THE APPROVED CONSTRUCTION PLANS, DOCUMENTS AND ALL ENGINEERING MUST BE POSTED ON THE JOB AT ALL INSPECTIONS IN A VISIBLE AND READILY ACCESSIBLE LOCATION.

FULL SIZED LEDGIBLE COLOR PLANS ARE REQUIRED TO BE PROVIDED BY THE PERMITEE ON SITE FOR INSPECTION

City of Puyallup
Building
ACCEPTED
JMontgomery
05/27/2022
2:30:43 PM

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Development & Permitting Services
ISSUED PERMIT
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Structural Calculations

PREPARED FOR:

James Guerrero Architects
7520 Bridgeport Way West
Lakewood, WA 98499

PROJECT:

2nd Street Apartments
2190606.20

PREPARED BY:

Jerad Harmon, PE
Project Engineer

Andy Pflueger, PE, SE
Senior Project Manager

REVIEWED BY:

Ken Leland, PE, SE
Principal

DATE:

December 2021

PRMU20220123

Structural Calculations

For

2nd Street Apartments

Puyallup, WA

Project # 2190606.20

City of Puyallup
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Project Principal Ken Leland, PE, SE
Project Manager Andy Pflueger, PE, SE
Project Engineer Jerad Harmon, PE

Design Criteria

Design Codes and Standards

Codes and Standards: Structural design and construction shall be in accordance with the applicable sections of the following codes and standards as adopted and amended by the local building authority: International Building Code, 2018 Edition.

Structural Design Criteria:



Live Load Criteria:

Roof (Min Blanket Snow)	25 psf
Private Floor	40 psf
Private Deck	60 psf
Commons and Corridors	100 psf

Wind Load Criteria:

Ultimate Wind Speed	97 mph
Wind Exposure	B
Topographic Factor	1.0

Seismic Criteria:

Risk Category	II
Seismic Importance Factor	1.0

S_s = 1.272 S_1 = 0.438

S_{ds} = 0.833 S_{d1} = 0.661

Site Class = E (per geotech)

Seismic Design Category = D

Response Modification Coeff. (R):

Concrete Shear walls = 5

Light-Frame (Wood) Shear walls = 6.5

Seismic Response Coeff. (C_s):

Concrete Shear walls = 0.167

Light-Frame (Wood) Shear walls = 0.128

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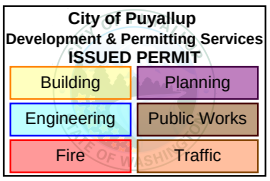
Soil Criteria:

Based on Geotechnical Engineering Report by: South Sound Geotechnical Consulting dated August 8, 2019.

Allowable Soil Bearing Capacity: 2000 psf on two feet of compacted structural fill, allow 33% increase for loads from wind or seismic origin.



Active Earth Pressure	=	35 pcf
At Rest Earth Pressure	=	50 pcf
Seismic Earth Pressure	=	10H
Friction Coefficient	=	0.35*
Passive Pressure	=	325 pcf * (neglect upper 1-foot if affected by weather/able to be disturbed by future grading)

* includes a FS of 1.5

Project Description

The project consists of an apartment complex composed of three stories of wood frame construction over one story of concrete composite floor deck supported by steel wide flange beams and HSS columns. The lateral force resisting system at the wood levels utilize wood diaphragms and light-frame wood shear walls, and the transfer level utilizes concrete shear walls at the parking garage below the composite deck. The areas of concrete walls below grade have also been designed as retaining walls. The entire structure is supported on a 2-ft thick structural mat foundation due to soil site class E.

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5.0	Wood Framed Roof Design	
6.0	Wall Design	
7.0	Column Design	
8.0	Lower Level Lateral Design	
9.0	Upper Wood Levels Lateral Design	
10.0	Miscellaneous Design	

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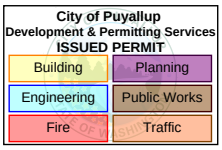

Section 1.0
Design Criteria

Project PUYALLUP 2ND ST APTS Project No. 2190606-20

Subject _____ Phone _____

With/To _____ Fax # _____

Address _____ # Faxed Pages _____

Date _____ By _____

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AHBL

Civil Engineers

Structural Engineers

Landscape Architects

Community Planners

Land Surveyors

DESIGN CRITERIA:

2018 IBC.

ADDRESS: 2ND ST NE & 5TH AVE NE, PUYALLUP WA

LAT: 47.195895
LONG: -122.291883.

GRAVITY:

RESIDENTIAL	LL = 40 PSF	DL = 28 PSF
DECK	LL = 60 PSF	
CORRIDOR	LL = 100 PSF	DL = 28 PSF
EXIT	LL = 100 PSF	DL = 40 PSF @ CONC. THRU STAIRS
		DL = 15 PSF @ MID-LANDING
ROOF	SL = 25 PSF	DL = 15 PSF

WIND:

97 MPH
EXP B
$K_{zt} = 1.0$

SEISMIC:

$S_S = 1.272$
$S_1 = 0.438$

$S_{DS} = 0.8331$
$S_{D1} = 0.6605$

PER COMMENTARY FIG C11.4-2
F_a FOR $S_S = 1.25$ $F_a = 1.00$
F_a FOR $S_S = 1.50$ $F_a = 0.80$

F_v FOR $S_1 = 0.40$ $F_v = 2.4$
F_v FOR $S_1 = 0.50$ $F_v = 2.2$

$\therefore F_a = 0.9824$ $S_{DS} = 0.8331$
$F_v = 2.3240$ $S_{D1} = 0.6786$

$T_S = \frac{S_{D1}}{S_{DS}} = \frac{0.6786}{0.8331} = 0.8146$

$T_L = 6.0$

$T_a = 0.02(39)^{0.75}$
$= 0.3121$

$\therefore$ GROUND MOTION HAZARD ANALYSIS IS NOT REQUIRED PER 11.4.8 EXCEPTION 3.

If this does not meet with your understanding, please contact us in writing within seven days. THANK YOU.

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Design Loads (psf)

Roof Dead Load - Typical	USE	15
Membrane		5
1/2" Plywood Sheathing		1.6
Trusses at 24" oc		3
Insulation		1
Mechanical		1.5
Miscellaneous		1.5
		13.6

Roof Live Load	
Snow	25

Roof Dead Load - Solar Ready Area	USE	19
Roof Dead Load - Typical		15
Solar Panels		4

Typical Wood Floor Dead Load	USE	28
1" Gypcrete Topping		12.5
3/4" Plywood Sheathing		2.4
11.875" I-Joists		2.3
Beams		2
GWB		4
Insulation		1
MEP		1.8
Miscellaneous		1.5
		27.5

Floor Live Load	
Private	40
Common	100
Corridors	100
Common Deck	150
Private Deck	60

Wood Interior Wall Dead Load	10
Studs	1.5
GWB	6
MEP / Misc	1.5
Insulation	1

Wood Exterior Wall Dead Load	15
Studs	1.5
1/2" Sheathing	2
GWB	3
MEP / Misc	1.5
Cladding / Glazing	6
Insulation	1

First Floor Composite Deck	73
18 GA ASC 2WH-36 Comp Deck (5 1/2" Conc)	56.1
Steel Beams at 8'-0" OC	5.84
Misc & Mechanical	11
TOTAL	72.9

Concrete Walls	105
8" Concrete Wall	101
Misc & Mechanical	4

Hazards by Location

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Search Information

Coordinates: 47.195895, -122.291883

Elevation: 41 ft

Timestamp: 2021-03-09T19:47:23.788Z

Hazard Type: Seismic

Reference Document: ASCE7-16

Risk Category: II

Site Class: E



Basic Parameters

Name	Value	Description
S_S	1.272	MCE_R ground motion (period=0.2s)
S_1	0.438	MCE_R ground motion (period=1.0s)
S_{MS}	** null	Site-modified spectral acceleration value
S_{M1}	* null	Site-modified spectral acceleration value
S_{DS}	** null	Numeric seismic design value at 0.2s SA
S_{D1}	* null	Numeric seismic design value at 1.0s SA

* See Section 11.4.8
** See Section 11.4.8

Additional Information

Name	Value	Description
SDC	* null	Seismic design category
F_a	** null	Site amplification factor at 0.2s
F_v	* null	Site amplification factor at 1.0s
CR_S	0.914	Coefficient of risk (0.2s)
CR_1	0.898	Coefficient of risk (1.0s)
PGA	0.5	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	0.6	Site modified peak ground acceleration
T_L	6	Long-period transition period (s)

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SsRT	1.272	Probabilistic risk-targeted ground motion (0.2s)
SsUH	1.392	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	1.5	Factored deterministic acceleration value (0.2s)
S1RT	0.438	Probabilistic risk-targeted ground motion (1.0s)
S1UH	0.487	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S1D	0.6	Factored deterministic acceleration value (1.0s)
PGAd	0.5	Factored deterministic acceleration value (PGA)

* See Section 11.4.8
** See Section 11.4.8

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are provided by the U.S. Geological Survey Seismic Design Web Services.

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Hazards by Location

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Search Information

Coordinates: 47.195895, -122.291883

Elevation: 41 ft

Timestamp: 2021-03-09T19:46:13.632Z

Hazard Type: Wind



ASCE 7-16

MRI 10-Year	67 mph
MRI 25-Year	73 mph
MRI 50-Year	78 mph
MRI 100-Year	82 mph
Risk Category I	92 mph
Risk Category II	97 mph
Risk Category III	104 mph
Risk Category IV	108 mph

ASCE 7-10

MRI 10-Year	72 mph
MRI 25-Year	79 mph
MRI 50-Year	85 mph
MRI 100-Year	91 mph
Risk Category I	100 mph
Risk Category II	110 mph
Risk Category III-IV	115 mph

ASCE 7-05

ASCE 7-05 Wind Speed	85 mph

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are interpolated from data provided in ASCE 7 and rounded up to the nearest whole integer. Per ASCE 7, islands and coastal areas outside the last contour should use the last wind speed contour of the coastal area – in some cases, this website will extrapolate past the last wind speed contour and therefore, provide a wind speed that is slightly higher. NOTE: For queries near wind-borne debris region boundaries, the resulting determination is sensitive to rounding which may affect whether or not it is considered to be within a wind-borne debris region.

Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.

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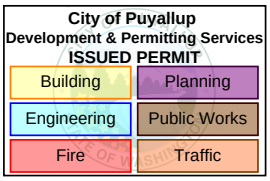

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Section 2.0
Foundation Design

Project PUYALLUP 2ND ST Project No. 2190606.20

Subject Phone

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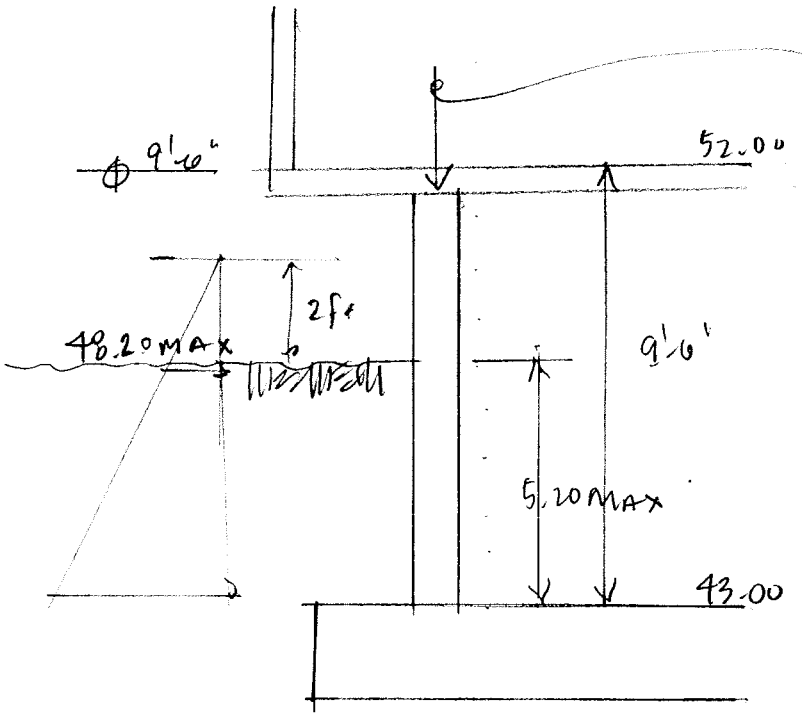
CONCRETE BASEMENT WALL:



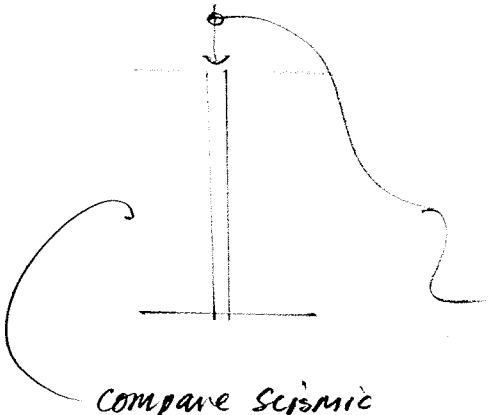
POINT LOAD EFFECTIVE WIDTH = BEARING WIDTH + 4t
= 4 + 4(8)
= 3 ft WIDE PER BEAM REACTION

MAX PT. LOAD: 45K UNFACTORED
23.45 DL
21.02 LL

SEE RETAIN PRO OUTPUT

7817 PLF DL
7007 PLF LL

WORST CASE WALL (NON-RETAINING).



S_{DS} = 0.8331

WIND = Z4 : 16.7 / -18.1
Z5 : 16.7 / -22.3

Compare Seismic to wind

$F_p = 0.4 S_{DS} W_p$ = 33.3 PSF 0.7E = 23.3
W = 22.3 0.6 W = 13.3

USE # 5 AT 15" OC EW AT CL.

If this does not meet with your understanding, please contact us in writing within seven days. THANK YOU.

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Cantilevered Retaining Wall

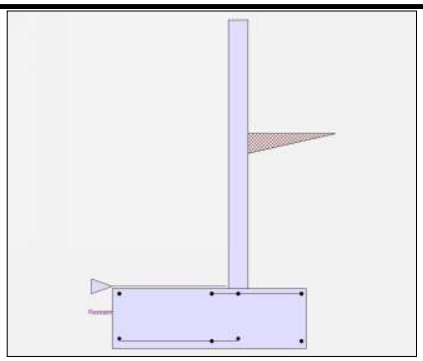
Code: IBC 2018,ACI 318-14,TMS 402-16

Criteria

Retained Height	=	5.20 ft
Wall height above soil	=	3.80 ft
Slope Behind Wall	=	0.00
Height of Soil over Toe	=	0.00 in
Water height over heel	=	0.0 ft

Soil Data

Allow Soil Bearing	=	2,000.0 psf
Equivalent Fluid Pressure Method		
Active Heel Pressure	=	35.0 psf/ft
	=	
Passive Pressure	=	487.5 psf/ft
Soil Density, Heel	=	110.00 pcf
Soil Density, Toe	=	110.00 pcf
Footing||Soil Friction	=	0.525
Soil height to ignore for passive pressure	=	12.00 in



Surcharge Loads

Surcharge Over Heel	=	250.0 psf
Used To Resist Sliding & Overturning		
Surcharge Over Toe	=	0.0
Used for Sliding & Overturning		

Lateral Load Applied to Stem

Lateral Load	=	0.0 #/ft
...Height to Top	=	9.00 ft
...Height to Bottom	=	0.00 ft
Load Type	=	Seismic (E) (Strength Level)
Wind on Exposed Stem (Service Level)	=	0.0 psf

Adjacent Footing Load

Adjacent Footing Load	=	0.0 lbs
Footing Width	=	0.00 ft
Eccentricity	=	0.00 in
Wall to Ftg CL Dist	=	0.00 ft
Footing Type		Line Load
Base Above/Below Soil at Back of Wall	=	0.0 ft
Poisson's Ratio	=	0.300

Axial Load Applied to Stem

Axial Dead Load	=	0.0 lbs
Axial Live Load	=	0.0 lbs
Axial Load Eccentricity	=	0.0 in

Design Summary

Wall Stability Ratios

Overturning	=	4.69	OK
Slab Resists All Sliding !			
Total Bearing Load	=	4,544 lbs	
...resultant ecc.	=	1.31 in	
Soil Pressure @ Toe	=	614 psf	OK
Soil Pressure @ Heel	=	749 psf	OK
Allowable	=	2,000 psf	
Soil Pressure Less Than Allowable			
ACI Factored @ Toe	=	860 psf	
ACI Factored @ Heel	=	1,048 psf	
Footing Shear @ Toe	=	5.0 psi	OK
Footing Shear @ Heel	=	3.3 psi	OK
Allowable	=	75.0 psi	

Sliding Calcs

Lateral Sliding Force	=	1,479.9 lbs

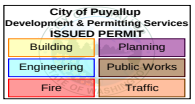
Vertical component of active lateral soil pressure IS NOT considered in the calculation of soil bearing

Load Factors

Building Code	IBC 2018,ACI
Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W	1.000
Seismic, E	1.000

Stem Construction

	Bottom
	Stem OK
Design Height Above Ftg ft =	0.00
Wall Material Above "Ht" =	Concrete
Design Method =	LRFD
Thickness =	8.00
Rebar Size =	# 5
Rebar Spacing =	15.00
Rebar Placed at =	Center
Design Data	
fb/FB + fa/Fa =	**0.712**
Total Force @ Section	
Service Level lbs =	
Strength Level lbs =	1,418.9
Moment....Actual	
Service Level ft-# =	
Strength Level ft-# =	3,033.1
Moment.....Allowable =	4,259.9
Shear.....Actual	
Service Level psi =	
Strength Level psi =	29.6
Shear.....Allowable psi =	94.9
Anet (Masonry) in2 =	
Rebar Depth 'd' in =	4.00
Masonry Data	
f'm psi =	
Fs psi =	
Solid Grouting =	
Modular Ratio 'n' =	
Wall Weight psf =	100.0
Short Term Factor =	
Equiv. Solid Thick. =	
Masonry Block Type =	Medium Weight
Masonry Design Method =	ASD
Concrete Data	
f'c psi =	4,000.0
Fy psi =	60,000.0



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Cantilevered Retaining Wall

Code: IBC 2018,ACI 318-14,TMS 402-16

Concrete Stem Rebar Area Details

Bottom Stem	Vertical Reinforcing	Horizontal Reinforcing	
As (based on applied moment) :	0.1831 in2/ft		
(4/3) * As :	0.2441 in2/ft	Min Stem T&S Reinf Area 2.160 in2	
200bd/fy : 200(12)(4)/60000 :	0.16 in2/ft	Min Stem T&S Reinf Area per ft of stem Height : 0.240 in2/ft	
0.0025bh : 0.0025(12)(8) :	0.24 in2/ft	Horizontal Reinforcing Options :	
	==========	One layer of :	Two layers of :
Required Area :	0.1831 in2/ft	#4@ 10.00 in	#4@ 20.00 in
Provided Area :	0.248 in2/ft	#5@ 15.50 in	#5@ 31.00 in
Maximum Area :	0.867 in2/ft	#6@ 22.00 in	#6@ 44.00 in

Footing Data

Toe Width	=	4.00 ft
Heel Width	=	2.67
Total Footing Width	=	6.67
Footing Thickness	=	24.00 in
Key Width	=	0.00 in
Key Depth	=	0.00 in
Key Distance from Toe	=	0.00 ft

f'c = 2,500 psi Fy = 60,000 psi
Footing Concrete Density = 150.00 pcf
Min. As % = 0.0018
Cover @ Top 2.00 @ Btm.= 3.00 in

Footing Design Results

		Toe	Heel	
Factored Pressure	=	860	1,048	psf
Mu' : Upward	=	86,196	2,135	ft-#
Mu' : Downward	=	34,560	2,894	ft-#
Mu: Design	=	4,303	759	ft-#
Actual 1-Way Shear	=	4.96	3.31	psi
Allow 1-Way Shear	=	75.00	75.00	psi

Toe Reinforcing = # 7 @ 12.00 in
Heel Reinforcing = # 7 @ 12.00 in
Key Reinforcing = None Spec'd
Footing Torsion, Tu = 0.00 ft-lbs
Footing Allow. Torsion, phi Tu = 0.00 ft-lbs

If torsion exceeds allowable, provide supplemental design for footing torsion.

Other Acceptable Sizes & Spacings

Toe: #4@ 4.62 in, #5@ 7.17 in, #6@ 10.18 in, #7@ 13.88 in, #8@ 18.28 in, #9@ 23.
Heel: #4@ 4.62 in, #5@ 7.17 in, #6@ 10.18 in, #7@ 13.88 in, #8@ 18.28 in, #9@ 23.
Key: No key defined

Min footing T&S reinf Area 3.46 in2
Min footing T&S reinf Area per foot 0.52 in2 /ft

If one layer of horizontal bars:	If two layers of horizontal bars:
#4@ 4.63 in	#4@ 9.26 in
#5@ 7.18 in	#5@ 14.35 in
#6@ 10.19 in	#6@ 20.37 in

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Cantilevered Retaining Wall

Code: IBC 2018,ACI 318-14,TMS 402-16

Summary of Overturning & Resisting Forces & Moments

Item		.....OVERTURNING..... Force lbs	Distance ft	Moment ft-#		.....RESISTING..... Force lbs	Distance ft	Moment ft-#
HL Act Pres (ab water tbl)		907.2	2.40	2,177.3	Soil Over HL (ab. water tbl)	1,144.2	5.67	6,483.9
HL Act Pres (be water tbl)					Soil Over HL (bel. water tbl)		5.67	6,483.9
Hydrostatic Force					Watre Table			
Buoyant Force	=				Sloped Soil Over Heel	=		
Surcharge over Heel	=	572.7	3.60	2,061.8	Surcharge Over Heel	= 500.1	5.67	2,833.9
Surcharge Over Toe	=				Adjacent Footing Load	=		
Adjacent Footing Load	=				Axial Dead Load on Stem	=		
Added Lateral Load	=				* Axial Live Load on Stem	=		
Load @ Stem Above Soil	=				Soil Over Toe	=		
	=				Surcharge Over Toe	=		
					Stem Weight(s)	= 900.0	4.33	3,900.0
					Earth @ Stem Transitions	=		
					Footing Weight	= 2,000.1	3.33	6,667.3
					Key Weight	=		
					Vert. Component	=		
Total	=	1,479.9	**O.T.M.** =	4,239.1	**Total =**	4,544.4 lbs	**R.M.=**	19,885.2

Resisting/Overturning Ratio = **4.69**
Vertical Loads used for Soil Pressure = 4,544.4 lbs

* Axial live load NOT included in total displayed, or used for overturning resistance, but is included for soil pressure calculation.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Sliding Resistance.

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Overturning Resistance.

Tilt

Horizontal Deflection at Top of Wall due to settlement of soil

(Deflection due to wall bending not considered)

Soil Spring Reaction Modulus	250.0	pci
Horizontal Defl @ Top of Wall (approximate only)	0.000	in

The above calculation is not valid if the heel soil bearing pressure exceeds that of the toe, because the wall would then tend to rotate into the retained soil.

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This Wall in File: Q:\2019\2190606\20_STR\NON_CAD\CALCs\puyallup 2nd st apts - retaining walls.RPX

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Restrained Retaining Wall

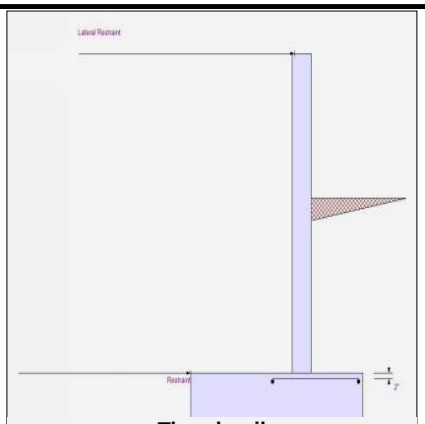
Code: IBC 2018,ACI 318-14,TMS 402-16

Criteria

Retained Height	=	5.20 ft
Wall height above soil	=	4.30 ft
Total Wall Height	=	9.50 ft
Top Support Height	=	9.50 ft
Slope Behind Wall	=	0.00
Height of Soil over Toe	=	0.00 in

Soil Data

Allow Soil Bearing	=	2,000.0 psf
Equivalent Fluid Pressure Method		
At-Rest Heel Pressure	=	50.0 psf/ft
	=	
Passive Pressure	=	487.5 psf/ft
Soil Density	=	110.00 pcf
Footing||Soil Frictior	=	0.400
Soil height to ignore for passive pressure	=	12.00 in



Thumbnail

Surcharge Loads

Surcharge Over Heel = 250.0 psf
>>>NOT Used To Resist Sliding & Overturn
Surcharge Over Toe = 0.0 psf
NOT Used for Sliding & Overturning

Axial Load Applied to Stem

Axial Dead Load	=	7,817.0 lbs
Axial Live Load	=	7,007.0 lbs
Axial Load Eccentricity	=	0.0 in

Uniform Lateral Load Applied to Stem

Lateral Load	=	33.3 #/ft
...Height to Top	=	9.00 ft
...Height to Bottom	=	0.00 ft
Load Type	=	Seismic (E) (Service Level)
Wind on Exposed Stem	=	0.0 psf

Adjacent Footing Load

Adjacent Footing Load	=	0.0 lbs
Footing Width	=	0.00 ft
Eccentricity	=	0.00 in
Wall to Ftg CL Dist	=	0.00 ft
Footing Type		Line Load
Base Above/Below Soil at Back of Wall	=	0.0 ft
Poisson's Ratio	=	0.300

Earth Pressure Seismic Load

K_h Soil Density Multiplier = 0.130 g Added seismic per unit area = 52.1 psf

Design Summary

Total Bearing Load	=	19,418 lbs
...resultant ecc.	=	0.00 in
Soil Pressure @ Toe	=	2,913 psf NG
Soil Pressure @ Heel	=	2,913 psf NG
Allowable	=	2,000 psf

THIS MODULE NOT USED FOR FOOTING DESIGN

ACI Factored @ Toe	=	3,916 psf
ACI Factored @ Heel	=	3,916 psf
Footing Shear @ Toe	=	33.1 psi OK
Footing Shear @ Heel	=	19.1 psi OK
Allowable	=	82.2 psi
Reaction at Top	=	227.3 lbs
Reaction at Bottom	=	2,366.3 lbs

Sliding Calcs
Lateral Sliding Force = 2,366.3 lbs

Concrete Stem Construction

Thickness = 8.00 in Fy = 60,000 psi
Wall Weight = 100.0 psf f'c = 4,000 psi
Stem is FIXED to top of footing

	@ Top Support	Mmax Between Top & Base	@ Base of Wall
	Stem OK	Stem OK	Stem OK
Design Height Above Ftg =	9.50 ft	4.54 ft	0.00 ft
Rebar Size =	# 5	# 5	# 5
Rebar Spacing =	16.00 in	16.00 in	16.00 in
Rebar Placed at =	Center	Center	Center
Rebar Depth 'd' =	4.00 in	4.00 in	4.00 in
Design Data			
fb/FB + fa/Fa =	0.000	0.332	0.846
Mu....Actual =	0.0 ft-#	1,330.7 ft-#	3,390.1 ft-#
Mn * Phi.....Allowable =	4,005.6 ft-#	4,005.6 ft-#	4,005.6 ft-#
Shear Force @ this height =	347.0 lbs		2,366.4 lbs
Shear.....Actual =	7.23 psi		49.30 psi
Shear.....Allowable =	94.87 psi		94.87 psi

Vertical component of active lateral soil pressure IS NOT considered in the calculation of soil bearing

Load Factors

Building Code	IBC 2018,ACI
Dead Load	1.200
Live Load	1.600
Earth, H	1.600
Wind, W	1.000
Seismic, E	1.000

Concrete Stem Rebar Area Details

Top Support	Vertical Reinforcing	Horizontal Reinforcing	
As (based on applied moment) :	0 in2/ft		
(4/3) * As :	0 in2/ft	Min Stem T&S Reinf Area 1.824 in2	
200bd/fy : 200(12)(4)/60000 :	0.16 in2/ft	Min Stem T&S Reinf Area per ft of stem Height : 0.192 in2/ft	
0.0018bh : 0.0018(12)(8) :	0.1728 in2/ft	Horizontal Reinforcing Options :	
	==========	One layer of :	Two layers of :
Required Area :	0.1728 in2/ft	#4@ 12.50 in	#4@ 25.00 in
Provided Area :	0.2325 in2/ft	#5@ 19.38 in	#5@ 38.75 in
Maximum Area :	0.867 in2/ft	#6@ 27.50 in	#6@ 55.00 in

Mmax Between Ends	Vertical Reinforcing	Horizontal Reinforcing	
As (based on applied moment) :	0.0803 in2/ft		
(4/3) * As :	0.1071 in2/ft	Min Stem T&S Reinf Area 0.952 in2	
200bd/fy : 200(12)(4)/60000 :	0.16 in2/ft	Min Stem T&S Reinf Area per ft of stem Height : 0.192 in2/ft	
0.0018bh : 0.0018(12)(8) :	0.1728 in2/ft	Horizontal Reinforcing Options :	
	==========	One layer of :	Two layers of :
Required Area :	0.1728 in2/ft	#4@ 12.50 in	#4@ 25.00 in
Provided Area :	0.2325 in2/ft	#5@ 19.38 in	#5@ 38.75 in
Maximum Area :	0.867 in2/ft	#6@ 27.50 in	#6@ 55.00 in

Base Support	Vertical Reinforcing	Horizontal Reinforcing	
As (based on applied moment) :	0.2046 in2/ft		
(4/3) * As :	0.2729 in2/ft	Min Stem T&S Reinf Area 0.872 in2	
200bd/fy : 200(12)(4)/60000 :	0.16 in2/ft	Min Stem T&S Reinf Area per ft of stem Height : 0.192 in2/ft	
0.0018bh : 0.0018(12)(8) :	0.1728 in2/ft	Horizontal Reinforcing Options :	
	==========	One layer of :	Two layers of :
Required Area :	0.2046 in2/ft	#4@ 12.50 in	#4@ 25.00 in
Provided Area :	0.2325 in2/ft	#5@ 19.38 in	#5@ 38.75 in
Maximum Area :	0.867 in2/ft	#6@ 27.50 in	#6@ 55.00 in

Footing Strengths & Dimensions

Toe Width	=	4.00 ft
Heel Width	=	2.67
Total Footing Width	=	6.67
Footing Thickness	=	24.00 in
Key Width	=	0.00 in
Key Depth	=	0.00 in
Key Distance from Toe	=	0.00 ft

f'c = 3,000 psi Fy = 60,000 psi
Footing Concrete Density = 150.00 pcf
Min. As % = 0.0018
Cover @ Top = 2.00 in @ Btm.= 3.00 in

Footing Design Results

		Toe	Heel	
Factored Pressure	=	3,916	3,916	psf
Mu' : Upward	=	0	0	ft-#
Mu' : Downward	=	0	0	ft-#
Mu: Design	=	3,033	-3,033	ft-#
Actual 1-Way Shear	=	33.12	19.14	psi
Allow 1-Way Shear	=	82.16	82.16	psi

Other Acceptable Sizes & Spacings:

Toe: # 7 @ 12.00 in	-or-	phiMn = phi'5'lambda'sqrt(fc)'Sm
Heel: # 6 @ 12.00 in	-or-	phiMn = phi'5'lambda'sqrt(fc)'Sm
Key: No key defined	-or-	No key defined

Min footing T&S reinf Area 3.46 in2
Min footing T&S reinf Area per foot 0.52 in2 /ft

If one layer of horizontal bars:	If two layers of horizontal bars:
#4@ 4.63 in	#4@ 9.26 in
#5@ 7.18 in	#5@ 14.35 in
#6@ 10.19 in	#6@ 20.37 in

Restrained Retaining Wall

Code: IBC 2018,ACI 318-14,TMS 402-16

Summary of Forces on Footing : Slab RESISTS sliding, stem is FIXED at footing

Forces acting on footing for soil pressure

>>> Sliding Forces are restrained by the adjacent slab

Load & Moment Summary For Footing : For Soil Pressure Calcs

Moment @ Top of Footing Applied from Stem				=		-2,186.6 ft-#
Surcharge Over Heel	=		lbs		ft	ft-#
Adjacent Footing Load	=		lbs		ft	ft-#
Axial Dead Load on Stem	=	14,824.0	lbs	4.33	ft	64,237.3 ft-#
Soil Over Toe	=		lbs		ft	ft-#
Surcharge Over Toe	=		lbs		ft	ft-#
Stem Weight	=	950.0	lbs	4.33	ft	4,116.7 ft-#
Soil Over Heel	=	1,144.2	lbs	5.67	ft	6,483.9 ft-#
Footing Weight	=	2,000.1	lbs	3.33	ft	6,667.3 ft-#
Total Vertical Force	=	19,418.4	lbs	Base Moment	=	79,318.6 ft-#

Soil Pressure Resulting Moment = 0.0 ft-#

Vertical component of active lateral soil pressure IS NOT considered in the calculation of Sliding Resistance.

AHBL Inc.
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(253) 383-2422

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Engineer:
Project ID: PRMU20220123
Project Descr:

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Concrete Slender Wall

Project File: Puyallup 2nd St Apts - Ground to First Floor.ec6

LIC# : KW-06014847, Build:20.21.10.4 AHBL, INC (c) ENERCALC INC 1983-2021

DESCRIPTION: NON-RETAINING CONCRETE WALL

Code References

Calculations per ACI 318-14 Sec 11.8, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : IBC 2018

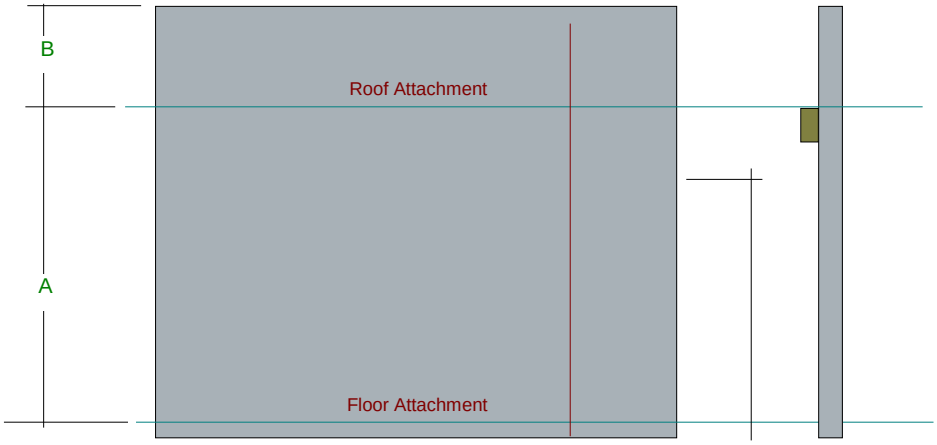
General Information

f'c : Concrete 28 day streng	=	4.0 ksi	Wall Thickness		8.0 in	Temp Diff across thickness	=	deg F
Fy : Rebar Yield	=	60.0 ksi	Rebar at wall center			Min Allow Out-of-Plane Defl Ratio	=	0.0
Ec : Concrete Elastic Modu	=	3,122.0 ksi	Rebar "d" distance		4.0 in			
λ : Lt Wt Conc Fact	=	1.0	Lower Level Rebar . . .			Min allow As/bd	=	0.0020
Fr : Rupture Modulus	=	316.228 psi	Bar Size	#	5	Using Stiff. Reduction Factor per ACI 318-14		
Max Allow As/bd	=	0.01806	Bar Spacing		16.0 in			Section 11.8.3
Max Pu/Ag = f'c *	=	0.060						
Concrete Density	=	144.0 pcf						
Width of Design Strip	=	12.0 in						

One-Story Wall Dimensions

A Clear Height = 9.50 ft
B Parapet height = ft

Wall Support Condition: Top & Bottom Pinned



Vertical Loads

Vertical Uniform Loads . . . (Applied per foot of Strip Width)			DL : Dead	Lr : Roof Live	Lf : Floor Live	S : Snow	W : Wind	
Ledger Load	Eccentricity	6.750 in						k/ft
Concentric Load			7.817		7.007			k/ft

Lateral Loads

Wind Loads :
Full area WIND load 22.30 psf

Seismic Loads :
Wall Weight Seismic Load Input Method : ASCE seismic factors entered

SDS Value per ASCE 12.11.1 S_{DS} * I = 0.8330
Fp = Wall Wt. * 0.3332 = 31.987 psf

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Concrete Slender Wall

Project File: Puyallup 2nd St Apts - Ground to First Floor.ec6

LIC# : KW-06014847, Build:20.21.10.4 AHBL, INC (c) ENERCALC INC 1983-2021

DESCRIPTION: NON-RETAINING CONCRETE WALL

DESIGN SUMMARY

Results reported for "Strip Width" of 12.0 in

	Governing Load Combination . . .	Actual Values . . .		Allowable Values . . .	
PASS	Moment Capacity Check	Maximum Bending Stress Rat	0.06431		
	+0.7334D+E	Max Mu	0.3625 k-ft	Phi * Mn	5.637 k-ft
PASS	Service Deflection Check	Actual Defl. Ratio L/	23366	Allowable Defl. Ratio	150.0
	E Only	Max. Deflection	0.004879 in		
PASS	Axial Load Check	Max Pu / Ag	154.697 psi	Max. Allow. Defl.	0.760 in
	+1.367D+0.50L+E	Location	4.592 ft	0.06 * f'c	240.0 psi
PASS	Reinforcing Limit Check				
		Actual As/bd	0.004844	Max Allow As/bd	0.01806

Maximum Reactions *for Load Combination...*

Top Horizontal	E Only	0.1519 k
Base Horizontal	E Only	0.1519 k
Vertical Reaction	+D+L	15.736 k

Design Maximum Combinations - Moments

Results reported for "Strip Width" = 12 in.

Load Combination	Axial Load Pu k	0.06*f'c*b*t k	Moment Values Mcr k-ft	Mu k-ft	Phi	Phi Mn k-ft	As in^2	As Ratio	0.6 * rho bal	Bar 'd'
	0.000	0.000	0.00	0.00	0.00	0.00	0.000	0.0000	0.0000	0.00
	0.000	0.000	0.00	0.00	0.00	0.00	0.000	0.0000	0.0000	0.00
	0.000	0.000	0.00	0.00	0.00	0.00	0.000	0.0000	0.0000	0.00
+1.20D+0.50W at 4.43 to 4.75	9.964	23.040	3.37	0.13	0.90	6.65	0.233	0.0048	0.0181	4.00
+1.20D-0.50W at 4.43 to 4.75	9.964	23.040	3.37	0.13	0.90	6.65	0.233	0.0048	0.0181	4.00
+1.20D+0.50L+W at 4.43 to 4.75	13.468	23.040	3.37	0.25	0.90	7.53	0.233	0.0048	0.0181	4.00
+1.20D+0.50L-W at 4.43 to 4.75	13.468	23.040	3.37	0.25	0.90	7.53	0.233	0.0048	0.0181	4.00
+1.367D+0.50L+E at 4.43 to 4.75	14.851	23.040	3.37	0.37	0.90	7.88	0.233	0.0048	0.0181	4.00
+1.367D+0.50L-E at 4.43 to 4.75	14.851	23.040	3.37	0.37	0.90	7.88	0.233	0.0048	0.0181	4.00
+0.90D+W at 4.43 to 4.75	7.473	23.040	3.37	0.25	0.90	6.01	0.233	0.0048	0.0181	4.00
+0.90D-W at 4.43 to 4.75	7.473	23.040	3.37	0.25	0.90	6.01	0.233	0.0048	0.0181	4.00
+0.7334D+E at 4.43 to 4.75	6.090	23.040	3.37	0.36	0.90	5.64	0.233	0.0048	0.0181	4.00
+0.7334D-E at 4.43 to 4.75	6.090	23.040	3.37	0.36	0.90	5.64	0.233	0.0048	0.0181	4.00

Design Maximum Combinations - Deflections

Results reported for "Strip Width" = 12 in.

Load Combination	Axial Load Pu k	Moment Values Mcr k-ft	Mactual k-ft	Stiffness I gross in^4	I cracked in^4	I effective in^4	Deflections Deflection in	Defl. Ratio
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0
+D+0.60W at 4.43 to 4.75	8.303	3.37	0.15	512.00	36.91	384.000	0.002	55,352.7
+D-0.60W at 4.43 to 4.75	8.303	3.37	0.15	512.00	36.91	384.000	0.002	55,352.7
+D+0.70E at 4.43 to 4.75	8.303	3.37	0.25	512.00	36.91	384.000	0.003	33,076.6
+D-0.70E at 4.43 to 4.75	8.303	3.37	0.25	512.00	36.91	384.000	0.003	33,076.6
+D+0.750L+0.450W at 4.43 to 4.75	13.559	3.37	0.11	512.00	43.49	384.000	0.002	73,373.9
+D+0.750L-0.450W at 4.43 to 4.75	13.559	3.37	0.11	512.00	43.49	384.000	0.002	73,373.9
+D+0.750L+0.5250E at 4.43 to 4.75	13.559	3.37	0.19	512.00	43.49	384.000	0.003	43,845.4
+D+0.750L-0.5250E at 4.43 to 4.75	13.559	3.37	0.19	512.00	43.49	384.000	0.003	43,845.4
+0.60D+0.60W at 4.43 to 4.75	4.982	3.37	0.15	512.00	32.46	384.000	0.002	55,555.6
+0.60D-0.60W at 4.43 to 4.75	4.982	3.37	0.15	512.00	32.46	384.000	0.002	55,555.6
+0.60D+0.70E at 4.43 to 4.75	4.982	3.37	0.25	512.00	32.46	384.000	0.003	33,197.8

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Concrete Slender Wall

Project File: Puyallup 2nd St Apts - Ground to First Floor.ec6

LIC# : KW-06014847, Build:20.21.10.4 AHBL, INC (c) ENERCALC INC 1983-2021

DESCRIPTION: NON-RETAINING CONCRETE WALL

+0.60D-0.70E at 4.43 to 4.75	4.982	3.37	0.25	512.00	32.46	384.000	0.003	33,197.8
	0.000	0.00	0.00	0.00	0.00	0.000	0.000	0.0
W Only at 4.75 to 5.07	0.000	3.37	0.25	512.00	25.28	384.000	0.003	33,516.1
-W at 4.75 to 5.07	0.000	3.37	0.25	512.00	25.28	384.000	0.003	33,516.1
E Only at 4.75 to 5.07	0.000	3.37	0.36	512.00	25.28	384.000	0.005	23,365.8
E Only * -1.0 at 4.75 to 5.07	0.000	3.37	0.36	512.00	25.28	384.000	0.005	23,365.8

Reactions - Vertical & Horizontal

Load Combination	Base Horizontal	Top Horizontal	Vertical @ Wall Base
D Only	0.0 k	0.00 k	8.729 k
+D+L	0.0 k	0.00 k	15.736 k
+D+0.750L	0.0 k	0.00 k	13.984 k
+D+0.60W	0.1 k	0.06 k	8.729 k
+D-0.60W	0.1 k	0.06 k	8.729 k
+D+0.70E	0.1 k	0.11 k	8.729 k

Reactions - Vertical & Horizontal

Load Combination	Base Horizontal	Top Horizontal	Vertical @ Wall Base
+D-0.70E	0.1 k	0.11 k	8.729 k
+D+0.750L+0.450W	0.0 k	0.05 k	13.984 k
+D+0.750L-0.450W	0.0 k	0.05 k	13.984 k
+D+0.750L+0.5250E	0.1 k	0.08 k	13.984 k
+D+0.750L-0.5250E	0.1 k	0.08 k	13.984 k
+0.60D+0.60W	0.1 k	0.06 k	5.237 k
+0.60D-0.60W	0.1 k	0.06 k	5.237 k
+0.60D+0.70E	0.1 k	0.11 k	5.237 k
+0.60D-0.70E	0.1 k	0.11 k	5.237 k
L Only	0.0 k	0.00 k	7.007 k
W Only	0.1 k	0.11 k	0.000 k
-W	0.1 k	0.11 k	0.000 k
E Only	0.2 k	0.15 k	0.000 k
E Only * -1.0	0.2 k	0.15 k	0.000 k

PRMU20220123

Puyallup Second Street Apartments

City of Puyallup
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Building	Planning
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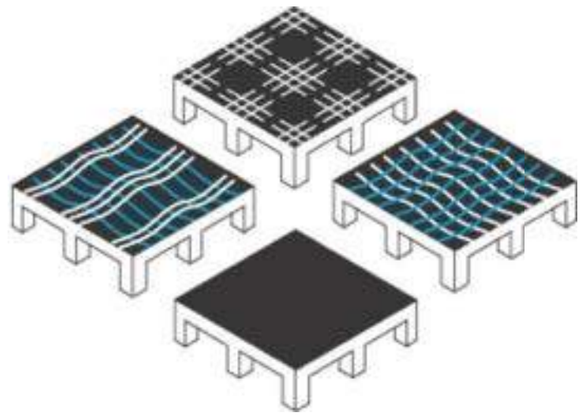
Mat Foundation Design

AMP



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Units

Geometry Units

Plan Dimensions: feet
Angles: degrees
Slab Thickness: inches
Elevations: inches
Support Dimensions: inches
Support Height: feet

Loading and Reaction Unit

Point Force: Kips
- Report As Zero: 0 Kips

Point Moment: kip-ft
- Report As Zero: 0 kip-ft

Line Force: kips/ft
- Report As Zero: 0 kips/ft

Line Moment: Kips
- Report As Zero: 0 Kips

Area Force: psf
- Report As Zero: 0 psf

Area Moment: #/foot
- Report As Zero: 0 #/foot

Spring and Stiffness Units

Point Force Spring: kips/in
Point Moment Spring: k-ft/°
Line Force Spring: ksi
Line Moment Spring: k/°
Area Force Spring: pci
Area Moment Spring: k/ft°

Slab Analysis Units

Force: Kips
- Report As Zero: 0 Kips

Force Per Width: kips/ft
- Report As Zero: 0 kips/ft

Moment: kip-ft
- Report As Zero: 0 kip-ft

Moment Per Width: Kips
- Report As Zero: 0 Kips

Concrete Stress: psi
- Report As Zero: 0 psi

Deflection: inches
- Report As Zero: 0 inches

Materials Units

Concrete Volume: yd^3
Tendon Force: Kips
Reinforcing Stress: ksi
Reinforcing Area: in^2
Tendon Force Per Width: kips/ft
PT Weight: pounds
Reinforcement Weight: tons
Tendon Profile: inches
Cover: inches

Miscellaneous Units

Floor Area: ft^2
Tendon Angles (for friction): radians
Density: pcf
Temperature Change: °F
Elongations: inches

Signs

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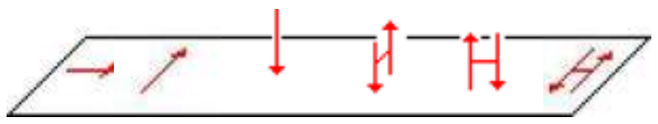
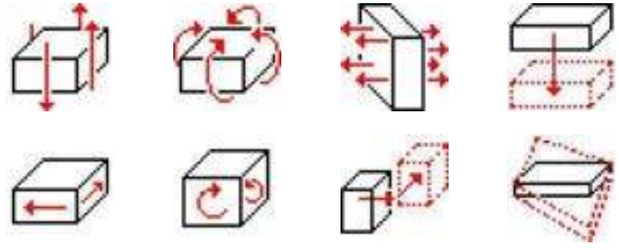
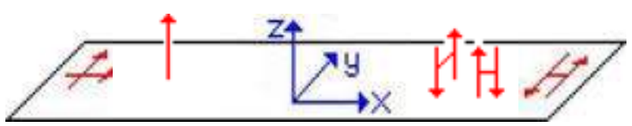
Positive Loads



Positive Analysis



Positive Reactions



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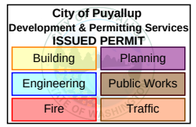

Materials

Concrete Mix

Mix Name	Density (pcf)	Density For Loads (pcf)	f'ci (psi)	f'c (psi)	fcui (psi)	fcu (psi)	Poissons Ratio	Thermal Exp. Coeff	Ec Calc	User Eci (psi)	User Ec (psi)
3000 psi	150	150	3000	3000	3725	3725	0.2	5.556e-6	Code	2500000	3000000
4000 psi	150	150	3000	4000	3725	4975	0.2	5.556e-6	Code	2500000	3000000
5000 psi	150	150	3000	5000	3725	6399	0.2	5.556e-6	Code	2500000	3000000
6000 psi	150	150	3000	6000	3725	7450	0.2	5.556e-6	Code	2500000	3000000
4000 psi (2)	150	150	3000	4000	3725	4975	0.2	5.556e-6	Code	2500000	3000000
4000 psi (3)	150	150	3000	4000	3725	4975	0.2	5.556e-6	Code	2500000	3000000
4000 psi (4)	150	150	3000	4000	3725	4975	0.2	5.556e-6	Code	2500000	3000000
4000 psi (5)	150	150	3000	4000	3725	4975	0.2	5.556e-6	Code	2500000	3000000

PT Systems

System Name	Type	Aps (in²)	Eps (ksi)	fse (ksi)	fpy (ksi)	fpu (ksi)	Duct Width (inches)	Strands Per Duct	Min Radius (feet)
½" Unbonded	unbonded	0.153	28000	175	243	270	0.5	1	6
½" Bonded	bonded	0.153	28000	160	243	270	3	4	6
0.6" Unbonded	unbonded	0.217	28000	175	243	270	0.6	1	8
0.6" Bonded	bonded	0.217	28000	160	243	270	4	4	8

PT Stressing Parameters

System Name	Jacking Stress (ksi)	Seating Loss (inches)	Anchor Friction	Wobble Friction (1/feet)	Angular Friction (1/radians)	Long-Term Losses (ksi)
½" Unbonded	216	0.25	0	0.0014	0.07	22
½" Bonded	216	0.25	0.02	0.001	0.2	22
0.6" Unbonded	216	0.25	0	0.0014	0.07	22
0.6" Bonded	216	0.25	0.02	0.001	0.2	22

Reinforcing Bars

Bar Name	As (in²)	Es (ksi)	Fy (ksi)	Coating	Straight Ld/Db	90 Hook Ld/Db	180 Hook Ld/Db
#3	0.11	29000	60	None	Code	Code	Code
#4	0.2	29000	60	None	Code	Code	Code
#5	0.31	29000	60	None	Code	Code	Code
#6	0.44	29000	60	None	Code	Code	Code
#7	0.6	29000	60	None	Code	Code	Code
#8	0.79	29000	60	None	Code	Code	Code
#9	1	29000	60	None	Code	Code	Code
#10	1.27	29000	60	None	Code	Code	Code
#11	1.56	29000	60	None	Code	Code	Code

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Materials (2)

SSR Systems

SSR System Name	Stud Area (in²)	Head Area (in²)	Min Clear Head Spacing (inches)	Specified Stud Spacing (inches)	Fy (ksi)	Stud Spacing Rounding Increment (inches)	Min Studs Per Rail	System Type
3/8" SSR	0.11	1.11	0.5	None	50	0.25	2	Rail
1/2" SSR	0.196	1.96	0.5	None	50	0.25	2	Rail
5/8" SSR	0.307	3.07	0.5	None	50	0.25	2	Rail
3/4" SSR	0.442	4.42	0.5	None	50	0.25	2	Rail
Ancon Shearfix Auto-Size	0.1217	1.096	0.5906	None	72.52	0.03937	2	Rail
Ancon Shearfix 10 mm	0.1217	1.096	0.5906	None	72.52	0.03937	2	Rail
Ancon Shearfix 12 mm	0.1753	1.578	0.5906	None	72.52	0.03937	2	Rail
Ancon Shearfix 14 mm	0.2386	2.147	0.5906	None	72.52	0.03937	2	Rail
Ancon Shearfix 16 mm	0.3116	2.805	0.5906	None	72.52	0.03937	2	Rail
Ancon Shearfix 20 mm	0.4869	4.383	0.5906	None	72.52	0.03937	2	Rail
Ancon Shearfix 24 mm	0.7012	6.311	0.5906	None	72.52	0.03937	2	Rail

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Loadings

Loading Name	*Type*	*Analysis*	*On-Pattern Factor*	*Off-Pattern Factor*
Self-Dead Loading	Self-Weight	Normal	1	1
Balance Loading	Balance	Normal	1	1
Balanced Load (transfer)	Balance (transfer)	Normal	1	1
Hyperstatic Loading	Hyperstatic	Hyperstatic	1	1
Construction Dead Load	Stressing Dead	Normal	1	1
Dead Load	Dead	Normal	1	1
Dead Load (transfer)	Dead (transfer)	Normal	1	1
Live Load Reducible	Live (Reducible)	Normal	1	0
Live Load Reducible (transfer)	Live (Reducible) (transfer)	Normal	1	0
Live Load Unreducible	Live (Unreducible)	Normal	1	0
Partition Load	Live (Unreducible)	Normal	1	0
Live Load Unreducible (transfer)	Live (Unreducible) (transfer)	Normal	1	0
Live Load Storage	Live (Storage)	Normal	1	0
Live Load Storage (transfer)	Live (Storage) (transfer)	Normal	1	0
Live Load Roof	Live (Roof)	Normal	1	0
Live Load Roof (transfer)	Live (Roof) (transfer)	Normal	1	0
SEISMIC EAST-WEST	Ultimate Seismic 1	Normal	1	1
SEISMIC NORTH-SOUTH	Ultimate Seismic 2	Normal	1	1

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Load Combinations

All Dead LC

Active Design Criteria: <none>
Analysis: Zero-Tension

Loading	*Standard Factor*
Self-Dead Loading	1
Dead Load	1
Dead Load (transfer)	1

Dead + Balance LC

Active Design Criteria: <none>
Analysis: Zero-Tension

Loading	*Standard Factor*
Self-Dead Loading	1
Balance Loading	1
Balanced Load (transfer)	1
Dead Load	1
Dead Load (transfer)	1

Initial Service LC

Active Design Criteria: Initial Service Design
Analysis: Zero-Tension

Loading	*Standard Factor*
Self-Dead Loading	1
Balance Loading	1.13
Construction Dead Load	1

Service LC: D + L

Active Design Criteria: User Minimum Design, Code Minimum Design, Service Design, Soil Bearing Design
Analysis: Zero-Tension

Loading	*Standard Factor*
Self-Dead Loading	1
Balance Loading	1
Balanced Load (transfer)	1
Dead Load	1
Dead Load (transfer)	1
Live Load Reducible	1
Live Load Reducible (transfer)	1
Live Load Unreducible	1
Partition Load	1
Live Load Unreducible (transfer)	1
Live Load Storage	1
Live Load Storage (transfer)	1

Load Combinations (2)

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Service LC: D

Active Design Criteria: User Minimum Design, Code Minimum Design, Service Design, Soil Bearing Design
Analysis: Zero-Tension

Loading	*Standard Factor*
Self-Dead Loading	1
Balance Loading	1
Balanced Load (transfer)	1
Dead Load	1
Dead Load (transfer)	1

Service LC: D + Lr

Active Design Criteria: User Minimum Design, Code Minimum Design, Service Design, Soil Bearing Design
Analysis: Zero-Tension

Loading	*Standard Factor*
Self-Dead Loading	1
Balance Loading	1
Balanced Load (transfer)	1
Dead Load	1
Dead Load (transfer)	1
Live Load Roof	1
Live Load Roof (transfer)	1

Service LC: D + S

Active Design Criteria: User Minimum Design, Code Minimum Design, Service Design, Soil Bearing Design
Analysis: Zero-Tension

Loading	*Standard Factor*
Self-Dead Loading	1
Balance Loading	1
Balanced Load (transfer)	1
Dead Load	1
Dead Load (transfer)	1

Service LC: D + 0.75L + 0.75Lr

Active Design Criteria: User Minimum Design, Code Minimum Design, Service Design, Soil Bearing Design
Analysis: Zero-Tension

Loading	*Standard Factor*
Self-Dead Loading	1
Balance Loading	1
Balanced Load (transfer)	1
Dead Load	1
Dead Load (transfer)	1
Live Load Reducible	0.75
Live Load Reducible (transfer)	0.75
Live Load Unreducible	0.75
Partition Load	0.75
Live Load Unreducible (transfer)	0.75
Live Load Storage	0.75
Live Load Storage (transfer)	0.75
Live Load Roof	0.75
Live Load Roof (transfer)	0.75

Load Combinations (3)

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Service LC: D + 0.75L + 0.75S

Active Design Criteria: User Minimum Design, Code Minimum Design, Service Design, Soil Bearing Design
Analysis: Zero-Tension

Loading	*Standard Factor*
Self-Dead Loading	1
Balance Loading	1
Balanced Load (transfer)	1
Dead Load	1
Dead Load (transfer)	1
Live Load Reducible	0.75
Live Load Reducible (transfer)	0.75
Live Load Unreducible	0.75
Partition Load	0.75
Live Load Unreducible (transfer)	0.75
Live Load Storage	0.75
Live Load Storage (transfer)	0.75

Service Seismic LC: D + 0.7E

Active Design Criteria: Soil Bearing Design
Analysis: Zero-Tension
Key Lateral Loading: Seismic-Ultimate Standard Factor: 0.7

Loading	*Standard Factor*
Self-Dead Loading	1
Balance Loading	1
Balanced Load (transfer)	1
Dead Load	1
Dead Load (transfer)	1

Service Seismic LC: D - 0.7E

Active Design Criteria: Soil Bearing Design
Analysis: Zero-Tension
Key Lateral Loading: Seismic-Ultimate Standard Factor: -0.7

Loading	*Standard Factor*
Self-Dead Loading	1
Balance Loading	1
Balanced Load (transfer)	1
Dead Load	1
Dead Load (transfer)	1

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Load Combinations (4)

Service Seismic LC: D + 0.75L + 0.75S + 0.525E

Active Design Criteria: Soil Bearing Design
Analysis: Zero-Tension
Key Lateral Loading: Seismic-Ultimate Standard Factor: 0.525

Loading	*Standard Factor*
Self-Dead Loading	1
Balance Loading	1
Balanced Load (transfer)	1
Dead Load	1
Dead Load (transfer)	1
Live Load Reducible	0.75
Live Load Reducible (transfer)	0.75
Live Load Unreducible	0.75
Partition Load	0.75
Live Load Unreducible (transfer)	0.75
Live Load Storage	0.75
Live Load Storage (transfer)	0.75

Service Seismic LC: D + 0.75L + 0.75S - 0.525E

Active Design Criteria: Soil Bearing Design
Analysis: Zero-Tension
Key Lateral Loading: Seismic-Ultimate Standard Factor: -0.525

Loading	*Standard Factor*
Self-Dead Loading	1
Balance Loading	1
Balanced Load (transfer)	1
Dead Load	1
Dead Load (transfer)	1
Live Load Reducible	0.75
Live Load Reducible (transfer)	0.75
Live Load Unreducible	0.75
Partition Load	0.75
Live Load Unreducible (transfer)	0.75
Live Load Storage	0.75
Live Load Storage (transfer)	0.75

Service Seismic LC: 0.6D + 0.7E

Active Design Criteria: Soil Bearing Design
Analysis: Zero-Tension
Key Lateral Loading: Seismic-Ultimate Standard Factor: 0.7

Loading	*Standard Factor*
Self-Dead Loading	0.6
Balance Loading	1
Balanced Load (transfer)	1
Dead Load	0.6
Dead Load (transfer)	0.6

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Load Combinations (5)

Service Seismic LC: 0.6D - 0.7E

Active Design Criteria: Soil Bearing Design
Analysis: Zero-Tension
Key Lateral Loading: Seismic-Ultimate Standard Factor: -0.7

Loading	*Standard Factor*
Self-Dead Loading	0.6
Balance Loading	1
Balanced Load (transfer)	1
Dead Load	0.6
Dead Load (transfer)	0.6

Sustained Service LC

Active Design Criteria: Sustained Service Design
Analysis: Zero-Tension

Loading	*Standard Factor*
Self-Dead Loading	1
Balance Loading	1
Balanced Load (transfer)	1
Dead Load	1
Dead Load (transfer)	1
Live Load Reducible	0.5
Live Load Reducible (transfer)	0.5
Live Load Unreducible	0.5
Partition Load	0.5
Live Load Unreducible (transfer)	0.5
Live Load Storage	1
Live Load Storage (transfer)	1
Live Load Roof	0.5
Live Load Roof (transfer)	0.5

Factored LC: 1.4D

Active Design Criteria: User Minimum Design, Code Minimum Design, Strength Design, Ductility Design
Analysis: Zero-Tension

Loading	*Standard Factor*
Self-Dead Loading	1.4
Hyperstatic Loading	1
Dead Load	1.4
Dead Load (transfer)	1.4

Factored LC: 0.9D

Active Design Criteria: User Minimum Design, Code Minimum Design, Strength Design, Ductility Design
Analysis: Zero-Tension

Loading	*Standard Factor*
Self-Dead Loading	0.9
Hyperstatic Loading	1
Dead Load	0.9
Dead Load (transfer)	0.9

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Load Combinations (6)

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Factored LC: 1.2D + 1.6L + 0.5Lr

Active Design Criteria: User Minimum Design, Code Minimum Design, Strength Design, Ductility Design
Analysis: Zero-Tension

Loading	*Standard Factor*
Self-Dead Loading	1.2
Hyperstatic Loading	1
Dead Load	1.2
Dead Load (transfer)	1.2
Live Load Reducible	1.6
Live Load Reducible (transfer)	1.6
Live Load Unreducible	1.6
Partition Load	1.6
Live Load Unreducible (transfer)	1.6
Live Load Storage	1.6
Live Load Storage (transfer)	1.6
Live Load Roof	0.5
Live Load Roof (transfer)	0.5

Factored LC: 1.2D + 1.6L + 0.5S

Active Design Criteria: User Minimum Design, Code Minimum Design, Strength Design, Ductility Design
Analysis: Zero-Tension

Loading	*Standard Factor*
Self-Dead Loading	1.2
Hyperstatic Loading	1
Dead Load	1.2
Dead Load (transfer)	1.2
Live Load Reducible	1.6
Live Load Reducible (transfer)	1.6
Live Load Unreducible	1.6
Partition Load	1.6
Live Load Unreducible (transfer)	1.6
Live Load Storage	1.6
Live Load Storage (transfer)	1.6

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Load Combinations (7)

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Factored LC: 0.9D + 1.6L + 0.5Lr

Active Design Criteria: User Minimum Design, Code Minimum Design, Strength Design, Ductility Design
Analysis: Zero-Tension

Loading	*Standard Factor*
Self-Dead Loading	0.9
Hyperstatic Loading	1
Dead Load	0.9
Dead Load (transfer)	0.9
Live Load Reducible	1.6
Live Load Reducible (transfer)	1.6
Live Load Unreducible	1.6
Partition Load	1.6
Live Load Unreducible (transfer)	1.6
Live Load Storage	1.6
Live Load Storage (transfer)	1.6
Live Load Roof	0.5
Live Load Roof (transfer)	0.5

Factored LC: 0.9D + 1.6L + 0.5S

Active Design Criteria: User Minimum Design, Code Minimum Design, Strength Design, Ductility Design
Analysis: Zero-Tension

Loading	*Standard Factor*
Self-Dead Loading	0.9
Hyperstatic Loading	1
Dead Load	0.9
Dead Load (transfer)	0.9
Live Load Reducible	1.6
Live Load Reducible (transfer)	1.6
Live Load Unreducible	1.6
Partition Load	1.6
Live Load Unreducible (transfer)	1.6
Live Load Storage	1.6
Live Load Storage (transfer)	1.6

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Load Combinations (8)

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Factored LC: 1.2D + f1L + 1.6Lr

Active Design Criteria: User Minimum Design, Code Minimum Design, Strength Design, Ductility Design
Analysis: Zero-Tension

Loading	*Standard Factor*
Self-Dead Loading	1.2
Hyperstatic Loading	1
Dead Load	1.2
Dead Load (transfer)	1.2
Live Load Reducible	0.5
Live Load Reducible (transfer)	0.5
Live Load Unreducible	1
Partition Load	1
Live Load Unreducible (transfer)	1
Live Load Storage	1
Live Load Storage (transfer)	1
Live Load Roof	1.6
Live Load Roof (transfer)	1.6

Factored LC: 1.2D + f1L + 1.6S

Active Design Criteria: User Minimum Design, Code Minimum Design, Strength Design, Ductility Design
Analysis: Zero-Tension

Loading	*Standard Factor*
Self-Dead Loading	1.2
Hyperstatic Loading	1
Dead Load	1.2
Dead Load (transfer)	1.2
Live Load Reducible	0.5
Live Load Reducible (transfer)	0.5
Live Load Unreducible	1
Partition Load	1
Live Load Unreducible (transfer)	1
Live Load Storage	1
Live Load Storage (transfer)	1

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Load Combinations (9)

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Factored LC: 0.9D + f1L + 1.6Lr

Active Design Criteria: User Minimum Design, Code Minimum Design, Strength Design, Ductility Design
Analysis: Zero-Tension

Loading	*Standard Factor*
Self-Dead Loading	0.9
Hyperstatic Loading	1
Dead Load	0.9
Dead Load (transfer)	0.9
Live Load Reducible	0.5
Live Load Reducible (transfer)	0.5
Live Load Unreducible	1
Partition Load	1
Live Load Unreducible (transfer)	1
Live Load Storage	1
Live Load Storage (transfer)	1
Live Load Roof	1.6
Live Load Roof (transfer)	1.6

Factored LC: 0.9D + f1L + 1.6S

Active Design Criteria: User Minimum Design, Code Minimum Design, Strength Design, Ductility Design
Analysis: Zero-Tension

Loading	*Standard Factor*
Self-Dead Loading	0.9
Hyperstatic Loading	1
Dead Load	0.9
Dead Load (transfer)	0.9
Live Load Reducible	0.5
Live Load Reducible (transfer)	0.5
Live Load Unreducible	1
Partition Load	1
Live Load Unreducible (transfer)	1
Live Load Storage	1
Live Load Storage (transfer)	1

Factored Seismic LC: 1.2D + f1L + f2S + E

Active Design Criteria: User Minimum Design, Code Minimum Design, Strength Design, Ductility Design
Analysis: Zero-Tension
Key Lateral Loading: Seismic-Ultimate Standard Factor: 1

Loading	*Standard Factor*
Self-Dead Loading	1.2
Hyperstatic Loading	1
Dead Load	1.2
Dead Load (transfer)	1.2
Live Load Reducible	0.5
Live Load Reducible (transfer)	0.5
Live Load Unreducible	1
Partition Load	1
Live Load Unreducible (transfer)	1
Live Load Storage	1
Live Load Storage (transfer)	1

Load Combinations (10)

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Factored Seismic LC: 1.2D + f1L + f2S - E

Active Design Criteria: User Minimum Design, Code Minimum Design, Strength Design, Ductility Design
Analysis: Zero-Tension
Key Lateral Loading: Seismic-Ultimate Standard Factor: -1

Loading	*Standard Factor*
Self-Dead Loading	1.2
Hyperstatic Loading	1
Dead Load	1.2
Dead Load (transfer)	1.2
Live Load Reducible	0.5
Live Load Reducible (transfer)	0.5
Live Load Unreducible	1
Partition Load	1
Live Load Unreducible (transfer)	1
Live Load Storage	1
Live Load Storage (transfer)	1

Factored Seismic LC: 0.9D + E

Active Design Criteria: User Minimum Design, Code Minimum Design, Strength Design, Ductility Design
Analysis: Zero-Tension
Key Lateral Loading: Seismic-Ultimate Standard Factor: 1

Loading	*Standard Factor*
Self-Dead Loading	0.9
Hyperstatic Loading	1
Dead Load	0.9
Dead Load (transfer)	0.9

Factored Seismic LC: 0.9D - E

Active Design Criteria: User Minimum Design, Code Minimum Design, Strength Design, Ductility Design
Analysis: Zero-Tension
Key Lateral Loading: Seismic-Ultimate Standard Factor: -1

Loading	*Standard Factor*
Self-Dead Loading	0.9
Hyperstatic Loading	1
Dead Load	0.9
Dead Load (transfer)	0.9

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Engineering | Public Works
Fire | Traffic

Design Rules

Code Minimum Desig

318-14 Min. Reinforcement

User Minimum Desig

Specified Min. Reinforcement

Initial Service Desig

318-14 Initial Service Design

Service Design

318-14 Service Design

Include detailed section analysis

Sustained Service Desig

318-14 Sustained Service Design

Strength Design

318-14 Strength Design

Punching Shear Design

Ductility Desig

318-14 Ductility Design

Soil Bearing Desig

None

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Element: Standard Plan

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

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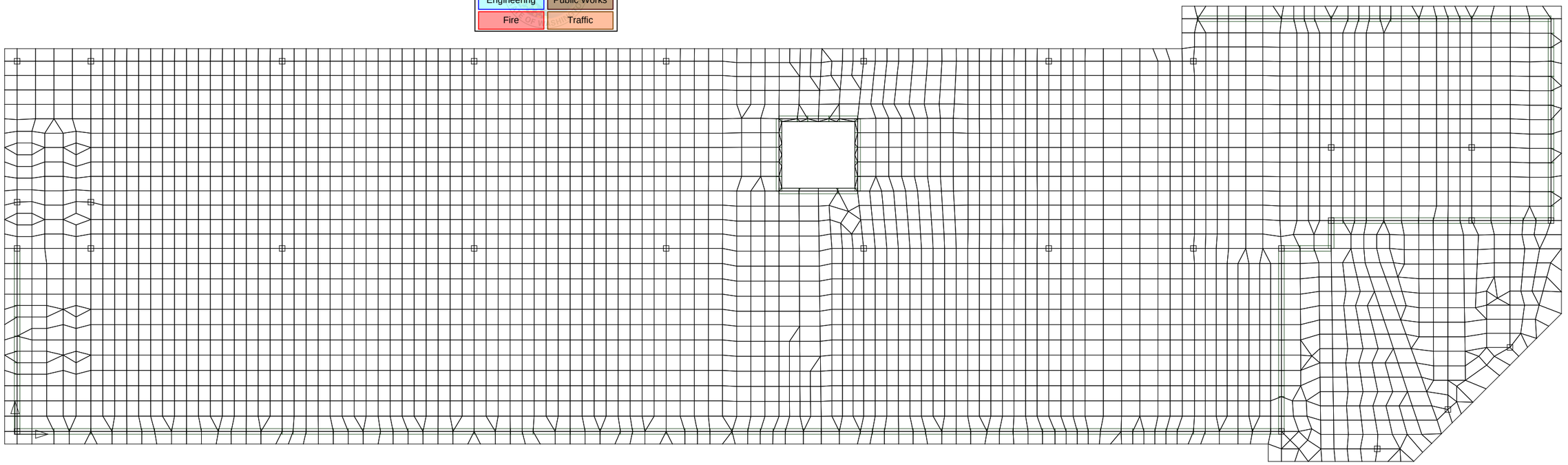
Engineering	Public Works
Fire	Traffic



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;
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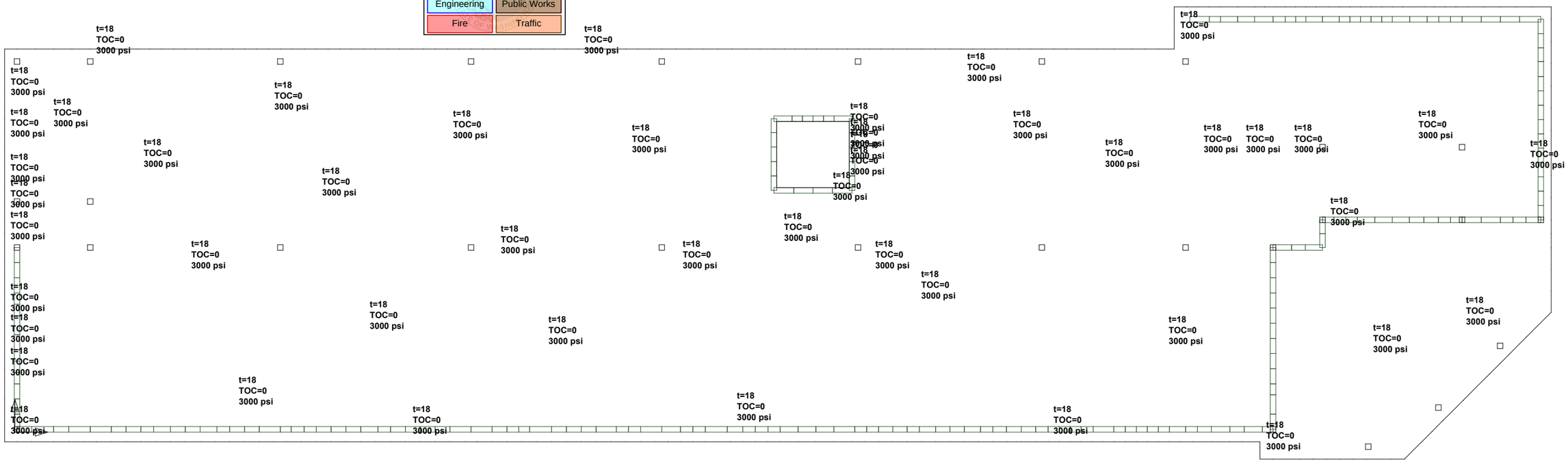

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Dead Load: All Loads Plan

Dead Load: 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 = 1:150

City of Puyallup
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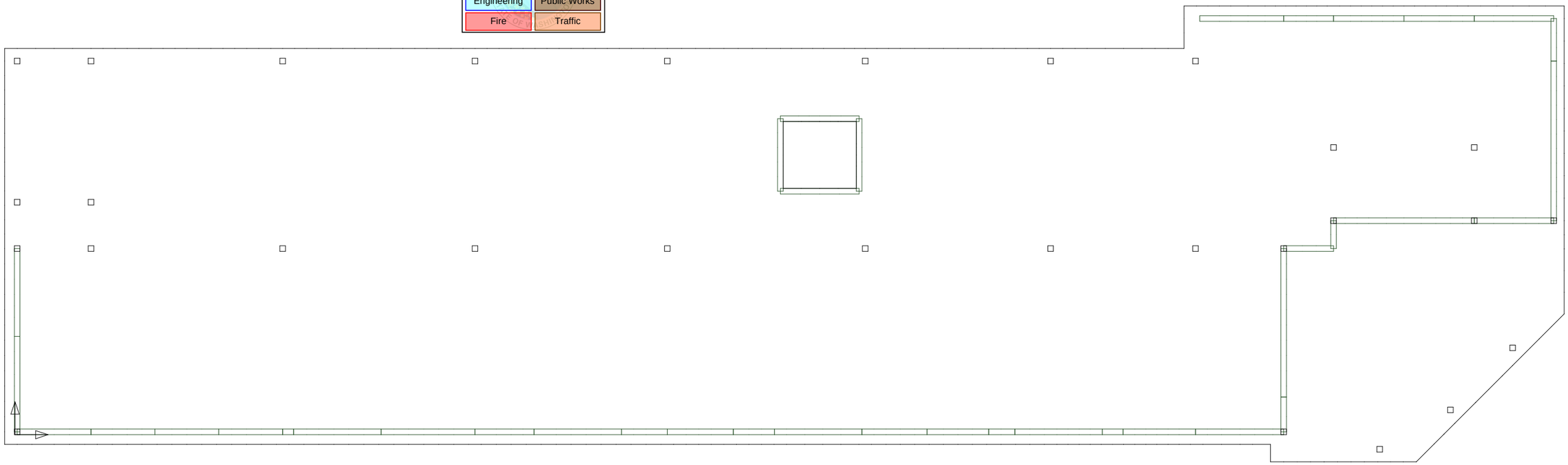
Engineering	Public Works
Fire	Traffic



Dead Load (transfer): All Loads Plan

Dead Load (transfer): 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 = 1:150

City of Puyallup
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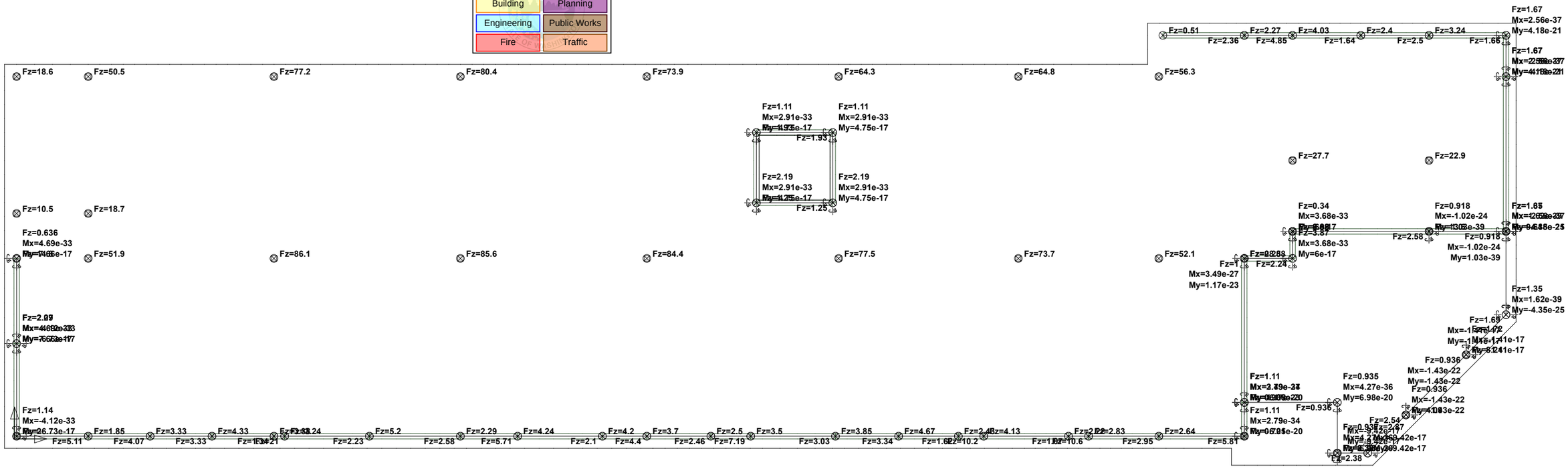
Fire | Traffic



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Live Load Reducible: All Loads Plan

Live Load Reducible: 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 = 1:150

City of Puyallup
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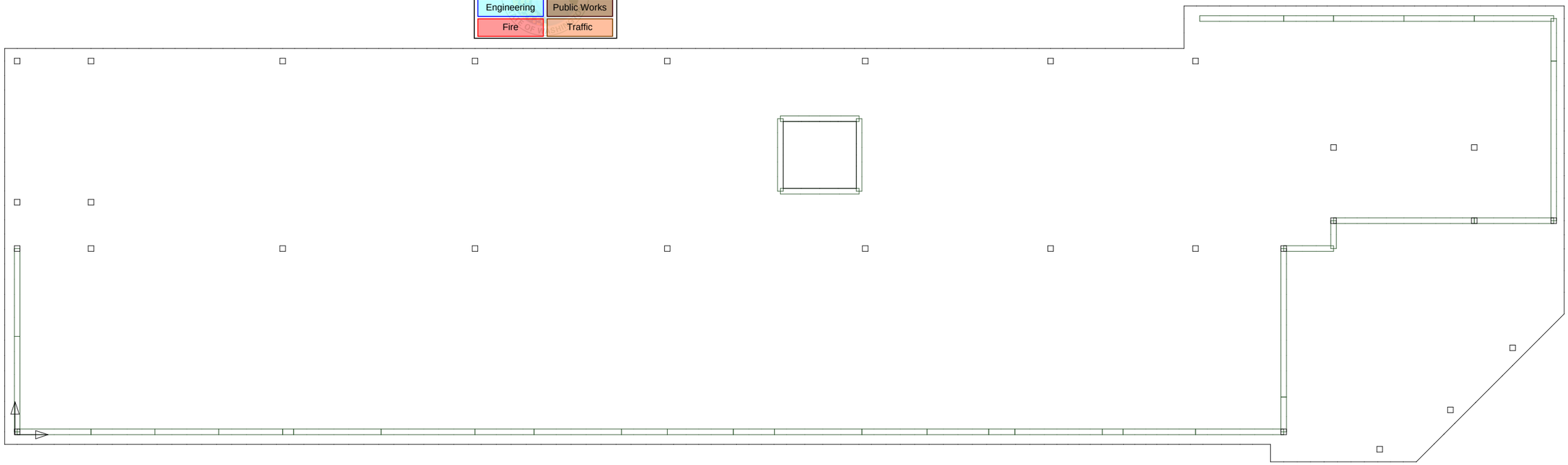
Engineering	Public Works
Fire	Traffic



Live Load Reducible (transfer): All Loads Plan

Live Load Reducible (transfer): 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;
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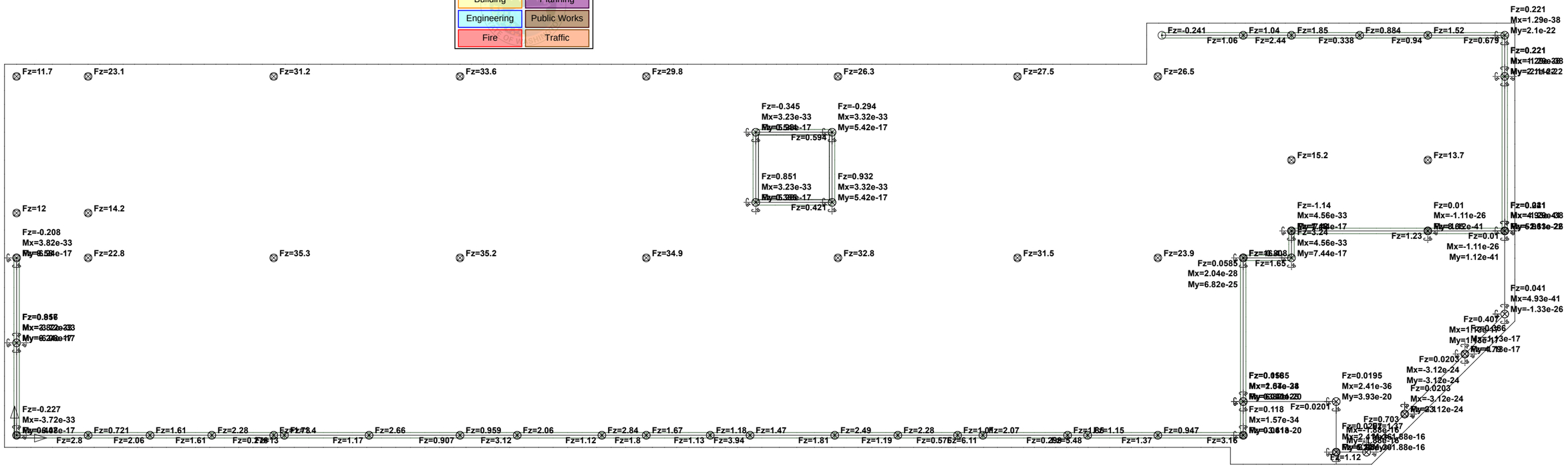
Engineering	Public Works
Fire	Traffic



Live Load Unreducible: All Loads Plan

Live Load Unreducible: 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 = 1:150

City of Puyallup
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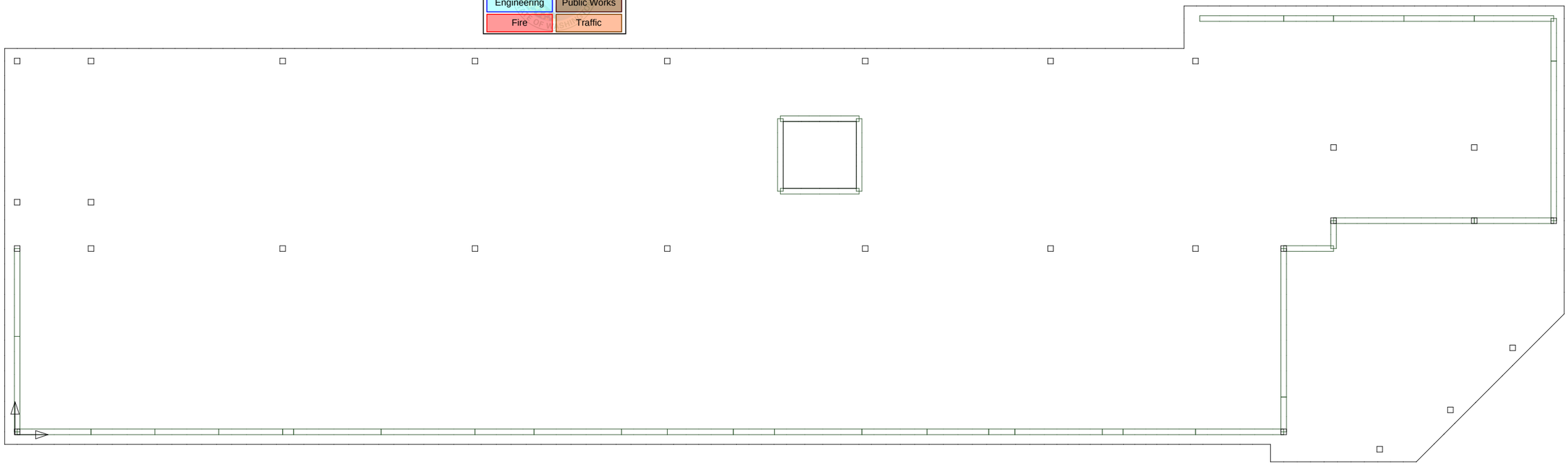

Live Load Unreducible (transfer): All Loads Plan

Live Load Unreducible (transfer): 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;
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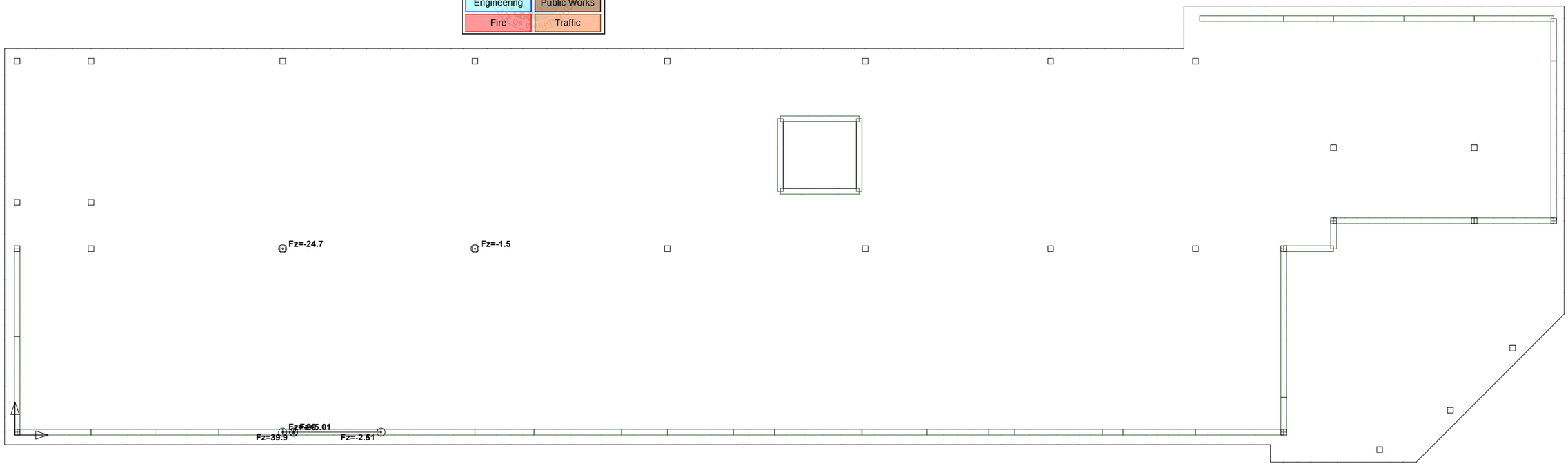

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Live Load Storage: All Loads Plan

Live Load Storage: 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 = 1:150

City of Puyallup
Development & Permitting Services
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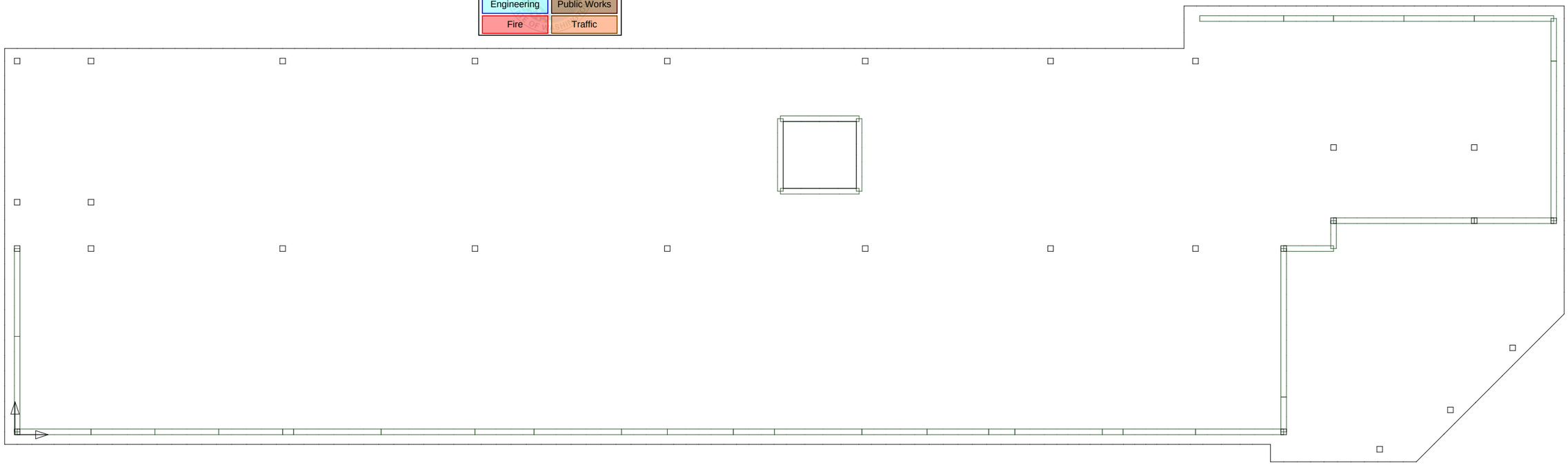
Building	Planning
Engineering	Public Works
Fire	Traffic



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Live Load Storage (transfer): All Loads Plan

