	0.045	8.3	0.045	0.436	**0.180**
N/A	865	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	865	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**
N/A	865	19	0.000	21	1.50E+06	0.0	0.000	0.000	0.000	0.0	0.000	0.000	**0.000**

CHORDS - COMPRESSION CONTROLS

Level	D	L	S	E	C_{ASD}	h	C_p	f_c	F_{cp}	F_c'	f_c/F_{cp}	f_c/F_c'	MAX
	k	k	k	k	k	ft		psi	psi	psi			
ROOF	0.00	0.00	0.00	4.0	2.857	10.3	0.340	346	625	808	0.554	0.429	0.554
4TH	0.00	0.00	0.00	10.5	7.481	8.3	0.221	356	625	526	0.570	0.677	0.677
3RD	0.00	0.00	0.00	18.5	13.229	8.3	0.221	504	625	526	0.806	0.958	0.958
N/A	0.00	0.00	0.00	18.5	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	18.5	0.000	0.0	0.000	0	625	0			0.000
N/A	0.00	0.00	0.00	18.5	0.000	0.0	0.000	0	625	0			0.000

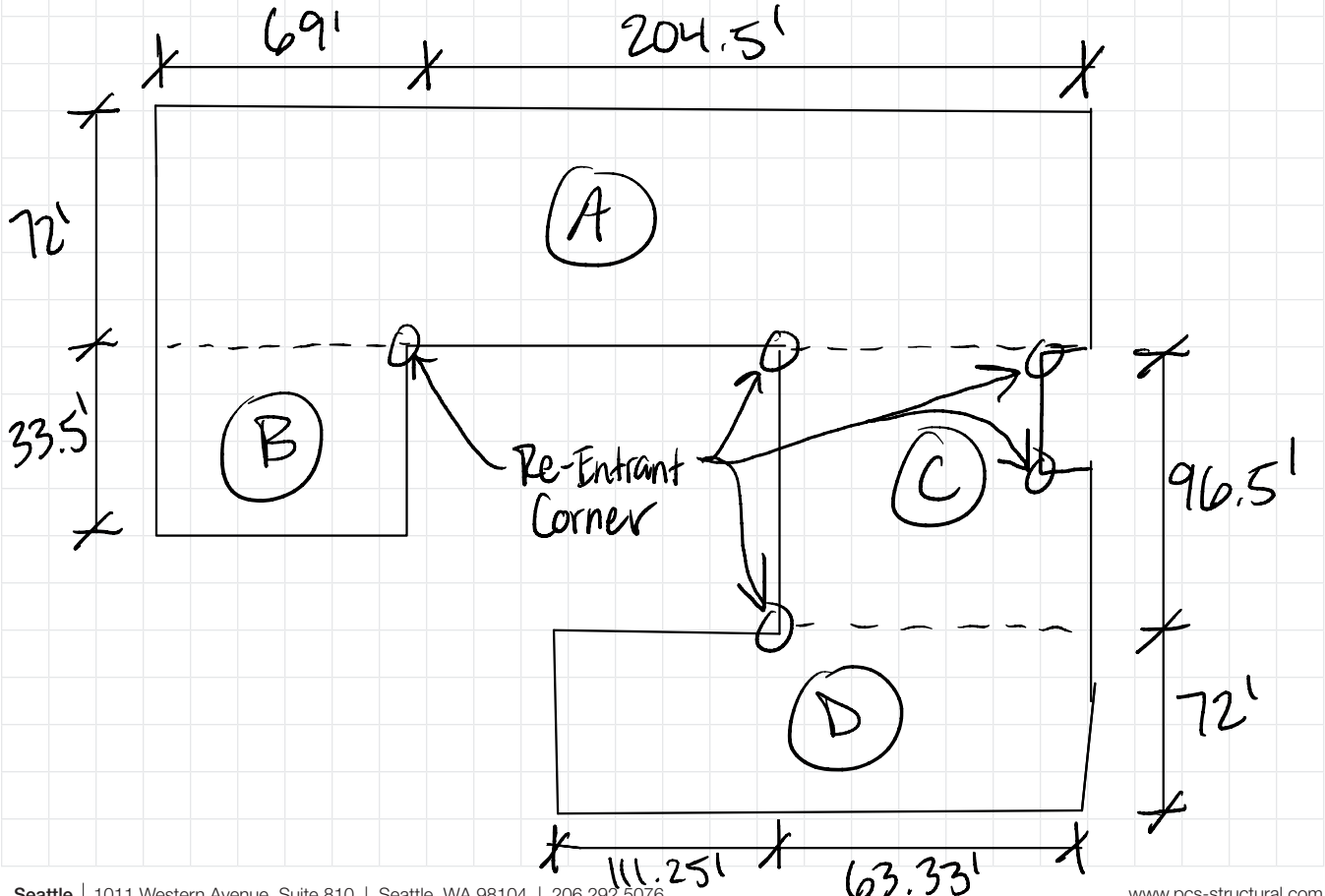
DIAPHRAGM #'s

F_{PX} = 274.8k (L4 Controls)

$\frac{F_{PX}}{V} = \frac{274.8}{389} = 0.706$ (Distributed Shear Factor)

E/W #'s

W(A) = 2.58 x 0.706 = 1.82 KLF
W(B) = 0.62 = 0.44 KLF
W(C) = 0.60 = 0.42 KLF
W(D) = 1.59 = 1.12 KLF



Chords:

(A):

$$M = \frac{wl^2}{8} = \frac{(1.82)(72^2)}{8} = 1179.4 \text{ k-FT}$$

$$T=C = \frac{1179.4}{69' + 204.5'} = 4.31 \text{ K}$$

$Z' = (141)(1.6)(\text{ALL OTHER CONSTANTS} = 1.0)$

$Z' = 225 \text{ lbs/Nail}$

$$\#\ 16d \text{ Nails} = \frac{4310}{225} = \underline{\underline{20}}$$

(B):