Live Load Storage (transfer): 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;
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City of Puyallup
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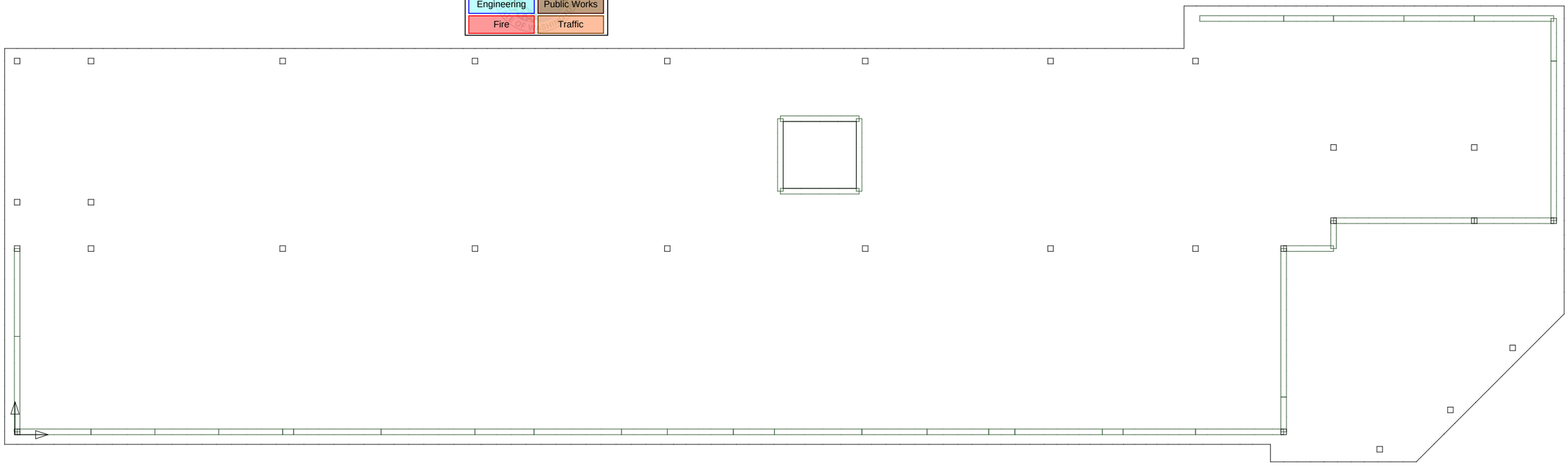
Building	Planning
Engineering	Public Works
Fire	Traffic



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Live Load Roof: All Loads Plan

Live Load Roof: 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;
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City of Puyallup
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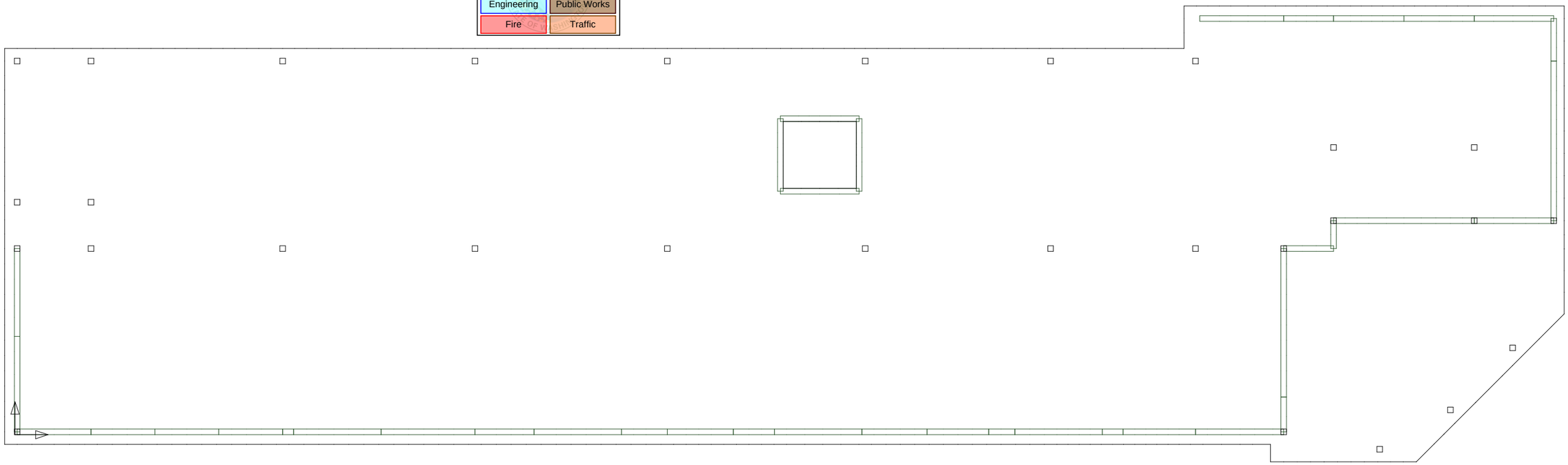
Fire	Traffic



Live Load Roof (transfer): All Loads Plan

Live Load Roof (transfer): 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 = 1:150

City of Puyallup
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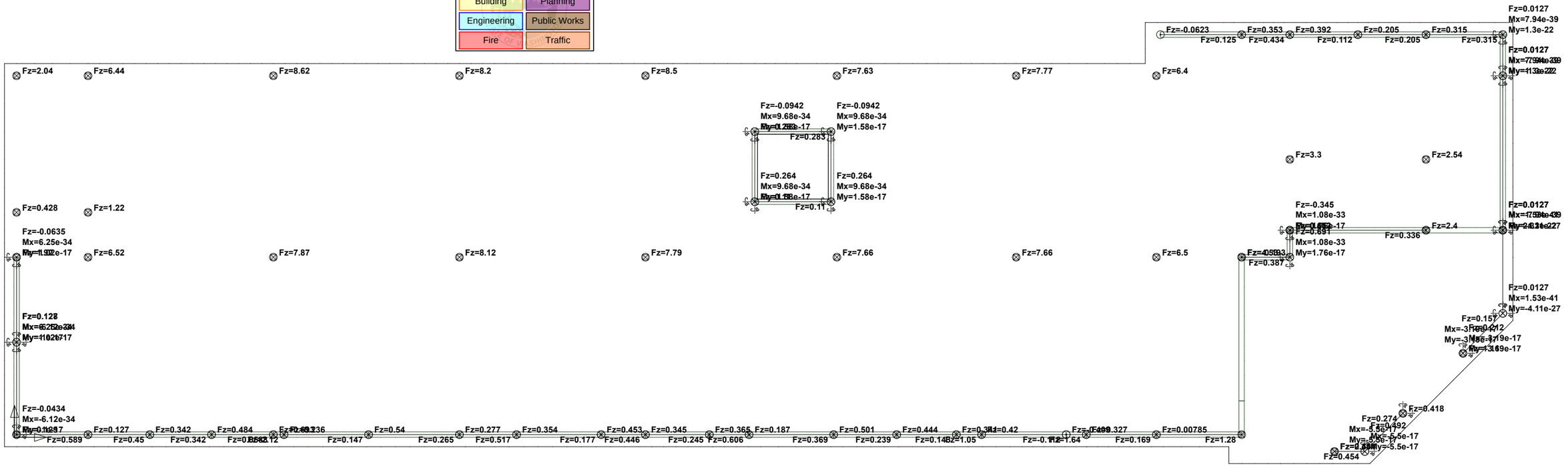

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Construction Dead Load: All Loads Plan

Construction Dead Load: 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 = 1:150

City of Puyallup
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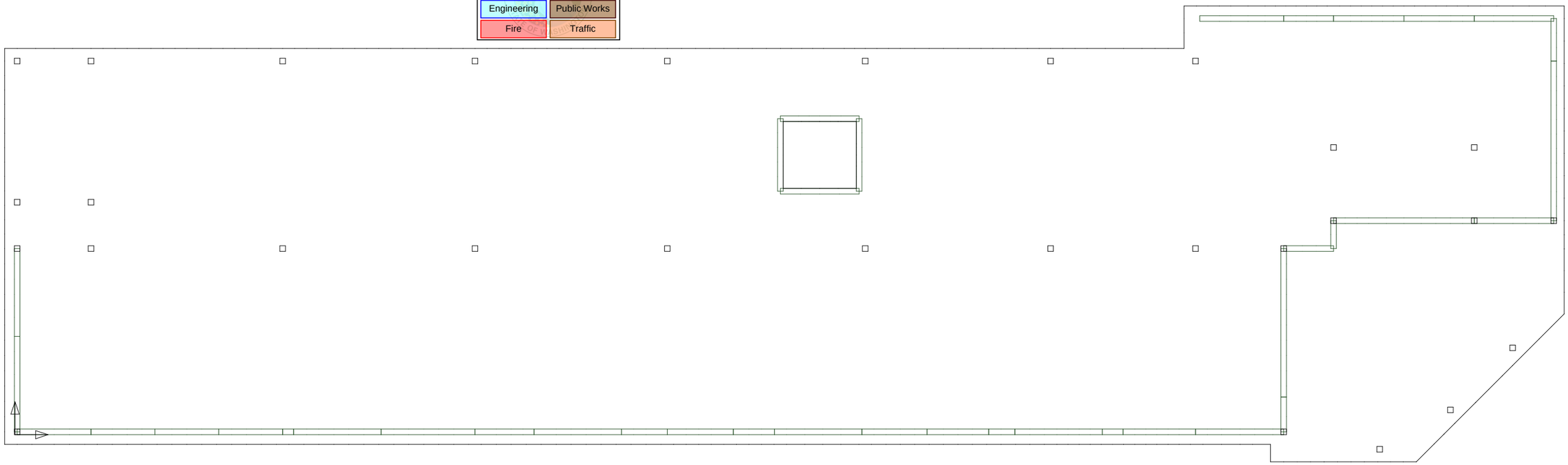
Engineering	Public Works
Fire	Traffic



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Balanced Load (transfer): All Loads Plan

Balanced Load (transfer): 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 = 1:150

City of Puyallup
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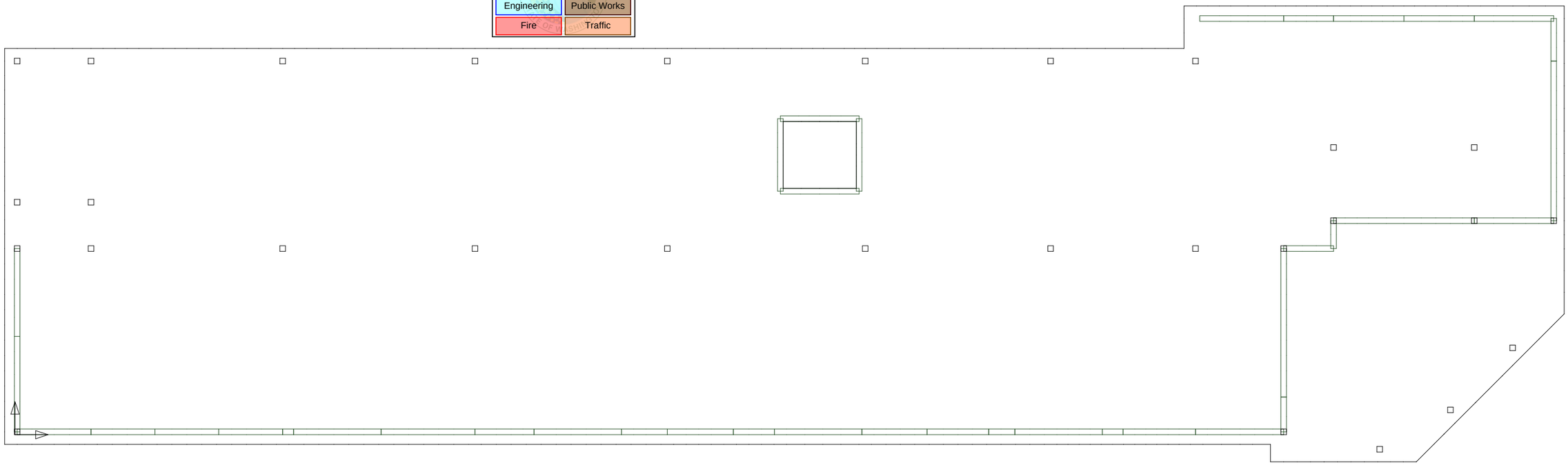
Fire | Traffic



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Partition Load: All Loads Plan

Partition Load: 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;
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City of Puyallup
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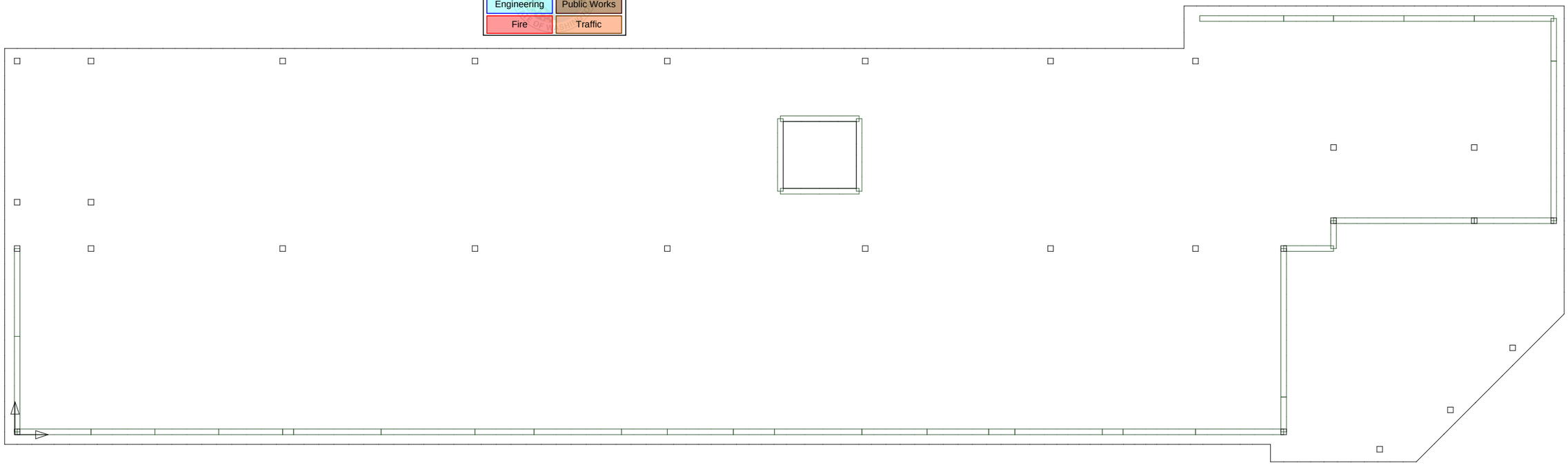
Building	Planning
Engineering	Public Works
Fire	Traffic



SEISMIC EAST-WEST: All Loads Plan

SEISMIC EAST-WEST: 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 = 1:150

City of Puyallup
Development & Permitting Services
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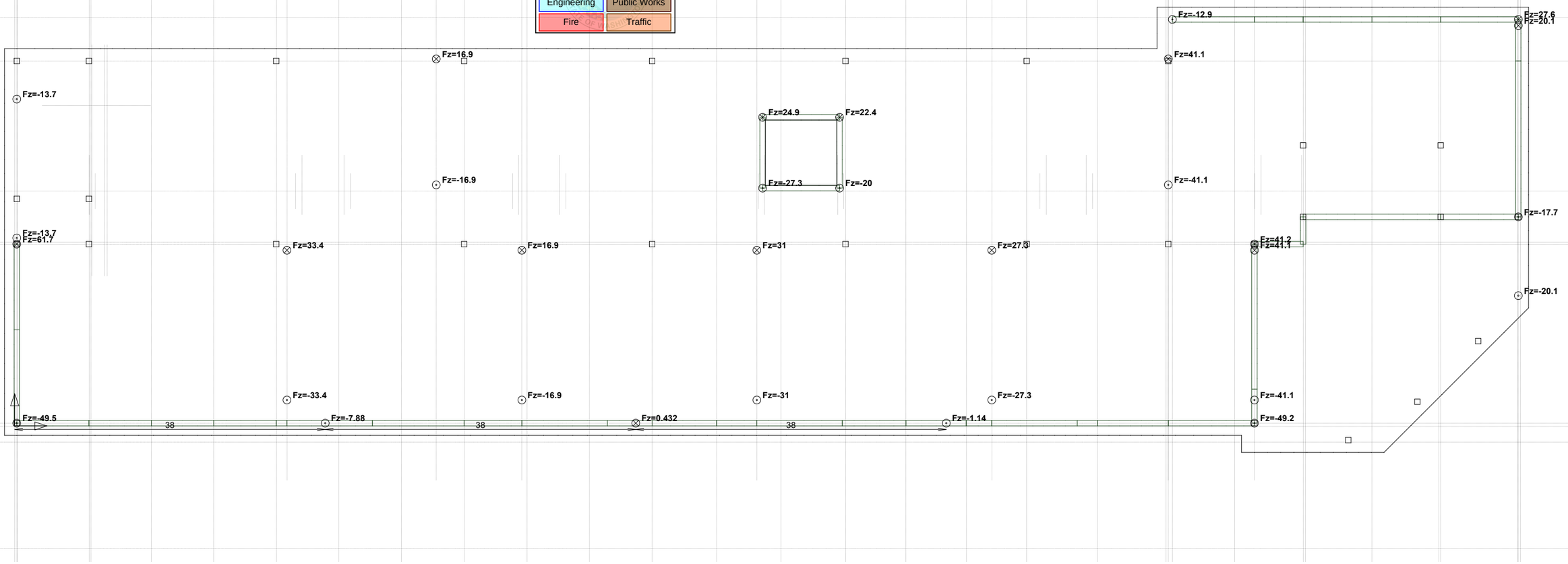
Building	Planning
Engineering	Public Works
Fire	Traffic



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SEISMIC NORTH-SOUTH: All Loads Plan

SEISMIC NORTH-SOUTH: 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;
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City of Puyallup
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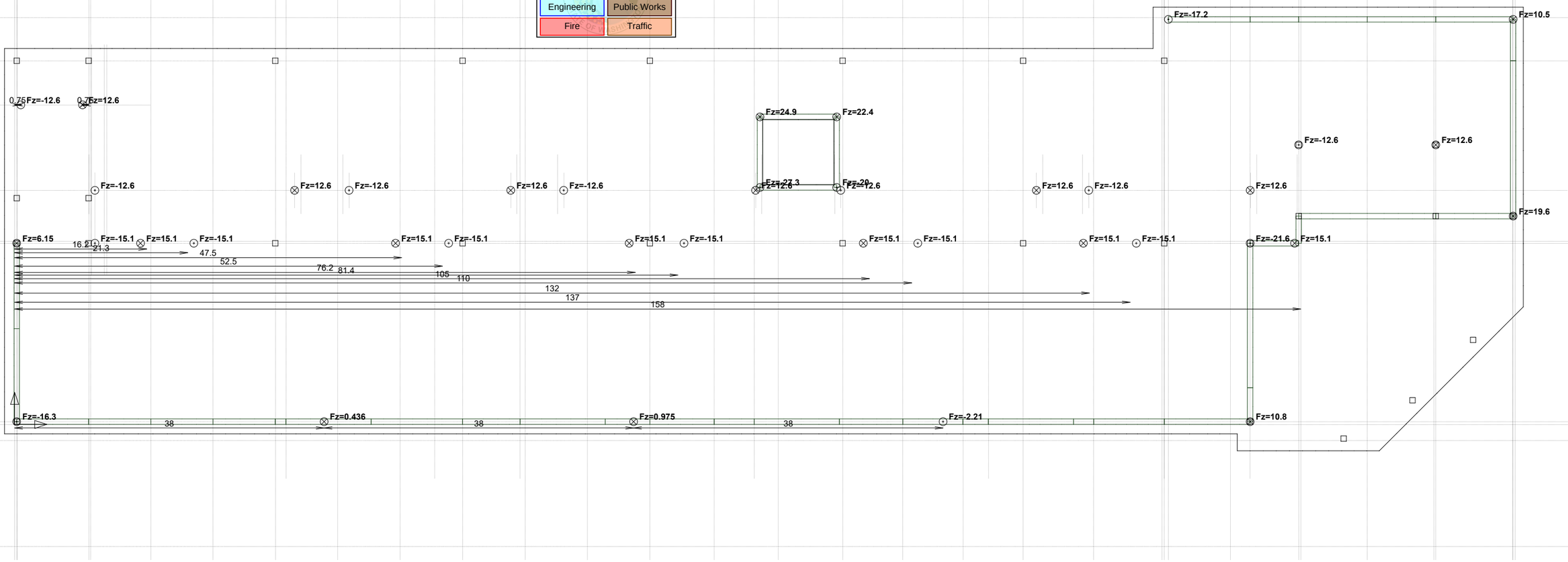
Engineering	Public Works
Fire	Traffic



Service LC: D + L: Max Soil Bearing Pressure 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 = 1:150
Service LC: D + L - Area Spring Vertical Reactions Plot (Maximum Values)

350 490 630 770 910 1050 1190 1330 1470

Min Value = 260.6 psf @ (20.54,32.6) Max Value = 1608 psf @ (55.01,46.17)

City of Puyallup
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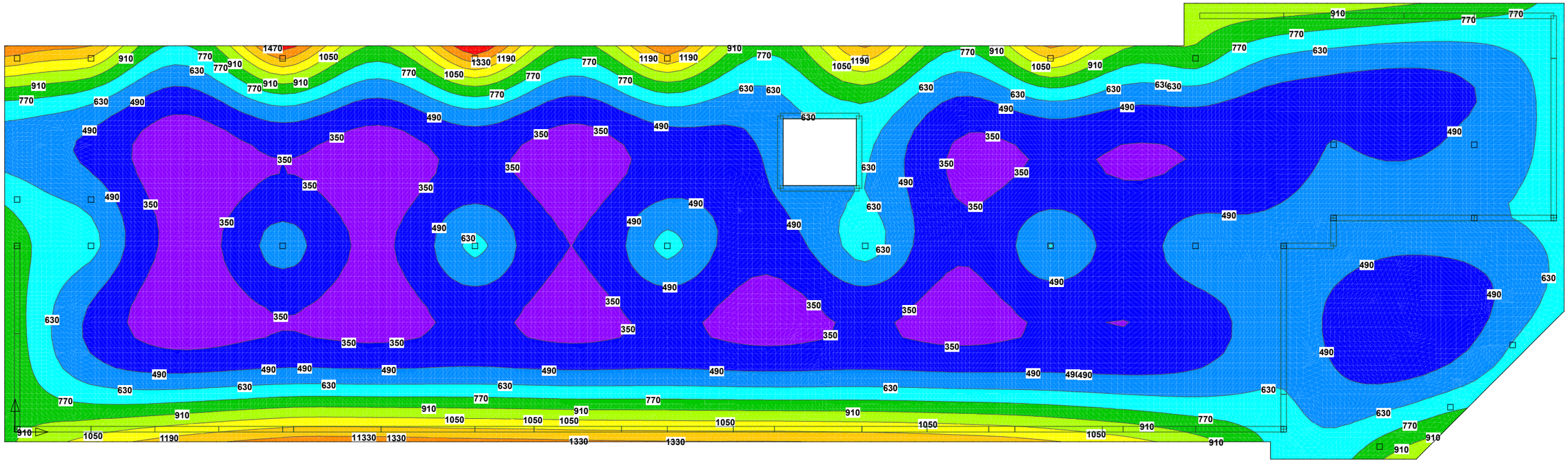
Engineering	Public Works
Fire	Traffic



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Service LC: D + L: Min Soil Bearing Pressure 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 = 1:150
Service LC: D + L - Area Spring Vertical Reactions Plot (Minimum Values)

350 490 630 770 910 1050 1190 1330 1470

Min Value = 260.6 psf @ (20.54,32.6) Max Value = 1608 psf @ (55.01,46.17)

City of Puyallup
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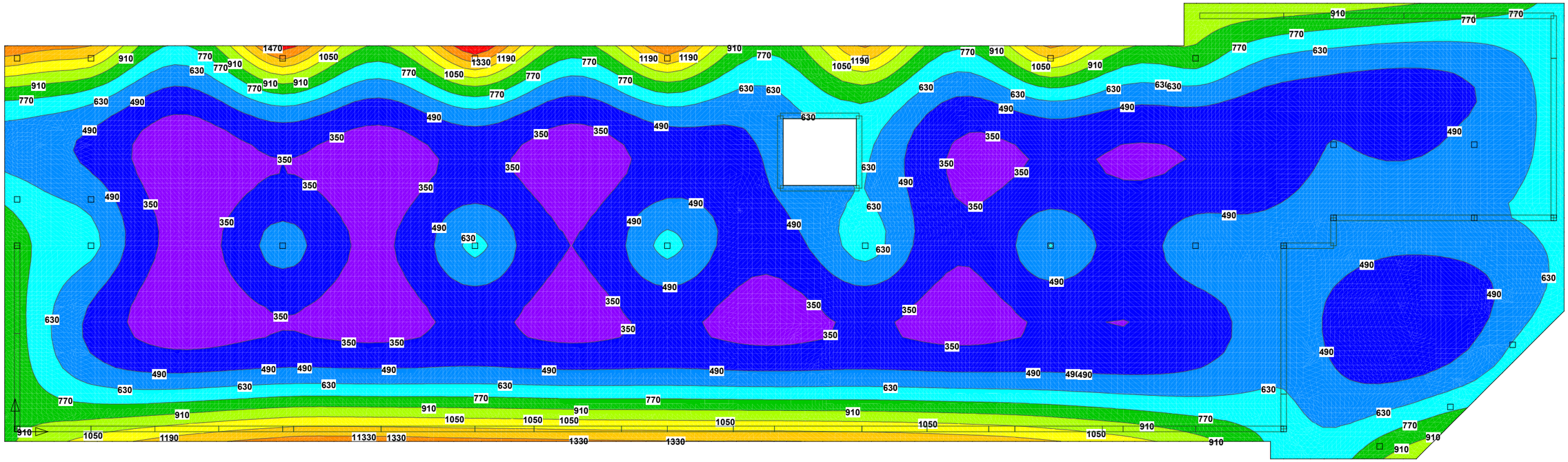
Engineering	Public Works
Fire	Traffic


910 770 770 770 770 630 910 770 630 770 910 910 770 1470 1050 1330 1190 770 1050 770 770 1190 1190 910 770 1050 1190 770 910 1050 1190 910 770 630 630 630 630 630 630 630 490 490 490

Service LC: D: Max Soil Bearing Pressure Plan

Service LC: D: 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 = 1:150
Service LC: D - Area Spring Vertical Reactions Plot (Maximum Values)

270 360 450 540 630 720 810 900 990

Min Value = 255.7 psf @ (20.54,32.6) Max Value = 1198 psf @ (55.01,46.17)

City of Puyallup
Development & Permitting Services
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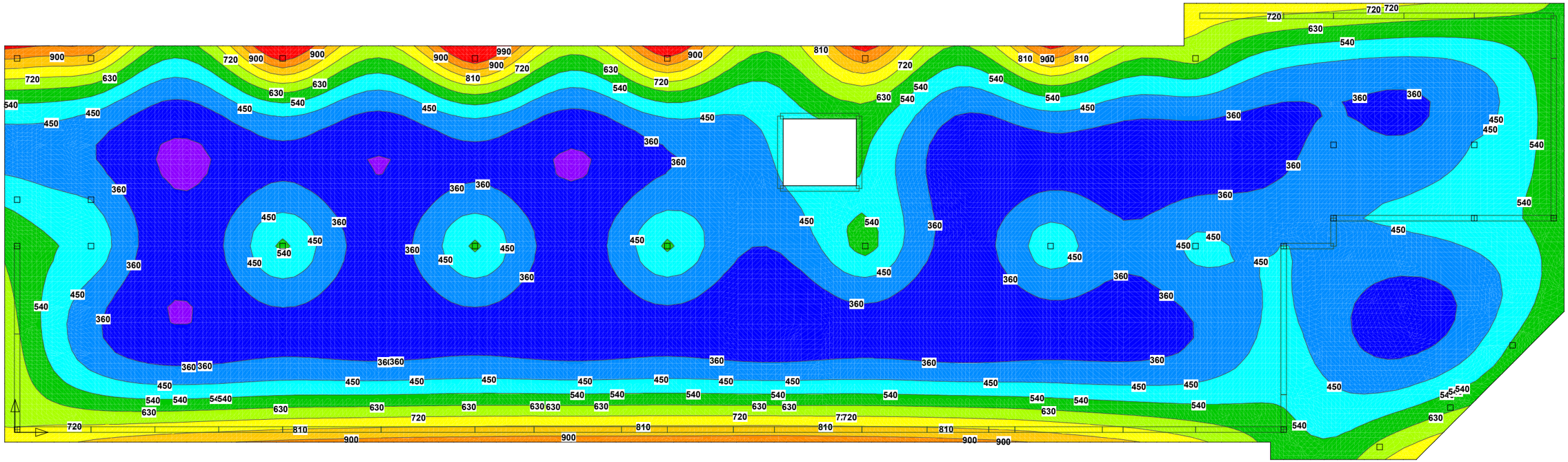
Building	Planning
Engineering	Public Works
Fire	Traffic



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Service LC: D: Min Soil Bearing Pressure Plan

Service LC: D: 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 = 1:150
Service LC: D - Area Spring Vertical Reactions Plot (Minimum Values)

270 360 450 540 630 720 810 900 990

Min Value = 255.7 psf @ (20.54,32.6) Max Value = 1198 psf @ (55.01,46.17)

City of Puyallup
Development & Permitting Services
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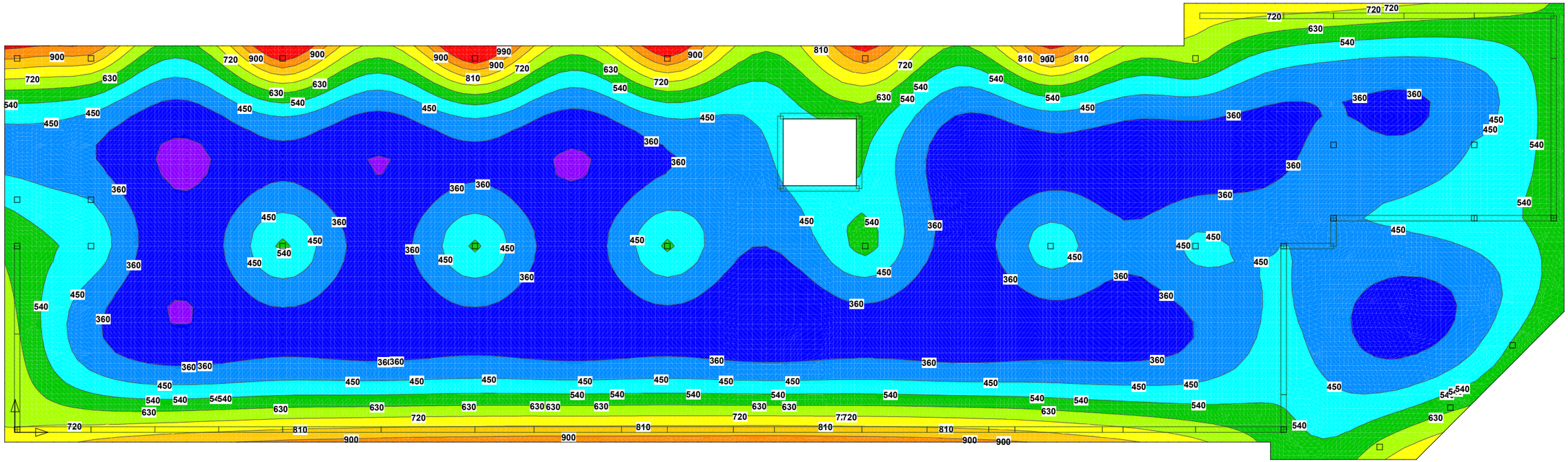
Building	Planning
Engineering	Public Works
Fire	Traffic



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Service LC: D + Lr: Max Soil Bearing Pressure Plan

Service LC: D + Lr: 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 = 1:150
Service LC: D + Lr - Area Spring Vertical Reactions Plot (Maximum Values)

300 400 500 600 700 800 900 1000 1100

Min Value = 258.6 psf @ (20.54,32.6) Max Value = 1297 psf @ (55.01,46.17)

City of Puyallup
Development & Permitting Services
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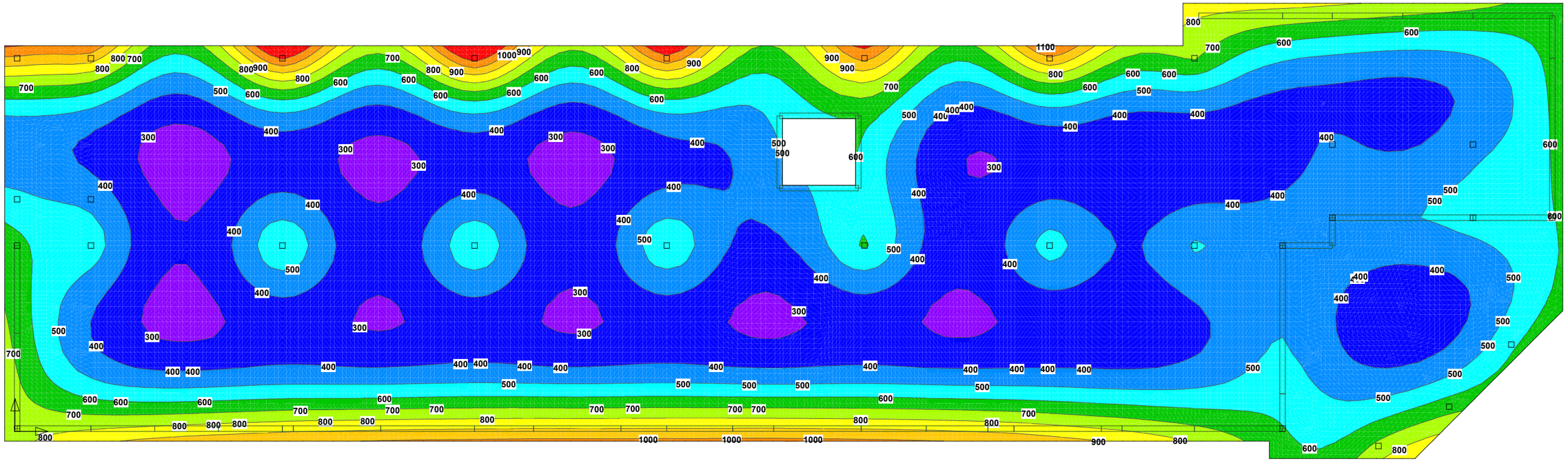
Building	Planning
Engineering	Public Works
Fire	Traffic



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Service LC: D + Lr: Min Soil Bearing Pressure Plan

Service LC: D + Lr: 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 = 1:150
Service LC: D + Lr - Area Spring Vertical Reactions Plot (Minimum Values)

300 400 500 600 700 800 900 1000 1100

Min Value = 258.6 psf @ (20.54,32.6) Max Value = 1297 psf @ (55.01,46.17)

City of Puyallup
Development & Permitting Services
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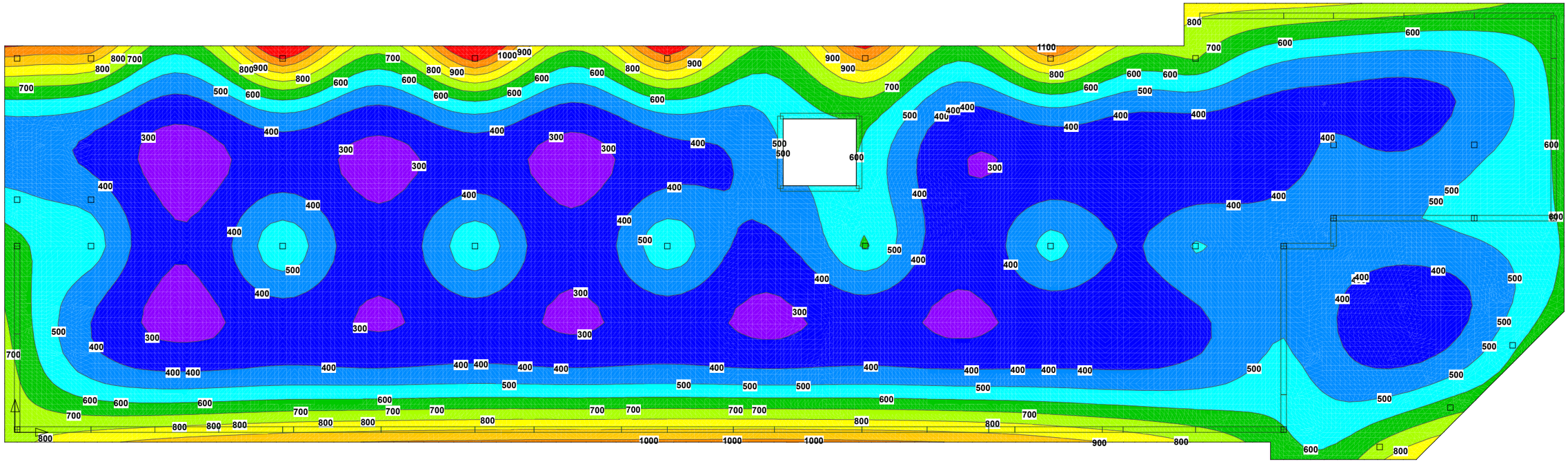
Building	Planning
Engineering	Public Works
Fire	Traffic



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Service LC: D + S: Max Soil Bearing Pressure Plan

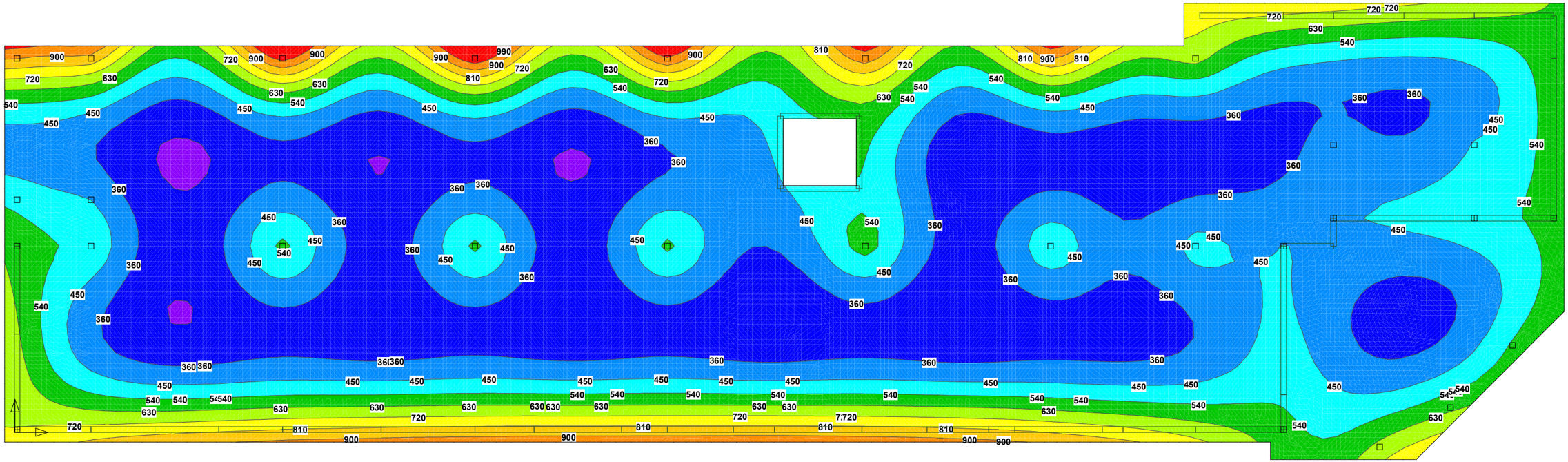
Service LC: D + S: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:150
Service LC: D + S - Area Spring Vertical Reactions Plot (Maximum Values)

270 360 450 540 630 720 810 900 990

Min Value = 255.7 psf @ (20.54,32.6) Max Value = 1198 psf @ (55.01,46.17)

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Building	Planning
Engineering	Public Works
Fire	Traffic



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Service LC: D + S: Min Soil Bearing Pressure Plan

Service LC: D + S: 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 = 1:150
Service LC: D + S - Area Spring Vertical Reactions Plot (Minimum Values)

270 360 450 540 630 720 810 900 990

Min Value = 255.7 psf @ (20.54,32.6) Max Value = 1198 psf @ (55.01,46.17)

City of Puyallup
Development & Permitting Services
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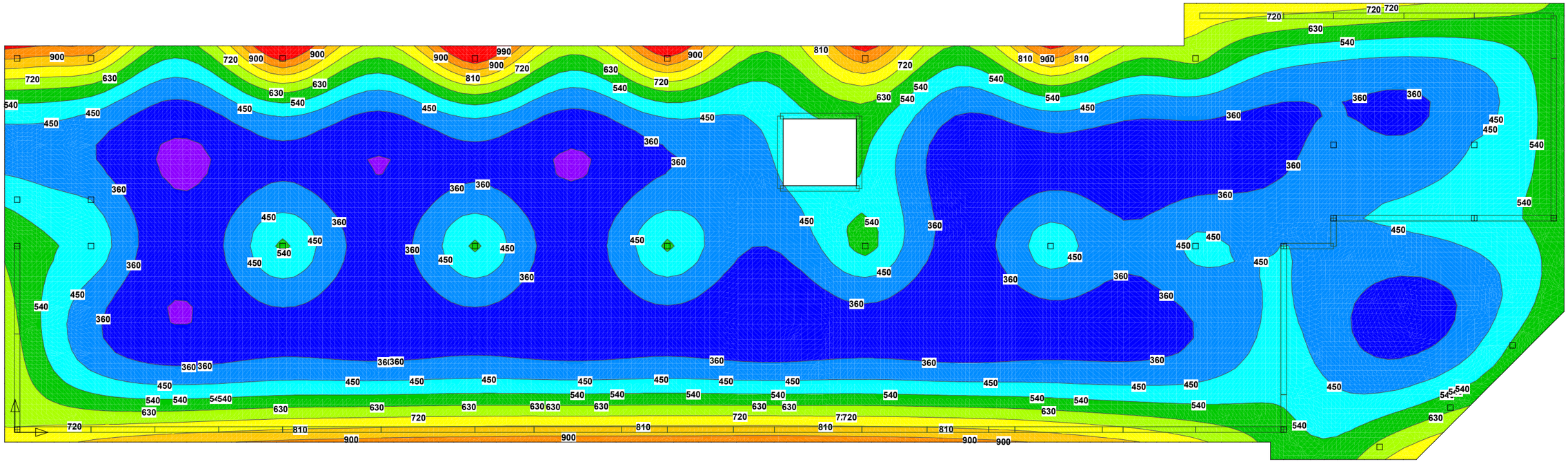
Building	Planning
Engineering	Public Works
Fire	Traffic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630
540
900 720 900 900 900 990 900 900 810 810 900 810
720 630 630 630 540 720 630 540 720 540 540 540
540 450 450 450 450 450 450 630 540 540 450
450 450 360 360 360 360 360 450 450 540
360 450 360 450 450 450 450 360 360 360 360 450 450
540 360 450 450 450 450 450 450 450 450 450 450 450 450 450 540
360 360 360 360 360

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Service LC: D + 0.75L + 0.75Lr: Max Soil Bearing Pressure Plan

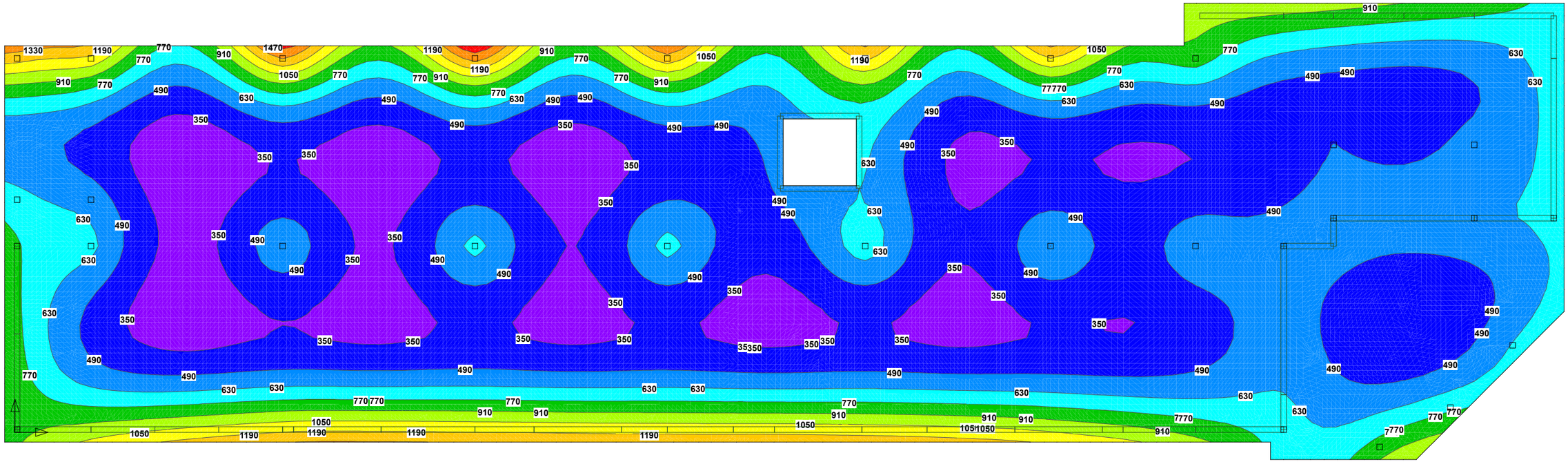
Service LC: D + 0.75L + 0.75Lr: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:150
Service LC: D + 0.75L + 0.75Lr - Area Spring Vertical Reactions Plot (Maximum Values)

350 490 630 770 910 1050 1190 1330 1470

Min Value = 261.5 psf @ (20.54,32.6) Max Value = 1580 psf @ (55.01,46.17)

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Building	Planning
Engineering	Public Works
Fire	Traffic



PRMU20220123

Service LC: D + 0.75L + 0.75Lr: Min Soil Bearing Pressure Plan

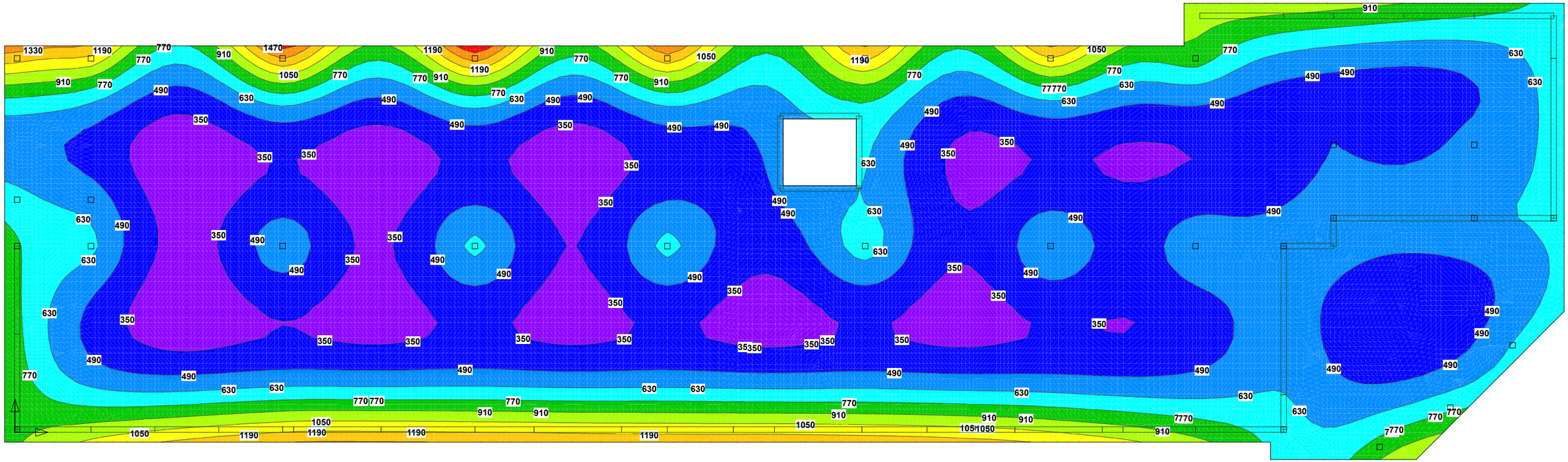
Service LC: D + 0.75L + 0.75Lr: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:150
Service LC: D + 0.75L + 0.75Lr - Area Spring Vertical Reactions Plot (Minimum Values)

350 490 630 770 910 1050 1190 1330 1470

Min Value = 261.5 psf @ (20.54,32.6) Max Value = 1580 psf @ (55.01,46.17)

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Building	Planning
Engineering	Public Works
Fire	Traffic


1330 1190 770 910 1470 1190 910 770 1050 1190 1050 1190 770 910 770 770 1050 770 910 770 630 770 490 630 490 490 490 350 490 350 490 490 350 350 350 350 490 490 630 490 630 350 490 350 350 350 490 490 350 630 490 630 350 490 350 350 350 350 350 350 350 350 350 350 350 350 350 490 490 490 490 770 490 630 630 630 630 770 770 770 770 910 910 910 910 1050 1190 1190 1190 1190 1050 1050 1050 910 770 770 630 630 630 490 490 490 490 490 490 630 630 630 490 490 490 490 490 490 630 630 630 490 490 490 490 490 490

PRMU20220123

Service LC: D + 0.75L + 0.75S: Max Soil Bearing Pressure Plan

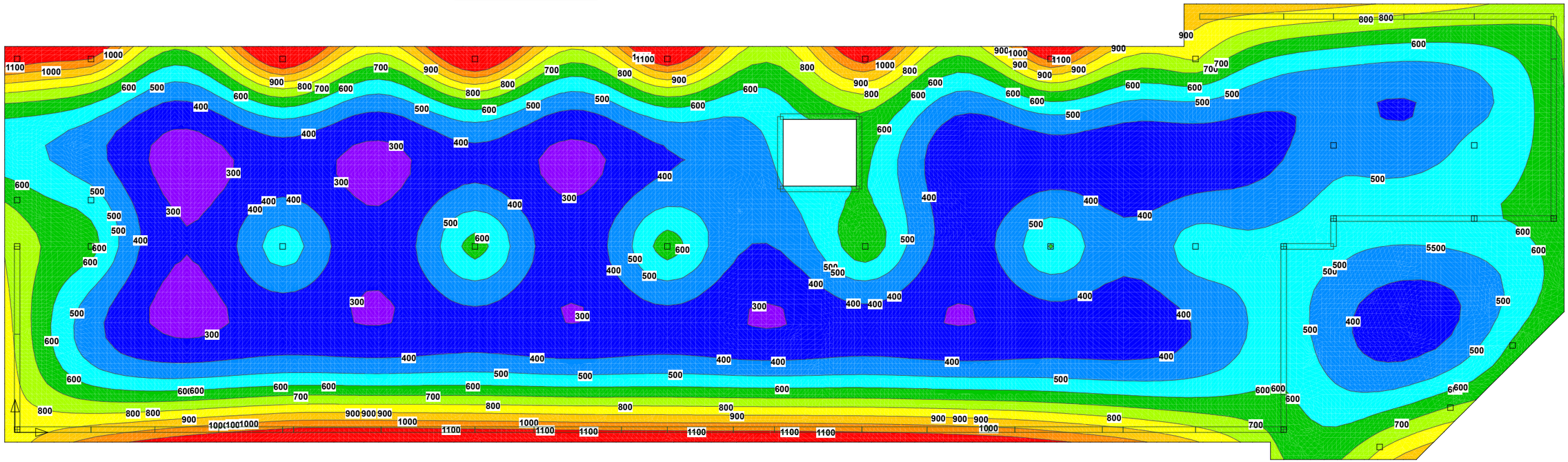
Service LC: D + 0.75L + 0.75S: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:150
Service LC: D + 0.75L + 0.75S - Area Spring Vertical Reactions Plot (Maximum Values)

300 400 500 600 700 800 900 1000 1100

Min Value = 259.3 psf @ (20.54,32.6) Max Value = 1505 psf @ (55.01,46.17)

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Building	Planning
Engineering	Public Works
Fire	Traffic



PRMU20220123

Service LC: D + 0.75L + 0.75S: Min Soil Bearing Pressure Plan

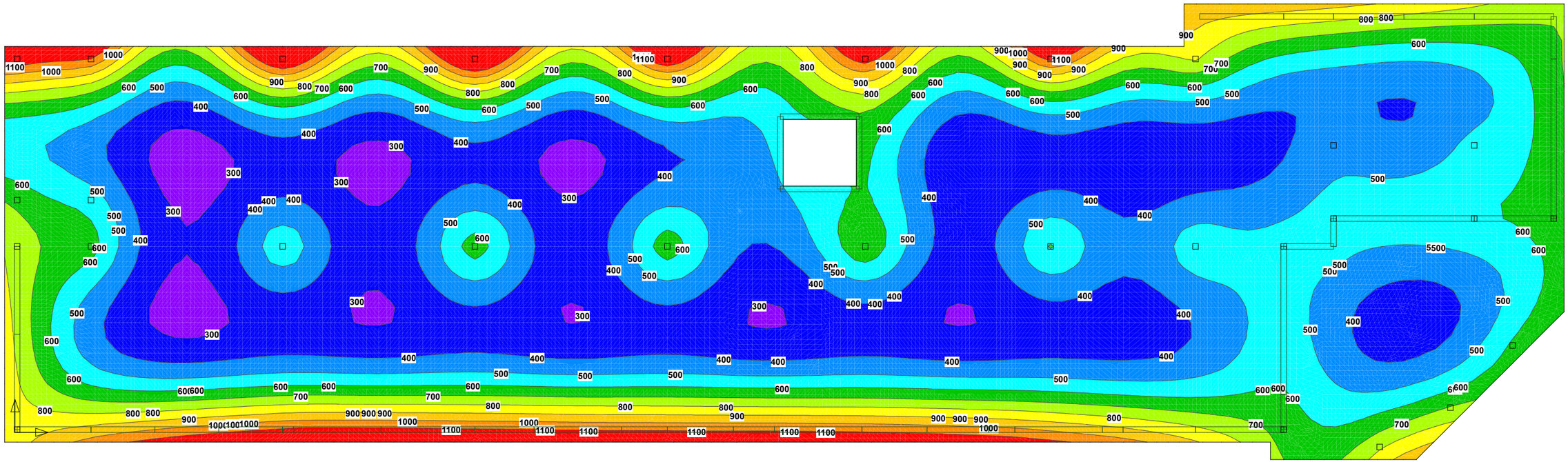
Service LC: D + 0.75L + 0.75S: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:150
Service LC: D + 0.75L + 0.75S - Area Spring Vertical Reactions Plot (Minimum Values)

300 400 500 600 700 800 900 1000 1100

Min Value = 259.3 psf @ (20.54,32.6) Max Value = 1505 psf @ (55.01,46.17)

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Building	Planning
Engineering	Public Works
Fire	Traffic



Service Seismic LC: D + 0.7E: Max Soil Bearing Pressure Plan

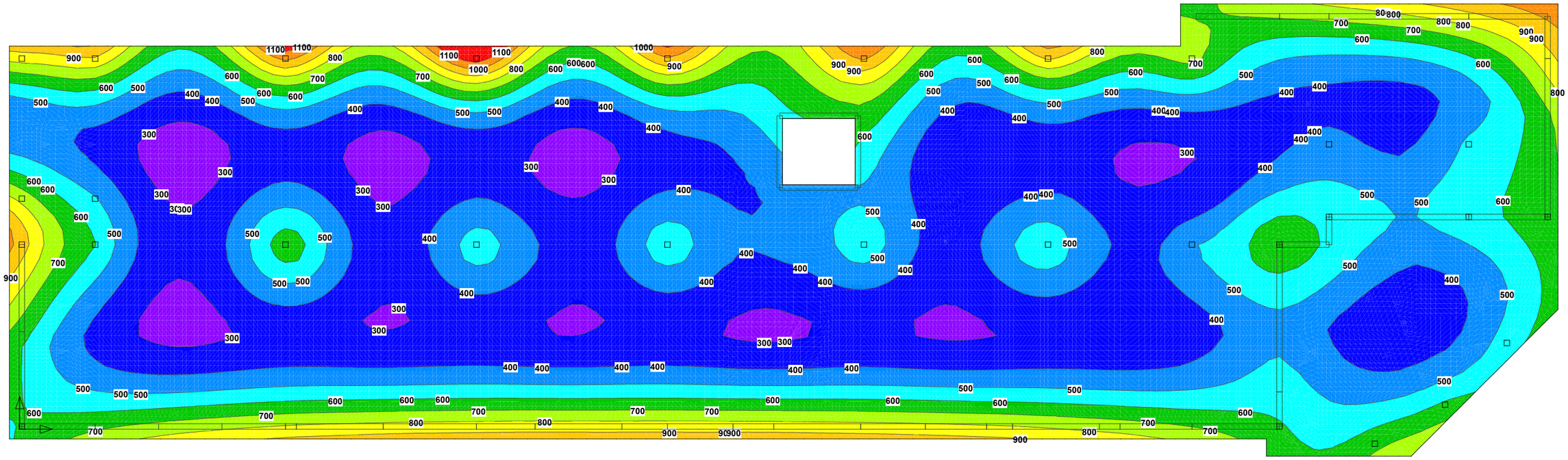
Service Seismic LC: D + 0.7E: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:150
Service Seismic LC: D + 0.7E - Area Spring Vertical Reactions Plot (Maximum Values)

300 400 500 600 700 800 900 1000 1100

Min Value = 257.8 psf @ (19.11,32.6) Max Value = 1321 psf @ (55.01,46.17)

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Building	Planning
Engineering	Public Works
Fire	Traffic



PRMU20220123

Service Seismic LC: D + 0.7E: Min Soil Bearing Pressure Plan

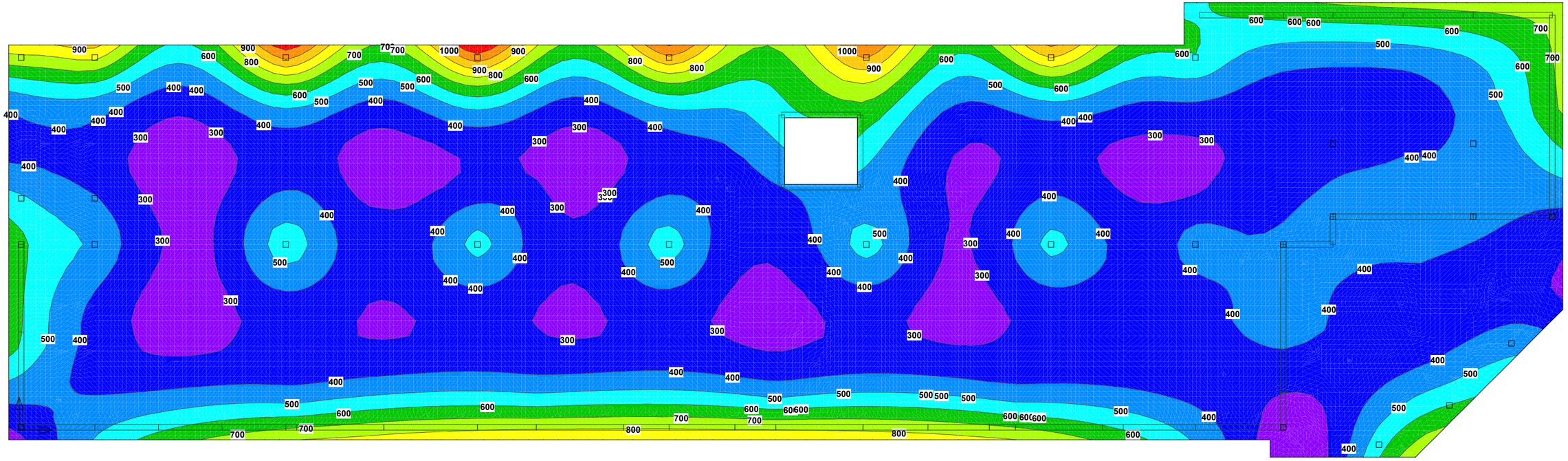
Service Seismic LC: D + 0.7E: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:150
Service Seismic LC: D + 0.7E - Area Spring Vertical Reactions Plot (Minimum Values)

300 400 500 600 700 800 900 1000 1100

Min Value = 200.8 psf @ (151.7,-3.25) Max Value = 1198 psf @ (55.01,46.17)

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Building	Planning
Engineering	Public Works
Fire	Traffic



PRMU20220123

Service Seismic LC: D - 0.7E: Max Soil Bearing Pressure Plan

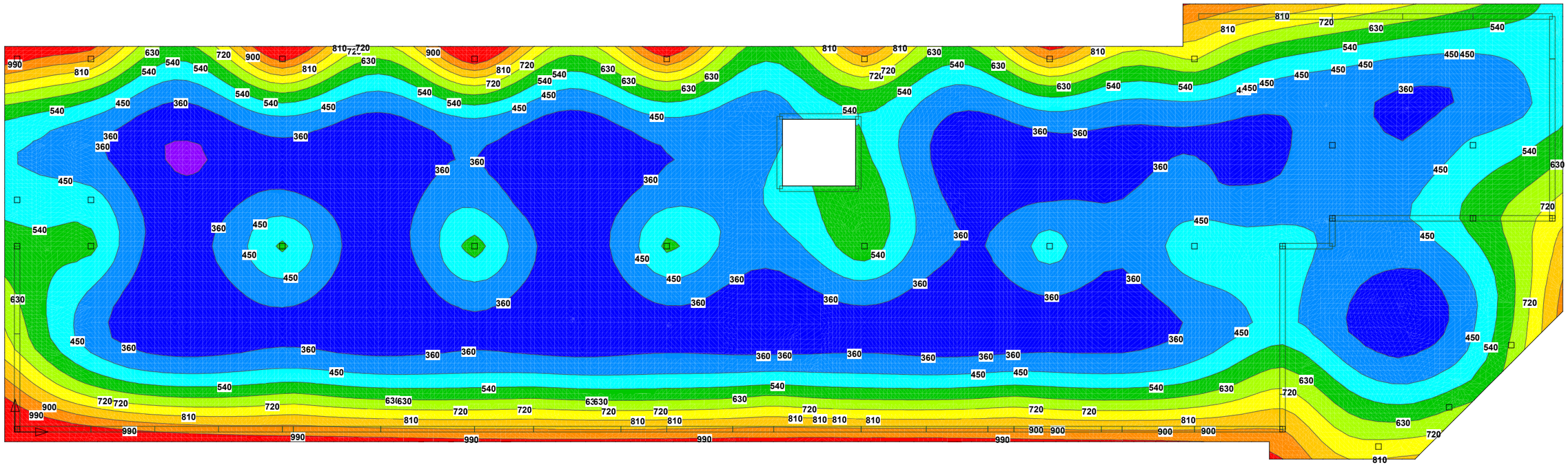
Service Seismic LC: D - 0.7E: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:150
Service Seismic LC: D - 0.7E - Area Spring Vertical Reactions Plot (Maximum Values)

270 360 450 540 630 720 810 900 990

Min Value = 261.4 psf @ (20.54,32.6) Max Value = 1201 psf @ (-1.25,-1.167)

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Building	Planning
Engineering	Public Works
Fire	Traffic



PRMU20220123

Service Seismic LC: D - 0.7E: Min Soil Bearing Pressure Plan

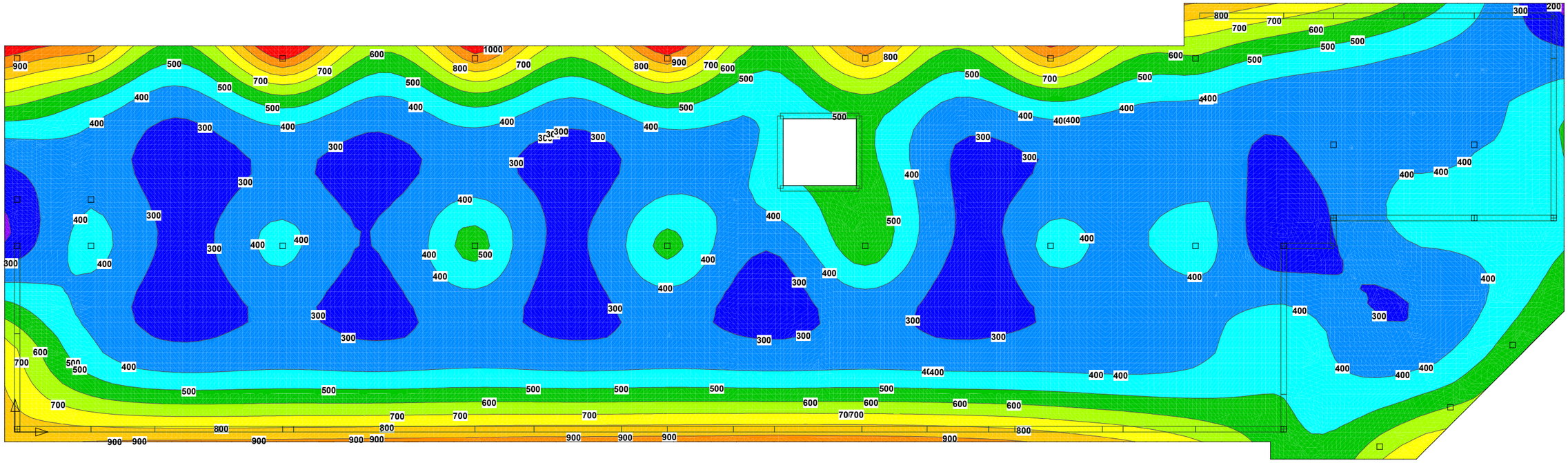
Service Seismic LC: D - 0.7E: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:150
Service Seismic LC: D - 0.7E - Area Spring Vertical Reactions Plot (Minimum Values)

200 300 400 500 600 700 800 900 1000

Min Value = 166.8 psf @ (185.3,51.25) Max Value = 1152 psf @ (32.01,46.17)

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Building	Planning
Engineering	Public Works
Fire	Traffic



PRMU20220123

Service Seismic LC: D + 0.75L + 0.75S + 0.525E: Max Soil Bearing Pressure Plan

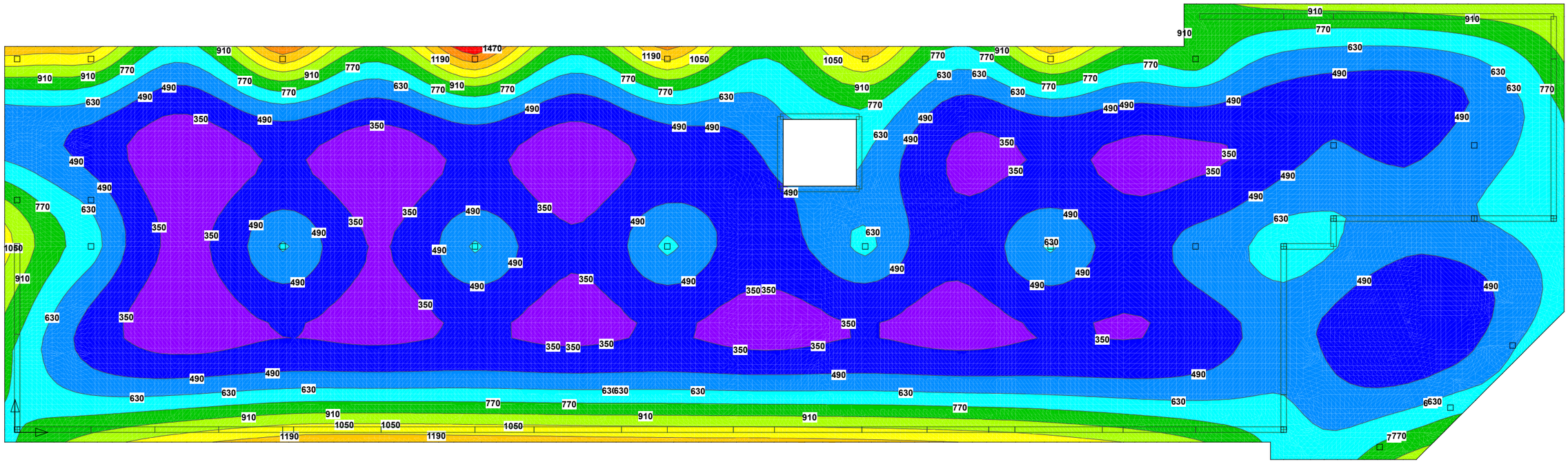
Service Seismic LC: D + 0.75L + 0.75S + 0.525E: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:150
Service Seismic LC: D + 0.75L + 0.75S + 0.525E - Area Spring Vertical Reactions Plot (Maximum Values)

350 490 630 770 910 1050 1190 1330 1470

Min Value = 261.3 psf @ (20.54,32.6) Max Value = 1597 psf @ (55.01,46.17)

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Building	Planning
Engineering	Public Works
Fire	Traffic



PRMU20220123

Service Seismic LC: D + 0.75L + 0.75S + 0.525E: Min Soil Bearing Pressure Plan

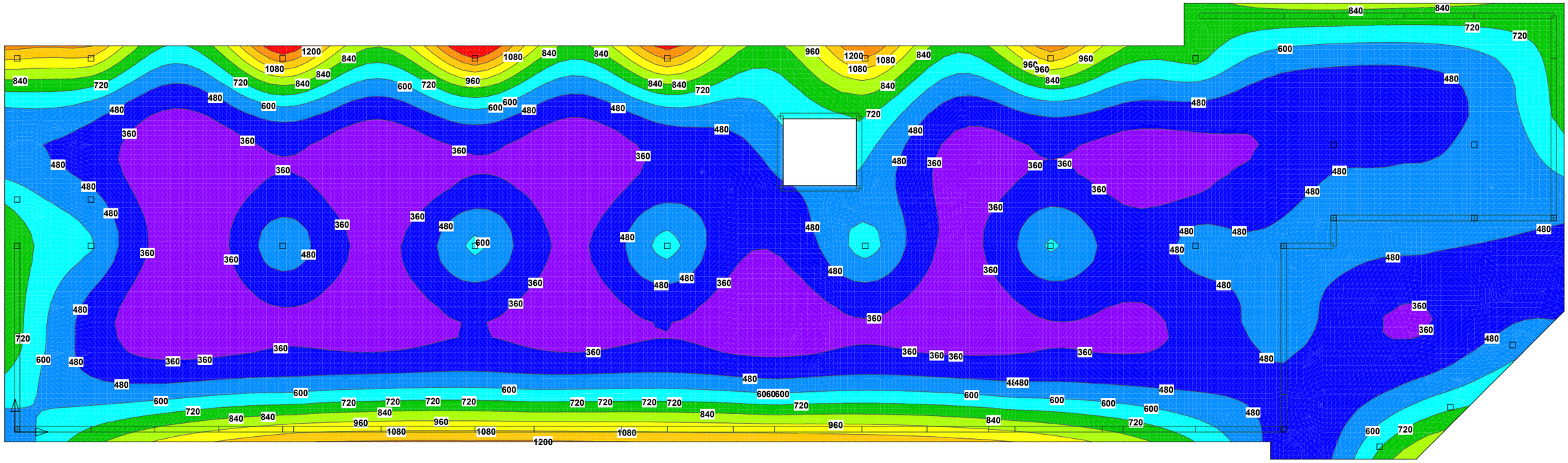
Service Seismic LC: D + 0.75L + 0.75S + 0.525E: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:150
Service Seismic LC: D + 0.75L + 0.75S + 0.525E - Area Spring Vertical Reactions Plot (Minimum Values)

360 480 600 720 840 960 1080 1200 1320

Min Value = 253.7 psf @ (20.54,30.87) Max Value = 1505 psf @ (55.01,46.17)

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Building	Planning
Engineering	Public Works
Fire	Traffic



PRMU20220123

Service Seismic LC: D + 0.75L + 0.75S - 0.525E: Max Soil Bearing Pressure Plan

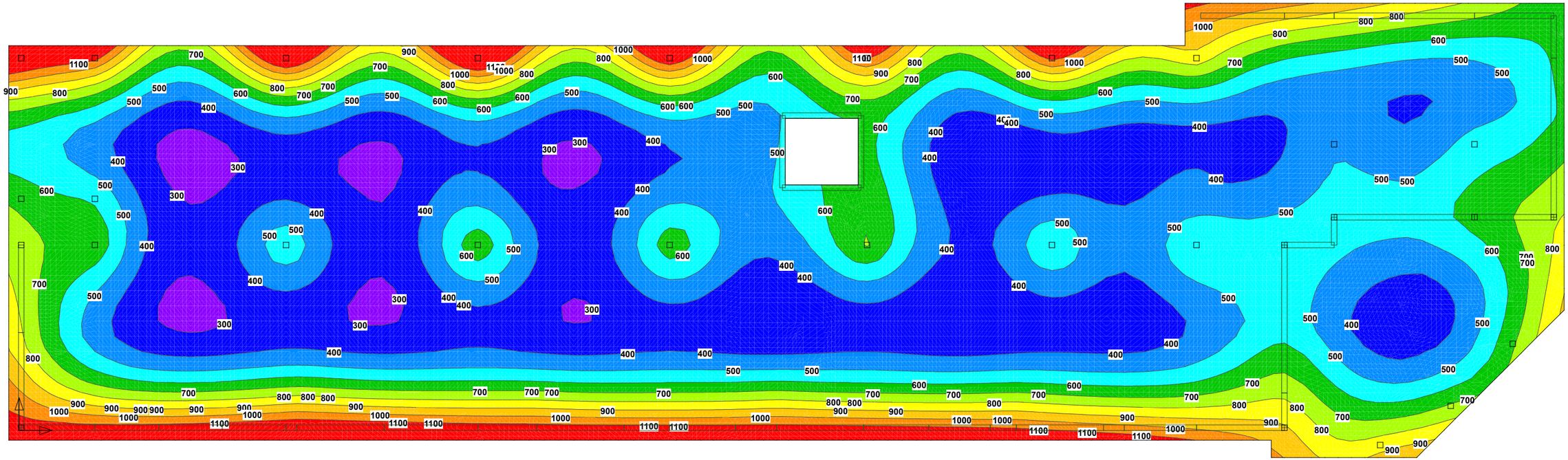
Service Seismic LC: D + 0.75L + 0.75S - 0.525E: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:150
Service Seismic LC: D + 0.75L + 0.75S - 0.525E - Area Spring Vertical Reactions Plot (Maximum Values)

300 400 500 600 700 800 900 1000 1100

Min Value = 263.6 psf @ (20.54,32.6) Max Value = 1505 psf @ (55.01,46.17)

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Building	Planning
Engineering	Public Works
Fire	Traffic



PRMU20220123

Service Seismic LC: D + 0.75L + 0.75S - 0.525E: Min Soil Bearing Pressure Plan

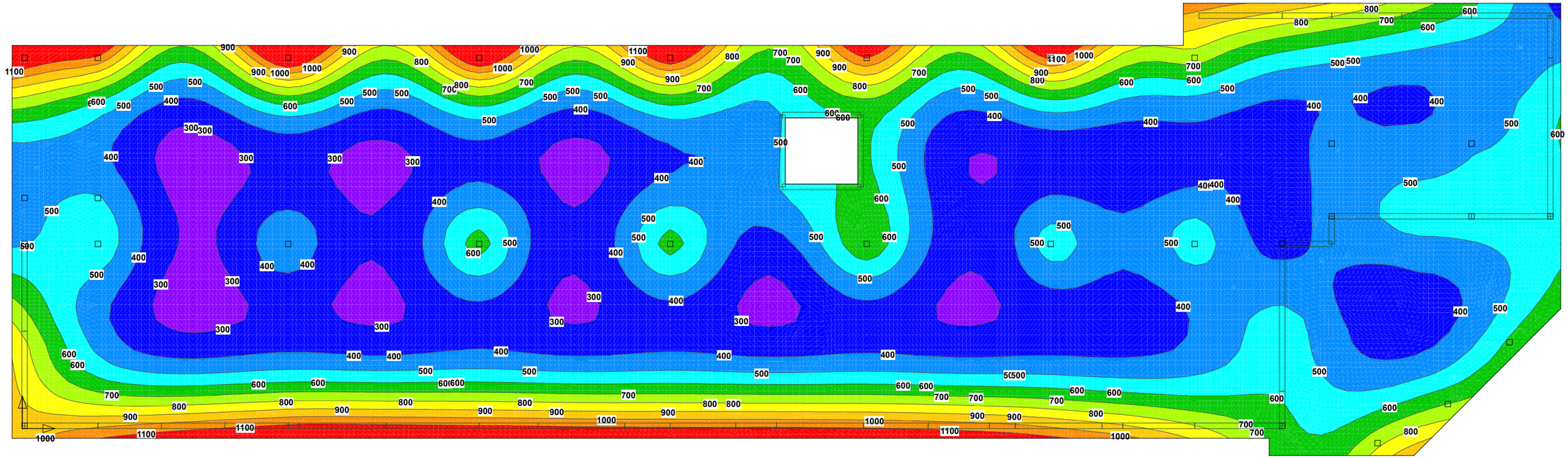
Service Seismic LC: D + 0.75L + 0.75S - 0.525E: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:150
Service Seismic LC: D + 0.75L + 0.75S - 0.525E - Area Spring Vertical Reactions Plot (Minimum Values)

300 400 500 600 700 800 900 1000 1100

Min Value = 256.2 psf @ (21.97,30.87) Max Value = 1439 psf @ (32.01,46.17)

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Building	Planning
Engineering	Public Works
Fire	Traffic



PRMU20220123

Service Seismic LC: 0.6D + 0.7E: Max Soil Bearing Pressure Plan

Service Seismic LC: 0.6D + 0.7E: 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 = 1:150
Service Seismic LC: 0.6D + 0.7E - Area Spring Vertical Reactions Plot (Maximum Values)

210 280 350 420 490 560 630 700 770

Min Value = 152.7 psf @ (43.5,32.6) Max Value = 841.7 psf @ (55.01,46.17)

City of Puyallup
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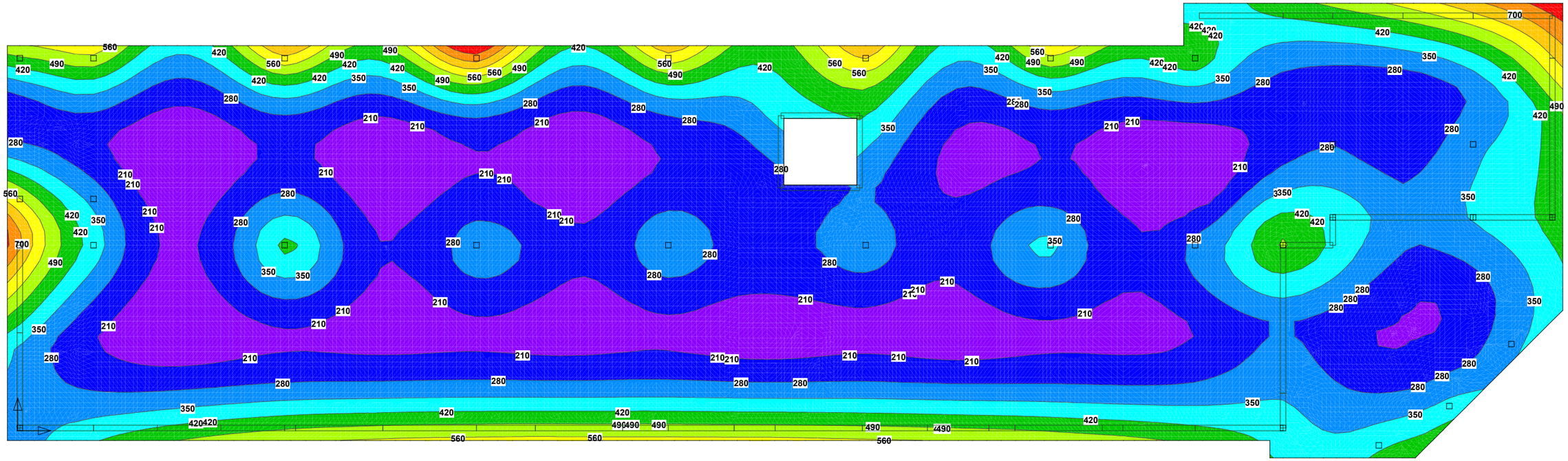
Engineering | Public Works
Fire | Traffic



Service Seismic LC: 0.6D + 0.7E: Min Soil Bearing Pressure Plan

Service Seismic LC: 0.6D + 0.7E: 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 = 1:150
Service Seismic LC: 0.6D + 0.7E - Area Spring Vertical Reactions Plot (Minimum Values)

70 140 210 280 350 420 490 560 630

Min Value = 0.0006006 psf @ (0.25,-1.167) Max Value = 718.7 psf @ (55.01,46.17)

City of Puyallup
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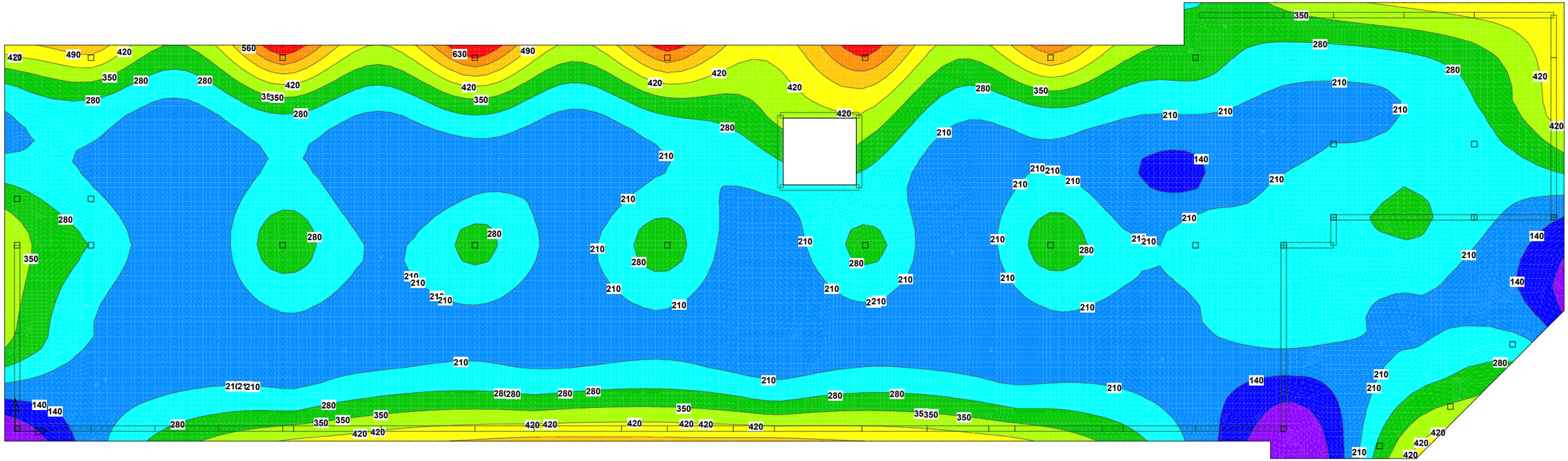
Building	Planning
Engineering	Public Works
Fire	Traffic



PRMU20220123

Service Seismic LC: 0.6D - 0.7E: Max Soil Bearing Pressure Plan

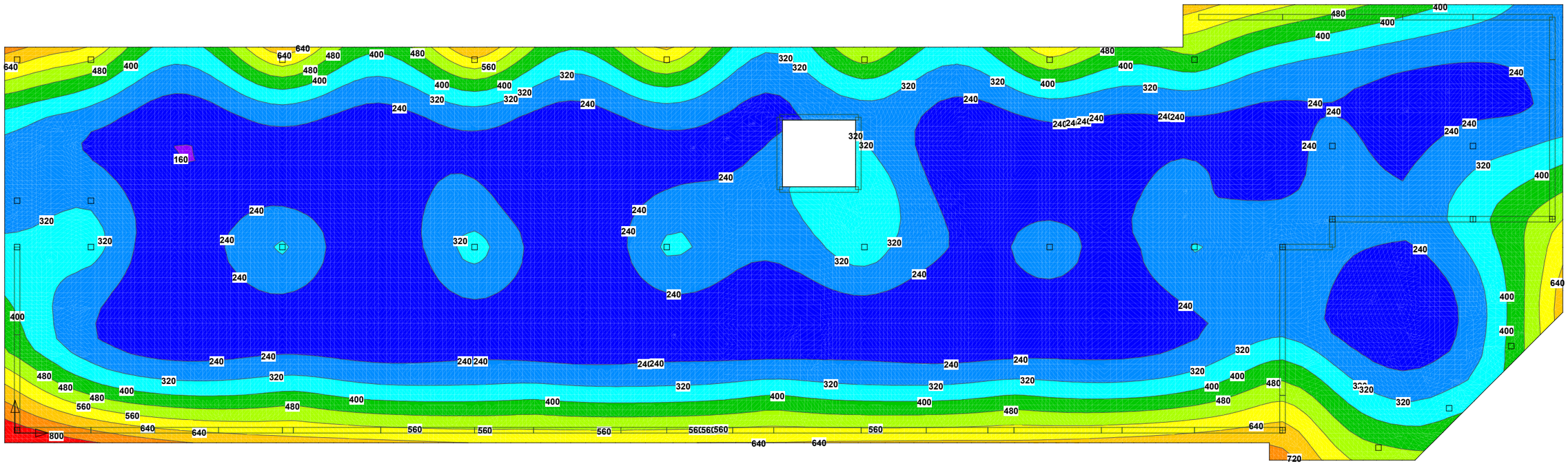
Service Seismic LC: 0.6D - 0.7E: User Lines; User Notes; User Dimensions;
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:150
Service Seismic LC: 0.6D - 0.7E - Area Spring Vertical Reactions Plot (Maximum Values)

160 240 320 400 480 560 640 720 800

Min Value = 159 psf @ (20.54,34.32) Max Value = 909.6 psf @ (-1.25,-1.167)

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Building	Planning
Engineering	Public Works
Fire	Traffic



PRMU20220123

Service Seismic LC: 0.6D - 0.7E: Min Soil Bearing Pressure Plan

Service Seismic LC: 0.6D - 0.7E: 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 = 1:150
Service Seismic LC: 0.6D - 0.7E - Area Spring Vertical Reactions Plot (Minimum Values)

70 140 210 280 350 420 490 560 630

Min Value = 0.0159 psf @ (184,49.75) Max Value = 689.9 psf @ (32.01,46.17)

City of Puyallup
Development & Permitting Services
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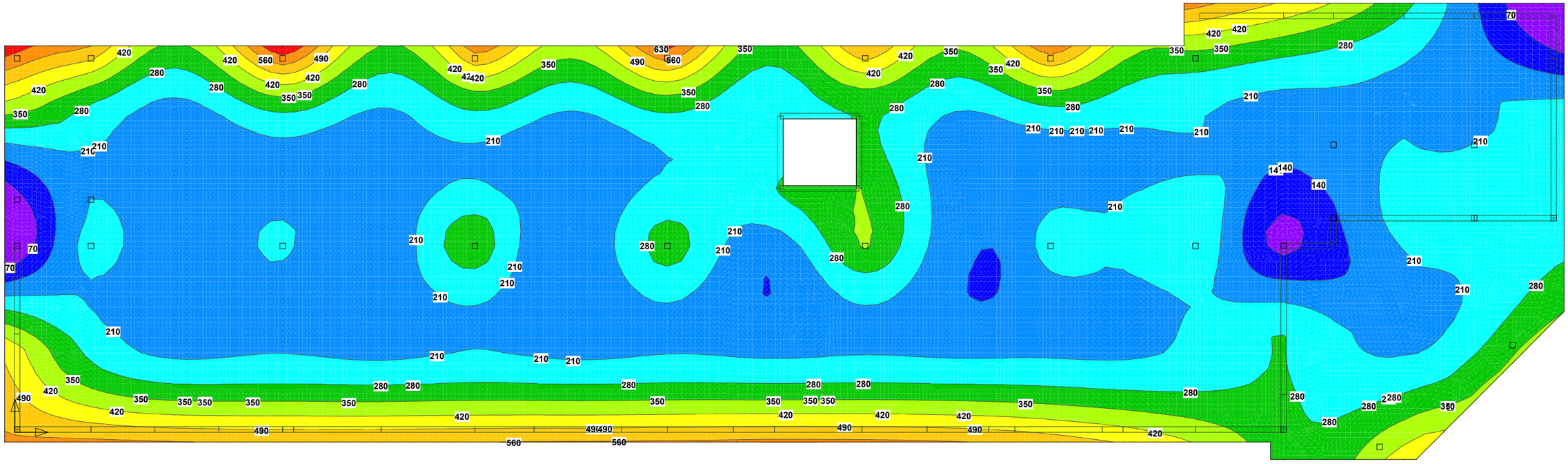
Building	Planning
Engineering	Public Works
Fire	Traffic



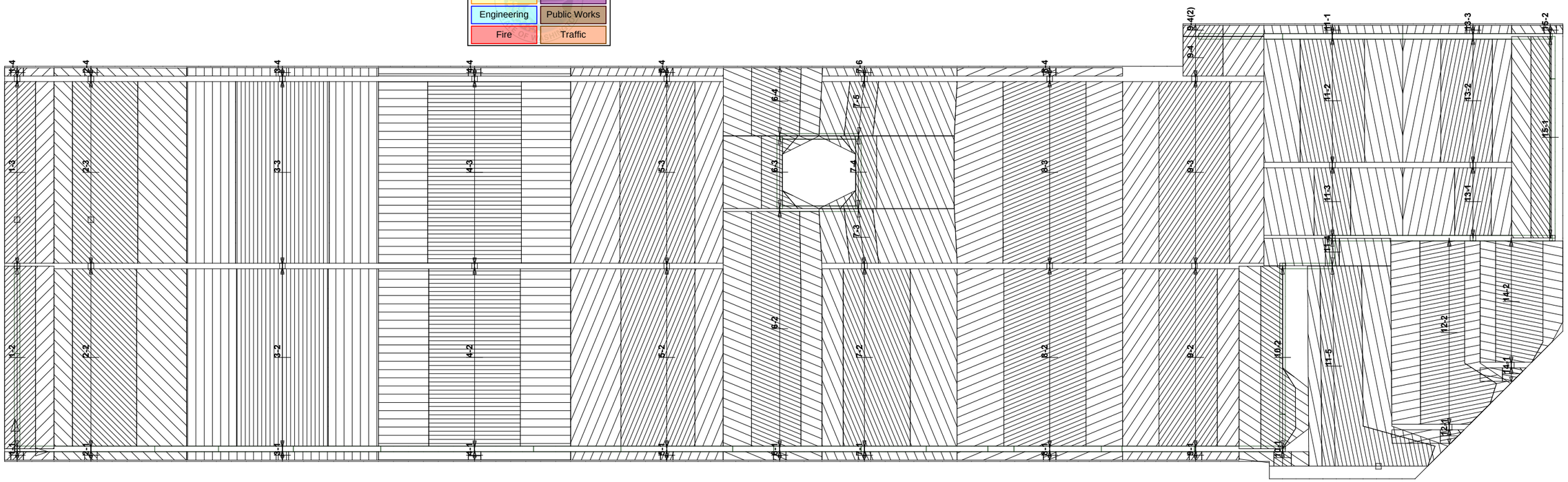
PRMU20220123

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;
Element: Wall Elements Above; Wall Elements Below; Wall Element Outline Only; Column Elements Above; Column Elements Below; Slab Elements; Slab Element Outline Only;
Scale = 1:150

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Building	Planning
Engineering	Public Works
Fire	Traffic



PRMU20220123

Design Strip: Longitude Design Spans Plan

Design Strip: Longitude Span Boundaries; Longitude SSs; SS Numbers; Longitude DSs; Longitude Strip Boundaries; Longitude SSSs; SSS Hatching; 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 = 1:150

City of Puyallup
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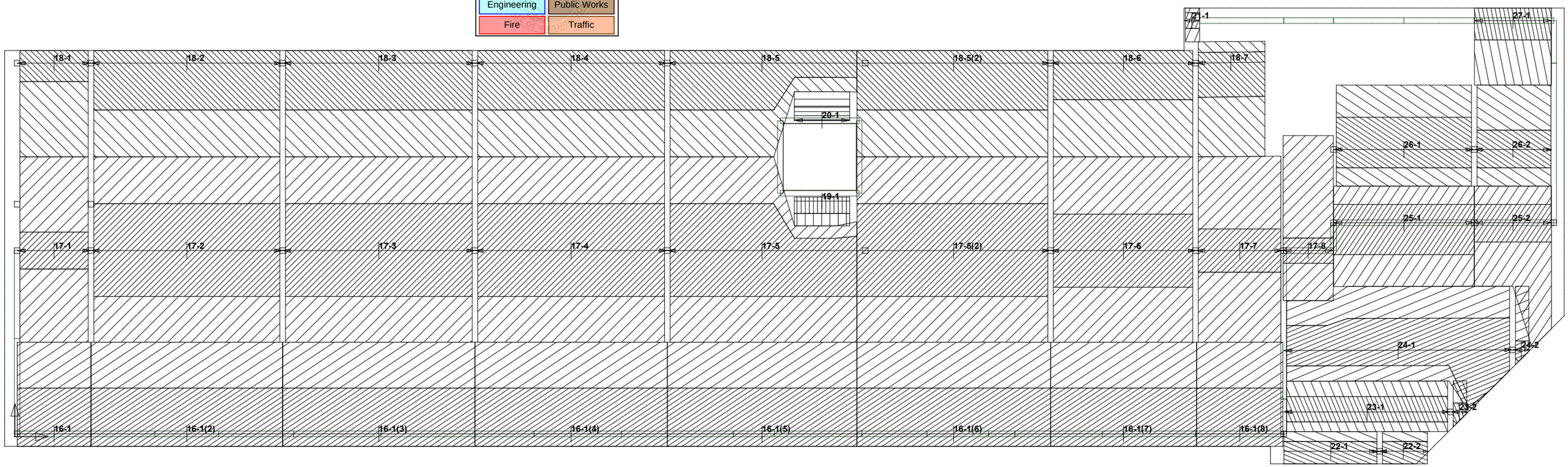
Fire | Traffic



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City of Puyallup
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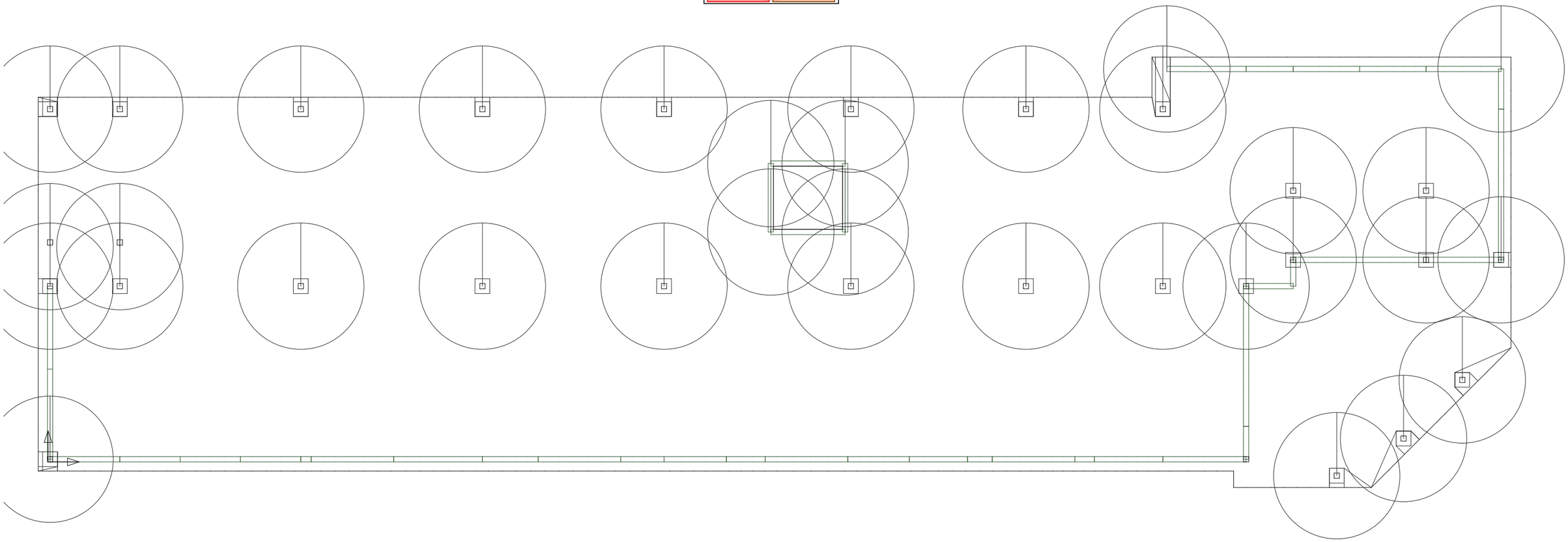
Building	Planning
Engineering	Public Works
Fire	Traffic

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 = 1:150



Reinforcement: Top Bars Plan

Reinforcement: Latitude User Concentrated Reinf.; Longitude User Concentrated Reinf.; Top Face Concentrated Reinf.; Both Faces Concentrated Reinf.; Concentrated Reinf. Descriptions; Concentrated Reinf. Extent; Latitude User Distributed Reinf.; Longitude User Distributed Reinf.; Top Face Distributed Reinf.; Both Faces Distributed Reinf.; Distributed Reinf. Descriptions; Distributed Reinf. Extent; User Notes; Us
Element: Wall Elements Above; Wall Elements Below; Wall Element Outline Only; Column Elements Above; Column Elements Below; Slab Elements; Slab Element Outline Only;
Scale = 1:150

City of Puyallup
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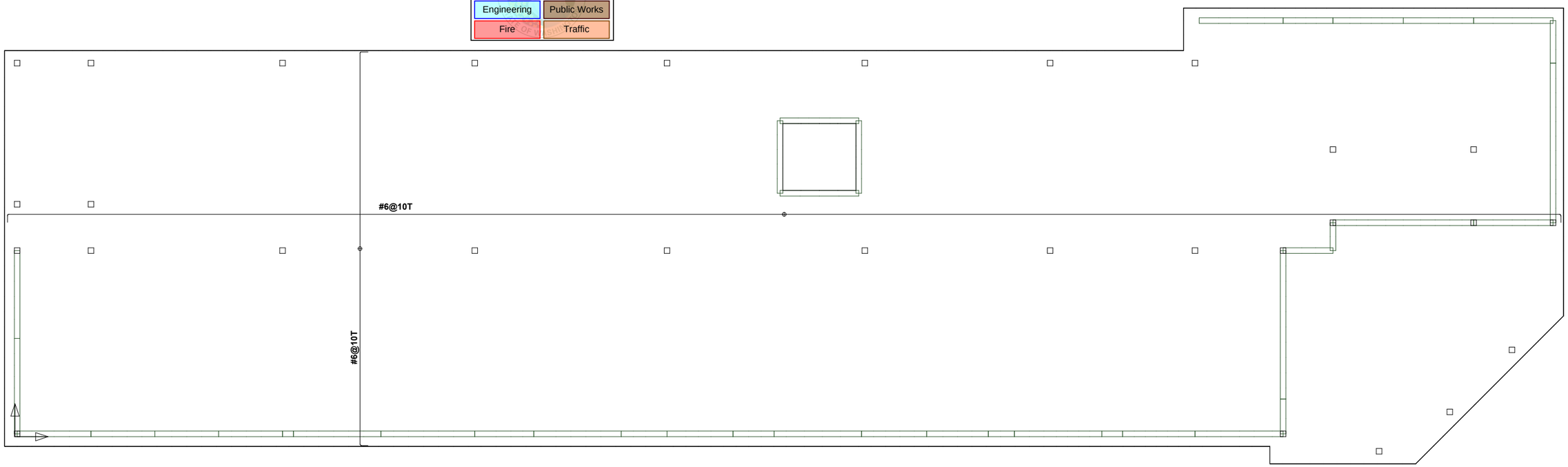
Fire | Traffic



Reinforcement: Bottom Bars Plan

Reinforcement: Latitude User Concentrated Reinf.; Longitude User Concentrated Reinf.; Bottom Face Concentrated Reinf.; Both Faces Concentrated Reinf.; Concentrated Reinf. Descriptions; Concentrated Reinf. Extent; Latitude User Distributed Reinf.; Longitude User Distributed Reinf.; Bottom Face Distributed Reinf.; Both Faces Distributed Reinf.; Distributed Reinf. Descriptions; Distributed Reinf. Extent; User Ne
Element: Wall Elements Above; Wall Elements Below; Wall Element Outline Only; Column Elements Above; Column Elements Below; Slab Elements; Slab Element Outline Only;
Scale = 1:150

City of Puyallup
Development & Permitting Services
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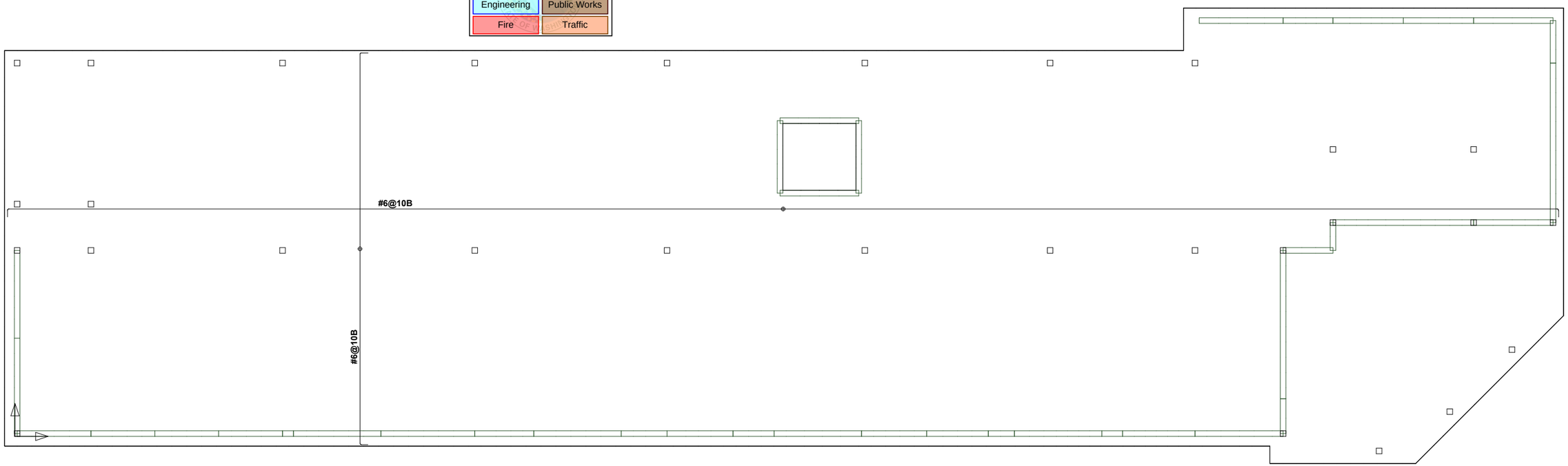
Fire | Traffic



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; T
Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only;
Scale = 1:150

City of Puyallup
Development & Permitting Services
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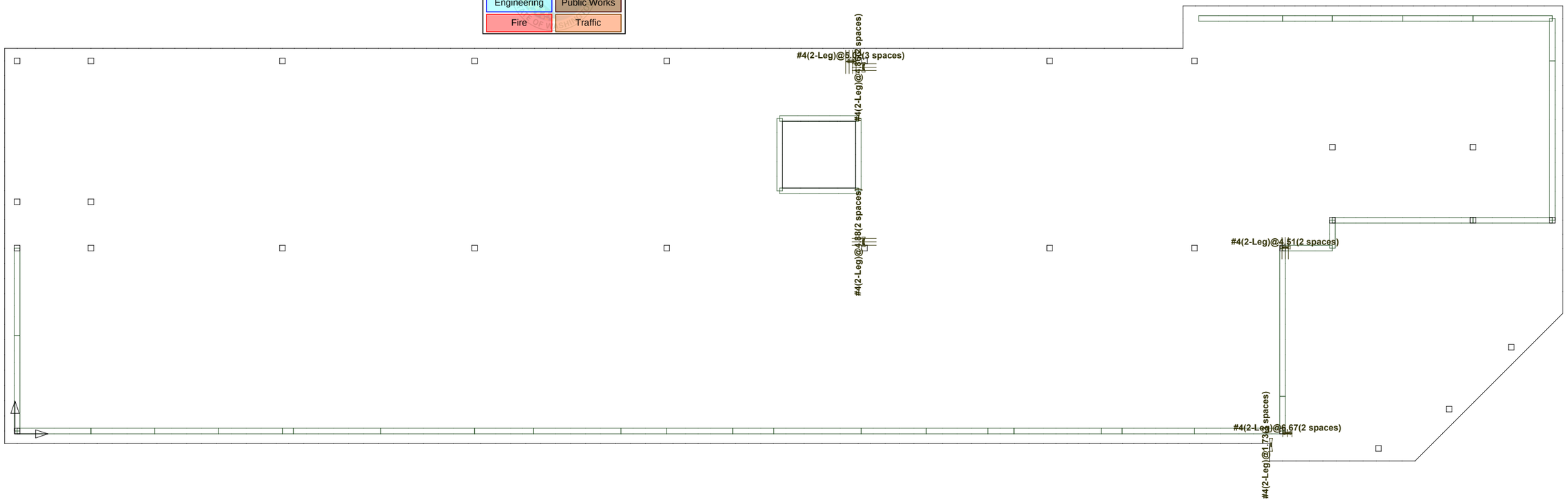
Fire | Traffic



PRMU20220123

Soil Bearing Design: Max Soil Bearing Pressure Plan

Soil Bearing Design: User Lines; User Notes; User Dimensions; Latitude Span Designs; Longitude Span Designs; Latitude DS Designs; Longitude DS Designs; PC Designs; Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only; Scale = 1:150

Soil Bearing Design - Area Spring Vertical Reactions Plot (Maximum Values)

350 490 630 770 910 1050 1190 1330 1470

Min Value = 263.6 psf @ (20.54,32.6) Max Value = 1608 psf @ (55.01,46.17)

City of Puyallup
Development & Permitting Services
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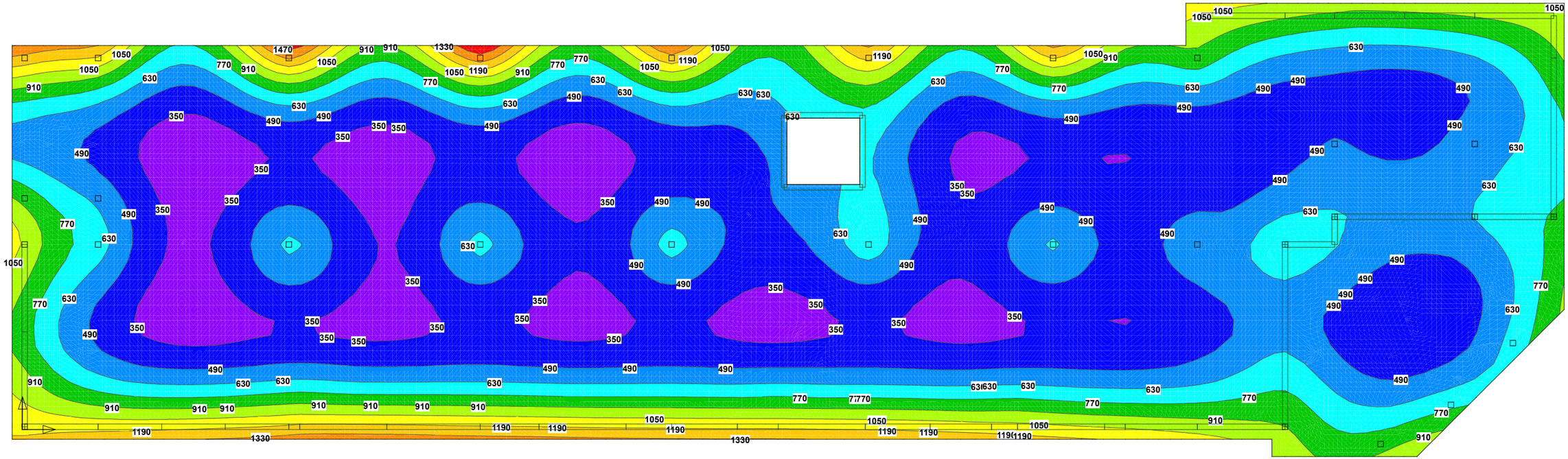
Building	Planning
Engineering	Public Works
Fire	Traffic



PRMU20220123

Soil Bearing Design: Min Soil Bearing Pressure Plan

Soil Bearing Design: User Lines; User Notes; User Dimensions; Latitude Span Designs; Longitude Span Designs; Latitude DS Designs; Longitude DS Designs; PC Designs; Element: Wall Elements Below; Wall Elements Above; Wall Element Outline Only; Column Elements Below; Column Elements Above; Slab Elements; Slab Element Outline Only; Scale = 1:150

Soil Bearing Design - Area Spring Vertical Reactions Plot (Minimum Values)

70 140 210 280 350 420 490 560 630

Min Value = 0.0006006 psf @ (0.25,-1.167) Max Value = 689.9 psf @ (32.01,46.17)

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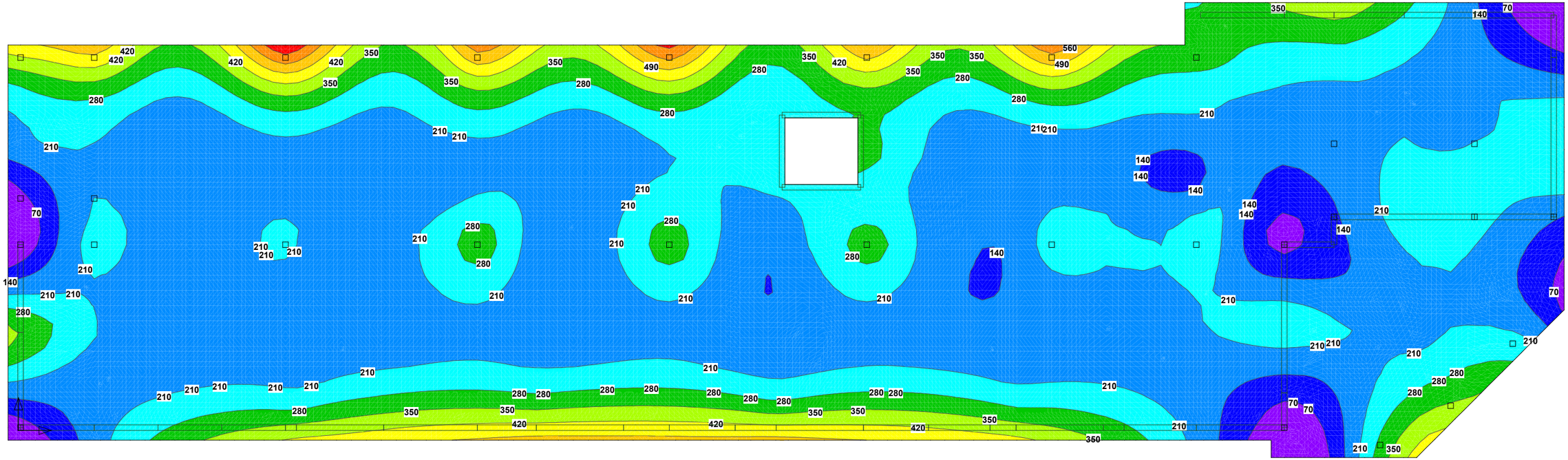
Engineering	Public Works
Fire	Traffic



Design Status: Status Plan

Design Status: User Lines; User Notes; User Dimensions; Latitude Span Designs; Longitude Span Designs; Span Design Numbers; Span Design Status; Latitude DS Designs; Longitude DS Designs; DS Design Numbers; DS Design Status; PC Designs; PC Design Numbers; PC 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 = 1:150

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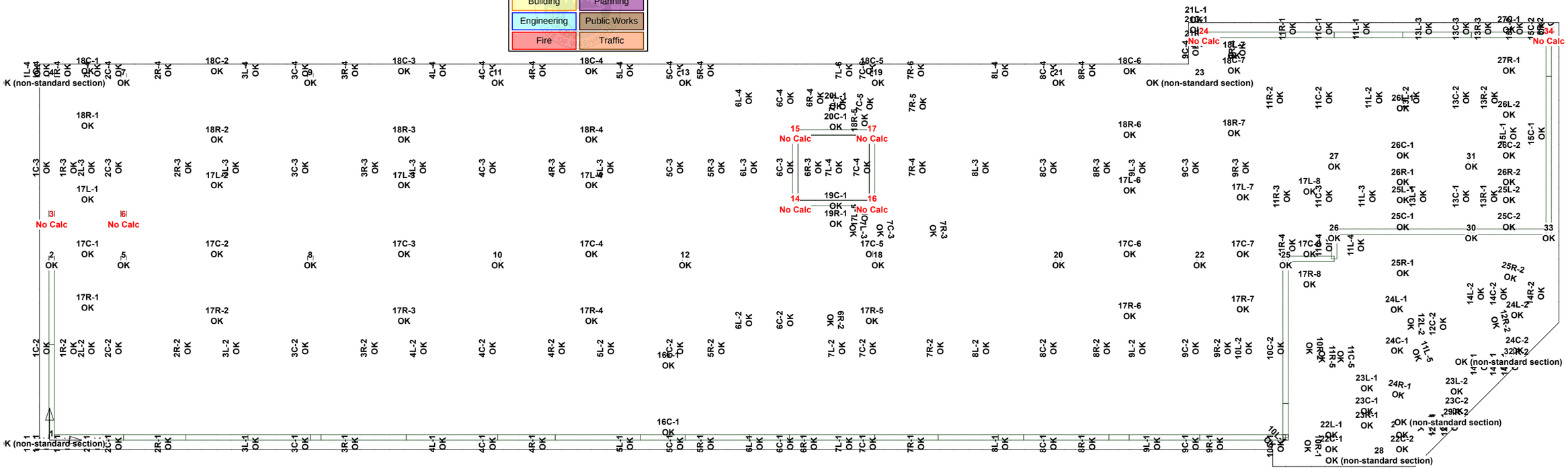
Fire | Traffic



PRMU20220123

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 = 1:150

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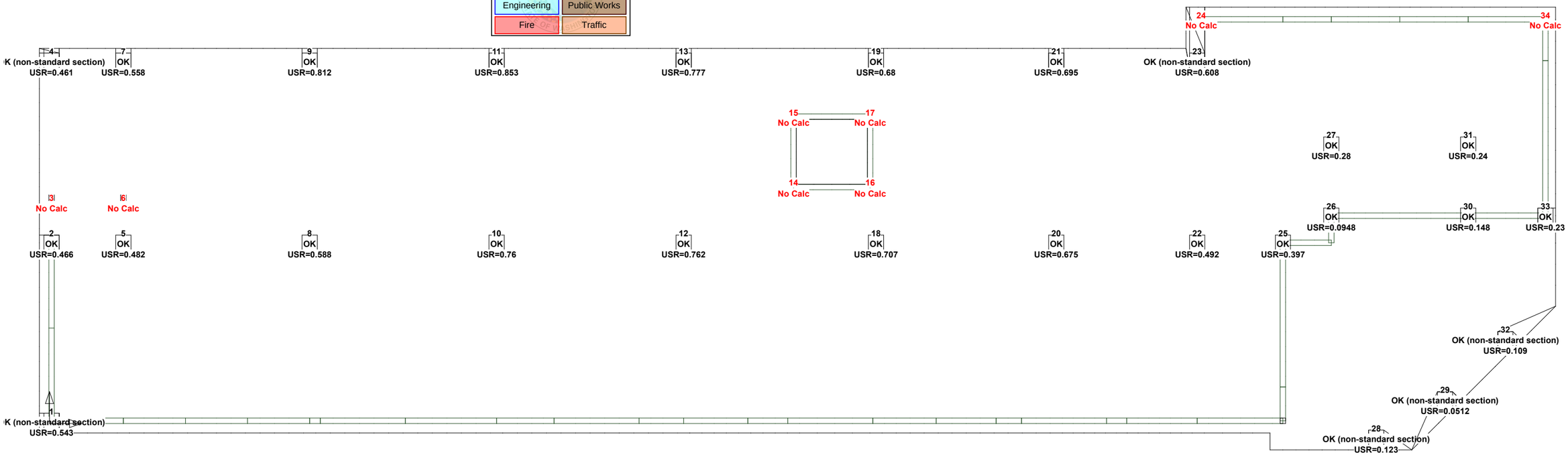
Engineering	Public Works
Fire	Traffic



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PRMU20220123

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Fire	Traffic

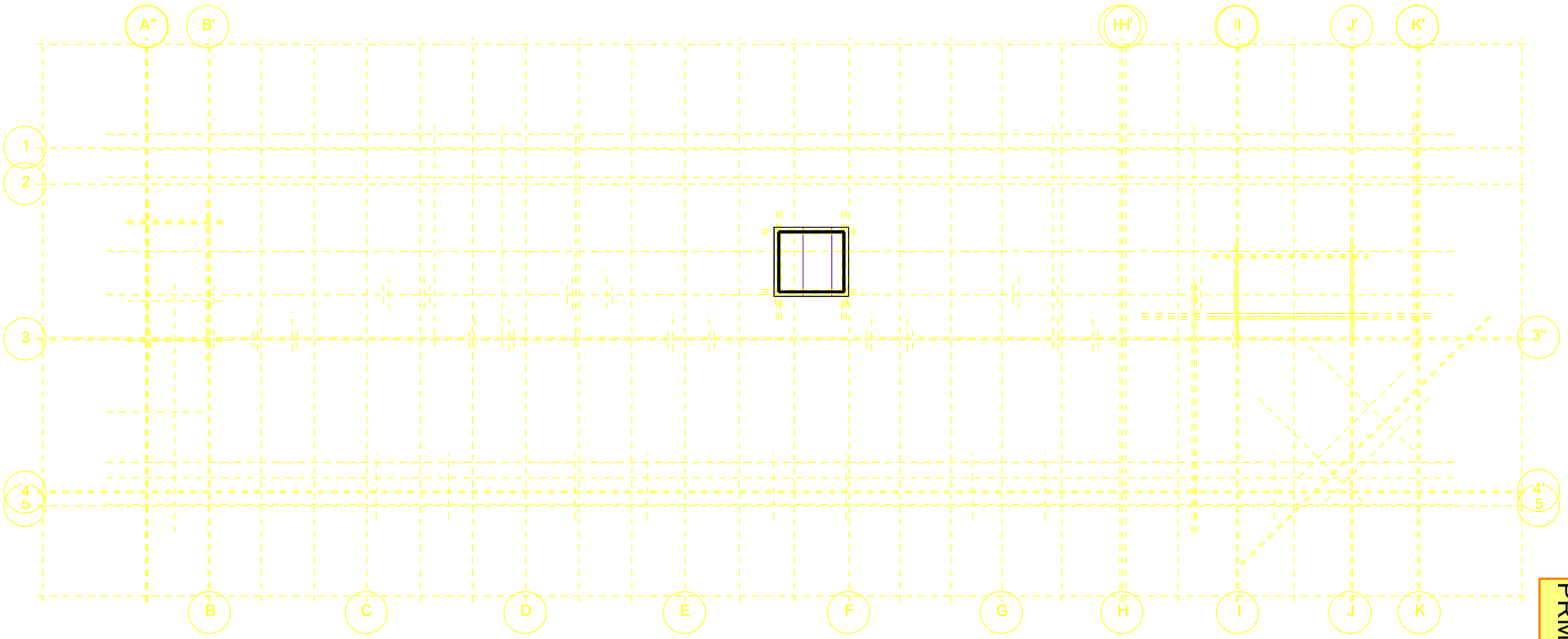
Section 3.0
First Floor Framing Design

Floor Map

RAM Steel 17.02.01.23
DataBase: 2190606 Transfer Level w Omega - Update 210422
Building Code: IBC

10/28/21 18:03:22
Steel Code: AISC 360-16 LRFD

Floor Type: HIGH ROOF



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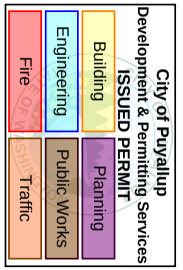
PRMU2022123

Decks:	Deck Label	Deck Type	Slab Action	Orientation
	TJI ROOF	Noncomposite	One-Way	90.00 degrees



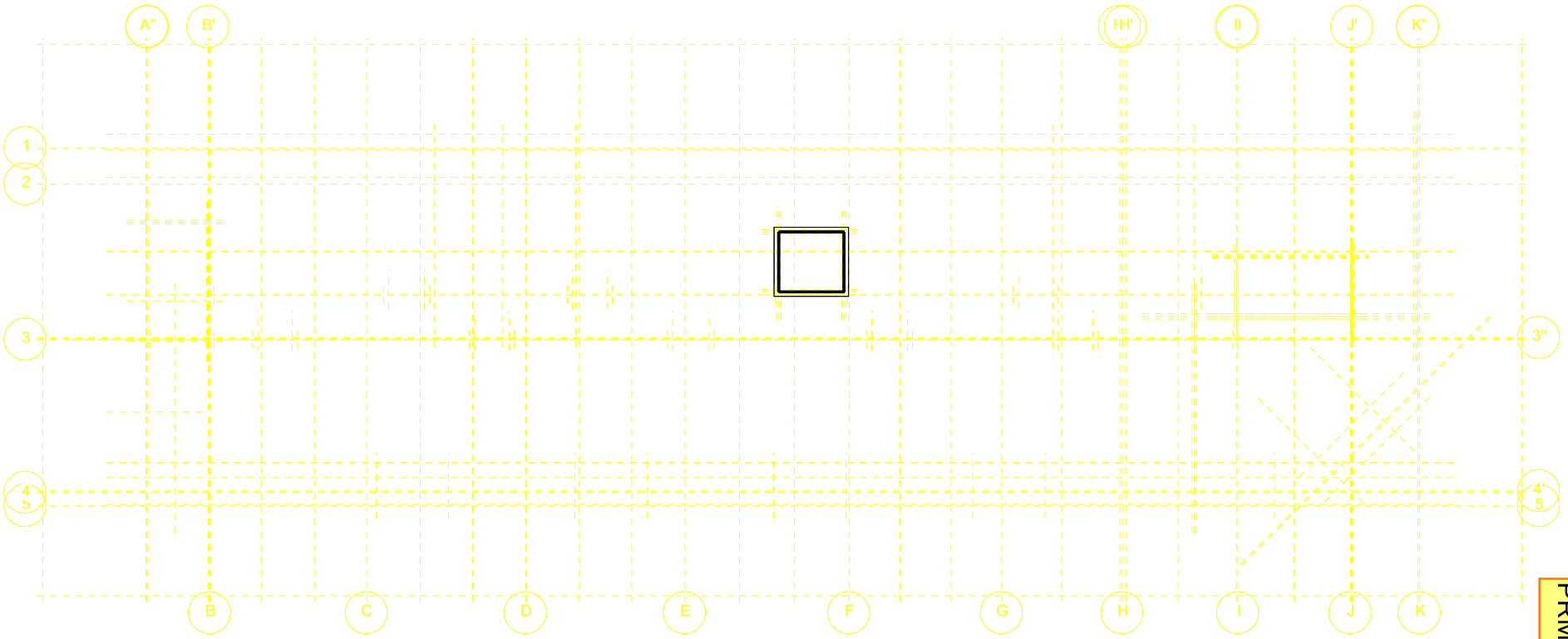
PRMU2022123

Floor Map

RAM Steel 17.02.01.23
DataBase: 2190606 Transfer Level w Omega - Update 210422
Building Code: IBC

10/28/21 18:03:22
Steel Code: AISC 360-16 LRFD

Floor Type: HIGH ROOF



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Floor Map

Surface Loads

Label	DL psf	CDL psf	LL psf	Reduction Type	PLL psf	CLL psf	Mass DL psf
ROOF	0.0	0.0	25.0	Roof	0.0	0.0	0.0

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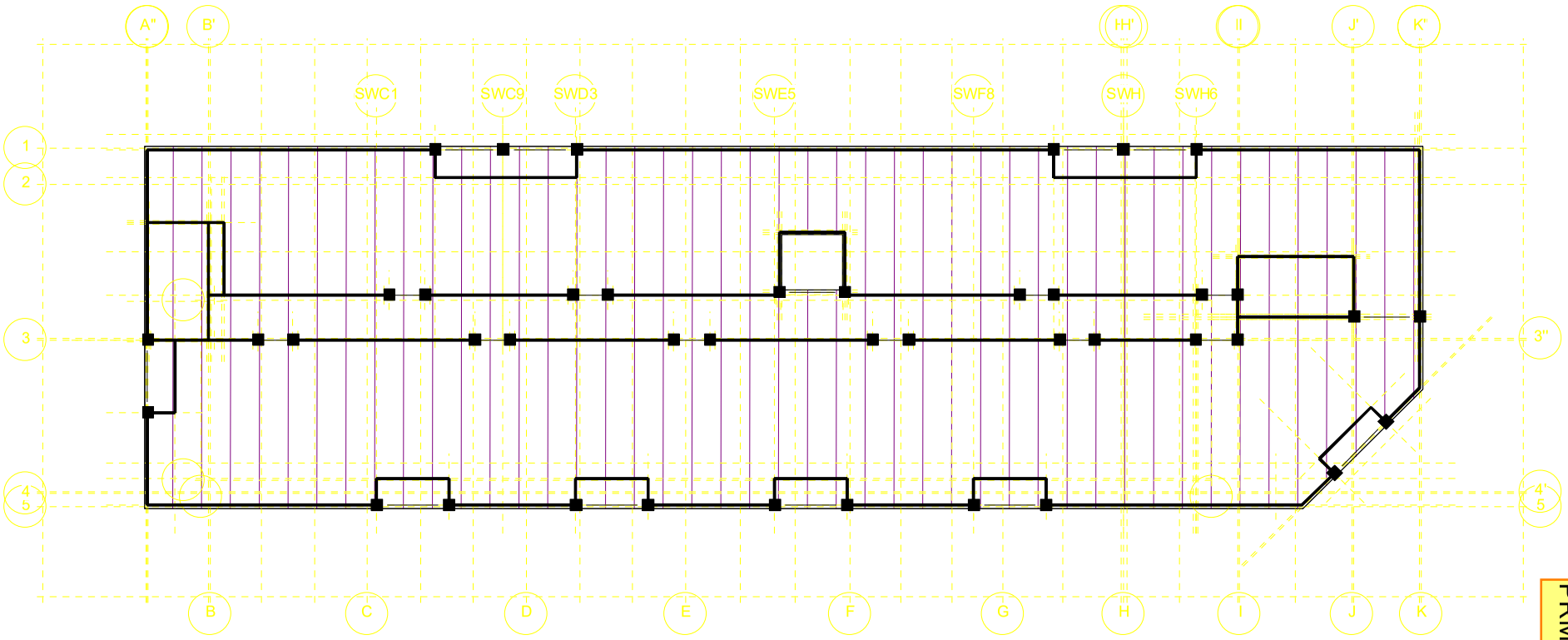
Floor Map

RAM Steel 17.02.01.23
DataBase: 2190606 Transfer Level w Omega - Update 210422
Building Code: IBC

10/28/21 18:03:22
Steel Code: AISC 360-16 LRFD

Floor Type: ROOF



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Floor Map

Decks:	Deck Label	Deck Type	Slab Action	Orientation
	TJI ROOF	Noncomposite	One-Way	90.00 degrees

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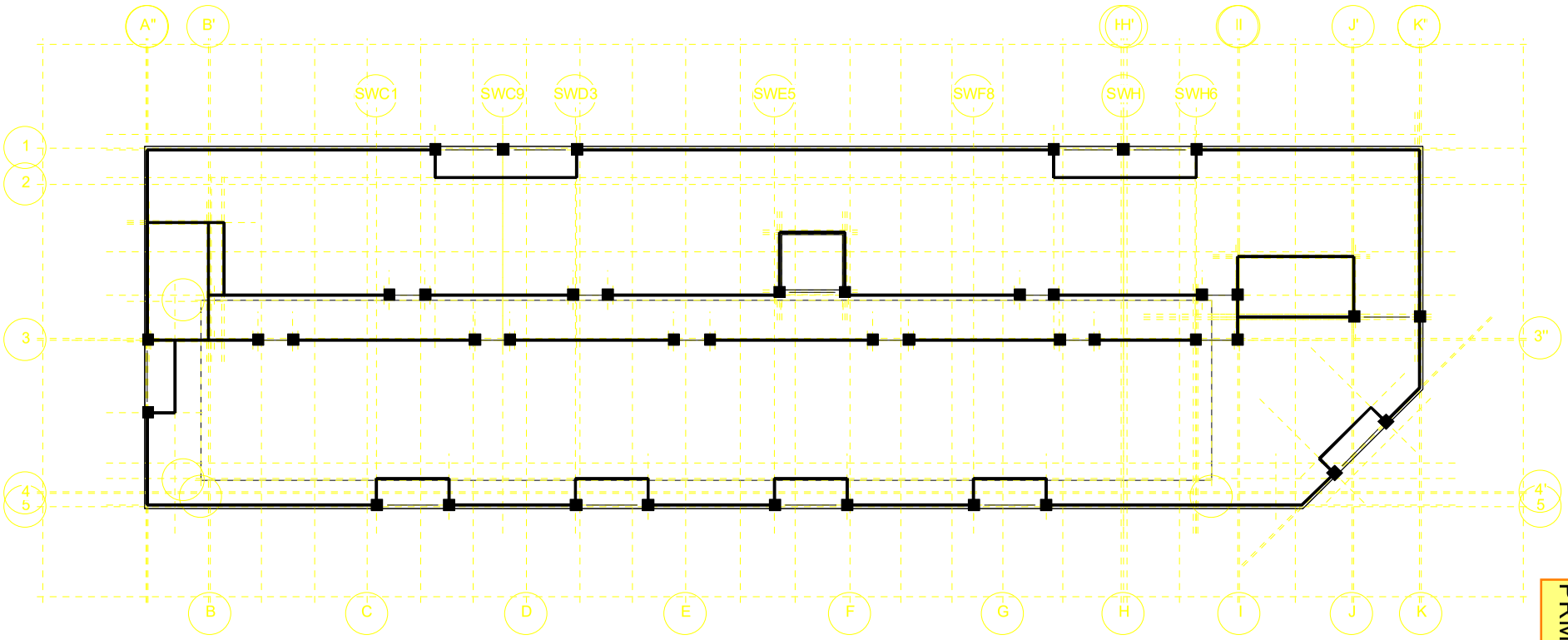
Floor Map

RAM Structural System
Bentley

RAM Steel 17.02.01.23
DataBase: 2190606 Transfer Level w Omega - Update 210422
Building Code: IBC

10/28/21 18:03:22
Steel Code: AISC 360-16 LRFD

Floor Type: ROOF



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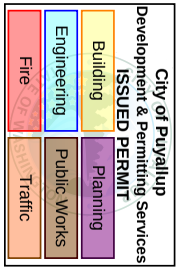
Floor Map

Surface Loads

	Label	DL psf	CDL psf	LL psf	Reduction Type	PLL psf	CLL psf	Mass DL psf
	ROOF	0.0	0.0	25.0	Roof	0.0	0.0	0.0
	ROOF (SOLAR)	4.0	0.0	25.0	Roof	0.0	0.0	0.0



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Floor Map

RAM Structural System
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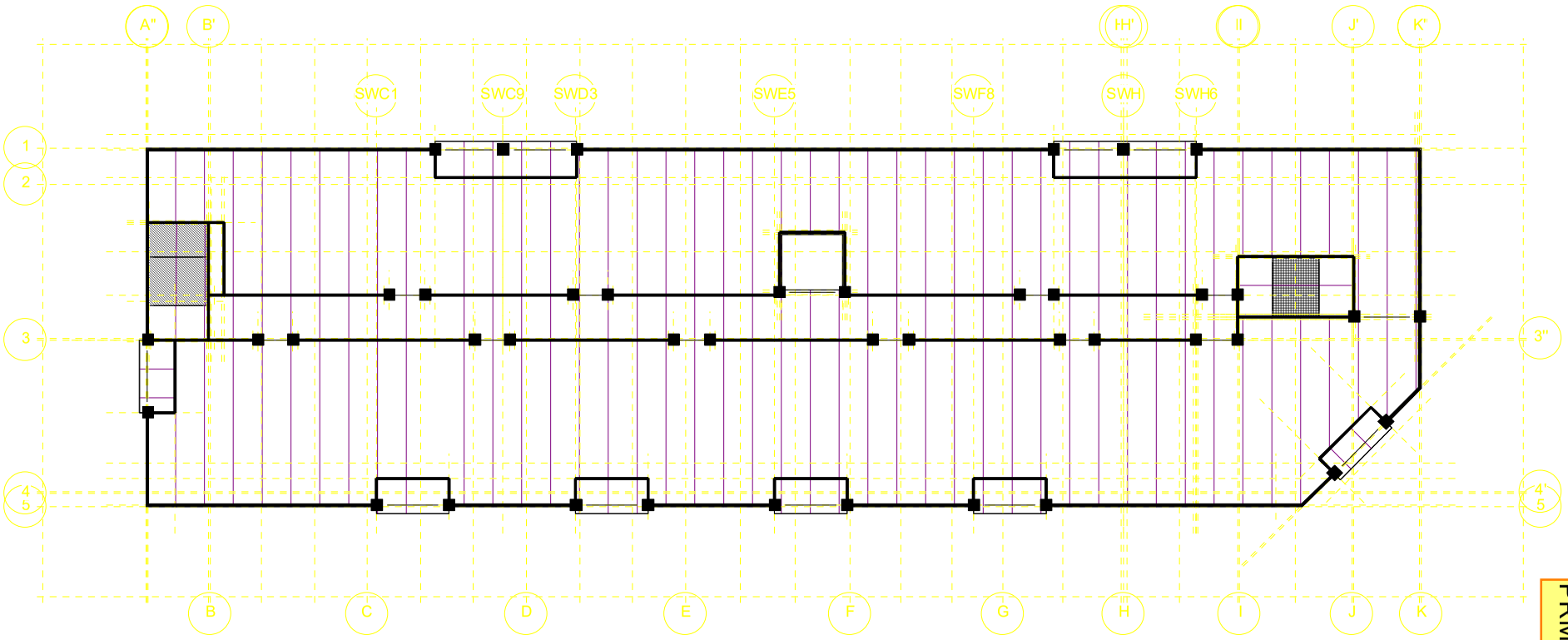
RAM Steel 17.02.01.23
DataBase: 2190606 Transfer Level w Omega - Update 210422
Building Code: IBC

10/28/21 18:03:22
Steel Code: AISC 360-16 LRFD

Floor Type: THIRD FLOOR



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Floor Map

Decks:	Deck Label	Deck Type	Slab Action	Orientation
	TJI FLR (11+17=28)	Noncomposite	One-Way	0.00 degrees
	TJI FLR (11+17=28)	Noncomposite	One-Way	90.00 degrees
	TJI FLR (11+17=28)	Noncomposite	One-Way	135.00 degrees
	STAIRS	Noncomposite	One-Way	0.00 degrees
	STAIRS	Noncomposite	One-Way	90.00 degrees
	CONC STR (11+29=40)	Noncomposite	One-Way	0.00 degrees
	CONC STR (11+29=40)	Noncomposite	One-Way	90.00 degrees

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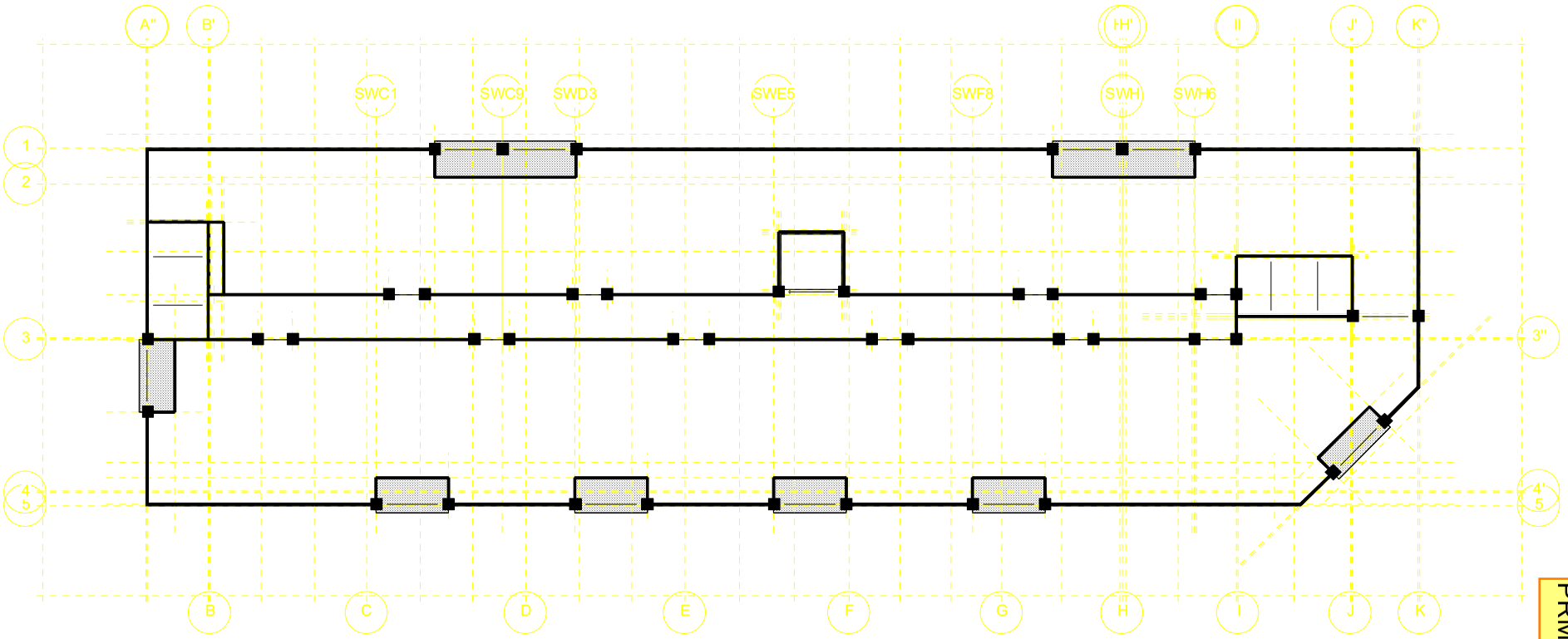
Floor Map

RAM Steel 17.02.01.23
DataBase: 2190606 Transfer Level w Omega - Update 210422
Building Code: IBC

10/28/21 18:03:22
Steel Code: AISC 360-16 LRFD

Floor Type: THIRD FLOOR



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Floor Map

Surface Loads

Label	DL psf	CDL psf	LL psf	Reduction Type	PLL psf	CLL psf	Mass DL psf
RESIDENTIAL	11.0	0.0	40.0	Reducible	0.0	0.0	0.0
DECK	11.0	0.0	60.0	Reducible	0.0	0.0	0.0
PUBLIC/CORR/EGRESS	11.0	0.0	100.0	Reducible	0.0	0.0	0.0

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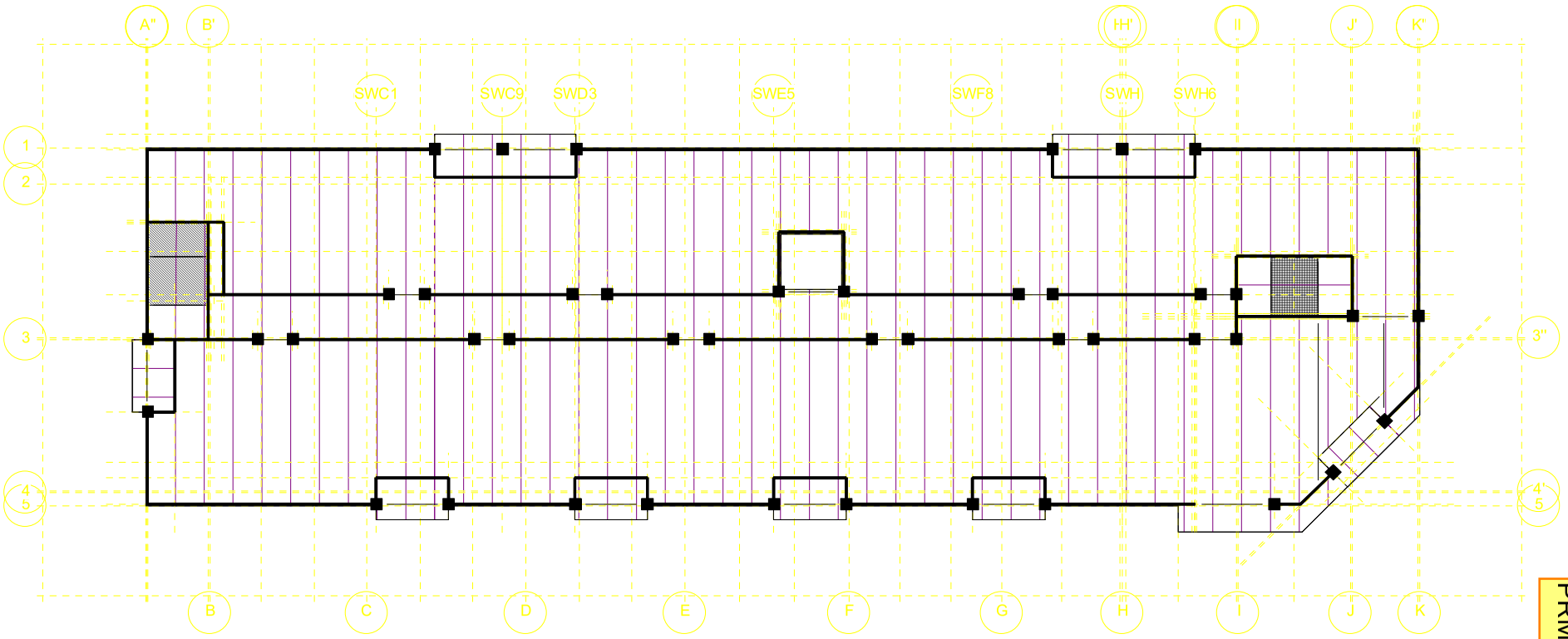
Floor Map

RAM Steel 17.02.01.23
DataBase: 2190606 Transfer Level w Omega - Update 210422
Building Code: IBC

10/28/21 18:03:22
Steel Code: AISC 360-16 LRFD

Floor Type: SECOND FLOOR



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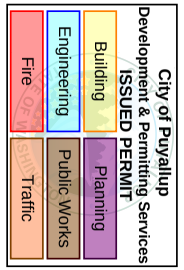
Floor Map

Decks:	Deck Label	Deck Type	Slab Action	Orientation
	TJI FLR (11+17=28)	Noncomposite	One-Way	0.00 degrees
	TJI FLR (11+17=28)	Noncomposite	One-Way	90.00 degrees
	TJI FLR (11+17=28)	Noncomposite	One-Way	135.00 degrees
	STAIRS	Noncomposite	One-Way	0.00 degrees
	STAIRS	Noncomposite	One-Way	90.00 degrees
	CONC STR (11+29=40)	Noncomposite	One-Way	0.00 degrees
	CONC STR (11+29=40)	Noncomposite	One-Way	90.00 degrees



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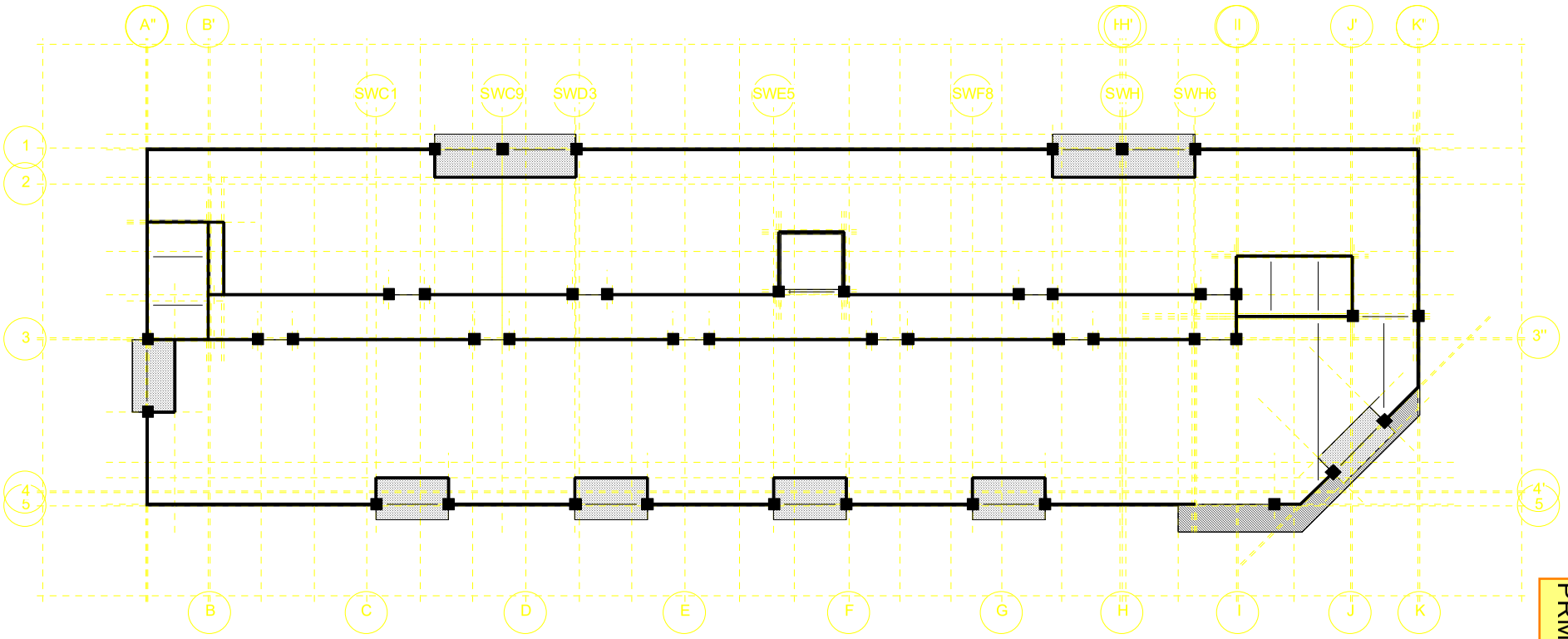
Floor Map

RAM Structural System
Bentley

RAM Steel 17.02.01.23
DataBase: 2190606 Transfer Level w Omega - Update 210422
Building Code: IBC

10/28/21 18:03:22
Steel Code: AISC 360-16 LRFD

Floor Type: SECOND FLOOR



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Floor Map

Surface Loads

Label	DL psf	CDL psf	LL psf	Reduction Type	PLL psf	CLL psf	Mass DL psf
RESIDENTIAL	11.0	0.0	40.0	Reducible	0.0	0.0	0.0
DECK	11.0	0.0	60.0	Reducible	0.0	0.0	0.0
PUBLIC/CORR/EGRESS	11.0	0.0	100.0	Reducible	0.0	0.0	0.0
CANOPY	0.0	0.0	25.0	Roof	0.0	0.0	0.0

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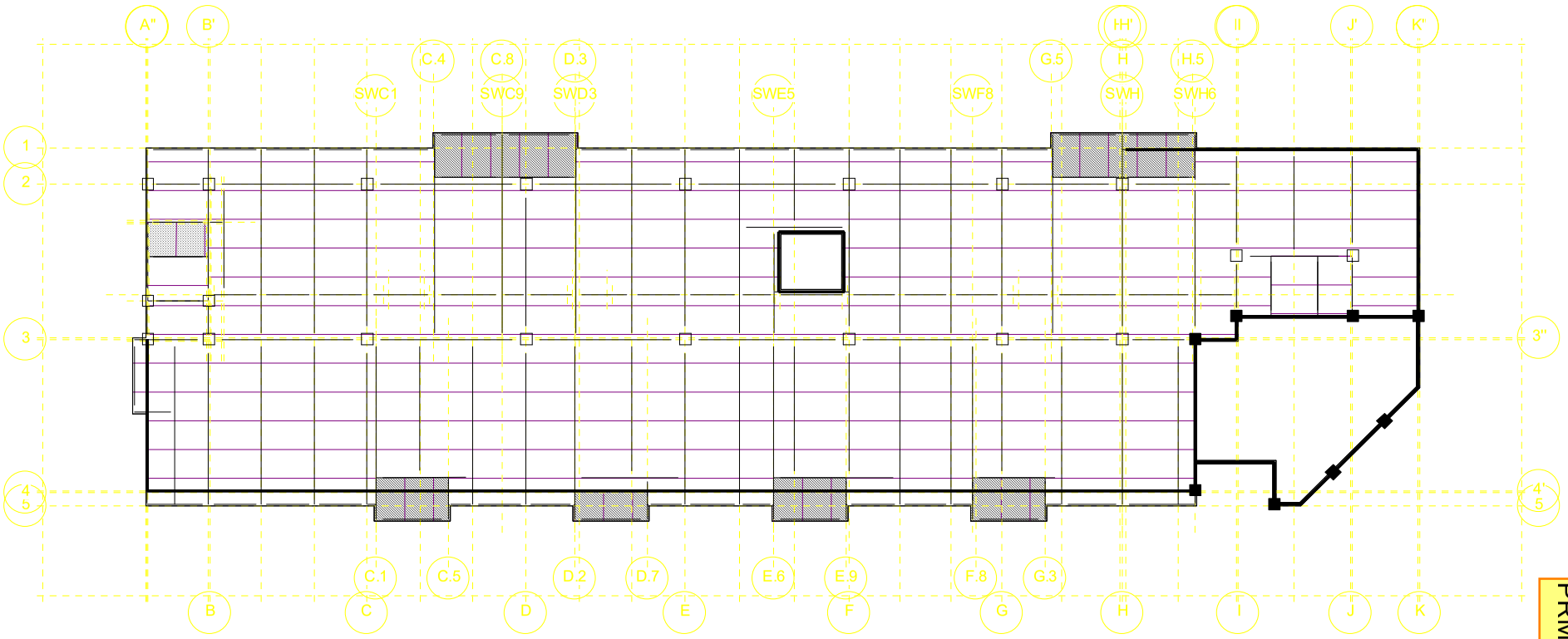
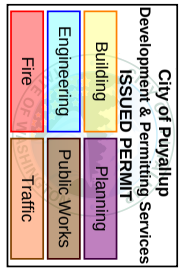
Floor Map

RAM Steel 17.02.01.23
DataBase: 2190606 Transfer Level w Omega - Update 210422
Building Code: IBC

10/28/21 18:03:22
Steel Code: AISC 360-16 LRFD

Floor Type: FIRST FLOOR





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Floor Map

Decks:	Deck Label	Deck Type	Slab Action	Orientation
	STAIRS	Noncomposite	One-Way	0.00 degrees
	STAIRS	Noncomposite	One-Way	90.00 degrees
	CONC STR (11+29=40)	Noncomposite	One-Way	0.00 degrees
	5.5" O/2W	ASC 2W	One-Way	0.00 degrees
	5.5" O/2W	ASC 2W	One-Way	90.00 degrees

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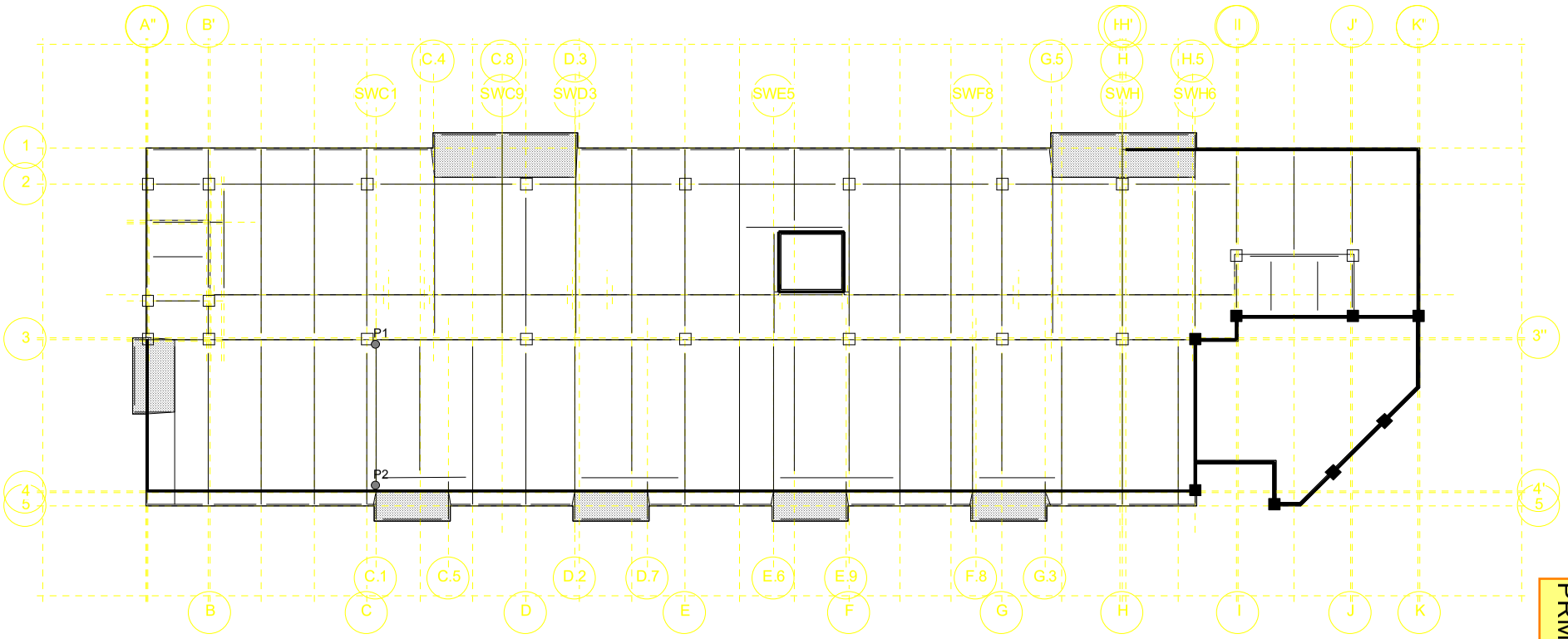
Floor Map

RAM Steel 17.02.01.23
DataBase: 2190606 Transfer Level w Omega - Update 210422
Building Code: IBC

10/28/21 18:03:22
Steel Code: AISC 360-16 LRFD

Floor Type: FIRST FLOOR



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Floor Map

Surface Loads

Label	DL psf	CDL psf	LL psf	Reduction Type	PLL psf	CLL psf	Mass DL psf
RESIDENTIAL	11.0	0.0	40.0	Reducible	0.0	0.0	0.0
DECK	11.0	0.0	60.0	Reducible	0.0	0.0	0.0
PUBLIC/CORR/EGRESS	11.0	0.0	100.0	Reducible	0.0	0.0	0.0

Point Loads

	Label	DL kips	CDL kips	LL kips	Reduction Type	PLL kips	CLL kips	Mass DL kips
P1	HD2 (-)	0.000	0.000	-28.125	Unreducible	0.000	0.000	0.000
P2	HD2 (+)	0.000	0.000	28.125	Unreducible	0.000	0.000	0.000

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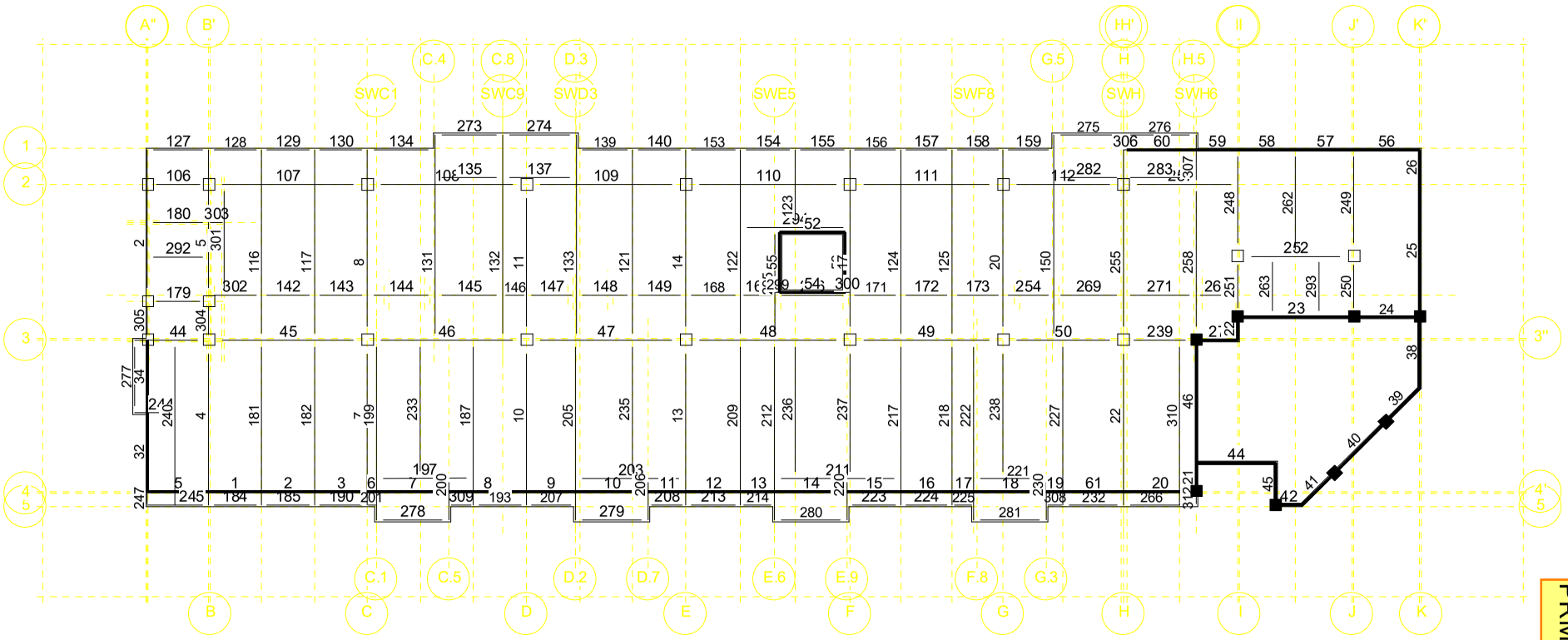
Floor Map

RAM Steel 17.02.01.23
DataBase: 2190606 Transfer Level w Omega - Update 210422
Building Code: IBC

10/28/21 18:03:22
Steel Code: AISC 360-16 LRFD

Floor Type: FIRST FLOOR

Beam Numbers



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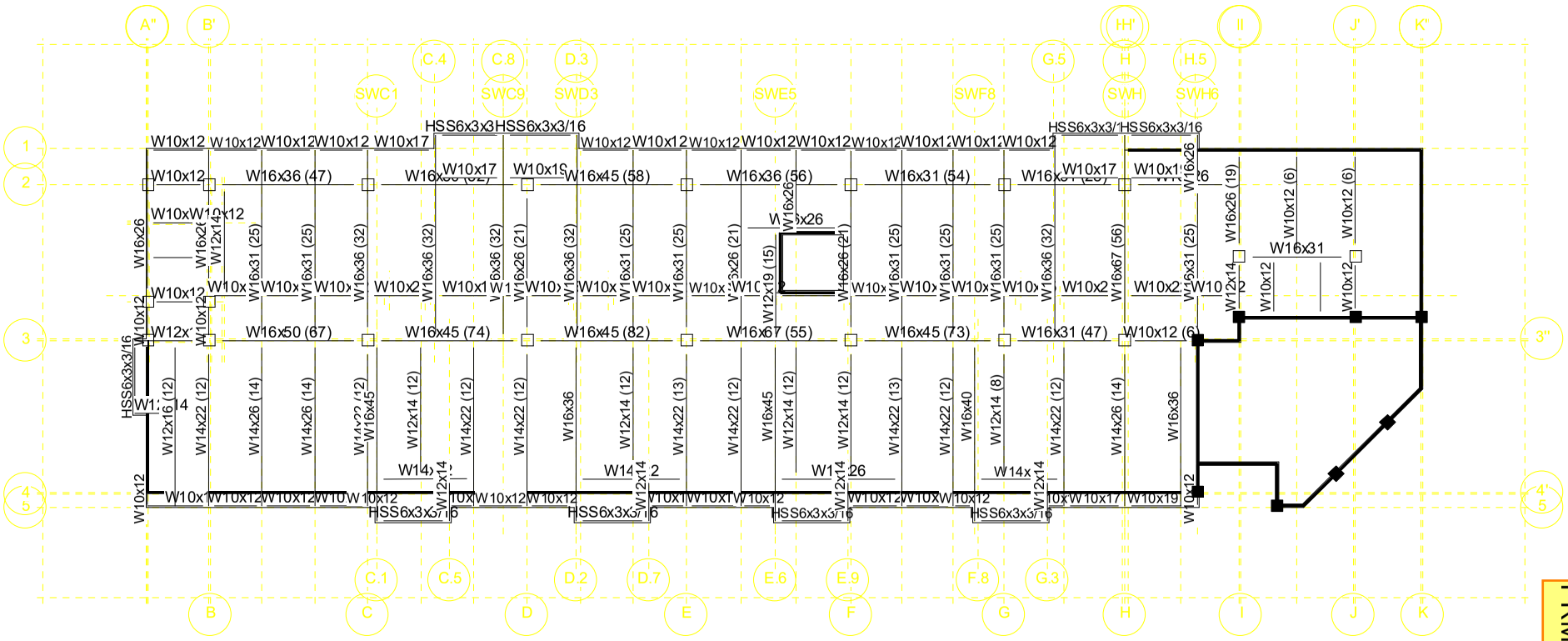
Floor Map

RAM Steel 17.02.01.23
DataBase: 2190606 Transfer Level w Omega - Update 210422
Building Code: IBC

10/28/21 18:03:22
Steel Code: AISC 360-16 LRFD

Floor Type: FIRST FLOOR

Beam Designs



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Gravity Beam Design

RAM Steel 17.02.01.23
DataBase: 2190606 Transfer Level w Omega - Update 210422 10/28/21 18:03:22
Building Code: IBC Steel Code: AISC 360-16 LRFD

Floor Type: FIRST FLOOR **Beam Number = 2**

SPAN INFORMATION (ft): I-End (0.25,27.79) J-End (0.25,49.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X26 Fy = 50.0 ksi
Total Beam Length (ft) = 21.96
Cantilever on right (ft) = 5.08
Mp (kip-ft) = 184.17

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
6.458	0.17	1.10	1.6	0.00	0.00	0.0	0.00	0.0	0.00
11.458	4.47	5.30	1.6	0.00	0.00	0.0	1.52	0.0	0.00
21.958	3.59	1.99	0.0	0.00	0.00	0.0	0.64	0.0	0.00
6.458	0.78	2.65	1.6	0.00	0.00	0.0	0.00	0.0	0.00
6.458	1.09	2.65	1.6	0.00	0.00	0.0	0.00	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	16.875	0.016	0.000			0.000
2	0.000	0.003	0.026	1.6%	Red	0.000
	11.458	0.003	0.026			0.000
3	11.459	0.003	0.010	1.6%	Red	0.000
	16.875	0.003	0.010			0.000
4	16.875	0.016	0.000	---	NonR	0.000
	21.958	0.016	0.000			0.000
5	16.875	0.003	0.010	0.0%	Red	0.000
	21.958	0.003	0.010			0.000
6	0.000	0.128	0.000	---	NonR	0.000
	6.458	0.128	0.000			0.000
7	0.000	0.049	0.442	1.6%	Red	0.000
	6.458	0.049	0.442			0.000
8	11.459	0.265	0.000	---	NonR	0.000
	16.875	0.265	0.000			0.000
9	11.459	0.049	0.442	1.6%	Red	0.000
	11.708	0.049	0.442			0.000
10	11.709	0.049	0.177	1.6%	Red	0.000
	16.875	0.049	0.177			0.000
11	16.875	0.265	0.000	---	NonR	0.000
	21.958	0.265	0.000			0.000
12	16.875	0.049	0.177	0.0%	Red	0.000
	21.958	0.049	0.177			0.000
13	0.000	0.026	0.000	---	NonR	0.000
	16.875	0.026	0.000			0.000
14	16.875	0.026	0.000	---	NonR	0.000
	21.958	0.026	0.000			0.000

Load	Dist	DL	LL	Red%	Type	PartL
15	0.000	0.016	0.000	---	NonR	0.000
	16.875	0.016	0.000			0.000
16	16.875	0.016	0.000	---	NonR	0.000
	21.958	0.016	0.000			0.000
17	11.459	0.006	0.021	1.6%	Red	0.000
	16.875	0.006	0.021			0.000
18	16.875	0.006	0.021	0.0%	Red	0.000
	21.958	0.006	0.021			0.000
19	0.000	0.387	0.000	---	NonR	0.000
	16.875	0.387	0.000			0.000
20	16.875	0.387	0.000	---	NonR	0.000
	21.958	0.387	0.000			0.000
21	0.000	0.000	0.013	0.0%	Roof	0.000
	16.875	0.000	0.013			0.000
22	16.875	0.000	0.013	0.0%	Roof	0.000
	21.958	0.000	0.013			0.000
23	0.000	0.006	0.052	1.6%	Red	0.000
	11.458	0.006	0.052			0.000

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SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 28.92 kips 0.90Vn = 105.97 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu	@	Lb	Cb	Phi	Phi*Mn
			kip-ft	ft	ft			kip-ft
Center	Max +	1.2DL+1.6LL	108.7	6.5	5.0	1.03	0.90	161.77
	Max -	1.2DL+1.6LL	-59.7	16.9	5.4	1.93	0.90	165.75
Right	Max -	1.2DL+1.6LL	-59.7	16.9	5.1	1.00	0.90	155.58
Controlling		1.2DL+1.6LL	108.7	6.5	5.0	1.03	0.90	161.77

REACTIONS (kips):

	Left	Right
DL reaction	6.05	18.45
Max +LL reaction	9.20	13.60
Max -LL reaction	-0.96	0.00
Max +total reaction (factored)	21.98	43.90

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DEFLECTIONS:

Center span:

Dead load (in)	at	8.27 ft	= -0.134	L/D = 1514		
Live load (in)	at	8.27 ft	= -0.281	L/D = 722	> 360	0
Net Total load (in)	at	8.27 ft	= -0.414	L/D = 489	> 240	0

Right cantilever:

Dead load (in)	= 0.026	L/D = 4652		
Pos Live load (in)	= -0.118	L/D = 1033	> 360	0.35
Neg Live load (in)	= 0.266	L/D = 458	> 360	0.79
Pos Total load (in)	= -0.092	L/D = 1328	> 240	0.18
Neg Total load (in)	= 0.292	L/D = 417	> 240	0.58

Floor Type: FIRST FLOOR **Beam Number = 4**

SPAN INFORMATION (ft): I-End (9.08,-1.75) J-End (9.08,22.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W14X22 Fy = 50.0 ksi
Total Beam Length (ft) = 24.00
Cantilever on left (ft) = 2.08

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	perpendicular	perpendicular
Decking type	ASC 2W	ASC 2W

beff (in)	=	61.87	Y bar(in)	=	15.59
Mnf (kip-ft)	=	316.49	Mn (kip-ft)	=	212.58
C (kips)	=	86.15	PNA (in)	=	10.60
Ieff (in4)	=	527.63	Itr (in4)	=	836.80
Stud length (in)	=	4.00	Stud diam (in)	=	0.75

Stud Capacity (kips) Qn = 17.2 Rg = 1.00 Rp = 0.60
# of studs: Max = 21 Partial = 10 Actual = 12
Number of Stud Rows = 1 Percent of Full Composite Action = 26.53

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
0.000	5.07	0.11	3.78	0.0	0.00	0.00	0.0	1.19	0.0	0.00
0.000	1.13	-0.11	2.39	0.0	0.00	0.00	0.0	0.76	0.0	0.00
			-1.04	0.0	0.00	0.00	0.0	-0.31	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.374	0.374	0.000	---	NonR	0.000	0.000
	2.083	0.374	0.374	0.000			0.000	0.000
2	0.000	0.069	0.000	0.249	0.0%	Red	0.000	0.000
	2.083	0.069	0.000	0.249			0.000	0.000
3	2.084	0.374	0.374	0.000	---	NonR	0.000	0.000
	24.000	0.374	0.374	0.000			0.000	0.000
4	2.084	0.069	0.000	0.249	0.0%	Red	0.000	0.000
	24.000	0.069	0.000	0.249			0.000	0.000
5	0.000	0.022	0.022	0.000	---	NonR	0.000	0.000
	2.083	0.022	0.022	0.000			0.000	0.000
6	2.084	0.022	0.022	0.000	---	NonR	0.000	0.000
	24.000	0.022	0.022	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 22.44 kips 1.00Vn = 94.53 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Left	PreCmp-	1.4DL	-1.2	2.1	2.1	1.00	0.90	124.50
	Max -	1.2DL+1.6LL	-44.7	2.1	2.1	1.00	0.90	124.50
Center	PreCmp+	1.4DL	32.7	13.1	0.0	1.00	0.90	124.50
	PreCmp-	1.4DL	-1.2	2.1	21.9	1.14	0.90	27.69
	Init DL	1.4DL	32.7	13.1	---	---		
	Max +	1.2DL+1.6LL	51.5	13.6	---	---	0.90	191.32
	Max -	1.2DL+1.6LL	-44.7	2.1	21.9	2.50	0.90	60.76
Controlling		1.2DL+1.6LL	-44.7	2.1	21.9	2.50	0.90	60.76

REACTIONS (kips):

	Left	Right
Initial reaction	5.21	4.31
DL reaction	12.90	4.46
Max +LL reaction	12.18	2.86
Max -LL reaction	-1.48	-0.80
Max +total reaction (factored)	34.96	9.93

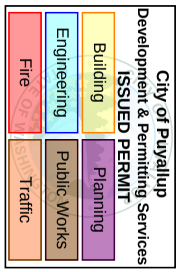
DEFLECTIONS: **Ratio**

Left cantilever:

Init load (in)	= 0.104	L/D = 479		
Pos Live load (in)	= -0.038	L/D = 1331 > 360		0.27
Neg Live load (in)	= 0.032	L/D = 1572 > 360		0.23
Pos Post Comp load (in)	= -0.059	L/D = 854 > 240		0.28
Neg Post Comp load (in)	= 0.011	L/D = 4634 > 240		0.05
Neg Total load (in)	= 0.115	L/D = 434 > 240		0.55

Center span:

Initial load (in)	at 13.15 ft = -0.349	L/D = 754		
Live load (in)	at 13.15 ft = -0.094	L/D = 2794 > 360		0
Post Comp load (in)	at 13.59 ft = 0.078	L/D = 3356 > 240		0
Net Total load (in)	at 13.15 ft = -0.422	L/D = 623 > 240		0



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Floor Type: FIRST FLOOR **Beam Number = 5**

SPAN INFORMATION (ft): I-End (9.08,27.79) J-End (9.08,49.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X26 Fy = 50.0 ksi
Total Beam Length (ft) = 21.96
Cantilever on right (ft) = 5.08
Mp (kip-ft) = 184.17

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
0.958	8.45	6.13	18.5	0.00	0.00	0.0	1.13	0.0	0.00
6.458	0.17	1.10	18.5	0.00	0.00	0.0	0.00	0.0	0.00
11.458	1.27	1.09	18.5	0.00	0.00	0.0	0.29	0.0	0.00
11.458	4.47	5.30	18.5	0.00	0.00	0.0	1.52	0.0	0.00
21.958	3.82	2.53	0.0	0.00	0.00	0.0	0.80	0.0	0.00
21.958	3.59	1.99	0.0	0.00	0.00	0.0	0.64	0.0	0.00
6.458	0.78	2.65	18.5	0.00	0.00	0.0	0.00	0.0	0.00
6.458	1.09	2.65	18.5	0.00	0.00	0.0	0.00	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.128	0.000	---	NonR	0.000
	6.458	0.128	0.000			0.000
2	0.000	0.049	0.442	18.5%	Red	0.000
	6.458	0.049	0.442			0.000
3	11.459	0.332	0.000	---	NonR	0.000
	16.875	0.332	0.000			0.000
4	11.459	0.049	0.442	18.5%	Red	0.000
	11.708	0.049	0.442			0.000
5	11.709	0.049	0.177	18.5%	Red	0.000
	16.875	0.049	0.177			0.000
6	16.875	0.494	0.000	---	NonR	0.000
	21.958	0.494	0.000			0.000
7	16.875	0.091	0.329	0.0%	Red	0.000
	21.958	0.091	0.329			0.000
8	0.000	0.229	0.000	---	NonR	0.000
	0.958	0.229	0.000			0.000
9	0.000	0.042	0.382	18.5%	Red	0.000
	0.958	0.042	0.382			0.000
10	0.959	0.067	0.000	---	NonR	0.000
	11.458	0.067	0.000			0.000
11	0.959	0.003	0.024	18.5%	Red	0.000
	11.458	0.003	0.024			0.000
12	0.959	0.010	0.035	18.5%	Red	0.000
	11.458	0.010	0.035			0.000
13	11.459	0.012	0.044	18.5%	Red	0.000

Gravity Beam Design

Load	Dist	DL	LL	Red%	Type	PartL
	16.875	0.012	0.044			0.000
14	0.000	0.026	0.000	---	NonR	0.000
	16.875	0.026	0.000			0.000
15	16.875	0.026	0.000	---	NonR	0.000
	21.958	0.026	0.000			0.000
16	0.000	0.387	0.000	---	NonR	0.000
	11.458	0.387	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 38.54 kips 0.90Vn = 105.97 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu	@	Lb	Cb	Phi	Phi*Mn
			kip-ft	ft	ft			kip-ft
Center	Max +	1.2DL+1.6LL	105.1	6.5	0.0	1.00	0.90	165.75
	Max -	1.2DL+1.6LL	-110.0	16.9	5.4	1.49	0.90	165.75
Right	Max -	1.2DL+1.6LL	-110.0	16.9	5.1	1.00	0.90	155.58
Controlling		1.2DL+1.6LL	-110.0	16.9	5.1	1.00	0.90	155.58

REACTIONS (kips):

	Left	Right
DL reaction	13.56	22.42
Max +LL reaction	13.91	18.28
Max -LL reaction	-2.05	0.00
Max +total reaction (factored)	38.54	56.15

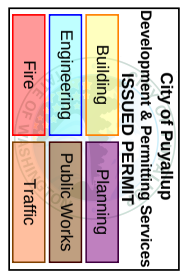
DEFLECTIONS: **Ratio**

Center span:

Dead load (in)	at	7.93 ft	= -0.114	L/D = 1781		
Live load (in)	at	7.93 ft	= -0.272	L/D = 745	> 360	0.48
Net Total load (in)	at	7.93 ft	= -0.386	L/D = 525	> 240	0.46

Right cantilever:

Dead load (in)	= -0.072	L/D = 1685	
Pos Live load (in)	= -0.253	L/D = 483	> 360
Neg Live load (in)	= 0.259	L/D = 471	> 360
Pos Total load (in)	= -0.325	L/D = 375	> 240
Neg Total load (in)	= 0.186	L/D = 655	> 240



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Floor Type: FIRST FLOOR **Beam Number = 7**

SPAN INFORMATION (ft): I-End (32.00,-1.75) J-End (32.00,22.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W14X22 Fy = 50.0 ksi
Total Beam Length (ft) = 24.00
Cantilever on left (ft) = 2.08

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	perpendicular	perpendicular
Decking type	ASC 2W	ASC 2W

beff (in)	=	40.75	Y bar(in)	=	14.83
Mnf (kip-ft)	=	305.68	Mn (kip-ft)	=	211.82
C (kips)	=	86.15	PNA (in)	=	10.60
Ieff (in4)	=	495.07	Itr (in4)	=	773.63
Stud length (in)	=	4.00	Stud diam (in)	=	0.75

Stud Capacity (kips) Qn = 17.2 Rg = 1.00 Rp = 0.60
# of studs: Max = 21 Partial = 12 Actual = 12
Number of Stud Rows = 1 Percent of Full Composite Action = 26.52

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
0.000	0.87	0.02	0.65	0.0	0.00	0.00	0.0	0.21	0.0	0.00
0.000	5.07	0.11	3.78	0.0	0.00	0.00	0.0	1.19	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.269	0.269	0.000	---	NonR	0.000	0.000
	2.083	0.269	0.269	0.000			0.000	0.000
2	0.000	0.049	0.000	0.177	0.0%	Red	0.000	0.000
	2.083	0.049	0.000	0.179			0.000	0.000
3	2.084	0.269	0.269	0.000	---	NonR	0.000	0.000
	24.000	0.269	0.269	0.000			0.000	0.000
4	2.084	0.049	0.000	0.179	0.0%	Red	0.000	0.000
	24.000	0.049	0.000	0.179			0.000	0.000
5	0.000	0.022	0.022	0.000	---	NonR	0.000	0.000
	2.083	0.022	0.022	0.000			0.000	0.000
6	2.084	0.022	0.022	0.000	---	NonR	0.000	0.000
	24.000	0.022	0.022	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 17.90 kips 1.00Vn = 94.53 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Left	PreCmp-	1.4DL	-1.2	2.1	2.1	1.00	0.90	124.50
	Max -	1.2DL+1.6LL	-35.8	2.1	2.1	1.00	0.90	124.50
Center	PreCmp+	1.4DL	23.8	13.2	0.0	1.00	0.90	124.50
	PreCmp-	1.4DL	-1.2	2.1	21.9	1.14	0.90	27.72
	Init DL	1.4DL	23.8	13.2	---	---		
	Max +	1.2DL+1.6LL	34.2	14.1	---	---	0.90	190.64
	Max -	1.2DL+1.6LL	-35.8	2.1	21.9	2.64	0.90	64.13
Controlling		1.4DL	-18.3	2.1	21.9	1.25	0.90	30.36

REACTIONS (kips):

	Left	Right
Initial reaction	3.96	3.15
DL reaction	10.97	3.13
Max +LL reaction	8.74	1.96
Max -LL reaction	0.00	-0.57
Max +total reaction (factored)	27.14	6.89

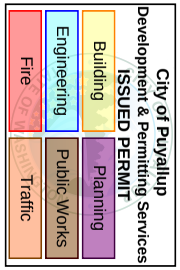
DEFLECTIONS: **Ratio**

Left cantilever:

Init load (in)	= 0.075	L/D =	665	
Pos Live load (in)	= -0.028	L/D =	1763 > 360	0.20
Neg Live load (in)	= 0.020	L/D =	2539 > 360	0.14
Pos Post Comp load (in)	= -0.051	L/D =	988 > 240	0.24
Neg Total load (in)	= 0.073	L/D =	688 > 240	0.35

Center span:

Initial load (in)	at 13.26 ft = -0.254	L/D =	1037	
Live load (in)	at 13.26 ft = -0.065	L/D =	4065 > 360	0.09
Post Comp load (in)	at 13.81 ft = 0.069	L/D =	3799 > 240	0
Net Total load (in)	at 13.26 ft = -0.292	L/D =	900 > 240	0



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Floor Type: FIRST FLOOR **Beam Number = 8**

SPAN INFORMATION (ft): I-End (32.00,22.25) J-End (32.00,49.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X36 Fy = 50.0 ksi
Total Beam Length (ft) = 27.50
Cantilever on right (ft) = 5.08

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	perpendicular	perpendicular
Decking type	ASC 2W	ASC 2W

beff (in)	=	67.25	Y bar(in)	=	16.77
Mnf (kip-ft)	=	548.37	Mn (kip-ft)	=	394.96
C (kips)	=	139.56	PNA (in)	=	12.68
Ieff (in4)	=	1031.65	Itr (in4)	=	1585.39
Stud length (in)	=	4.00	Stud diam (in)	=	0.75

Rg Stud Red. Factor Rg[1] = 1.00 Rg[2] = 0.85
Rp Stud Red. Factor Rp[1] = 0.60 Rp[2] = 0.60
Stud Capacity (kips) Qn[1] = 17.2 Qn[2] = 14.6
# of studs: Max = 44 Partial = 32 Actual = 32
Number of Stud Rows = 2 Percent of Full Composite Action = 26.33

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
					L					
6.500	6.44	0.11	7.29	24.1	0.00	0.00	0.0	1.68	0.0	0.00
6.500	5.29	0.05	5.69	24.1	0.00	0.00	0.0	1.31	0.0	0.00
27.500	5.83	0.16	4.26	0.0	0.00	0.00	0.0	1.35	0.0	0.00
27.500	4.53	0.11	3.33	0.0	0.00	0.00	0.0	1.05	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.523	0.523	0.000	---	NonR	0.000	0.000
	22.416	0.523	0.523	0.000			0.000	0.000
2	0.000	0.096	0.000	0.872	24.1%	Red	0.000	0.000
	6.500	0.096	0.000	0.872			0.000	0.000
3	6.500	0.096	0.000	0.349	24.1%	Red	0.000	0.000
	22.416	0.096	0.000	0.349			0.000	0.000
4	22.417	0.523	0.523	0.000	---	NonR	0.000	0.000
	27.500	0.523	0.523	0.000			0.000	0.000
5	22.417	0.096	0.000	0.349	0.0%	Red	0.000	0.000
	27.500	0.096	0.000	0.348			0.000	0.000