$$M = \frac{wl^2}{8} = \frac{(0.44)(33.5^2)}{8} = 61.7 \text{ k-FT}$$

$$T=C = \frac{61.7}{69'} = 0.9 \text{ k}$$

$$\#\ 16d \text{ Nails} = \frac{900}{225} = \underline{\underline{4}}$$

PCS Structural Solutions

Project: MIMU Job No: 19028

Subject: _____ Sheet _____ Name: AED

Originating Office: ☒ Seattle ☐ Tacoma ☐ Portland Date: 6/17/21

(C):

$$M = \frac{wl^2}{8} = \frac{(0.42)(96.5^2)}{8} = 488.9 \text{ K-FT}$$

$$T = C = \frac{488.9}{63.33'} = 7.72 \text{ K}$$

$$\#\text{16d Nails} = \frac{7720}{225} = \underline{\underline{35}}$$

(D):

$$M = \frac{(1.12)(72^2)}{8} = 725.8 \text{ K-FT}$$

$$T = C = \frac{725.8}{111.25 + 63.33} = 4.2 \text{ K}$$

(20) 16d Nails

Max Tension Force = 7.72K

Try CS14 Strap Fully Nailed w/ 10d's

Length Req'd: $\frac{2.49\text{K}}{2.5'} = 1\text{K/FT}$

8'-0" STRAP OK ✓

PCS
Structural *Solutions*

WOOD MISC.

WAC 296-155-24613 Fall arrest specifications.

Fall arrest protection must conform to the following provisions:

(1) Personal fall arrest system must meet the following requirements:

(a) You must use a full body harness.

(b) You must immediately remove from service full body harness systems or components subject to impact loading and you must not use them again for employee protection unless inspected and determined by a competent person to be undamaged and suitable for reuse.