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
6	0.000	0.036	0.036	0.000	---	NonR	0.000	0.000
	22.416	0.036	0.036	0.000			0.000	0.000
7	22.417	0.036	0.036	0.000	---	NonR	0.000	0.000
	27.500	0.036	0.036	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 38.40 kips 1.00Vn = 140.71 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu	@	Lb	Cb	Phi	Phi*Mn
			kip-ft	ft	ft			kip-ft
Center	PreCmp+	1.4DL	44.1	10.4	0.0	1.00	0.90	240.00
	PreCmp-	1.4DL	-12.0	22.4	15.9	1.22	0.90	168.25
	Init DL	1.4DL	44.1	10.4	---	---		
	Max +	1.2DL+1.6LL	210.7	6.5	---	---	0.90	355.47
	Max -	1.2DL+1.6LL	-161.8	22.4	15.9	2.40	0.90	240.00
Right	PreCmp-	1.4DL	-12.0	22.4	5.1	1.00	0.90	240.00
	Max -	1.2DL+1.6LL	-161.8	22.4	5.1	1.00	0.90	240.00
Controlling		1.2DL+1.6LL	-161.8	22.4	15.9	2.40	0.90	240.00

REACTIONS (kips):

	Left	Right
Initial reaction	6.00	9.80
DL reaction	12.95	27.16
Max +LL reaction	14.29	21.29
Max -LL reaction	-2.47	0.00
Max +total reaction (factored)	38.40	66.65

DEFLECTIONS: **Ratio**

Center span:

Initial load (in)	at 10.09 ft =	-0.211	L/D =	1274		
Live load (in)	at 10.09 ft =	-0.200	L/D =	1342 >	360	0.27
Post Comp load (in)	at 10.09 ft =	-0.250	L/D =	1075 >	240	0
Net Total load (in)	at 10.09 ft =	-0.461	L/D =	583 >	240	0

Right cantilever:

Init load (in)	= 0.129	L/D =	947		
Pos Live load (in)	= -0.183	L/D =	666 >	360	0
Neg Live load (in)	= 0.129	L/D =	945 >	360	0
Pos Post Comp load (in)	= -0.270	L/D =	453 >	240	0
Neg Post Comp load (in)	= 0.043	L/D =	2845 >	240	0
Pos Total load (in)	= -0.141	L/D =	867 >	240	0
Neg Total load (in)	= 0.172	L/D =	711 >	240	0

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Floor Type: FIRST FLOOR **Beam Number = 10**

SPAN INFORMATION (ft): I-End (55.00,-1.75) J-End (55.00,22.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W14X22 Fy = 50.0 ksi
Total Beam Length (ft) = 24.00
Cantilever on left (ft) = 2.08

COMPOSITE PROPERTIES (Not Shored):

	Left			Right	
Deck Label	5.5" O/2W			5.5" O/2W	
Concrete thickness (in)	3.50			3.50	
Unit weight concrete (pcf)	150.00			150.00	
f'c (ksi)	4.00			4.00	
Decking Orientation	perpendicular			perpendicular	
Decking type	ASC 2W			ASC 2W	
beff (in)	= 65.75	Y bar(in)		= 15.69	
Mnf (kip-ft)	= 317.72	Mn (kip-ft)		= 212.67	
C (kips)	= 86.15	PNA (in)		= 10.60	
Ieff (in4)	= 532.02	Itr (in4)		= 845.34	
Stud length (in)	= 4.00	Stud diam (in)		= 0.75	

Stud Capacity (kips) Qn = 17.2 Rg = 1.00 Rp = 0.60
# of studs: Max = 21 Partial = 12 Actual = 12
Number of Stud Rows = 1 Percent of Full Composite Action = 26.54

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
0.000	4.68	0.10	3.50	0.0	0.00	0.00	0.0	1.10	0.0	0.00
0.000	5.08	0.11	3.80	0.0	0.00	0.00	0.0	1.20	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.442	0.442	0.000	---	NonR	0.000	0.000
	2.083	0.442	0.442	0.000			0.000	0.000
2	0.000	0.081	0.000	0.294	0.0%	Red	0.000	0.000
	2.083	0.081	0.000	0.295			0.000	0.000
3	2.084	0.442	0.442	0.000	---	NonR	0.000	0.000
	24.000	0.442	0.442	0.000			0.000	0.000
4	2.084	0.081	0.000	0.295	0.0%	Red	0.000	0.000
	24.000	0.081	0.000	0.295			0.000	0.000
5	0.000	0.022	0.022	0.000	---	NonR	0.000	0.000
	2.083	0.022	0.022	0.000			0.000	0.000
6	2.084	0.022	0.022	0.000	---	NonR	0.000	0.000
	24.000	0.022	0.022	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 29.42 kips 1.00Vn = 94.53 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Left	PreCmp-	1.4DL	-2.0	2.1	2.1	1.00	0.90	124.50
	Max -	1.2DL+1.6LL	-58.9	2.1	2.1	1.00	0.90	124.50
Center	PreCmp+	1.4DL	38.0	13.2	0.0	1.00	0.90	124.50
	PreCmp-	1.4DL	-2.0	2.1	21.9	1.14	0.90	27.73
	Init DL	1.4DL	38.0	13.2	---	---		
	Max +	1.2DL+1.6LL	55.3	14.1	---	---	0.90	191.40
	Max -	1.2DL+1.6LL	-58.9	2.1	21.9	2.68	0.90	65.07
Controlling		1.4DL	-30.1	2.1	21.9	1.25	0.90	30.49

REACTIONS (kips):

	Left	Right
Initial reaction	6.32	5.02
DL reaction	17.86	4.99
Max +LL reaction	14.38	3.23
Max -LL reaction	0.00	-0.94
Max +total reaction (factored)	44.44	11.16

DEFLECTIONS: **Ratio**

Left cantilever:

Init load (in)	= 0.120	L/D =	417	
Pos Live load (in)	= -0.044	L/D =	1135 > 360	0.32
Neg Live load (in)	= 0.030	L/D =	1658 > 360	0.22
Pos Post Comp load (in)	= -0.079	L/D =	635 > 240	0.38
Neg Total load (in)	= 0.115	L/D =	433 > 240	0.55

Center span:

Initial load (in)	at 13.26 ft = -0.405	L/D =	650	
Live load (in)	at 13.26 ft = -0.099	L/D =	2655 > 360	0.14
Post Comp load (in)	at 13.70 ft = 0.107	L/D =	2467 > 240	0
Net Total load (in)	at 13.26 ft = -0.464	L/D =	567 > 240	0

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Gravity Beam Design

RAM Steel 17.02.01.23 Page 13/249
DataBase: 2190606 Transfer Level w Omega - Update 210422 10/28/21 18:03:22
Building Code: IBC Steel Code: AISC 360-16 LRFD

Floor Type: FIRST FLOOR **Beam Number = 11**

SPAN INFORMATION (ft): I-End (55.00,22.25) J-End (55.00,44.67)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X26 Fy = 50.0 ksi
Total Beam Length (ft) = 22.42

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	perpendicular	perpendicular
Decking type	ASC 2W	ASC 2W

beff (in)	=	54.13	Y bar(in)	=	16.82
Mnf (kip-ft)	=	397.81	Mn (kip-ft)	=	280.16
C (kips)	=	103.38	PNA (in)	=	11.99
Ieff (in4)	=	733.53	Itr (in4)	=	1134.61
Stud length (in)	=	4.00	Stud diam (in)	=	0.75

Stud Capacity (kips) Qn = 17.2 Rg = 1.00 Rp = 0.60
# of studs: Max = 44 Partial = 21 Actual = 21
Number of Stud Rows = 1 Percent of Full Composite Action = 25.65

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
6.500	4.71	0.05	5.06	7.8	0.00	0.00	0.0	1.12	0.0	0.00
6.500	2.13	0.02	2.27	7.8	0.00	0.00	0.0	0.50	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.320	0.320	0.000	---	NonR	0.000	0.000
	22.416	0.320	0.320	0.000			0.000	0.000
2	0.000	0.059	0.000	0.532	7.8%	Red	0.000	0.000
	6.500	0.059	0.000	0.532			0.000	0.000
3	6.500	0.059	0.000	0.213	7.8%	Red	0.000	0.000
	22.416	0.059	0.000	0.213			0.000	0.000
4	0.000	0.026	0.026	0.000	---	NonR	0.000	0.000
	22.416	0.026	0.026	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 26.92 kips 0.90Vn = 105.97 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	PreCmp+	1.4DL	30.7	11.1	0.0	1.00	0.90	165.75
	Init DL	1.4DL	30.7	11.1	---	---		
	Max +	1.2DL+1.6LL	148.1	6.5	---	---	0.90	252.15

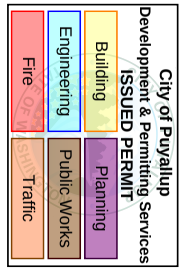
Span	Cond	LoadCombo	Mu	@	Lb	Cb	Phi	Phi*Mn
Controlling		1.2DL+1.6LL	148.1	6.5	---	---	0.90	252.15

REACTIONS (kips):

	Left	Right
Initial reaction	3.93	3.90
DL reaction	9.38	6.51
Max +LL reaction	9.79	4.91
Max +total reaction (factored)	26.92	15.67

DEFLECTIONS:

								Ratio
Initial load (in)	at 10.87 ft	=	-0.227	L/D	=	1183		
Live load (in)	at 10.65 ft	=	-0.192	L/D	=	1401	> 360	0.26
Post Comp load (in)	at 10.65 ft	=	-0.308	L/D	=	873	> 240	0.27
Net Total load (in)	at 10.65 ft	=	-0.535	L/D	=	503	> 240	0.48



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Floor Type: FIRST FLOOR **Beam Number = 13**

SPAN INFORMATION (ft): I-End (78.00,-1.75) J-End (78.00,22.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W14X22 Fy = 50.0 ksi
Total Beam Length (ft) = 24.00
Cantilever on left (ft) = 2.08

COMPOSITE PROPERTIES (Not Shored):

	Left		Right
Deck Label	5.5" O/2W		5.5" O/2W
Concrete thickness (in)	3.50		3.50
Unit weight concrete (pcf)	150.00		150.00
f'c (ksi)	4.00		4.00
Decking Orientation	perpendicular		perpendicular
Decking type	ASC 2W		ASC 2W
beff (in) =	65.75	Y bar(in) =	15.69
Mnf (kip-ft) =	317.72	Mn (kip-ft) =	212.67
C (kips) =	86.15	PNA (in) =	10.60
Ieff (in4) =	532.02	Itr (in4) =	845.34
Stud length (in) =	4.00	Stud diam (in) =	0.75

Stud Capacity (kips) Qn = 17.2 Rg = 1.00 Rp = 0.60
# of studs: Max = 21 Partial = 13 Actual = 13
Number of Stud Rows = 1 Percent of Full Composite Action = 26.55

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
0.000	5.23	0.11	3.91	0.0	0.00	0.00	0.0	1.23	0.0	0.00
0.000	3.63	0.08	2.71	0.0	0.00	0.00	0.0	0.86	0.0	0.00
4.000	2.08	1.67	5.42	13.5	0.00	0.00	0.0	1.03	0.0	0.00
			-4.78	17.3	0.00	0.00	0.0	-0.84	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.401	0.401	0.000	---	NonR	0.000	0.000
	2.083	0.401	0.401	0.000			0.000	0.000
2	0.000	0.073	0.000	0.267	0.0%	Red	0.000	0.000
	2.083	0.074	0.000	0.267			0.000	0.000
3	2.084	0.164	0.164	0.000	---	NonR	0.000	0.000
	4.000	0.164	0.164	0.000			0.000	0.000
4	2.084	0.030	0.000	0.110	13.5%	Red	0.000	0.000
	4.000	0.030	0.000	0.110			0.000	0.000
5	4.000	0.230	0.230	0.000	---	NonR	0.000	0.000
	24.000	0.230	0.230	0.000			0.000	0.000
6	4.000	0.042	0.000	0.153	13.5%	Red	0.000	0.000
	24.000	0.042	0.000	0.153			0.000	0.000

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
7	2.084	0.237	0.237	0.000	---	NonR	0.000	0.000
	24.000	0.237	0.237	0.000			0.000	0.000
8	2.084	0.043	0.000	0.158	13.5%	Red	0.000	0.000
	24.000	0.043	0.000	0.158			0.000	0.000
9	0.000	0.022	0.022	0.000	---	NonR	0.000	0.000
	2.083	0.022	0.022	0.000			0.000	0.000
10	2.084	0.022	0.022	0.000	---	NonR	0.000	0.000
	24.000	0.022	0.022	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 26.71 kips 1.00Vn = 94.53 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu	@	Lb	Cb	Phi	Phi*Mn
			kip-ft	ft	ft			kip-ft
Left	PreCmp-	1.4DL	-1.8	2.1	2.1	1.00	0.90	124.50
	Max -	1.2DL+1.6LL	-53.4	2.1	2.1	1.00	0.90	124.50
Center	PreCmp+	1.4DL	42.4	12.9	0.0	1.00	0.90	124.50
	PreCmp-	1.4DL	-1.8	2.1	1.9	1.77	0.90	124.50
	Init DL	1.4DL	42.4	12.9	---	---		
	Max +	1.2DL+1.6LL	66.6	13.1	---	---	0.90	191.40
	Max -	1.2DL+1.6LL	-53.4	2.1	1.9	1.07	0.90	124.50
Controlling		1.2DL+1.6LL	-44.8	4.0	20.0	2.46	0.90	67.86

REACTIONS (kips):

	Left	Right
Initial reaction	7.89	5.44
DL reaction	18.84	5.58
Max +LL reaction	18.23	3.45
Max -LL reaction	-4.38	-1.27
Max +total reaction (factored)	51.77	12.21

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DEFLECTIONS:

Left cantilever:

Init load (in) =	0.140	L/D =	358		
Pos Live load (in) =	-0.054	L/D =	932 > 360		
Neg Live load (in) =	0.044	L/D =	1143 > 360		
Pos Post Comp load (in) =	-0.083	L/D =	604 > 240		
Neg Post Comp load (in) =	0.015	L/D =	3409 > 240		
Neg Total load (in) =	0.154	L/D =	324 > 240		

Center span:

Initial load (in)	at 13.04 ft =	-0.456	L/D = 577	
Live load (in)	at 13.04 ft =	-0.127	L/D = 2073 > 360	0.17
Post Comp load (in)	at 13.59 ft =	0.121	L/D = 2177 > 240	0.11
Net Total load (in)	at 13.04 ft =	-0.552	L/D = 476 > 240	0.50

Floor Type: FIRST FLOOR **Beam Number = 14**

SPAN INFORMATION (ft): I-End (78.00,22.25) J-End (78.00,49.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X31 Fy = 50.0 ksi
Total Beam Length (ft) = 27.50
Cantilever on right (ft) = 5.08

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	perpendicular	perpendicular
Decking type	ASC 2W	ASC 2W

beff (in)	=	67.25	Y bar(in)	=	17.09
Mnf (kip-ft)	=	478.44	Mn (kip-ft)	=	333.62
C (kips)	=	115.44	PNA (in)	=	12.15
Ieff (in4)	=	887.34	Itr (in4)	=	1393.84
Stud length (in)	=	4.00	Stud diam (in)	=	0.75

Rg Stud Red. Factor Rg[1] = 1.00 Rg[2] = 0.85
Rp Stud Red. Factor Rp[1] = 0.60 Rp[2] = 0.60
Stud Capacity (kips) Qn[1] = 17.2 Qn[2] = 14.6
# of studs: Max = 44 Partial = 25 Actual = 25
Number of Stud Rows = 2 Percent of Full Composite Action = 25.29

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
					L					
6.500	5.48	0.06	5.88	21.2	0.00	0.00	0.0	1.36	0.0	0.00
6.500	5.31	0.05	5.71	21.2	0.00	0.00	0.0	1.32	0.0	0.00
27.500	4.68	0.11	3.44	0.0	0.00	0.00	0.0	1.09	0.0	0.00
27.500	4.54	0.11	3.34	0.0	0.00	0.00	0.0	1.05	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.467	0.467	0.000	---	NonR	0.000	0.000
	22.416	0.467	0.467	0.000			0.000	0.000
2	0.000	0.086	0.000	0.778	21.2%	Red	0.000	0.000
	6.500	0.086	0.000	0.778			0.000	0.000
3	6.500	0.086	0.000	0.311	21.2%	Red	0.000	0.000
	22.416	0.086	0.000	0.311			0.000	0.000
4	22.417	0.467	0.467	0.000	---	NonR	0.000	0.000
	27.500	0.467	0.467	0.000			0.000	0.000
5	22.417	0.086	0.000	0.311	0.0%	Red	0.000	0.000
	27.500	0.086	0.000	0.311			0.000	0.000

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
6	0.000	0.031	0.031	0.000	---	NonR	0.000	0.000
	22.416	0.031	0.031	0.000			0.000	0.000
7	22.417	0.031	0.031	0.000	---	NonR	0.000	0.000
	27.500	0.031	0.031	0.000			0.000	0.000

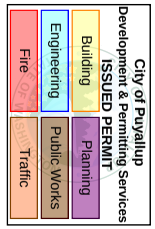
SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 35.21 kips 1.00Vn = 131.18 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu	@	Lb	Cb	Phi	Phi*Mn
			kip-ft	ft	ft			kip-ft
Center	PreCmp+	1.4DL	39.2	10.5	0.0	1.00	0.90	202.50
	PreCmp-	1.4DL	-10.5	22.4	15.9	1.22	0.90	94.41
	Init DL	1.4DL	39.2	10.5	---	---		
	Max +	1.2DL+1.6LL	193.4	6.5	---	---	0.90	300.26
	Max -	1.2DL+1.6LL	-144.2	22.4	15.9	2.41	0.90	186.07
Right	PreCmp-	1.4DL	-10.5	22.4	5.1	1.00	0.90	192.70
	Max -	1.2DL+1.6LL	-144.2	22.4	5.1	1.00	0.90	192.70
Controlling		1.2DL+1.6LL	-144.2	22.4	15.9	2.41	0.90	186.07

REACTIONS (kips):

	Left	Right
Initial reaction	5.32	8.69
DL reaction	11.78	24.28
Max +LL reaction	13.18	19.22
Max -LL reaction	-2.20	0.00
Max +total reaction (factored)	35.21	59.88



DEFLECTIONS: **Ratio**

Center span:

Initial load (in)	at 10.09 ft	=	-0.224	L/D	= 1200	
Live load (in)	at 10.09 ft	=	-0.215	L/D	= 1252 > 360	0.29
Post Comp load (in)	at 10.09 ft	=	-0.271	L/D	= 994 > 240	0
Net Total load (in)	at 10.09 ft	=	-0.495	L/D	= 544 > 240	0

Right cantilever:

Init load (in)	=	0.137	L/D	=	889	
Pos Live load (in)	=	-0.192	L/D	=	635 > 360	0
Neg Live load (in)	=	0.138	L/D	=	881 > 360	0
Pos Post Comp load (in)	=	-0.281	L/D	=	435 > 240	0
Neg Post Comp load (in)	=	0.050	L/D	=	2444 > 240	0
Pos Total load (in)	=	-0.143	L/D	=	851 > 240	0
Neg Total load (in)	=	0.187	L/D	=	652 > 240	0

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Floor Type: FIRST FLOOR **Beam Number = 17**

SPAN INFORMATION (ft): I-End (101.67,22.25) J-End (101.67,49.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X26 Fy = 50.0 ksi
Total Beam Length (ft) = 27.50
Cantilever on right (ft) = 5.08

COMPOSITE PROPERTIES (Not Shored):

	Left			Right	
Deck Label	5.5" O/2W			5.5" O/2W	
Concrete thickness (in)	3.50			3.50	
Unit weight concrete (pcf)	150.00			150.00	
f'c (ksi)	4.00			4.00	
Decking Orientation	perpendicular			perpendicular	
Decking type	ASC 2W			ASC 2W	
beff (in)	= 37.94	Y bar(in)		= 16.01	
Mnf (kip-ft)	= 383.57	Mn (kip-ft)		= 279.13	
C (kips)	= 103.38	PNA (in)		= 11.99	
Ieff (in4)	= 691.40	Itr (in4)		= 1053.42	
Stud length (in)	= 4.00	Stud diam (in)		= 0.75	

Stud Capacity (kips) Qn = 17.2 Rg = 1.00 Rp = 0.60
# of studs: Max = 44 Partial = 21 Actual = 21
Number of Stud Rows = 1 Percent of Full Composite Action = 25.13

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
6.500	5.12	0.04	5.50	14.4	0.00	0.00	0.0	1.27	0.0	0.00
6.500	0.98	0.00	1.07	14.4	0.00	0.00	0.0	0.25	0.0	0.00
16.188	-1.19	1.06	1.71	14.4	0.00	0.00	0.0	0.14	0.0	0.00
			-2.27	17.0	0.00	0.00	0.0	-0.62	0.0	0.00
27.500	4.38	0.10	3.22	0.0	0.00	0.00	0.0	1.02	0.0	0.00
27.500	3.63	0.11	2.26	0.0	0.00	0.00	0.0	0.72	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.325	0.325	0.000	---	NonR	0.000	0.000
	6.864	0.325	0.325	0.000			0.000	0.000
2	0.000	0.100	0.000	0.910	14.4%	Red	0.000	0.000
	6.500	0.100	0.000	0.910			0.000	0.000
3	6.500	0.008	0.000	0.028	14.4%	Red	0.000	0.000
	6.864	0.008	0.000	0.028			0.000	0.000
4	6.500	0.052	0.000	0.469	14.4%	Red	0.000	0.000
	6.864	0.052	0.000	0.469			0.000	0.000
5	6.865	0.022	0.022	0.000	---	NonR	0.000	0.000
	15.520	0.022	0.022	0.000			0.000	0.000

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Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
6	6.865	0.004	0.000	0.014	14.4%	Red	0.000	0.000
	15.520	0.004	0.000	0.014			0.000	0.000
7	15.521	0.325	0.325	0.000	---	NonR	0.000	0.000
	16.187	0.325	0.325	0.000			0.000	0.000
8	15.521	0.059	0.000	0.216	14.4%	Red	0.000	0.000
	16.187	0.059	0.000	0.216			0.000	0.000
9	16.188	0.237	0.237	0.000	---	NonR	0.000	0.000
	22.416	0.237	0.237	0.000			0.000	0.000
10	16.188	0.043	0.000	0.158	14.4%	Red	0.000	0.000
	22.416	0.043	0.000	0.158			0.000	0.000
11	22.417	0.459	0.459	0.000	---	NonR	0.000	0.000
	27.500	0.459	0.459	0.000			0.000	0.000
12	22.417	0.084	0.000	0.306	0.0%	Red	0.000	0.000
	27.500	0.084	0.000	0.306			0.000	0.000
13	0.000	0.222	0.222	0.000	---	NonR	0.000	0.000
	22.416	0.222	0.222	0.000			0.000	0.000
14	6.500	0.041	0.000	0.148	14.4%	Red	0.000	0.000
	22.416	0.041	0.000	0.148			0.000	0.000
15	0.000	0.026	0.026	0.000	---	NonR	0.000	0.000
	22.416	0.026	0.026	0.000			0.000	0.000
16	22.417	0.026	0.026	0.000	---	NonR	0.000	0.000
	27.500	0.026	0.026	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 27.11 kips 0.90Vn = 105.97 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	PreCmp+	1.4DL	32.3	10.8	0.0	1.00	0.90	165.75
	PreCmp-	1.4DL	-10.3	22.4	6.2	1.89	0.90	165.75
	Init DL	1.4DL	32.3	10.8	---	---		
	Max +	1.2DL+1.6LL	130.2	6.5	---	---	0.90	25
	Max -	1.2DL+1.6LL	-122.7	22.4	6.2	1.22	0.90	16
Right	PreCmp-	1.4DL	-10.3	22.4	5.1	1.00	0.90	15
	Max -	1.2DL+1.6LL	-122.7	22.4	5.1	1.00	0.90	15
Controlling		1.2DL+1.6LL	-122.7	22.4	5.1	1.00	0.90	15

REACTIONS (kips):

	Left	Right
Initial reaction	5.03	8.42
DL reaction	7.75	19.39
Max +LL reaction	10.88	16.75
Max -LL reaction	-2.51	-1.81
Max +total reaction (factored)	26.70	50.06

DEFLECTIONS: **Ratio**

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Center span:

Initial load (in)	at	10.09 ft	=	-0.240	L/D	=	1121	
Live load (in)	at	10.09 ft	=	-0.220	L/D	=	1220 > 360	0.30
Post Comp load (in)	at	10.09 ft	=	-0.196	L/D	=	1370 > 240	0.18
Net Total load (in)	at	10.09 ft	=	-0.436	L/D	=	617 > 240	0.39

Right cantilever:

Init load (in)	=	0.149	L/D	=	818	
Pos Live load (in)	=	-0.232	L/D	=	525 > 360	0.69
Neg Live load (in)	=	0.148	L/D	=	822 > 360	0.44
Pos Post Comp load (in)	=	-0.391	L/D	=	312 > 240	0.77
Pos Total load (in)	=	-0.241	L/D	=	505 > 240	0.48
Neg Total load (in)	=	0.139	L/D	=	877 > 240	0.27

Floor Type: FIRST FLOOR **Beam Number = 20**

SPAN INFORMATION (ft): I-End (123.83,22.25) J-End (123.83,49.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X31 Fy = 50.0 ksi
Total Beam Length (ft) = 27.50
Cantilever on right (ft) = 5.08

COMPOSITE PROPERTIES (Not Shored):

	Left			Right		
Deck Label	5.5" O/2W			5.5" O/2W		
Concrete thickness (in)	3.50			3.50		
Unit weight concrete (pcf)	150.00			150.00		
f'c (ksi)	4.00			4.00		
Decking Orientation	perpendicular			perpendicular		
Decking type	ASC 2W			ASC 2W		
beff (in)	=	67.25	Y bar(in)	=	17.09	
Mnf (kip-ft)	=	478.44	Mn (kip-ft)	=	333.62	
C (kips)	=	115.44	PNA (in)	=	12.15	
Ieff (in4)	=	887.34	Itr (in4)	=	1393.84	
Stud length (in)	=	4.00	Stud diam (in)	=	0.75	

Rg Stud Red. Factor Rg[1] = 1.00 Rg[2] = 0.85
Rp Stud Red. Factor Rp[1] = 0.60 Rp[2] = 0.60
Stud Capacity (kips) Qn[1] = 17.2 Qn[2] = 14.6
# of studs: Max = 44 Partial = 25 Actual = 25
Number of Stud Rows = 2 Percent of Full Composite Action = 25.29

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POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL L	StorLL	Red%	RoofLL	Red%	PartL
6.500	4.77	0.05	5.44	19.6	0.00	0.00	0.0	1.25	0.0	0.00
6.500	5.12	0.04	5.50	19.6	0.00	0.00	0.0	1.27	0.0	0.00
27.500	4.32	0.10	3.18	0.0	0.00	0.00	0.0	1.00	0.0	0.00
27.500	4.38	0.10	3.22	0.0	0.00	0.00	0.0	1.02	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.441	0.441	0.000	---	NonR	0.000	0.000
	22.416	0.441	0.441	0.000			0.000	0.000
2	0.000	0.081	0.000	0.734	19.6%	Red	0.000	0.000
	6.500	0.081	0.000	0.734			0.000	0.000
3	6.500	0.081	0.000	0.294	19.6%	Red	0.000	0.000
	22.416	0.081	0.000	0.294			0.000	0.000
4	22.417	0.441	0.441	0.000	---	NonR	0.000	0.000
	27.500	0.441	0.441	0.000			0.000	0.000
5	22.417	0.081	0.000	0.294	0.0%	Red	0.000	0.000
	27.500	0.081	0.000	0.293			0.000	0.000

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Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
6	0.000	0.031	0.031	0.000	---	NonR	0.000	0.000
	22.416	0.031	0.031	0.000			0.000	0.000
7	22.417	0.031	0.031	0.000	---	NonR	0.000	0.000
	27.500	0.031	0.031	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 33.35 kips 1.00Vn = 131.18 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	PreCmp+	1.4DL	37.1	10.5	0.0	1.00	0.90	202.50
	PreCmp-	1.4DL	-10.0	22.4	15.9	1.22	0.90	94.41
	Init DL	1.4DL	37.1	10.5	---	---		
	Max +	1.2DL+1.6LL	182.8	6.5	---	---	0.90	300.26
	Max -	1.2DL+1.6LL	-136.1	22.4	15.9	2.40	0.90	185.94
Right	PreCmp-	1.4DL	-10.0	22.4	5.1	1.00	0.90	192.70
	Max -	1.2DL+1.6LL	-136.1	22.4	5.1	1.00	0.90	192.70
Controlling		1.2DL+1.6LL	-136.1	22.4	15.9	2.40	0.90	185.94

REACTIONS (kips):

	Left	Right
Initial reaction	5.04	8.23
DL reaction	10.92	22.86
Max +LL reaction	12.65	18.24
Max -LL reaction	-2.08	0.00
Max +total reaction (factored)	33.35	56.62

DEFLECTIONS: **Ratio**

Center span:

Initial load (in)	at 10.09 ft = -0.212	L/D = 1267		
Live load (in)	at 10.09 ft = -0.206	L/D = 1304 > 360		0.28
Post Comp load (in)	at 10.09 ft = -0.255	L/D = 1054 > 240		0.23
Net Total load (in)	at 10.09 ft = -0.468	L/D = 575 > 240		0.42

Right cantilever:

Init load (in)	= 0.130	L/D = 939	
Pos Live load (in)	= -0.181	L/D = 673 > 360	0.53
Neg Live load (in)	= 0.133	L/D = 918 > 360	0.39
Pos Post Comp load (in)	= -0.267	L/D = 457 > 240	0.53
Neg Post Comp load (in)	= 0.047	L/D = 2589 > 240	0.09
Pos Total load (in)	= -0.137	L/D = 891 > 240	0.27
Neg Total load (in)	= 0.177	L/D = 689 > 240	0.35

Gravity Beam Design

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DataBase: 2190606 Transfer Level w Omega - Update 210422 10/28/21 18:03:22
Building Code: IBC Steel Code: AISC 360-16 LRFD

Floor Type: FIRST FLOOR Beam Number = 22

SPAN INFORMATION (ft): I-End (141.17,-1.75) J-End (141.17,22.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W14X26 Fy = 50.0 ksi
Total Beam Length (ft) = 24.00
Cantilever on left (ft) = 2.08

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	perpendicular	perpendicular
Decking type	ASC 2W	ASC 2W

beff (in)	=	65.75	Y bar(in)	=	15.59
Mnf (kip-ft)	=	375.37	Mn (kip-ft)	=	256.62
C (kips)	=	103.38	PNA (in)	=	11.00
Ieff (in4)	=	634.09	Itr (in4)	=	995.38
Stud length (in)	=	4.00	Stud diam (in)	=	0.75

Stud Capacity (kips) Qn = 17.2 Rg = 1.00 Rp = 0.60
# of studs: Max = 21 Partial = 13 Actual = 14
Number of Stud Rows = 1 Percent of Full Composite Action = 26.88

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POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
0.000	2.64	0.10	4.03	0.0	0.00	0.00	0.0	1.27	0.0	0.00
			-2.08	0.0	0.00	0.00	0.0	-0.87	0.0	0.00
0.000	5.77	0.14	4.29	0.0	0.00	0.00	0.0	1.36	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.504	0.504	0.000	---	NonR	0.000	0.000
	2.083	0.504	0.504	0.000			0.000	0.000
2	0.000	0.092	0.000	0.336	0.0%	Red	0.000	0.000
	2.083	0.092	0.000	0.336			0.000	0.000
3	2.084	0.504	0.504	0.000	---	NonR	0.000	0.000
	24.000	0.504	0.504	0.000			0.000	0.000
4	2.084	0.092	0.000	0.336	0.0%	Red	0.000	0.000
	24.000	0.092	0.000	0.336			0.000	0.000
5	0.000	0.026	0.026	0.000	---	NonR	0.000	0.000
	2.083	0.026	0.026	0.000			0.000	0.000
6	2.084	0.026	0.026	0.000	---	NonR	0.000	0.000
	24.000	0.026	0.026	0.000			0.000	0.000

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SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 30.28 kips 1.00Vn = 106.33 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Left	PreCmp-	1.4DL	-2.3	2.1	2.1	1.00	0.90	150.75
	Max -	1.2DL+1.6LL	-60.3	2.1	2.1	1.00	0.90	150.75
Center	PreCmp+	1.4DL	43.4	13.2	0.0	1.00	0.90	150.75
	PreCmp-	1.4DL	-2.3	2.1	21.9	1.14	0.90	39.13
	Init DL	1.4DL	43.4	13.2	---	---		
	Max +	1.2DL+1.6LL	70.8	13.5	---	---	0.90	230.96
	Max -	1.2DL+1.6LL	-60.3	2.1	21.9	2.51	0.90	86.18
Controlling		1.2DL+1.6LL	-60.3	2.1	21.9	2.51	0.90	86.18

REACTIONS (kips):

	Left	Right
Initial reaction	7.23	5.73
DL reaction	17.39	5.96
Max +LL reaction	16.40	3.96
Max -LL reaction	-3.24	-1.07
Max +total reaction (factored)	47.11	13.49

DEFLECTIONS: **Ratio**

Left cantilever:

Init load (in)	= 0.111	L/D = 449		
Pos Live load (in)	= -0.042	L/D = 1194 > 360		0.30
Neg Live load (in)	= 0.040	L/D = 1256 > 360		0.29
Pos Post Comp load (in)	= -0.065	L/D = 774 > 240		0.31
Neg Post Comp load (in)	= 0.017	L/D = 2932 > 240		0.08
Neg Total load (in)	= 0.128	L/D = 390 > 240		0.62

Center span:

Initial load (in)	at 13.15 ft = -0.375	L/D = 701		
Live load (in)	at 13.15 ft = -0.112	L/D = 2346 > 360		0.15
Post Comp load (in)	at 13.15 ft = -0.090	L/D = 2931 > 240		0.08
Net Total load (in)	at 13.15 ft = -0.465	L/D = 565 > 240		0.42

Floor Type: FIRST FLOOR **Beam Number = 44**

SPAN INFORMATION (ft): I-End (-1.75,22.25) J-End (9.08,22.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W12X16 Fy = 50.0 ksi
Total Beam Length (ft) = 10.83
Cantilever on left (ft) = 2.00
Mp (kip-ft) = 83.75

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
0.000	0.52	0.40	0.0	0.00	0.00	0.0	0.00	0.0	0.00
6.000	7.53	4.74	8.5	0.00	0.00	0.0	0.31	0.0	0.00
		-0.68	9.4	0.00	0.00	0.0	-0.17	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	1.741	0.016	0.000			0.000
2	0.000	0.003	0.015	0.0%	Red	0.000
	1.741	0.003	0.015			0.000
3	1.742	0.015	0.000	---	NonR	0.000
	2.000	0.000	0.000			0.000
4	1.742	0.003	0.015	0.0%	Red	0.000
	2.000	0.000	0.000			0.000
5	0.000	0.016	0.000	---	NonR	0.000
	2.000	0.016	0.000			0.000
6	2.000	0.016	0.000	---	NonR	0.000
	10.833	0.016	0.000			0.000
7	2.000	0.291	0.000	---	NonR	0.000
	6.000	0.291	0.000			0.000
8	2.000	0.055	0.500	8.5%	Red	0.000
	10.833	0.055	0.500			0.000
9	2.000	0.387	0.000	---	NonR	0.000
	10.833	0.387	0.000			0.000
10	2.000	0.000	0.344	0.0%	Roof	0.000
	6.000	0.000	0.344			0.000
11	6.000	0.801	0.000	---	NonR	0.000
	10.833	0.801	0.000			0.000
12	6.000	0.264	0.960	8.5%	Red	0.000
	10.833	0.264	0.960			0.000
13	6.000	0.000	0.513	0.0%	Roof	0.000
	9.750	0.000	0.513			0.000
14	9.750	0.066	0.412	0.0%	Roof	0.000
	10.833	0.066	0.412			0.000
15	9.750	0.000	0.100	0.0%	Roof	0.000
	10.833	0.000	0.100			0.000

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SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 26.16 kips 1.00Vn = 79.20 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Left	Max -	1.2DL+1.6LL	-2.7	2.0	2.0	1.00	0.90	75.38
Center	Max +	1.2DL+1.6LL	70.2	6.0	4.8	1.36	0.90	75.38
	Max -	1.2DL+1.6LL	-2.6	2.0	4.0	1.65	0.90	75.38
Controlling		1.2DL+1.6LL	70.2	6.0	4.8	1.36	0.90	75.38

REACTIONS (kips):

	Left	Right
DL reaction	9.17	9.38
Max +LL reaction	7.98	9.32
Max -LL reaction	-0.43	-0.45
Max +total reaction (factored)	23.78	26.16

DEFLECTIONS: **Ratio**

Left cantilever:

Dead load (in)	= 0.077	L/D = 625		
Pos Live load (in)	= -0.008	L/D = 6019 > 360		0.06
Neg Live load (in)	= 0.071	L/D = 675 > 360		0.53
Neg Total load (in)	= 0.148	L/D = 324 > 240		0.74

Center span:

Dead load (in)	at 6.42 ft = -0.113	L/D = 934		
Live load (in)	at 6.42 ft = -0.102	L/D = 1035 > 360		0.35
Net Total load (in)	at 6.42 ft = -0.216	L/D = 491 > 240		0.49

Gravity Beam Design

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DataBase: 2190606 Transfer Level w Omega - Update 210422 — 10/28/21 18:03:22
Building Code: IBC — Steel Code: AISC 360-16 LRFD

Floor Type: FIRST FLOOR **Beam Number = 45**

SPAN INFORMATION (ft): I-End (9.08,22.25) J-End (32.00,22.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X50 Fy = 50.0 ksi
Total Beam Length (ft) = 22.92

COMPOSITE PROPERTIES (Not Shored):

		Left		Right
Deck Label		5.5" O/2W		5.5" O/2W
Concrete thickness (in)		3.50		3.50
Unit weight concrete (pcf)		150.00		150.00
f'c (ksi)		4.00		4.00
Decking Orientation		parallel		parallel
Decking type		ASC 2W		ASC 2W
beff (in)	= 68.75	Y bar(in)	=	16.37
Mnf (kip-ft)	= 747.42	Mn (kip-ft)	=	732.43
C (kips)	= 667.65	PNA (in)	=	16.20
Ieff (in4)	= 2075.61	Itr (in4)	=	2145.34
Stud length (in)	= 4.00	Stud diam (in)	=	0.75

Stud Capacity (kips) Qn = 21.5 Rg = 1.00 Rp = 0.75
# of studs: Full = 83 Partial = 28 Actual = 67
Number of Stud Rows = 2 Percent of Full Composite Action = 80.75

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POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL L	StorLL	Red%	RoofLL	Red%	PartL
7.639	12.19	5.26	14.02	46.0	0.00	0.00	0.0	1.85	29.7	0.00
			-1.65	46.6	0.00	0.00	0.0	-0.47	29.7	0.00
7.639	5.21	5.24	3.35	46.0	0.00	0.00	0.0	0.00	0.0	0.00
			-0.75	46.6	0.00	0.00	0.0	-0.23	0.0	0.00
15.278	11.56	5.22	14.05	46.0	0.00	0.00	0.0	1.86	29.7	0.00
			-1.68	46.6	0.00	0.00	0.0	-0.48	29.7	0.00
15.278	5.21	5.24	3.35	46.0	0.00	0.00	0.0	0.00	0.0	0.00
			-0.75	46.6	0.00	0.00	0.0	-0.23	0.0	0.00
7.125	3.40	0.00	4.06	46.0	0.00	0.00	0.0	0.96	29.7	0.00
12.167	3.40	0.00	4.06	46.0	0.00	0.00	0.0	0.96	29.7	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.050	0.050	0.000	---	NonR	0.000	0.000
	22.916	0.050	0.050	0.000			0.000	0.000
2	0.000	0.747	0.000	0.000	---	NonR	0.000	0.000
	7.125	0.747	0.000	0.000			0.000	0.000
3	0.000	0.071	0.000	0.650	46.0%	Red	0.000	0.000
	7.125	0.071	0.000	0.650			0.000	0.000
4	0.000	0.264	0.000	0.960	46.0%	Red	0.000	0.000

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Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
	7.125	0.264	0.000	0.960			0.000	0.000
5	0.000	0.387	0.000	0.000	---	NonR	0.000	0.000
	7.125	0.387	0.000	0.000			0.000	0.000
6	0.000	0.060	0.000	0.373	29.7%	Roof	0.000	0.000
	7.125	0.060	0.000	0.373			0.000	0.000
7	0.000	0.000	0.000	0.007	29.7%	Roof	0.000	0.000
	7.125	0.000	0.000	0.007			0.000	0.000
8	12.167	0.747	0.000	0.000	---	NonR	0.000	0.000
	22.917	0.747	0.000	0.000			0.000	0.000
9	12.167	0.071	0.000	0.650	46.0%	Red	0.000	0.000
	22.917	0.071	0.000	0.650			0.000	0.000
10	12.167	0.264	0.000	0.960	46.0%	Red	0.000	0.000
	22.917	0.264	0.000	0.960			0.000	0.000
11	12.167	0.387	0.000	0.000	---	NonR	0.000	0.000
	22.917	0.387	0.000	0.000			0.000	0.000
12	12.167	0.060	0.000	0.373	29.7%	Roof	0.000	0.000
	22.917	0.060	0.000	0.373			0.000	0.000
13	12.167	0.000	0.000	0.007	29.7%	Roof	0.000	0.000
	22.917	0.000	0.000	0.007			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 79.68 kips 1.00Vn = 185.82 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	PreCmp+	1.4DL	116.7	11.2	7.6	1.00	0.90	322.11
	Init DL	1.4DL	116.7	11.3	---	---		
	Max +	1.2DL+1.6LL	525.2	12.2	---	---	0.90	659.18
Controlling		1.2DL+1.6LL	499.8	15.3	---	---	0.90	609.56

REACTIONS (kips):

	Left	Right
Initial reaction	11.06	11.05
DL reaction	34.76	34.70
Max +LL reaction	23.72	23.73
Max -LL reaction	-1.74	-1.75
Max +total reaction (factored)	79.68	79.61

DEFLECTIONS:

				Ratio
Initial load (in)	at 11.46 ft = -0.421	L/D = 653		
Live load (in)	at 11.46 ft = -0.247	L/D = 1114 > 360		0.32
Post Comp load (in)	at 11.46 ft = -0.477	L/D = 576 > 240		0.42
Net Total load (in)	at 11.46 ft = -0.898	L/D = 306 > 240		0.78

Floor Type: FIRST FLOOR Beam Number = 46

SPAN INFORMATION (ft): I-End (32.00,22.25) J-End (55.00,22.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X45 Fy = 50.0 ksi
Total Beam Length (ft) = 23.00

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	parallel	parallel
Decking type	ASC 2W	ASC 2W
beff (in) =	69.00	Y bar(in) = 16.47
Mnf (kip-ft) =	679.28	Mn (kip-ft) = 679.28
C (kips) =	665.00	PNA (in) = 18.89
Ieff (in4) =	1953.78	Itr (in4) = 1953.78
Stud length (in) =	4.00	Stud diam (in) = 0.75

Stud Capacity (kips) Qn = 21.5 Rg = 1.00 Rp = 0.75
# of studs: Full = 73 Partial = 40 Actual = 74
Number of Stud Rows = 2 Percent of Full Composite Action = 100.00

City of Puyallup Development & Permitting Services ISSUED PERMIT
Fire Engineering Building
Traffic Public Works Planning
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POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
1.313	3.81	3.04	2.42	46.2	0.96	0.00	0.0	0.17	28.3	0.00
			-0.57	46.8	-27.16	0.00	0.0	-0.07	28.3	0.00
7.667	5.12	4.35	2.80	46.2	0.00	0.00	0.0	0.00	0.0	0.00
9.792	14.01	6.50	17.46	46.2	0.00	0.00	0.0	2.22	28.3	0.00
			-2.17	46.8	0.00	0.00	0.0	-0.44	28.3	0.00
15.333	5.65	5.31	3.84	46.2	0.00	0.00	0.0	0.10	28.3	0.00
			-0.96	46.8	0.00	0.00	0.0	-0.23	28.3	0.00
19.583	8.93	4.09	11.40	46.2	0.00	0.00	0.0	1.38	28.3	0.00
			-2.25	46.8	0.00	0.00	0.0	-0.27	28.3	0.00
15.521	3.39	0.00	4.04	46.2	0.00	0.00	0.0	0.95	28.3	0.00
20.542	3.39	0.00	4.04	46.2	0.00	0.00	0.0	0.95	28.3	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.045	0.045	0.000	---	NonR	0.000	0.000
	23.000	0.045	0.045	0.000			0.000	0.000
2	0.000	0.159	0.000	0.000	---	NonR	0.000	0.000
	15.520	0.159	0.000	0.000			0.000	0.000
3	0.000	0.071	0.000	0.650	46.2%	Red	0.000	0.000
	15.520	0.071	0.000	0.650			0.000	0.000

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
4	0.000	0.588	0.000	0.000	---	NonR	0.000	0.000
	1.312	0.588	0.000	0.000			0.000	0.000
5	0.000	0.264	0.000	0.960	46.2%	Red	0.000	0.000
	1.312	0.264	0.000	0.960			0.000	0.000
6	1.313	0.490	0.000	0.000	---	NonR	0.000	0.000
	11.770	0.490	0.000	0.000			0.000	0.000
7	1.313	0.220	0.000	0.800	46.2%	Red	0.000	0.000
	11.770	0.220	0.000	0.800			0.000	0.000
8	11.771	0.588	0.000	0.000	---	NonR	0.000	0.000
	15.520	0.588	0.000	0.000			0.000	0.000
9	11.771	0.264	0.000	0.960	46.2%	Red	0.000	0.000
	15.520	0.264	0.000	0.960			0.000	0.000
10	0.000	0.387	0.000	0.000	---	NonR	0.000	0.000
	15.520	0.387	0.000	0.000			0.000	0.000
11	0.000	0.013	0.000	0.080	28.3%	Roof	0.000	0.000
	15.520	0.013	0.000	0.080			0.000	0.000
12	0.000	0.047	0.000	0.293	28.3%	Roof	0.000	0.000
	1.312	0.047	0.000	0.293			0.000	0.000
13	0.000	0.000	0.000	0.007	28.3%	Roof	0.000	0.000
	1.312	0.000	0.000	0.007			0.000	0.000
14	1.313	0.040	0.000	0.250	28.3%	Roof	0.000	0.000
	11.770	0.040	0.000	0.250			0.000	0.000
15	11.771	0.047	0.000	0.293	28.3%	Roof	0.000	0.000
	15.520	0.047	0.000	0.293			0.000	0.000
16	11.771	0.000	0.000	0.007	28.3%	Roof	0.000	0.000
	15.520	0.000	0.000	0.007			0.000	0.000
17	20.542	0.747	0.000	0.000	---	NonR	0.000	0.000
	23.000	0.747	0.000	0.000			0.000	0.000
18	20.542	0.071	0.000	0.650	46.2%	Red	0.000	0.000
	23.000	0.071	0.000	0.650			0.000	0.000
19	20.542	0.264	0.000	0.960	46.2%	Red	0.000	0.000
	23.000	0.264	0.000	0.960			0.000	0.000
20	20.542	0.387	0.000	0.000	---	NonR	0.000	0.000
	23.000	0.387	0.000	0.000			0.000	0.000
21	20.542	0.060	0.000	0.373	28.3%	Roof	0.000	0.000
	23.000	0.060	0.000	0.373			0.000	0.000
22	20.542	0.000	0.000	0.007	28.3%	Roof	0.000	0.000
	23.000	0.000	0.000	0.007			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 84.31 kips 1.00Vn = 166.64 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	PreCmp+	1.4DL	117.9	9.8	5.5	1.06	0.90	308.63
	Init DL	1.4DL	117.9	9.8	---	---		

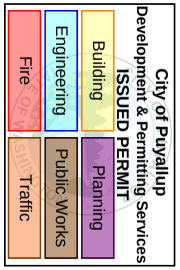
Span	Cond	LoadCombo	Mu	@	Lb	Cb	Phi	Phi*Mn
	Max +	1.2DL+1.6LL	526.5	9.8	---	---	0.90	611.35
	Max -	1.2DL+1.6LL	-3.5	1.3	6.4	1.60	0.90	308.63
Controlling		1.2DL+1.6LL	526.5	9.8	---	---	0.90	611.35

REACTIONS (kips):

	Left	Right
Initial reaction	12.39	11.93
DL reaction	35.06	36.21
Max +LL reaction	23.52	25.53
Max -LL reaction	-27.20	-3.81
Max +total reaction (factored)	79.70	84.31

DEFLECTIONS:

					Ratio
Initial load (in)	at 11.50 ft	= -0.450	L/D = 613		
Live load (in)	at 11.50 ft	= -0.252	L/D = 1096	> 360	0.33
Post Comp load (in)	at 11.50 ft	= -0.489	L/D = 565	> 240	0.43
Net Total load (in)	at 11.50 ft	= -0.939	L/D = 294	> 240	0.82



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Floor Type: FIRST FLOOR **Beam Number = 47**

SPAN INFORMATION (ft): I-End (55.00,22.25) J-End (78.00,22.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X45 Fy = 50.0 ksi
Total Beam Length (ft) = 23.00

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	parallel	parallel
Decking type	ASC 2W	ASC 2W
beff (in) =	69.00	Y bar(in) = 16.47
Mnf (kip-ft) =	679.28	Mn (kip-ft) = 679.28
C (kips) =	665.00	PNA (in) = 18.89
Ieff (in4) =	1953.78	Itr (in4) = 1953.78
Stud length (in) =	4.00	Stud diam (in) = 0.75

Stud Capacity (kips) Qn = 21.5 Rg = 1.00 Rp = 0.75
# of studs: Full = 81 Partial = 40 Actual = 82
Number of Stud Rows = 2 Percent of Full Composite Action = 100.00

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building
Engineering
Planning
Public Works
Traffic
Fire

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
7.063	6.27	5.42	4.15	45.9	0.00	0.00	0.0	0.18	29.4	0.00
			-0.93	46.5	0.00	0.00	0.0	-0.17	29.4	0.00
7.229	10.11	5.03	13.35	45.9	0.00	0.00	0.0	1.66	29.4	0.00
			-2.07	46.5	0.00	0.00	0.0	-0.40	29.4	0.00
15.333	11.92	5.40	14.67	45.9	0.00	0.00	0.0	1.96	29.4	0.00
			-1.74	46.5	0.00	0.00	0.0	-0.49	29.4	0.00
15.333	5.80	4.93	3.19	45.9	0.00	0.00	0.0	0.00	0.0	0.00
21.219	3.53	0.00	4.21	45.9	0.00	0.00	0.0	0.99	29.4	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.045	0.045	0.000	---	NonR	0.000	0.000
	23.000	0.045	0.045	0.000			0.000	0.000
2	0.000	0.159	0.000	0.000	---	NonR	0.000	0.000
	21.218	0.159	0.000	0.000			0.000	0.000
3	0.000	0.071	0.000	0.650	45.9%	Red	0.000	0.000
	21.218	0.071	0.000	0.650			0.000	0.000
4	0.000	0.588	0.000	0.000	---	NonR	0.000	0.000
	7.062	0.588	0.000	0.000			0.000	0.000
5	0.000	0.264	0.000	0.960	45.9%	Red	0.000	0.000

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
	7.062	0.264	0.000	0.960			0.000	0.000
6	7.063	0.490	0.000	0.000	---	NonR	0.000	0.000
	17.520	0.490	0.000	0.000			0.000	0.000
7	7.063	0.220	0.000	0.800	45.9%	Red	0.000	0.000
	17.520	0.220	0.000	0.800			0.000	0.000
8	17.521	0.588	0.000	0.000	---	NonR	0.000	0.000
	21.218	0.588	0.000	0.000			0.000	0.000
9	17.521	0.264	0.000	0.960	45.9%	Red	0.000	0.000
	21.218	0.264	0.000	0.960			0.000	0.000
10	0.000	0.387	0.000	0.000	---	NonR	0.000	0.000
	21.218	0.387	0.000	0.000			0.000	0.000
11	0.000	0.013	0.000	0.080	29.4%	Roof	0.000	0.000
	21.218	0.013	0.000	0.080			0.000	0.000
12	0.000	0.047	0.000	0.293	29.4%	Roof	0.000	0.000
	7.062	0.047	0.000	0.293			0.000	0.000
13	0.000	0.000	0.000	0.007	29.4%	Roof	0.000	0.000
	7.062	0.000	0.000	0.007			0.000	0.000
14	7.063	0.040	0.000	0.250	29.4%	Roof	0.000	0.000
	17.520	0.040	0.000	0.250			0.000	0.000
15	17.521	0.047	0.000	0.293	29.4%	Roof	0.000	0.000
	21.218	0.047	0.000	0.293			0.000	0.000
16	17.521	0.000	0.000	0.007	29.4%	Roof	0.000	0.000
	21.218	0.000	0.000	0.007			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 80.10 kips 1.00Vn = 166.64 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	PreCmp+	1.4DL	112.4	15.3	8.1	1.01	0.90	282.60
	Init DL	1.4DL	112.4	15.3	---	---		
	Max +	1.2DL+1.6LL	515.4	12.0	---	---	0.90	61
Controlling		1.2DL+1.6LL	515.4	12.0	---	---	0.90	61

REACTIONS (kips):

	Left	Right
Initial reaction	11.17	10.65
DL reaction	34.74	34.83
Max +LL reaction	23.73	23.94
Max -LL reaction	-1.78	-1.46
Max +total reaction (factored)	79.66	80.10

DEFLECTIONS:

			Ratio
Initial load (in)	at 11.50 ft = -0.462	L/D = 597	
Live load (in)	at 11.50 ft = -0.262	L/D = 1054 > 360	0.34
Post Comp load (in)	at 11.50 ft = -0.511	L/D = 540 > 240	0.44
Net Total load (in)	at 11.50 ft = -0.973	L/D = 284 > 240	0.85

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Floor Type: FIRST FLOOR **Beam Number = 48**

SPAN INFORMATION (ft): I-End (78.00,22.25) J-End (101.67,22.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X67 Fy = 50.0 ksi
Total Beam Length (ft) = 23.67

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	parallel	parallel
Decking type	ASC 2W	ASC 2W

beff (in)	=	71.00	Y bar(in)	=	15.68
Mnf (kip-ft)	=	937.68	Mn (kip-ft)	=	873.37
C (kips)	=	581.50	PNA (in)	=	15.91
Ieff (in4)	=	2454.53	Itr (in4)	=	2762.73
Stud length (in)	=	4.00	Stud diam (in)	=	0.75

Stud Capacity (kips) Qn = 21.5 Rg = 1.00 Rp = 0.75
# of studs: Full = 87 Partial = 22 Actual = 55
Number of Stud Rows = 1 Percent of Full Composite Action = 62.88

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building
Engineering
Planning
Public Works
Traffic
Fire

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
7.889	9.51	4.94	12.75	43.9	0.00	0.00	0.0	1.65	22.7	0.00
			-2.34	44.5	0.00	0.00	0.0	-0.66	22.7	0.00
7.889	4.37	4.40	2.81	43.9	0.00	0.00	0.0	0.00	0.0	0.00
			-0.63	44.5	0.00	0.00	0.0	-0.19	0.0	0.00
12.813	3.80	3.29	2.70	43.9	0.00	0.00	0.0	0.20	22.7	0.00
			-0.93	44.5	0.00	0.00	0.0	-0.17	22.7	0.00
12.854	6.34	3.19	7.34	43.9	0.00	0.00	0.0	0.65	22.7	0.00
15.778	4.00	3.40	2.17	43.9	0.00	0.00	0.0	0.00	0.0	0.00
3.448	3.53	0.00	4.21	43.9	0.00	0.00	0.0	0.99	22.7	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.067	0.067	0.000	---	NonR	0.000	0.000
	23.666	0.067	0.067	0.000			0.000	0.000
2	3.448	0.159	0.000	0.000	---	NonR	0.000	0.000
	13.520	0.159	0.000	0.000			0.000	0.000
3	3.448	0.071	0.000	0.650	43.9%	Red	0.000	0.000
	13.520	0.071	0.000	0.650			0.000	0.000
4	13.521	0.168	0.000	0.000	---	NonR	0.000	0.000
	22.947	0.168	0.000	0.000			0.000	0.000

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
5	13.521	0.075	0.000	0.685	43.9%	Red	0.000	0.000
	15.111	0.075	0.000	0.685			0.000	0.000
6	15.112	0.076	0.000	0.686	43.9%	Red	0.000	0.000
	22.947	0.076	0.000	0.686			0.000	0.000
7	22.948	0.159	0.000	0.000	---	NonR	0.000	0.000
	23.667	0.159	0.000	0.000			0.000	0.000
8	22.948	0.071	0.000	0.650	43.9%	Red	0.000	0.000
	23.667	0.071	0.000	0.650			0.000	0.000
9	3.448	0.588	0.000	0.000	---	NonR	0.000	0.000
	12.812	0.588	0.000	0.000			0.000	0.000
10	3.448	0.264	0.000	0.960	43.9%	Red	0.000	0.000
	12.812	0.264	0.000	0.960			0.000	0.000
11	12.813	0.490	0.000	0.000	---	NonR	0.000	0.000
	23.270	0.490	0.000	0.000			0.000	0.000
12	12.813	0.220	0.000	0.800	43.9%	Red	0.000	0.000
	23.270	0.220	0.000	0.800			0.000	0.000
13	23.271	0.588	0.000	0.000	---	NonR	0.000	0.000
	23.667	0.588	0.000	0.000			0.000	0.000
14	23.271	0.264	0.000	0.960	43.9%	Red	0.000	0.000
	23.667	0.264	0.000	0.960			0.000	0.000
15	3.448	0.387	0.000	0.000	---	NonR	0.000	0.000
	23.667	0.387	0.000	0.000			0.000	0.000
16	3.448	0.013	0.000	0.080	22.7%	Roof	0.000	0.000
	13.520	0.013	0.000	0.080			0.000	0.000
17	13.521	0.013	0.000	0.084	22.7%	Roof	0.000	0.000
	22.947	0.013	0.000	0.084			0.000	0.000
18	22.948	0.013	0.000	0.080	22.7%	Roof	0.000	0.000
	23.667	0.013	0.000	0.080			0.000	0.000
19	3.448	0.047	0.000	0.293	22.7%	Roof	0.000	0.000
	12.812	0.047	0.000	0.293			0.000	0.000
20	3.448	0.000	0.000	0.007	22.7%	Roof	0.000	0.000
	12.812	0.000	0.000	0.007			0.000	0.000
21	12.813	0.040	0.000	0.250	22.7%	Roof	0.000	0.000
	23.270	0.040	0.000	0.250			0.000	0.000
22	23.271	0.047	0.000	0.293	22.7%	Roof	0.000	0.000
	23.667	0.047	0.000	0.293			0.000	0.000
23	23.271	0.000	0.000	0.007	22.7%	Roof	0.000	0.000
	23.667	0.000	0.000	0.007			0.000	0.000

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SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 74.56 kips 1.00Vn = 193.15 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu	@	Lb	Cb	Phi	Phi*Mn
			kip-ft	ft	ft			kip-ft
Center	PreCmp+	1.4DL	127.3	12.8	4.9	1.02	0.90	487.50
	Init DL	1.4DL	127.3	12.8	---	---		

Span	Cond	LoadCombo	Mu	@	Lb	Cb	Phi	Phi*Mn
	Max +	1.2DL+1.6LL	538.6	11.9	---	---	0.90	786.03
Controlling		1.2DL+1.6LL	507.7	7.9	---	---	0.90	726.44

REACTIONS (kips):

	Left	Right
Initial reaction	11.11	9.68
DL reaction	31.90	30.72
Max +LL reaction	22.68	21.01
Max -LL reaction	-1.80	-1.10
Max +total reaction (factored)	74.56	70.48

DEFLECTIONS:

					Ratio
Initial load (in)	at 11.72 ft =	-0.315	L/D = 902		
Live load (in)	at 11.72 ft =	-0.223	L/D = 1275 >	360	0.28
Post Comp load (in)	at 11.72 ft =	-0.425	L/D = 669 >	240	0.36
Net Total load (in)	at 11.72 ft =	-0.739	L/D = 384 >	240	0.62

Gravity Beam Design

RAM Steel 17.02.01.23 Page 38/249
DataBase: 2190606 Transfer Level w Omega - Update 210422 10/28/21 18:03:22
Building Code: IBC Steel Code: AISC 360-16 LRFD

Floor Type: FIRST FLOOR **Beam Number = 49**

SPAN INFORMATION (ft): I-End (101.67,22.25) J-End (123.83,22.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X45 Fy = 50.0 ksi
Total Beam Length (ft) = 22.17

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	parallel	parallel
Decking type	ASC 2W	ASC 2W
beff (in) =	66.50	Y bar(in) = 16.38
Mnf (kip-ft) =	676.33	Mn (kip-ft) = 676.33
C (kips) =	665.00	PNA (in) = 18.78
Ieff (in4) =	1938.00	Itr (in4) = 1938.00
Stud length (in) =	4.00	Stud diam (in) = 0.75

Stud Capacity (kips) Qn = 21.5 Rg = 1.00 Rp = 0.75
# of studs: Full = 76 Partial = 32 Actual = 73
Number of Stud Rows = 2 Percent of Full Composite Action = 96.82

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POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
					L					
7.389	11.20	5.06	13.59	45.8	0.00	0.00	0.0	1.80	28.2	0.00
			-1.63	46.5	0.00	0.00	0.0	-0.46	28.2	0.00
7.389	5.18	5.27	3.72	45.8	0.00	0.00	0.0	0.08	28.2	0.00
			-1.17	46.5	0.00	0.00	0.0	-0.31	28.2	0.00
14.778	11.20	5.06	13.59	45.8	0.00	0.00	0.0	1.80	28.2	0.00
			-1.63	46.5	0.00	0.00	0.0	-0.46	28.2	0.00
14.778	3.63	3.65	2.30	45.8	0.00	0.00	0.0	0.00	0.0	0.00
			-0.52	46.5	0.00	0.00	0.0	-0.16	0.0	0.00
17.896	3.61	2.92	2.35	45.8	0.00	0.00	0.0	0.16	28.2	0.00
			-0.59	46.5	0.00	0.00	0.0	-0.08	28.2	0.00
3.302	3.49	0.00	4.17	45.8	0.00	0.00	0.0	0.98	28.2	0.00
8.479	3.49	0.00	4.17	45.8	0.00	0.00	0.0	0.98	28.2	0.00

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LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.045	0.045	0.000	---	NonR	0.000	0.000
	22.166	0.045	0.045	0.000			0.000	0.000
2	0.000	0.747	0.000	0.000	---	NonR	0.000	0.000
	3.302	0.747	0.000	0.000			0.000	0.000
3	0.000	0.071	0.000	0.650	45.8%	Red	0.000	0.000

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
	3.302	0.071	0.000	0.650			0.000	0.000
4	0.000	0.264	0.000	0.960	45.8%	Red	0.000	0.000
	3.302	0.264	0.000	0.960			0.000	0.000
5	0.000	0.387	0.000	0.000	---	NonR	0.000	0.000
	3.302	0.387	0.000	0.000			0.000	0.000
6	0.000	0.060	0.000	0.373	28.2%	Roof	0.000	0.000
	3.302	0.060	0.000	0.373			0.000	0.000
7	0.000	0.000	0.000	0.007	28.2%	Roof	0.000	0.000
	3.302	0.000	0.000	0.007			0.000	0.000
8	8.480	0.159	0.000	0.000	---	NonR	0.000	0.000
	22.167	0.159	0.000	0.000			0.000	0.000
9	8.480	0.071	0.000	0.650	45.8%	Red	0.000	0.000
	22.167	0.071	0.000	0.650			0.000	0.000
10	8.480	0.588	0.000	0.000	---	NonR	0.000	0.000
	17.895	0.588	0.000	0.000			0.000	0.000
11	8.480	0.264	0.000	0.960	45.8%	Red	0.000	0.000
	17.895	0.264	0.000	0.960			0.000	0.000
12	17.896	0.490	0.000	0.000	---	NonR	0.000	0.000
	22.167	0.490	0.000	0.000			0.000	0.000
13	17.896	0.220	0.000	0.800	45.8%	Red	0.000	0.000
	22.167	0.220	0.000	0.800			0.000	0.000
14	8.480	0.387	0.000	0.000	---	NonR	0.000	0.000
	22.167	0.387	0.000	0.000			0.000	0.000
15	8.480	0.013	0.000	0.080	28.2%	Roof	0.000	0.000
	22.167	0.013	0.000	0.080			0.000	0.000
16	8.480	0.047	0.000	0.293	28.2%	Roof	0.000	0.000
	17.895	0.047	0.000	0.293			0.000	0.000
17	8.480	0.000	0.000	0.007	28.2%	Roof	0.000	0.000
	17.895	0.000	0.000	0.007			0.000	0.000
18	17.896	0.040	0.000	0.250	28.2%	Roof	0.000	0.000
	22.167	0.040	0.000	0.250			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 79.50 kips 1.00Vn = 166.64 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	PreCmp+	1.4DL	111.1	11.6	7.4	1.00	0.90	288.96
	Init DL	1.4DL	111.1	11.6	---	---		
	Max +	1.2DL+1.6LL	497.9	11.2	---	---	0.90	608.69
Controlling		1.2DL+1.6LL	473.8	14.8	---	---	0.90	574.10

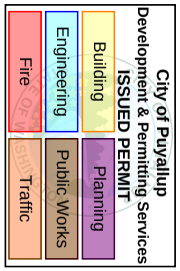
REACTIONS (kips):

	Left	Right
Initial reaction	10.86	12.12
DL reaction	33.26	34.89
Max +LL reaction	23.36	23.52

	Left	Right
Max -LL reaction	-1.93	-2.01
Max +total reaction (factored)	77.30	79.50

DEFLECTIONS:

							Ratio
Initial load (in)	at 11.08 ft	=	-0.426	L/D	=	625	
Live load (in)	at 11.08 ft	=	-0.236	L/D	=	1125 > 360	0.32
Post Comp load (in)	at 11.08 ft	=	-0.452	L/D	=	589 > 240	0.41
Net Total load (in)	at 11.08 ft	=	-0.878	L/D	=	303 > 240	0.79



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Floor Type: FIRST FLOOR **Beam Number = 50**

SPAN INFORMATION (ft): I-End (123.83,22.25) J-End (141.17,22.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X31 Fy = 50.0 ksi
Total Beam Length (ft) = 17.33

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	parallel	parallel
Decking type	ASC 2W	ASC 2W

beff (in)	=	52.00	Y bar(in)	=	16.52
Mnf (kip-ft)	=	467.30	Mn (kip-ft)	=	460.57
C (kips)	=	430.74	PNA (in)	=	15.85
Ieff (in4)	=	1297.88	Itr (in4)	=	1325.07
Stud length (in)	=	4.00	Stud diam (in)	=	0.75

Stud Capacity (kips) Qn = 21.5 Rg = 1.00 Rp = 0.75
# of studs: Full = 52 Partial = 17 Actual = 47
Number of Stud Rows = 2 Percent of Full Composite Action = 92.50

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POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
7.292	12.30	5.76	15.36	38.9	0.00	0.00	0.0	1.93	13.3	0.00
			-1.92	39.4	0.00	0.00	0.0	-0.36	13.3	0.00
8.667	6.68	5.90	4.27	38.9	0.00	0.00	0.0	0.11	13.3	0.00
			-0.73	39.4	0.00	0.00	0.0	-0.15	13.3	0.00
8.146	3.37	0.00	4.02	38.9	0.00	0.00	0.0	0.95	13.3	0.00
13.146	3.37	0.00	4.02	38.9	0.00	0.00	0.0	0.95	13.3	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.031	0.031	0.000	---	NonR	0.000	0.000
	17.333	0.031	0.031	0.000			0.000	0.000
2	0.000	0.159	0.000	0.000	---	NonR	0.000	0.000
	8.145	0.159	0.000	0.000			0.000	0.000
3	0.000	0.071	0.000	0.650	38.9%	Red	0.000	0.000
	8.145	0.071	0.000	0.650			0.000	0.000
4	0.000	0.490	0.000	0.000	---	NonR	0.000	0.000
	6.187	0.490	0.000	0.000			0.000	0.000
5	0.000	0.220	0.000	0.800	38.9%	Red	0.000	0.000
	6.187	0.220	0.000	0.800			0.000	0.000
6	6.188	0.588	0.000	0.000	---	NonR	0.000	0.000

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
	8.145	0.588	0.000	0.000			0.000	0.000
7	6.188	0.256	0.000	0.933	38.9%	Red	0.000	0.000
	6.520	0.264	0.000	0.961			0.000	0.000
8	6.188	0.007	0.000	0.040	38.9%	Red	0.000	0.000
	6.520	0.000	0.000	0.000			0.000	0.000
9	6.521	0.264	0.000	0.960	38.9%	Red	0.000	0.000
	8.145	0.264	0.000	0.960			0.000	0.000
10	0.000	0.387	0.000	0.000	---	NonR	0.000	0.000
	8.145	0.387	0.000	0.000			0.000	0.000
11	0.000	0.013	0.000	0.080	13.3%	Roof	0.000	0.000
	8.145	0.013	0.000	0.080			0.000	0.000
12	0.000	0.040	0.000	0.250	13.3%	Roof	0.000	0.000
	6.187	0.040	0.000	0.250			0.000	0.000
13	6.188	0.047	0.000	0.293	13.3%	Roof	0.000	0.000
	8.145	0.047	0.000	0.293			0.000	0.000
14	6.188	0.000	0.000	0.007	13.3%	Roof	0.000	0.000
	8.145	0.000	0.000	0.007			0.000	0.000
15	13.146	0.747	0.000	0.000	---	NonR	0.000	0.000
	17.333	0.747	0.000	0.000			0.000	0.000
16	13.146	0.071	0.000	0.650	38.9%	Red	0.000	0.000
	17.333	0.071	0.000	0.650			0.000	0.000
17	13.146	0.264	0.000	0.960	38.9%	Red	0.000	0.000
	17.333	0.264	0.000	0.960			0.000	0.000
18	13.146	0.387	0.000	0.000	---	NonR	0.000	0.000
	17.333	0.387	0.000	0.000			0.000	0.000
19	13.146	0.060	0.000	0.373	13.3%	Roof	0.000	0.000
	17.333	0.060	0.000	0.373			0.000	0.000
20	13.146	0.000	0.000	0.007	13.3%	Roof	0.000	0.000
	17.333	0.000	0.000	0.007			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 56.96 kips 1.00Vn = 131.18 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu	@	Lb	Cb	Phi	Phi
			kip-ft	ft	ft			k
Center	PreCmp+	1.4DL	66.8	8.7	8.7	1.66	0.90	20
	Init DL	1.4DL	66.8	8.7	---	---		
	Max +	1.2DL+1.6LL	320.2	7.3	---	---	0.90	41
Controlling		1.2DL+1.6LL	320.2	7.3	---	---	0.90	41

REACTIONS (kips):

	Left	Right
Initial reaction	6.56	5.64
DL reaction	22.89	21.32
Max +LL reaction	18.43	17.24
Max -LL reaction	-1.14	-0.91
Max +total reaction (factored)	56.96	53.17

PRMU2022123

DEFLECTIONS: **Ratio**

Initial load (in)	at	8.49 ft	=	-0.203	L/D	=	1023		
Live load (in)	at	8.49 ft	=	-0.133	L/D	=	1559	> 360	0.23
Post Comp load (in)	at	8.49 ft	=	-0.243	L/D	=	856	> 240	0.28
Net Total load (in)	at	8.49 ft	=	-0.446	L/D	=	466	> 240	0.51

Floor Type: FIRST FLOOR **Beam Number = 106**

SPAN INFORMATION (ft): I-End (0.25,44.67) J-End (9.08,44.67)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 8.83
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.012	0.000	---	NonR	0.000
	8.833	0.012	0.000			0.000

SHEAR (Ultimate): Max Vu (1.4DL) = 0.07 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

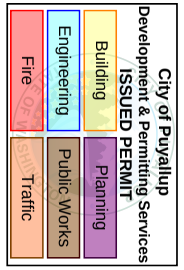
Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.4DL	0.2	4.4	8.8	1.14	0.90	27.74
Controlling		1.4DL	0.2	4.4	8.8	1.14	0.90	27.74

REACTIONS (kips):

	Left	Right
DL reaction	0.05	0.05
Max +total reaction (factored)	0.07	0.07

DEFLECTIONS: **Ratio**

Dead load (in)	at	4.42 ft	=	-0.001	L/D	=	1002		
							24		
Live load (in)	at	4.42 ft	=	-0.000					
Net Total load (in)	at	4.42 ft	=	-0.001	L/D	=	1002	> 240	0.00
							24		



Floor Type: FIRST FLOOR **Beam Number = 107**

SPAN INFORMATION (ft): I-End (9.08,44.67) J-End (32.00,44.67)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X36 Fy = 50.0 ksi
Total Beam Length (ft) = 22.92

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	parallel	parallel
Decking type	ASC 2W	ASC 2W

beff (in)	=	64.87	Y bar(in)	=	16.69
Mnf (kip-ft)	=	546.50	Mn (kip-ft)	=	488.22
C (kips)	=	344.59	PNA (in)	=	15.63
Ieff (in4)	=	1355.99	Itr (in4)	=	1574.07
Stud length (in)	=	4.00	Stud diam (in)	=	0.75

Stud Capacity (kips) Qn = 21.5 Rg = 1.00 Rp = 0.75
# of studs: Full = 75 Partial = 47 Actual = 47
Number of Stud Rows = 1 Percent of Full Composite Action = 62.99

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
2.219	4.45	1.95	1.83	19.7	0.00	0.00	0.0	0.19	3.5	0.00
7.639	23.32	8.03	16.52	19.7	0.00	0.00	0.0	3.28	3.5	0.00
15.278	23.85	8.54	17.05	19.7	0.00	0.00	0.0	3.34	3.5	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.036	0.036	0.000	---	NonR	0.000	0.000
	22.916	0.036	0.036	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 62.46 kips 1.00Vn = 140.71 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	PreCmp+	1.4DL	94.9	11.0	7.6	1.00	0.90	219.02
	Init DL	1.4DL	94.9	11.0	---	---		
	Max +	1.2DL+1.6LL	432.5	7.6	---	---	0.90	439.40
Controlling		1.2DL+1.6LL	432.5	7.6	---	---	0.90	439.40

REACTIONS (kips):

	Left	Right
Initial reaction	10.37	8.97
DL reaction	27.93	24.52
Max +LL reaction	18.09	16.91
Max +total reaction (factored)	62.46	56.48

DEFLECTIONS:

						Ratio
Initial load (in)	at 11.46 ft	=	-0.507	L/D = 543		
Live load (in)	at 11.46 ft	=	-0.318	L/D = 864	> 360	0.42
Post Comp load (in)	at 11.46 ft	=	-0.613	L/D = 448	> 240	0.54
Net Total load (in)	at 11.46 ft	=	-1.120	L/D = 246	> 240	0.98

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Floor Type: FIRST FLOOR **Beam Number = 108**

SPAN INFORMATION (ft): I-End (32.00,44.67) J-End (55.00,44.67)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X50 Fy = 50.0 ksi
Total Beam Length (ft) = 23.00

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	parallel	parallel
Decking type	ASC 2W	ASC 2W

beff (in)	=	41.00	Y bar(in)	=	14.93
Mnf (kip-ft)	=	653.17	Mn (kip-ft)	=	650.20
C (kips)	=	473.82	PNA (in)	=	15.93
Ieff (in4)	=	1858.35	Itr (in4)	=	1876.05
Stud length (in)	=	4.00	Stud diam (in)	=	0.75

Stud Capacity (kips) Qn = 21.5 Rg = 1.00 Rp = 0.75
# of studs: Full = 54 Partial = 37 Actual = 52
Number of Stud Rows = 1 Percent of Full Composite Action = 97.11

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
9.792	34.72	11.94	25.20	27.0	0.00	0.00	0.0	4.28	10.9	0.00
19.583	32.79	10.82	26.46	27.0	0.00	0.00	0.0	4.16	10.9	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.050	0.050	0.000	---	NonR	0.000	0.000
	23.000	0.050	0.050	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 98.43 kips 1.00Vn = 185.82 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu	@	Lb	Cb	Phi	Phi*Mn
			kip-ft	ft	ft			kip-ft
Center	PreCmp+	1.4DL	120.5	9.8	9.8	1.65	0.90	345.00
	Init DL	1.4DL	120.5	9.8	---	---		
	Max +	1.2DL+1.6LL	548.9	9.8	---	---	0.90	585.18
Controlling		1.2DL+1.6LL	548.9	9.8	---	---	0.90	585.18

REACTIONS (kips):

	Left	Right
Initial reaction	9.04	14.87
DL reaction	25.39	43.28

	Left	Right
Max +LL reaction	16.18	29.06
Max +total reaction (factored)	56.35	98.43

DEFLECTIONS:

				Ratio
Initial load (in)	at 11.50 ft = -0.389	L/D = 710		
Live load (in)	at 11.50 ft = -0.256	L/D = 1079	> 360	0.33
Post Comp load (in)	at 11.50 ft = -0.512	L/D = 539	> 240	0.45
Net Total load (in)	at 11.50 ft = -0.901	L/D = 306	> 240	0.78

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Floor Type: FIRST FLOOR **Beam Number = 109**

SPAN INFORMATION (ft): I-End (55.00,44.67) J-End (78.00,44.67)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X45 Fy = 50.0 ksi
Total Beam Length (ft) = 23.00

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	parallel	parallel
Decking type	ASC 2W	ASC 2W

beff (in)	=	41.39	Y bar(in)	=	15.09
Mnf (kip-ft)	=	603.45	Mn (kip-ft)	=	578.88
C (kips)	=	387.67	PNA (in)	=	15.71
Ieff (in4)	=	1593.63	Itr (in4)	=	1721.82
Stud length (in)	=	4.00	Stud diam (in)	=	0.75

Stud Capacity (kips) Qn = 21.5 Rg = 1.00 Rp = 0.75
# of studs: Full = 73 Partial = 47 Actual = 58
Number of Stud Rows = 1 Percent of Full Composite Action = 78.70

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
7.229	31.50	10.39	22.85	22.1	0.00	0.00	0.0	3.92	6.0	0.00
15.333	24.60	8.81	17.66	22.1	0.00	0.00	0.0	3.46	6.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.045	0.045	0.000	---	NonR	0.000	0.000
	23.000	0.045	0.045	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 69.02 kips 1.00Vn = 166.64 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	PreCmp+	1.4DL	105.5	7.2	8.1	1.01	0.90	284.07
	Init DL	1.4DL	105.5	7.2	---	---		
	Max +	1.2DL+1.6LL	497.5	7.2	---	---	0.90	520.99
Controlling		1.2DL+1.6LL	497.5	7.2	---	---	0.90	520.99

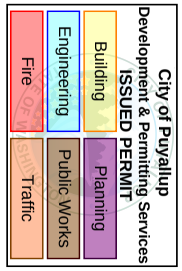
REACTIONS (kips):

	Left	Right
Initial reaction	10.58	9.66
DL reaction	30.32	26.82

	Left	Right
Max +LL reaction	20.40	18.09
Max +total reaction (factored)	69.02	61.13

DEFLECTIONS:

							Ratio
Initial load (in)	at 11.39 ft	=	-0.430	L/D =	643		
Live load (in)	at 11.39 ft	=	-0.304	L/D =	908	> 360	0.40
Post Comp load (in)	at 11.39 ft	=	-0.595	L/D =	464	> 240	0.52
Net Total load (in)	at 11.39 ft	=	-1.025	L/D =	269	> 240	0.89



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Gravity Beam Design

RAM Steel 17.02.01.23 Page 51/249
DataBase: 2190606 Transfer Level w Omega - Update 210422 10/28/21 18:03:22
Building Code: IBC Steel Code: AISC 360-16 LRFD

Floor Type: FIRST FLOOR **Beam Number = 110**

SPAN INFORMATION (ft): I-End (78.00,44.67) J-End (101.67,44.67)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X36 Fy = 50.0 ksi
Total Beam Length (ft) = 23.67

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	parallel	parallel
Decking type	ASC 2W	ASC 2W

beff (in)	=	66.00	Y bar(in)	=	16.73
Mnf (kip-ft)	=	547.40	Mn (kip-ft)	=	511.00
C (kips)	=	409.20	PNA (in)	=	15.73
Ieff (in4)	=	1442.23	Itr (in4)	=	1579.50
Stud length (in)	=	4.00	Stud diam (in)	=	0.75

Stud Capacity (kips) Qn = 21.5 Rg = 1.00 Rp = 0.75
# of studs: Full = 75 Partial = 48 Actual = 56
Number of Stud Rows = 1 Percent of Full Composite Action = 75.18

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
7.889	23.50	9.56	18.68	12.0	0.00	0.00	0.0	3.47	0.0	0.00
			-1.64	14.1	0.00	0.00	0.0	-0.45	0.0	0.00
15.778	19.61	5.53	11.89	12.0	0.00	0.00	0.0	2.75	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.036	0.036	0.000	---	NonR	0.000	0.000
	23.666	0.036	0.036	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 55.45 kips 1.00Vn = 140.71 kips

MOMENTS (Ultimate):

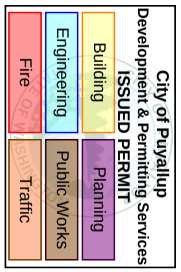
Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	PreCmp+	1.4DL	93.9	7.9	7.9	1.06	0.90	230.50
	Init DL	1.4DL	93.9	7.9	---	---		
	Max +	1.2DL+1.6LL	436.1	7.9	---	---	0.90	459.90
Controlling		1.2DL+1.6LL	436.1	7.9	---	---	0.90	459.90

REACTIONS (kips):

	Left	Right
Initial reaction	8.64	7.30
DL reaction	22.63	21.33
Max +LL reaction	17.68	15.45
Max -LL reaction	-1.24	-0.62
Max +total reaction (factored)	55.45	50.31

DEFLECTIONS:

								Ratio
Initial load (in)	at 11.60 ft	=	-0.492	L/D	=	577		
Live load (in)	at 11.60 ft	=	-0.322	L/D	=	882	> 360	0.41
Post Comp load (in)	at 11.60 ft	=	-0.594	L/D	=	478	> 240	0.50
Net Total load (in)	at 11.60 ft	=	-1.086	L/D	=	261	> 240	0.92



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Floor Type: FIRST FLOOR **Beam Number = 111**

SPAN INFORMATION (ft): I-End (101.67,44.67) J-End (123.83,44.67)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X31 Fy = 50.0 ksi
Total Beam Length (ft) = 22.17

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	parallel	parallel
Decking type	ASC 2W	ASC 2W

beff (in)	=	63.75	Y bar(in)	=	16.98
Mnf (kip-ft)	=	476.36	Mn (kip-ft)	=	476.36
C (kips)	=	456.50	PNA (in)	=	19.42
Ieff (in4)	=	1380.04	Itr (in4)	=	1380.04
Stud length (in)	=	4.00	Stud diam (in)	=	0.75

Stud Capacity (kips) Qn = 21.5 Rg = 1.00 Rp = 0.75
# of studs: Full = 64 Partial = 54 Actual = 54
Number of Stud Rows = 1 Percent of Full Composite Action = 84.97

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
7.389	23.09	8.28	16.49	17.5	0.00	0.00	0.0	3.23	2.2	0.00
14.778	23.09	8.28	16.49	17.5	0.00	0.00	0.0	3.23	2.2	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.031	0.031	0.000	---	NonR	0.000	0.000
	22.166	0.031	0.031	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 54.95 kips 1.00Vn = 131.18 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	PreCmp+	1.4DL	88.3	11.1	7.4	1.00	0.90	169.40
	Init DL	1.4DL	88.3	11.1	---	---		
	Max +	1.2DL+1.6LL	405.2	11.1	---	---	0.90	428.72
Controlling		1.2DL+1.6LL	405.0	14.8	---	---	0.90	409.42

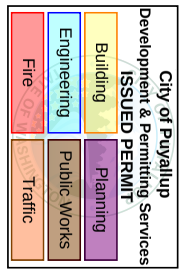
REACTIONS (kips):

	Left	Right
Initial reaction	8.63	8.63
DL reaction	23.44	23.44

	Left	Right
Max +LL reaction	16.77	16.77
Max +total reaction (factored)	54.95	54.95

DEFLECTIONS:

							Ratio
Initial load (in)	at 11.08 ft	=	-0.524	L/D =	507		
Live load (in)	at 11.08 ft	=	-0.280	L/D =	950	> 360	0.38
Post Comp load (in)	at 11.08 ft	=	-0.527	L/D =	505	> 240	0.48
Net Total load (in)	at 11.08 ft	=	-1.051	L/D =	253	> 240	0.95



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Floor Type: FIRST FLOOR **Beam Number = 112**

SPAN INFORMATION (ft): I-End (123.83,44.67) J-End (141.17,44.67)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X31 Fy = 50.0 ksi
Total Beam Length (ft) = 17.33

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	parallel	parallel
Decking type	ASC 2W	ASC 2W

beff (in)	=	32.50	Y bar(in)	=	15.31
Mnf (kip-ft)	=	426.96	Mn (kip-ft)	=	395.51
C (kips)	=	258.45	PNA (in)	=	15.54
Ieff (in4)	=	1036.94	Itr (in4)	=	1184.75
Stud length (in)	=	4.00	Stud diam (in)	=	0.75

Stud Capacity (kips) Qn = 21.5 Rg = 1.00 Rp = 0.75
# of studs: Full = 43 Partial = 22 Actual = 28
Number of Stud Rows = 1 Percent of Full Composite Action = 64.70

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
7.292	31.29	10.74	22.77	3.4	0.00	0.00	0.0	3.79	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.031	0.031	0.000	---	NonR	0.000	0.000
	17.333	0.031	0.031	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 45.97 kips 1.00Vn = 131.18 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	PreCmp+	1.4DL	65.1	7.3	10.0	1.65	0.90	202.50
	Init DL	1.4DL	65.1	7.3	---	---		
	Max +	1.2DL+1.6LL	334.2	7.3	---	---	0.90	355.96
Controlling		1.2DL+1.6LL	334.2	7.3	---	---	0.90	355.96

REACTIONS (kips):

	Left	Right
Initial reaction	6.49	4.79
DL reaction	18.40	13.43
Max +LL reaction	14.93	10.84

	Left	Right
Max +total reaction (factored)	45.97	33.47

DEFLECTIONS:

							Ratio
Initial load (in)	at	8.23 ft	=	-0.185	L/D =	1125	
Live load (in)	at	8.23 ft	=	-0.155	L/D =	1338 > 360	0.27
Post Comp load (in)	at	8.23 ft	=	-0.279	L/D =	745 > 240	0.32
Net Total load (in)	at	8.23 ft	=	-0.464	L/D =	448 > 240	0.54

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Floor Type: FIRST FLOOR **Beam Number = 116**

SPAN INFORMATION (ft): I-End (16.72,22.25) J-End (16.72,49.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X31 Fy = 50.0 ksi
Total Beam Length (ft) = 27.50
Cantilever on right (ft) = 5.08

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	perpendicular	perpendicular
Decking type	ASC 2W	ASC 2W

beff (in)	=	66.15	Y bar(in)	=	17.06
Mnf (kip-ft)	=	477.81	Mn (kip-ft)	=	333.58
C (kips)	=	115.44	PNA (in)	=	12.15
Ieff (in4)	=	885.21	Itr (in4)	=	1389.59
Stud length (in)	=	4.00	Stud diam (in)	=	0.75

Rg Stud Red. Factor Rg[1] = 1.00 Rg[2] = 0.85
Rp Stud Red. Factor Rp[1] = 0.60 Rp[2] = 0.60
Stud Capacity (kips) Qn[1] = 17.2 Qn[2] = 14.6
# of studs: Max = 44 Partial = 25 Actual = 25
Number of Stud Rows = 2 Percent of Full Composite Action = 25.29

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POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
6.500	5.29	0.05	5.69	20.0	0.00	0.00	0.0	1.31	0.0	0.00
6.500	6.76	0.62	6.00	20.0	0.00	0.00	0.0	1.30	0.0	0.00
27.500	4.53	0.11	3.33	0.0	0.00	0.00	0.0	1.05	0.0	0.00
27.500	4.41	0.11	3.19	0.0	0.00	0.00	0.0	1.01	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.459	0.459	0.000	---	NonR	0.000	0.000
	6.500	0.459	0.459	0.000			0.000	0.000
2	0.000	0.084	0.000	0.764	20.0%	Red	0.000	0.000
	6.500	0.084	0.000	0.764			0.000	0.000
3	6.500	0.392	0.392	0.000	---	NonR	0.000	0.000
	22.416	0.392	0.392	0.000			0.000	0.000
4	6.500	0.072	0.000	0.261	20.0%	Red	0.000	0.000
	22.416	0.072	0.000	0.261			0.000	0.000
5	22.417	0.459	0.459	0.000	---	NonR	0.000	0.000
	27.500	0.459	0.459	0.000			0.000	0.000

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
6	22.417	0.084	0.000	0.306	0.0%	Red	0.000	0.000
	27.500	0.084	0.000	0.306			0.000	0.000
7	0.000	0.031	0.031	0.000	---	NonR	0.000	0.000
	22.416	0.031	0.031	0.000			0.000	0.000
8	22.417	0.031	0.031	0.000	---	NonR	0.000	0.000
	27.500	0.031	0.031	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 35.55 kips 1.00Vn = 131.18 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	PreCmp+	1.4DL	36.6	9.8	0.0	1.00	0.90	202.50
	PreCmp-	1.4DL	-10.4	22.4	15.9	1.25	0.90	96.76
	Init DL	1.4DL	36.6	9.8	---	---		
	Max +	1.2DL+1.6LL	195.9	6.5	---	---	0.90	300.22
	Max -	1.2DL+1.6LL	-139.5	22.4	15.9	2.38	0.90	184.16
Right	PreCmp-	1.4DL	-10.4	22.4	5.1	1.00	0.90	192.70
	Max -	1.2DL+1.6LL	-139.5	22.4	5.1	1.00	0.90	192.70
Controlling		1.2DL+1.6LL	-139.5	22.4	15.9	2.38	0.90	184.16

REACTIONS (kips):

	Left	Right
Initial reaction	5.26	8.03
DL reaction	12.19	23.32
Max +LL reaction	13.08	18.45
Max -LL reaction	-2.12	0.00
Max +total reaction (factored)	35.55	57.50

DEFLECTIONS: **Ratio**

Center span:

Initial load (in)	at	9.98 ft	= -0.209	L/D = 1288			
Live load (in)	at	9.98 ft	= -0.211	L/D = 1276	>	360	0
Post Comp load (in)	at	9.98 ft	= -0.276	L/D = 973	>	240	0
Net Total load (in)	at	9.98 ft	= -0.485	L/D = 554	>	240	0

Right cantilever:

Init load (in)	= 0.124	L/D = 985			
Pos Live load (in)	= -0.185	L/D = 658	>	360	0
Neg Live load (in)	= 0.135	L/D = 903	>	360	0
Pos Post Comp load (in)	= -0.265	L/D = 461	>	240	0
Neg Post Comp load (in)	= 0.056	L/D = 2193	>	240	0
Pos Total load (in)	= -0.141	L/D = 866	>	240	0.28
Neg Total load (in)	= 0.179	L/D = 680	>	240	0.35

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Floor Type: FIRST FLOOR **Beam Number = 117**

SPAN INFORMATION (ft): I-End (24.36,22.25) J-End (24.36,49.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X31 Fy = 50.0 ksi
Total Beam Length (ft) = 27.50
Cantilever on right (ft) = 5.08

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	perpendicular	perpendicular
Decking type	ASC 2W	ASC 2W

beff (in)	=	67.25	Y bar(in)	=	17.09
Mnf (kip-ft)	=	478.44	Mn (kip-ft)	=	333.62
C (kips)	=	115.44	PNA (in)	=	12.15
Ieff (in4)	=	887.34	Itr (in4)	=	1393.84
Stud length (in)	=	4.00	Stud diam (in)	=	0.75

Rg Stud Red. Factor Rg[1] = 1.00 Rg[2] = 0.85
Rp Stud Red. Factor Rp[1] = 0.60 Rp[2] = 0.60
Stud Capacity (kips) Qn[1] = 17.2 Qn[2] = 14.6
# of studs: Max = 44 Partial = 25 Actual = 25
Number of Stud Rows = 2 Percent of Full Composite Action = 25.29

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POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
					L					
6.500	5.29	0.05	5.69	20.7	0.00	0.00	0.0	1.31	0.0	0.00
6.500	5.29	0.05	5.69	20.7	0.00	0.00	0.0	1.31	0.0	0.00
27.500	4.53	0.11	3.33	0.0	0.00	0.00	0.0	1.05	0.0	0.00
27.500	4.53	0.11	3.33	0.0	0.00	0.00	0.0	1.05	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.459	0.459	0.000	---	NonR	0.000	0.000
	22.416	0.459	0.459	0.000			0.000	0.000
2	0.000	0.084	0.000	0.764	20.7%	Red	0.000	0.000
	6.500	0.084	0.000	0.764			0.000	0.000
3	6.500	0.084	0.000	0.306	20.7%	Red	0.000	0.000
	22.416	0.084	0.000	0.306			0.000	0.000
4	22.417	0.459	0.459	0.000	---	NonR	0.000	0.000
	27.500	0.459	0.459	0.000			0.000	0.000
5	22.417	0.084	0.000	0.306	0.0%	Red	0.000	0.000
	27.500	0.084	0.000	0.306			0.000	0.000

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
6	0.000	0.031	0.031	0.000	---	NonR	0.000	0.000
	22.416	0.031	0.031	0.000			0.000	0.000
7	22.417	0.031	0.031	0.000	---	NonR	0.000	0.000
	27.500	0.031	0.031	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 34.69 kips 1.00Vn = 131.18 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu	@	Lb	Cb	Phi	Phi*Mn
			kip-ft	ft	ft			kip-ft
Center	PreCmp+	1.4DL	38.5	10.5	0.0	1.00	0.90	202.50
	PreCmp-	1.4DL	-10.4	22.4	15.9	1.22	0.90	94.40
	Init DL	1.4DL	38.5	10.5	---	---		
	Max +	1.2DL+1.6LL	190.5	6.5	---	---	0.90	300.26
	Max -	1.2DL+1.6LL	-141.7	22.4	15.9	2.41	0.90	186.09
Right	PreCmp-	1.4DL	-10.4	22.4	5.1	1.00	0.90	192.70
	Max -	1.2DL+1.6LL	-141.7	22.4	5.1	1.00	0.90	192.70
Controlling		1.2DL+1.6LL	-141.7	22.4	15.9	2.41	0.90	186.09

REACTIONS (kips):

	Left	Right
Initial reaction	5.22	8.54
DL reaction	11.56	23.85
Max +LL reaction	13.01	18.91
Max -LL reaction	-2.16	0.00
Max +total reaction (factored)	34.69	58.88

DEFLECTIONS: **Ratio**

Center span:

Initial load (in)	at 10.09 ft =	-0.220	L/D =	1222	
Live load (in)	at 10.09 ft =	-0.212	L/D =	1268 > 360	0.28
Post Comp load (in)	at 10.09 ft =	-0.267	L/D =	1008 > 240	0
Net Total load (in)	at 10.09 ft =	-0.487	L/D =	552 > 240	0

Right cantilever:

Init load (in)	= 0.135	L/D =	906	
Pos Live load (in)	= -0.189	L/D =	647 > 360	0
Neg Live load (in)	= 0.137	L/D =	893 > 360	0
Pos Post Comp load (in)	= -0.276	L/D =	443 > 240	0
Neg Post Comp load (in)	= 0.050	L/D =	2453 > 240	0
Pos Total load (in)	= -0.141	L/D =	866 > 240	0
Neg Total load (in)	= 0.184	L/D =	662 > 240	0

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Floor Type: FIRST FLOOR **Beam Number = 121**

SPAN INFORMATION (ft): I-End (70.33,22.25) J-End (70.33,49.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X31 Fy = 50.0 ksi
Total Beam Length (ft) = 27.50
Cantilever on right (ft) = 5.08

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	perpendicular	perpendicular
Decking type	ASC 2W	ASC 2W

beff (in)	=	67.25	Y bar(in)	=	17.09
Mnf (kip-ft)	=	478.44	Mn (kip-ft)	=	333.62
C (kips)	=	115.44	PNA (in)	=	12.15
Ieff (in4)	=	887.34	Itr (in4)	=	1393.84
Stud length (in)	=	4.00	Stud diam (in)	=	0.75

Rg Stud Red. Factor Rg[1] = 1.00 Rg[2] = 0.85
Rp Stud Red. Factor Rp[1] = 0.60 Rp[2] = 0.60
Stud Capacity (kips) Qn[1] = 17.2 Qn[2] = 14.6
# of studs: Max = 44 Partial = 25 Actual = 25
Number of Stud Rows = 2 Percent of Full Composite Action = 25.29

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POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
6.500	5.31	0.05	5.71	21.8	0.00	0.00	0.0	1.32	0.0	0.00
6.500	5.60	0.08	6.26	21.8	0.00	0.00	0.0	1.44	0.0	0.00
27.500	4.54	0.11	3.34	0.0	0.00	0.00	0.0	1.05	0.0	0.00
27.500	4.80	0.11	3.53	0.0	0.00	0.00	0.0	1.12	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.473	0.473	0.000	---	NonR	0.000	0.000
	22.416	0.473	0.473	0.000			0.000	0.000
2	0.000	0.087	0.000	0.789	21.8%	Red	0.000	0.000
	6.500	0.087	0.000	0.789			0.000	0.000
3	6.500	0.087	0.000	0.315	21.8%	Red	0.000	0.000
	22.416	0.087	0.000	0.315			0.000	0.000
4	22.417	0.473	0.473	0.000	---	NonR	0.000	0.000
	27.500	0.473	0.473	0.000			0.000	0.000
5	22.417	0.087	0.000	0.315	0.0%	Red	0.000	0.000
	27.500	0.087	0.000	0.315			0.000	0.000

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
6	0.000	0.031	0.031	0.000	---	NonR	0.000	0.000
	22.416	0.031	0.031	0.000			0.000	0.000
7	22.417	0.031	0.031	0.000	---	NonR	0.000	0.000
	27.500	0.031	0.031	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 35.79 kips 1.00Vn = 131.18 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu	@	Lb	Cb	Phi	Phi*Mn
			kip-ft	ft	ft			kip-ft
Center	PreCmp+	1.4DL	39.8	10.5	0.0	1.00	0.90	202.50
	PreCmp-	1.4DL	-10.7	22.4	15.9	1.22	0.90	94.44
	Init DL	1.4DL	39.8	10.5	---	---		
	Max +	1.2DL+1.6LL	196.8	6.5	---	---	0.90	300.26
	Max -	1.2DL+1.6LL	-146.2	22.4	15.9	2.40	0.90	186.04
Right	PreCmp-	1.4DL	-10.7	22.4	5.1	1.00	0.90	192.70
	Max -	1.2DL+1.6LL	-146.2	22.4	5.1	1.00	0.90	192.70
Controlling		1.2DL+1.6LL	-146.2	22.4	15.9	2.40	0.90	186.04

REACTIONS (kips):

	Left	Right
Initial reaction	5.40	8.81
DL reaction	11.92	24.60
Max +LL reaction	13.43	19.50
Max -LL reaction	-2.23	0.00
Max +total reaction (factored)	35.79	60.73

DEFLECTIONS: **Ratio**

Center span:

Initial load (in)	at 10.09 ft =	-0.228	L/D =	1182	
Live load (in)	at 10.09 ft =	-0.219	L/D =	1227 > 360	0.29
Post Comp load (in)	at 10.09 ft =	-0.275	L/D =	977 > 240	0
Net Total load (in)	at 10.09 ft =	-0.503	L/D =	535 > 240	0

Right cantilever:

Init load (in)	=	0.139	L/D =	876
Pos Live load (in)	=	-0.195	L/D =	627 > 360
Neg Live load (in)	=	0.141	L/D =	865 > 360
Pos Post Comp load (in)	=	-0.285	L/D =	429 > 240
Neg Post Comp load (in)	=	0.051	L/D =	2390 > 240
Pos Total load (in)	=	-0.145	L/D =	839 > 240
Neg Total load (in)	=	0.190	L/D =	641 > 240

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Floor Type: FIRST FLOOR **Beam Number = 122**

SPAN INFORMATION (ft): I-End (85.89,22.25) J-End (85.89,49.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X26 Fy = 50.0 ksi
Total Beam Length (ft) = 27.50
Cantilever on right (ft) = 5.08

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COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	perpendicular	perpendicular
Decking type	ASC 2W	ASC 2W

beff (in) = 63.42 Y bar(in) = 17.14
Mnf (kip-ft) = 402.70 Mn (kip-ft) = 280.52
C (kips) = 103.38 PNA (in) = 11.99
Ieff (in4) = 750.73 Itr (in4) = 1167.77
Stud length (in) = 4.00 Stud diam (in) = 0.75
Stud Capacity (kips) Qn = 17.2 Rg = 1.00 Rp = 0.60
# of studs: Max = 44 Partial = 21 Actual = 21
Number of Stud Rows = 1 Percent of Full Composite Action = 26.48

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
6.500	3.44	0.03	3.70	21.2	0.00	0.00	0.0	0.85	0.0	0.00
6.500	5.48	0.06	5.88	21.2	0.00	0.00	0.0	1.36	0.0	0.00
16.188	0.39	1.87	3.15	21.2	0.00	0.00	0.0	0.30	0.0	0.00
			-2.27	23.1	0.00	0.00	0.0	-0.62	0.0	0.00
27.500	4.57	0.11	3.32	0.0	0.00	0.00	0.0	1.05	0.0	0.00
27.500	4.68	0.11	3.44	0.0	0.00	0.00	0.0	1.09	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.237	0.237	0.000	---	NonR	0.000	0.000
	22.416	0.237	0.237	0.000			0.000	0.000
2	0.000	0.071	0.000	0.643	21.2%	Red	0.000	0.000
	6.500	0.071	0.000	0.643			0.000	0.000
3	6.500	0.043	0.000	0.158	21.2%	Red	0.000	0.000
	22.416	0.043	0.000	0.158			0.000	0.000
4	22.417	0.474	0.474	0.000	---	NonR	0.000	0.000
	27.500	0.474	0.474	0.000			0.000	0.000
5	22.417	0.087	0.000	0.316	0.0%	Red	0.000	0.000
	27.500	0.087	0.000	0.316			0.000	0.000

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
6	0.000	0.149	0.149	0.000	---	NonR	0.000	0.000
	16.187	0.149	0.149	0.000			0.000	0.000
7	6.500	0.027	0.000	0.099	21.2%	Red	0.000	0.000
	16.187	0.027	0.000	0.099			0.000	0.000
8	16.188	0.237	0.237	0.000	---	NonR	0.000	0.000
	22.416	0.237	0.237	0.000			0.000	0.000
9	16.188	0.043	0.000	0.158	21.2%	Red	0.000	0.000
	22.416	0.043	0.000	0.158			0.000	0.000
10	0.000	0.026	0.026	0.000	---	NonR	0.000	0.000
	22.416	0.026	0.026	0.000			0.000	0.000
11	22.417	0.026	0.026	0.000	---	NonR	0.000	0.000
	27.500	0.026	0.026	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 31.46 kips 0.90Vn = 105.97 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu	@	Lb	Cb	Phi	Phi*Mn
			kip-ft	ft	ft			kip-ft
Center	PreCmp+	1.4DL	40.8	11.8	0.0	1.00	0.90	165.75
	PreCmp-	1.4DL	-10.6	22.4	6.2	1.83	0.90	165.75
	Init DL	1.4DL	40.8	11.8	---	---		
	Max +	1.2DL+1.6LL	166.4	6.5	---	---	0.90	252.47
	Max -	1.2DL+1.6LL	-144.3	22.4	6.2	1.29	0.90	165.75
Right	PreCmp-	1.4DL	-10.6	22.4	5.1	1.00	0.90	155.58
	Max -	1.2DL+1.6LL	-144.3	22.4	5.1	1.00	0.90	155.58
Controlling		1.2DL+1.6LL	-144.3	22.4	5.1	1.00	0.90	155.58

REACTIONS (kips):

	Left	Right
Initial reaction	4.94	9.56
DL reaction	9.51	23.50
Max +LL reaction	11.70	20.33
Max -LL reaction	-2.85	-1.71
Max +total reaction (factored)	30.12	60.73

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DEFLECTIONS:

Center span:

Initial load (in) at 10.42 ft = -0.297 L/D = 905
Live load (in) at 10.42 ft = -0.250 L/D = 1077 > 360
Post Comp load (in) at 10.42 ft = -0.263 L/D = 1021 > 240
Net Total load (in) at 10.42 ft = -0.561 L/D = 480 > 240

Right cantilever:

Init load (in) = 0.193 L/D = 631
Pos Live load (in) = -0.258 L/D = 472 > 360 0.76
Neg Live load (in) = 0.170 L/D = 719 > 360 0.50
Pos Post Comp load (in) = -0.404 L/D = 302 > 240 0.79
Neg Post Comp load (in) = 0.024 L/D = 5029 > 240 0.05

Right cantilever:

Pos Total load (in)	=	-0.210	L/D	=	580 > 240	0.41
Neg Total load (in)	=	0.218	L/D	=	560 > 240	0.43

Floor Type: FIRST FLOOR **Beam Number = 123**

SPAN INFORMATION (ft): I-End (93.78,38.44) J-End (93.78,49.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X26 Fy = 50.0 ksi
Total Beam Length (ft) = 11.31
Cantilever on right (ft) = 5.08
Mp (kip-ft) = 184.17

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
11.313	3.42	2.02	0.0	0.00	0.00	0.0	0.64	0.0	0.00
11.313	4.06	2.74	0.0	0.00	0.00	0.0	0.87	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.474	0.000	---	NonR	0.000
	6.229	0.474	0.000			0.000
2	0.000	0.087	0.316	0.0%	Red	0.000
	6.229	0.087	0.316			0.000
3	6.230	0.474	0.000	---	NonR	0.000
	11.312	0.474	0.000			0.000
4	6.230	0.087	0.316	0.0%	Red	0.000
	11.312	0.087	0.316			0.000
5	0.000	0.026	0.000	---	NonR	0.000
	6.229	0.026	0.000			0.000
6	6.230	0.026	0.000	---	NonR	0.000
	11.312	0.026	0.000			0.000

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SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 25.16 kips 0.90Vn = 105.97 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi k
Center	Max -	1.2DL+1.6LL	-112.3	6.2	6.2	1.73	0.90	16
Right	Max -	1.2DL+1.6LL	-112.3	6.2	5.1	1.00	0.90	15
Controlling		1.2DL+1.6LL	-112.3	6.2	5.1	1.00	0.90	15

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REACTIONS (kips):

	Left	Right
DL reaction	-5.49	19.61
Max +LL reaction	0.98	14.63
Max -LL reaction	-5.77	0.00
Max +total reaction (factored)	-7.69	46.94
Max -total reaction	-15.83	27.45

DEFLECTIONS: **Ratio**

Center span:								
Dead load (in)	at	3.68 ft	=	0.020	L/D	=	3689	
Live load (in)	at	3.61 ft	=	0.018	L/D	=	4218 > 360	0.09
Net Total load (in)	at	3.61 ft	=	0.038	L/D	=	1968 > 240	0.12
Right cantilever:								
Dead load (in)			=	-0.164	L/D	=	745	
Pos Live load (in)			=	-0.135	L/D	=	906 > 360	0.40
Neg Live load (in)			=	0.003	L/D	=	38148 > 360	0.01
Pos Total load (in)			=	-0.299	L/D	=	409 > 240	0.59

Floor Type: FIRST FLOOR **Beam Number = 124**

SPAN INFORMATION (ft): I-End (109.06,22.25) J-End (109.06,49.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X31 Fy = 50.0 ksi
Total Beam Length (ft) = 27.50
Cantilever on right (ft) = 5.08

COMPOSITE PROPERTIES (Not Shored):

	Left			Right		
Deck Label	5.5" O/2W			5.5" O/2W		
Concrete thickness (in)	3.50			3.50		
Unit weight concrete (pcf)	150.00			150.00		
f'c (ksi)	4.00			4.00		
Decking Orientation	perpendicular			perpendicular		
Decking type	ASC 2W			ASC 2W		
beff (in)	= 67.25	Y bar(in)		= 17.09		
Mnf (kip-ft)	= 478.44	Mn (kip-ft)		= 333.62		
C (kips)	= 115.44	PNA (in)		= 12.15		
Ieff (in4)	= 887.34	Itr (in4)		= 1393.84		
Stud length (in)	= 4.00	Stud diam (in)		= 0.75		

Rg Stud Red. Factor Rg[1] = 1.00 Rg[2] = 0.85
Rp Stud Red. Factor Rp[1] = 0.60 Rp[2] = 0.60
Stud Capacity (kips) Qn[1] = 17.2 Qn[2] = 14.6
# of studs: Max = 44 Partial = 25 Actual = 25
Number of Stud Rows = 2 Percent of Full Composite Action = 25.29

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POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL L	StorLL	Red%	RoofLL	Red%	PartL
6.500	5.12	0.04	5.50	19.8	0.00	0.00	0.0	1.27	0.0	0.00
6.500	5.12	0.04	5.50	19.8	0.00	0.00	0.0	1.27	0.0	0.00
27.500	4.38	0.10	3.22	0.0	0.00	0.00	0.0	1.02	0.0	0.00
27.500	4.38	0.10	3.22	0.0	0.00	0.00	0.0	1.02	0.0	0.00

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LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.444	0.444	0.000	---	NonR	0.000	0.000
	22.416	0.444	0.444	0.000			0.000	0.000
2	0.000	0.081	0.000	0.739	19.8%	Red	0.000	0.000
	6.500	0.081	0.000	0.739			0.000	0.000
3	6.500	0.081	0.000	0.296	19.8%	Red	0.000	0.000
	22.416	0.081	0.000	0.296			0.000	0.000
4	22.417	0.444	0.444	0.000	---	NonR	0.000	0.000
	27.500	0.444	0.444	0.000			0.000	0.000
5	22.417	0.081	0.000	0.296	0.0%	Red	0.000	0.000
	27.500	0.081	0.000	0.296			0.000	0.000

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
6	0.000	0.031	0.031	0.000	---	NonR	0.000	0.000
	22.416	0.031	0.031	0.000			0.000	0.000
7	22.417	0.031	0.031	0.000	---	NonR	0.000	0.000
	27.500	0.031	0.031	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 33.77 kips 1.00Vn = 131.18 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu	@	Lb	Cb	Phi	Phi*Mn
			kip-ft	ft	ft			kip-ft
Center	PreCmp+	1.4DL	37.3	10.5	0.0	1.00	0.90	202.50
	PreCmp-	1.4DL	-10.0	22.4	15.9	1.22	0.90	94.40
	Init DL	1.4DL	37.3	10.5	---	---		
	Max +	1.2DL+1.6LL	185.4	6.5	---	---	0.90	300.26
	Max -	1.2DL+1.6LL	-137.0	22.4	15.9	2.41	0.90	186.13
Right	PreCmp-	1.4DL	-10.0	22.4	5.1	1.00	0.90	192.70
	Max -	1.2DL+1.6LL	-137.0	22.4	5.1	1.00	0.90	192.70
Controlling		1.2DL+1.6LL	-137.0	22.4	15.9	2.41	0.90	186.13

REACTIONS (kips):

	Left	Right
Initial reaction	5.06	8.28
DL reaction	11.20	23.09
Max +LL reaction	12.71	18.35
Max -LL reaction	-2.09	0.00
Max +total reaction (factored)	33.77	57.07

DEFLECTIONS: **Ratio**

Center span:

Initial load (in)	at 10.09 ft = -0.213	L/D = 1261			
Live load (in)	at 10.09 ft = -0.207	L/D = 1298	>	360	0.28
Post Comp load (in)	at 10.09 ft = -0.260	L/D = 1034	>	240	0.23
Net Total load (in)	at 10.09 ft = -0.474	L/D = 568	>	240	0.42

Right cantilever:

Init load (in)	= 0.131	L/D = 934			
Pos Live load (in)	= -0.182	L/D = 669	>	360	0.54
Neg Live load (in)	= 0.134	L/D = 914	>	360	0.39
Pos Post Comp load (in)	= -0.266	L/D = 458	>	240	0.52
Neg Post Comp load (in)	= 0.049	L/D = 2469	>	240	0.10
Pos Total load (in)	= -0.136	L/D = 898	>	240	0.27
Neg Total load (in)	= 0.180	L/D = 678	>	240	0.35

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Floor Type: FIRST FLOOR **Beam Number = 125**

SPAN INFORMATION (ft): I-End (116.44,22.2[illegible]) J-End (116.44,49.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X31 Fy = 50.0 ksi
Total Beam Length (ft) = 27.50
Cantilever on right (ft) = 5.08

COMPOSITE PROPERTIES (Not Shored):

	Left		Right	
Deck Label	5.5" O/2W		5.5" O/2W	
Concrete thickness (in)	3.50		3.50	
Unit weight concrete (pcf)	150.00		150.00	
f'c (ksi)	4.00		4.00	
Decking Orientation	perpendicular		perpendicular	
Decking type	ASC 2W		ASC 2W	
beff (in) =	67.25	Y bar(in) =	17.09	
Mnf (kip-ft) =	478.44	Mn (kip-ft) =	333.62	
C (kips) =	115.44	PNA (in) =	12.15	
Ieff (in4) =	887.34	Itr (in4) =	1393.84	
Stud length (in) =	4.00	Stud diam (in) =	0.75	

Rg Stud Red. Factor Rg[1] = 1.00 Rg[2] = 0.85
Rp Stud Red. Factor Rp[1] = 0.60 Rp[2] = 0.60
Stud Capacity (kips) Qn[1] = 17.2 Qn[2] = 14.6
# of studs: Max = 44 Partial = 25 Actual = 25
Number of Stud Rows = 2 Percent of Full Composite Action = 25.29

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
					L					
6.500	5.12	0.04	5.50	19.8	0.00	0.00	0.0	1.27	0.0	0.00
6.500	5.12	0.04	5.50	19.8	0.00	0.00	0.0	1.27	0.0	0.00
27.500	4.38	0.10	3.22	0.0	0.00	0.00	0.0	1.02	0.0	0.00
27.500	4.38	0.10	3.22	0.0	0.00	0.00	0.0	1.02	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.444	0.444	0.000	---	NonR	0.000	0.000
	22.416	0.444	0.444	0.000			0.000	0.000
2	0.000	0.081	0.000	0.739	19.8%	Red	0.000	0.000
	6.500	0.081	0.000	0.739			0.000	0.000
3	6.500	0.081	0.000	0.296	19.8%	Red	0.000	0.000
	22.416	0.081	0.000	0.296			0.000	0.000
4	22.417	0.444	0.444	0.000	---	NonR	0.000	0.000
	27.500	0.444	0.444	0.000			0.000	0.000
5	22.417	0.081	0.000	0.296	0.0%	Red	0.000	0.000
	27.500	0.081	0.000	0.296			0.000	0.000

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Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
6	0.000	0.031	0.031	0.000	---	NonR	0.000	0.000
	22.416	0.031	0.031	0.000			0.000	0.000
7	22.417	0.031	0.031	0.000	---	NonR	0.000	0.000
	27.500	0.031	0.031	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 33.77 kips 1.00Vn = 131.18 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	PreCmp+	1.4DL	37.3	10.5	0.0	1.00	0.90	202.50
	PreCmp-	1.4DL	-10.0	22.4	15.9	1.22	0.90	94.40
	Init DL	1.4DL	37.3	10.5	---	---		
	Max +	1.2DL+1.6LL	185.4	6.5	---	---	0.90	300.26
	Max -	1.2DL+1.6LL	-137.0	22.4	15.9	2.41	0.90	186.13
Right	PreCmp-	1.4DL	-10.0	22.4	5.1	1.00	0.90	192.70
	Max -	1.2DL+1.6LL	-137.0	22.4	5.1	1.00	0.90	192.70
Controlling		1.2DL+1.6LL	-137.0	22.4	15.9	2.41	0.90	186.13

REACTIONS (kips):

	Left	Right
Initial reaction	5.06	8.28
DL reaction	11.20	23.09
Max +LL reaction	12.71	18.35
Max -LL reaction	-2.09	0.00
Max +total reaction (factored)	33.77	57.07

DEFLECTIONS: **Ratio**

Center span:

Initial load (in)	at 10.09 ft = -0.213	L/D = 1261			
Live load (in)	at 10.09 ft = -0.207	L/D = 1298	> 360		0.28
Post Comp load (in)	at 10.09 ft = -0.260	L/D = 1034	> 240		0.23
Net Total load (in)	at 10.09 ft = -0.474	L/D = 568	> 240		0.42

Right cantilever:

Init load (in)	= 0.131	L/D = 934		
Pos Live load (in)	= -0.182	L/D = 669	> 360	0.54
Neg Live load (in)	= 0.134	L/D = 914	> 360	0.39
Pos Post Comp load (in)	= -0.266	L/D = 458	> 240	0.52
Neg Post Comp load (in)	= 0.049	L/D = 2469	> 240	0.10
Pos Total load (in)	= -0.136	L/D = 898	> 240	0.27
Neg Total load (in)	= 0.180	L/D = 678	> 240	0.35

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City of Puyallup

Floor Type: FIRST FLOOR **Beam Number = 127**

SPAN INFORMATION (ft): I-End (0.25,49.75) J-End (0.25,49.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 8.83
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	8.833	0.016	0.000			0.000
2	0.000	0.003	0.010	0.0%	Red	0.000
	8.833	0.003	0.010			0.000
3	0.000	0.012	0.000	---	NonR	0.000
	8.833	0.012	0.000			0.000
4	0.000	0.274	0.000	---	NonR	0.000
	8.833	0.274	0.000			0.000
5	0.000	0.121	0.440	0.0%	Red	0.000
	8.833	0.121	0.441			0.000
6	0.000	0.387	0.000	---	NonR	0.000
	8.833	0.387	0.000			0.000
7	0.000	0.000	0.144	0.0%	Roof	0.000
	8.833	0.000	0.144			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 8.51 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	18.8	4.4	8.8	1.14	0.90	27.74
Controlling		1.2DL+1.6LL	18.8	4.4	8.8	1.14	0.90	2

REACTIONS (kips):

	Left	Right
DL reaction	3.59	3.59
Max +LL reaction	2.63	2.63
Max +total reaction (factored)	8.51	8.51

DEFLECTIONS: **R**

Dead load (in)	at 4.42 ft = -0.071	L/D = 1486		
Live load (in)	at 4.42 ft = -0.052	L/D = 2030	> 360	0.1
Net Total load (in)	at 4.42 ft = -0.124	L/D = 858	> 240	0.28

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Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 128**

SPAN INFORMATION (ft): I-End (9.08,49.75) J-End (16.72,49.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 7.64
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	7.638	0.016	0.000			0.000
2	0.000	0.003	0.010	0.0%	Red	0.000
	7.638	0.003	0.010			0.000
3	0.000	0.012	0.000	---	NonR	0.000
	7.638	0.012	0.000			0.000
4	0.000	0.195	0.000	---	NonR	0.000
	7.639	0.195	0.000			0.000
5	0.000	0.121	0.441	0.0%	Red	0.000
	7.639	0.121	0.441			0.000
6	2.219	0.336	0.000	---	NonR	0.000
	7.639	0.336	0.000			0.000
7	2.219	0.115	0.420	0.0%	Red	0.000
	7.639	0.115	0.420			0.000
8	0.000	0.387	0.000	---	NonR	0.000
	7.639	0.387	0.000			0.000
9	0.000	0.000	0.013	0.0%	Roof	0.000
	7.639	0.000	0.013			0.000
10	0.000	0.079	0.000	---	NonR	0.000
	2.218	0.079	0.000			0.000
11	0.000	0.000	0.131	0.0%	Roof	0.000
	2.218	0.000	0.131			0.000
12	2.219	0.000	0.262	0.0%	Roof	0.000
	7.639	0.000	0.262			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 12.01 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	22.1	4.0	7.6	1.15	0.90	34.52
Controlling		1.2DL+1.6LL	22.1	4.0	7.6	1.15	0.90	34.52

REACTIONS (kips):

	Left	Right
DL reaction	3.82	4.41
Max +LL reaction	3.33	4.20
Max +total reaction (factored)	9.92	12.01

Gravity Beam Design

DEFLECTIONS: **Ratio**

Dead load (in)	at	3.86 ft	=	-0.05	L/D	=	1675	
Live load (in)	at	3.86 ft	=	-0.05	L/D	=	1793 > 360	0.20
Net Total load (in)	at	3.86 ft	=	-0.10	L/D	=	866 > 240	0.28

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Floor Type: FIRST FLOOR **Beam Number = 129**

SPAN INFORMATION (ft): I-End (16.72,49.75) J-End (24.36,49.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 7.64
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	7.638	0.016	0.000			0.000
2	0.000	0.003	0.010	0.0%	Red	0.000
	7.638	0.003	0.010			0.000
3	0.000	0.012	0.000	---	NonR	0.000
	7.638	0.012	0.000			0.000
4	0.000	0.531	0.000	---	NonR	0.000
	7.639	0.531	0.000			0.000
5	0.000	0.237	0.861	0.0%	Red	0.000
	7.639	0.237	0.861			0.000
6	0.000	0.387	0.000	---	NonR	0.000
	7.639	0.387	0.000			0.000
7	0.000	0.000	0.275	0.0%	Roof	0.000
	7.639	0.000	0.275			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 12.44 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	23.8	3.8	7.6	1.14	0.90	34.17
Controlling		1.2DL+1.6LL	23.8	3.8	7.6	1.14	0.90	34.17

REACTIONS (kips):

	Left	Right
DL reaction	4.53	4.53
Max +LL reaction	4.38	4.38
Max +total reaction (factored)	12.44	12.44

DEFLECTIONS: **Ratio**

Dead load (in)	at 3.82 ft =	-0.058	L/D = 1575		
Live load (in)	at 3.82 ft =	-0.056	L/D = 1629 > 360		0.22
Net Total load (in)	at 3.82 ft =	-0.114	L/D = 801 > 240		0.30

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Floor Type: FIRST FLOOR **Beam Number = 130**

SPAN INFORMATION (ft): I-End (24.36,49.75) J-End (30.00,49.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 7.64
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	7.638	0.016	0.000			0.000
2	0.000	0.003	0.010	0.0%	Red	0.000
	7.638	0.003	0.010			0.000
3	0.000	0.012	0.000	---	NonR	0.000
	7.638	0.012	0.000			0.000
4	0.000	0.531	0.000	---	NonR	0.000
	7.639	0.531	0.000			0.000
5	0.000	0.237	0.861	0.0%	Red	0.000
	7.639	0.237	0.861			0.000
6	0.000	0.387	0.000	---	NonR	0.000
	7.639	0.387	0.000			0.000
7	0.000	0.000	0.275	0.0%	Roof	0.000
	7.639	0.000	0.275			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 12.44 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	23.8	3.8	7.6	1.14	0.90	34.17
Controlling		1.2DL+1.6LL	23.8	3.8	7.6	1.14	0.90	3

REACTIONS (kips):

	Left	Right
DL reaction	4.53	4.53
Max +LL reaction	4.38	4.38
Max +total reaction (factored)	12.44	12.44

DEFLECTIONS:

Dead load (in)	at 3.82 ft =	-0.058	L/D = 1575		
Live load (in)	at 3.82 ft =	-0.056	L/D = 1629 > 360		
Net Total load (in)	at 3.82 ft =	-0.114	L/D = 801 > 240		0.30

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Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 131**

SPAN INFORMATION (ft): I-End (41.79,22.25) J-End (41.79,51.83)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X36 Fy = 50.0 ksi
Total Beam Length (ft) = 29.58
Cantilever on right (ft) = 7.17

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	perpendicular	perpendicular
Decking type	ASC 2W	ASC 2W

beff (in)	=	67.25	Y bar(in)	=	16.77
Mnf (kip-ft)	=	548.37	Mn (kip-ft)	=	394.96
C (kips)	=	139.56	PNA (in)	=	12.68
Ieff (in4)	=	1031.65	Itr (in4)	=	1585.39
Stud length (in)	=	4.00	Stud diam (in)	=	0.75

Rg Stud Red. Factor Rg[1] = 1.00 Rg[2] = 0.85
Rp Stud Red. Factor Rp[1] = 0.60 Rp[2] = 0.60
Stud Capacity (kips) Qn[1] = 17.2 Qn[2] = 14.6
# of studs: Max = 44 Partial = 32 Actual = 32
Number of Stud Rows = 2 Percent of Full Composite Action = 26.33

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
6.500	6.12	0.09	6.51	26.0	0.00	0.00	0.0	1.44	0.0	0.00
6.500	6.28	0.11	7.29	26.0	0.00	0.00	0.0	1.68	0.0	0.00
23.500	6.69	0.98	5.40	0.0	0.00	0.00	0.0	1.29	0.0	0.00
27.500	5.82	0.16	4.26	0.0	0.00	0.00	0.0	1.35	0.0	0.00
29.583	1.20	1.02	0.97	0.0	0.00	0.00	0.0	0.00	0.0	0.00
27.500	2.22	0.00	2.21	0.0	0.00	0.00	0.0	0.31	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	27.500	0.000	0.000	0.000	---	NonR	0.000	0.000
	27.758	0.015	0.015	0.000			0.000	0.000
2	27.500	0.000	0.000	0.000	0.0%	Red	0.000	0.000
	27.758	0.003	0.000	0.015			0.000	0.000
3	27.759	0.016	0.016	0.000	---	NonR	0.000	0.000
	29.583	0.016	0.016	0.000			0.000	0.000
4	27.759	0.003	0.000	0.015	0.0%	Red	0.000	0.000
	29.583	0.003	0.000	0.015			0.000	0.000

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Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
5	0.000	0.588	0.588	0.000		NonR	0.000	0.000
	22.416	0.588	0.588	0.000			0.000	0.000
6	0.000	0.108	0.000	0.978		Red	0.000	0.000
	6.500	0.108	0.000	0.978			0.000	0.000
7	6.500	0.108	0.000	0.392	26.0%	Red	0.000	0.000
	22.416	0.108	0.000	0.392			0.000	0.000
8	22.417	0.294	0.294	0.000	---	NonR	0.000	0.000
	27.500	0.294	0.294	0.000			0.000	0.000
9	22.417	0.108	0.000	0.392	0.0%	Red	0.000	0.000
	23.500	0.108	0.000	0.392			0.000	0.000
10	23.500	0.000	0.000	0.000	0.0%	Red	0.000	0.000
	27.500	0.005	0.000	0.029			0.000	0.000
11	23.500	0.054	0.000	0.196	0.0%	Red	0.000	0.000
	27.500	0.048	0.000	0.176			0.000	0.000
12	22.417	0.294	0.294	0.000	---	NonR	0.000	0.000
	23.500	0.294	0.294	0.000			0.000	0.000
13	0.000	0.036	0.036	0.000	---	NonR	0.000	0.000
	22.416	0.036	0.036	0.000			0.000	0.000
14	22.417	0.036	0.036	0.000	---	NonR	0.000	0.000
	29.583	0.036	0.036	0.000			0.000	0.000
15	23.500	0.387	0.000	0.000	---	NonR	0.000	0.000
	27.500	0.387	0.000	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 51.15 kips 1.00Vn = 140.71 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	PreCmp+	1.4DL	46.4	10.1	0.0	1.00	0.90	240.00
	PreCmp-	1.4DL	-19.9	22.4	15.9	1.27	0.90	175.36
	Init DL	1.4DL	46.4	10.1	---	---		
	Max +	1.2DL+1.6LL	223.5	6.5	---	---	0.90	35
	Max -	1.2DL+1.6LL	-174.2	22.4	15.9	2.41	0.90	24
Right	PreCmp-	1.4DL	-19.9	22.4	1.1	1.00	0.90	24
	Max -	1.2DL+1.6LL	-174.2	22.4	1.1	1.00	0.90	24
Controlling		1.2DL+1.6LL	-174.2	22.4	15.9	2.41	0.90	24

REACTIONS (kips):

	Left	Right
Initial reaction	6.50	11.94
DL reaction	14.01	34.72
Max +LL reaction	15.13	27.16
Max -LL reaction	-2.60	0.00
Max +total reaction (factored)	41.01	85.12

DEFLECTIONS: **Ratio**

PRMU2022012

Center span:								
Initial load (in)	at	10.09 ft	=	-0.218	L/D	=	1236	
Live load (in)	at	10.09 ft	=	-0.212	L/D	=	1270 > 360	0.28
Post Comp load (in)	at	10.09 ft	=	-0.269	L/D	=	999 > 240	0.24
Net Total load (in)	at	10.09 ft	=	-0.487	L/D	=	553 > 240	0.43
Right cantilever:								
Init load (in)	=	0.156			L/D	=	1101	
Pos Live load (in)	=	-0.280			L/D	=	614 > 360	0.59
Neg Live load (in)	=	0.193			L/D	=	893 > 360	0.40
Pos Post Comp load (in)	=	-0.399			L/D	=	431 > 240	0.56
Neg Post Comp load (in)	=	0.074			L/D	=	2326 > 240	0.10
Pos Total load (in)	=	-0.243			L/D	=	709 > 240	0.34
Neg Total load (in)	=	0.230			L/D	=	747 > 240	0.32

Gravity Beam Design

Fire Engineering Building Traffic Public Works Planning
ISSUED PERMIT
Development & Permitting Services
City of Puyallup

Floor Type: FIRST FLOOR **Beam Number = 132**

SPAN INFORMATION (ft): I-End (51.58,22.25) J-End (51.83)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X36 Fy = 50.0 ksi
Total Beam Length (ft) = 29.58
Cantilever on right (ft) = 7.17

COMPOSITE PROPERTIES (Not Shored):

	Left		Right
Deck Label	5.5" O/2W		5.5" O/2W
Concrete thickness (in)	3.50		3.50
Unit weight concrete (pcf)	150.00		150.00
f'c (ksi)	4.00		4.00
Decking Orientation	perpendicular		perpendicular
Decking type	ASC 2W		ASC 2W
beff (in) =	54.13	Y bar(in) =	16.26
Mnf (kip-ft) =	535.96	Mn (kip-ft) =	394.10
C (kips) =	139.56	PNA (in) =	12.68
Ieff (in4) =	995.54	Itr (in4) =	1515.02
Stud length (in) =	4.00	Stud diam (in) =	0.75

Rg Stud Red. Factor Rg[1] = 1.00 Rg[2] = 0.85
Rp Stud Red. Factor Rp[1] = 0.60 Rp[2] = 0.60
Stud Capacity (kips) Qn[1] = 17.2 Qn[2] = 14.6
# of studs: Max = 44 Partial = 32 Actual = 32
Number of Stud Rows = 2 Percent of Full Composite Action = 26.31

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL L	StorLL	Red%	RoofLL	Red%	PartL
6.500	2.13	0.02	2.27	14.1	0.00	0.00	0.0	0.50	0.0	0.00
6.500	6.12	0.09	6.51	14.1	0.00	0.00	0.0	1.44	0.0	0.00
23.500	7.28	1.07	5.87	0.0	0.00	0.00	0.0	1.40	0.0	0.00
23.500	6.69	0.98	5.40	0.0	0.00	0.00	0.0	1.29	0.0	0.00
29.583	1.30	1.11	1.05	0.0	0.00	0.00	0.0	0.00	0.0	0.00
29.583	1.20	1.02	0.97	0.0	0.00	0.00	0.0	0.00	0.0	0.00
27.500	4.64	0.00	4.60	0.0	0.00	0.00	0.0	0.64	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.396	0.396	0.000	---	NonR	0.000	0.000
	22.416	0.396	0.396	0.000			0.000	0.000
2	0.000	0.073	0.000	0.660	14.1%	Red	0.000	0.000
	6.500	0.073	0.000	0.660			0.000	0.000
3	6.500	0.073	0.000	0.264	14.1%	Red	0.000	0.000
	22.416	0.073	0.000	0.264			0.000	0.000
4	22.417	0.613	0.613	0.000	---	NonR	0.000	0.000

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Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
	23.500	0.613	0.613	0.000			0.000	0.000
5	22.417	0.112	0.000	0.409	0.0%	Red	0.000	0.000
	23.500	0.112	0.000	0.409			0.000	0.000
6	0.000	0.036	0.036	0.000	---	NonR	0.000	0.000
	22.416	0.036	0.036	0.000			0.000	0.000
7	22.417	0.036	0.036	0.000	---	NonR	0.000	0.000
	29.583	0.036	0.036	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 61.23 kips 1.00Vn = 140.71 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	PreCmp+	1.4DL	26.7	9.2	0.0	1.00	0.90	240.00
	PreCmp-	1.4DL	-26.2	22.4	15.9	1.51	0.90	207.85
	Init DL	1.4DL	26.7	9.2	---	---		
	Max +	1.2DL+1.6LL	153.9	6.5	---	---	0.90	354.69
	Max -	1.2DL+1.6LL	-160.0	22.4	15.9	2.26	0.90	240.00
Right	PreCmp-	1.4DL	-26.2	22.4	1.1	1.00	0.90	240.00
	Max -	1.2DL+1.6LL	-160.0	22.4	1.1	1.00	0.90	240.00
Controlling		1.2DL+1.6LL	-160.0	22.4	15.9	2.26	0.90	240.00

REACTIONS (kips):

	Left	Right
Initial reaction	4.09	10.82
DL reaction	8.93	32.79
Max +LL reaction	11.17	29.79
Max -LL reaction	-2.52	0.00
Max +total reaction (factored)	28.59	87.02

DEFLECTIONS: **Ratio**

Center span:

Initial load (in)	at 9.75 ft = -0.114	L/D = 2350			
Live load (in)	at 9.75 ft = -0.161	L/D = 1671	> 360		0.22
Post Comp load (in)	at 9.75 ft = -0.195	L/D = 1380	> 240		0.17
Net Total load (in)	at 9.75 ft = -0.309	L/D = 869	> 240		0.28

Right cantilever:

Init load (in)	= 0.025	L/D = 6898		
Pos Live load (in)	= -0.271	L/D = 635	> 360	0.57
Neg Live load (in)	= 0.147	L/D = 1168	> 360	0.31
Pos Post Comp load (in)	= -0.360	L/D = 477	> 240	0.50
Neg Post Comp load (in)	= 0.058	L/D = 2982	> 240	0.08
Pos Total load (in)	= -0.336	L/D = 513	> 240	0.47
Neg Total load (in)	= 0.083	L/D = 2082	> 240	0.12

Fire Engineering Building Traffic Public Works Planning
ISSUED PERMIT
Development & Permitting Services
City of Puyallup

Floor Type: FIRST FLOOR **Beam Number = 133**

SPAN INFORMATION (ft): I-End (62.23,22.25) J-End (62.23,21.83)

Maximum Depth Limitation specified = 17.00
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X36 Fy = 50.0 ksi
Total Beam Length (ft) = 29.58
Cantilever on right (ft) = 7.17

COMPOSITE PROPERTIES (Not Shored):

		Left			Right
Deck Label		5.5" O/2W			5.5" O/2W
Concrete thickness (in)		3.50			3.50
Unit weight concrete (pcf)		150.00			150.00
f'c (ksi)		4.00			4.00
Decking Orientation		perpendicular			perpendicular
Decking type		ASC 2W			ASC 2W
beff (in)	= 67.25	Y bar(in)		=	16.77
Mnf (kip-ft)	= 548.37	Mn (kip-ft)		=	394.96
C (kips)	= 139.56	PNA (in)		=	12.68
Ieff (in4)	= 1031.65	Itr (in4)		=	1585.39
Stud length (in)	= 4.00	Stud diam (in)		=	0.75

Rg Stud Red. Factor Rg[1] = 1.00 Rg[2] = 0.85
Rp Stud Red. Factor Rp[1] = 0.60 Rp[2] = 0.60
Stud Capacity (kips) Qn[1] = 17.2 Qn[2] = 14.6
# of studs: Max = 44 Partial = 32 Actual = 32
Number of Stud Rows = 2 Percent of Full Composite Action = 26.16

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL L	StorLL	Red%	RoofLL	Red%	PartL
6.500	2.56	0.08	2.92	19.0	0.00	0.00	0.0	0.67	0.0	0.00
6.500	6.52	0.05	7.44	19.0	0.00	0.00	0.0	1.67	0.0	0.00
23.500	7.28	1.07	5.86	0.0	0.00	0.00	0.0	1.40	0.0	0.00
27.500	4.80	0.11	3.53	0.0	0.00	0.00	0.0	1.12	0.0	0.00
29.583	1.30	1.11	1.05	0.0	0.00	0.00	0.0	0.00	0.0	0.00
27.500	2.41	0.00	2.38	0.0	0.00	0.00	0.0	0.33	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.460	0.460	0.000	---	NonR	0.000	0.000
	22.416	0.460	0.460	0.000			0.000	0.000
2	0.000	0.084	0.000	0.767	19.0%	Red	0.000	0.000
	6.500	0.084	0.000	0.767			0.000	0.000
3	6.500	0.084	0.000	0.307	19.0%	Red	0.000	0.000
	22.416	0.084	0.000	0.307			0.000	0.000
4	22.417	0.320	0.320	0.000	---	NonR	0.000	0.000
	23.500	0.320	0.320	0.000			0.000	0.000

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Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
5	22.417	0.059	0.000	0.213	0.0%	Red	0.000	0.000
	23.500	0.059	0.000	0.213			0.000	0.000
6	27.500	0.000	0.000	0.000	---	NonR	0.000	0.000
	27.758	0.015	0.015	0.000			0.000	0.000
7	27.500	0.000	0.000	0.000	0.0%	Red	0.000	0.000
	27.680	0.002	0.000	0.011			0.000	0.000
8	27.681	0.002	0.000	0.011	0.0%	Red	0.000	0.000
	29.583	0.002	0.000	0.011			0.000	0.000
9	27.759	0.016	0.016	0.000	---	NonR	0.000	0.000
	29.583	0.016	0.016	0.000			0.000	0.000
10	22.417	0.243	0.243	0.000	---	NonR	0.000	0.000
	27.500	0.243	0.243	0.000			0.000	0.000
11	22.417	0.045	0.000	0.162	0.0%	Red	0.000	0.000
	27.500	0.045	0.000	0.162			0.000	0.000
12	0.000	0.036	0.036	0.000	---	NonR	0.000	0.000
	22.416	0.036	0.036	0.000			0.000	0.000
13	22.417	0.036	0.036	0.000	---	NonR	0.000	0.000
	29.583	0.036	0.036	0.000			0.000	0.000
14	23.500	0.387	0.000	0.000	---	NonR	0.000	0.000
	27.500	0.387	0.000	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 50.22 kips 1.00Vn = 140.71 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	PreCmp+	1.4DL	35.0	9.9	0.0	1.00	0.90	240.00
	PreCmp-	1.4DL	-19.7	22.4	15.9	1.32	0.90	181.86
	Init DL	1.4DL	35.0	9.9	---	---		
	Max +	1.2DL+1.6LL	172.9	6.5	---	---	0.90	355.47
	Max -	1.2DL+1.6LL	-164.8	22.4	15.9	2.34	0.90	240.00
Right	PreCmp-	1.4DL	-19.7	22.4	1.1	1.00	0.90	240.00
	Max -	1.2DL+1.6LL	-164.8	22.4	1.1	1.00	0.90	240.00
Controlling		1.2DL+1.6LL	-164.8	22.4	15.9	2.34	0.90	240.00

REACTIONS (kips):

	Left	Right
Initial reaction	5.03	10.39
DL reaction	10.11	31.50
Max +LL reaction	12.47	25.46
Max -LL reaction	-2.46	0.00
Max +total reaction (factored)	32.09	78.53

DEFLECTIONS: **Ratio**

Center span:

Initial load (in)	at	9.86 ft	=	-0.161	L/D	=	1673		
Live load (in)	at	9.86 ft	=	-0.174	L/D	=	1547	> 360	0.23

City of Puyallup
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Center span:

Post Comp load (in)	at	9.86 ft	=	-0.193	L/D	=	1349	> 240	0.18
Net Total load (in)	at	9.86 ft	=	-0.336	L/D	=	747	> 240	0.32

Right cantilever:

Init load (in)	=	0.099			L/D	=	1746	
Pos Live load (in)	=	-0.264			L/D	=	651 > 360	0.55
Neg Live load (in)	=	0.159			L/D	=	1084 > 360	0.33
Pos Post Comp load (in)	=	-0.399			L/D	=	431 > 240	0.56
Neg Post Comp load (in)	=	0.023			L/D	=	7383 > 240	0.03
Pos Total load (in)	=	-0.301			L/D	=	571 > 240	0.42
Neg Total load (in)	=	0.122			L/D	=	1412 > 240	0.17

Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 134**

SPAN INFORMATION (ft): I-End (32.00,49.75) J-End (41.79,49.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X17 Fy = 50.0 ksi
Total Beam Length (ft) = 9.79
Mp (kip-ft) = 77.92

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	9.533	0.016	0.000			0.000
2	0.000	0.003	0.010	2.4%	Red	0.000
	9.533	0.003	0.010			0.000
3	9.534	0.015	0.000	---	NonR	0.000
	9.791	0.000	0.000			0.000
4	9.534	0.003	0.010	2.4%	Red	0.000
	9.791	0.000	0.000			0.000
5	0.000	0.017	0.000	---	NonR	0.000
	9.791	0.017	0.000			0.000
6	0.000	0.531	0.000	---	NonR	0.000
	9.791	0.531	0.000			0.000
7	0.000	0.237	0.861	2.4%	Red	0.000
	9.791	0.237	0.861			0.000
8	0.000	0.387	0.000	---	NonR	0.000
	9.791	0.387	0.000			0.000
9	0.000	0.000	0.275	0.0%	Roof	0.000
	9.791	0.000	0.275			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 15.81 kips 1.00Vn = 72.72 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	38.7	4.9	9.8	1.14	0.90	43.36
Controlling		1.2DL+1.6LL	38.7	4.9	9.8	1.14	0.90	43.36

REACTIONS (kips):

	Left	Right
DL reaction	5.83	5.83
Max +LL reaction	5.51	5.51
Max +total reaction (factored)	15.81	15.81

DEFLECTIONS:

					Ratio
Dead load (in)	at	4.90 ft =	-0.104	L/D = 1133	
Live load (in)	at	4.90 ft =	-0.098	L/D = 1199 > 360	0.30
Net Total load (in)	at	4.90 ft =	-0.202	L/D = 583 > 240	0.41

RAM Structural System
Bentley

Gravity Beam Design

Fire Engineering Building Traffic Public Works Planning
ISSUED PERMIT
Development & Permitting Services
City of Puyallup

Floor Type: FIRST FLOOR **Beam Number = 135**

SPAN INFORMATION (ft): I-End (41.79,45.75) J-End ([illegible],45.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X17 Fy = 50.0 ksi
Total Beam Length (ft) = 9.79
Mp (kip-ft) = 77.92

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.183	0.000	---	NonR	0.000
	9.791	0.183	0.000			0.000
2	0.000	0.033	0.183	5.9%	Red	0.000
	9.791	0.033	0.183			0.000
3	0.000	0.017	0.000	---	NonR	0.000
	9.791	0.017	0.000			0.000
4	0.000	0.514	0.000	---	NonR	0.000
	9.791	0.514	0.000			0.000
5	0.000	0.044	0.240	5.9%	Red	0.000
	9.791	0.044	0.240			0.000
6	0.000	0.187	0.680	5.9%	Red	0.000
	9.791	0.187	0.680			0.000
7	0.000	0.387	0.000	---	NonR	0.000
	9.791	0.387	0.000			0.000
8	0.000	0.000	0.262	0.0%	Roof	0.000
	9.791	0.000	0.262			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 18.21 kips 1.00Vn = 72.72 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn k
Center	Max +	1.2DL+1.6LL	44.6	4.9	0.0	1.00	0.90	7
Controlling		1.2DL+1.6LL	44.6	4.9	0.0	1.00	0.90	7

REACTIONS (kips):

	Left	Right
DL reaction	6.69	6.69
Max +LL reaction	6.37	6.37
Max +total reaction (factored)	18.21	18.21

DEFLECTIONS:

					Ratio
Dead load (in)	at	4.90 ft =	-0.119	L/D = 988	
Live load (in)	at	4.90 ft =	-0.113	L/D = 1038 > 360	0.35
Net Total load (in)	at	4.90 ft =	-0.232	L/D = 506 > 240	0.47

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Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 137**

SPAN INFORMATION (ft): I-End (51.58,45.75) J-End (62.23,45.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X19 Fy = 50.0 ksi
Total Beam Length (ft) = 10.65
Mp (kip-ft) = 90.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.183	0.000	---	NonR	0.000
	10.645	0.183	0.000			0.000
2	0.000	0.033	0.183	8.7%	Red	0.000
	10.645	0.033	0.183			0.000
3	0.000	0.019	0.000	---	NonR	0.000
	10.645	0.019	0.000			0.000
4	0.000	0.514	0.000	---	NonR	0.000
	10.645	0.514	0.000			0.000
5	0.000	0.044	0.240	8.7%	Red	0.000
	10.552	0.044	0.240			0.000
6	10.553	0.045	0.244	8.7%	Red	0.000
	10.645	0.000	0.000			0.000
7	10.553	0.000	0.000	8.7%	Red	0.000
	10.645	0.043	0.157			0.000
8	0.000	0.187	0.680	8.7%	Red	0.000
	10.645	0.187	0.680			0.000
9	0.000	0.387	0.000	---	NonR	0.000
	10.645	0.387	0.000			0.000
10	0.000	0.000	0.262	0.0%	Roof	0.000
	10.645	0.000	0.262			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 19.55 kips 1.00Vn = 76.50 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	52.0	5.3	0.0	1.00	0.90	81.00
Controlling		1.2DL+1.6LL	52.0	5.3	0.0	1.00	0.90	81.00

REACTIONS (kips):

	Left	Right
DL reaction	7.28	7.28
Max +LL reaction	6.75	6.75
Max +total reaction (factored)	19.55	19.54

DEFLECTIONS: **Ratio**

Dead load (in) at 5.32 ft = -0.142 L/D = 902
Live load (in) at 5.32 ft = -0.131 L/D = 973 > 360 0.37

Gravity Beam Design

Net Total load (in) at 5.32 ft = -0.272 L/D = 468 > 240 0.51

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Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 139**

SPAN INFORMATION (ft): I-End (62.23,49.75) J-End (70.33,49.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 8.10
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.000	0.000	---	NonR	0.000
	0.258	0.015	0.000			0.000
2	0.000	0.000	0.000	0.0%	Red	0.000
	0.258	0.003	0.010			0.000
3	0.259	0.016	0.000	---	NonR	0.000
	8.104	0.016	0.000			0.000
4	0.259	0.003	0.010	0.0%	Red	0.000
	8.104	0.003	0.010			0.000
5	0.000	0.012	0.000	---	NonR	0.000
	8.104	0.012	0.000			0.000
6	0.000	0.531	0.000	---	NonR	0.000
	8.104	0.531	0.000			0.000
7	0.000	0.237	0.861	0.0%	Red	0.000
	8.104	0.237	0.861			0.000
8	0.000	0.387	0.000	---	NonR	0.000
	8.104	0.387	0.000			0.000
9	0.000	0.000	0.275	0.0%	Roof	0.000
	8.104	0.000	0.275			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 13.20 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	26.7	4.1	8.1	1.14	0.90	32.11
Controlling		1.2DL+1.6LL	26.7	4.1	8.1	1.14	0.90	32.11

REACTIONS (kips):

	Left	Right
DL reaction	4.80	4.80
Max +LL reaction	4.64	4.64
Max +total reaction (factored)	13.19	13.20

DEFLECTIONS:

					Ratio
Dead load (in)	at	4.05 ft =	-0.074	L/D = 1319	
Live load (in)	at	4.05 ft =	-0.071	L/D = 1364 > 360	0.26
Net Total load (in)	at	4.05 ft =	-0.145	L/D = 670 > 240	0.36

Gravity Beam Design

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Floor Type: FIRST FLOOR **Beam Number = 140**

SPAN INFORMATION (ft): I-End (70.33,49.75) J-End (78.00,49.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 7.67
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	7.666	0.016	0.000			0.000
2	0.000	0.003	0.010	0.0%	Red	0.000
	7.666	0.003	0.010			0.000
3	0.000	0.012	0.000	---	NonR	0.000
	7.666	0.012	0.000			0.000
4	0.000	0.531	0.000	---	NonR	0.000
	7.667	0.531	0.000			0.000
5	0.000	0.237	0.861	0.0%	Red	0.000
	7.667	0.237	0.861			0.000
6	0.000	0.387	0.000	---	NonR	0.000
	7.667	0.387	0.000			0.000
7	0.000	0.000	0.275	0.0%	Roof	0.000
	7.667	0.000	0.275			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 12.48 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	23.9	3.8	7.7	1.14	0.90	34.06
Controlling		1.2DL+1.6LL	23.9	3.8	7.7	1.14	0.90	3

REACTIONS (kips):

	Left	Right
DL reaction	4.54	4.54
Max +LL reaction	4.39	4.39
Max +total reaction (factored)	12.48	12.48

DEFLECTIONS:

Dead load (in)	at	3.83 ft =	-0.059	L/D = 1558	
Live load (in)	at	3.83 ft =	-0.057	L/D = 1611 > 360	0.
Net Total load (in)	at	3.83 ft =	-0.116	L/D = 792 > 240	0.30

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Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 142**

SPAN INFORMATION (ft): I-End (16.72,28.75) J-End (24.36,28.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 7.64
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.012	0.000	---	NonR	0.000
	7.638	0.012	0.000			0.000
2	0.000	0.674	0.000	---	NonR	0.000
	7.639	0.674	0.000			0.000
3	0.000	0.231	0.840	1.8%	Red	0.000
	7.639	0.231	0.840			0.000
4	0.000	0.071	0.650	1.8%	Red	0.000
	7.639	0.071	0.650			0.000
5	0.000	0.387	0.000	---	NonR	0.000
	7.639	0.387	0.000			0.000
6	0.000	0.000	0.280	0.0%	Roof	0.000
	7.639	0.000	0.280			0.000
7	0.000	0.010	0.064	0.0%	Roof	0.000
	7.639	0.010	0.064			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 17.39 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	33.2	3.8	7.6	1.14	0.90	34.17
Controlling		1.2DL+1.6LL	33.2	3.8	7.6	1.14	0.90	34.17

REACTIONS (kips):

	Left	Right
DL reaction	5.29	5.29
Max +LL reaction	6.90	6.90
Max +total reaction (factored)	17.39	17.39

DEFLECTIONS: **Ratio**

Dead load (in)	at 3.82 ft =	-0.068	L/D = 1347		
Live load (in)	at 3.82 ft =	-0.089	L/D = 1033 > 360		0.35
Net Total load (in)	at 3.82 ft =	-0.157	L/D = 585 > 240		0.41

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Floor Type: FIRST FLOOR **Beam Number = 143**

SPAN INFORMATION (ft): I-End (24.36,28.75) J-End (28.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 7.64
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.012	0.000	---	NonR	0.000
	7.638	0.012	0.000			0.000
2	0.000	0.674	0.000	---	NonR	0.000
	7.639	0.674	0.000			0.000
3	0.000	0.231	0.840	1.8%	Red	0.000
	7.639	0.231	0.840			0.000
4	0.000	0.071	0.650	1.8%	Red	0.000
	7.639	0.071	0.650			0.000
5	0.000	0.387	0.000	---	NonR	0.000
	7.639	0.387	0.000			0.000
6	0.000	0.000	0.280	0.0%	Roof	0.000
	7.639	0.000	0.280			0.000
7	0.000	0.010	0.064	0.0%	Roof	0.000
	7.639	0.010	0.064			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 17.39 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	33.2	3.8	7.6	1.14	0.90	34.17
Controlling		1.2DL+1.6LL	33.2	3.8	7.6	1.14	0.90	3

REACTIONS (kips):

	Left	Right
DL reaction	5.29	5.29
Max +LL reaction	6.90	6.90
Max +total reaction (factored)	17.39	17.39

DEFLECTIONS:

Dead load (in)	at 3.82 ft =	-0.068	L/D = 1347		
Live load (in)	at 3.82 ft =	-0.089	L/D = 1033 > 360		
Net Total load (in)	at 3.82 ft =	-0.157	L/D = 585 > 240		0.41

Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 144**

SPAN INFORMATION (ft): I-End (32.00,28.75) J-End (41.79,28.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X22 Fy = 50.0 ksi
Total Beam Length (ft) = 9.79
Mp (kip-ft) = 108.33

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
3.125	3.09	3.86	10.4	0.00	0.00	0.0	0.89	0.0	0.00
8.313	3.09	3.86	10.4	0.00	0.00	0.0	0.89	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.022	0.000	---	NonR	0.000
	9.791	0.022	0.000			0.000
2	0.000	0.674	0.000	---	NonR	0.000
	3.125	0.674	0.000			0.000
3	0.000	0.231	0.840	10.4%	Red	0.000
	3.125	0.231	0.840			0.000
4	0.000	0.071	0.650	10.4%	Red	0.000
	3.125	0.071	0.650			0.000
5	0.000	0.387	0.000	---	NonR	0.000
	3.125	0.387	0.000			0.000
6	0.000	0.000	0.280	0.0%	Roof	0.000
	3.125	0.000	0.280			0.000
7	0.000	0.010	0.064	0.0%	Roof	0.000
	3.125	0.010	0.064			0.000
8	8.313	0.674	0.000	---	NonR	0.000
	9.791	0.674	0.000			0.000
9	8.313	0.231	0.840	10.4%	Red	0.000
	9.791	0.231	0.840			0.000
10	8.313	0.071	0.650	10.4%	Red	0.000
	9.792	0.071	0.650			0.000
11	8.313	0.387	0.000	---	NonR	0.000
	9.792	0.387	0.000			0.000
12	8.313	0.000	0.280	0.0%	Roof	0.000
	9.791	0.000	0.280			0.000
13	8.313	0.010	0.064	0.0%	Roof	0.000
	9.792	0.010	0.064			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 20.88 kips 1.00Vn = 73.44 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	44.0	3.1	9.8	1.19	0.90	91.32

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Span	Cond	LoadCombo	Mu	@	Lb	Cb	Phi	Phi*Mn
Controlling		1.2DL+1.6LL	44.0	3.1	9.8	1.19	0.90	91.32

REACTIONS (kips):

	Left	Right
DL reaction	6.44	6.44
Max +LL reaction	8.22	8.22
Max +total reaction (factored)	20.88	20.69

DEFLECTIONS:

						Ratio
Dead load (in)	at	4.70 ft	=	-0.064	L/D = 1849	
Live load (in)	at	4.70 ft	=	-0.083	L/D = 1412 > 360	0.25
Net Total load (in)	at	4.70 ft	=	-0.147	L/D = 801 > 240	0.30

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Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 145**

SPAN INFORMATION (ft): I-End (41.79,28.75) J-End (51.58,28.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X19 Fy = 50.0 ksi
Total Beam Length (ft) = 9.79
Mp (kip-ft) = 90.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.019	0.000	---	NonR	0.000
	9.791	0.019	0.000			0.000
2	0.000	0.576	0.000	---	NonR	0.000
	9.792	0.576	0.000			0.000
3	0.000	0.187	0.680	5.1%	Red	0.000
	9.792	0.187	0.680			0.000
4	0.000	0.071	0.650	5.1%	Red	0.000
	9.792	0.071	0.650			0.000
5	0.000	0.387	0.000	---	NonR	0.000
	9.792	0.387	0.000			0.000
6	0.000	0.000	0.230	0.0%	Roof	0.000
	9.792	0.000	0.230			0.000
7	0.000	0.010	0.064	0.0%	Roof	0.000
	9.792	0.010	0.064			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 19.54 kips 1.00Vn = 76.50 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	47.8	4.9	9.8	1.14	0.90	55.50
Controlling		1.2DL+1.6LL	47.8	4.9	9.8	1.14	0.90	55.50

REACTIONS (kips):

	Left	Right
DL reaction	6.12	6.12
Max +LL reaction	7.62	7.62
Max +total reaction (factored)	19.54	19.54

DEFLECTIONS: **Ratio**

Dead load (in)	at 4.90 ft =	-0.093	L/D = 1268		
Live load (in)	at 4.90 ft =	-0.115	L/D = 1019 > 360		0.35
Net Total load (in)	at 4.90 ft =	-0.208	L/D = 565 > 240		0.42

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Floor Type: FIRST FLOOR **Beam Number = 146**

SPAN INFORMATION (ft): I-End (51.58,28.75) J-End (61.36,28.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 3.42
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.012	0.000	---	NonR	0.000
	3.416	0.012	0.000			0.000
2	0.000	0.576	0.000	---	NonR	0.000
	3.417	0.576	0.000			0.000
3	0.000	0.187	0.680	0.0%	Red	0.000
	3.417	0.187	0.680			0.000
4	0.000	0.071	0.650	0.0%	Red	0.000
	3.417	0.071	0.650			0.000
5	0.000	0.387	0.000	---	NonR	0.000
	3.417	0.387	0.000			0.000
6	0.000	0.000	0.230	0.0%	Roof	0.000
	3.417	0.000	0.230			0.000
7	0.000	0.010	0.064	0.0%	Roof	0.000
	3.417	0.010	0.064			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 6.99 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	6.0	1.7	3.4	1.14	0.90	46.90
Controlling		1.2DL+1.6LL	6.0	1.7	3.4	1.14	0.90	4

REACTIONS (kips):

	Left	Right
DL reaction	2.13	2.13
Max +LL reaction	2.77	2.77
Max +total reaction (factored)	6.99	6.99

DEFLECTIONS: **R**

Dead load (in)	at 1.71 ft =	-0.002	L/D = 1677		
Live load (in)	at 1.71 ft =	-0.003	L/D = 1284 > 360		0.03
Net Total load (in)	at 1.71 ft =	-0.006	L/D = 7275 > 240		0.03

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Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 147**

SPAN INFORMATION (ft): I-End (55.00,28.75) J-End (62.23,28.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X15 Fy = 50.0 ksi
Total Beam Length (ft) = 7.23
Mp (kip-ft) = 66.67

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
6.667	2.91	3.64	4.0	0.00	0.00	0.0	0.83	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.015	0.000	---	NonR	0.000
	7.229	0.015	0.000			0.000
2	0.000	0.576	0.000	---	NonR	0.000
	6.666	0.576	0.000			0.000
3	0.000	0.187	0.680	4.0%	Red	0.000
	6.666	0.187	0.680			0.000
4	0.000	0.071	0.650	4.0%	Red	0.000
	6.666	0.071	0.650			0.000
5	0.000	0.387	0.000	---	NonR	0.000
	6.666	0.387	0.000			0.000
6	0.000	0.000	0.230	0.0%	Roof	0.000
	6.666	0.000	0.230			0.000
7	0.000	0.010	0.064	0.0%	Roof	0.000
	6.666	0.010	0.064			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 21.93 kips 1.00Vn = 68.93 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	28.9	3.8	7.2	1.12	0.90	47.12
Controlling		1.2DL+1.6LL	28.9	3.8	7.2	1.12	0.90	47.12

REACTIONS (kips):

	Left	Right
DL reaction	4.71	6.52
Max +LL reaction	5.98	8.82
Max +total reaction (factored)	15.21	21.93

DEFLECTIONS:

					Ratio
Dead load (in)	at 3.65 ft =	-0.042	L/D = 2047		
Live load (in)	at 3.65 ft =	-0.054	L/D = 1594 >	360	0.23
Net Total load (in)	at 3.65 ft =	-0.097	L/D = 896 >	240	0.27

Gravity Beam Design

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Floor Type: FIRST FLOOR **Beam Number = 148**

SPAN INFORMATION (ft): I-End (62.23,28.75) J-End (70.33,28.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X19 Fy = 50.0 ksi
Total Beam Length (ft) = 8.10
Mp (kip-ft) = 90.00

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
4.438	2.98	3.72	0.0	0.00	0.00	0.0	0.86	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.019	0.000	---	NonR	0.000
	8.104	0.019	0.000			0.000
2	4.438	0.674	0.000	---	NonR	0.000
	8.104	0.674	0.000			0.000
3	4.438	0.231	0.840	0.0%	Red	0.000
	8.104	0.231	0.840			0.000
4	4.438	0.071	0.650	0.0%	Red	0.000
	8.104	0.071	0.650			0.000
5	4.438	0.387	0.000	---	NonR	0.000
	8.104	0.387	0.000			0.000
6	4.438	0.000	0.280	0.0%	Roof	0.000
	8.104	0.000	0.280			0.000
7	4.438	0.010	0.064	0.0%	Roof	0.000
	8.104	0.010	0.064			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 19.06 kips 1.00Vn = 76.50 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi k
Center	Max +	1.2DL+1.6LL	38.9	4.4	8.1	1.28	0.90	7
Controlling		1.2DL+1.6LL	38.9	4.4	8.1	1.28	0.90	7

REACTIONS (kips):

	Left	Right
DL reaction	2.56	5.60
Max +LL reaction	3.59	7.71
Max +total reaction (factored)	8.82	19.06

DEFLECTIONS:

					Ratio
Dead load (in)	at 4.30 ft =	-0.041	L/D = 2357		
Live load (in)	at 4.30 ft =	-0.058	L/D = 1669 >	360	0.22
Net Total load (in)	at 4.30 ft =	-0.100	L/D = 977 >	240	0.25

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Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 149**

SPAN INFORMATION (ft): I-End (70.33,28.75) J-End (78.00,28.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 7.67
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.012	0.000	---	NonR	0.000
	7.666	0.012	0.000			0.000
2	0.000	0.674	0.000	---	NonR	0.000
	7.667	0.674	0.000			0.000
3	0.000	0.231	0.840	2.0%	Red	0.000
	7.667	0.231	0.840			0.000
4	0.000	0.071	0.650	2.0%	Red	0.000
	7.667	0.071	0.650			0.000
5	0.000	0.387	0.000	---	NonR	0.000
	7.667	0.387	0.000			0.000
6	0.000	0.000	0.280	0.0%	Roof	0.000
	7.667	0.000	0.280			0.000
7	0.000	0.010	0.064	0.0%	Roof	0.000
	7.667	0.010	0.064			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 17.44 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	33.4	3.8	7.7	1.14	0.90	34.06
Controlling		1.2DL+1.6LL	33.4	3.8	7.7	1.14	0.90	34.06

REACTIONS (kips):

	Left	Right
DL reaction	5.31	5.31
Max +LL reaction	6.92	6.92
Max +total reaction (factored)	17.44	17.44

DEFLECTIONS:

					Ratio
Dead load (in)	at	3.83 ft =	-0.069	L/D = 1332	
Live load (in)	at	3.83 ft =	-0.090	L/D = 1023 > 360	0.35
Net Total load (in)	at	3.83 ft =	-0.159	L/D = 579 > 240	0.41

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Floor Type: FIRST FLOOR **Beam Number = 150**

SPAN INFORMATION (ft): I-End (131.12,22.2[illegible] J-End ([illegible],51.83)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X36 Fy = 50.0 ksi
Total Beam Length (ft) = 29.58
Cantilever on right (ft) = 7.17

COMPOSITE PROPERTIES (Not Shored):

		Left		Right
Deck Label		5.5" O/2W		5.5" O/2W
Concrete thickness (in)		3.50		3.50
Unit weight concrete (pcf)		150.00		150.00
f'c (ksi)		4.00		4.00
Decking Orientation		perpendicular		perpendicular
Decking type		ASC 2W		ASC 2W
beff (in)	= 67.25	Y bar(in)	=	16.77
Mnf (kip-ft)	= 548.37	Mn (kip-ft)	=	394.96
C (kips)	= 139.56	PNA (in)	=	12.68
Ieff (in4)	= 1031.65	Itr (in4)	=	1585.39
Stud length (in)	= 4.00	Stud diam (in)	=	0.75

Rg Stud Red. Factor Rg[1] = 1.00 Rg[2] = 0.85
Rp Stud Red. Factor Rp[1] = 0.60 Rp[2] = 0.60
Stud Capacity (kips) Qn[1] = 17.2 Qn[2] = 14.6
# of studs: Max = 44 Partial = 32 Actual = 32
Number of Stud Rows = 2 Percent of Full Composite Action = 26.33

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
					L					
6.500	6.28	0.11	6.66	22.8	0.00	0.00	0.0	1.47	0.0	0.00
6.500	1.54	0.05	1.77	22.8	0.00	0.00	0.0	0.41	0.0	0.00
23.500	6.85	1.00	5.53	0.0	0.00	0.00	0.0	1.32	0.0	0.00
27.500	4.32	0.10	3.17	0.0	0.00	0.00	0.0	1.00	0.0	0.00
29.583	1.23	1.04	0.99	0.0	0.00	0.00	0.0	0.00	0.0	0.00
27.500	2.28	0.00	2.26	0.0	0.00	0.00	0.0	0.31	0.0	0.00
6.500	2.93	0.00	3.66	22.8	0.00	0.00	0.0	0.84	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	27.500	0.000	0.000	0.000	---	NonR	0.000	0.000
	27.758	0.015	0.015	0.000			0.000	0.000
2	27.500	0.000	0.000	0.000	0.0%	Red	0.000	0.000
	27.758	0.003	0.000	0.015			0.000	0.000
3	27.759	0.016	0.016	0.000	---	NonR	0.000	0.000
	29.583	0.016	0.016	0.000			0.000	0.000
4	27.759	0.003	0.000	0.015	0.0%	Red	0.000	0.000

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Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
	29.583	0.003	0.000	0.015			0.000	0.000
5	0.000	0.520	0.520	0.000	---	NonR	0.000	0.000
	22.416	0.520	0.520	0.000			0.000	0.000
6	0.000	0.095	0.000	0.867	22.8%	Red	0.000	0.000
	6.500	0.095	0.000	0.867			0.000	0.000
7	6.500	0.095	0.000	0.347	22.8%	Red	0.000	0.000
	22.416	0.095	0.000	0.347			0.000	0.000
8	22.417	0.219	0.219	0.000	---	NonR	0.000	0.000
	27.500	0.219	0.219	0.000			0.000	0.000
9	22.417	0.095	0.000	0.347	0.0%	Red	0.000	0.000
	23.500	0.095	0.000	0.347			0.000	0.000
10	23.500	0.000	0.000	0.000	0.0%	Red	0.000	0.000
	27.500	0.005	0.000	0.029			0.000	0.000
11	23.500	0.040	0.000	0.146	0.0%	Red	0.000	0.000
	27.500	0.035	0.000	0.127			0.000	0.000
12	22.417	0.301	0.301	0.000	---	NonR	0.000	0.000
	23.500	0.301	0.301	0.000			0.000	0.000
13	0.000	0.036	0.036	0.000	---	NonR	0.000	0.000
	22.416	0.036	0.036	0.000			0.000	0.000
14	22.417	0.036	0.036	0.000	---	NonR	0.000	0.000
	29.583	0.036	0.036	0.000			0.000	0.000
15	23.500	0.387	0.000	0.000	---	NonR	0.000	0.000
	27.500	0.387	0.000	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 46.83 kips 1.00Vn = 140.71 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	PreCmp+	1.4DL	41.0	10.1	0.0	1.00	0.90	240.00
	PreCmp-	1.4DL	-18.5	22.4	15.9	1.28	0.90	176.29
	Init DL	1.4DL	41.0	10.1	---	---		
	Max +	1.2DL+1.6LL	200.3	6.5	---	---	0.90	355.47
	Max -	1.2DL+1.6LL	-152.9	22.4	15.9	2.42	0.90	240.00
Right	PreCmp-	1.4DL	-18.5	22.4	1.1	1.00	0.90	240.00
	Max -	1.2DL+1.6LL	-152.9	22.4	1.1	1.00	0.90	240.00
Controlling		1.2DL+1.6LL	-152.9	22.4	15.9	2.42	0.90	240.00

REACTIONS (kips):

	Left	Right
Initial reaction	5.76	10.74
DL reaction	12.30	31.29
Max +LL reaction	13.80	24.76
Max -LL reaction	-2.28	0.00
Max +total reaction (factored)	36.84	77.16

DEFLECTIONS: **Ratio**

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Center span:								
Initial load (in)	at 10.09 ft	=	-0.19	L/D	=	1403		
Live load (in)	at 10.09 ft	=	-0.19	L/D	=	1393	> 360	0.26
Post Comp load (in)	at 10.09 ft	=	-0.24	L/D	=	1105	> 240	0.22
Net Total load (in)	at 10.09 ft	=	-0.43	L/D	=	618	> 240	0.39
Right cantilever:								
Init load (in)		=	0.134	L/D	=	1282		
Pos Live load (in)		=	-0.245	L/D	=	703	> 360	0.51
Neg Live load (in)		=	0.176	L/D	=	979	> 360	0.37
Pos Post Comp load (in)		=	-0.346	L/D	=	498	> 240	0.48
Neg Post Comp load (in)		=	0.075	L/D	=	2302	> 240	0.10
Pos Total load (in)		=	-0.211	L/D	=	814	> 240	0.29
Neg Total load (in)		=	0.209	L/D	=	823	> 240	0.29

Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 153**

SPAN INFORMATION (ft): I-End (78.00,49.75) J-End (85.89,49.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 7.89
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	7.888	0.016	0.000			0.000
2	0.000	0.003	0.010	0.0%	Red	0.000
	7.888	0.003	0.010			0.000
3	0.000	0.012	0.000	---	NonR	0.000
	7.888	0.012	0.000			0.000
4	0.000	0.531	0.000	---	NonR	0.000
	7.889	0.531	0.000			0.000
5	0.000	0.237	0.861	0.0%	Red	0.000
	7.889	0.237	0.861			0.000
6	0.000	0.387	0.000	---	NonR	0.000
	7.889	0.387	0.000			0.000
7	0.000	0.000	0.275	0.0%	Roof	0.000
	7.889	0.000	0.275			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 12.84 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	25.3	3.9	7.9	1.14	0.90	33.17
Controlling		1.2DL+1.6LL	25.3	3.9	7.9	1.14	0.90	33.17

REACTIONS (kips):

	Left	Right
DL reaction	4.68	4.68
Max +LL reaction	4.52	4.52
Max +total reaction (factored)	12.84	12.84

DEFLECTIONS: **Ratio**

Dead load (in)	at 3.94 ft =	-0.066	L/D = 1430		
Live load (in)	at 3.94 ft =	-0.064	L/D = 1479 > 360		0.24
Net Total load (in)	at 3.94 ft =	-0.130	L/D = 727 > 240		0.33

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Floor Type: FIRST FLOOR **Beam Number = 153**

SPAN INFORMATION (ft): I-End (85.89,49.75) J-End (78.00,49.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 7.89
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	7.888	0.016	0.000			0.000
2	0.000	0.003	0.010	0.0%	Red	0.000
	7.888	0.003	0.010			0.000
3	0.000	0.012	0.000	---	NonR	0.000
	7.888	0.012	0.000			0.000
4	0.000	0.016	0.000	---	NonR	0.000
	7.889	0.016	0.000			0.000
5	0.000	0.006	0.021	0.0%	Red	0.000
	7.889	0.006	0.021			0.000
6	0.000	0.514	0.000	---	NonR	0.000
	5.631	0.514	0.000			0.000
7	0.000	0.231	0.840	0.0%	Red	0.000
	5.631	0.231	0.840			0.000
8	5.632	0.293	0.000	---	NonR	0.000
	7.889	0.293	0.000			0.000
9	5.632	0.132	0.479	0.0%	Red	0.000
	7.889	0.132	0.479			0.000
10	0.000	0.387	0.000	---	NonR	0.000
	7.889	0.387	0.000			0.000
11	0.000	0.000	0.013	0.0%	Roof	0.000
	7.889	0.000	0.013			0.000
12	0.000	0.000	0.262	0.0%	Roof	0.000
	5.631	0.000	0.262			0.000
13	5.632	0.000	0.150	0.0%	Roof	0.000
	7.889	0.000	0.150			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 12.48 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi kip-ft
Center	Max +	1.2DL+1.6LL	23.9	3.8	7.9	1.15	0.90	33.45
Controlling		1.2DL+1.6LL	23.9	3.8	7.9	1.15	0.90	33.45

REACTIONS (kips):

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	Left	Right
DL reaction	4.57	4.06
Max +LL reaction	4.37	3.60
Max +total reaction (factored)	12.48	10.63

DEFLECTIONS:

									Ratio
Dead load (in)	at	3.91 ft	=	-0.063	L/D	=	1505		
Live load (in)	at	3.91 ft	=	-0.059	L/D	=	1602	> 360	0.22
Net Total load (in)	at	3.91 ft	=	-0.122	L/D	=	776	> 240	0.31

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Floor Type: FIRST FLOOR **Beam Number = 155**

SPAN INFORMATION (ft): I-End (93.78,49.75) J-End (89.67,49.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 7.89
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	7.888	0.016	0.000			0.000
2	0.000	0.003	0.010	0.0%	Red	0.000
	7.888	0.003	0.010			0.000
3	0.000	0.012	0.000	---	NonR	0.000
	7.888	0.012	0.000			0.000
4	0.000	0.016	0.000	---	NonR	0.000
	7.889	0.016	0.000			0.000
5	0.000	0.006	0.021	0.0%	Red	0.000
	7.889	0.006	0.021			0.000
6	0.000	0.293	0.000	---	NonR	0.000
	7.170	0.293	0.000			0.000
7	0.000	0.132	0.479	0.0%	Red	0.000
	7.170	0.132	0.479			0.000
8	7.171	0.514	0.000	---	NonR	0.000
	7.889	0.514	0.000			0.000
9	7.171	0.231	0.840	0.0%	Red	0.000
	7.889	0.231	0.840			0.000
10	0.000	0.387	0.000	---	NonR	0.000
	7.889	0.387	0.000			0.000
11	0.000	0.000	0.013	0.0%	Roof	0.000
	7.889	0.000	0.013			0.000
12	0.000	0.000	0.150	0.0%	Roof	0.000
	7.170	0.000	0.150			0.000
13	7.171	0.000	0.262	0.0%	Roof	0.000
	7.889	0.000	0.262			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 9.12 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu	@	Lb	Cb	Phi	Phi
			kip-ft	ft	ft			kip-ft
Center	Max +	1.2DL+1.6LL	16.6	4.0	7.9	1.14	0.90	33.13
Controlling		1.2DL+1.6LL	16.6	4.0	7.9	1.14	0.90	33.13

REACTIONS (kips):

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	Left	Right
DL reaction	3.42	3.63
Max +LL reaction	2.67	2.98
Max +total reaction (factored)	8.38	9.12

DEFLECTIONS:

									Ratio
Dead load (in)	at	3.94 ft	=	-0.049	L/D	=	1945		
Live load (in)	at	3.94 ft	=	-0.038	L/D	=	2485	> 360	0.14
Net Total load (in)	at	3.94 ft	=	-0.087	L/D	=	1091	> 240	0.22

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building
Planning
Engineering
Public Works
Traffic
Fire

Floor Type: FIRST FLOOR **Beam Number = 156**

SPAN INFORMATION (ft): I-End (101.67,49.75) I-End (99.86,49.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 7.39
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	7.388	0.016	0.000			0.000
2	0.000	0.003	0.010	0.0%	Red	0.000
	7.388	0.003	0.010			0.000
3	0.000	0.012	0.000	---	NonR	0.000
	7.388	0.012	0.000			0.000
4	0.000	0.531	0.000	---	NonR	0.000
	7.389	0.531	0.000			0.000
5	0.000	0.237	0.861	0.0%	Red	0.000
	7.389	0.237	0.861			0.000
6	0.000	0.387	0.000	---	NonR	0.000
	7.389	0.387	0.000			0.000
7	0.000	0.000	0.275	0.0%	Roof	0.000
	7.389	0.000	0.275			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 12.03 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	22.2	3.7	7.4	1.14	0.90	35.17
Controlling		1.2DL+1.6LL	22.2	3.7	7.4	1.14	0.90	3[illegible]

REACTIONS (kips):

	Left	Right
DL reaction	4.38	4.38
Max +LL reaction	4.23	4.23
Max +total reaction (factored)	12.03	12.03

DEFLECTIONS:

									R
Dead load (in)	at	3.69 ft	=	-0.051	L/D	=	1740		
Live load (in)	at	3.69 ft	=	-0.049	L/D	=	1800	> 360	0.[illegible]
Net Total load (in)	at	3.69 ft	=	-0.100	L/D	=	885	> 240	0.27

PRMU20220123

Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 157**

SPAN INFORMATION (ft): I-End (109.06,49.75) J-End (116.44,49.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 7.39
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	7.388	0.016	0.000			0.000
2	0.000	0.003	0.010	0.0%	Red	0.000
	7.388	0.003	0.010			0.000
3	0.000	0.012	0.000	---	NonR	0.000
	7.388	0.012	0.000			0.000
4	0.000	0.531	0.000	---	NonR	0.000
	7.389	0.531	0.000			0.000
5	0.000	0.237	0.861	0.0%	Red	0.000
	7.389	0.237	0.861			0.000
6	0.000	0.387	0.000	---	NonR	0.000
	7.389	0.387	0.000			0.000
7	0.000	0.000	0.275	0.0%	Roof	0.000
	7.389	0.000	0.275			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 12.03 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	22.2	3.7	7.4	1.14	0.90	35.17
Controlling		1.2DL+1.6LL	22.2	3.7	7.4	1.14	0.90	35.17

REACTIONS (kips):

	Left	Right
DL reaction	4.38	4.38
Max +LL reaction	4.23	4.23
Max +total reaction (factored)	12.03	12.03

DEFLECTIONS:

						Ratio
Dead load (in)	at	3.69 ft	= -0.051	L/D = 1740		
Live load (in)	at	3.69 ft	= -0.049	L/D = 1800	> 360	0.20
Net Total load (in)	at	3.69 ft	= -0.100	L/D = 885	> 240	0.27

RAM Structural System
Bentley

Gravity Beam Design

Fire
Engineering
Building
Traffic
Public Works
Planning
ISSUED PERMIT
Development & Permitting Services
City of Puyallup
PRMU2022012

Floor Type: FIRST FLOOR **Beam Number = 158**

SPAN INFORMATION (ft): I-End (116.44,49.75) J-End (123.83,49.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 7.39
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	7.388	0.016	0.000			0.000
2	0.000	0.003	0.010	0.0%	Red	0.000
	7.388	0.003	0.010			0.000
3	0.000	0.012	0.000	---	NonR	0.000
	7.388	0.012	0.000			0.000
4	0.000	0.531	0.000	---	NonR	0.000
	7.389	0.531	0.000			0.000
5	0.000	0.237	0.861	0.0%	Red	0.000
	7.389	0.237	0.861			0.000
6	0.000	0.387	0.000	---	NonR	0.000
	7.389	0.387	0.000			0.000
7	0.000	0.000	0.275	0.0%	Roof	0.000
	7.389	0.000	0.275			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 12.03 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	22.2	3.7	7.4	1.14	0.90	35.17
Controlling		1.2DL+1.6LL	22.2	3.7	7.4	1.14	0.90	3

REACTIONS (kips):

	Left	Right
DL reaction	4.38	4.38
Max +LL reaction	4.23	4.23
Max +total reaction (factored)	12.03	12.03

DEFLECTIONS:

Dead load (in)	at	3.69 ft	= -0.051	L/D = 1740		
Live load (in)	at	3.69 ft	= -0.049	L/D = 1800	> 360	
Net Total load (in)	at	3.69 ft	= -0.100	L/D = 885	> 240	0.27

Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 159**

SPAN INFORMATION (ft): I-End (123.83,49.75) J-End (131.13,49.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 7.29
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	7.033	0.016	0.000			0.000
2	0.000	0.003	0.010	0.0%	Red	0.000
	7.033	0.003	0.010			0.000
3	7.034	0.015	0.000	---	NonR	0.000
	7.291	0.000	0.000			0.000
4	7.034	0.003	0.010	0.0%	Red	0.000
	7.291	0.000	0.000			0.000
5	0.000	0.012	0.000	---	NonR	0.000
	7.291	0.012	0.000			0.000
6	0.000	0.531	0.000	---	NonR	0.000
	7.291	0.531	0.000			0.000
7	0.000	0.237	0.861	0.0%	Red	0.000
	7.291	0.237	0.861			0.000
8	0.000	0.387	0.000	---	NonR	0.000
	7.291	0.387	0.000			0.000
9	0.000	0.000	0.275	0.0%	Roof	0.000
	7.291	0.000	0.275			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 11.87 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	21.6	3.6	7.3	1.14	0.90	35.56
Controlling		1.2DL+1.6LL	21.6	3.6	7.3	1.14	0.90	35.56