(c) Anchorages for full body harness systems must be capable of supporting (per employee):

(i) 3,000 pounds when used in conjunction with:

(A) A self-retracting lifeline that limits the maximum free fall distances to two feet or less; or

(B) A shock absorbing lanyard that restricts the forces on the body to 900 pounds or less.

(ii) 5,000 pounds for all other personal fall arrest system applications, or they must be designed, installed, and used:

(A) As a part of a complete personal fall arrest system which maintains a safety factor of at least two; and

(B) Under the supervision of a qualified person.

(d) When stopping a fall, personal fall arrest systems must:

(i) Be rigged to allow a maximum free fall distance of 6 feet so an employee will not contact any lower level;

(ii) Limit maximum arresting force on an employee to 1,800 pounds (8 kN);

(iii) Bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3-1/2 feet (1.07 m); and

(iv) Have sufficient strength to withstand twice the potential impact energy of an employee free falling a maximum distance of 6 feet (1.8 m).

What are the proper loads for designing fall restraints?

Per Dale Cavanaugh, P.E. Safety Engineer for OSHA-January 2004.

Ultimate Load = 5000 pounds

This dynamic load is based on a 6 foot free fall with a rigid lanyard. The impact load is approximately 2400 pounds with factor of safety of 2.0. No additional load factors are required.

Allowable Load = 1800 pounds

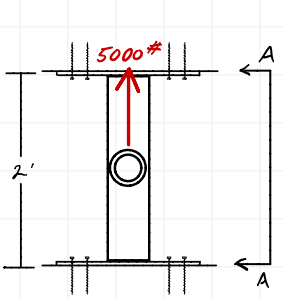
This load is based on a 900 pound force with a factor of safety of 2.0. No material stress increases should be used except for a load duration increase for wood design.

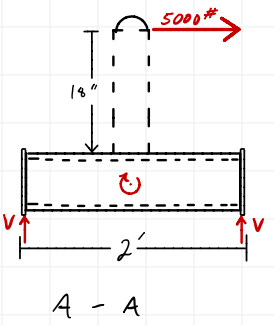
FALL PROTECTION ANCHOR

SIZE HSS SUPPORT [REF. AISC MANUAL]

NOTE: FOR LRFD: 5000# LOAD IS ULTIMATE WITH F.S. = 2.0
NO ADDITIONAL LOAD FACTORS NEED TO BE APPLIED

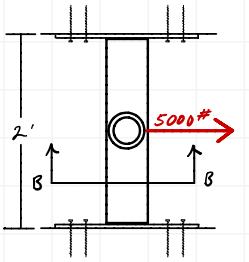
CASE 1

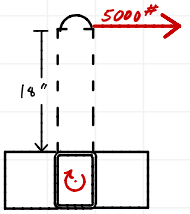




A - A

CASE 2





B - B

CASE 1:

$M_u = 5^K \cdot 1.5' = 7.5\ K\cdot FT < \phi M_n = 24.8\ K\cdot FT$ ✓ (F.S. = 3.3) [T 3-12]

[G5.]

$h/t = 22.8$ $A_w = 2ht = 2\left(\frac{h}{t}\right)t^2 = 2\,(22.8)(0.233")^2 = 2.48\ IN^2$

$\sqrt{k_v E/F_y} = \sqrt{5(29{,}000\ KSI)/(46\ KSI)} = 5.6 \cdot 1.1 = 6.16 \geq \frac{h}{t} = 22.8$ [§G2.1(b)]

$\Rightarrow C_v = 1.0$

$\phi V_n = (0.9)(0.6)(46\ KSI)(2.48\ IN^2)(1.0) = 61.6\ K$ [EQ. G2-1]

$V_u = 7.5\ K\cdot FT / 2' = 3.75^K < \phi V_n = 61.6^K$ ✓ (F.S. = 16.4)