REACTIONS (kips):

	Left	Right
DL reaction	4.32	4.32
Max +LL reaction	4.18	4.18
Max +total reaction (factored)	11.87	11.87

DEFLECTIONS:

					Ratio
Dead load (in)	at	3.65 ft =	-0.048	L/D = 1811	
Live load (in)	at	3.65 ft =	-0.047	L/D = 1873 > 360	0.19
Net Total load (in)	at	3.65 ft =	-0.095	L/D = 921 > 240	0.26

Gravity Beam Design

Fire
Engineering
Building
Traffic
Public Works
Planning
ISSUED PERMIT
Development & Permitting Services
City of Puyallup

Floor Type: FIRST FLOOR **Beam Number = 168**

SPAN INFORMATION (ft): I-End (78.00,28.75) J-End (85.89,28.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X15 Fy = 50.0 ksi
Total Beam Length (ft) = 7.89
Mp (kip-ft) = 66.67

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.015	0.000	---	NonR	0.000
	7.888	0.015	0.000			0.000
2	0.000	0.674	0.000	---	NonR	0.000
	7.889	0.674	0.000			0.000
3	0.000	0.231	0.840	3.0%	Red	0.000
	7.889	0.231	0.840			0.000
4	0.000	0.071	0.650	3.0%	Red	0.000
	7.889	0.071	0.650			0.000
5	0.000	0.387	0.000	---	NonR	0.000
	7.889	0.387	0.000			0.000
6	0.000	0.000	0.280	0.0%	Roof	0.000
	7.889	0.000	0.280			0.000
7	0.000	0.010	0.064	0.0%	Roof	0.000
	7.889	0.010	0.064			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 17.87 kips 1.00Vn = 68.93 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	35.2	3.9	7.9	1.14	0.90	44.51
Controlling		1.2DL+1.6LL	35.2	3.9	7.9	1.14	0.90	4

REACTIONS (kips):

	Left	Right
DL reaction	5.48	5.48
Max +LL reaction	7.06	7.06
Max +total reaction (factored)	17.87	17.87

DEFLECTIONS:

Dead load (in)	at	3.94 ft =	-0.061	L/D = 1563	
Live load (in)	at	3.94 ft =	-0.078	L/D = 1213 > 360	0.
Net Total load (in)	at	3.94 ft =	-0.139	L/D = 683 > 240	0.35

PRMU2022012

Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 169**

SPAN INFORMATION (ft): I-End (85.89,28.75) J-End (90.85,28.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 4.97
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.012	0.000	---	NonR	0.000
	4.965	0.012	0.000			0.000
2	0.000	0.674	0.000	---	NonR	0.000
	4.965	0.674	0.000			0.000
3	0.000	0.231	0.840	0.0%	Red	0.000
	4.965	0.231	0.840			0.000
4	0.000	0.071	0.650	0.0%	Red	0.000
	4.965	0.071	0.650			0.000
5	0.000	0.387	0.000	---	NonR	0.000
	4.965	0.387	0.000			0.000
6	0.000	0.000	0.280	0.0%	Roof	0.000
	4.965	0.000	0.280			0.000
7	0.000	0.010	0.064	0.0%	Roof	0.000
	4.965	0.010	0.064			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 11.41 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	14.2	2.5	5.0	1.14	0.90	44.89
Controlling		1.2DL+1.6LL	14.2	2.5	5.0	1.14	0.90	44.89

REACTIONS (kips):

	Left	Right
DL reaction	3.44	3.44
Max +LL reaction	4.55	4.55
Max +total reaction (factored)	11.41	11.41

DEFLECTIONS: **Ratio**

Dead load (in)	at 2.48 ft =	-0.012	L/D = 4904		
Live load (in)	at 2.48 ft =	-0.016	L/D = 3707 > 360		0.10
Net Total load (in)	at 2.48 ft =	-0.028	L/D = 2111 > 240		0.11

Gravity Beam Design

Fire Engineering Building Traffic Public Works Planning
ISSUED PERMIT
Development & Permitting Services
City of Puyallup

Floor Type: FIRST FLOOR **Beam Number = 171**

SPAN INFORMATION (ft): I-End (101.67,28.75) J-End (96.96,28.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 7.39
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.012	0.000	---	NonR	0.000
	7.388	0.012	0.000			0.000
2	0.000	0.674	0.000	---	NonR	0.000
	7.389	0.674	0.000			0.000
3	0.000	0.231	0.840	0.6%	Red	0.000
	7.389	0.231	0.840			0.000
4	0.000	0.071	0.650	0.6%	Red	0.000
	7.389	0.071	0.650			0.000
5	0.000	0.387	0.000	---	NonR	0.000
	7.389	0.387	0.000			0.000
6	0.000	0.000	0.280	0.0%	Roof	0.000
	7.389	0.000	0.280			0.000
7	0.000	0.010	0.064	0.0%	Roof	0.000
	7.389	0.010	0.064			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 16.93 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	31.3	3.7	7.4	1.14	0.90	35.17
Controlling		1.2DL+1.6LL	31.3	3.7	7.4	1.14	0.90	3

REACTIONS (kips):

	Left	Right
DL reaction	5.12	5.12
Max +LL reaction	6.74	6.74
Max +total reaction (factored)	16.93	16.93

DEFLECTIONS: **R**

Dead load (in)	at 3.69 ft =	-0.060	L/D = 1488		
Live load (in)	at 3.69 ft =	-0.078	L/D = 1130 > 360		0.[illegible]
Net Total load (in)	at 3.69 ft =	-0.138	L/D = 642 > 240		0.37

PRMU2022012[illegible]

Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 172**

SPAN INFORMATION (ft): I-End (109.06,28.75) J-End (116.44,28.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 7.39
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.012	0.000	---	NonR	0.000
	7.388	0.012	0.000			0.000
2	0.000	0.674	0.000	---	NonR	0.000
	7.389	0.674	0.000			0.000
3	0.000	0.231	0.840	0.6%	Red	0.000
	7.389	0.231	0.840			0.000
4	0.000	0.071	0.650	0.6%	Red	0.000
	7.389	0.071	0.650			0.000
5	0.000	0.387	0.000	---	NonR	0.000
	7.389	0.387	0.000			0.000
6	0.000	0.000	0.280	0.0%	Roof	0.000
	7.389	0.000	0.280			0.000
7	0.000	0.010	0.064	0.0%	Roof	0.000
	7.389	0.010	0.064			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 16.93 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	31.3	3.7	7.4	1.14	0.90	35.17
Controlling		1.2DL+1.6LL	31.3	3.7	7.4	1.14	0.90	35.17

REACTIONS (kips):

	Left	Right
DL reaction	5.12	5.12
Max +LL reaction	6.74	6.74
Max +total reaction (factored)	16.93	16.93

DEFLECTIONS: **Ratio**

Dead load (in)	at 3.69 ft =	-0.060	L/D = 1488		
Live load (in)	at 3.69 ft =	-0.078	L/D = 1130 > 360		0.32
Net Total load (in)	at 3.69 ft =	-0.138	L/D = 642 > 240		0.37

Gravity Beam Design

Fire
Engineering
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ISSUED PERMIT
Development & Permitting Services
City of Puyallup
PRMU2022012

Floor Type: FIRST FLOOR **Beam Number = 173**

SPAN INFORMATION (ft): I-End (116.44,28.75) J-End (123.83,28.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 7.39
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.012	0.000	---	NonR	0.000
	7.388	0.012	0.000			0.000
2	0.000	0.674	0.000	---	NonR	0.000
	7.389	0.674	0.000			0.000
3	0.000	0.231	0.840	0.6%	Red	0.000
	7.389	0.231	0.840			0.000
4	0.000	0.071	0.650	0.6%	Red	0.000
	7.389	0.071	0.650			0.000
5	0.000	0.387	0.000	---	NonR	0.000
	7.389	0.387	0.000			0.000
6	0.000	0.000	0.280	0.0%	Roof	0.000
	7.389	0.000	0.280			0.000
7	0.000	0.010	0.064	0.0%	Roof	0.000
	7.389	0.010	0.064			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 16.93 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	31.3	3.7	7.4	1.14	0.90	35.17
Controlling		1.2DL+1.6LL	31.3	3.7	7.4	1.14	0.90	3

REACTIONS (kips):

	Left	Right
DL reaction	5.12	5.12
Max +LL reaction	6.74	6.74
Max +total reaction (factored)	16.93	16.93

DEFLECTIONS: **R**

Dead load (in)	at 3.69 ft =	-0.060	L/D = 1488		
Live load (in)	at 3.69 ft =	-0.078	L/D = 1130 > 360		0.32
Net Total load (in)	at 3.69 ft =	-0.138	L/D = 642 > 240		0.37

Floor Type: FIRST FLOOR **Beam Number = 179**

SPAN INFORMATION (ft): I-End (0.25,27.79) J-End (9.08,27.79)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 8.83
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.012	0.000	---	NonR	0.000
	8.833	0.012	0.000			0.000

SHEAR (Ultimate): Max Vu (1.4DL) = 0.07 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.4DL	0.2	4.4	8.8	1.14	0.90	27.74
Controlling		1.4DL	0.2	4.4	8.8	1.14	0.90	27.74

REACTIONS (kips):

	Left	Right
DL reaction	0.05	0.05
Max +total reaction (factored)	0.07	0.07

DEFLECTIONS: **Ratio**

Dead load (in) at 4.42 ft = -0.001 L/D = 1002
24

Live load (in) at 4.42 ft = -0.000

Net Total load (in) at 4.42 ft = -0.001 L/D = 1002 > 240 0.00
24

Fire Engineering Building Traffic Public Works Planning
ISSUED PERMIT
Development & Permitting Services
City of Puyallup

Floor Type: FIRST FLOOR **Beam Number = 180**

SPAN INFORMATION (ft): I-End (0.25,39.25) J-End (9.08,39.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 8.83
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.010	0.000	---	NonR	0.000
	8.833	0.010	0.000			0.000
2	0.000	0.027	0.250	0.0%	Red	0.000
	8.833	0.027	0.250			0.000
3	0.000	0.012	0.000	---	NonR	0.000
	8.833	0.012	0.000			0.000
4	0.000	0.405	0.000	---	NonR	0.000
	8.833	0.405	0.000			0.000
5	0.000	0.060	0.549	0.0%	Red	0.000
	8.833	0.060	0.549			0.000
6	0.000	0.110	0.400	0.0%	Red	0.000
	8.833	0.110	0.400			0.000
7	0.000	0.387	0.000	---	NonR	0.000
	8.833	0.387	0.000			0.000
8	0.000	0.000	0.131	0.0%	Roof	0.000
	8.833	0.000	0.131			0.000
9	0.000	0.000	0.212	0.0%	Roof	0.000
	7.750	0.000	0.212			0.000
10	7.750	0.000	0.188	0.0%	Roof	0.000
	8.833	0.000	0.188			0.000
11	7.750	0.004	0.024	0.0%	Roof	0.000
	8.833	0.004	0.024			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 16.27 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi k
Center	Max +	1.2DL+1.6LL	35.9	4.4	0.0	1.00	0.90	4
Controlling		1.2DL+1.6LL	35.9	4.4	0.0	1.00	0.90	4

REACTIONS (kips):

	Left	Right
DL reaction	4.47	4.47
Max +LL reaction	6.82	6.82
Max +total reaction (factored)	16.27	16.27

DEFLECTIONS: **Ratio**

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Dead load (in)	at	4.42 ft	=	-0.089	L/D	=	1192	
Live load (in)	at	4.42 ft	=	-0.136	L/D	=	782 > 360	0.46
Net Total load (in)	at	4.42 ft	=	-0.224	L/D	=	472 > 240	0.51

Fire Engineering Building Traffic Public Works Planning
ISSUED PERMIT
Development & Permitting Services
City of Puyallup

Floor Type: FIRST FLOOR **Beam Number = 181**

SPAN INFORMATION (ft): I-End (16.72,-1.75) J-End (16.72,22.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W14X26 Fy = 50.0 ksi
Total Beam Length (ft) = 24.00
Cantilever on left (ft) = 2.08

COMPOSITE PROPERTIES (Not Shored):

	Left		Right
Deck Label	5.5" O/2W		5.5" O/2W
Concrete thickness (in)	3.50		3.50
Unit weight concrete (pcf)	150.00		150.00
f'c (ksi)	4.00		4.00
Decking Orientation	perpendicular		perpendicular
Decking type	ASC 2W		ASC 2W
beff (in) =	65.75	Y bar(in) =	15.59
Mnf (kip-ft) =	375.37	Mn (kip-ft) =	256.62
C (kips) =	103.38	PNA (in) =	11.00
Ieff (in4) =	634.09	Itr (in4) =	995.38
Stud length (in) =	4.00	Stud diam (in) =	0.75

Stud Capacity (kips) Qn = 17.2 Rg = 1.00 Rp = 0.60
# of studs: Max = 21 Partial = 14 Actual = 14
Number of Stud Rows = 1 Percent of Full Composite Action = 26.89

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
					L					
0.000	5.07	0.11	3.78	0.0	0.00	0.00	0.0	1.19	0.0	0.00
0.000	5.07	0.11	3.78	0.0	0.00	0.00	0.0	1.19	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.459	0.459	0.000	---	NonR	0.000	0.000
	2.083	0.459	0.459	0.000			0.000	0.000
2	0.000	0.084	0.000	0.306	0.0%	Red	0.000	0.000
	2.083	0.084	0.000	0.306			0.000	0.000
3	2.084	0.459	0.459	0.000	---	NonR	0.000	0.000
	24.000	0.459	0.459	0.000			0.000	0.000
4	2.084	0.084	0.000	0.306	0.0%	Red	0.000	0.000
	24.000	0.084	0.000	0.306			0.000	0.000
5	0.000	0.026	0.026	0.000	---	NonR	0.000	0.000
	2.083	0.026	0.026	0.000			0.000	0.000
6	2.084	0.026	0.026	0.000	---	NonR	0.000	0.000
	24.000	0.026	0.026	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 30.53 kips 1.00Vn = 106.33 kips

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MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Left	PreCmp-	1.4DL	-2.1	2.1	2.1	1.00	0.90	150.75
	Max -	1.2DL+1.6LL	-61.1	2.1	2.1	1.00	0.90	150.75
Center	PreCmp+	1.4DL	39.7	13.2	0.0	1.00	0.90	150.75
	PreCmp-	1.4DL	-2.1	2.1	21.9	1.14	0.90	39.12
	Init DL	1.4DL	39.7	13.2	---	---		
	Max +	1.2DL+1.6LL	57.6	14.1	---	---	0.90	230.96
	Max -	1.2DL+1.6LL	-61.1	2.1	21.9	2.67	0.90	91.53
Controlling		1.4DL	-31.3	2.1	21.9	1.25	0.90	42.98

REACTIONS (kips):

	Left	Right
Initial reaction	6.60	5.24
DL reaction	18.57	5.21
Max +LL reaction	14.92	3.35
Max -LL reaction	0.00	-0.98
Max +total reaction (factored)	46.15	11.61

DEFLECTIONS: **Ratio**

Left cantilever:

Init load (in)	= 0.102	L/D = 491			
Pos Live load (in)	= -0.038	L/D = 1312 > 360			0.27
Neg Live load (in)	= 0.026	L/D = 1906 > 360			0.19
Pos Post Comp load (in)	= -0.068	L/D = 735 > 240			0.33
Neg Total load (in)	= 0.098	L/D = 510 > 240			0.47

Center span:

Initial load (in)	at 13.26 ft = -0.343	L/D = 766			
Live load (in)	at 13.26 ft = -0.086	L/D = 3050 > 360			0.12
Post Comp load (in)	at 13.81 ft = 0.092	L/D = 2850 > 240			0.08
Net Total load (in)	at 13.26 ft = -0.395	L/D = 666 > 240			0.36

Fire Engineering Building Traffic Public Works Planning
ISSUED PERMIT
Development & Permitting Services
City of Puyallup

Floor Type: FIRST FLOOR **Beam Number = 182**

SPAN INFORMATION (ft): I-End (24.36,-1.75) J-End (22.36,22.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W14X26 Fy = 50.0 ksi
Total Beam Length (ft) = 24.00
Cantilever on left (ft) = 2.08

COMPOSITE PROPERTIES (Not Shored):

	Left		Right	
Deck Label	5.5" O/2W		5.5" O/2W	
Concrete thickness (in)	3.50		3.50	
Unit weight concrete (pcf)	150.00		150.00	
f'c (ksi)	4.00		4.00	
Decking Orientation	perpendicular		perpendicular	
Decking type	ASC 2W		ASC 2W	
beff (in) =	65.75	Y bar(in) =	15.59	
Mnf (kip-ft) =	375.37	Mn (kip-ft) =	256.62	
C (kips) =	103.38	PNA (in) =	11.00	
Ieff (in4) =	634.09	Itr (in4) =	995.38	
Stud length (in) =	4.00	Stud diam (in) =	0.75	

Stud Capacity (kips) Qn = 17.2 Rg = 1.00 Rp = 0.60
# of studs: Max = 21 Partial = 14 Actual = 14
Number of Stud Rows = 1 Percent of Full Composite Action = 26.89

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL L	StorLL	Red%	RoofLL	Red%	PartL
0.000	5.07	0.11	3.78	0.0	0.00	0.00	0.0	1.19	0.0	0.00
0.000	5.07	0.11	3.78	0.0	0.00	0.00	0.0	1.19	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.459	0.459	0.000	---	NonR	0.000	0.000
	2.083	0.459	0.459	0.000			0.000	0.000
2	0.000	0.084	0.000	0.306	0.0%	Red	0.000	0.000
	2.083	0.084	0.000	0.306			0.000	0.000
3	2.084	0.459	0.459	0.000	---	NonR	0.000	0.000
	24.000	0.459	0.459	0.000			0.000	0.000
4	2.084	0.084	0.000	0.306	0.0%	Red	0.000	0.000
	24.000	0.084	0.000	0.306			0.000	0.000
5	0.000	0.026	0.026	0.000	---	NonR	0.000	0.000
	2.083	0.026	0.026	0.000			0.000	0.000
6	2.084	0.026	0.026	0.000	---	NonR	0.000	0.000
	24.000	0.026	0.026	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 30.53 kips 1.00Vn = 106.33 kips

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Gravity Beam Design

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Left	PreCmp-	1.4DL	-2.1	2.1	2.1	1.00	0.90	150.75
	Max -	1.2DL+1.6LL	-61.1	2.1	2.1	1.00	0.90	150.75
Center	PreCmp+	1.4DL	39.7	13.2	0.0	1.00	0.90	150.75
	PreCmp-	1.4DL	-2.1	2.1	21.9	1.14	0.90	39.12
	Init DL	1.4DL	39.7	13.2	---	---		
	Max +	1.2DL+1.6LL	57.6	14.1	---	---	0.90	230.96
	Max -	1.2DL+1.6LL	-61.1	2.1	21.9	2.67	0.90	91.53
Controlling		1.4DL	-31.3	2.1	21.9	1.25	0.90	42.98

REACTIONS (kips):

	Left	Right
Initial reaction	6.60	5.24
DL reaction	18.57	5.21
Max +LL reaction	14.92	3.35
Max -LL reaction	0.00	-0.98
Max +total reaction (factored)	46.15	11.61

DEFLECTIONS:

				Ratio
Left cantilever:				
Init load (in)	= 0.102	L/D = 491		
Pos Live load (in)	= -0.038	L/D = 1312 > 360		0.27
Neg Live load (in)	= 0.026	L/D = 1906 > 360		0.19
Pos Post Comp load (in)	= -0.068	L/D = 735 > 240		0.33
Neg Total load (in)	= 0.098	L/D = 510 > 240		0.47
Center span:				
Initial load (in)	at 13.26 ft = -0.343	L/D = 766		
Live load (in)	at 13.26 ft = -0.086	L/D = 3050 > 360		0.12
Post Comp load (in)	at 13.81 ft = 0.092	L/D = 2850 > 240		0.08
Net Total load (in)	at 13.26 ft = -0.395	L/D = 666 > 240		0.36

Gravity Beam Design

Fire
Traffic
Engineering
Public Works
Building
Planning
ISSUED PERMIT
Development & Permitting Services
City of Puyallup

Floor Type: FIRST FLOOR **Beam Number = 184**

SPAN INFORMATION (ft): I-End (9.08,-1.75) J-End (16.72,-1.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 7.64
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	7.638	0.016	0.000			0.000
2	0.000	0.003	0.010	0.0%	Red	0.000
	7.638	0.003	0.010			0.000
3	0.000	0.012	0.000	---	NonR	0.000
	7.638	0.012	0.000			0.000
4	0.000	0.604	0.000	---	NonR	0.000
	7.639	0.604	0.000			0.000
5	0.000	0.270	0.981	0.0%	Red	0.000
	7.639	0.270	0.981			0.000
6	0.000	0.387	0.000	---	NonR	0.000
	7.639	0.387	0.000			0.000
7	0.000	0.000	0.099	0.0%	Roof	0.000
	7.639	0.000	0.099			0.000
8	0.000	0.034	0.214	0.0%	Roof	0.000
	7.639	0.034	0.214			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 14.05 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn k
Center	Max +	1.2DL+1.6LL	26.8	3.8	7.6	1.14	0.90	3
Controlling		1.2DL+1.6LL	26.8	3.8	7.6	1.14	0.90	3

REACTIONS (kips):

	Left	Right
DL reaction	5.07	5.07
Max +LL reaction	4.98	4.98
Max +total reaction (factored)	14.05	14.05

DEFLECTIONS:

				Ratio
Dead load (in)	at 3.82 ft = -0.065	L/D = 1408		
Live load (in)	at 3.82 ft = -0.064	L/D = 1432 > 360		0.25
Net Total load (in)	at 3.82 ft = -0.129	L/D = 710 > 240		0.34

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Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 185**

SPAN INFORMATION (ft): I-End (16.72,-1.75) J-End (24.36,-1.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 7.64
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	7.638	0.016	0.000			0.000
2	0.000	0.003	0.010	0.0%	Red	0.000
	7.638	0.003	0.010			0.000
3	0.000	0.012	0.000	---	NonR	0.000
	7.638	0.012	0.000			0.000
4	0.000	0.604	0.000	---	NonR	0.000
	7.639	0.604	0.000			0.000
5	0.000	0.270	0.981	0.0%	Red	0.000
	7.639	0.270	0.981			0.000
6	0.000	0.387	0.000	---	NonR	0.000
	7.639	0.387	0.000			0.000
7	0.000	0.000	0.099	0.0%	Roof	0.000
	7.639	0.000	0.099			0.000
8	0.000	0.034	0.214	0.0%	Roof	0.000
	7.639	0.034	0.214			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 14.05 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	26.8	3.8	7.6	1.14	0.90	34.17
Controlling		1.2DL+1.6LL	26.8	3.8	7.6	1.14	0.90	34.17

REACTIONS (kips):

	Left	Right
DL reaction	5.07	5.07
Max +LL reaction	4.98	4.98
Max +total reaction (factored)	14.05	14.05

DEFLECTIONS:

					Ratio
Dead load (in)	at	3.82 ft =	-0.065	L/D = 1408	
Live load (in)	at	3.82 ft =	-0.064	L/D = 1432 > 360	0.25
Net Total load (in)	at	3.82 ft =	-0.129	L/D = 710 > 240	0.34

Gravity Beam Design

Fire
Engineering
Building
Traffic
Public Works
Planning
ISSUED PERMIT
Development & Permitting Services
City of Puyallup

Floor Type: FIRST FLOOR **Beam Number = 187**

SPAN INFORMATION (ft): I-End (47.33,-1.75) J-End (24.33,-22.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W14X22 Fy = 50.0 ksi
Total Beam Length (ft) = 24.00
Cantilever on left (ft) = 2.08

COMPOSITE PROPERTIES (Not Shored):

		Left		Right
Deck Label		5.5" O/2W		5.5" O/2W
Concrete thickness (in)		3.50		3.50
Unit weight concrete (pcf)		150.00		150.00
f'c (ksi)		4.00		4.00
Decking Orientation		perpendicular		perpendicular
Decking type		ASC 2W		ASC 2W
beff (in)	= 65.75	Y bar(in)	=	15.69
Mnf (kip-ft)	= 317.72	Mn (kip-ft)	=	212.67
C (kips)	= 86.15	PNA (in)	=	10.60
Ieff (in4)	= 532.02	Itr (in4)	=	845.34
Stud length (in)	= 4.00	Stud diam (in)	=	0.75

Stud Capacity (kips) Qn = 17.2 Rg = 1.00 Rp = 0.60
# of studs: Max = 21 Partial = 12 Actual = 12
Number of Stud Rows = 1 Percent of Full Composite Action = 26.55

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
					L					
0.000	5.08	0.11	3.80	0.0	0.00	0.00	0.0	1.20	0.0	0.00
0.000	2.36	0.05	1.77	0.0	0.00	0.00	0.0	0.56	0.0	0.00
4.000	2.25	0.94	5.53	13.2	0.00	0.00	0.0	1.17	0.0	0.00
			-4.63	16.7	0.00	0.00	0.0	-0.72	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.337	0.337	0.000	---	NonR	0.000	0.000
	2.083	0.337	0.337	0.000			0.000	0.000
2	0.000	0.062	0.000	0.224	0.0%	Red	0.000	0.000
	2.083	0.062	0.000	0.225			0.000	0.000
3	2.084	0.107	0.107	0.000	---	NonR	0.000	0.000
	4.000	0.107	0.107	0.000			0.000	0.000
4	2.084	0.020	0.000	0.071	13.2%	Red	0.000	0.000
	4.000	0.020	0.000	0.071			0.000	0.000
5	4.000	0.230	0.230	0.000	---	NonR	0.000	0.000
	24.000	0.230	0.230	0.000			0.000	0.000
6	4.000	0.042	0.000	0.153	13.2%	Red	0.000	0.000
	24.000	0.042	0.000	0.153			0.000	0.000

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Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
7	2.084	0.230	0.230	0.000	---	NonR	0.000	0.000
	24.000	0.230	0.230	0.000			0.000	0.000
8	2.084	0.042	0.000	0.153	13.2%	Red	0.000	0.000
	24.000	0.042	0.000	0.153			0.000	0.000
9	0.000	0.022	0.022	0.000	---	NonR	0.000	0.000
	2.083	0.022	0.022	0.000			0.000	0.000
10	2.084	0.022	0.022	0.000	---	NonR	0.000	0.000
	24.000	0.022	0.022	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 24.82 kips 1.00Vn = 94.53 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Left	PreCmp-	1.4DL	-1.5	2.1	2.1	1.00	0.90	124.50
	Max -	1.2DL+1.6LL	-44.9	2.1	2.1	1.00	0.90	124.50
Center	PreCmp+	1.4DL	40.9	13.0	0.0	1.00	0.90	124.50
	PreCmp-	1.4DL	-1.5	2.1	1.9	1.77	0.90	124.50
	Init DL	1.4DL	40.9	13.0	---	---		
	Max +	1.2DL+1.6LL	68.0	12.9	---	---	0.90	191.40
	Max -	1.2DL+1.6LL	-44.9	2.1	1.9	1.09	0.90	124.50
Controlling		1.2DL+1.6LL	-36.3	4.0	20.0	2.17	0.90	59.98

REACTIONS (kips):

	Left	Right
Initial reaction	6.88	5.31
DL reaction	17.07	5.65
Max +LL reaction	16.74	3.43
Max -LL reaction	-4.17	-1.12
Max +total reaction (factored)	47.26	12.27

DEFLECTIONS: **Ratio**

Left cantilever:

Init load (in)	= 0.133		L/D = 376		
Pos Live load (in)	= -0.047		L/D = 1072 > 360		0.34
Neg Live load (in)	= 0.044		L/D = 1135 > 360		0.32
Pos Post Comp load (in)	= -0.067		L/D = 745 > 240		0.32
Neg Post Comp load (in)	= 0.024		L/D = 2117 > 240		0.11
Neg Total load (in)	= 0.156		L/D = 320 > 240		0.75

Center span:

Initial load (in)	at 13.04 ft = -0.438	L/D = 600		
Live load (in)	at 13.04 ft = -0.127	L/D = 2067 > 360		0.17
Post Comp load (in)	at 13.04 ft = -0.112	L/D = 2342 > 240		0.10
Net Total load (in)	at 13.04 ft = -0.550	L/D = 478 > 240		0.50

Fire Traffic Engineering Public Works Building Planning
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City of Puyallup

Floor Type: FIRST FLOOR **Beam Number = 190**

SPAN INFORMATION (ft): I-End (24.36,-1.75) J-End (31.36,-1.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 7.64
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	7.638	0.016	0.000			0.000
2	0.000	0.003	0.010	0.0%	Red	0.000
	7.638	0.003	0.010			0.000
3	0.000	0.012	0.000	---	NonR	0.000
	7.638	0.012	0.000			0.000
4	0.000	0.604	0.000	---	NonR	0.000
	7.639	0.604	0.000			0.000
5	0.000	0.270	0.981	0.0%	Red	0.000
	7.639	0.270	0.981			0.000
6	0.000	0.387	0.000	---	NonR	0.000
	7.639	0.387	0.000			0.000
7	0.000	0.000	0.099	0.0%	Roof	0.000
	7.639	0.000	0.099			0.000
8	0.000	0.034	0.214	0.0%	Roof	0.000
	7.639	0.034	0.214			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 14.05 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn k
Center	Max +	1.2DL+1.6LL	26.8	3.8	7.6	1.14	0.90	3
Controlling		1.2DL+1.6LL	26.8	3.8	7.6	1.14	0.90	3

REACTIONS (kips):

	Left	Right
DL reaction	5.07	5.07
Max +LL reaction	4.98	4.98
Max +total reaction (factored)	14.05	14.05

DEFLECTIONS: **Ratio**

Dead load (in)	at 3.82 ft = -0.065	L/D = 1408	
Live load (in)	at 3.82 ft = -0.064	L/D = 1432 > 360	0.25
Net Total load (in)	at 3.82 ft = -0.129	L/D = 710 > 240	0.34

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Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 193**

SPAN INFORMATION (ft): I-End (47.33,-1.75) J-End (55.00,-1.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 7.67
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	7.666	0.016	0.000			0.000
2	0.000	0.003	0.010	0.0%	Red	0.000
	7.666	0.003	0.010			0.000
3	0.000	0.012	0.000	---	NonR	0.000
	7.666	0.012	0.000			0.000
4	0.000	0.604	0.000	---	NonR	0.000
	7.667	0.604	0.000			0.000
5	0.000	0.270	0.981	0.0%	Red	0.000
	7.667	0.270	0.981			0.000
6	0.000	0.387	0.000	---	NonR	0.000
	7.667	0.387	0.000			0.000
7	0.000	0.000	0.099	0.0%	Roof	0.000
	7.667	0.000	0.099			0.000
8	0.000	0.034	0.214	0.0%	Roof	0.000
	7.667	0.034	0.214			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 14.10 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	27.0	3.8	7.7	1.14	0.90	34.06
Controlling		1.2DL+1.6LL	27.0	3.8	7.7	1.14	0.90	34.06

REACTIONS (kips):

	Left	Right
DL reaction	5.08	5.08
Max +LL reaction	5.00	5.00
Max +total reaction (factored)	14.10	14.10

DEFLECTIONS: **Ratio**

Dead load (in)	at	3.83 ft	= -0.066	L/D = 1392			
Live load (in)	at	3.83 ft	= -0.065	L/D = 1416	>	360	0.25
Net Total load (in)	at	3.83 ft	= -0.131	L/D = 702	>	240	0.34

Gravity Beam Design

Fire
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Development & Permitting Services
City of Puyallup

Floor Type: FIRST FLOOR **Beam Number = 197**

SPAN INFORMATION (ft): I-End (33.31,2.25) J-End (47.33,-1.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W14X22 Fy = 50.0 ksi
Total Beam Length (ft) = 14.02
Mp (kip-ft) = 138.33

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
6.348	5.12	2.80	16.9	0.00	0.00	0.0	0.00	0.0	0.00
10.458	-7.35	0.07	16.9	0.00	0.00	0.0	0.00	0.0	0.00
		-6.21	20.7	0.00	0.00	0.0	-0.96	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.058	0.000	---	NonR	0.000
	10.458	0.058	0.000			0.000
2	0.000	0.011	0.038	16.9%	Red	0.000
	10.458	0.011	0.038			0.000
3	0.000	0.022	0.000	---	NonR	0.000
	14.020	0.022	0.000			0.000
4	0.000	0.588	0.000	---	NonR	0.000
	10.458	0.588	0.000			0.000
5	0.000	0.220	0.800	16.9%	Red	0.000
	10.458	0.220	0.800			0.000
6	0.000	0.044	0.240	16.9%	Red	0.000
	10.458	0.044	0.240			0.000
7	0.000	0.387	0.000	---	NonR	0.000
	10.458	0.387	0.000			0.000
8	0.000	0.041	0.256	0.0%	Roof	0.000
	10.458	0.041	0.256			0.000
9	0.000	0.000	0.044	0.0%	Roof	0.000
	10.458	0.000	0.044			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 26.54 kips 1.00Vn = 94.53 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi k
Center	Max +	1.2DL+1.6LL	96.8	6.3	0.0	1.00	0.90	12
	Max -	1.2DL+1.6LL	-15.6	10.5	4.1	2.01	0.90	12
Controlling		1.2DL+1.6LL	96.8	6.3	0.0	1.00	0.90	124.50

REACTIONS (kips):

	Left	Right
DL reaction	9.93	2.25
Max +LL reaction	9.14	5.76
Max -LL reaction	-1.49	-4.39

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	Left	Right
Max +total reaction (factored)	26.54	11.93
Max -total reaction	13.91	-4.32

DEFLECTIONS:

								Ratio
Dead load (in)	at	6.66 ft	=	-0.177	L/D	=	952	
Live load (in)	at	6.66 ft	=	-0.194	L/D	=	868 > 360	0.41
Net Total load (in)	at	6.66 ft	=	-0.370	L/D	=	454 > 240	0.53

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Traffic | Public Works | Planning | Development & Permitting Services

Floor Type: FIRST FLOOR **Beam Number = 199**

SPAN INFORMATION (ft): I-End (33.31,-3.83) J-End (33.31,22.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X45 Fy = 50.0 ksi
Total Beam Length (ft) = 26.08
Cantilever on left (ft) = 4.17
Mp (kip-ft) = 342.92

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
0.000	0.92	0.73	0.0	0.00	0.00	0.0	0.00	0.0	0.00
2.083	0.87	0.65	0.0	0.00	0.00	0.0	0.21	0.0	0.00
6.083	9.93	8.62	11.7	0.00	0.00	0.0	1.97	0.0	0.00
		-1.58	13.0	0.00	0.00	0.0	-0.24	0.0	0.00
4.917	0.00	0.00	0.0	28.13	0.00	0.0	0.00	0.0	0.00
25.333	0.00	0.00	0.0	-28.13	0.00	0.0	0.00	0.0	0.00
2.083	2.38	2.36	0.0	0.00	0.00	0.0	0.33	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	1.825	0.016	0.000			0.000
2	0.000	0.003	0.015	0.0%	Red	0.000
	1.825	0.003	0.015			0.000
3	1.825	0.015	0.000	---	NonR	0.000
	2.083	0.000	0.000			0.000
4	1.825	0.003	0.015	0.0%	Red	0.000
	2.083	0.000	0.000			0.000
5	2.084	0.039	0.000	---	NonR	0.000
	4.166	0.039	0.000			0.000
6	2.084	0.004	0.019	0.0%	Red	0.000
	4.166	0.000	0.000			0.000
7	2.084	0.004	0.013	0.0%	Red	0.000
	4.166	0.007	0.026			0.000
8	4.167	0.039	0.000	---	NonR	0.000
	26.083	0.039	0.000			0.000
9	4.167	0.007	0.026	11.7%	Red	0.000
	26.083	0.007	0.026			0.000
10	6.084	0.191	0.000	---	NonR	0.000
	26.083	0.191	0.000			0.000
11	6.084	0.035	0.127	11.7%	Red	0.000
	26.083	0.035	0.127			0.000
12	0.000	0.045	0.000	---	NonR	0.000
	4.166	0.045	0.000			0.000
13	4.167	0.045	0.000	---	NonR	0.000
	26.083	0.045	0.000			0.000

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Load	Dist	DL	LL	Red%	Type	PartL
14	4.167	0.387	0.000	---	NonR	0.000
	6.083	0.387	0.000			0.000
15	2.084	0.387	0.000	---	NonR	0.000
	4.167	0.387	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 76.34 kips 1.00Vn = 166.64 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu	@	Lb	Cb	Phi	Phi*Mn
			kip-ft	ft	ft			kip-ft
Left	Max -	1.2DL+1.6LL	-31.4	4.2	2.1	1.00	0.90	308.63
Center	Max +	1.2DL+1.6LL	80.6	9.7	0.0	1.00	0.90	308.63
	Max -	1.2DL+1.6LL	-31.4	4.2	1.9	1.45	0.90	308.63
Controlling		1.2DL+1.6LL	80.6	9.7	0.0	1.00	0.90	308.63

REACTIONS (kips):

	Left	Right
DL reaction	18.68	3.81
Max +LL reaction	42.03	3.28
Max -LL reaction	-2.44	-27.79
Max +total reaction (factored)	89.67	9.81
Max -total reaction	26.15	-39.89

DEFLECTIONS: **Ratio**

Left cantilever:

Dead load (in)	= 0.069	L/D = 1454		
Pos Live load (in)	= -0.078	L/D = 1277 > 360		0.28
Neg Live load (in)	= 0.136	L/D = 734 > 360		0.49
Pos Total load (in)	= -0.010	L/D = 10441 > 240		0.02
Neg Total load (in)	= 0.205	L/D = 488 > 240		0.49

Center span:

Dead load (in)	at 14.36 ft = -0.118	L/D = 2221		
Live load (in)	at 14.36 ft = -0.162	L/D = 1619 > 360		0.22
Net Total load (in)	at 14.36 ft = -0.281	L/D = 936 > 240		0.26

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Floor Type: FIRST FLOOR **Beam Number = 200**

SPAN INFORMATION (ft): I-End (43.77,-3.83) J-End (43.77,7.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W12X14 Fy = 50.0 ksi
Total Beam Length (ft) = 6.08
Cantilever on left (ft) = 4.17
Mp (kip-ft) = 72.50

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
0.000	0.92	0.73	0.0	0.00	0.00	0.0	0.00	0.0	0.00
2.083	2.36	1.76	0.0	0.00	0.00	0.0	0.56	0.0	0.00
2.083	2.38	2.36	0.0	0.00	0.00	0.0	0.33	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	1.825	0.016	0.000			0.000
2	0.000	0.003	0.015	0.0%	Red	0.000
	1.825	0.003	0.015			0.000
3	1.825	0.015	0.000	---	NonR	0.000
	2.083	0.000	0.000			0.000
4	1.825	0.003	0.015	0.0%	Red	0.000
	2.083	0.000	0.000			0.000
5	2.084	0.107	0.000	---	NonR	0.000
	4.166	0.107	0.000			0.000
6	2.084	0.003	0.018	0.0%	Red	0.000
	4.166	0.000	0.000			0.000
7	2.084	0.016	0.060	0.0%	Red	0.000
	4.166	0.020	0.071			0.000
8	4.167	0.107	0.000	---	NonR	0.000
	6.083	0.107	0.000			0.000
9	4.167	0.020	0.071	0.0%	Red	0.000
	6.083	0.020	0.071			0.000
10	0.000	0.014	0.000	---	NonR	0.000
	4.166	0.014	0.000			0.000
11	4.167	0.014	0.000	---	NonR	0.000
	6.083	0.014	0.000			0.000
12	4.167	0.387	0.000	---	NonR	0.000
	6.083	0.387	0.000			0.000
13	2.084	0.387	0.000	---	NonR	0.000
	4.167	0.387	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 21.61 kips 0.90Vn = 64.26 kips

MOMENTS (Ultimate):

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Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Left	Max -	1.2DL+1.6LL	-40.1	4.2	2.1	1.00	0.90	65.25
Center	Max -	1.2DL+1.6LL	-40.0	4.2	1.9	1.68	0.90	65.25
Controlling		1.2DL+1.6LL	-40.1	4.2	2.1	1.00	0.90	65.25

REACTIONS (kips):

	Left	Right
DL reaction	15.18	-7.35
Max +LL reaction	13.16	0.07
Max -LL reaction	0.00	-7.17
Max +total reaction (factored)	39.28	-10.29
Max -total reaction	21.26	-20.29

DEFLECTIONS: **Ratio**

Left cantilever:

Dead load (in)	= -0.068		L/D = 1468		
Pos Live load (in)	= -0.062		L/D = 1601 > 360		0.22
Pos Total load (in)	= -0.131		L/D = 766 > 240		0.31

Center span:

Dead load (in)	at 4.97 ft =	0.002	L/D = 9890		
Live load (in)	at 4.97 ft =	0.002	L/D = 1056 > 360		0.03
			0		
Net Total load (in)	at 4.97 ft =	0.005	L/D = 5107 > 240		0.05

Fire Engineering Building Traffic Public Works Planning
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City of Puyallup

Floor Type: FIRST FLOOR **Beam Number = 201**

SPAN INFORMATION (ft): I-End (32.00,-1.75) J-End (33.31,-1.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 1.31
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	1.054	0.016	0.000			0.000
2	0.000	0.003	0.010	0.0%	Red	0.000
	1.054	0.003	0.010			0.000
3	1.055	0.015	0.000	---	NonR	0.000
	1.312	0.000	0.000			0.000
4	1.055	0.003	0.010	0.0%	Red	0.000
	1.312	0.000	0.000			0.000
5	0.000	0.012	0.000	---	NonR	0.000
	1.312	0.012	0.000			0.000
6	0.000	0.604	0.000	---	NonR	0.000
	1.312	0.604	0.000			0.000
7	0.000	0.270	0.981	0.0%	Red	0.000
	1.312	0.270	0.981			0.000
8	0.000	0.387	0.000	---	NonR	0.000
	1.312	0.387	0.000			0.000
9	0.000	0.000	0.099	0.0%	Roof	0.000
	1.312	0.000	0.099			0.000
10	0.000	0.034	0.214	0.0%	Roof	0.000
	1.312	0.034	0.214			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 2.41 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi k
Center	Max +	1.2DL+1.6LL	0.8	0.7	1.3	1.14	0.90	4
Controlling		1.2DL+1.6LL	0.8	0.7	1.3	1.14	0.90	4

REACTIONS (kips):

	Left	Right
DL reaction	0.87	0.87
Max +LL reaction	0.86	0.85
Max +total reaction (factored)	2.41	2.41

DEFLECTIONS: **Ratio**

Dead load (in)	at 0.66 ft =	-0.000	
Live load (in)	at 0.66 ft =	-0.000	

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Net Total load (in) at 0.66 ft = -0.000

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Floor Type: FIRST FLOOR **Beam Number = 203**

SPAN INFORMATION (ft): I-End (62.06,2.25) J-End (78.00,2.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W14X22 Fy = 50.0 ksi
Total Beam Length (ft) = 15.94
Mp (kip-ft) = 138.33

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
8.271	5.80	3.19	17.3	0.00	0.00	0.0	0.00	0.0	0.00
10.458	-8.39	0.31	17.3	0.00	0.00	0.0	0.00	0.0	0.00
		-7.29	22.0	0.00	0.00	0.0	-1.29	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.022	0.000	---	NonR	0.000
	15.937	0.022	0.000			0.000
2	0.000	0.588	0.000	---	NonR	0.000
	10.458	0.588	0.000			0.000
3	0.000	0.220	0.800	17.3%	Red	0.000
	10.458	0.220	0.800			0.000
4	0.000	0.044	0.240	17.3%	Red	0.000
	10.458	0.044	0.240			0.000
5	0.000	0.387	0.000	---	NonR	0.000
	10.458	0.387	0.000			0.000
6	0.000	0.041	0.256	0.0%	Roof	0.000
	10.458	0.041	0.256			0.000
7	0.000	0.000	0.044	0.0%	Roof	0.000
	10.458	0.000	0.044			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 26.10 kips 1.00Vn = 94.53 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi k
Center	Max +	1.2DL+1.6LL	99.7	7.6	8.3	1.26	0.90	11
	Max -	1.2DL+1.6LL	-26.9	10.5	5.5	1.67	0.90	12
Controlling		1.2DL+1.6LL	99.7	7.6	8.3	1.26	0.90	11

REACTIONS (kips):

	Left	Right
DL reaction	9.08	2.08
Max +LL reaction	9.50	5.51
Max -LL reaction	-2.40	-4.58
Max +total reaction (factored)	26.10	11.31
Max -total reaction	12.71	-4.83

DEFLECTIONS: **Ratio**

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Dead load (in)	at	7.49 ft	=	-0.208	L/D	=	920		
Live load (in)	at	7.49 ft	=	-0.287	L/D	=	666	> 360	0.54
Net Total load (in)	at	7.49 ft	=	-0.495	L/D	=	386	> 240	0.62

Fire Traffic Engineering Public Works Building Planning
ISSUED PERMIT
Development & Permitting Services
City of Puyallup

Floor Type: FIRST FLOOR **Beam Number = 205**

SPAN INFORMATION (ft): I-End (62.06,-3.83) J-End (62.06,22.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X36 Fy = 50.0 ksi
Total Beam Length (ft) = 26.08
Cantilever on left (ft) = 4.17
Mp (kip-ft) = 266.67

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
0.000	0.92	0.73	0.0	0.00	0.00	0.0	0.00	0.0	0.00
2.083	4.68	3.50	0.0	0.00	0.00	0.0	1.10	0.0	0.00
6.083	9.08	8.95	20.6	0.00	0.00	0.0	2.11	0.0	0.00
		-2.50	22.0	0.00	0.00	0.0	-0.44	0.0	0.00
2.083	2.38	2.36	0.0	0.00	0.00	0.0	0.33	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	1.825	0.016	0.000			0.000
2	0.000	0.003	0.015	0.0%	Red	0.000
	1.825	0.003	0.015			0.000
3	1.825	0.015	0.000	---	NonR	0.000
	2.083	0.000	0.000			0.000
4	1.825	0.003	0.015	0.0%	Red	0.000
	2.083	0.000	0.000			0.000
5	2.084	0.212	0.000	---	NonR	0.000
	4.166	0.212	0.000			0.000
6	2.084	0.004	0.022	0.0%	Red	0.000
	4.166	0.000	0.000			0.000
7	2.084	0.035	0.127	0.0%	Red	0.000
	4.166	0.039	0.141			0.000
8	4.167	0.212	0.000	---	NonR	0.000
	26.083	0.212	0.000			0.000
9	4.167	0.039	0.141	20.6%	Red	0.000
	26.083	0.039	0.141			0.000
10	4.167	0.314	0.000	---	NonR	0.000
	6.083	0.314	0.000			0.000
11	4.167	0.058	0.209	20.6%	Red	0.000
	6.083	0.058	0.209			0.000
12	6.084	0.248	0.000	---	NonR	0.000
	26.083	0.248	0.000			0.000
13	6.084	0.045	0.165	20.6%	Red	0.000
	26.083	0.045	0.165			0.000
14	0.000	0.036	0.000	---	NonR	0.000
	4.166	0.036	0.000			0.000

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Load	Dist	DL	LL	Red%	Type	PartL
15	4.167	0.036	0.000	---	NonR	0.000
	26.083	0.036	0.000			0.000
16	4.167	0.387	0.000	---	NonR	0.000
	6.083	0.387	0.000			0.000
17	2.084	0.387	0.000	---	NonR	0.000
	4.167	0.387	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 38.90 kips 1.00Vn = 140.71 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Left	Max -	1.2DL+1.6LL	-54.3	4.2	2.1	1.00	0.90	240.00
Center	Max +	1.2DL+1.6LL	78.8	14.0	0.0	1.00	0.90	240.00
	Max -	1.2DL+1.6LL	-54.2	4.2	1.9	1.31	0.90	240.00
Controlling		1.2DL+1.6LL	78.8	14.0	0.0	1.00	0.90	240.00

REACTIONS (kips):

	Left	Right
DL reaction	25.92	6.27
Max +LL reaction	20.34	3.48
Max -LL reaction	-2.19	-1.06
Max +total reaction (factored)	63.65	13.09

DEFLECTIONS: **Ratio**

Left cantilever:

Dead load (in)	= 0.113	L/D =	888	
Pos Live load (in)	= -0.102	L/D =	985 > 360	0.37
Neg Live load (in)	= 0.122	L/D =	821 > 360	0.44
Neg Total load (in)	= 0.235	L/D =	426 > 240	0.56

Center span:

Dead load (in)	at 14.91 ft = -0.223	L/D = 1181	
Live load (in)	at 14.91 ft = -0.168	L/D = 1568 > 360	0.23
Net Total load (in)	at 14.91 ft = -0.391	L/D = 673 > 240	0.36

Fire Engineering Building Traffic Public Works Planning
ISSUED PERMIT
Development & Permitting Services
City of Puyallup

Floor Type: FIRST FLOOR **Beam Number = 206**

SPAN INFORMATION (ft): I-End (72.52,-3.83) J-End (78.60,-3.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W12X14 Fy = 50.0 ksi
Total Beam Length (ft) = 6.08
Cantilever on left (ft) = 4.17
Mp (kip-ft) = 72.50

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
0.000	0.92	0.73	0.0	0.00	0.00	0.0	0.00	0.0	0.00
2.083	3.63	2.71	0.0	0.00	0.00	0.0	0.86	0.0	0.00
2.083	2.38	2.36	0.0	0.00	0.00	0.0	0.33	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	4.167	0.478	0.000	---	NonR	0.000
	6.083	0.478	0.000			0.000
2	4.167	0.088	0.319	0.0%	Red	0.000
	6.083	0.088	0.319			0.000
3	0.000	0.016	0.000	---	NonR	0.000
	1.825	0.016	0.000			0.000
4	0.000	0.003	0.015	0.0%	Red	0.000
	1.825	0.003	0.015			0.000
5	1.825	0.015	0.000	---	NonR	0.000
	2.083	0.000	0.000			0.000
6	1.825	0.003	0.015	0.0%	Red	0.000
	2.083	0.000	0.000			0.000
7	2.084	0.164	0.000	---	NonR	0.000
	4.166	0.164	0.000			0.000
8	2.084	0.003	0.018	0.0%	Red	0.000
	4.166	0.000	0.000			0.000
9	2.084	0.027	0.098	0.0%	Red	0.000
	4.166	0.030	0.110			0.000
10	0.000	0.014	0.000	---	NonR	0.000
	4.166	0.014	0.000			0.000
11	4.167	0.014	0.000	---	NonR	0.000
	6.083	0.014	0.000			0.000
12	4.167	0.387	0.000	---	NonR	0.000
	6.083	0.387	0.000			0.000
13	2.084	0.387	0.000	---	NonR	0.000
	4.167	0.387	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 26.49 kips 0.90Vn = 64.26 kips

MOMENTS (Ultimate):

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Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Left	Max -	1.2DL+1.6LL	-47.7	4.2	2.1	1.00	0.90	65.25
Center	Max -	1.2DL+1.6LL	-47.7	4.2	1.9	1.69	0.90	65.25
Controlling		1.2DL+1.6LL	-47.7	4.2	2.1	1.00	0.90	65.25

REACTIONS (kips):

	Left	Right
DL reaction	18.47	-8.39
Max +LL reaction	16.13	0.31
Max -LL reaction	0.00	-8.57
Max +total reaction (factored)	47.97	-11.74
Max -total reaction	25.86	-23.78

DEFLECTIONS: **Ratio**

Left cantilever:

Dead load (in)	= -0.079		L/D = 1259		
Pos Live load (in)	= -0.074		L/D = 1356 > 360		0.27
Pos Total load (in)	= -0.153		L/D = 653 > 240		0.37

Center span:

Dead load (in)	at 4.97 ft =	0.003	L/D = 8461		
Live load (in)	at 4.97 ft =	0.003	L/D = 8833 > 360		0.04
Net Total load (in)	at 4.97 ft =	0.005	L/D = 4322 > 240		0.06

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City of Puyallup

Floor Type: FIRST FLOOR **Beam Number = 207**

SPAN INFORMATION (ft): I-End (55.00,-1.75) J-End (61.06,-1.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 7.06
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	6.804	0.016	0.000			0.000
2	0.000	0.003	0.010	0.0%	Red	0.000
	6.804	0.003	0.010			0.000
3	6.805	0.015	0.000	---	NonR	0.000
	7.062	0.000	0.000			0.000
4	6.805	0.003	0.010	0.0%	Red	0.000
	7.062	0.000	0.000			0.000
5	0.000	0.012	0.000	---	NonR	0.000
	7.062	0.012	0.000			0.000
6	0.000	0.604	0.000	---	NonR	0.000
	7.062	0.604	0.000			0.000
7	0.000	0.270	0.981	0.0%	Red	0.000
	7.062	0.270	0.981			0.000
8	0.000	0.387	0.000	---	NonR	0.000
	7.062	0.387	0.000			0.000
9	0.000	0.000	0.099	0.0%	Roof	0.000
	7.062	0.000	0.099			0.000
10	0.000	0.034	0.214	0.0%	Roof	0.000
	7.062	0.034	0.214			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 12.99 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi k
Center	Max +	1.2DL+1.6LL	22.9	3.5	7.1	1.14	0.90	3
Controlling		1.2DL+1.6LL	22.9	3.5	7.1	1.14	0.90	3

REACTIONS (kips):

	Left	Right
DL reaction	4.68	4.68
Max +LL reaction	4.60	4.60
Max +total reaction (factored)	12.99	12.98

DEFLECTIONS: **Ratio**

Dead load (in)	at 3.53 ft = -0.048	L/D = 1781		
Live load (in)	at 3.53 ft = -0.047	L/D = 1812 > 360		0.20

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Net Total load (in)	at	3.53 ft	=	-0.094	L/D	=	898 > 240	0.27

Fire Engineering Building Traffic Public Works Planning
ISSUED PERMIT
City of Puyallup
Development & Permitting Services
PRMU2022012

Floor Type: FIRST FLOOR **Beam Number = 208**

SPAN INFORMATION (ft): I-End (72.52,-1.75) J-End (78.00,-1.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 5.48
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.000	0.000	---	NonR	0.000
	0.258	0.015	0.000			0.000
2	0.000	0.000	0.000	0.0%	Red	0.000
	0.258	0.003	0.010			0.000
3	0.259	0.016	0.000	---	NonR	0.000
	5.479	0.016	0.000			0.000
4	0.259	0.003	0.010	0.0%	Red	0.000
	5.479	0.003	0.010			0.000
5	0.000	0.012	0.000	---	NonR	0.000
	5.479	0.012	0.000			0.000
6	0.000	0.604	0.000	---	NonR	0.000
	5.479	0.604	0.000			0.000
7	0.000	0.270	0.981	0.0%	Red	0.000
	5.479	0.270	0.981			0.000
8	0.000	0.387	0.000	---	NonR	0.000
	5.479	0.387	0.000			0.000
9	0.000	0.000	0.099	0.0%	Roof	0.000
	5.479	0.000	0.099			0.000
10	0.000	0.034	0.214	0.0%	Roof	0.000
	5.479	0.034	0.214			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 10.07 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi k
Center	Max +	1.2DL+1.6LL	13.8	2.7	5.5	1.14	0.90	4
Controlling		1.2DL+1.6LL	13.8	2.7	5.5	1.14	0.90	4

REACTIONS (kips):

	Left	Right
DL reaction	3.63	3.63
Max +LL reaction	3.57	3.57
Max +total reaction (factored)	10.07	10.07

DEFLECTIONS: **Ratio**

Dead load (in)	at	2.74 ft	=	-0.017	L/D	=	3815	
Live load (in)	at	2.74 ft	=	-0.017	L/D	=	3880 > 360	0.09

Net Total load (in)	at	2.74 ft	=	-0.034	L/D	= 1924 > 240	0.12

Fire Engineering Building Traffic Public Works Planning
ISSUED PERMIT
City of Puyallup
Development & Permitting Services

Floor Type: FIRST FLOOR **Beam Number = 209**

SPAN INFORMATION (ft): I-End (85.89,-1.75) J-End (88.89,22.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W14X22 Fy = 50.0 ksi
Total Beam Length (ft) = 24.00
Cantilever on left (ft) = 2.08

COMPOSITE PROPERTIES (Not Shored):

	Left		Right
Deck Label	5.5" O/2W		5.5" O/2W
Concrete thickness (in)	3.50		3.50
Unit weight concrete (pcf)	150.00		150.00
f'c (ksi)	4.00		4.00
Decking Orientation	perpendicular		perpendicular
Decking type	ASC 2W		ASC 2W
beff (in) =	62.42	Y bar(in) =	15.61
Mnf (kip-ft) =	316.67	Mn (kip-ft) =	212.59
C (kips) =	86.15	PNA (in) =	10.60
Ieff (in4) =	528.26	Itr (in4) =	838.04
Stud length (in) =	4.00	Stud diam (in) =	0.75

Stud Capacity (kips) Qn = 17.2 Rg = 1.00 Rp = 0.60
# of studs: Max = 21 Partial = 12 Actual = 12
Number of Stud Rows = 1 Percent of Full Composite Action = 26.55

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL L	StorLL	Red%	RoofLL	Red%	PartL
0.000	3.26	0.07	2.44	0.0	0.00	0.00	0.0	0.77	0.0	0.00
0.000	5.23	0.11	3.91	0.0	0.00	0.00	0.0	1.23	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.385	0.385	0.000	---	NonR	0.000	0.000
	2.083	0.385	0.385	0.000			0.000	0.000
2	0.000	0.070	0.000	0.256	0.0%	Red	0.000	0.000
	2.083	0.070	0.000	0.256			0.000	0.000
3	2.084	0.385	0.385	0.000	---	NonR	0.000	0.000
	24.000	0.385	0.385	0.000			0.000	0.000
4	2.084	0.070	0.000	0.256	0.0%	Red	0.000	0.000
	24.000	0.070	0.000	0.256			0.000	0.000
5	0.000	0.022	0.022	0.000	---	NonR	0.000	0.000
	2.083	0.022	0.022	0.000			0.000	0.000
6	2.084	0.022	0.022	0.000	---	NonR	0.000	0.000
	24.000	0.022	0.022	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 25.60 kips 1.00Vn = 94.53 kips

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MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Left	PreCmp-	1.4DL	-1.7	2.1	2.1	1.00	0.90	124.50
	Max -	1.2DL+1.6LL	-51.2	2.1	2.1	1.00	0.90	124.50
Center	PreCmp+	1.4DL	33.3	13.2	0.0	1.00	0.90	124.50
	PreCmp-	1.4DL	-1.7	2.1	21.9	1.14	0.90	27.72
	Init DL	1.4DL	33.3	13.2	---	---		
	Max +	1.2DL+1.6LL	48.3	14.1	---	---	0.90	191.33
	Max -	1.2DL+1.6LL	-51.2	2.1	21.9	2.67	0.90	64.85
Controlling		1.4DL	-26.2	2.1	21.9	1.25	0.90	30.45

REACTIONS (kips):

	Left	Right
Initial reaction	5.54	4.40
DL reaction	15.57	4.37
Max +LL reaction	12.51	2.81
Max -LL reaction	0.00	-0.82
Max +total reaction (factored)	38.71	9.74

DEFLECTIONS: **Ratio**

Left cantilever:

Init load (in)	= 0.105	L/D = 476		
Pos Live load (in)	= -0.039	L/D = 1297 > 360		0.28
Neg Live load (in)	= 0.026	L/D = 1893 > 360		0.19
Pos Post Comp load (in)	= -0.069	L/D = 726 > 240		0.33
Neg Total load (in)	= 0.101	L/D = 494 > 240		0.49

Center span:

Initial load (in)	at 13.26 ft = -0.354	L/D = 742		
Live load (in)	at 13.26 ft = -0.087	L/D = 3030 > 360		0.12
Post Comp load (in)	at 13.70 ft = 0.093	L/D = 2816 > 240		0.09
Net Total load (in)	at 13.26 ft = -0.406	L/D = 647 > 240		0.37

Fire Engineering Building Public Works Planning Traffic
ISSUED PERMIT
Development & Permitting Services
City of Puyallup

Floor Type: FIRST FLOOR **Beam Number = 211**

SPAN INFORMATION (ft): I-End (90.81,2.25) J-End (108.96,2.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X26 Fy = 50.0 ksi
Total Beam Length (ft) = 18.24
Mp (kip-ft) = 184.17

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
2.965	4.00	2.17	21.7	0.00	0.00	0.0	0.00	0.0	0.00
10.458	-10.42	0.15	21.7	0.00	0.00	0.0	0.00	0.0	0.00
		-8.58	26.2	0.00	0.00	0.0	-1.68	0.0	0.00
10.854	5.57	3.06	21.7	0.00	0.00	0.0	0.00	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.058	0.000	---	NonR	0.000
	10.458	0.058	0.000			0.000
2	0.000	0.011	0.038	21.7%	Red	0.000
	10.458	0.011	0.038			0.000
3	0.000	0.026	0.000	---	NonR	0.000
	18.243	0.026	0.000			0.000
4	0.000	0.588	0.000	---	NonR	0.000
	10.458	0.588	0.000			0.000
5	0.000	0.220	0.800	21.7%	Red	0.000
	10.458	0.220	0.800			0.000
6	0.000	0.044	0.240	21.7%	Red	0.000
	10.458	0.044	0.240			0.000
7	0.000	0.387	0.000	---	NonR	0.000
	10.458	0.387	0.000			0.000
8	0.000	0.041	0.256	0.0%	Roof	0.000
	10.458	0.041	0.256			0.000
9	0.000	0.000	0.044	0.0%	Roof	0.000
	10.458	0.000	0.044			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 31.32 kips 0.90Vn = 105.97 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi k
Center	Max +	1.2DL+1.6LL	103.7	6.8	0.0	1.00	0.90	165.75
	Max -	1.2DL+1.6LL	-39.6	10.5	7.5	2.66	0.90	165.75
Controlling		1.2DL+1.6LL	103.7	6.8	0.0	1.00	0.90	165.75

REACTIONS (kips):

	Left	Right
DL reaction	11.45	2.27
Max +LL reaction	10.98	5.20

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	Left	Right
Max -LL reaction	-3.42	-4.59
Max +total reaction (factored)	31.32	11.04
Max -total reaction	16.04	-4.62

DEFLECTIONS:

								Ratio
Dead load (in)	at	8.39 ft	=	-0.175	L/D	= 1252		
Live load (in)	at	8.39 ft	=	-0.281	L/D	= 779	> 360	0.46
Net Total load (in)	at	8.39 ft	=	-0.456	L/D	= 480	> 240	0.50

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Traffic | Public Works | Planning | Development & Permitting Services

Floor Type: FIRST FLOOR **Beam Number = 212**

SPAN INFORMATION (ft): I-End (90.81,-3.83) J-End (90.81,22.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X45 Fy = 50.0 ksi
Total Beam Length (ft) = 26.08
Cantilever on left (ft) = 4.17
Mp (kip-ft) = 342.92

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
0.000	0.92	0.73	0.0	0.00	0.00	0.0	0.00	0.0	0.00
2.083	3.26	2.44	0.0	0.00	0.00	0.0	0.77	0.0	0.00
6.083	11.45	11.16	18.1	0.00	0.00	0.0	2.24	0.0	0.00
		-3.66	20.6	0.00	0.00	0.0	-0.72	0.0	0.00
2.083	2.38	2.36	0.0	0.00	0.00	0.0	0.33	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	1.825	0.016	0.000			0.000
2	0.000	0.003	0.015	0.0%	Red	0.000
	1.825	0.003	0.015			0.000
3	1.825	0.015	0.000	---	NonR	0.000
	2.083	0.000	0.000			0.000
4	1.825	0.003	0.015	0.0%	Red	0.000
	2.083	0.000	0.000			0.000
5	2.084	0.148	0.000	---	NonR	0.000
	4.166	0.148	0.000			0.000
6	2.084	0.004	0.022	0.0%	Red	0.000
	4.166	0.000	0.000			0.000
7	2.084	0.023	0.084	0.0%	Red	0.000
	4.166	0.027	0.098			0.000
8	4.167	0.148	0.000	---	NonR	0.000
	26.083	0.148	0.000			0.000
9	4.167	0.027	0.098	18.1%	Red	0.000
	26.083	0.027	0.098			0.000
10	6.084	0.089	0.000	---	NonR	0.000
	26.083	0.089	0.000			0.000
11	6.084	0.016	0.059	18.1%	Red	0.000
	26.083	0.016	0.059			0.000
12	0.000	0.045	0.000	---	NonR	0.000
	4.166	0.045	0.000			0.000
13	4.167	0.045	0.000	---	NonR	0.000
	26.083	0.045	0.000			0.000
14	4.167	0.387	0.000	---	NonR	0.000
	6.083	0.387	0.000			0.000

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Load	Dist	DL	LL	Red%	Type	PartL
15	2.084	0.387	0.000	---	NonR	0.000
	4.167	0.387	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 38.27 kips 1.00Vn = 166.64 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Left	Max -	1.2DL+1.6LL	-45.8	4.2	2.1	1.00	0.90	308.63
Center	Max +	1.2DL+1.6LL	59.3	12.0	0.0	1.00	0.90	308.63
	Max -	1.2DL+1.6LL	-45.8	4.2	1.9	1.30	0.90	308.63
Controlling		1.2DL+1.6LL	59.3	12.0	0.0	1.00	0.90	308.63

REACTIONS (kips):

	Left	Right
DL reaction	23.28	3.80
Max +LL reaction	19.29	2.41
Max -LL reaction	-3.31	-1.03
Max +total reaction (factored)	58.80	8.41

DEFLECTIONS: **Ratio**

Left cantilever:

Dead load (in)	= 0.061	L/D = 1652		
Pos Live load (in)	= -0.074	L/D = 1358 > 360		0.27
Neg Live load (in)	= 0.083	L/D = 1210 > 360		0.30
Pos Total load (in)	= -0.013	L/D = 7646 > 240		0.03
Neg Total load (in)	= 0.143	L/D = 698 > 240		0.34

Center span:

Dead load (in)	at 14.58 ft = -0.114	L/D = 2300		
Live load (in)	at 14.58 ft = -0.106	L/D = 2484 > 360		0.14
Net Total load (in)	at 14.58 ft = -0.220	L/D = 1194 > 240		0.20

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Floor Type: FIRST FLOOR **Beam Number = 213**

SPAN INFORMATION (ft): I-End (78.00,-1.75) J-End (85.89,-1.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 7.89
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	7.888	0.016	0.000			0.000
2	0.000	0.003	0.010	0.0%	Red	0.000
	7.888	0.003	0.010			0.000
3	0.000	0.012	0.000	---	NonR	0.000
	7.888	0.012	0.000			0.000
4	0.000	0.604	0.000	---	NonR	0.000
	7.889	0.604	0.000			0.000
5	0.000	0.270	0.981	0.0%	Red	0.000
	7.889	0.270	0.981			0.000
6	0.000	0.387	0.000	---	NonR	0.000
	7.889	0.387	0.000			0.000
7	0.000	0.000	0.099	0.0%	Roof	0.000
	7.889	0.000	0.099			0.000
8	0.000	0.034	0.214	0.0%	Roof	0.000
	7.889	0.034	0.214			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 14.50 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn k
Center	Max +	1.2DL+1.6LL	28.6	3.9	7.9	1.14	0.90	3
Controlling		1.2DL+1.6LL	28.6	3.9	7.9	1.14	0.90	3

REACTIONS (kips):

	Left	Right
DL reaction	5.23	5.23
Max +LL reaction	5.14	5.14
Max +total reaction (factored)	14.50	14.50

DEFLECTIONS: **Ratio**

Dead load (in)	at 3.94 ft = -0.074	L/D = 1278		
Live load (in)	at 3.94 ft = -0.073	L/D = 1300 > 360		0.28
Net Total load (in)	at 3.94 ft = -0.147	L/D = 644 > 240		0.37

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Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 214**

SPAN INFORMATION (ft): I-End (85.89,-1.75) J-End (90.81,-1.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 4.92
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	4.665	0.016	0.000			0.000
2	0.000	0.003	0.010	0.0%	Red	0.000
	4.665	0.003	0.010			0.000
3	4.666	0.015	0.000	---	NonR	0.000
	4.923	0.000	0.000			0.000
4	4.666	0.003	0.010	0.0%	Red	0.000
	4.923	0.000	0.000			0.000
5	0.000	0.012	0.000	---	NonR	0.000
	4.923	0.012	0.000			0.000
6	0.000	0.604	0.000	---	NonR	0.000
	4.923	0.604	0.000			0.000
7	0.000	0.270	0.981	0.0%	Red	0.000
	4.923	0.270	0.981			0.000
8	0.000	0.387	0.000	---	NonR	0.000
	4.923	0.387	0.000			0.000
9	0.000	0.000	0.099	0.0%	Roof	0.000
	4.923	0.000	0.099			0.000
10	0.000	0.034	0.214	0.0%	Roof	0.000
	4.923	0.034	0.214			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 9.05 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	11.1	2.5	4.9	1.14	0.90	45.06
Controlling		1.2DL+1.6LL	11.1	2.5	4.9	1.14	0.90	45.06

REACTIONS (kips):

	Left	Right
DL reaction	3.26	3.26
Max +LL reaction	3.21	3.21
Max +total reaction (factored)	9.05	9.05

DEFLECTIONS: **Ratio**

Dead load (in) at 2.46 ft = -0.011 L/D = 5257
Live load (in) at 2.46 ft = -0.011 L/D = 5348 > 360 0.07

Gravity Beam Design

Net Total load (in) at 2.46 ft = -0.022 L/D = 2651 > 240 0.09

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Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 217**

SPAN INFORMATION (ft): I-End (109.06,-1.75) J-End (109.06,22.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W14X22 Fy = 50.0 ksi
Total Beam Length (ft) = 24.00
Cantilever on left (ft) = 2.08

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	perpendicular	perpendicular
Decking type	ASC 2W	ASC 2W

beff (in)	=	65.75	Y bar(in)	=	15.69
Mnf (kip-ft)	=	317.72	Mn (kip-ft)	=	212.67
C (kips)	=	86.15	PNA (in)	=	10.60
Ieff (in4)	=	532.02	Itr (in4)	=	845.34
Stud length (in)	=	4.00	Stud diam (in)	=	0.75

Stud Capacity (kips) Qn = 17.2 Rg = 1.00 Rp = 0.60
# of studs: Max = 21 Partial = 13 Actual = 13
Number of Stud Rows = 1 Percent of Full Composite Action = 26.55

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
0.000	4.90	0.10	3.66	0.0	0.00	0.00	0.0	1.16	0.0	0.00
0.000	5.16	0.11	3.86	0.0	0.00	0.00	0.0	1.22	0.0	0.00
4.000	2.27	2.65	5.49	13.1	0.00	0.00	0.0	0.90	0.0	0.00
			-4.92	17.3	0.00	0.00	0.0	-0.96	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.455	0.455	0.000	---	NonR	0.000	0.000
	2.083	0.455	0.455	0.000			0.000	0.000
2	0.000	0.083	0.000	0.303	0.0%	Red	0.000	0.000
	2.083	0.083	0.000	0.303			0.000	0.000
3	2.084	0.234	0.234	0.000	---	NonR	0.000	0.000
	4.000	0.234	0.234	0.000			0.000	0.000
4	2.084	0.043	0.000	0.156	13.1%	Red	0.000	0.000
	4.000	0.043	0.000	0.156			0.000	0.000
5	4.000	0.222	0.222	0.000	---	NonR	0.000	0.000
	24.000	0.222	0.222	0.000			0.000	0.000
6	4.000	0.041	0.000	0.148	13.1%	Red	0.000	0.000
	24.000	0.041	0.000	0.148			0.000	0.000

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Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
7	2.084	0.222	0.222	0.000		NonR	0.000	0.000
	24.000	0.222	0.222	0.000			0.000	0.000
8	2.084	0.041	0.000	0.148		Red	0.000	0.000
	24.000	0.041	0.000	0.148			0.000	0.000
9	0.000	0.022	0.022	0.000		NonR	0.000	0.000
	2.083	0.022	0.022	0.000			0.000	0.000
10	2.084	0.022	0.022	0.000	---	NonR	0.000	0.000
	24.000	0.022	0.022	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 30.31 kips 1.00Vn = 94.53 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Left	PreCmp-	1.4DL	-2.1	2.1	2.1	1.00	0.90	124.50
	Max -	1.2DL+1.6LL	-60.6	2.1	2.1	1.00	0.90	124.50
Center	PreCmp+	1.4DL	41.7	12.7	0.0	1.00	0.90	124.50
	PreCmp-	1.4DL	-2.1	2.1	1.9	1.77	0.90	124.50
	Init DL	1.4DL	41.7	12.7	---	---		
	Max +	1.2DL+1.6LL	62.1	13.2	---	---	0.90	191.40
	Max -	1.2DL+1.6LL	-60.6	2.1	1.9	1.06	0.90	124.50
Controlling		1.2DL+1.6LL	-52.0	4.0	20.0	2.76	0.90	76.23

REACTIONS (kips):

	Left	Right
Initial reaction	8.81	5.27
DL reaction	20.33	5.18
Max +LL reaction	19.49	3.31
Max -LL reaction	-4.59	-1.41
Max +total reaction (factored)	55.59	11.51

DEFLECTIONS:

Left cantilever:

Init load (in)	= 0.140		L/D = 356		
Pos Live load (in)	= -0.060		L/D = 837 > 360		
Neg Live load (in)	= 0.042		L/D = 1177 > 360		
Pos Post Comp load (in)	= -0.097		L/D = 517 > 240		
Neg Post Comp load (in)	= 0.005		L/D = 9131 > 240		
Neg Total load (in)	= 0.146		L/D = 343 > 240		

Center span:

Initial load (in)	at 13.04 ft = -0.451	L/D = 583		
Live load (in)	at 13.04 ft = -0.123	L/D = 2145 > 360		0.17
Post Comp load (in)	at 13.70 ft = 0.144	L/D = 1823 > 240		0.13
Net Total load (in)	at 13.04 ft = -0.529	L/D = 497 > 240		0.48

Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 218**

SPAN INFORMATION (ft): I-End (116.44,-1.75) J-End (116.44,22.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W14X22 Fy = 50.0 ksi
Total Beam Length (ft) = 24.00
Cantilever on left (ft) = 2.08

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	perpendicular	perpendicular
Decking type	ASC 2W	ASC 2W

beff (in)	=	51.58	Y bar(in)	=	15.28
Mnf (kip-ft)	=	312.33	Mn (kip-ft)	=	212.29
C (kips)	=	86.15	PNA (in)	=	10.60
Ieff (in4)	=	513.97	Itr (in4)	=	810.31
Stud length (in)	=	4.00	Stud diam (in)	=	0.75

Stud Capacity (kips) Qn = 17.2 Rg = 1.00 Rp = 0.60
# of studs: Max = 21 Partial = 12 Actual = 12
Number of Stud Rows = 1 Percent of Full Composite Action = 26.55

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
0.000	2.07	0.04	1.54	0.0	0.00	0.00	0.0	0.49	0.0	0.00
0.000	4.90	0.10	3.66	0.0	0.00	0.00	0.0	1.16	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.315	0.315	0.000	---	NonR	0.000	0.000
	2.083	0.315	0.315	0.000			0.000	0.000
2	0.000	0.058	0.000	0.209	0.0%	Red	0.000	0.000
	2.083	0.058	0.000	0.210			0.000	0.000
3	2.084	0.315	0.315	0.000	---	NonR	0.000	0.000
	24.000	0.315	0.315	0.000			0.000	0.000
4	2.084	0.058	0.000	0.210	0.0%	Red	0.000	0.000
	24.000	0.058	0.000	0.210			0.000	0.000
5	0.000	0.022	0.022	0.000	---	NonR	0.000	0.000
	2.083	0.022	0.022	0.000			0.000	0.000
6	2.084	0.022	0.022	0.000	---	NonR	0.000	0.000
	24.000	0.022	0.022	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 21.00 kips 1.00Vn = 94.53 kips

RAM Structural System
Bentley

Gravity Beam Design

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MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft		Lb ft	Cb	Phi	Phi*Mn kip-ft
Left	PreCmp-	1.4DL	-1.4	2.1	2.1	1.00	0.90	124.50
	Max -	1.2DL+1.6LL	-42.0	2.1	2.1	1.00	0.90	124.50
Center	PreCmp+	1.4DL	27.6	13.2	0.0	1.00	0.90	124.50
	PreCmp-	1.4DL	-1.4	2.1	21.9	1.14	0.90	27.72
	Init DL	1.4DL	27.6	13.2	---	---		
	Max +	1.2DL+1.6LL	39.9	14.1	---	---	0.90	191.06
	Max -	1.2DL+1.6LL	-42.0	2.1	21.9	2.65	0.90	64.48
Controlling		1.4DL	-21.5	2.1	21.9	1.25	0.90	30.41

REACTIONS (kips):

	Left	Right
Initial reaction	4.59	3.65
DL reaction	12.82	3.63
Max +LL reaction	10.26	2.30
Max -LL reaction	0.00	-0.67
Max +total reaction (factored)	31.80	8.04

DEFLECTIONS: **Ratio**

Left cantilever:

Init load (in)	= 0.087	L/D = 573		
Pos Live load (in)	= -0.032	L/D = 1548 > 360		0.23
Neg Live load (in)	= 0.022	L/D = 2246 > 360		0.16
Pos Post Comp load (in)	= -0.058	L/D = 867 > 240		0.28
Neg Total load (in)	= 0.084	L/D = 594 > 240		0.40

Center span:

Initial load (in)	at 13.26 ft = -0.294	L/D = 894		
Live load (in)	at 13.26 ft = -0.073	L/D = 3595 > 360		0.10
Post Comp load (in)	at 13.81 ft = 0.078	L/D = 3359 > 240		0
Net Total load (in)	at 13.26 ft = -0.338	L/D = 778 > 240		0

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Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 220**

SPAN INFORMATION (ft): I-End (101.27,-3.83) J-End (101.27,2.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W12X14 Fy = 50.0 ksi
Total Beam Length (ft) = 6.08
Cantilever on left (ft) = 4.17
Mp (kip-ft) = 72.50

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
0.000	0.92	0.73	0.0	0.00	0.00	0.0	0.00	0.0	0.00
2.083	5.16	3.86	0.0	0.00	0.00	0.0	1.22	0.0	0.00
2.083	2.38	2.36	0.0	0.00	0.00	0.0	0.33	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	1.825	0.016	0.000			0.000
2	0.000	0.003	0.015	0.0%	Red	0.000
	1.825	0.003	0.015			0.000
3	1.825	0.015	0.000	---	NonR	0.000
	2.083	0.000	0.000			0.000
4	1.825	0.003	0.015	0.0%	Red	0.000
	2.083	0.000	0.000			0.000
5	2.084	0.234	0.000	---	NonR	0.000
	4.166	0.234	0.000			0.000
6	2.084	0.003	0.018	0.0%	Red	0.000
	4.166	0.000	0.000			0.000
7	2.084	0.040	0.144	0.0%	Red	0.000
	4.166	0.043	0.156			0.000
8	4.167	0.234	0.000	---	NonR	0.000
	6.083	0.234	0.000			0.000
9	4.167	0.043	0.156	0.0%	Red	0.000
	6.083	0.043	0.156			0.000
10	0.000	0.014	0.000	---	NonR	0.000
	4.166	0.014	0.000			0.000
11	4.167	0.014	0.000	---	NonR	0.000
	6.083	0.014	0.000			0.000
12	4.167	0.387	0.000	---	NonR	0.000
	6.083	0.387	0.000			0.000
13	2.084	0.387	0.000	---	NonR	0.000
	4.167	0.387	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 30.71 kips 0.90Vn = 64.26 kips

MOMENTS (Ultimate):

Gravity Beam Design

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Left	Max -	1.2DL+1.6LL	-56.1	4.2	2.1	1.00	0.90	65.25
Center	Max -	1.2DL+1.6LL	-56.2	4.2	1.9	1.68	0.90	65.25
Controlling		1.2DL+1.6LL	-56.9	4.2	2.1	1.00	0.90	65.25

REACTIONS (kips):

	Left	Right
DL reaction	21.65	-10.42
Max +LL reaction	19.26	0.15
Max -LL reaction	0.00	-10.26
Max +total reaction (factored)	56.79	-14.59
Max -total reaction	30.31	-28.91

DEFLECTIONS: **Ratio**

Left cantilever:

Dead load (in) = -0.094 L/D = 1067
Pos Live load (in) = -0.087 L/D = 1145 > 360 0.31
Pos Total load (in) = -0.181 L/D = 552 > 240 0.43

Center span:

Dead load (in) at 4.97 ft = 0.003 L/D = 7003
Live load (in) at 4.97 ft = 0.003 L/D = 7382 > 360 0.05
Net Total load (in) at 4.97 ft = 0.006 L/D = 3594 > 240 0.07

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Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 221**

SPAN INFORMATION (ft): I-End (119.56,2.25) J-End (132.50,2.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W14X22 Fy = 50.0 ksi
Total Beam Length (ft) = 12.94
Mp (kip-ft) = 138.33

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
4.260	4.74	2.59	16.3	0.00	0.00	0.0	0.00	0.0	0.00
10.458	-4.82	0.05	16.3	0.00	0.00	0.0	0.00	0.0	0.00
		-4.29	18.6	0.00	0.00	0.0	-0.36	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.058	0.000	---	NonR	0.000
	10.458	0.058	0.000			0.000
2	0.000	0.011	0.038	16.3%	Red	0.000
	10.458	0.011	0.038			0.000
3	0.000	0.022	0.000	---	NonR	0.000
	12.937	0.022	0.000			0.000
4	0.000	0.588	0.000	---	NonR	0.000
	10.458	0.588	0.000			0.000
5	0.000	0.220	0.800	16.3%	Red	0.000
	10.458	0.220	0.800			0.000
6	0.000	0.044	0.240	16.3%	Red	0.000
	10.458	0.044	0.240			0.000
7	0.000	0.387	0.000	---	NonR	0.000
	10.458	0.387	0.000			0.000
8	0.000	0.041	0.256	0.0%	Roof	0.000
	10.458	0.041	0.256			0.000
9	0.000	0.000	0.044	0.0%	Roof	0.000
	10.458	0.000	0.044			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 27.28 kips 1.00Vn = 94.53 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	85.0	5.1	0.0	1.00	0.90	124.50
	Max -	1.2DL+1.6LL	-2.0	10.5	6.2	1.37	0.90	124.50
Controlling		1.2DL+1.6LL	85.0	5.1	0.0	1.00	0.90	124.50

REACTIONS (kips):

	Left	Right
DL reaction	10.80	3.51
Max +LL reaction	8.95	5.83
Max -LL reaction	-0.74	-3.11

Gravity Beam Design

	Left	Right
Max +total reaction (factored)	27.28	13.63

DEFLECTIONS:

								Ratio
Dead load (in)	at	6.15 ft	=	-0.15	L/D	=	993	
Live load (in)	at	6.15 ft	=	-0.14	L/D	=	1070 > 360	0.34
Net Total load (in)	at	6.15 ft	=	-0.301	L/D	=	515 > 240	0.47

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Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 222**

SPAN INFORMATION (ft): I-End (119.56,-3.83) J-End (119.56,22.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X40 Fy = 50.0 ksi
Total Beam Length (ft) = 26.08
Cantilever on left (ft) = 4.17
Mp (kip-ft) = 304.17

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
0.000	0.92	0.73	0.0	0.00	0.00	0.0	0.00	0.0	0.00
2.083	2.06	1.54	0.0	0.00	0.00	0.0	0.49	0.0	0.00
6.083	10.80	8.46	11.1	0.00	0.00	0.0	1.87	0.0	0.00
		-0.82	11.7	0.00	0.00	0.0	-0.07	0.0	0.00
2.083	2.38	2.36	0.0	0.00	0.00	0.0	0.33	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	1.825	0.016	0.000			0.000
2	0.000	0.003	0.015	0.0%	Red	0.000
	1.825	0.003	0.015			0.000
3	1.825	0.015	0.000	---	NonR	0.000
	2.083	0.000	0.000			0.000
4	1.825	0.003	0.015	0.0%	Red	0.000
	2.083	0.000	0.000			0.000
5	2.084	0.094	0.000	---	NonR	0.000
	4.166	0.094	0.000			0.000
6	2.084	0.004	0.021	0.0%	Red	0.000
	4.166	0.000	0.000			0.000
7	2.084	0.013	0.048	0.0%	Red	0.000
	4.166	0.017	0.062			0.000
8	4.167	0.094	0.000	---	NonR	0.000
	26.083	0.094	0.000			0.000
9	4.167	0.017	0.062	11.1%	Red	0.000
	26.083	0.017	0.062			0.000
10	6.084	0.128	0.000	---	NonR	0.000
	26.083	0.128	0.000			0.000
11	6.084	0.023	0.085	11.1%	Red	0.000
	26.083	0.023	0.085			0.000
12	0.000	0.040	0.000	---	NonR	0.000
	4.166	0.040	0.000			0.000
13	4.167	0.040	0.000	---	NonR	0.000
	26.083	0.040	0.000			0.000
14	4.167	0.387	0.000	---	NonR	0.000
	6.083	0.387	0.000			0.000

RAM Structural System
Bentley
RAM Steel 17.02.01.23
DataBase: 2190606 Transfer Level w Omega - Update 210422
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Steel Code: AISC 360-16 LRFD

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Load	Dist	DL	LL	Red%	Type	PartL
15	2.084	0.387	0.000	---	NonR	0.000
	4.167	0.387	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 33.37 kips 1.00*Vn = 146.40 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Left	Max -	1.2DL+1.6LL	-38.6	4.2	2.1	1.00	0.90	273.75
Center	Max +	1.2DL+1.6LL	55.0	12.2	0.0	1.00	0.90	273.75
	Max -	1.2DL+1.6LL	-38.5	4.2	1.9	1.49	0.90	273.75
Controlling		1.2DL+1.6LL	55.0	12.2	0.0	1.00	0.90	273.75

REACTIONS (kips):

	Left	Right
DL reaction	20.87	3.61
Max +LL reaction	16.08	2.25
Max -LL reaction	-0.72	-0.67
Max +total reaction (factored)	50.77	7.94

DEFLECTIONS: **Ratio**

Left cantilever:

Dead load (in)	= 0.070	L/D =	1429	
Pos Live load (in)	= -0.057	L/D =	1760 > 360	0.20
Neg Live load (in)	= 0.082	L/D =	1218 > 360	0.30
Neg Total load (in)	= 0.152	L/D =	657 > 240	0.37

Center span:

Dead load (in)	at 14.58 ft = -0.126	L/D =	2085	
Live load (in)	at 14.58 ft = -0.107	L/D =	2456 > 360	0.15
Net Total load (in)	at 14.58 ft = -0.233	L/D =	1128 > 240	0.21

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Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 223**

SPAN INFORMATION (ft): I-End (101.27,-1.75) J-End (109.06,-1.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 7.78
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.000	0.000	---	NonR	0.000
	0.258	0.015	0.000			0.000
2	0.000	0.000	0.000	0.0%	Red	0.000
	0.258	0.003	0.010			0.000
3	0.259	0.016	0.000	---	NonR	0.000
	7.784	0.016	0.000			0.000
4	0.259	0.003	0.010	0.0%	Red	0.000
	7.784	0.003	0.010			0.000
5	0.000	0.012	0.000	---	NonR	0.000
	7.784	0.012	0.000			0.000
6	0.000	0.604	0.000	---	NonR	0.000
	7.785	0.604	0.000			0.000
7	0.000	0.270	0.981	0.0%	Red	0.000
	7.785	0.270	0.981			0.000
8	0.000	0.387	0.000	---	NonR	0.000
	7.785	0.387	0.000			0.000
9	0.000	0.000	0.099	0.0%	Roof	0.000
	7.785	0.000	0.099			0.000
10	0.000	0.034	0.214	0.0%	Roof	0.000
	7.785	0.034	0.214			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 14.31 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	27.9	3.9	7.8	1.14	0.90	33.58
Controlling		1.2DL+1.6LL	27.9	3.9	7.8	1.14	0.90	33.58

REACTIONS (kips):

	Left	Right
DL reaction	5.16	5.16
Max +LL reaction	5.07	5.07
Max +total reaction (factored)	14.31	14.31

DEFLECTIONS: **Ratio**

Dead load (in) at 3.89 ft = -0.070 L/D = 1330
Live load (in) at 3.89 ft = -0.069 L/D = 1353 > 360 0.27

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Net Total load (in) at 3.89 ft = -0.139 L/D = 671 > 240 0.36

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Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 224**

SPAN INFORMATION (ft): I-End (109.06,-1.75) J-End (116.44,-1.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 7.39
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	7.388	0.016	0.000			0.000
2	0.000	0.003	0.010	0.0%	Red	0.000
	7.388	0.003	0.010			0.000
3	0.000	0.012	0.000	---	NonR	0.000
	7.388	0.012	0.000			0.000
4	0.000	0.604	0.000	---	NonR	0.000
	7.389	0.604	0.000			0.000
5	0.000	0.270	0.981	0.0%	Red	0.000
	7.389	0.270	0.981			0.000
6	0.000	0.387	0.000	---	NonR	0.000
	7.389	0.387	0.000			0.000
7	0.000	0.000	0.099	0.0%	Roof	0.000
	7.389	0.000	0.099			0.000
8	0.000	0.034	0.214	0.0%	Roof	0.000
	7.389	0.034	0.214			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 13.59 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	25.1	3.7	7.4	1.14	0.90	35.17
Controlling		1.2DL+1.6LL	25.1	3.7	7.4	1.14	0.90	35.17

REACTIONS (kips):

	Left	Right
DL reaction	4.90	4.90
Max +LL reaction	4.82	4.82
Max +total reaction (factored)	13.59	13.59

DEFLECTIONS: **Ratio**

Dead load (in)	at	3.69 ft	= -0.057	L/D = 1555			
Live load (in)	at	3.69 ft	= -0.056	L/D = 1582	>	360	0.23
Net Total load (in)	at	3.69 ft	= -0.113	L/D = 784	>	240	0.31

Gravity Beam Design

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Floor Type: FIRST FLOOR **Beam Number = 225**

SPAN INFORMATION (ft): I-End (116.44,-1.75) J-End (119.56,-1.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 3.12
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	2.859	0.016	0.000			0.000
2	0.000	0.003	0.010	0.0%	Red	0.000
	2.859	0.003	0.010			0.000
3	2.860	0.015	0.000	---	NonR	0.000
	3.118	0.000	0.000			0.000
4	2.860	0.003	0.010	0.0%	Red	0.000
	3.118	0.000	0.000			0.000
5	0.000	0.012	0.000	---	NonR	0.000
	3.118	0.012	0.000			0.000
6	0.000	0.604	0.000	---	NonR	0.000
	3.118	0.604	0.000			0.000
7	0.000	0.270	0.981	0.0%	Red	0.000
	3.118	0.270	0.981			0.000
8	0.000	0.387	0.000	---	NonR	0.000
	3.118	0.387	0.000			0.000
9	0.000	0.000	0.099	0.0%	Roof	0.000
	3.118	0.000	0.099			0.000
10	0.000	0.034	0.214	0.0%	Roof	0.000
	3.118	0.034	0.214			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 5.73 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi k
Center	Max +	1.2DL+1.6LL	4.5	1.6	3.1	1.14	0.90	4
Controlling		1.2DL+1.6LL	4.5	1.6	3.1	1.14	0.90	4

REACTIONS (kips):

	Left	Right
DL reaction	2.07	2.06
Max +LL reaction	2.03	2.03
Max +total reaction (factored)	5.73	5.73

DEFLECTIONS: **Ratio**

Dead load (in)	at	1.56 ft	= -0.002	L/D = 2069	
				9	

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Live load (in)	at	1.56 ft	=	-0.002	L/D	=	2105 5	>	360	0.02
Net Total load (in)	at	1.56 ft	=	-0.004	L/D	=	1043 8	>	240	0.02

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DataBase: 2190606 Transfer Level w Omega - Update 210422 — 10/28/21 18:03:22
Building Code: IBC — Steel Code: AISC 360-16 LRFD

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Floor Type: FIRST FLOOR **Beam Number = 227**

SPAN INFORMATION (ft): I-End (132.50,-1.75) J-End (132.50,22.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W14X22 Fy = 50.0 ksi
Total Beam Length (ft) = 24.00
Cantilever on left (ft) = 2.08

COMPOSITE PROPERTIES (Not Shored):

	Left		Right
Deck Label	5.5" O/2W		5.5" O/2W
Concrete thickness (in)	3.50		3.50
Unit weight concrete (pcf)	150.00		150.00
f'c (ksi)	4.00		4.00
Decking Orientation	perpendicular		perpendicular
Decking type	ASC 2W		ASC 2W
beff (in) =	65.75	Y bar(in) =	15.69
Mnf (kip-ft) =	317.72	Mn (kip-ft) =	212.67
C (kips) =	86.15	PNA (in) =	10.60
Ieff (in4) =	532.02	Itr (in4) =	845.34
Stud length (in) =	4.00	Stud diam (in) =	0.75

Stud Capacity (kips) Qn = 17.2 Rg = 1.00 Rp = 0.60
# of studs: Max = 21 Partial = 12 Actual = 12
Number of Stud Rows = 1 Percent of Full Composite Action = 26.55

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL L	StorLL	Red%	RoofLL	Red%	PartL
0.000	5.77	0.14	4.29	0.0	0.00	0.00	0.0	1.36	0.0	0.00
0.000	0.04	0.03	0.01	0.0	0.00	0.00	0.0	0.00	0.0	0.00
4.000	3.51	0.21	5.45	14.9	0.00	0.00	0.0	1.27	0.0	0.00
			-3.47	16.9	0.00	0.00	0.0	-0.29	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.001	0.335	0.335	0.000	---	NonR	0.000	0.000
	2.083	0.335	0.335	0.000			0.000	0.000
2	0.001	0.060	0.000	0.219	0.0%	Red	0.000	0.000
	2.083	0.061	0.000	0.223			0.000	0.000
3	0.001	0.001	0.000	0.007	0.0%	Red	0.000	0.000
	2.083	0.000	0.000	0.000			0.000	0.000
4	2.084	0.074	0.074	0.000	---	NonR	0.000	0.000
	4.000	0.074	0.074	0.000			0.000	0.000
5	2.084	0.014	0.000	0.050	14.9%	Red	0.000	0.000
	4.000	0.014	0.000	0.050			0.000	0.000
6	4.000	0.260	0.260	0.000	---	NonR	0.000	0.000
	24.000	0.260	0.260	0.000			0.000	0.000

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Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
7	4.000	0.048	0.000	0.174	14.9%	Red	0.000	0.000
	24.000	0.048	0.000	0.173			0.000	0.000
8	2.084	0.260	0.260	0.000	---	NonR	0.000	0.000
	24.000	0.260	0.260	0.000			0.000	0.000
9	2.084	0.048	0.000	0.173	14.9%	Red	0.000	0.000
	24.000	0.048	0.000	0.173			0.000	0.000
10	0.000	0.022	0.022	0.000	---	NonR	0.000	0.000
	2.083	0.022	0.022	0.000			0.000	0.000
11	2.084	0.022	0.022	0.000	---	NonR	0.000	0.000
	24.000	0.022	0.022	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 26.84 kips 1.00Vn = 94.53 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Left	PreCmp-	1.4DL	-1.6	2.1	2.1	1.00	0.90	124.50
	Max -	1.2DL+1.6LL	-35.3	2.1	2.1	1.00	0.90	124.50
Center	PreCmp+	1.4DL	44.9	13.1	0.0	1.00	0.90	124.50
	PreCmp-	1.4DL	-1.6	2.1	1.9	1.77	0.90	124.50
	Init DL	1.4DL	44.9	13.1	---	---		
	Max +	1.2DL+1.6LL	79.3	12.7	---	---	0.90	191.40
	Max -	1.2DL+1.6LL	-35.2	2.1	1.9	1.23	0.90	124.50
Controlling		1.2DL+1.6LL	-19.4	4.0	20.0	1.21	0.90	33.40

REACTIONS (kips):

	Left	Right
Initial reaction	6.76	5.90
DL reaction	17.06	6.68
Max +LL reaction	15.12	3.74
Max -LL reaction	-2.89	-0.84
Max +total reaction (factored)	44.65	14.00

DEFLECTIONS: **Ratio**

Left cantilever:

Init load (in)	= 0.143	L/D = 350		
Pos Live load (in)	= -0.035	L/D = 1419 > 360		0.25
Neg Live load (in)	= 0.047	L/D = 1070 > 360		0.34
Pos Post Comp load (in)	= -0.042	L/D = 1205 > 240		0.20
Neg Post Comp load (in)	= 0.040	L/D = 1236 > 240		0.19
Neg Total load (in)	= 0.183	L/D = 273 > 240		0.88

Center span:

Initial load (in)	at 13.04 ft = -0.478	L/D = 550		
Live load (in)	at 13.04 ft = -0.136	L/D = 1930 > 360		0.19
Post Comp load (in)	at 13.04 ft = -0.149	L/D = 1761 > 240		0.14
Net Total load (in)	at 13.04 ft = -0.628	L/D = 419 > 240		0.57

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Floor Type: FIRST FLOOR **Beam Number = 230**

SPAN INFORMATION (ft): I-End (130.02,-3.83) J-End (136.10,-2.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W12X14 Fy = 50.0 ksi
Total Beam Length (ft) = 6.08
Cantilever on left (ft) = 4.17
Mp (kip-ft) = 72.50

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
0.000	0.92	0.73	0.0	0.00	0.00	0.0	0.00	0.0	0.00
2.084	0.03	0.01	0.0	0.00	0.00	0.0	0.00	0.0	0.00
2.083	2.38	2.36	0.0	0.00	0.00	0.0	0.33	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	1.825	0.016	0.000			0.000
2	0.000	0.003	0.015	0.0%	Red	0.000
	1.825	0.003	0.015			0.000
3	1.826	0.015	0.000	---	NonR	0.000
	2.083	0.000	0.000			0.000
4	1.826	0.003	0.015	0.0%	Red	0.000
	2.083	0.000	0.000			0.000
5	2.084	0.074	0.000	---	NonR	0.000
	4.166	0.074	0.000			0.000
6	2.084	0.007	0.038	0.0%	Red	0.000
	4.166	0.000	0.000			0.000
7	2.084	0.007	0.025	0.0%	Red	0.000
	4.166	0.014	0.050			0.000
8	4.167	0.074	0.000	---	NonR	0.000
	6.083	0.074	0.000			0.000
9	4.167	0.014	0.050	0.0%	Red	0.000
	6.083	0.014	0.050			0.000
10	0.000	0.014	0.000	---	NonR	0.000
	4.166	0.014	0.000			0.000
11	4.167	0.014	0.000	---	NonR	0.000
	6.083	0.014	0.000			0.000
12	4.167	0.387	0.000	---	NonR	0.000
	6.083	0.387	0.000			0.000
13	2.084	0.387	0.000	---	NonR	0.000
	4.167	0.387	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 14.41 kips 0.90Vn = 64.26 kips

MOMENTS (Ultimate):

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Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Left	Max -	1.2DL+1.6LL	-26.4	4.2	2.1	1.00	0.90	65.25
Center	Max -	1.2DL+1.6LL	-26.4	4.2	1.9	1.69	0.90	65.25
Controlling		1.2DL+1.6LL	-26.4	4.2	2.1	1.00	0.90	65.25

REACTIONS (kips):

	Left	Right
DL reaction	10.17	-4.82
Max +LL reaction	8.27	0.05
Max -LL reaction	0.00	-4.64
Max +total reaction (factored)	25.43	-6.74
Max -total reaction	14.24	-13.21

DEFLECTIONS: **Ratio**

Left cantilever:

Dead load (in)	= -0.047		L/D = 2110		
Pos Live load (in)	= -0.042		L/D = 2378 > 360		0.15
Pos Total load (in)	= -0.089		L/D = 1118 > 240		0.21

Center span:

Dead load (in)	at 4.97 ft =	0.002	L/D = 1484		
Live load (in)	at 4.97 ft =	0.001	L/D = 1630 > 360		0.02
Net Total load (in)	at 4.97 ft =	0.003	L/D = 7771 > 240		0.03

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Floor Type: FIRST FLOOR **Beam Number = 232**

SPAN INFORMATION (ft): I-End (132.50,-1.75) J-End (141.17,-1.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X17 Fy = 50.0 ksi
Total Beam Length (ft) = 8.67
Mp (kip-ft) = 77.92

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	8.666	0.016	0.000			0.000
2	0.000	0.003	0.010	2.6%	Red	0.000
	8.666	0.003	0.010			0.000
3	0.000	0.017	0.000	---	NonR	0.000
	8.666	0.017	0.000			0.000
4	0.000	0.604	0.000	---	NonR	0.000
	8.667	0.604	0.000			0.000
5	0.000	0.270	0.981	2.6%	Red	0.000
	8.667	0.270	0.981			0.000
6	0.000	0.387	0.000	---	NonR	0.000
	8.667	0.387	0.000			0.000
7	0.000	0.000	0.099	0.0%	Roof	0.000
	8.667	0.000	0.099			0.000
8	0.000	0.034	0.214	0.0%	Roof	0.000
	8.667	0.034	0.214			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 15.78 kips 1.00Vn = 72.72 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn k
Center	Max +	1.2DL+1.6LL	34.2	4.3	8.7	1.14	0.90	5
Controlling		1.2DL+1.6LL	34.2	4.3	8.7	1.14	0.90	5

REACTIONS (kips):

	Left	Right
DL reaction	5.77	5.77
Max +LL reaction	5.54	5.54
Max +total reaction (factored)	15.78	15.78

DEFLECTIONS: **Ratio**

Dead load (in)	at 4.33 ft =	-0.071	L/D = 1462		
Live load (in)	at 4.33 ft =	-0.068	L/D = 1523 > 360		0.24
Net Total load (in)	at 4.33 ft =	-0.139	L/D = 746 > 240		0.32

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Floor Type: FIRST FLOOR **Beam Number = 233**

SPAN INFORMATION (ft): I-End (39.66,2.25) J-End (39.67,22.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W12X14 Fy = 50.0 ksi
Total Beam Length (ft) = 20.00

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	90.0 deg	90.0 deg
Decking type	ASC 2W	ASC 2W

beff (in)	=	60.00	Y bar(in)	=	14.49
Mnf (kip-ft)	=	191.80	Mn (kip-ft)	=	148.07
C (kips)	=	103.38	PNA (in)	=	11.12
Ieff (in4)	=	354.79	Itr (in4)	=	466.19
Stud length (in)	=	4.00	Stud diam (in)	=	0.75

Stud Capacity (kips) Qn = 17.2 Rg = 1.00 Rp = 0.60
# of studs: Max = 20 Partial = 8 Actual = 12
Number of Stud Rows = 1 Percent of Full Composite Action = 49.70

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.421	0.421	0.000	---	NonR	0.000	0.000
	20.000	0.421	0.421	0.000			0.000	0.000
2	0.000	0.077	0.000	0.280	0.0%	Red	0.000	0.000
	20.000	0.077	0.000	0.280			0.000	0.000
3	0.000	0.014	0.014	0.000	---	NonR	0.000	0.000
	20.000	0.014	0.014	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 10.63 kips 0.90Vn = 64.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu	@	Lb	Cb	Phi	Phi*Mn
			kip-ft	ft	ft			kip-ft
Center	PreCmp+	1.4DL	30.4	10.0	0.0	1.00	0.90	65.25
	Init DL	1.4DL	30.4	10.0	---	---		
	Max +	1.2DL+1.6LL	53.2	10.0	---	---	0.90	133.26
Controlling		1.4DL	30.4	10.0	0.0	1.00	0.90	65.25

REACTIONS (kips):

	Left	Right
Initial reaction	4.35	4.35
DL reaction	5.12	5.12
Max +LL reaction	2.80	2.80
Max +total reaction (factored)	10.63	10.63

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DEFLECTIONS:

							Ratio
Initial load (in)	at 10.00 ft	=	-0.60	L/D	=	394	
Live load (in)	at 10.00 ft	=	-0.09	L/D	= 2446 >	360	0.15
Post Comp load (in)	at 10.00 ft	=	-0.21	L/D	= 1919 >	240	0.13
Net Total load (in)	at 10.00 ft	=	-0.73	L/D	= 327 >	240	0.73

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Floor Type: FIRST FLOOR **Beam Number = 235**

SPAN INFORMATION (ft): I-End (70.33,2.25) J-End (70.33,22.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W12X14 Fy = 50.0 ksi
Total Beam Length (ft) = 20.00

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	perpendicular	perpendicular
Decking type	ASC 2W	ASC 2W

beff (in)	=	60.00	Y bar(in)	=	14.49
Mnf (kip-ft)	=	191.80	Mn (kip-ft)	=	148.07
C (kips)	=	103.38	PNA (in)	=	11.12
Ieff (in4)	=	354.79	Itr (in4)	=	466.19
Stud length (in)	=	4.00	Stud diam (in)	=	0.75

Stud Capacity (kips) Qn = 17.2 Rg = 1.00 Rp = 0.60
# of studs: Max = 20 Partial = 8 Actual = 12
Number of Stud Rows = 1 Percent of Full Composite Action = 49.70

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.478	0.478	0.000	---	NonR	0.000	0.000
	20.000	0.478	0.478	0.000			0.000	0.000
2	0.000	0.088	0.000	0.319	0.0%	Red	0.000	0.000
	20.000	0.088	0.000	0.319			0.000	0.000
3	0.000	0.014	0.014	0.000	---	NonR	0.000	0.000
	20.000	0.014	0.014	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 12.06 kips 0.90Vn = 64.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	PreCmp+	1.4DL	34.5	10.0	0.0	1.00	0.90	65.25
	Init DL	1.4DL	34.5	10.0	---	---		
	Max +	1.2DL+1.6LL	60.3	10.0	---	---	0.90	133.26
Controlling		1.4DL	34.5	10.0	0.0	1.00	0.90	65.25

REACTIONS (kips):

	Left	Right
Initial reaction	4.93	4.93
DL reaction	5.80	5.80
Max +LL reaction	3.19	3.19
Max +total reaction (factored)	12.06	12.06

DEFLECTIONS:

						Ratio
Initial load (in)	at 10.00 ft	=	-0.69	L/D	= 348	
Live load (in)	at 10.00 ft	=	-0.11	L/D	= 2152 > 360	0.17
Post Comp load (in)	at 10.00 ft	=	-0.14	L/D	= 1688 > 240	0.14
Net Total load (in)	at 10.00 ft	=	-0.83	L/D	= 288 > 240	0.83

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Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 236**

SPAN INFORMATION (ft): I-End (93.78,2.25) J-End (93.78,22.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W12X14 Fy = 50.0 ksi
Total Beam Length (ft) = 20.00

COMPOSITE PROPERTIES (Not Shored):

	Left		Right		
Deck Label	5.5" O/2W		5.5" O/2W		
Concrete thickness (in)	3.50		3.50		
Unit weight concrete (pcf)	150.00		150.00		
f'c (ksi)	4.00		4.00		
Decking Orientation	perpendicular		perpendicular		
Decking type	ASC 2W		ASC 2W		
beff (in)	= 47.79	Y bar(in)	= 14.22		
Mnf (kip-ft)	= 189.54	Mn (kip-ft)	= 147.51		
C (kips)	= 103.38	PNA (in)	= 11.12		
Ieff (in4)	= 342.80	Itr (in4)	= 449.17		
Stud length (in)	= 4.00	Stud diam (in)	= 0.75		

Stud Capacity (kips) Qn = 17.2 Rg = 1.00 Rp = 0.60
# of studs: Max = 20 Partial = 8 Actual = 12
Number of Stud Rows = 1 Percent of Full Composite Action = 49.70

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.326	0.326	0.000	---	NonR	0.000	0.000
	20.000	0.326	0.326	0.000			0.000	0.000
2	0.000	0.060	0.000	0.217	0.0%	Red	0.000	0.000
	20.000	0.060	0.000	0.217			0.000	0.000
3	0.000	0.014	0.014	0.000	---	NonR	0.000	0.000
	20.000	0.014	0.014	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 8.27 kips 0.90Vn = 64.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	PreCmp+	1.4DL	23.8	10.0	0.0	1.00	0.90	65.25
	Init DL	1.4DL	23.8	10.0	---	---		
	Max +	1.2DL+1.6LL	41.3	10.0	---	---	0.90	132.76
Controlling		1.4DL	23.8	10.0	0.0	1.00	0.90	65.25

REACTIONS (kips):

	Left	Right
Initial reaction	3.40	3.40
DL reaction	4.00	4.00
Max +LL reaction	2.17	2.17
Max +total reaction (factored)	8.27	8.27

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DEFLECTIONS: **Ratio**

Initial load (in)	at 10.00 ft	=	-0.47	L/D	=	504		
Live load (in)	at 10.00 ft	=	-0.07	L/D	=	3053 > 360		0.12
Post Comp load (in)	at 10.00 ft	=	-0.10	L/D	=	2394 > 240		0.10
Net Total load (in)	at 10.00 ft	=	-0.57	L/D	=	416 > 240		0.58

Floor Type: FIRST FLOOR **Beam Number = 237**

SPAN INFORMATION (ft): I-End (101.67,2.25) J-End (101.67,22.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W12X14 Fy = 50.0 ksi
Total Beam Length (ft) = 20.00

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	perpendicular	perpendicular
Decking type	ASC 2W	ASC 2W

beff (in)	=	60.00	Y bar(in)	=	14.49
Mnf (kip-ft)	=	191.80	Mn (kip-ft)	=	148.07
C (kips)	=	103.38	PNA (in)	=	11.12
Ieff (in4)	=	354.79	Itr (in4)	=	466.19
Stud length (in)	=	4.00	Stud diam (in)	=	0.75

Stud Capacity (kips) Qn = 17.2 Rg = 1.00 Rp = 0.60
# of studs: Max = 20 Partial = 8 Actual = 12
Number of Stud Rows = 1 Percent of Full Composite Action = 49.70

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.459	0.459	0.000	---	NonR	0.000	0.000
	20.000	0.459	0.459	0.000			0.000	0.000
2	0.000	0.084	0.000	0.306	0.0%	Red	0.000	0.000
	20.000	0.084	0.000	0.306			0.000	0.000
3	0.000	0.014	0.014	0.000	---	NonR	0.000	0.000
	20.000	0.014	0.014	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 11.57 kips 0.90Vn = 64.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	PreCmp+	1.4DL	33.1	10.0	0.0	1.00	0.90	65.25
	Init DL	1.4DL	33.1	10.0	---	---		
	Max +	1.2DL+1.6LL	57.8	10.0	---	---	0.90	133.26
Controlling		1.4DL	33.1	10.0	0.0	1.00	0.90	65.25

REACTIONS (kips):

	Left	Right
Initial reaction	4.73	4.73
DL reaction	5.57	5.57
Max +LL reaction	3.06	3.06
Max +total reaction (factored)	11.57	11.57

DEFLECTIONS:

							Ratio
Initial load (in)	at 10.00 ft	=	-0.66	L/D	=	362	
Live load (in)	at 10.00 ft	=	-0.[illegible]	L/D	=	2245 > 360	0.16
Post Comp load (in)	at 10.00 ft	=	-0.[illegible]	L/D	=	1761 > 240	0.14
Net Total load (in)	at 10.00 ft	=	-0.79	L/D	=	301 > 240	0.80

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Floor Type: FIRST FLOOR **Beam Number = 238**

SPAN INFORMATION (ft): I-End (123.82,2.25) J-End (123.83,22.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W12X14 Fy = 50.0 ksi
Total Beam Length (ft) = 20.00

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	90.0 deg	90.0 deg
Decking type	ASC 2W	ASC 2W

beff (in)	=	55.58	Y bar(in)	=	14.41
Mnf (kip-ft)	=	191.09	Mn (kip-ft)	=	128.33
C (kips)	=	68.92	PNA (in)	=	9.40
Ieff (in4)	=	302.68	Itr (in4)	=	460.52
Stud length (in)	=	4.00	Stud diam (in)	=	0.75

Stud Capacity (kips) Qn = 17.2 Rg = 1.00 Rp = 0.60
# of studs: Max = 20 Partial = 8 Actual = 8
Number of Stud Rows = 1 Percent of Full Composite Action = 33.13

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.388	0.388	0.000	---	NonR	0.000	0.000
	20.000	0.388	0.388	0.000			0.000	0.000
2	0.000	0.071	0.000	0.259	0.0%	Red	0.000	0.000
	20.000	0.071	0.000	0.259			0.000	0.000
3	0.000	0.014	0.014	0.000	---	NonR	0.000	0.000
	20.000	0.014	0.014	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 9.82 kips 0.90Vn = 64.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	PreCmp+	1.4DL	28.2	10.0	0.0	1.00	0.90	65.25
	Init DL	1.4DL	28.2	10.0	---	---		
	Max +	1.2DL+1.6LL	49.1	10.0	---	---	0.90	115.50
Controlling		1.4DL	28.2	10.0	0.0	1.00	0.90	65.25

REACTIONS (kips):

	Left	Right
Initial reaction	4.02	4.02
DL reaction	4.74	4.74
Max +LL reaction	2.59	2.59
Max +total reaction (factored)	9.82	9.82

DEFLECTIONS: **Ratio**

Initial load (in)	at	10.00 ft	=	-0.564	L/D	=	426	
Live load (in)	at	10.00 ft	=	-0.107	L/D	=	2262 > 360	0.16
Post Comp load (in)	at	10.00 ft	=	-0.135	L/D	=	1774 > 240	0.14
Net Total load (in)	at	10.00 ft	=	-0.699	L/D	=	343 > 240	0.70

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Floor Type: FIRST FLOOR **Beam Number = 239**

SPAN INFORMATION (ft): I-End (141.17,22.25) J-End (151.72,22.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (Optimum) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 10.55

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	parallel	parallel
Decking type	ASC 2W	ASC 2W

beff (in)	=	31.66	Y bar(in)	=	12.03
Mnf (kip-ft)	=	143.63	Mn (kip-ft)	=	98.87
C (kips)	=	64.61	PNA (in)	=	8.34
Ieff (in4)	=	196.53	Itr (in4)	=	290.04
Stud length (in)	=	4.00	Stud diam (in)	=	0.75

Stud Capacity (kips) Qn = 21.5 Rg = 1.00 Rp = 0.75
# of studs: Full = 21 Partial = 6 Actual = 6
Number of Stud Rows = 1 Percent of Full Composite Action = 28.12

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
8.125	2.64	3.80	2.31	26.0	0.00	0.00	0.0	0.00	0.0	0.00
			-1.38	26.8	0.00	0.00	0.0	-0.53	0.0	0.00
10.458	4.01	0.00	4.86	26.0	0.00	0.00	0.0	1.15	0.5	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.012	0.012	0.000	---	NonR	0.000	0.000
	10.552	0.012	0.012	0.000			0.000	0.000
2	0.000	0.747	0.000	0.000	---	NonR	0.000	0.000
	10.458	0.747	0.000	0.000			0.000	0.000
3	0.000	0.071	0.000	0.650	26.0%	Red	0.000	0.000
	10.458	0.071	0.000	0.650			0.000	0.000
4	0.000	0.264	0.000	0.960	26.0%	Red	0.000	0.000
	10.458	0.264	0.000	0.960			0.000	0.000
5	0.000	0.387	0.000	0.000	---	NonR	0.000	0.000
	10.458	0.387	0.000	0.000			0.000	0.000
6	0.000	0.060	0.000	0.373	0.5%	Roof	0.000	0.000
	10.458	0.060	0.000	0.373			0.000	0.000
7	0.000	0.000	0.000	0.007	0.5%	Roof	0.000	0.000
	10.458	0.000	0.000	0.007			0.000	0.000

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SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 39.43 kips 1.4DL Vu = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu	Mu	Lb	Cb	Phi	Phi*Mn
			kip-ft	kip-ft	ft			kip-ft
Center	PreCmp+	1.4DL	10.1	8.1	8.1	1.64	0.90	46.16
	Init DL	1.4DL	10.1	8.1	---	---		
	Max +	1.2DL+1.6LL	68.7	5.6	---	---	0.90	88.98
Controlling		1.2DL+1.6LL	54.9	8.1	---	---	0.90	63.48

REACTIONS (kips):

	Left	Right
Initial reaction	0.94	2.99
DL reaction	8.78	13.99
Max +LL reaction	8.71	14.15
Max -LL reaction	-0.35	-1.18
Max +total reaction (factored)	24.48	39.43

DEFLECTIONS:

						Ratio
Initial load (in)	at	5.54 ft	= -0.069	L/D = 1838		
Live load (in)	at	5.49 ft	= -0.086	L/D = 1475	> 360	0.24
Post Comp load (in)	at	5.49 ft	= -0.156	L/D = 813	> 240	0.30
Net Total load (in)	at	5.49 ft	= -0.225	L/D = 564	> 240	0.43

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Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 240**

SPAN INFORMATION (ft): I-End (4.25,-1.75) J-End (4.25,22.25)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W12X16 Fy = 50.0 ksi
Total Beam Length (ft) = 24.00
Cantilever on left (ft) = 2.08

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	perpendicular	perpendicular
Decking type	ASC 2W	ASC 2W

beff (in)	=	53.00	Y bar(in)	=	14.28
Mnf (kip-ft)	=	215.32	Mn (kip-ft)	=	151.29
C (kips)	=	86.15	PNA (in)	=	9.92
Ieff (in4)	=	351.18	Itr (in4)	=	513.34
Stud length (in)	=	4.00	Stud diam (in)	=	0.75

Stud Capacity (kips) Qn = 17.2 Rg = 1.00 Rp = 0.60
# of studs: Max = 21 Partial = 8 Actual = 12
Number of Stud Rows = 1 Percent of Full Composite Action = 34.70

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
0.000	9.43	0.50	5.83	0.0	0.00	0.00	0.0	1.81	0.0	0.00
13.500	1.64	-0.21	1.08	0.0	0.00	0.00	0.0	0.60	0.0	0.00
			-0.21	0.0	0.00	0.00	0.0	0.00	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.265	0.265	0.000	---	NonR	0.000	0.000
	2.083	0.265	0.265	0.000			0.000	0.000
2	0.000	0.049	0.000	0.177	0.0%	Red	0.000	0.000
	2.083	0.049	0.000	0.177			0.000	0.000
3	2.084	0.265	0.265	0.000	---	NonR	0.000	0.000
	24.000	0.265	0.265	0.000			0.000	0.000
4	2.084	0.022	0.000	0.080	0.0%	Red	0.000	0.000
	13.186	0.022	0.000	0.080			0.000	0.000
5	13.187	0.022	0.000	0.080	0.0%	Red	0.000	0.000
	13.500	0.000	0.000	0.000			0.000	0.000
6	13.187	0.000	0.000	0.000	0.0%	Red	0.000	0.000
	13.500	0.022	0.000	0.119			0.000	0.000
7	13.500	0.022	0.000	0.120	0.0%	Red	0.000	0.000

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Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
	24.000	0.022	0.000	0.120			0.000	0.000
8	2.084	0.027	0.000	0.097	0.0%	Red	0.000	0.000
	24.000	0.027	0.000	0.097			0.000	0.000
9	0.000	0.016	0.016	0.000	---	NonR	0.000	0.000
	2.083	0.016	0.016	0.000			0.000	0.000
10	2.084	0.016	0.016	0.000	---	NonR	0.000	0.000
	24.000	0.016	0.016	0.000			0.000	0.000
11	13.500	0.068	0.000	0.000	---	NonR	0.000	0.000
	24.000	0.068	0.000	0.000			0.000	0.000
12	13.500	0.044	0.000	0.240	0.0%	Red	0.000	0.000
	24.000	0.044	0.000	0.240			0.000	0.000
13	13.500	0.387	0.000	0.000	---	NonR	0.000	0.000
	24.000	0.387	0.000	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 24.95 kips 1.00Vn = 79.20 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu	@	Lb	Cb	Phi	Phi*Mn
			kip-ft	ft	ft			kip-ft
Left	PreCmp-	1.4DL	-2.3	2.1	2.1	1.00	0.90	75.38
	Max -	1.2DL+1.6LL	-50.5	2.1	2.1	1.00	0.90	75.38
Center	PreCmp+	1.4DL	20.9	12.9	0.0	1.00	0.90	75.38
	PreCmp-	1.4DL	-2.3	2.1	11.4	1.31	0.90	33.04
	Init DL	1.4DL	20.9	13.0	---	---		
	Max +	1.2DL+1.6LL	84.8	14.1	---	---	0.90	136.16
	Max -	1.2DL+1.6LL	-50.5	2.1	11.4	2.39	0.90	60.18
Controlling		1.2DL+1.6LL	-50.5	2.1	11.4	2.39	0.90	60.18

REACTIONS (kips):

	Left	Right
Initial reaction	4.14	2.90
DL reaction	16.70	7.53
Max +LL reaction	12.20	5.05
Max -LL reaction	-0.10	-0.85
Max +total reaction (factored)	39.56	17.11

DEFLECTIONS:

Left cantilever:

Init load (in)	= 0.125	L/D =	399	
Pos Live load (in)	= -0.058	L/D =	865 > 360	
Neg Live load (in)	= 0.063	L/D =	798 > 360	
Pos Post Comp load (in)	= -0.063	L/D =	789 > 240	0.30
Neg Post Comp load (in)	= 0.057	L/D =	876 > 240	0.27
Neg Total load (in)	= 0.182	L/D =	274 > 240	0.88

Center span:

Initial load (in)	at 13.48 ft = -0.433	L/D = 608	
Live load (in)	at 13.48 ft = -0.219	L/D = 1199 > 360	0.30

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Center span:

Post Comp load (in)	at	13.48 ft	=	-0.339	L/D	= 777	> 240	0.31
Net Total load (in)	at	13.48 ft	=	-0.771	L/D	= 341	> 240	0.70

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Floor Type: FIRST FLOOR **Beam Number = 241**

SPAN INFORMATION (ft): I-End (-1.75,11.75) J-End (11.75,13.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W12X14 Fy = 50.0 ksi
Total Beam Length (ft) = 6.00
Cantilever on left (ft) = 2.00
Mp (kip-ft) = 72.50

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
0.000	0.52	0.40	0.0	0.00	0.00	0.0	0.00	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	1.741	0.016	0.000			0.000
2	0.000	0.003	0.015	0.0%	Red	0.000
	1.741	0.003	0.015			0.000
3	1.742	0.015	0.000	---	NonR	0.000
	2.000	0.000	0.000			0.000
4	1.742	0.003	0.015	0.0%	Red	0.000
	2.000	0.000	0.000			0.000
5	0.000	0.014	0.000	---	NonR	0.000
	2.000	0.014	0.000			0.000
6	2.000	0.014	0.000	---	NonR	0.000
	6.000	0.014	0.000			0.000
7	2.000	0.410	0.000	---	NonR	0.000
	6.000	0.410	0.000			0.000
8	2.000	0.148	0.540	0.0%	Red	0.000
	6.000	0.148	0.540			0.000
9	2.000	0.387	0.000	---	NonR	0.000
	6.000	0.387	0.000			0.000
10	2.000	0.000	0.300	0.0%	Roof	0.000
	6.000	0.000	0.300			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 5.65 kips 0.90Vn = 64.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi k
Left	Max -	1.2DL+1.6LL	-2.6	2.0	2.0	1.00	0.90	[illegible]
Center	Max +	1.2DL+1.6LL	4.3	4.1	4.0	1.17	0.90	65.25
	Max -	1.2DL+1.6LL	-2.6	2.0	4.0	2.28	0.90	65.25
Controlling		1.2DL+1.6LL	4.3	4.1	4.0	1.17	0.90	65.25

REACTIONS (kips):

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	Left	Right
DL reaction	2.78	1.64
Max +LL reaction	2.31	1.68
Max -LL reaction	0.00	-0.21
Max +total reaction (factored)	7.03	4.66

DEFLECTIONS: **Ratio**

Left cantilever:

Dead load (in)	= 0.000				
Pos Live load (in)	= -0.002	L/D = 21734 > 360			0.02
Neg Live load (in)	= 0.003	L/D = 15931 > 360			0.02
Pos Total load (in)	= -0.002	L/D = 27709 > 240			0.01
Neg Total load (in)	= 0.003	L/D = 13757 > 240			0.02

Center span:

Dead load (in)	at 4.06 ft = -0.001	L/D = 3399			
Live load (in)	at 4.06 ft = -0.002	L/D = 2551	>	360	0.01
Net Total load (in)	at 4.06 ft = -0.003	L/D = 1457	>	240	0.02

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Floor Type: FIRST FLOOR **Beam Number = 245**

SPAN INFORMATION (ft): I-End (0.25,-1.75) J-End (0.25,1.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 8.83
Cantilever on left (ft) = 4.00
Mp (kip-ft) = 52.50

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
0.000	0.61	0.12	0.0	0.00	0.00	0.0	0.01	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	4.000	0.016	0.000	---	NonR	0.000
	8.833	0.016	0.000			0.000
2	4.000	0.003	0.010	0.0%	Red	0.000
	8.833	0.003	0.010			0.000
3	0.000	0.016	0.000	---	NonR	0.000
	4.000	0.016	0.000			0.000
4	0.000	0.003	0.010	0.0%	Red	0.000
	4.000	0.003	0.010			0.000
5	0.000	0.012	0.000	---	NonR	0.000
	4.000	0.012	0.000			0.000
6	4.000	0.012	0.000	---	NonR	0.000
	8.833	0.012	0.000			0.000
7	0.000	0.347	0.000	---	NonR	0.000
	4.000	0.347	0.000			0.000
8	0.000	0.154	0.561	0.0%	Red	0.000
	4.000	0.154	0.561			0.000
9	4.000	0.604	0.000	---	NonR	0.000
	8.833	0.604	0.000			0.000
10	4.000	0.270	0.981	0.0%	Red	0.000
	8.833	0.270	0.981			0.000
11	4.000	0.387	0.000	---	NonR	0.000
	8.833	0.387	0.000			0.000
12	0.000	0.387	0.000	---	NonR	0.000
	4.000	0.387	0.000			0.000
13	0.000	0.000	0.181	0.0%	Roof	0.000
	4.000	0.000	0.181			0.000
14	4.000	0.000	0.300	0.0%	Roof	0.000
	7.750	0.000	0.300			0.000
15	7.750	0.000	0.086	0.0%	Roof	0.000
	8.833	0.000	0.086			0.000
16	7.750	0.034	0.214	0.0%	Roof	0.000
	8.833	0.034	0.214			0.000

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Load	Dist	DL	LL	Red%	Type	PartL
17	4.000	0.000	0.013	0.0%	Roof	0.000
	8.833	0.000	0.013			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 13.38 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Left	Max -	1.2DL+1.6LL	-22.2	4.0	4.0	1.00	0.90	42.91
Center	Max +	1.2DL+1.6LL	5.6	7.1	4.8	2.22	0.90	46.90
	Max -	1.2DL+1.6LL	-22.2	4.0	4.8	2.17	0.90	46.90
Controlling		1.2DL+1.6LL	-22.2	4.0	4.0	1.00	0.90	42.91

REACTIONS (kips):

	Left	Right
DL reaction	9.43	1.13
Max +LL reaction	7.64	3.15
Max -LL reaction	0.00	-1.35
Max +total reaction (factored)	23.54	6.40
Max -total reaction	13.20	1.59

DEFLECTIONS: **Ratio**

Left cantilever:

Dead load (in)	= -0.090		L/D = 1071		
Pos Live load (in)	= -0.076		L/D = 1258 > 360		0.29
Neg Live load (in)	= 0.027		L/D = 3533 > 360		0.10
Pos Total load (in)	= -0.166		L/D = 578 > 240		0.42

Center span:

Dead load (in)	at 5.81 ft = 0.007		L/D = 8766		
Live load (in)	at 5.81 ft = 0.011		L/D = 5405 > 360		0.07
Net Total load (in)	at 5.81 ft = 0.017		L/D = 3344 > 240		0.07

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Floor Type: FIRST FLOOR **Beam Number = 247**

SPAN INFORMATION (ft): I-End (0.25,-1.75) J-End (1.83,-1.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 2.08
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	2.083	0.016	0.000			0.000
2	0.000	0.003	0.010	0.0%	Red	0.000
	2.083	0.003	0.010			0.000
3	0.000	0.120	0.000	---	NonR	0.000
	2.083	0.120	0.000			0.000
4	0.000	0.022	0.080	0.0%	Red	0.000
	2.083	0.022	0.080			0.000
5	0.000	0.012	0.000	---	NonR	0.000
	2.083	0.012	0.000			0.000
6	0.000	0.016	0.000	---	NonR	0.000
	2.083	0.016	0.000			0.000
7	0.000	0.006	0.021	0.0%	Red	0.000
	2.083	0.006	0.021			0.000
8	0.000	0.387	0.000	---	NonR	0.000
	2.083	0.387	0.000			0.000
9	0.000	0.000	0.013	0.0%	Roof	0.000
	2.083	0.000	0.013			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 0.93 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi k
Center	Max +	1.2DL+1.6LL	0.5	1.0	0.0	1.00	0.90	4
Controlling		1.2DL+1.6LL	0.5	1.0	0.0	1.00	0.90	4

REACTIONS (kips):

	Left	Right
DL reaction	0.61	0.61
Max +LL reaction	0.13	0.13
Max +total reaction (factored)	0.93	0.93

DEFLECTIONS: **Ratio**

Dead load (in)	at 1.04 ft = -0.000	
Live load (in)	at 1.04 ft = -0.000	
Net Total load (in)	at 1.04 ft = -0.000	

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Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 248**

SPAN INFORMATION (ft): I-End (157.67,34.33) J-End (157.67,49.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X26 Fy = 50.0 ksi
Total Beam Length (ft) = 15.42

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	perpendicular	perpendicular
Decking type	ASC 2W	ASC 2W

beff (in)	=	46.25	Y bar(in)	=	16.48
Mnf (kip-ft)	=	392.13	Mn (kip-ft)	=	275.96
C (kips)	=	98.21	PNA (in)	=	11.78
Ieff (in4)	=	704.99	Itr (in4)	=	1099.85
Stud length (in)	=	4.00	Stud diam (in)	=	0.75

Rg Stud Red. Factor Rg[1] = 1.00 Rg[2] = 0.85
Rp Stud Red. Factor Rp[1] = 0.60 Rp[2] = 0.60
Stud Capacity (kips) Qn[1] = 17.2 Qn[2] = 14.6
# of studs: Max = 30 Partial = 19 Actual = 19
Number of Stud Rows = 2 Percent of Full Composite Action = 25.16

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
					L					
10.333	10.84	4.78	7.86	11.3	0.00	0.00	0.0	1.17	0.0	0.00
			-0.11	11.4	0.00	0.00	0.0	0.00	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.431	0.431	0.000	---	NonR	0.000	0.000
	15.416	0.431	0.431	0.000			0.000	0.000
2	0.000	0.049	0.000	0.445	11.3%	Red	0.000	0.000
	0.250	0.049	0.000	0.445			0.000	0.000
3	0.000	0.030	0.000	0.109	11.3%	Red	0.000	0.000
	0.250	0.030	0.000	0.109			0.000	0.000
4	0.250	0.079	0.000	0.287	11.3%	Red	0.000	0.000
	15.416	0.079	0.000	0.287			0.000	0.000
5	0.000	0.026	0.026	0.000	---	NonR	0.000	0.000
	15.416	0.026	0.026	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 25.56 kips 0.90Vn = 105.97 kips

Gravity Beam Design

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MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	Vu	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	PreCmp+	1.4DL	39.6	10.3	0.0	1.00	0.90	165.75
	Init DL	1.4DL	39.6	10.3	---	---		
	Max +	1.2DL+1.6LL	116.4	10.3	---	---	0.90	248.36
Controlling		1.2DL+1.6LL	116.4	10.3	---	---	0.90	248.36

REACTIONS (kips):

	Left	Right
Initial reaction	5.10	6.73
DL reaction	7.71	11.40
Max +LL reaction	4.71	7.43
Max -LL reaction	-0.03	-0.07
Max +total reaction (factored)	16.79	25.56

DEFLECTIONS:

					Ratio
Initial load (in)	at	8.09 ft	= -0.128	L/D = 1445	
Live load (in)	at	8.17 ft	= -0.061	L/D = 3050 > 360	0.12
Post Comp load (in)	at	8.17 ft	= -0.099	L/D = 1870 > 240	0.13
Net Total load (in)	at	8.17 ft	= -0.227	L/D = 815 > 240	0.29

PRMU2022012

Floor Type: FIRST FLOOR **Beam Number = 249**

SPAN INFORMATION (ft): I-End (174.50,34.33) J-End (174.50,49.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 15.42

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	perpendicular	perpendicular
Decking type	ASC 2W	ASC 2W

beff (in)	=	46.25	Y bar(in)	=	12.49
Mnf (kip-ft)	=	147.46	Mn (kip-ft)	=	91.70
C (kips)	=	51.69	PNA (in)	=	7.66
Ieff (in4)	=	193.01	Itr (in4)	=	311.41
Stud length (in)	=	4.00	Stud diam (in)	=	0.75

Stud Capacity (kips) Qn = 17.2 Rg = 1.00 Rp = 0.60
# of studs: Max = 15 Partial = 6 Actual = 6
Number of Stud Rows = 1 Percent of Full Composite Action = 29.20

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.538	0.538	0.000	---	NonR	0.000	0.000
	15.416	0.538	0.538	0.000			0.000	0.000
2	0.000	0.049	0.000	0.446	0.0%	Red	0.000	0.000
	0.250	0.049	0.000	0.446			0.000	0.000
3	0.250	0.099	0.000	0.358	0.0%	Red	0.000	0.000
	15.416	0.099	0.000	0.358			0.000	0.000
4	0.000	0.050	0.000	0.180	0.0%	Red	0.000	0.000
	0.250	0.050	0.000	0.180			0.000	0.000
5	0.000	0.012	0.012	0.000	---	NonR	0.000	0.000
	15.416	0.012	0.012	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 10.52 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	PreCmp+	1.4DL	22.9	7.7	0.0	1.00	0.90	46.90
	Init DL	1.4DL	22.9	7.7	---	---		
	Max +	1.2DL+1.6LL	40.2	7.7	---	---	0.90	82.53
Controlling		1.4DL	22.9	7.7	0.0	1.00	0.90	46.90

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REACTIONS (kips):

	Left	Right
Initial reaction	4.24	6.24
DL reaction	5.00	7.00
Max +LL reaction	2.83	3.76
Max +total reaction (factored)	10.52	10.42

DEFLECTIONS:

						Ratio
Initial load (in)	at	7.71 ft	=	-0.448	L/D = 413	
Live load (in)	at	7.71 ft	=	-0.081	L/D = 2273 > 360	0.16
Post Comp load (in)	at	7.71 ft	=	-0.104	L/D = 1783 > 240	0.13
Net Total load (in)	at	7.71 ft	=	-0.552	L/D = 335 > 240	0.72

PRMU2022012

Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 250**

SPAN INFORMATION (ft): I-End (174.50,25.58) J-End (174.50,34.33)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 8.75
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.295	0.000	---	NonR	0.000
	8.750	0.295	0.000			0.000
2	0.000	0.030	0.275	0.0%	Red	0.000
	8.750	0.030	0.275			0.000
3	0.000	0.050	0.180	0.0%	Red	0.000
	8.750	0.050	0.180			0.000
4	0.000	0.012	0.000	---	NonR	0.000
	8.750	0.012	0.000			0.000
5	0.000	0.020	0.000	---	NonR	0.000
	8.750	0.020	0.000			0.000
6	0.000	0.055	0.499	0.0%	Red	0.000
	8.750	0.055	0.500			0.000
7	0.000	0.387	0.000	---	NonR	0.000
	8.750	0.387	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 11.14 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	24.4	4.4	0.0	1.00	0.90	46.90
Controlling		1.2DL+1.6LL	24.4	4.4	0.0	1.00	0.90	46.90

REACTIONS (kips):

	Left	Right
DL reaction	3.72	3.72
Max +LL reaction	4.17	4.17
Max +total reaction (factored)	11.13	11.14

DEFLECTIONS: **Ratio**

Dead load (in)	at 4.38 ft =	-0.072	L/D = 1462		
Live load (in)	at 4.38 ft =	-0.081	L/D = 1302 > 360		0.28
Net Total load (in)	at 4.38 ft =	-0.152	L/D = 689 > 240		0.35

Gravity Beam Design

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Floor Type: FIRST FLOOR **Beam Number = 251**

SPAN INFORMATION (ft): I-End (157.67,25.58) J-End (157.67,34.33)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W12X14 Fy = 50.0 ksi
Total Beam Length (ft) = 8.75
Mp (kip-ft) = 72.50

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
3.167	0.52	0.59	0.0	0.00	0.00	0.0	0.14	0.0	0.00
3.167	3.05	3.84	0.0	0.00	0.00	0.0	0.89	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.329	0.000	---	NonR	0.000
	8.750	0.329	0.000			0.000
2	0.000	0.033	0.297	0.0%	Red	0.000
	3.166	0.033	0.297			0.000
3	3.167	0.003	0.024	0.0%	Red	0.000
	8.750	0.003	0.024			0.000
4	3.167	0.030	0.109	0.0%	Red	0.000
	8.750	0.030	0.109			0.000
5	0.000	0.027	0.250	0.0%	Red	0.000
	8.750	0.027	0.250			0.000
6	0.000	0.014	0.000	---	NonR	0.000
	8.750	0.014	0.000			0.000
7	0.000	0.085	0.000	---	NonR	0.000
	8.750	0.085	0.000			0.000
8	0.000	0.055	0.500	0.0%	Red	0.000
	8.750	0.055	0.500			0.000
9	0.000	0.387	0.000	---	NonR	0.000
	8.750	0.387	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 20.05 kips 0.90Vn = 64.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi k
Center	Max +	1.2DL+1.6LL	49.5	3.2	0.0	1.00	0.90	6
Controlling		1.2DL+1.6LL	49.5	3.2	0.0	1.00	0.90	6

REACTIONS (kips):

	Left	Right
DL reaction	6.35	5.36
Max +LL reaction	7.77	5.93
Max +total reaction (factored)	20.05	15.93

DEFLECTIONS: **Ratio**

Dead load (in)	at	4.24 ft	=	-0.078	L/D	=	1349		
Live load (in)	at	4.20 ft	=	-0.094	L/D	=	1119	> 360	0.32
Net Total load (in)	at	4.20 ft	=	-0.172	L/D	=	612	> 240	0.39

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Floor Type: FIRST FLOOR **Beam Number = 252**

SPAN INFORMATION (ft): I-End (157.67,34.33) J-End (174.50,34.33)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X31 Fy = 50.0 ksi
Total Beam Length (ft) = 16.83
Mp (kip-ft) = 225.00

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
5.000	1.43	2.59	26.6	0.00	0.00	0.0	0.00	0.0	0.00
8.417	4.70	2.72	26.6	0.00	0.00	0.0	0.00	0.0	0.00
11.833	0.76	2.59	26.6	0.00	0.00	0.0	0.00	0.0	0.00
5.000	1.21	2.59	26.6	0.00	0.00	0.0	0.00	0.0	0.00
11.833	0.76	2.59	26.6	0.00	0.00	0.0	0.00	0.0	0.00
5.000	1.20	2.59	26.6	0.00	0.00	0.0	0.00	0.0	0.00
11.833	1.06	2.59	26.6	0.00	0.00	0.0	0.00	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.031	0.000	---	NonR	0.000
	16.833	0.031	0.000			0.000
2	0.000	0.443	0.000	---	NonR	0.000
	16.833	0.443	0.000			0.000
3	0.000	0.170	0.617	26.6%	Red	0.000
	16.833	0.170	0.617			0.000
4	0.000	0.387	0.000	---	NonR	0.000
	16.833	0.387	0.000			0.000
5	0.000	0.000	0.302	0.3%	Roof	0.000
	16.833	0.000	0.302			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 38.27 kips 1.00Vn = 131.18 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi k
Center	Max +	1.2DL+1.6LL	188.6	8.4	3.4	1.06	0.90	20
Controlling		1.2DL+1.6LL	188.6	8.4	3.4	1.06	0.90	20

REACTIONS (kips):

	Left	Right
DL reaction	14.50	13.99
Max +LL reaction	13.05	13.05
Max +total reaction (factored)	38.27	37.66

DEFLECTIONS:

									Ratio
Dead load (in)	at	8.42 ft	=	-0.325	L/D	=	621		
Live load (in)	at	8.42 ft	=	-0.298	L/D	=	677	> 360	0.53
Net Total load (in)	at	8.42 ft	=	-0.624	L/D	=	324	> 240	0.74

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Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 254**

SPAN INFORMATION (ft): I-End (123.83,28.75) J-End (131.13,28.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X15 Fy = 50.0 ksi
Total Beam Length (ft) = 7.29
Mp (kip-ft) = 66.67

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
2.375	2.94	3.67	0.0	0.00	0.00	0.0	0.85	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.015	0.000	---	NonR	0.000
	7.291	0.015	0.000			0.000
2	0.000	0.674	0.000	---	NonR	0.000
	2.375	0.674	0.000			0.000
3	0.000	0.231	0.840	0.0%	Red	0.000
	2.375	0.231	0.840			0.000
4	0.000	0.071	0.650	0.0%	Red	0.000
	2.375	0.071	0.650			0.000
5	0.000	0.387	0.000	---	NonR	0.000
	2.375	0.387	0.000			0.000
6	0.000	0.000	0.280	0.0%	Roof	0.000
	2.375	0.000	0.280			0.000
7	0.000	0.010	0.064	0.0%	Roof	0.000
	2.375	0.010	0.064			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 16.43 kips 1.00Vn = 68.93 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	26.0	2.4	7.3	1.36	0.90	56.83
Controlling		1.2DL+1.6LL	26.0	2.4	7.3	1.36	0.90	56.83

REACTIONS (kips):

	Left	Right
DL reaction	4.77	1.54
Max +LL reaction	6.69	2.18
Max +total reaction (factored)	16.43	5.34

DEFLECTIONS: **Ratio**

Dead load (in) at 3.28 ft = -0.028 L/D = 3083
Live load (in) at 3.28 ft = -0.041 L/D = 2145 > 360 0.17
Net Total load (in) at 3.28 ft = -0.069 L/D = 1265 > 240 0.19

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Floor Type: FIRST FLOOR **Beam Number = 255**

SPAN INFORMATION (ft): I-End (141.17,22.2[illegible]) J-End (147.51,83)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X67 Fy = 50.0 ksi
Total Beam Length (ft) = 29.58
Cantilever on right (ft) = 7.17

COMPOSITE PROPERTIES (Not Shored):

		Left			Right
Deck Label		5.5" O/2W			5.5" O/2W
Concrete thickness (in)		3.50			3.50
Unit weight concrete (pcf)		150.00			150.00
f'c (ksi)		4.00			4.00
Decking Orientation		perpendicular			perpendicular
Decking type		ASC 2W			ASC 2W
beff (in)	= 67.25	Y bar(in)		=	15.53
Mnf (kip-ft)	= 922.70	Mn (kip-ft)		=	720.28
C (kips)	= 203.31	PNA (in)		=	13.30
Ieff (in4)	= 1846.50	Itr (in4)		=	2724.72
Stud length (in)	= 4.00	Stud diam (in)		=	0.75

Rg Stud Red. Factor Rg[1] = 1.00 Rg[2] = 0.85 Rg[3] = 0.70
Rp Stud Red. Factor Rp[1] = 0.60 Rp[2] = 0.60 Rp[3] = 0.60
Stud Capacity (kips) Qn[1] = 17.2 Qn[2] = 14.6 Qn[3] = 12.1
# of studs: Max = 66 Partial = 56 Actual = 56
Number of Stud Rows = 3 Percent of Full Composite Action = 25.40

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
6.500	6.62	0.12	7.02	26.2	0.00	0.00	0.0	1.55	0.0	0.00
6.500	6.30	0.11	6.68	26.2	0.00	0.00	0.0	1.47	0.0	0.00
23.500	6.83	0.73	5.49	0.0	0.00	0.00	0.0	1.38	0.0	0.00
23.500	6.86	1.00	5.54	0.0	0.00	0.00	0.0	1.32	0.0	0.00
27.500	0.05	0.05	0.05	0.0	0.00	0.00	0.0	0.00	0.0	0.00
29.583	0.54	0.46	0.41	0.0	0.00	0.00	0.0	0.00	0.0	0.00
29.583	1.23	1.04	0.99	0.0	0.00	0.00	0.0	0.00	0.0	0.00
27.500	4.68	0.00	4.64	0.0	0.00	0.00	0.0	0.65	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.618	0.618	0.000	---	NonR	0.000	0.000
	22.416	0.618	0.618	0.000			0.000	0.000
2	0.000	0.113	0.000	1.030	26.2%	Red	0.000	0.000
	6.500	0.113	0.000	1.030			0.000	0.000
3	6.500	0.113	0.000	0.412	26.2%	Red	0.000	0.000
	22.416	0.113	0.000	0.412			0.000	0.000

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Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
4	22.417	0.618	0.618	0.000	---	NonR	0.000	0.000
	23.500	0.618	0.618	0.000			0.000	0.000
5	22.417	0.113	0.000	0.412	0.0%	Red	0.000	0.000
	23.500	0.113	0.000	0.412			0.000	0.000
6	0.000	0.067	0.067	0.000	---	NonR	0.000	0.000
	22.416	0.067	0.067	0.000			0.000	0.000
7	22.417	0.067	0.067	0.000	---	NonR	0.000	0.000
	29.583	0.067	0.067	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 59.19 kips 1.00Vn = 193.15 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	PreCmp+	1.4DL	51.3	10.1	0.0	1.00	0.90	487.50
	PreCmp-	1.4DL	-21.0	22.4	15.9	1.27	0.90	487.50
	Init DL	1.4DL	51.3	10.1	---	---		
	Max +	1.2DL+1.6LL	235.4	6.5	---	---	0.90	648.25
	Max -	1.2DL+1.6LL	-148.0	22.4	15.9	2.54	0.90	487.50
Right	PreCmp-	1.4DL	-21.0	22.4	1.1	1.00	0.90	487.50
	Max -	1.2DL+1.6LL	-148.0	22.4	1.1	1.00	0.90	487.50
Controlling		1.2DL+1.6LL	235.4	6.5	---	---	0.90	648.25

REACTIONS (kips):

	Left	Right
Initial reaction	7.17	12.85
DL reaction	15.72	36.54
Max +LL reaction	15.26	30.88
Max -LL reaction	-2.33	0.00
Max +total reaction (factored)	43.28	93.25

DEFLECTIONS: **Ratio**

Center span:

Initial load (in)	at 10.20 ft	=	-0.114	L/D	=	2369	
Live load (in)	at 10.20 ft	=	-0.119	L/D	=	2259 > 360	0.16
Post Comp load (in)	at 10.20 ft	=	-0.168	L/D	=	1597 > 240	0.15
Net Total load (in)	at 10.20 ft	=	-0.282	L/D	=	954 > 240	0.25

Right cantilever:

Init load (in)	=	0.082	L/D	=	2089		
Pos Live load (in)	=	-0.128	L/D	=	1343 > 360		0.27
Neg Live load (in)	=	0.108	L/D	=	1585 > 360		0.23
Pos Post Comp load (in)	=	-0.143	L/D	=	1202 > 240		0.20
Neg Post Comp load (in)	=	0.094	L/D	=	1839 > 240		0.13
Pos Total load (in)	=	-0.061	L/D	=	2833 > 240		0.08
Neg Total load (in)	=	0.176	L/D	=	978 > 240		0.25

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Floor Type: FIRST FLOOR **Beam Number = 257**

SPAN INFORMATION (ft): I-End (141.17,44.67) - J-End (157.67,44.67)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X26 Fy = 50.0 ksi
Total Beam Length (ft) = 16.50
Mp (kip-ft) = 184.17

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
10.552	6.71	4.81	9.3	0.00	0.00	0.0	1.09	0.0	0.00
		-0.17	9.4	0.00	0.00	0.0	0.00	0.0	0.00
10.552	9.91	7.48	9.3	0.00	0.00	0.0	0.75	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.026	0.000	---	NonR	0.000
	16.500	0.026	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 26.30 kips 0.90Vn = 105.97 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	155.9	10.6	10.6	1.66	0.90	165.75
Controlling		1.2DL+1.6LL	155.9	10.6	10.6	1.66	0.90	165.75

REACTIONS (kips):

	Left	Right
DL reaction	6.21	10.84
Max +LL reaction	4.68	8.31
Max -LL reaction	-0.06	-0.10
Max +total reaction (factored)	14.94	26.30

DEFLECTIONS:

Dead load (in)	at 8.91 ft	=	-0.282	L/D	=	701	
Live load (in)	at 8.91 ft	=	-0.217	L/D	=	913 > 360	
Net Total load (in)	at 8.91 ft	=	-0.499	L/D	=	397 > 240	

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Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 258**

SPAN INFORMATION (ft): I-End (151.72,22.25) J-End (151.72,44.67)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W16X31 Fy = 50.0 ksi
Total Beam Length (ft) = 22.42

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	perpendicular	perpendicular
Decking type	ASC 2W	ASC 2W

beff (in)	=	67.25	Y bar(in)	=	17.09
Mnf (kip-ft)	=	478.44	Mn (kip-ft)	=	333.62
C (kips)	=	115.44	PNA (in)	=	12.15
Ieff (in4)	=	887.34	Itr (in4)	=	1393.84
Stud length (in)	=	4.00	Stud diam (in)	=	0.75

Rg Stud Red. Factor Rg[1] = 1.00 Rg[2] = 0.85
Rp Stud Red. Factor Rp[1] = 0.60 Rp[2] = 0.60
Stud Capacity (kips) Qn[1] = 17.2 Qn[2] = 14.6
# of studs: Max = 44 Partial = 25 Actual = 25
Number of Stud Rows = 2 Percent of Full Composite Action = 25.28

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
6.500	3.70	0.04	4.43	21.3	0.00	0.00	0.0	1.02	0.0	0.00
6.500	6.62	0.12	7.02	21.3	0.00	0.00	0.0	1.55	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.495	0.495	0.000	---	NonR	0.000	0.000
	22.416	0.495	0.495	0.000			0.000	0.000
2	0.000	0.091	0.000	0.825	21.3%	Red	0.000	0.000
	6.500	0.091	0.000	0.825			0.000	0.000
3	6.500	0.091	0.000	0.330	21.3%	Red	0.000	0.000
	22.416	0.091	0.000	0.330			0.000	0.000
4	0.000	0.031	0.031	0.000	---	NonR	0.000	0.000
	22.416	0.031	0.031	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 38.36 kips 1.00Vn = 131.18 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	PreCmp+	1.4DL	47.0	11.1	0.0	1.00	0.90	202.50

Gravity Beam Design

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Span	Cond	LoadCombo	Mu	@	Lb	Cb	Phi	Phi*Mn
	Init DL	1.4DL	47.0	11.1	---	---		
	Max +	1.2DL+1.6LL	211.[illegible]	[illegible]	---	---	0.90	300.26
Controlling		1.2DL+1.6LL	211.[illegible]	[illegible]	---	---	0.90	300.26

REACTIONS (kips):

	Left	Right
Initial reaction	6.01	5.94
DL reaction	14.24	9.91
Max +LL reaction	13.29	6.63
Max +total reaction (factored)	38.36	22.50

DEFLECTIONS:

								Ratio
Initial load (in)	at 10.87 ft	=	-0.279	L/D	=	964		
Live load (in)	at 10.65 ft	=	-0.216	L/D	=	1246	> 360	0.29
Post Comp load (in)	at 10.65 ft	=	-0.361	L/D	=	745	> 240	0.32
Net Total load (in)	at 10.65 ft	=	-0.639	L/D	=	421	> 240	0.57

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Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 260**

SPAN INFORMATION (ft): I-End (151.72,28.75) J-End (157.67,28.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 5.95
Mp (kip-ft) = 52.50

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
0.792	3.06	3.84	0.0	0.00	0.00	0.0	0.89	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.012	0.000	---	NonR	0.000
	5.947	0.012	0.000			0.000
2	0.000	0.674	0.000	---	NonR	0.000
	0.791	0.674	0.000			0.000
3	0.000	0.231	0.840	0.0%	Red	0.000
	0.791	0.231	0.840			0.000
4	0.000	0.071	0.650	0.0%	Red	0.000
	0.791	0.071	0.650			0.000
5	0.000	0.387	0.000	---	NonR	0.000
	0.791	0.387	0.000			0.000
6	0.000	0.000	0.280	0.0%	Roof	0.000
	0.791	0.000	0.280			0.000
7	0.000	0.010	0.064	0.0%	Roof	0.000
	0.791	0.010	0.064			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 13.17 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu	@	Lb	Cb	Phi	Phi*Mn
			kip-ft	ft	ft			kip-ft
Center	Max +	1.2DL+1.6LL	9.0	0.8	5.9	1.50	0.90	46.90
Controlling		1.2DL+1.6LL	9.0	0.8	5.9	1.50	0.90	46.90

REACTIONS (kips):

	Left	Right
DL reaction	3.70	0.52
Max +LL reaction	5.45	0.73
Max +total reaction (factored)	13.17	1.78

DEFLECTIONS: **Ratio**

Dead load (in)	at 2.56 ft =	-0.007	L/D = 9902		
Live load (in)	at 2.56 ft =	-0.011	L/D = 6746 > 360		0.05
Net Total load (in)	at 2.56 ft =	-0.018	L/D = 4013 > 240		0.06

Gravity Beam Design

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Floor Type: FIRST FLOOR **Beam Number = 262**

SPAN INFORMATION (ft): I-End (166.08,34.33) J-End (166.08,49.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 15.42

COMPOSITE PROPERTIES (Not Shored):

		Left			Right
Deck Label		5.5" O/2W			5.5" O/2W
Concrete thickness (in)		3.50			3.50
Unit weight concrete (pcf)		150.00			150.00
f'c (ksi)		4.00			4.00
Decking Orientation		perpendicular			perpendicular
Decking type		ASC 2W			ASC 2W
beff (in)	= 46.25	Y bar(in)		=	12.49
Mnf (kip-ft)	= 147.46	Mn (kip-ft)		=	91.70
C (kips)	= 51.69	PNA (in)		=	7.66
Ieff (in4)	= 193.01	Itr (in4)		=	311.41
Stud length (in)	= 4.00	Stud diam (in)		=	0.75

Stud Capacity (kips) Qn = 17.2 Rg = 1.00 Rp = 0.60
# of studs: Max = 15 Partial = 6 Actual = 6
Number of Stud Rows = 1 Percent of Full Composite Action = 29.20

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.505	0.505	0.000	---	NonR	0.000	0.000
	15.416	0.505	0.505	0.000			0.000	0.000
2	0.000	0.093	0.000	0.842	0.0%	Red	0.000	0.000
	0.250	0.093	0.000	0.842			0.000	0.000
3	0.250	0.093	0.000	0.337	0.0%	Red	0.000	0.000
	15.416	0.093	0.000	0.337			0.000	0.000
4	0.000	0.012	0.012	0.000	---	NonR	0.000	0.000
	15.416	0.012	0.012	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 9.99 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu	@	Lb	Cb	Phi	Phi
			kip-ft	ft	ft			k
Center	PreCmp+	1.4DL	21.5	7.7	0.0	1.00	0.90	4
	Init DL	1.4DL	21.5	7.7	---	---		
	Max +	1.2DL+1.6LL	37.8	7.7	---	---	0.90	82.53
Controlling		1.4DL	21.5	7.7	0.0	1.00	0.90	46.90

REACTIONS (kips):

	Left	Right
Initial reaction	3.99	3.99
DL reaction	4.70	4.70

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	Left	Right
Max +LL reaction	2.72	2.60
Max +total reaction (factored)	9.99	9.79

DEFLECTIONS:

							Ratio
Initial load (in)	at	7.71 ft	=	-0.421	L/D = 439		
Live load (in)	at	7.71 ft	=	-0.077	L/D = 2418	> 360	0.15
Post Comp load (in)	at	7.71 ft	=	-0.098	L/D = 1897	> 240	0.13
Net Total load (in)	at	7.71 ft	=	-0.519	L/D = 356	> 240	0.67

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Floor Type: FIRST FLOOR **Beam Number = 263**

SPAN INFORMATION (ft): I-End (162.67,25.58) - J-End (171.42,34.33)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 8.75
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.249	0.000	---	NonR	0.000
	8.750	0.249	0.000			0.000
2	0.000	0.065	0.592	0.0%	Red	0.000
	8.750	0.065	0.592			0.000
3	0.000	0.012	0.000	---	NonR	0.000
	8.750	0.012	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 5.85 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	12.8	4.4	0.0	1.00	0.90	46.90
Controlling		1.2DL+1.6LL	12.8	4.4	0.0	1.00	0.90	46.90

REACTIONS (kips):

	Left	Right
DL reaction	1.43	1.43
Max +LL reaction	2.59	2.59
Max +total reaction (factored)	5.85	5.85

DEFLECTIONS:

							Ratio
Dead load (in)	at	4.38 ft	=	-0.028	L/D = 3807		
Live load (in)	at	4.38 ft	=	-0.050	L/D = 2099	> 360	0
Net Total load (in)	at	4.38 ft	=	-0.078	L/D = 1353	> 240	0

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Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 266**

SPAN INFORMATION (ft): I-End (141.17,-1.75) J-End (151.71,-1.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X19 Fy = 50.0 ksi
Total Beam Length (ft) = 10.55
Cantilever on right (ft) = 2.42
Mp (kip-ft) = 90.00

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
10.547	0.12	0.06	0.0	0.00	0.00	0.0	0.00	0.0	0.00
10.547	7.49	5.74	0.0	0.00	0.00	0.0	2.42	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	8.125	0.016	0.000	---	NonR	0.000
	10.546	0.016	0.000			0.000
2	8.125	0.003	0.010	0.0%	Red	0.000
	10.546	0.003	0.010			0.000
3	0.000	0.016	0.000	---	NonR	0.000
	8.125	0.016	0.000			0.000
4	0.000	0.003	0.010	0.2%	Red	0.000
	8.125	0.003	0.010			0.000
5	0.000	0.019	0.000	---	NonR	0.000
	8.125	0.019	0.000			0.000
6	8.125	0.019	0.000	---	NonR	0.000
	10.546	0.019	0.000			0.000
7	0.000	0.604	0.000	---	NonR	0.000
	8.125	0.604	0.000			0.000
8	8.125	0.668	0.000	---	NonR	0.000
	10.546	0.668	0.000			0.000
9	0.000	0.270	0.981	0.2%	Red	0.000
	8.125	0.270	0.981			0.000
10	8.125	0.267	0.970	0.0%	Red	0.000
	10.546	0.267	0.970			0.000
11	8.125	0.000	0.100	0.0%	Roof	0.000
	10.546	0.000	0.100			0.000
12	0.000	0.387	0.000	---	NonR	0.000
	8.125	0.387	0.000			0.000
13	8.125	0.387	0.000	---	NonR	0.000
	10.546	0.387	0.000			0.000
14	0.000	0.000	0.099	0.0%	Roof	0.000
	8.125	0.000	0.099			0.000
15	8.125	0.000	0.099	0.0%	Roof	0.000
	10.546	0.000	0.099			0.000
16	0.000	0.034	0.214	0.0%	Roof	0.000

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Load	Dist	DL	LL	Red%	Type	PartL
	8.125	0.034	0.214			0.000
17	8.125	0.034	0.214	0.0%	Roof	0.000
	10.546	0.034	0.214			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 31.75 kips 1.00Vn = 76.50 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu	@	Lb	Cb	Phi	Phi*Mn
			kip-ft	ft	ft			kip-ft
Center	Max +	1.2DL+1.6LL	18.4	3.2	8.1	1.77	0.90	81.00
	Max -	1.2DL+1.6LL	-65.4	8.1	8.1	2.16	0.90	81.00
Right	Max -	1.2DL+1.6LL	-65.4	8.1	2.4	1.00	0.90	81.00
Controlling		1.2DL+1.6LL	-65.4	8.1	8.1	2.16	0.90	81.00

REACTIONS (kips):

	Left	Right
DL reaction	2.64	19.18
Max +LL reaction	5.29	19.84
Max -LL reaction	-2.95	0.00
Max +total reaction (factored)	11.63	54.76
Max -total reaction	3.70	26.85

DEFLECTIONS: **Ratio**

Center span:

Dead load (in) at 5.08 ft = 0.015 L/D = 6474
Live load (in) at 5.08 ft = 0.062 L/D = 1566 > 360 0.23
Net Total load (in) at 5.08 ft = 0.077 L/D = 1261 > 240 0.19

Right cantilever:

Dead load (in) = -0.073 L/D = 799
Pos Live load (in) = -0.125 L/D = 464 > 360 0.78
Neg Live load (in) = 0.044 L/D = 1334 > 360 0.27
Pos Total load (in) = -0.198 L/D = 294 > 240 0

Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 269**

SPAN INFORMATION (ft): I-End (131.13,28.75) J-End (141.17,28.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X22 Fy = 50.0 ksi
Total Beam Length (ft) = 10.04
Mp (kip-ft) = 108.33

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.022	0.000	---	NonR	0.000
	10.041	0.022	0.000			0.000
2	0.011	0.576	0.000	---	NonR	0.000
	10.042	0.576	0.000			0.000
3	0.011	0.187	0.680	5.9%	Red	0.000
	10.042	0.187	0.680			0.000
4	0.011	0.071	0.650	5.9%	Red	0.000
	10.042	0.071	0.650			0.000
5	0.011	0.387	0.000	---	NonR	0.000
	10.042	0.387	0.000			0.000
6	0.011	0.000	0.230	0.0%	Roof	0.000
	10.042	0.000	0.230			0.000
7	0.011	0.010	0.064	0.0%	Roof	0.000
	10.042	0.010	0.064			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 19.97 kips 1.00Vn = 73.44 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	50.1	5.0	10.0	1.14	0.90	86.36
Controlling		1.2DL+1.6LL	50.1	5.0	10.0	1.14	0.90	86.36

REACTIONS (kips):

	Left	Right
DL reaction	6.28	6.30
Max +LL reaction	7.74	7.76
Max +total reaction (factored)	19.93	19.97

DEFLECTIONS: **Ratio**

Dead load (in)	at 5.02 ft =	-0.084	L/D = 1437		
Live load (in)	at 5.02 ft =	-0.103	L/D = 1167 > 360		0.31
Net Total load (in)	at 5.02 ft =	-0.187	L/D = 644 > 240		0.37

Gravity Beam Design

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Floor Type: FIRST FLOOR **Beam Number = 271**

SPAN INFORMATION (ft): I-End (141.17,28.75) J-End (152.42,28.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X22 Fy = 50.0 ksi
Total Beam Length (ft) = 10.55
Mp (kip-ft) = 108.33

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.022	0.000	---	NonR	0.000
	10.552	0.022	0.000			0.000
2	0.000	0.576	0.000	---	NonR	0.000
	10.552	0.576	0.000			0.000
3	0.000	0.187	0.680	7.6%	Red	0.000
	10.552	0.187	0.680			0.000
4	0.000	0.071	0.650	7.6%	Red	0.000
	10.552	0.071	0.650			0.000
5	0.000	0.387	0.000	---	NonR	0.000
	10.552	0.387	0.000			0.000
6	0.000	0.000	0.230	0.0%	Roof	0.000
	10.552	0.000	0.230			0.000
7	0.000	0.010	0.064	0.0%	Roof	0.000
	10.552	0.010	0.064			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 20.79 kips 1.00Vn = 73.44 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	54.8	5.3	10.6	1.14	0.90	84.03
Controlling		1.2DL+1.6LL	54.8	5.3	10.6	1.14	0.90	8

REACTIONS (kips):

	Left	Right
DL reaction	6.62	6.62
Max +LL reaction	8.03	8.03
Max +total reaction (factored)	20.79	20.79

DEFLECTIONS: **R**

Dead load (in)	at 5.28 ft =	-0.102	L/D = 1239		
Live load (in)	at 5.28 ft =	-0.124	L/D = 1021 > 360		0.
Net Total load (in)	at 5.28 ft =	-0.226	L/D = 560 > 240		0.43

PRMU20220123

Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 273**

SPAN INFORMATION (ft): I-End (41.79,51.83) J-End (51.58,51.83)

Beam Size (User Selected) = HSS6X3X3/16 Fy = 50.0 ksi
Total Beam Length (ft) = 9.79
Mp (kip-ft) = 23.29

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	9.791	0.016	0.000			0.000
2	0.000	0.003	0.015	0.0%	Red	0.000
	9.791	0.003	0.015			0.000
3	0.000	0.183	0.000	---	NonR	0.000
	9.791	0.183	0.000			0.000
4	0.000	0.033	0.183	0.0%	Red	0.000
	9.791	0.033	0.183			0.000
5	0.000	0.010	0.000	---	NonR	0.000
	9.791	0.010	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 2.99 kips 0.90Vn = 51.47 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	7.3	4.9	0.0	1.00	0.90	20.96
Controlling		1.2DL+1.6LL	7.3	4.9	0.0	1.00	0.90	20.96

REACTIONS (kips):

	Left	Right
DL reaction	1.20	1.20
Max +LL reaction	0.97	0.97
Max +total reaction (factored)	2.99	2.99

DEFLECTIONS: **Ratio**

Dead load (in)	at	4.90 ft	= -0.130	L/D = 903			
Live load (in)	at	4.90 ft	= -0.105	L/D = 1115	> 360		0.32
Net Total load (in)	at	4.90 ft	= -0.235	L/D = 499	> 240		0.48

Gravity Beam Design

Fire
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Building
Traffic
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Planning
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City of Puyallup

Floor Type: FIRST FLOOR **Beam Number = 274**

SPAN INFORMATION (ft): I-End (51.58,51.83) J-End (61.83,51.83)

Beam Size (User Selected) = HSS6X3X3/16 Fy = 50.0 ksi
Total Beam Length (ft) = 10.65
Mp (kip-ft) = 23.29

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	10.645	0.016	0.000			0.000
2	0.000	0.003	0.015	0.0%	Red	0.000
	10.645	0.003	0.015			0.000
3	0.000	0.183	0.000	---	NonR	0.000
	10.645	0.183	0.000			0.000
4	0.000	0.033	0.183	0.0%	Red	0.000
	10.645	0.033	0.183			0.000
5	0.000	0.010	0.000	---	NonR	0.000
	10.645	0.010	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 3.25 kips 0.90Vn = 51.47 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	8.6	5.3	0.0	1.00	0.90	20.96
Controlling		1.2DL+1.6LL	8.6	5.3	0.0	1.00	0.90	20.96

REACTIONS (kips):

	Left	Right
DL reaction	1.30	1.30
Max +LL reaction	1.05	1.05
Max +total reaction (factored)	3.25	3.25

DEFLECTIONS: **R**

Dead load (in)	at	5.32 ft	= -0.182	L/D = 703			
Live load (in)	at	5.32 ft	= -0.147	L/D = 868	> 360		0
Net Total load (in)	at	5.32 ft	= -0.329	L/D = 388	> 240		0

PRMU2022012

Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 275**

SPAN INFORMATION (ft): I-End (131.13,51.83) J-End (141.17,51.83)

Beam Size (User Selected) = HSS6X3X3/16 Fy = 50.0 ksi
Total Beam Length (ft) = 10.04
Mp (kip-ft) = 23.29

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	10.041	0.016	0.000			0.000
2	0.000	0.003	0.015	0.0%	Red	0.000
	10.041	0.003	0.015			0.000
3	0.000	0.183	0.000	---	NonR	0.000
	10.041	0.183	0.000			0.000
4	0.000	0.033	0.183	0.0%	Red	0.000
	10.041	0.033	0.183			0.000
5	0.000	0.010	0.000	---	NonR	0.000
	10.041	0.010	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 3.06 kips 0.90Vn = 51.47 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	7.7	5.0	0.0	1.00	0.90	20.96
Controlling		1.2DL+1.6LL	7.7	5.0	0.0	1.00	0.90	20.96

REACTIONS (kips):

	Left	Right
DL reaction	1.23	1.23
Max +LL reaction	0.99	0.99
Max +total reaction (factored)	3.06	3.06

DEFLECTIONS: **Ratio**

Dead load (in)	at	5.02 ft	=	-0.144	L/D	=	838	
Live load (in)	at	5.02 ft	=	-0.117	L/D	=	1034 > 360	0.35
Net Total load (in)	at	5.02 ft	=	-0.260	L/D	=	463 > 240	0.52

Gravity Beam Design

Fire
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City of Puyallup

Floor Type: FIRST FLOOR **Beam Number = 276**

SPAN INFORMATION (ft): I-End (141.17,51.83) J-End (152,51.83)

Beam Size (User Selected) = HSS6X3X3/16 Fy = 50.0 ksi
Total Beam Length (ft) = 10.55
Mp (kip-ft) = 23.29

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	10.552	0.016	0.000			0.000
2	0.000	0.003	0.015	0.0%	Red	0.000
	10.552	0.003	0.015			0.000
3	0.000	0.063	0.000	---	NonR	0.000
	10.552	0.063	0.000			0.000
4	0.000	0.011	0.063	0.0%	Red	0.000
	10.552	0.011	0.063			0.000
5	0.000	0.010	0.000	---	NonR	0.000
	10.552	0.010	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 1.31 kips 0.90Vn = 51.47 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	3.4	5.3	0.0	1.00	0.90	20.96
Controlling		1.2DL+1.6LL	3.4	5.3	0.0	1.00	0.90	20.96

REACTIONS (kips):

	Left	Right
DL reaction	0.54	0.54
Max +LL reaction	0.41	0.41
Max +total reaction (factored)	1.31	1.31

DEFLECTIONS: **R**

Dead load (in)	at	5.28 ft	=	-0.073	L/D	=	1724	
Live load (in)	at	5.28 ft	=	-0.056	L/D	=	2261 > 360	0
Net Total load (in)	at	5.28 ft	=	-0.129	L/D	=	978 > 240	0

PRMU2022012

Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 277**

SPAN INFORMATION (ft): I-End (-1.75,11.75) J-End (-1.75,22.25)

Beam Size (User Selected) = HSS6X3X3/16 Fy = 50.0 ksi
Total Beam Length (ft) = 10.50
Mp (kip-ft) = 23.29

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.016	0.000	---	NonR	0.000
	10.500	0.016	0.000			0.000
2	0.000	0.003	0.015	0.0%	Red	0.000
	10.500	0.003	0.015			0.000
3	0.000	0.060	0.000	---	NonR	0.000
	10.500	0.060	0.000			0.000
4	0.000	0.011	0.060	0.0%	Red	0.000
	10.500	0.011	0.060			0.000
5	0.000	0.010	0.000	---	NonR	0.000
	10.500	0.010	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 1.26 kips 0.90Vn = 51.47 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	3.3	5.3	0.0	1.00	0.90	20.96
Controlling		1.2DL+1.6LL	3.3	5.3	0.0	1.00	0.90	20.96

REACTIONS (kips):

	Left	Right
DL reaction	0.52	0.52
Max +LL reaction	0.40	0.40
Max +total reaction (factored)	1.26	1.26

DEFLECTIONS: **Ratio**

Dead load (in)	at	5.25 ft	= -0.070	L/D = 1802			
Live load (in)	at	5.25 ft	= -0.053	L/D = 2371	>	360	0.15
Net Total load (in)	at	5.25 ft	= -0.123	L/D = 1024	>	240	0.23

Gravity Beam Design

Fire
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City of Puyallup

Floor Type: FIRST FLOOR **Beam Number = 278**

SPAN INFORMATION (ft): I-End (33.31,-3.83) J-End (43.77,-3.83)

Beam Size (User Selected) = HSS6X3X3/16 Fy = 50.0 ksi
Total Beam Length (ft) = 10.46
Mp (kip-ft) = 23.29

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.125	0.000	---	NonR	0.000
	10.458	0.125	0.000			0.000
2	0.000	0.023	0.125	0.0%	Red	0.000
	10.458	0.023	0.125			0.000
3	0.000	0.016	0.000	---	NonR	0.000
	10.458	0.016	0.000			0.000
4	0.000	0.003	0.015	0.0%	Red	0.000
	10.458	0.003	0.015			0.000
5	0.000	0.010	0.000	---	NonR	0.000
	10.458	0.010	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 2.28 kips 0.90Vn = 51.47 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	6.0	5.2	0.0	1.00	0.90	20.96
Controlling		1.2DL+1.6LL	6.0	5.2	0.0	1.00	0.90	20.96

REACTIONS (kips):

	Left	Right
DL reaction	0.92	0.92
Max +LL reaction	0.73	0.73
Max +total reaction (factored)	2.28	2.28

DEFLECTIONS: **R**

Dead load (in)	at	5.23 ft	= -0.122	L/D = 1028			
Live load (in)	at	5.23 ft	= -0.097	L/D = 1290	>	360	0
Net Total load (in)	at	5.23 ft	= -0.219	L/D = 572	>	240	0

PRMU2022012

Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 279**

SPAN INFORMATION (ft): I-End (62.06,-3.83) J-End (72.52,-3.83)

Beam Size (User Selected) = HSS6X3X3/16 Fy = 50.0 ksi
Total Beam Length (ft) = 10.46
Mp (kip-ft) = 23.29

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.125	0.000	---	NonR	0.000
	10.458	0.125	0.000			0.000
2	0.000	0.023	0.125	0.0%	Red	0.000
	10.458	0.023	0.125			0.000
3	0.000	0.016	0.000	---	NonR	0.000
	10.458	0.016	0.000			0.000
4	0.000	0.003	0.015	0.0%	Red	0.000
	10.458	0.003	0.015			0.000
5	0.000	0.010	0.000	---	NonR	0.000
	10.458	0.010	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 2.28 kips 0.90Vn = 51.47 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	6.0	5.2	0.0	1.00	0.90	20.96
Controlling		1.2DL+1.6LL	6.0	5.2	0.0	1.00	0.90	20.96

REACTIONS (kips):

	Left	Right
DL reaction	0.92	0.92
Max +LL reaction	0.73	0.73
Max +total reaction (factored)	2.28	2.28

DEFLECTIONS: **Ratio**

Dead load (in)	at	5.23 ft	= -0.122	L/D = 1028			
Live load (in)	at	5.23 ft	= -0.097	L/D = 1290	>	360	0.28
Net Total load (in)	at	5.23 ft	= -0.219	L/D = 572	>	240	0.42

Gravity Beam Design

Fire
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City of Puyallup

Floor Type: FIRST FLOOR **Beam Number = 280**

SPAN INFORMATION (ft): I-End (90.81,-3.83) J-End (101.27,-3.83)

Beam Size (User Selected) = HSS6X3X3/16 Fy = 50.0 ksi
Total Beam Length (ft) = 10.46
Mp (kip-ft) = 23.29

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.125	0.000	---	NonR	0.000
	10.458	0.125	0.000			0.000
2	0.000	0.023	0.125	0.0%	Red	0.000
	10.458	0.023	0.125			0.000
3	0.000	0.016	0.000	---	NonR	0.000
	10.458	0.016	0.000			0.000
4	0.000	0.003	0.015	0.0%	Red	0.000
	10.458	0.003	0.015			0.000
5	0.000	0.010	0.000	---	NonR	0.000
	10.458	0.010	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 2.28 kips 0.90Vn = 51.47 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	6.0	5.2	0.0	1.00	0.90	20.96
Controlling		1.2DL+1.6LL	6.0	5.2	0.0	1.00	0.90	20.96

REACTIONS (kips):

	Left	Right
DL reaction	0.92	0.92
Max +LL reaction	0.73	0.73
Max +total reaction (factored)	2.28	2.28

DEFLECTIONS:

Dead load (in)	at	5.23 ft	= -0.122	L/D = 1028			
Live load (in)	at	5.23 ft	= -0.097	L/D = 1290	>	360	0
Net Total load (in)	at	5.23 ft	= -0.219	L/D = 572	>	240	0

PRMU2022012

Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 281**

SPAN INFORMATION (ft): I-End (119.56,-3.83) J-End (130.02,-3.83)

Beam Size (User Selected) = HSS6X3X3/16 Fy = 50.0 ksi
Total Beam Length (ft) = 10.46
Mp (kip-ft) = 23.29

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.125	0.000	---	NonR	0.000
	10.458	0.125	0.000			0.000
2	0.000	0.023	0.125	0.0%	Red	0.000
	10.458	0.023	0.125			0.000
3	0.000	0.016	0.000	---	NonR	0.000
	10.458	0.016	0.000			0.000
4	0.000	0.003	0.015	0.0%	Red	0.000
	10.458	0.003	0.015			0.000
5	0.000	0.010	0.000	---	NonR	0.000
	10.458	0.010	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 2.28 kips 0.90Vn = 51.47 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	6.0	5.2	0.0	1.00	0.90	20.96
Controlling		1.2DL+1.6LL	6.0	5.2	0.0	1.00	0.90	20.96

REACTIONS (kips):

	Left	Right
DL reaction	0.92	0.92
Max +LL reaction	0.73	0.73
Max +total reaction (factored)	2.28	2.28

DEFLECTIONS: **Ratio**

Dead load (in)	at	5.23 ft	=	-0.122	L/D	=	1028	
Live load (in)	at	5.23 ft	=	-0.097	L/D	=	1290 > 360	0.28
Net Total load (in)	at	5.23 ft	=	-0.219	L/D	=	572 > 240	0.42

Gravity Beam Design

Fire Engineering Building Traffic Public Works Planning
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Development & Permitting Services
PRMU2022012

Floor Type: FIRST FLOOR **Beam Number = 282**

SPAN INFORMATION (ft): I-End (131.13,45.7 E 7,45.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X17 Fy = 50.0 ksi
Total Beam Length (ft) = 10.04
Mp (kip-ft) = 77.92

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.183	0.000	---	NonR	0.000
	10.041	0.183	0.000			0.000
2	0.000	0.033	0.183	6.7%	Red	0.000
	10.041	0.033	0.183			0.000
3	0.000	0.017	0.000	---	NonR	0.000
	10.041	0.017	0.000			0.000
4	0.000	0.098	0.000	---	NonR	0.000
	10.042	0.098	0.000			0.000
5	0.000	0.044	0.240	6.7%	Red	0.000
	10.042	0.044	0.240			0.000
6	0.011	0.416	0.000	---	NonR	0.000
	10.042	0.416	0.000			0.000
7	0.011	0.187	0.680	6.7%	Red	0.000
	10.042	0.187	0.680			0.000
8	0.000	0.387	0.000	---	NonR	0.000
	10.042	0.387	0.000			0.000
9	0.000	0.000	0.050	0.0%	Roof	0.000
	10.042	0.000	0.050			0.000
10	0.011	0.000	0.212	0.0%	Roof	0.000
	10.042	0.000	0.212			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 18.60 kips 1.00Vn = 72.72 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi k
Center	Max +	1.2DL+1.6LL	46.7	5.0	0.0	1.00	0.90	7
Controlling		1.2DL+1.6LL	46.7	5.0	0.0	1.00	0.90	7

REACTIONS (kips):

	Left	Right
DL reaction	6.85	6.86
Max +LL reaction	6.47	6.48
Max +total reaction (factored)	18.58	18.60

DEFLECTIONS: **Ratio**

Dead load (in)	at	5.02 ft	=	-0.132	L/D	=	916	
Live load (in)	at	5.02 ft	=	-0.124	L/D	=	969 > 360	0.37

Net Total load (in) at 5.02 ft = -0.256 L/D = 471 > 240 0.51

Gravity Beam Design

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DataBase: 2190606 Transfer Level w Omega - Update 210422 10/28/21 18:03:22
Building Code: IBC Steel Code: AISC 360-16 LRFD

Fire Engineering Building Traffic Public Works Planning
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PRMU2022123

Floor Type: FIRST FLOOR **Beam Number = 283**

SPAN INFORMATION (ft): I-End (141.17,45.75) J-End (152.42,45.75)