FALL PROTECTION ANCHOR

SIZE HSS SUPPORT – CONT'D

CASE 2: $T = \frac{7.5\ K\cdot FT}{2} = 3.75\ K\cdot FT$

$h/t_w = 22.8 \le 2.25\sqrt{E/F_y} = 2.25\sqrt{29000\ KSI/46\ KSI} = 56.5$

$F_{cr} = 0.6\,F_y = 0.6\,(46\ KSI) = 27.6\ KSI$ [H3.1-b]

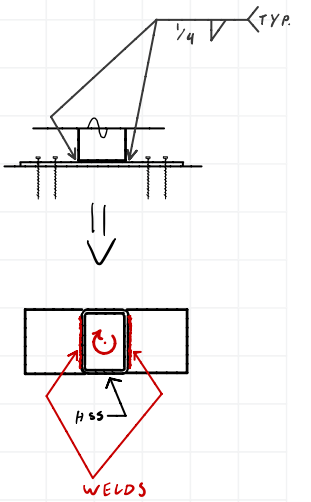
$C = 7.39\ IN^3$

$\phi T_n = 0.9\,F_{cr}\,C = 0.9\,(27.6\ KSI)\,(7.39\ IN^3) = 183\ K\cdot IN\ (= 15.3\ K\cdot FT)$ [ϕ EQ H3-1] [T 1.11]

$\phi T_n = 15.3\ K\cdot FT > T = 3.75\ K\cdot FT$ ✓ (F.S. = 4.0)

CHECK WELDS

$R_{u\,REQ.} = \frac{(3.75\ K\cdot FT)\left(12\ IN/FT\right)}{3''} = 15^{K}$

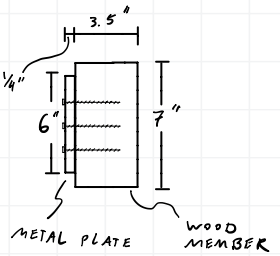


$\phi R_n = 1.392\,(4)\,(6'') = 33.4^{K} > 15^{K}$ ✓ [EQ 8-2a]

(F.S. = 2.2)

FALL PROTECTION ANCHOR

SIZE SCREWS [REF NDS]

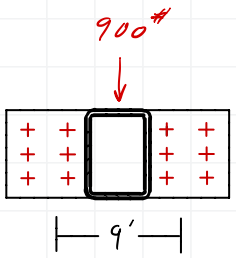


NOTE: FOR ASD: ALLOWABLE LOAD IS 1800# BASED ON A 900# LOAD WITH F.S. = 2.0. NO MATERIAL STRESS INCREASES SHOULD BE USED EXCEPT C_D.

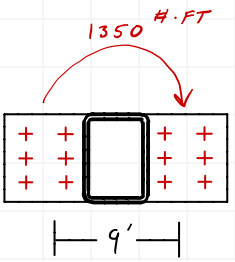
CASE 1: 1800#/2 ENDS = 900#

CASE 2: 1800#·18" (1'/12") /2 ENDS = 1350 #·FT

CASE 1



CASE 2



FOR 1/4" x 2 1/2" SDS SCREWS,

A_m = 3.5" x 7" = 24.5 IN²

A_s = 6" x 1/4" = 1.5 IN²

TRY WITHOUT C_g FIRST, SINCE C_g WILL BE NEAR 1.0 FOR (3) 1/4" SCREWS IN A ROW

Z' = (1420#) (1.6) = 670#/SCREW [SIMPSON STRONG-TIE C-C-2015] FOR G = 0.50

(C_D)

FALL PROTECTION ANCHOR

SIZE SCREWS – CONT'D

CASE 1

(670 #)(12 SCREWS) = 8040 # > 900 # ✓ (F.S. = 8.9)

CASE 2

$$T = \frac{1350\ \#\cdot FT}{(9")/(12"/FT)} = 1800\ \#$$

SCREWS REQ'D = 1800 #/650 # = 2.8 => 3 SCREWS PER SIDE

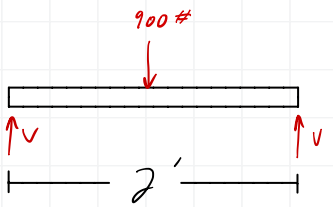
∴ (12) ¼" x 2½" SDS SCREWS EACH PLATE [(6) SCREWS PER SIDE] IS SUFFICIENT ✓

6 · 670 # = 4020 # (F.S. = 2.2)

FALL PROTECTION ANCHOR

SIZE BEAMS

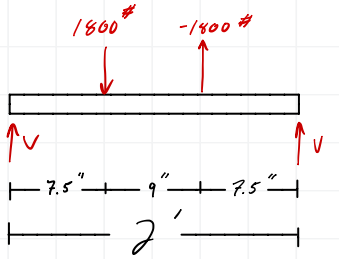
CASE 1



V = 450 #/BEAM

M = 450 #-FT/BEAM

CASE 2



V = 675 #/BEAM

M = 422 #-FT/BEAM

$M_{ALLOW} = (2900\ PSI)(1.6)(28.5)$

- S_x FOR 3½"x7" MEMBER
- C_D
- F_b FOR SLL

LOWER LOADS THAN PREVIOUS CALCS.

∴ CURRENT BEAMS / CONN. OK.

SIZE HANGER CHECK (2) LUS44

DOWN = 675 #

UPLIFT = 675 #

ALLOW $^{DOWN}_{UPLIFT}$ = 440 # + 985 # = 1425 # > 675 # ✓ (F.S. = 2.1)

- 440 #: 160% UPLIFT
- 985 #: 125% DOWN

∴ (2) LUS44 ADEQUATE ✓

MISC

MS-S-200 | 2" GRID HEIGHT | 2" x 2" SQUARE GRID

FIBERGLASS LOAD TABLE

CLEAR SPAN	LOAD TYPE	LBS./SF & RESULTING DEFLECTION IN INCHES								SAFE LOAD FACTOR 5:1	DEFLECTION
		50	100	150	200	250	300	400	500		
12"	U	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	4000	0.081
	C	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	0.013	0.016	2000	0.065
18"	U	<0.010	<0.010	0.012	0.016	0.020	0.024	0.032	0.040	1813	0.145
	C	<0.010	<0.010	0.013	0.017	0.021	0.026	0.034	0.043	1360	0.116
24"	U	0.010	0.021	0.031	0.042	0.052	0.063	0.083	0.104	960	0.200
	C	<0.010	0.017	0.025	0.033	0.042	0.050	0.067	0.083	960	0.160
30"	U	0.023	0.046	0.069	0.092	0.114	0.137	0.183	0.229	640	0.293
	C	0.015	0.029	0.044	0.059	0.073	0.088	0.117	0.146	800	0.234
36"	U	0.044	0.089	0.133	0.177	0.222	0.266	0.355	0.444	453	0.402
	C	0.024	0.047	0.071	0.095	0.118	0.142	0.189	0.237	680	0.322
42"	U	0.082	0.164	0.245	0.327	0.409	0.491	0.654	--	331	0.542
	C	0.037	0.075	0.112	0.150	0.187	0.224	0.299	0.374	580	0.434
48"	U	0.135	0.270	0.405	0.541	--	--	--	--	260	0.703
	C	0.054	0.108	0.162	0.216	0.270	0.324	0.432	0.541	520	0.562
54"	U	0.210	0.420	0.630	--	--	--	--	--	204	0.858
	C	0.075	0.149	0.224	0.298	0.373	0.448	0.597	--	460	0.686

U - Uniform Load - Lbs. per Square Foot

C - Concentrated Load - Lbs. per Square Foot of Width at Mid Span

- Safe load values have a safety factor of 5:1.
- Technical information provided is theoretical and for evaluation by technically skilled persons, with any use thereof to be at their independent discretion and risk. **McNICHOLS** shall have no responsibility or liability for results obtained or damages resulting from improper evaluation or use of Fiberglass Grating.