Maximum Depth Limitation specified = 17.00 in
Minimum Depth specified = 9.00 in
Beam Size (User Selected) = W10X19 Fy = 50.0 ksi
Total Beam Length (ft) = 10.55
Mp (kip-ft) = 90.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.120	0.000	---	NonR	0.000
	10.552	0.120	0.000			0.000
2	0.000	0.022	0.120	6.9%	Red	0.000
	10.552	0.022	0.120			0.000
3	0.000	0.019	0.000	---	NonR	0.000
	10.552	0.019	0.000			0.000
4	0.000	0.515	0.000	---	NonR	0.000
	10.552	0.515	0.000			0.000
5	0.000	0.044	0.240	6.9%	Red	0.000
	10.302	0.044	0.240			0.000
6	10.303	0.045	0.244	6.9%	Red	0.000
	10.395	0.000	0.000			0.000
7	10.303	0.000	0.000	6.9%	Red	0.000
	10.395	0.043	0.157			0.000
8	10.396	0.044	0.160	6.9%	Red	0.000
	10.552	0.044	0.160			0.000
9	0.000	0.187	0.680	6.9%	Red	0.000
	10.552	0.187	0.680			0.000
10	0.000	0.387	0.000	---	NonR	0.000
	10.552	0.387	0.000			0.000
11	0.000	0.000	0.262	0.0%	Roof	0.000
	10.552	0.000	0.262			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 18.58 kips 1.00Vn = 76.50 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi k
Center	Max +	1.2DL+1.6LL	49.0	5.3	0.0	1.00	0.90	8
Controlling		1.2DL+1.6LL	49.0	5.3	0.0	1.00	0.90	8

REACTIONS (kips):

	Left	Right
DL reaction	6.83	6.83
Max +LL reaction	6.49	6.48
Max +total reaction (factored)	18.58	18.56

DEFLECTIONS: **Ratio**

Gravity Beam Design

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Dead load (in)	at	5.28 ft	=	-0.129	L/D	=	980		
Live load (in)	at	5.28 ft	=	-0.123	L/D	=	1030	> 360	0.35
Net Total load (in)	at	5.28 ft	=	-0.252	L/D	=	502	> 240	0.48

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Floor Type: FIRST FLOOR **Beam Number = 294**

SPAN INFORMATION (ft): I-End (85.89,38.44) J-End (101.67,38.44)

Beam Size (User Selected) = W16X26 Fy = 50.0 ksi
Total Beam Length (ft) = 15.78
Mp (kip-ft) = 184.17

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
4.965	4.28	3.88	0.0	0.00	0.00	0.0	0.44	0.0	0.00
7.889	-5.49	0.98	0.0	0.00	0.00	0.0	0.00	0.0	0.00
		-4.54	0.0	0.00	0.00	0.0	-1.23	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.026	0.000	---	NonR	0.000
	15.777	0.026	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 6.05 kips 0.90Vn = 105.97 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu	@	Lb	Cb	Phi	Phi*Mn
			kip-ft	ft	ft			kip-ft
Center	Max +	1.2DL+1.6LL	29.4	5.0	5.0	1.66	0.90	165.75
	Max -	1.2DL+1.6LL	-48.7	7.9	7.9	1.68	0.90	165.75
Controlling		1.2DL+1.6LL	-48.7	7.9	7.9	1.68	0.90	165.75

REACTIONS (kips):

	Left	Right
DL reaction	0.39	-1.19
Max +LL reaction	3.45	1.85
Max -LL reaction	-2.89	-2.89
Max +total reaction (factored)	6.00	-1.67
Max -total reaction	-4.15	-6.05

DEFLECTIONS:

Dead load (in)	at	8.13 ft	=	0.028	L/D	=	6689		
Live load (in)	at	8.13 ft	=	0.093	L/D	=	2027	> 360	0
Net Total load (in)	at	8.13 ft	=	0.122	L/D	=	1556	> 240	0

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Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 295**

SPAN INFORMATION (ft): I-End (90.85,22.25) J-End (90.85,38.44)

Beam Size (User Selected) = W12X19 Fy = 50.0 ksi
Total Beam Length (ft) = 16.19

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Deck Label	5.5" O/2W	5.5" O/2W
Concrete thickness (in)	3.50	3.50
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	4.00	4.00
Decking Orientation	perpendicular	perpendicular
Decking type	ASC 2W	ASC 2W

beff (in)	=	28.28	Y bar(in)	=	13.10
Mnf (kip-ft)	=	238.51	Mn (kip-ft)	=	180.59
C (kips)	=	103.38	PNA (in)	=	10.50
Ieff (in4)	=	374.99	Itr (in4)	=	532.12
Stud length (in)	=	4.00	Stud diam (in)	=	0.75

Stud Capacity (kips) Qn = 17.2 Rg = 1.00 Rp = 0.60
# of studs: Max = 16 Partial = 13 Actual = 15
Number of Stud Rows = 1 Percent of Full Composite Action = 33.21

POINT LOADS (kips):

Dist	DL	CDL	RedLL	Red%	NonRL	StorLL	Red%	RoofLL	Red%	PartL
6.500	0.92	0.00	1.00	0.0	0.00	0.00	0.0	0.23	0.0	0.00
6.500	3.44	0.03	3.70	0.0	0.00	0.00	0.0	0.85	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
1	0.000	0.149	0.149	0.000	---	NonR	0.000	0.000
	16.187	0.149	0.149	0.000			0.000	0.000
2	0.000	0.087	0.000	0.789	0.0%	Red	0.000	0.000
	6.500	0.087	0.000	0.789			0.000	0.000
3	6.500	0.027	0.000	0.099	0.0%	Red	0.000	0.000
	16.187	0.027	0.000	0.099			0.000	0.000
4	0.000	0.325	0.325	0.000	---	NonR	0.000	0.000
	6.864	0.325	0.325	0.000			0.000	0.000
5	6.500	0.007	0.000	0.026	0.0%	Red	0.000	0.000
	6.864	0.008	0.000	0.028			0.000	0.000
6	6.500	0.052	0.000	0.474	0.0%	Red	0.000	0.000
	6.864	0.051	0.000	0.468			0.000	0.000
7	6.865	0.020	0.020	0.000	---	NonR	0.000	0.000
	15.520	0.020	0.020	0.000			0.000	0.000
8	6.865	0.004	0.000	0.013	0.0%	Red	0.000	0.000
	15.520	0.004	0.000	0.013			0.000	0.000
9	15.521	0.325	0.325	0.000	---	NonR	0.000	0.000

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Load	Dist	DL	CDL	LL	Red%	Type	PartL	CLL
	16.187	0.325	0.325	0.000			0.000	0.000
10	15.521	0.059	0.000	0.216	0.0%	Red	0.000	0.000
	16.187	0.059	0.000	0.216			0.000	0.000
11	0.000	0.019	0.019	0.000	---	NonR	0.000	0.000
	16.187	0.019	0.019	0.000			0.000	0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 20.39 kips 1.00Vn = 86.01 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu	@	Lb	Cb	Phi	Phi*Mn
			kip-ft	ft	ft			kip-ft
Center	PreCmp+	1.4DL	14.5	6.5	0.0	1.00	0.90	92.63
	Init DL	1.4DL	14.5	6.5	---	---		
	Max +	1.2DL+1.6LL	91.2	6.5	---	---	0.90	162.54
Controlling		1.2DL+1.6LL	91.2	6.5	---	---	0.90	162.54

REACTIONS (kips):

	Left	Right
Initial reaction	3.19	2.18
DL reaction	6.34	4.28
Max +LL reaction	7.99	4.32
Max +total reaction (factored)	20.39	12.05

DEFLECTIONS: **Ratio**

Initial load (in)	at	7.77 ft	=	-0.126	L/D = 1538		
Live load (in)	at	7.69 ft	=	-0.129	L/D = 1506	> 360	0.24
Post Comp load (in)	at	7.69 ft	=	-0.194	L/D = 1000	> 240	0.24
Net Total load (in)	at	7.69 ft	=	-0.321	L/D = 606	> 240	0.40

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Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 301**

SPAN INFORMATION (ft): I-End (11.30,28.75) J-End (11.30,44.67)

Beam Size (User Selected) = W12X14 Fy = 50.0 ksi
Total Beam Length (ft) = 15.92
Mp (kip-ft) = 72.50

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
10.500	1.27	0.94	0.0	0.00	0.00	0.0	0.29	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.229	0.000	---	NonR	0.000
	15.916	0.229	0.000			0.000
2	0.000	0.042	0.152	0.0%	Red	0.000
	15.916	0.042	0.153			0.000
3	0.000	0.014	0.000	---	NonR	0.000
	15.916	0.014	0.000			0.000
4	0.000	0.387	0.000	---	NonR	0.000
	10.500	0.387	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 9.13 kips 0.90Vn = 64.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	39.6	8.7	0.0	1.00	0.90	65.25
Controlling		1.2DL+1.6LL	39.6	8.7	0.0	1.00	0.90	65.25

REACTIONS (kips):

	Left	Right
DL reaction	5.43	4.45
Max +LL reaction	1.63	2.03
Max +total reaction (factored)	9.13	8.58

DEFLECTIONS:

					Ratio
Dead load (in)	at	7.96 ft =	-0.384	L/D = 497	
Live load (in)	at	8.04 ft =	-0.146	L/D = 1309 > 360	0.27
Net Total load (in)	at	8.04 ft =	-0.530	L/D = 360 > 240	0.67

Gravity Beam Design

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Floor Type: FIRST FLOOR **Beam Number = 302**

SPAN INFORMATION (ft): I-End (9.08,28.75) J-End (16.75,28.75)

Beam Size (User Selected) = W10X15 Fy = 50.0 ksi
Total Beam Length (ft) = 7.64
Mp (kip-ft) = 66.67

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
2.219	5.43	1.53	4.3	0.00	0.00	0.0	0.10	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.015	0.000	---	NonR	0.000
	7.638	0.015	0.000			0.000
2	2.219	0.674	0.000	---	NonR	0.000
	7.639	0.674	0.000			0.000
3	2.219	0.231	0.840	4.3%	Red	0.000
	7.639	0.231	0.840			0.000
4	0.000	0.071	0.650	4.3%	Red	0.000
	7.639	0.071	0.650			0.000
5	0.000	0.387	0.000	---	NonR	0.000
	7.639	0.387	0.000			0.000
6	2.219	0.000	0.280	0.0%	Roof	0.000
	7.639	0.000	0.280			0.000
7	0.000	0.010	0.064	0.0%	Roof	0.000
	7.639	0.010	0.064			0.000
8	0.000	0.416	0.000	---	NonR	0.000
	2.218	0.416	0.000			0.000
9	0.000	0.115	1.050	4.3%	Red	0.000
	0.250	0.115	1.050			0.000
10	0.250	0.115	0.420	4.3%	Red	0.000
	2.218	0.115	0.420			0.000
11	0.000	0.000	0.149	0.0%	Roof	0.000
	2.218	0.000	0.149			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 21.35 kips 1.00Vn = 68.93 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi k
Center	Max +	1.2DL+1.6LL	41.8	3.3	5.4	1.19	0.90	5
Controlling		1.2DL+1.6LL	41.8	3.3	5.4	1.19	0.90	5

REACTIONS (kips):

	Left	Right
DL reaction	8.45	6.76
Max +LL reaction	7.01	7.05
Max +total reaction (factored)	21.35	19.39

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DEFLECTIONS: **Ratio**

Dead load (in)	at	3.67 ft	=	-0.084	L/D	= 1086		
Live load (in)	at	3.74 ft	=	-0.074	L/D	= 1243 > 360		0.29
Net Total load (in)	at	3.74 ft	=	-0.158	L/D	= 580 > 240		0.41

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Floor Type: FIRST FLOOR **Beam Number = 303**

SPAN INFORMATION (ft): I-End (9.08,39.25) J-End (9.08,39.25)

Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 2.22
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.012	0.000	---	NonR	0.000
	2.218	0.012	0.000			0.000
2	0.000	0.514	0.000	---	NonR	0.000
	2.218	0.514	0.000			0.000
3	0.000	0.121	1.099	0.0%	Red	0.000
	0.250	0.121	1.099			0.000
4	0.000	0.110	0.400	0.0%	Red	0.000
	0.250	0.110	0.400			0.000
5	0.250	0.231	0.840	0.0%	Red	0.000
	2.218	0.231	0.840			0.000
6	0.000	0.387	0.000	---	NonR	0.000
	2.218	0.387	0.000			0.000
7	0.000	0.000	0.262	0.0%	Roof	0.000
	2.218	0.000	0.262			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 3.73 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	1.9	1.1	2.2	1.14	0.90	46.90
Controlling		1.2DL+1.6LL	1.9	1.1	2.2	1.14	0.90	46.90

REACTIONS (kips):

	Left	Right
DL reaction	1.27	1.27
Max +LL reaction	1.38	1.23
Max +total reaction (factored)	3.73	3.49

DEFLECTIONS:

Dead load (in)	at	1.11 ft	=	-0.000
Live load (in)	at	1.11 ft	=	-0.000
Net Total load (in)	at	1.11 ft	=	-0.001

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Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 304**

SPAN INFORMATION (ft): I-End (9.08,22.25) J-End (9.08,27.79)

Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 5.54
Mp (kip-ft) = 52.50

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
5.000	1.23	2.65	0.0	0.00	0.00	0.0	0.00	0.0	0.00
5.000	1.23	2.65	0.0	0.00	0.00	0.0	0.00	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.494	0.000	---	NonR	0.000
	5.541	0.494	0.000			0.000
2	0.000	0.039	0.351	0.0%	Red	0.000
	0.307	0.049	0.443			0.000
3	0.000	0.010	0.054	0.0%	Red	0.000
	0.307	0.000	0.000			0.000
4	0.308	0.049	0.442	0.0%	Red	0.000
	5.541	0.049	0.442			0.000
5	0.000	0.042	0.382	0.0%	Red	0.000
	5.541	0.042	0.382			0.000
6	0.000	0.012	0.000	---	NonR	0.000
	5.541	0.012	0.000			0.000
7	0.000	0.387	0.000	---	NonR	0.000
	5.542	0.387	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 17.24 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	12.9	3.2	0.0	1.00	0.90	46.90
Controlling		1.2DL+1.6LL	12.9	3.2	0.0	1.00	0.90	46.90

REACTIONS (kips):

	Left	Right
DL reaction	2.97	4.95
Max +LL reaction	2.79	7.06
Max +total reaction (factored)	8.03	17.24

DEFLECTIONS: **Ratio**

Dead load (in)	at	2.83 ft =	-0.016	L/D = 4105	
Live load (in)	at	2.88 ft =	-0.017	L/D = 3850 > 360	0.09
Net Total load (in)	at	2.88 ft =	-0.033	L/D = 1987 > 240	0.12

Gravity Beam Design

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Floor Type: FIRST FLOOR **Beam Number = 305**

SPAN INFORMATION (ft): I-End (0.25,22.25) J-End (0.25,27.79)

Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 5.54
Mp (kip-ft) = 52.50

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
5.000	1.23	2.65	0.0	0.00	0.00	0.0	0.00	0.0	0.00
5.000	1.23	2.65	0.0	0.00	0.00	0.0	0.00	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.000	0.000	---	NonR	0.000
	0.258	0.015	0.000			0.000
2	0.000	0.000	0.000	0.0%	Red	0.000
	0.258	0.003	0.010			0.000
3	0.259	0.016	0.000	---	NonR	0.000
	5.541	0.016	0.000			0.000
4	0.259	0.003	0.010	0.0%	Red	0.000
	0.307	0.003	0.010			0.000
5	0.308	0.000	0.000	0.0%	Red	0.000
	0.327	0.003	0.026			0.000
6	0.308	0.003	0.010	0.0%	Red	0.000
	0.327	0.000	0.000			0.000
7	0.328	0.003	0.026	0.0%	Red	0.000
	5.541	0.003	0.026			0.000
8	0.000	0.265	0.000	---	NonR	0.000
	5.541	0.265	0.000			0.000
9	0.000	0.034	0.186	0.0%	Red	0.000
	0.307	0.000	0.000			0.000
10	0.000	0.015	0.133	0.0%	Red	0.000
	0.307	0.048	0.441			0.000
11	0.308	0.049	0.442	0.0%	Red	0.000
	5.541	0.049	0.442			0.000
12	0.000	0.012	0.000	---	NonR	0.000
	5.541	0.012	0.000			0.000
13	0.000	0.016	0.000	---	NonR	0.000
	5.542	0.016	0.000			0.000
14	0.000	0.006	0.052	0.0%	Red	0.000
	5.542	0.006	0.052			0.000
15	0.000	0.387	0.000	---	NonR	0.000
	5.542	0.387	0.000			0.000
16	0.000	0.000	0.013	0.0%	Roof	0.000
	5.542	0.000	0.013			0.000

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SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 15.18 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	10.2	3.4	0.0	1.00	0.90	46.90
Controlling		1.2DL+1.6LL	10.2	3.4	0.0	1.00	0.90	46.90

REACTIONS (kips):

	Left	Right
DL reaction	2.33	4.31
Max +LL reaction	1.97	6.25
Max +total reaction (factored)	5.94	15.18

DEFLECTIONS:

					Ratio
Dead load (in)	at 2.85 ft	= -0.013	L/D = 5091		
Live load (in)	at 2.91 ft	= -0.013	L/D = 4995	> 360	0.07
Net Total load (in)	at 2.91 ft	= -0.026	L/D = 2522	> 240	0.10

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Floor Type: FIRST FLOOR **Beam Number: 307**

SPAN INFORMATION (ft): I-End (151.72,44.67) J-End (154.72,51.83)

Beam Size (User Selected) = W16X26 Fy = 50.0 ksi
Total Beam Length (ft) = 7.17
Cantilever on right (ft) = 2.08
Mp (kip-ft) = 184.17

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
1.083	6.83	5.47	0.0	0.00	0.00	0.0	1.38	0.0	0.00
7.167	0.54	0.41	0.0	0.00	0.00	0.0	0.00	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.317	0.000	---	NonR	0.000
	1.083	0.317	0.000			0.000
2	0.000	0.058	0.211	0.0%	Red	0.000
	1.083	0.058	0.211			0.000
3	5.084	0.000	0.000	---	NonR	0.000
	5.341	0.015	0.000			0.000
4	5.084	0.000	0.000	0.0%	Red	0.000
	5.341	0.003	0.010			0.000
5	5.342	0.016	0.000	---	NonR	0.000
	7.166	0.016	0.000			0.000
6	5.342	0.003	0.010	0.0%	Red	0.000
	7.166	0.003	0.010			0.000
7	0.000	0.179	0.000	---	NonR	0.000
	5.083	0.179	0.000			0.000
8	0.000	0.033	0.119	0.0%	Red	0.000
	5.083	0.033	0.119			0.000
9	0.000	0.026	0.000	---	NonR	0.000
	5.083	0.026	0.000			0.000
10	5.084	0.026	0.000	---	NonR	0.000
	7.166	0.026	0.000			0.000
11	1.084	0.387	0.000	---	NonR	0.000
	5.083	0.387	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 17.49 kips 0.90Vn = 105.97 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi kip-ft
Center	Max +	1.2DL+1.6LL	18.2	1.1	4.0	1.57	0.90	165.75
	Max -	1.2DL+1.6LL	-2.9	5.1	4.0	1.71	0.90	165.75
Right	Max -	1.2DL+1.6LL	-2.9	5.1	2.1	1.00	0.90	165.75
Controlling		1.2DL+1.6LL	18.2	1.1	4.0	1.57	0.90	165.75

PRMU20220123

REACTIONS (kips):

	Left	Right
DL reaction	6.71	3.91
Max +LL reaction	5.90	2.39
Max -LL reaction	-0.17	0.00
Max +total reaction (factored)	17.49	8.52

DEFLECTIONS: **Ratio**

Center span:

Dead load (in)	at 2.24 ft	= -0.003	L/D = 2068		
Live load (in)	at 2.24 ft	= -0.003	L/D = 24273 > 360		0.01
Net Total load (in)	at 2.24 ft	= -0.005	L/D = 11169 > 240		0.02

Right cantilever:

Dead load (in)	= 0.003	L/D = 18665		
Neg Live load (in)	= 0.003	L/D = 17936 > 360		0.02
Neg Total load (in)	= 0.005	L/D = 9147 > 240		0.03

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Floor Type: FIRST FLOOR **Beam Number = 308**

SPAN INFORMATION (ft): I-End (130.02,-1.75) J-End (132.50,-1.75)

Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 2.48
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.000	0.000	---	NonR	0.000
	0.258	0.015	0.000			0.000
2	0.000	0.000	0.000	0.0%	Red	0.000
	0.258	0.003	0.015			0.000
3	0.259	0.016	0.000	---	NonR	0.000
	2.479	0.016	0.000			0.000
4	0.259	0.003	0.015	0.0%	Red	0.000
	0.736	0.003	0.016			0.000
5	0.737	0.000	0.000	0.0%	Red	0.000
	0.827	0.003	0.010			0.000
6	0.737	0.003	0.016	0.0%	Red	0.000
	0.827	0.000	0.000			0.000
7	0.828	0.003	0.010	0.0%	Red	0.000
	2.479	0.003	0.010			0.000
8	0.000	0.012	0.000	---	NonR	0.000
	2.479	0.012	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 0.07 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	0.0	1.2	2.5	1.13	0.90	46.90
Controlling		1.2DL+1.6LL	0.0	1.2	2.5	1.13	0.90	4

REACTIONS (kips):

	Left	Right
DL reaction	0.04	0.04
Max +LL reaction	0.01	0.01
Max +total reaction (factored)	0.07	0.07

DEFLECTIONS:

Dead load (in)	at 1.24 ft	= -0.000		
Live load (in)	at 1.24 ft	= -0.000		
Net Total load (in)	at 1.24 ft	= -0.000		

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Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 309**

SPAN INFORMATION (ft): I-End (43.77,-1.75) J-End (47.33,-1.75)

Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 3.56
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.000	0.000	---	NonR	0.000
	0.258	0.015	0.000			0.000
2	0.000	0.000	0.000	0.0%	Red	0.000
	0.258	0.003	0.010			0.000
3	0.259	0.016	0.000	---	NonR	0.000
	3.562	0.016	0.000			0.000
4	0.259	0.003	0.010	0.0%	Red	0.000
	3.562	0.003	0.010			0.000
5	0.000	0.012	0.000	---	NonR	0.000
	3.562	0.012	0.000			0.000
6	0.000	0.604	0.000	---	NonR	0.000
	3.562	0.604	0.000			0.000
7	0.000	0.270	0.981	0.0%	Red	0.000
	3.562	0.270	0.981			0.000
8	0.000	0.387	0.000	---	NonR	0.000
	3.562	0.387	0.000			0.000
9	0.000	0.000	0.099	0.0%	Roof	0.000
	3.562	0.000	0.099			0.000
10	0.000	0.034	0.214	0.0%	Roof	0.000
	3.562	0.034	0.214			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 6.55 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	5.8	1.8	3.6	1.14	0.90	46.90
Controlling		1.2DL+1.6LL	5.8	1.8	3.6	1.14	0.90	46.90

REACTIONS (kips):

	Left	Right
DL reaction	2.36	2.36
Max +LL reaction	2.32	2.32
Max +total reaction (factored)	6.54	6.55

DEFLECTIONS: **Ratio**

Dead load (in) at 1.78 ft = -0.003 L/D = 1387 9
Live load (in) at 1.78 ft = -0.003 L/D = 1411 > 360 0.03 7

Gravity Beam Design

Net Total load (in) at 1.78 ft = -0.006 L/D = 6998 > 240 0.03

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Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 310**

SPAN INFORMATION (ft): I-End (149.29,-1.75) J-End (149.29,22.25)

Beam Size (User Selected) = W16X36 Fy = 50.0 ksi
Total Beam Length (ft) = 24.00
Cantilever on left (ft) = 2.08
Mp (kip-ft) = 266.67

POINT LOADS (kips):

Dist	DL	RedLL	Red%	NonRLL	StorLL	Red%	RoofLL	Red%	PartL
0.000	19.18	14.29	0.0	0.00	0.00	0.0	5.56	0.0	0.00

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.317	0.000	---	NonR	0.000
	2.083	0.317	0.000			0.000
2	0.000	0.058	0.211	0.0%	Red	0.000
	2.083	0.058	0.211			0.000
3	2.084	0.317	0.000	---	NonR	0.000
	24.000	0.317	0.000			0.000
4	2.084	0.058	0.211	0.0%	Red	0.000
	24.000	0.058	0.211			0.000
5	0.000	0.036	0.000	---	NonR	0.000
	2.083	0.036	0.000			0.000
6	2.084	0.036	0.000	---	NonR	0.000
	24.000	0.036	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 56.50 kips 1.00Vn = 140.71 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Left	Max -	1.2DL+1.6LL	-115.9	2.1	2.1	1.00	0.90	240.00
Center	Max +	1.2DL+1.6LL	28.4	15.7	0.0	1.00	0.90	240.00
	Max -	1.2DL+1.6LL	-115.9	2.1	21.9	2.35	0.90	194.94
Controlling		1.2DL+1.6LL	-115.9	2.1	21.9	2.35	0.90	194.94

REACTIONS (kips):

	Left	Right
DL reaction	26.40	2.64
Max +LL reaction	24.51	2.31
Max -LL reaction	0.00	-1.91
Max +total reaction (factored)	70.89	6.87

DEFLECTIONS: **Ratio**

Left cantilever:

Dead load (in)	= -0.041	L/D =	1233		
Pos Live load (in)	= -0.093	L/D =	540 > 360		0.67
Neg Live load (in)	= 0.026	L/D =	1949 > 360		0.18
Pos Total load (in)	= -0.133	L/D =	375 > 240		0.64

Gravity Beam Design

Center span:

Dead load (in)	at 9.86 ft	=	0.01	L/D	=	1646		
			6					
Live load (in)	at 9.86 ft	=	-0.13	L/D	=	1568 > 360		0.23
Net Total load (in)	at 9.86 ft	=	-0.13	L/D	=	1432 > 240		0.17

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Gravity Beam Design

Floor Type: FIRST FLOOR **Beam Number = 312**

SPAN INFORMATION (ft): I-End (151.71,-1.75) J-End (151.72,0.33)

Beam Size (User Selected) = W10X12 Fy = 50.0 ksi
Total Beam Length (ft) = 2.08
Mp (kip-ft) = 52.50

LINE LOADS (k/ft):

Load	Dist	DL	LL	Red%	Type	PartL
1	0.000	0.073	0.000	---	NonR	0.000
	2.083	0.073	0.000			0.000
2	0.000	0.013	0.048	0.0%	Red	0.000
	2.083	0.013	0.049			0.000
3	0.000	0.016	0.000	---	NonR	0.000
	2.083	0.016	0.000			0.000
4	0.000	0.003	0.010	0.0%	Red	0.000
	2.083	0.003	0.010			0.000
5	0.000	0.012	0.000	---	NonR	0.000
	2.083	0.012	0.000			0.000

SHEAR (Ultimate): Max Vu (1.2DL+1.6LL) = 0.24 kips 1.00Vn = 56.26 kips

MOMENTS (Ultimate):

Span	Cond	LoadCombo	Mu kip-ft	@ ft	Lb ft	Cb	Phi	Phi*Mn kip-ft
Center	Max +	1.2DL+1.6LL	0.1	1.0	0.0	1.00	0.90	46.90
Controlling		1.2DL+1.6LL	0.1	1.0	0.0	1.00	0.90	46.90

REACTIONS (kips):

	Left	**Right**
DL reaction	0.12	0.12
Max +LL reaction	0.06	0.06
Max +total reaction (factored)	0.24	0.24

DEFLECTIONS: **Ratio**

Dead load (in) at 1.04 ft = -0.000
Live load (in) at 1.04 ft = -0.000
Net Total load (in) at 1.04 ft = -0.000

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Model Settings

Solution

Members

Number of Reported Sections	5
Number of Internal Sections	100
Member Area Load Mesh Size (in^2)	144
Consider Shear Deformation	Yes
Consider Torsional Warping	Yes

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Wall Panels

Approximate Mesh Size (in)	24
Transfer Forces Between Intersecting Wood Walls	Yes
Increase Wood Wall Nailing Capacity for Wind Loads	Yes
Include P-Delta for Walls	Yes
Optimize Masonry and Wood Walls	Yes
Maximum Number of Iterations	3

Processor Core Utilization

Single	No
Multiple (Optimum)	Yes
Maximum	No

Axis

Vertical Global Axis

Global Axis corresponding to vertical direction	Y
Convert Existing Data	Yes

Default Member Orientation

Default Global Plane for z-axis	XZ

Plate Axis

Plate Local Axis Orientation	Global

Codes

Hot Rolled Steel	AISC 15th (360-16): ASD
Stiffness Adjustment	Yes (Iterative)
Notional Annex	None
Connections	AISC 14th (360-10): ASD
Cold Formed Steel	AISI S100-16: ASD
Stiffness Adjustment	Yes (Iterative)
Wood	AWC NDS-18: ASD
Temperature	< 100F
Concrete	ACI 318-19
Masonry	TMS 402-16: ASD
Aluminum	AA ADM1-15: ASD
Structure Type	Building
Stiffness Adjustment	Yes (Iterative)
Stainless	AISC 14th (360-10): ASD
Stiffness Adjustment	Yes (Iterative)

Concrete

Compression Stress Block	Rectangular Stress Block
Analyze using Cracked Sections	Yes
Leave room for horizontal rebar splices (2*d bar spacing)	No

Model Settings (Continued)

List forces which were ignored for design in the Detail Report	Yes

Rebar

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Column Min Steel	1
Column Max Steel	8
Rebar Material Spec	ASTM A615
Warn if beam section with framing arrangement is not understood	No

Shear Reinforcement

Number of Shear Regions	4
Region 2 & 3 Spacing Increase Increment (in)	4

Seismic

RISA-3D Seismic Load Options

Code	ASCE 7-16
Risk Category	I or II
Drift Cat	Other
Base Elevation (ft)	
Include the weight of the structure in base shear calcs	Yes

Site Parameters

S_1 (g)	1
SD_1 (g)	1
SD_S (g)	1
T_L (sec)	5

Structure Characteristics

T Z (sec)	
T X (sec)	
C_tX	0.02
C_tExp. Z	0.75
C_tExp. X	0.75
R Z	3
R X	3
Ω_0Z	1
Ω_0X	1
C_dZ	4
C_dX	4
ρ Z	1
ρ X	1

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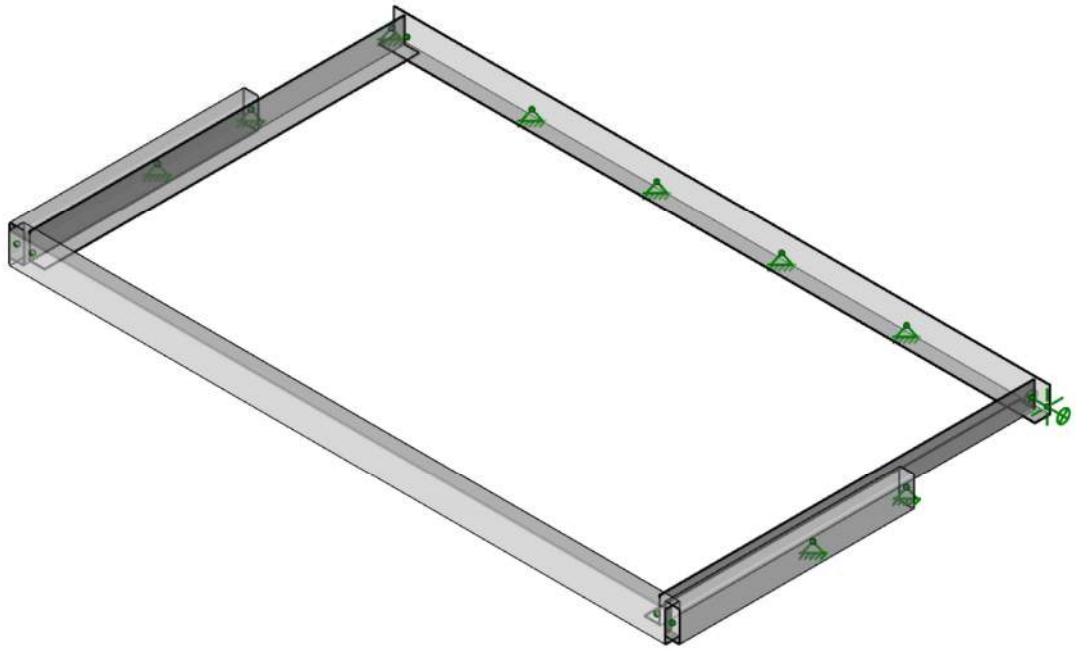

<Licensed Company>		SK-13
APFLUEGER		Oct 28, 2021
		FIRST FLOOR BALCONIES.r3d

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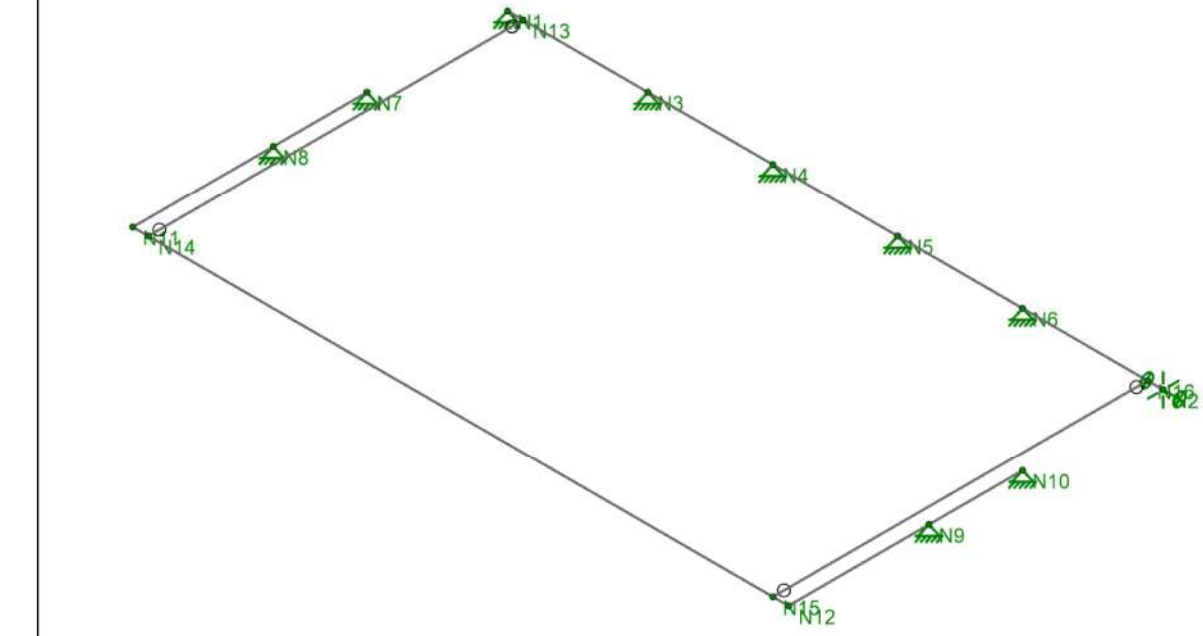

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APFLUEGER		Oct 28, 2021
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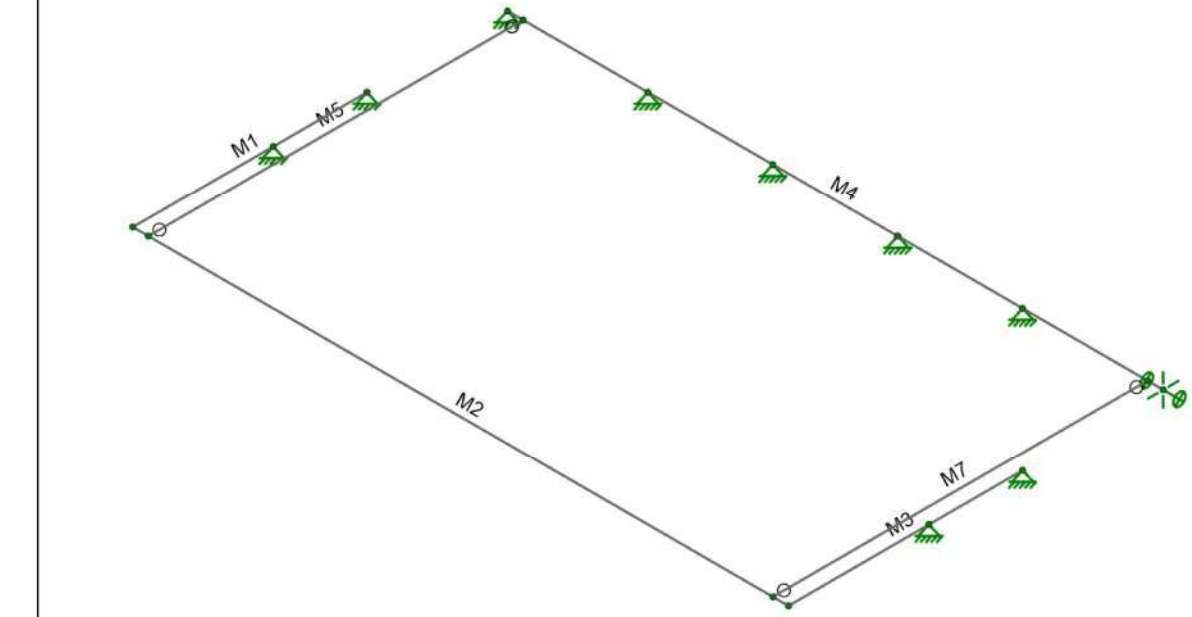

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APFLUEGER		Oct 28, 2021
		FIRST FLOOR BALCONIES.r3d

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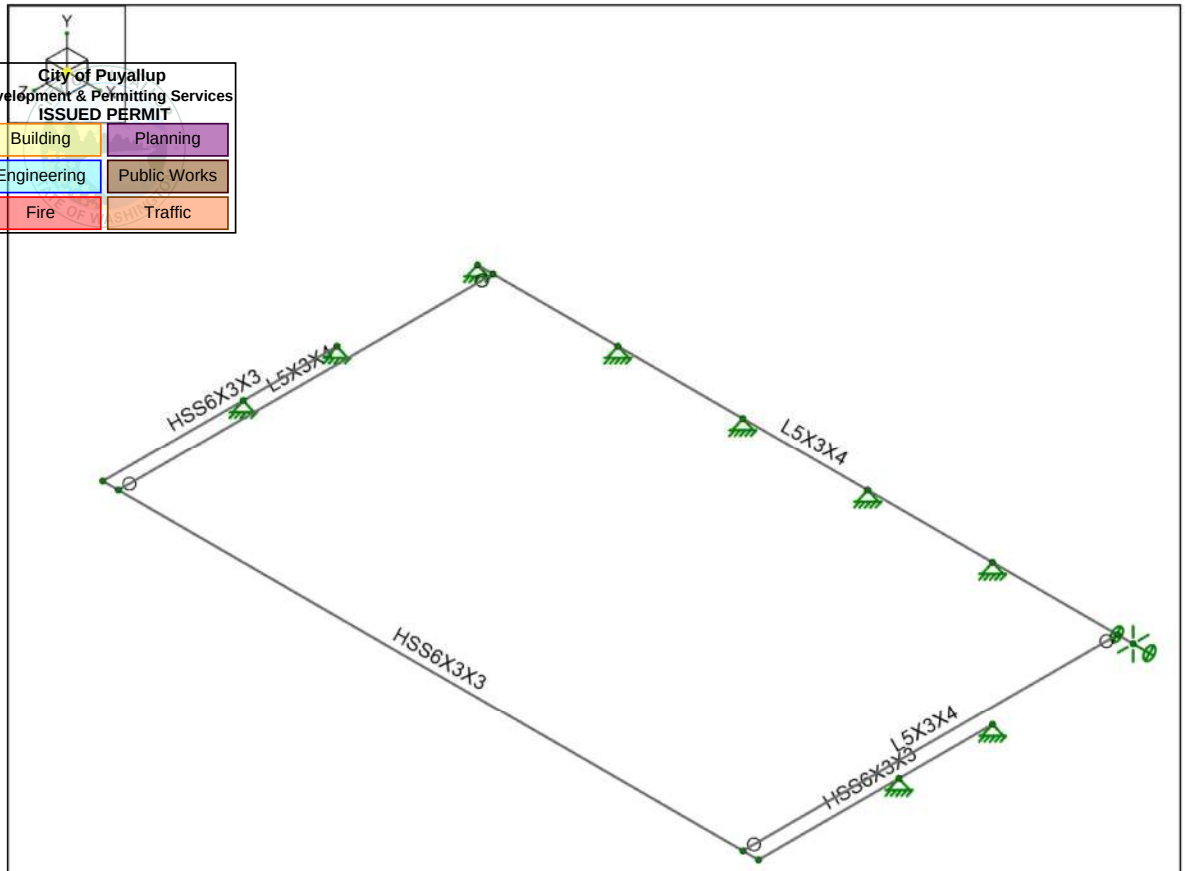

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APFLUEGER		Oct 28, 2021
		FIRST FLOOR BALCONIES.r3d

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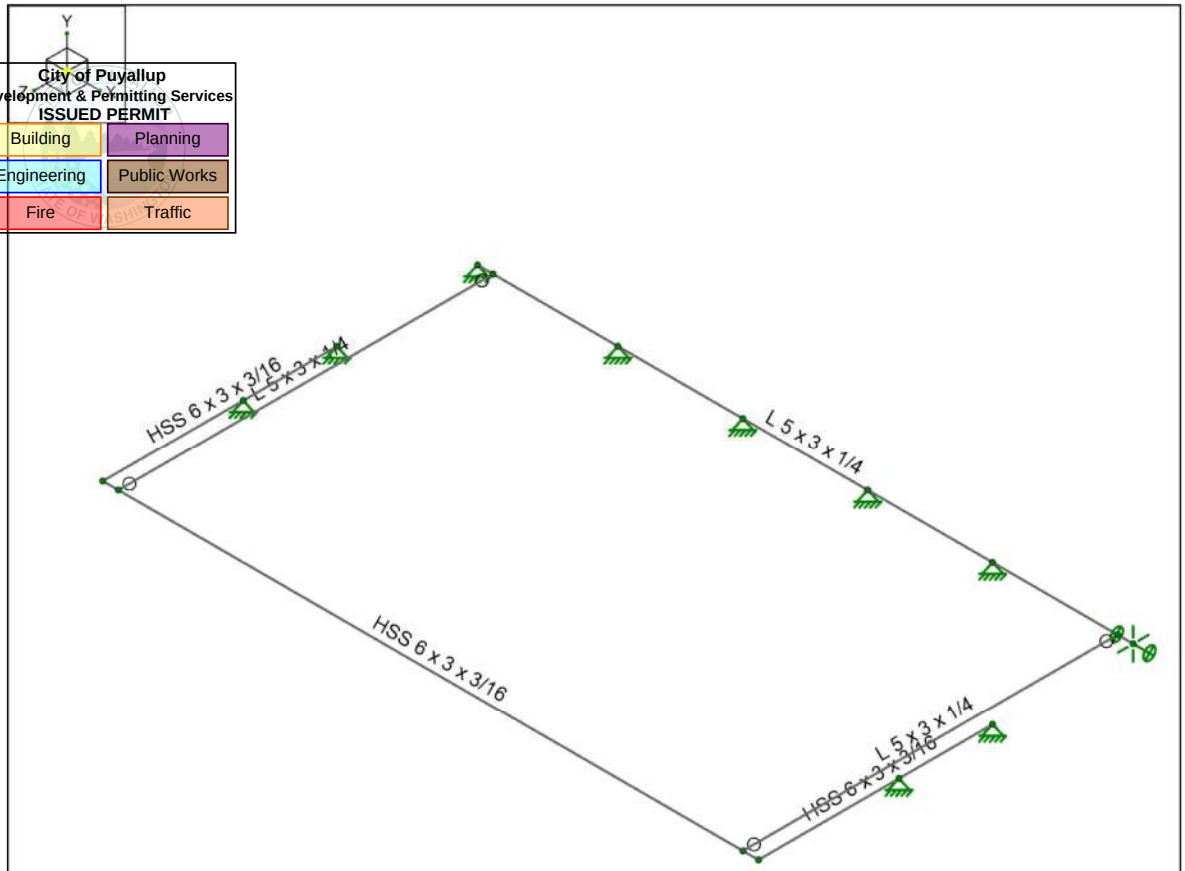

<Licensed Company>		SK-17
APFLUEGER		Oct 28, 2021
		FIRST FLOOR BALCONIES.r3d

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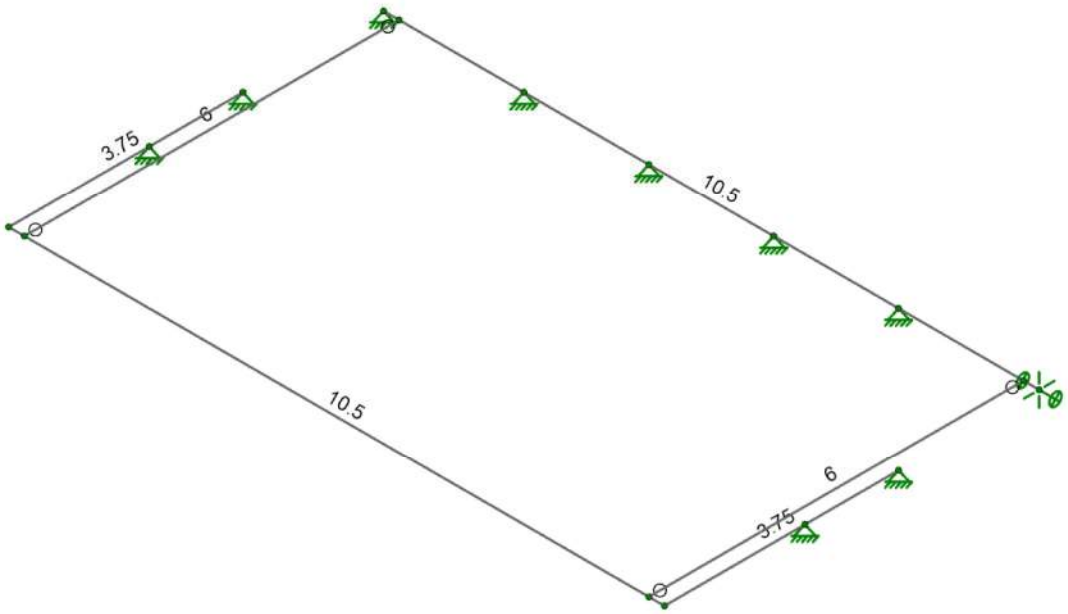

Member Length (ft) Displayed

<Licensed Company>		SK-18
APFLUEGER		Oct 28, 2021
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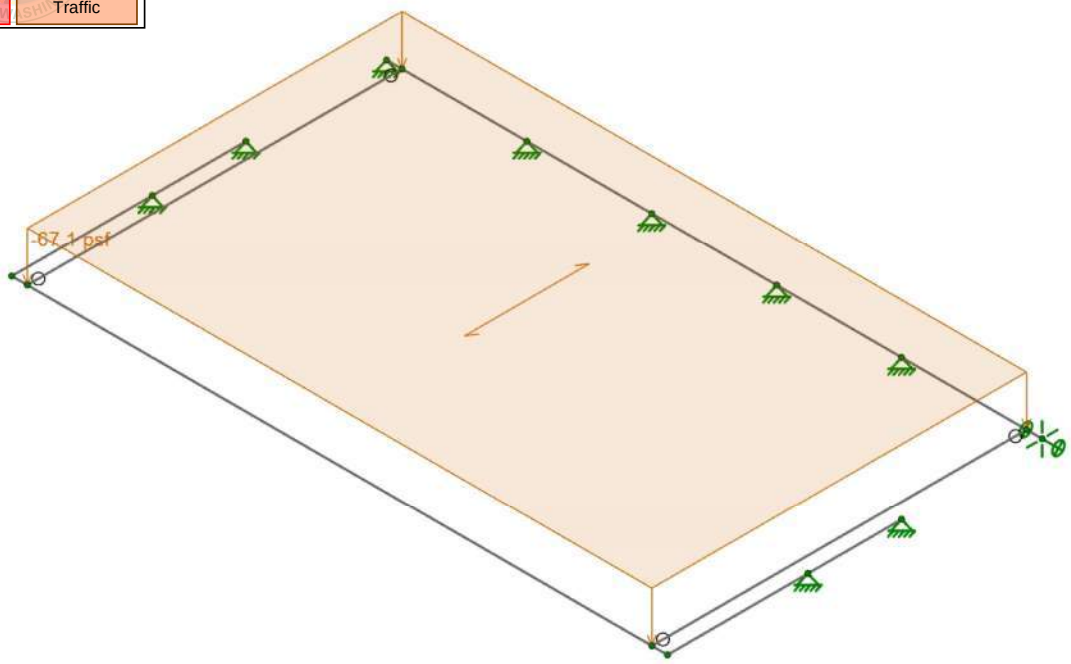

Loads: BLC 1, DEAD

<Licensed Company>		SK-19
APFLUEGER		Oct 28, 2021
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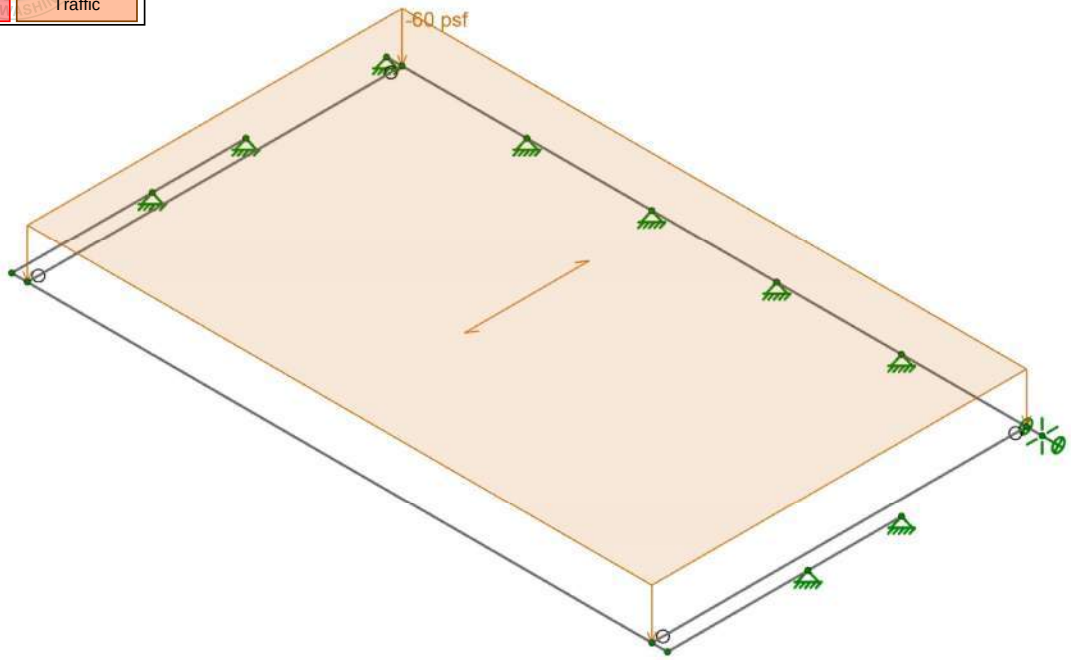

Loads: BLC 2, LIVE

<Licensed Company>		SK-20
APFLUEGER		Oct 28, 2021
		FIRST FLOOR BALCONIES.r3d

Node Coordinates

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	N1	-0.25	0	0	
2	N2	10.25	0	0	
3	N3	2	0	0	
4	N4	4	0	0	
5	N5	6	0	0	
6	N6	8	0	0	
7	N7	-0.25	0	2.25	
8	N8	-0.25	0	3.75	
9	N9	10.25	0	3.75	
10	N10	10.25	0	2.25	
11	N11	-0.25	0	6	
12	N12	10.25	0	6	
13	N13	0	0	0	
14	N14	0	0	6	
15	N15	10	0	6	
16	N16	10	0	0	

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Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]
1	N2	Reaction	Reaction	Reaction	Reaction
2	N1	Reaction	Reaction	Reaction	
3	N3	Reaction	Reaction	Reaction	
4	N4	Reaction	Reaction	Reaction	
5	N5	Reaction	Reaction	Reaction	
6	N6	Reaction	Reaction	Reaction	
7	N7	Reaction	Reaction	Reaction	
8	N8	Reaction	Reaction	Reaction	
9	N9	Reaction	Reaction	Reaction	
10	N10	Reaction	Reaction	Reaction	

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e^{5}°F^{-1}]	Density [lb/ft^{3}]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	490	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	490	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	490	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	527	42	1.4	58	1.3
5	A500 Gr.B RECT	29000	11154	0.3	0.65	527	46	1.4	58	1.3
6	A500 Gr.C RND	29000	11154	0.3	0.65	527	46	1.4	62	1.3
7	A500 Gr.C RECT	29000	11154	0.3	0.65	527	50	1.4	62	1.3
8	A53 Gr.B	29000	11154	0.3	0.65	490	35	1.6	60	1.2
9	A1085	29000	11154	0.3	0.65	490	50	1.4	65	1.3
10	A913 Gr.65	29000	11154	0.3	0.65	490	65	1.1	80	1.1

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in^{2}]	Iyy [in^{4}]	Izz [in^{4}]	J [in^{4}]
1	HSS 6 x 3 x 3/16	HSS6X3X3	Beam	Tube	A500 Gr.C RECT	Typical	2.93	4.55	13.4	11.1
2	L 5 x 3 x 1/4	L5X3X4	Beam	Single Angle	A36 Gr.36	Typical	1.94	1.41	5.09	0.044

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Member Primary Data

	Label	I Node	J Node	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N7	N11	HSS 6 x 3 x 3/16	Beam	Tube	A500 Gr.C RECT	Typical
2	M2	N14	N12	HSS 6 x 3 x 3/16	Beam	Tube	A500 Gr.C RECT	Typical
3	M3	N6	N10	HSS 6 x 3 x 3/16	Beam	Tube	A500 Gr.C RECT	Typical
4	M4	N1	N2	L 5 x 3 x 1/4	Beam	Single Angle	A36 Gr.36	Typical
5	M5	N14	N13	L 5 x 3 x 1/4	Beam	Single Angle	A36 Gr.36	Typical
6	M7	N16	N15	L 5 x 3 x 1/4	Beam	Single Angle	A36 Gr.36	Typical

Member Advanced Data

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
1	M1			Yes	Default	None
2	M2			Yes	Default	None
3	M3			Yes	Default	None
4	M4			Yes	Default	None
5	M5	BenPIN	BenPIN	Yes	Default	None
6	M7	BenPIN	BenPIN	Yes	Default	None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lcomp top [ft]	Function
1	M1	HSS 6 x 3 x 3/16	3.75	Lbyy	Lateral
2	M2	HSS 6 x 3 x 3/16	10.5	Lbyy	Lateral
3	M3	HSS 6 x 3 x 3/16	3.75	Lbyy	Lateral
4	M4	L 5 x 3 x 1/4	10.5	Lbyy	Lateral
5	M5	L 5 x 3 x 1/4	6	Lbyy	Lateral
6	M7	L 5 x 3 x 1/4	6	Lbyy	Lateral

Nodal Loads and Enforced Displacements

No Data to Print...

Member Point Loads

No Data to Print...

Member Distributed Loads (BLC 3 : BLC 1 Transient Area Loads)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/ft]	End Magnitude [lb/ft, F, psf, lb-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M2	Y	-201.3	-201.3	0.25	10.25
2	M4	Y	-201.3	-201.3	0.25	10.25

Member Distributed Loads (BLC 4 : BLC 2 Transient Area Loads)

	Member Label	Direction	Start Magnitude [lb/ft, F, psf, lb-ft/ft]	End Magnitude [lb/ft, F, psf, lb-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M2	Y	-180	-180	0.25	10.25
2	M4	Y	-180	-180	0.25	10.25

Member Area Loads (BLC 1 : DEAD)

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [psf]
1	N14	N13	N16	N15	Y	A-B	-67.1

Member Area Loads (BLC 2 : LIVE)

	Node A	Node B	Node C	Node D	Direction	Load Direction	Magnitude [psf]
1	N13	N14	N15	N16	Y	A-B	-60

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Basic Load Cases

	BLC	Description	Category	Y Gravity	Distributed	Area(Member)
1		DEAD	DL	-1		1
2		LIVE	LL			1
3		BLC 1 Transient Area Loads	None		2	
4		BLC 2 Transient Area Loads	None		2	

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor
1									
2	** ASD LOAD COMBINATIONS **								
3									
4	Deflection 1 (DL)	Yes	Y	DL	1				
5	Deflection 2 (LL)	Yes	Y	LL	1				
6	Deflection 3 (TL)	Yes	Y	DL	1	LL	1		
7	IBC 16-8	Yes	Y	DL	1				
8	IBC 16-9	Yes	Y	DL	1	LL	1	LLS	1

Load Combination Design

	Description	CD	Service	Hot Rolled	Cold Formed	Wood	Concrete	Masonry	Aluminum	Stainless	Connection
1				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	** ASD LOAD COMBINATIONS **			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	Deflection 1 (DL)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	Deflection 2 (LL)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	Deflection 3 (TL)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	IBC 16-8	0.9	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	IBC 16-9		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N2	max	0	8	279.176	8	-45.809	5	0	8	0	8	0	8
2		min	0	5	120.885	5	-101.237	6	0	4	0	4	0	4
3	N1	max	0	5	279.176	8	-45.809	5	0	8	0	8	0	8
4		min	0	6	120.885	5	-101.237	6	0	4	0	4	0	4
5	N3	max	0	5	939.816	8	-8.642	5	0	8	0	8	0	8
6		min	0	6	434.377	5	-19.125	6	0	4	0	4	0	4
7	N4	max	0	5	742.235	8	3.428	8	0	8	0	8	0	8
8		min	0	6	344.792	5	1.545	5	0	4	0	4	0	4
9	N5	max	0	8	742.235	8	3.428	8	0	8	0	8	0	8
10		min	0	5	344.792	5	1.545	5	0	4	0	4	0	4
11	N6	max	0	8	939.816	8	-8.642	5	0	8	0	8	0	8
12		min	0	5	434.377	5	-19.125	6	0	4	0	4	0	4
13	N7	max	-1.81	5	-1350.08	5	0	8	0	8	0	8	0	8
14		min	-4	6	-2984.348	6	0	5	0	4	0	4	0	4
15	N8	max	17.816	8	5006.894	8	116.934	8	0	8	0	8	0	8
16		min	8.061	5	2250.026	5	52.907	5	0	4	0	4	0	4

Envelope Node Reactions (Continued)

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
17	N9	max	-8.061	5	5006.894	8	116.934	8	0	8	0	8	0	8
18		min	-17.816	6	2250.026	5	52.907	5	0	4	0	4	0	4
19	N10	max	4	8	-1350.08	5	0	8	0	8	0	8	0	8
20		min	1.8	5	-2984.348	6	0	5	0	4	0	4	0	4
21	Totals:	max	0	8	7967.545	8	0	8						
22		min	0	5	3600	5	0	4						

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Envelope Beam Deflections

	Member Label	Span		Location [ft]	y' [in]	(n) L'/y' Ratio	LC
1	M1	1	max	0.312	0.001	NC	7
2		1	min	0.859	0.004	5004	6
3		2	max	1.562	-0.001	NC	8
4		2	min	3.75	-0.076	707	6
5	M2	1	max	10.391	-0.005	NC	5
6		1	min	5.25	-0.344	366	6
7	M3	1	max	2.188	-0.001	NC	8
8		1	min	0	-0.076	707	6
9		2	max	3.438	0.001	NC	7
10		2	min	2.891	0.004	5004	6
11	M4	1	max	1.531	-0.001	NC	8
12		1	min	0	0	NC	4
13		2	max	4.156	0	NC	8
14		2	min	2.297	0	NC	4
15		3	max	6.234	0	NC	8
16		3	min	4.266	0	NC	4
17		4	max	8.203	0	NC	8
18		4	min	6.344	0	NC	4
19		5	max	8.969	-0.001	NC	8
20		5	min	8.312	0	NC	4
21	M5	1	max	5.188	-0.001	NC	7
22		1	min	0	0	NC	4
23	M7	1	max	0.812	-0.001	NC	8
24		1	min	0	0	NC	4

Envelope AISC 15TH (360-16): ASD Member Steel Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	Pnc/om [lb]	Pnt/om [lb]	Mnyy/om [lb-ft]	Mnzz/om [lb-ft]	Cb	Eqn
1	M1	HSS6X3X3	0.32	1.523	8	0.088	1.484	y	8	79746.757	87724.551	7914.5	13947.106	1.386	H1-1b
2	M2	HSS6X3X3	0.387	5.25	8	0.058	10.5	y	8	41541.434	87724.551	7914.5	13947.106	1.137	H1-1b
3	M3	HSS6X3X3	0.32	2.227	8	0.088	2.266	y	8	79746.757	87724.551	7914.5	13947.106	1.386	H1-1b
4	M4	L5X3X4	0.092	9.516	8	0.031	8.312	y	8	7807.944	41820.359	1047.472	2958.213	1.5	H2-1
5	M5	L5X3X4	0.022	3	8	0.023	6	y	8	21035.936	41820.359	1047.472	3082.785	1.136	H2-1
6	M7	L5X3X4	0.022	3	8	0.023	6	y	8	21035.936	41820.359	1047.472	3082.785	1.136	H2-1

Warning Log

No Data to Print...

PRMU20220123

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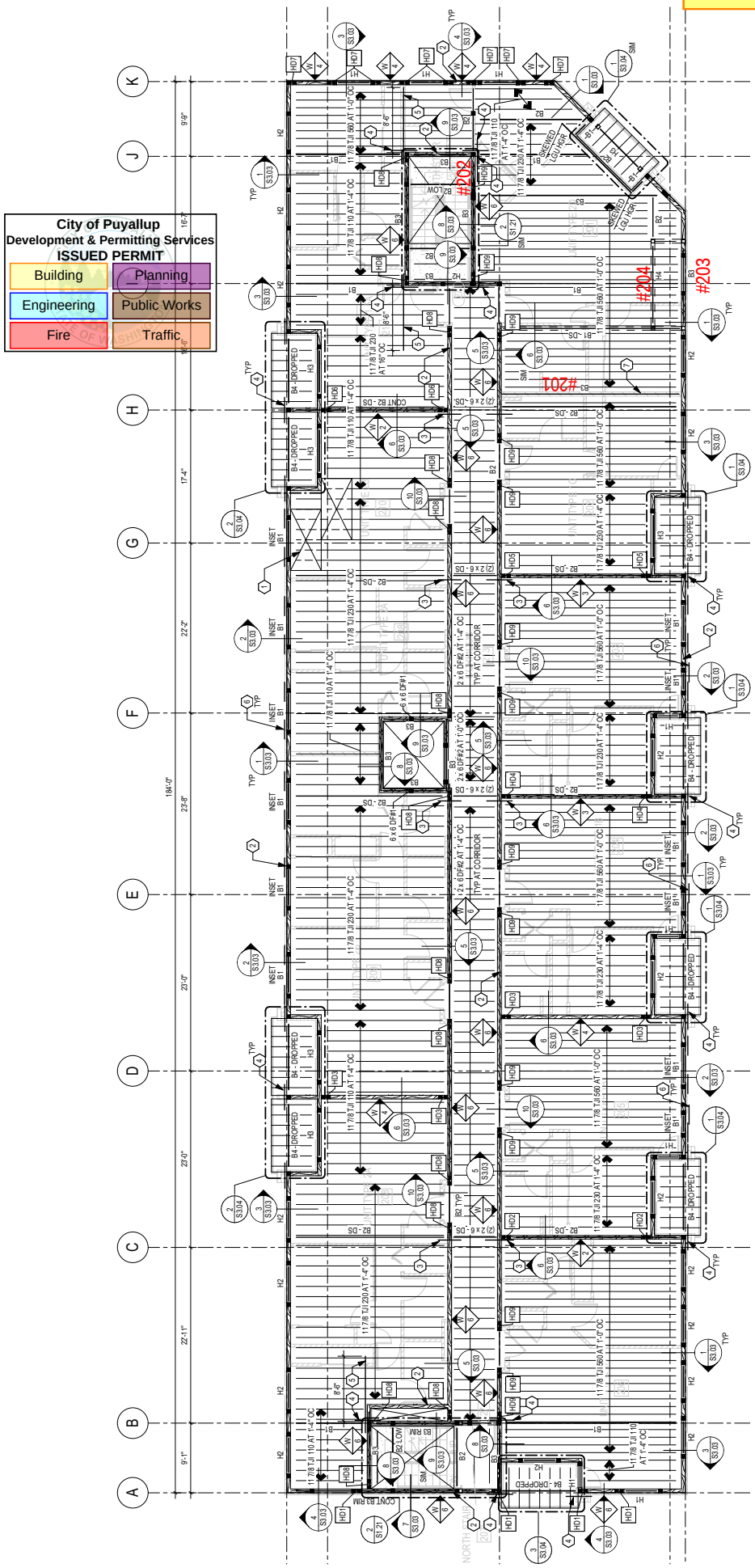
Section 4.0
Wood Framed Floor Design

PRMU20220123



SECOND FLOOR FRAMING PLAN - BEAM KEY

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Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

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DESCRIPTION: #201 - Beam Bel South Party Wall Offset

CODE REFERENCES

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building Planning
Engineering Public Works
Fire Traffic

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combination Set : IBC 2018

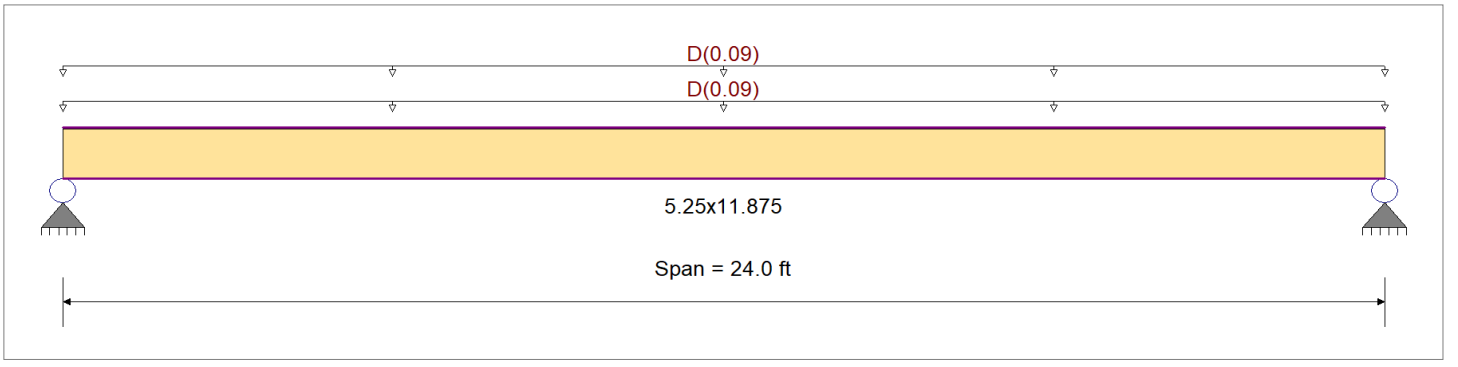
Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2018

Wood Species : iLevel Truss Joist
Wood Grade : TimberStrand LSL 1.55E

Fb +	2,325.0 psi	*E : Modulus of Elasticity*	
Fb -	2,325.0 psi	Ebend- xx	1,550.0 ksi
Fc - Prll	2,050.0 psi	Eminbend - xx	787.82 ksi
Fc - Perp	800.0 psi		
Fv	310.0 psi		
Ft	1,070.0 psi	Density	45.010 pcf

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.010 ksf, Tributary Width = 9.0 ft, (3rd FL Wall)
Uniform Load : D = 0.010 ksf, Tributary Width = 9.0 ft, (2nd FL Wall)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.602 : 1	Maximum Shear Stress Ratio	=	0.171 : 1
Section used for this span		5.25x11.875	Section used for this span		5.25x11.875
fb: Actual	=	1,260.41 psi	fv: Actual	=	47.80 psi
Fb: Allowable	=	2,092.50 psi	Fv: Allowable	=	279.00 psi
Load Combination		+D+H	Load Combination		+D+H
Location of maximum on span	=	12.000 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.000 in	Ratio =	0 <360
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	1.190 in	Ratio =	241 >=240
Max Upward Total Deflection	0.000 in	Ratio =	0 <240

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 24.0 ft	1	0.602	0.171	0.90	1.000	1.00	1.00	1.00	1.00	1.00	12.96	1,260.41	2092.50	1.99	47.80	279.00
+D+L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 24.0 ft	1	0.542	0.154	1.00	1.000	1.00	1.00	1.00	1.00	1.00	12.96	1,260.41	2325.00	1.99	47.80	310.00
+D+Lr+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 24.0 ft	1	0.434	0.123	1.25	1.000	1.00	1.00	1.00	1.00	1.00	12.96	1,260.41	2906.25	1.99	47.80	387.50
+D+S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 24.0 ft	1	0.471	0.134	1.15	1.000	1.00	1.00	1.00	1.00	1.00	12.96	1,260.41	2673.75	1.99	47.80	356.50
+D+0.750Lr+0.750L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 24.0 ft	1	0.434	0.123	1.25	1.000	1.00	1.00	1.00	1.00	1.00	12.96	1,260.41	2906.25	1.99	47.80	387.50
+D+0.750L+0.750S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 24.0 ft	1	0.471	0.134	1.15	1.000	1.00	1.00	1.00	1.00	1.00	12.96	1,260.41	2673.75	1.99	47.80	356.50
+D+0.60W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00

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Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

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DESCRIPTION: #201 - Beam Bel South Party Wall Offset

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Load Combination	Segment Length	Span #	M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	Moment Values fb	Moment Values F'b	Shear Values V	Shear Values fv	Shear Values F'v
	Length = 24.0 ft	1	0.339	0.096	1.60	1.000	1.00	1.00	1.00	1.00	1.00	12.96	1,260.41	3720.00	1.99	47.80	496.00
+D+0.70E+H						1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
	Length = 24.0 ft	1	0.339	0.096	1.60	1.000	1.00	1.00	1.00	1.00	1.00	12.96	1,260.41	3720.00	1.99	47.80	496.00
+D+0.750L+0.750S+0.450W+H						1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
	Length = 24.0 ft	1	0.339	0.096	1.60	1.000	1.00	1.00	1.00	1.00	1.00	12.96	1,260.41	3720.00	1.99	47.80	496.00
+D+0.750L+0.750S+0.450W+H						1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
	Length = 24.0 ft	1	0.339	0.096	1.60	1.000	1.00	1.00	1.00	1.00	1.00	12.96	1,260.41	3720.00	1.99	47.80	496.00
+D+0.750L+0.750S+0.5250E+H						1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
	Length = 24.0 ft	1	0.339	0.096	1.60	1.000	1.00	1.00	1.00	1.00	1.00	12.96	1,260.41	3720.00	1.99	47.80	496.00
+0.60D+0.60W+0.60H						1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
	Length = 24.0 ft	1	0.203	0.058	1.60	1.000	1.00	1.00	1.00	1.00	1.00	7.78	756.24	3720.00	1.19	28.68	496.00
+0.60D+0.70E+0.60H						1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
	Length = 24.0 ft	1	0.203	0.058	1.60	1.000	1.00	1.00	1.00	1.00	1.00	7.78	756.24	3720.00	1.19	28.68	496.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D Only	1	1.1902	12.088		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	2.160	2.160
Overall MINimum	2.160	2.160
+D+H	2.160	2.160
+D+L+H	2.160	2.160
+D+Lr+H	2.160	2.160
+D+S+H	2.160	2.160
+D+0.750Lr+0.750L+H	2.160	2.160
+D+0.750L+0.750S+H	2.160	2.160
+D+0.60W+H	2.160	2.160
+D+0.70E+H	2.160	2.160
+D+0.750Lr+0.750L+0.450W+H	2.160	2.160
+D+0.750L+0.750S+0.450W+H	2.160	2.160
+D+0.750L+0.750S+0.5250E+H	2.160	2.160
+0.60D+0.60W+0.60H	1.296	1.296
+0.60D+0.70E+0.60H	1.296	1.296
D Only	2.160	2.160
H Only		

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Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

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DESCRIPTION: #202 - Southwest Unit HDR

CODE REFERENCES

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Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Set : IBC 2018

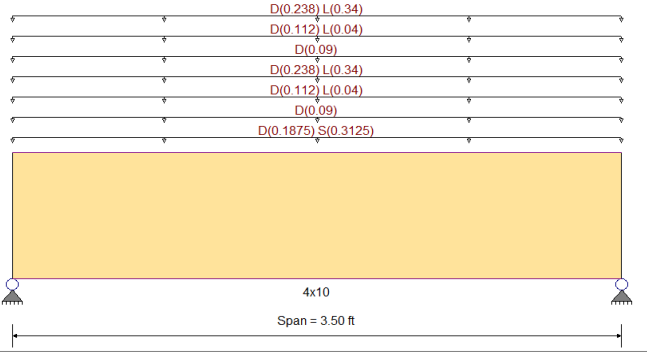
Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2018

Wood Species : Douglas Fir-Larch
Wood Grade : No.2

Fb +	900 psi	*E : Modulus of Elasticity*	
Fb -	900 psi	Ebend- xx	1600 ksi
Fc - Prll	1350 psi	Eminbend - xx	580 ksi
Fc - Perp	625 psi		
Fv	180 psi		
Ft	575 psi	Density	31.21 pcf

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.0150, S = 0.0250 ksf, Tributary Width = 12.50 ft, (Roof)
Uniform Load : D = 0.010 ksf, Tributary Width = 9.0 ft, (3rd FL Wall)
Uniform Load : D = 0.0280, L = 0.010 ksf, Tributary Width = 4.0 ft, (3rd FL Landing)
Uniform Load : D = 0.0280, L = 0.040 ksf, Tributary Width = 8.50 ft, (3rd FL)
Uniform Load : D = 0.010 ksf, Tributary Width = 9.0 ft, (2nd FL Wall)
Uniform Load : D = 0.0280, L = 0.010 ksf, Tributary Width = 4.0 ft, (2nd FL Landing)
Uniform Load : D = 0.0280, L = 0.040 ksf, Tributary Width = 8.50 ft, (2nd FL)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.623 : 1	Maximum Shear Stress Ratio	=	0.463 : 1
Section used for this span		4x10	Section used for this span		4x10
fb: Actual	=	672.80 psi	fv: Actual	=	83.28 psi
Fb: Allowable	=	1,080.00 psi	Fv: Allowable	=	180.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	1.750 ft	Location of maximum on span	=	2.734 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.007 in	Ratio =	6010 >=360
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.017 in	Ratio =	2440 >=240
Max Upward Total Deflection	0.000 in	Ratio =	0 <240

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+H													0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.404	0.300	0.90	1.200	1.00	1.00	1.00	1.00	1.00	1.63	393.00	972.00	1.05	48.65	162.00
+D+L+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.623	0.463	1.00	1.200	1.00	1.00	1.00	1.00	1.00	2.80	672.80	1080.00	1.80	83.28	180.00
+D+Lr+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.291	0.216	1.25	1.200	1.00	1.00	1.00	1.00	1.00	1.63	393.00	1350.00	1.05	48.65	225.00
+D+S+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.409	0.304	1.15	1.200	1.00	1.00	1.00	1.00	1.00	2.11	508.05	1242.00	1.36	62.89	207.00

Title Block Line 1
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Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

Printed: 8 MAR 2021, 4:08PM

Wood Beam

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Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: #202 - Southwest Unit HDR

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+0.750Lr+0.750L+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.347	0.332	1.25	1.200	1.00	1.00	1.00	1.00	1.00	2.51	602.85	1350.00	1.61	74.62	225.00
+D+0.750L+0.750S+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.555	0.412	1.15	1.200	1.00	1.00	1.00	1.00	1.00	2.87	689.13	1242.00	1.84	85.30	207.00
+D+0.60W+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.227	0.169	1.60	1.200	1.00	1.00	1.00	1.00	1.00	1.63	393.00	1728.00	1.05	48.65	288.00
+D+0.70E+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.227	0.169	1.60	1.200	1.00	1.00	1.00	1.00	1.00	1.63	393.00	1728.00	1.05	48.65	288.00
+D+0.750Lr+0.750L+0.450W+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.349	0.259	1.60	1.200	1.00	1.00	1.00	1.00	1.00	2.51	602.85	1728.00	1.61	74.62	288.00
+D+0.750L+0.750S+0.450W+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.399	0.296	1.60	1.200	1.00	1.00	1.00	1.00	1.00	2.87	689.13	1728.00	1.84	85.30	288.00
+D+0.750L+0.750S+0.5250E+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.399	0.296	1.60	1.200	1.00	1.00	1.00	1.00	1.00	2.87	689.13	1728.00	1.84	85.30	288.00
+0.60D+0.60W+0.60H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.136	0.101	1.60	1.200	1.00	1.00	1.00	1.00	1.00	0.98	235.80	1728.00	0.63	29.19	288.00
+0.60D+0.70E+0.60H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.136	0.101	1.60	1.200	1.00	1.00	1.00	1.00	1.00	0.98	235.80	1728.00	0.63	29.19	288.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.750L+0.750S+0.5250E+H	1	0.0172	1.763		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	3.276	3.276
Overall MINimum	0.547	0.547
+D+H	1.868	1.868
+D+L+H	3.198	3.198
+D+Lr+H	1.868	1.868
+D+S+H	2.415	2.415
+D+0.750Lr+0.750L+H	2.866	2.866
+D+0.750L+0.750S+H	3.276	3.276
+D+0.60W+H	1.868	1.868
+D+0.70E+H	1.868	1.868
+D+0.750Lr+0.750L+0.450W+H	2.866	2.866
+D+0.750L+0.750S+0.450W+H	3.276	3.276
+D+0.750L+0.750S+0.5250E+H	3.276	3.276
+0.60D+0.60W+0.60H	1.121	1.121
+0.60D+0.70E+0.60H	1.121	1.121
D Only	1.868	1.868
L Only	1.330	1.330
S Only	0.547	0.547
H Only		

Title Block Line 1
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Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

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DESCRIPTION: #203 - West Rim at Grid I4

CODE REFERENCES

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building Planning
Engineering Public Works
Fire Traffic

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Set : IBC 2018

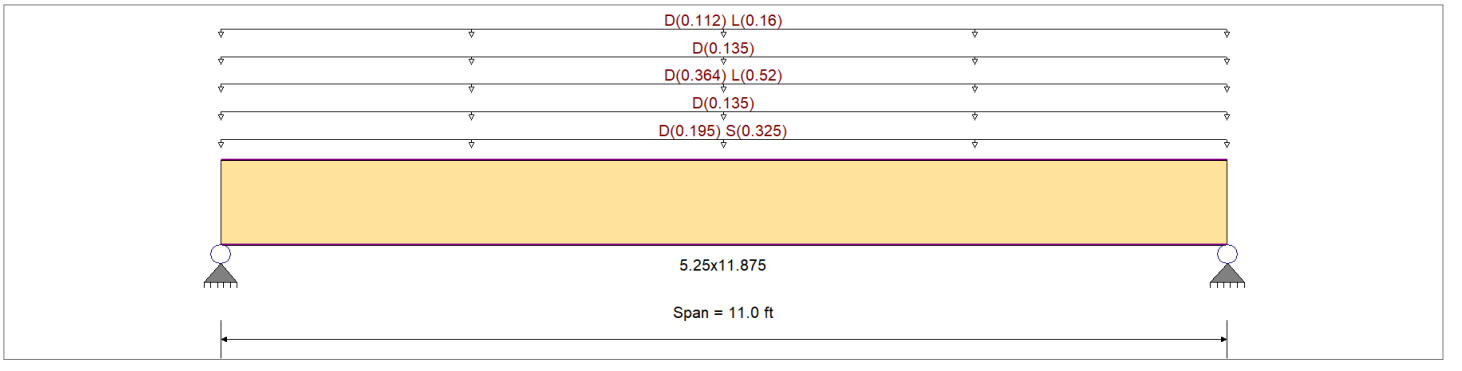
Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2018

Wood Species : iLevel Truss Joist
Wood Grade : Parallam PSL 2.0E

Fb +	2900 psi	*E : Modulus of Elasticity*	
Fb -	2900 psi	Ebend- xx	2000 ksi
Fc - Prll	2900 psi	Eminbend - xx	1016.535 ksi
Fc - Perp	750 psi		
Fv	290 psi		
Ft	2025 psi	Density	45.07 pcf

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.0150, S = 0.0250 ksf, Tributary Width = 13.0 ft, (Roof)
Uniform Load : D = 0.0150 ksf, Tributary Width = 9.0 ft, (3rd FL Wall)
Uniform Load : D = 0.0280, L = 0.040 ksf, Tributary Width = 13.0 ft, (3rd FL)
Uniform Load : D = 0.0150 ksf, Tributary Width = 9.0 ft, (2nd FL Wall)
Uniform Load : D = 0.0280, L = 0.040 ksf, Tributary Width = 4.0 ft, (2nd FL)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.822 : 1	Maximum Shear Stress Ratio	=	0.610 : 1
Section used for this span		5.25x11.875	Section used for this span		5.25x11.875
fb: Actual	=	2,384.43 psi	fv: Actual	=	176.93 psi
Fb: Allowable	=	2,900.00 psi	Fv: Allowable	=	290.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	5.500 ft	Location of maximum on span	=	10.036 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.154 in	Ratio =	858 >=360
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.383 in	Ratio =	344 >=240
Max Upward Total Deflection	0.000 in	Ratio =	0 <240

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 11.0 ft	1	0.530	0.394	0.90							14.23	1,384.17	2610.00	4.27	102.71	261.00
+D+L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 11.0 ft	1	0.822	0.610	1.00							24.52	2,384.43	2900.00	7.35	176.93	290.00
+D+Lr+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 11.0 ft	1	0.382	0.283	1.25							14.23	1,384.17	3625.00	4.27	102.71	362.50
+D+S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 11.0 ft	1	0.558	0.414	1.15							19.15	1,862.24	3335.00	5.74	138.18	333.50
+D+0.750Lr+0.750L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 11.0 ft	1	0.589	0.437	1.25							21.95	2,134.37	3625.00	6.58	158.37	362.50

Wood Beam

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DESCRIPTION: #203 - West Rim at Grid I4

City of Puyallup
Development & Permitting Services
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Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+0.750L+0.750S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 11.0 ft	1	0.347	0.555	1.15	1.000	1.00	1.00	1.00	1.00	1.00	25.63	2,492.91	3335.00	7.69	184.98	333.50
+D+0.60W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 11.0 ft	1	0.298	0.221	1.60	1.000	1.00	1.00	1.00	1.00	1.00	14.23	1,384.17	4640.00	4.27	102.71	464.00
+D+0.70E+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 11.0 ft	1	0.298	0.221	1.60	1.000	1.00	1.00	1.00	1.00	1.00	14.23	1,384.17	4640.00	4.27	102.71	464.00
+D+0.750Lr+0.750L+0.450W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 11.0 ft	1	0.460	0.341	1.60	1.000	1.00	1.00	1.00	1.00	1.00	21.95	2,134.37	4640.00	6.58	158.37	464.00
+D+0.750L+0.750S+0.450W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 11.0 ft	1	0.537	0.399	1.60	1.000	1.00	1.00	1.00	1.00	1.00	25.63	2,492.91	4640.00	7.69	184.98	464.00
+D+0.750L+0.750S+0.5250E+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 11.0 ft	1	0.537	0.399	1.60	1.000	1.00	1.00	1.00	1.00	1.00	25.63	2,492.91	4640.00	7.69	184.98	464.00
+0.60D+0.60W+0.60H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 11.0 ft	1	0.179	0.133	1.60	1.000	1.00	1.00	1.00	1.00	1.00	8.54	830.50	4640.00	2.56	61.63	464.00
+0.60D+0.70E+0.60H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 11.0 ft	1	0.179	0.133	1.60	1.000	1.00	1.00	1.00	1.00	1.00	8.54	830.50	4640.00	2.56	61.63	464.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.750L+0.750S+0.5250E+H	1	0.3832	5.540		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	9.321	9.321
Overall MINimum	1.788	1.788
+D+H	5.176	5.176
+D+L+H	8.916	8.916
+D+Lr+H	5.176	5.176
+D+S+H	6.963	6.963
+D+0.750Lr+0.750L+H	7.981	7.981
+D+0.750L+0.750S+H	9.321	9.321
+D+0.60W+H	5.176	5.176
+D+0.70E+H	5.176	5.176
+D+0.750Lr+0.750L+0.450W+H	7.981	7.981
+D+0.750L+0.750S+0.450W+H	9.321	9.321
+D+0.750L+0.750S+0.5250E+H	9.321	9.321
+0.60D+0.60W+0.60H	3.105	3.105
+0.60D+0.70E+0.60H	3.105	3.105
D Only	5.176	5.176
L Only	3.740	3.740
S Only	1.788	1.788
H Only		

Title Block Line 1
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Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

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DESCRIPTION: #204 - West HDR at Grid I4

CODE REFERENCES

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building Planning
Engineering Public Works
Fire Traffic

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Set : IBC 2018

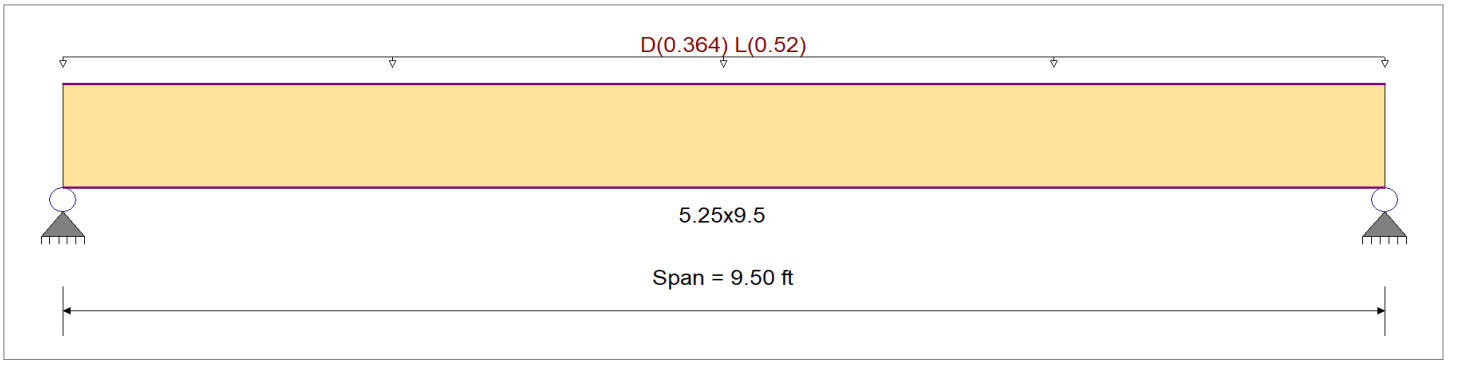
Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2018

Wood Species : iLevel Truss Joist
Wood Grade : Parallam PSL 2.0E

Fb +	2900 psi	*E : Modulus of Elasticity*	
Fb -	2900 psi	Ebend- xx	2000 ksi
Fc - Prll	2900 psi	Eminbend - xx	1016.535 ksi
Fc - Perp	750 psi		
Fv	290 psi		
Ft	2025 psi	Density	45.07 pcf

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.0280, L = 0.040 ksf, Tributary Width = 13.0 ft, (2nd FL)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.523 : 1	Maximum Shear Stress Ratio	=	0.366 : 1
Section used for this span		5.25x9.5	Section used for this span		5.25x9.5
fb: Actual	=	1,515.43 psi	fv: Actual	=	106.01 psi
Fb: Allowable	=	2,900.00 psi	Fv: Allowable	=	290.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	4.750 ft	Location of maximum on span	=	8.737 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.128 in	Ratio =	892	>=360
Max Upward Transient Deflection	0.000 in	Ratio =	0	<360
Max Downward Total Deflection	0.217 in	Ratio =	524	>=240
Max Upward Total Deflection	0.000 in	Ratio =	0	<240

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	Moment Values fb	Moment Values F'b	Shear Values V	Shear Values fv	Shear Values F'v
+D+H													0.00	0.00	0.00	0.00
Length = 9.50 ft	1	0.239	0.167	0.90	1.000	1.00	1.00	1.00	1.00	1.00	4.11	624.00	2610.00	1.45	43.65	261.00
+D+L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.50 ft	1	0.523	0.366	1.00	1.000	1.00	1.00	1.00	1.00	1.00	9.97	1,515.43	2900.00	3.52	106.01	290.00
+D+Lr+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.50 ft	1	0.172	0.120	1.25	1.000	1.00	1.00	1.00	1.00	1.00	4.11	624.00	3625.00	1.45	43.65	362.50
+D+S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.50 ft	1	0.187	0.131	1.15	1.000	1.00	1.00	1.00	1.00	1.00	4.11	624.00	3335.00	1.45	43.65	333.50
+D+0.750Lr+0.750L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.50 ft	1	0.357	0.249	1.25	1.000	1.00	1.00	1.00	1.00	1.00	8.51	1,292.57	3625.00	3.01	90.42	362.50
+D+0.750L+0.750S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.50 ft	1	0.388	0.271	1.15	1.000	1.00	1.00	1.00	1.00	1.00	8.51	1,292.57	3335.00	3.01	90.42	333.50
+D+0.60W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.50 ft	1	0.134	0.094	1.60	1.000	1.00	1.00	1.00	1.00	1.00	4.11	624.00	4640.00	1.45	43.65	464.00

Title Block Line 1
You can change this area
using the "Settings" menu item
and then using the "Printing &
Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

Printed: 9 MAR 2021, 12:18PM

Wood Beam

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DESCRIPTION: #204 - West HDR at Grid I4

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

Load Combination / Segment Length	Span #	M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	Moment Values fb	Moment Values F'b	Shear Values V	Shear Values fv	Shear Values F'v
+D+0.70E+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.50 ft	1	0.034	0.094	1.60	1.000	1.00	1.00	1.00	1.00	1.00	4.11	624.00	4640.00	1.45	43.65	464.00
+D+0.750Lr+0.750L+0.450W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.50 ft	1	0.279	0.195	1.60	1.000	1.00	1.00	1.00	1.00	1.00	8.51	1,292.57	4640.00	3.01	90.42	464.00
+D+0.750L+0.750S+0.450W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.50 ft	1	0.279	0.195	1.60	1.000	1.00	1.00	1.00	1.00	1.00	8.51	1,292.57	4640.00	3.01	90.42	464.00
+D+0.750L+0.750S+0.5250E+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.50 ft	1	0.279	0.195	1.60	1.000	1.00	1.00	1.00	1.00	1.00	8.51	1,292.57	4640.00	3.01	90.42	464.00
+0.60D+0.60W+0.60H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.50 ft	1	0.081	0.056	1.60	1.000	1.00	1.00	1.00	1.00	1.00	2.46	374.40	4640.00	0.87	26.19	464.00
+0.60D+0.70E+0.60H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.50 ft	1	0.081	0.056	1.60	1.000	1.00	1.00	1.00	1.00	1.00	2.46	374.40	4640.00	0.87	26.19	464.00

Overall Maximum Deflections

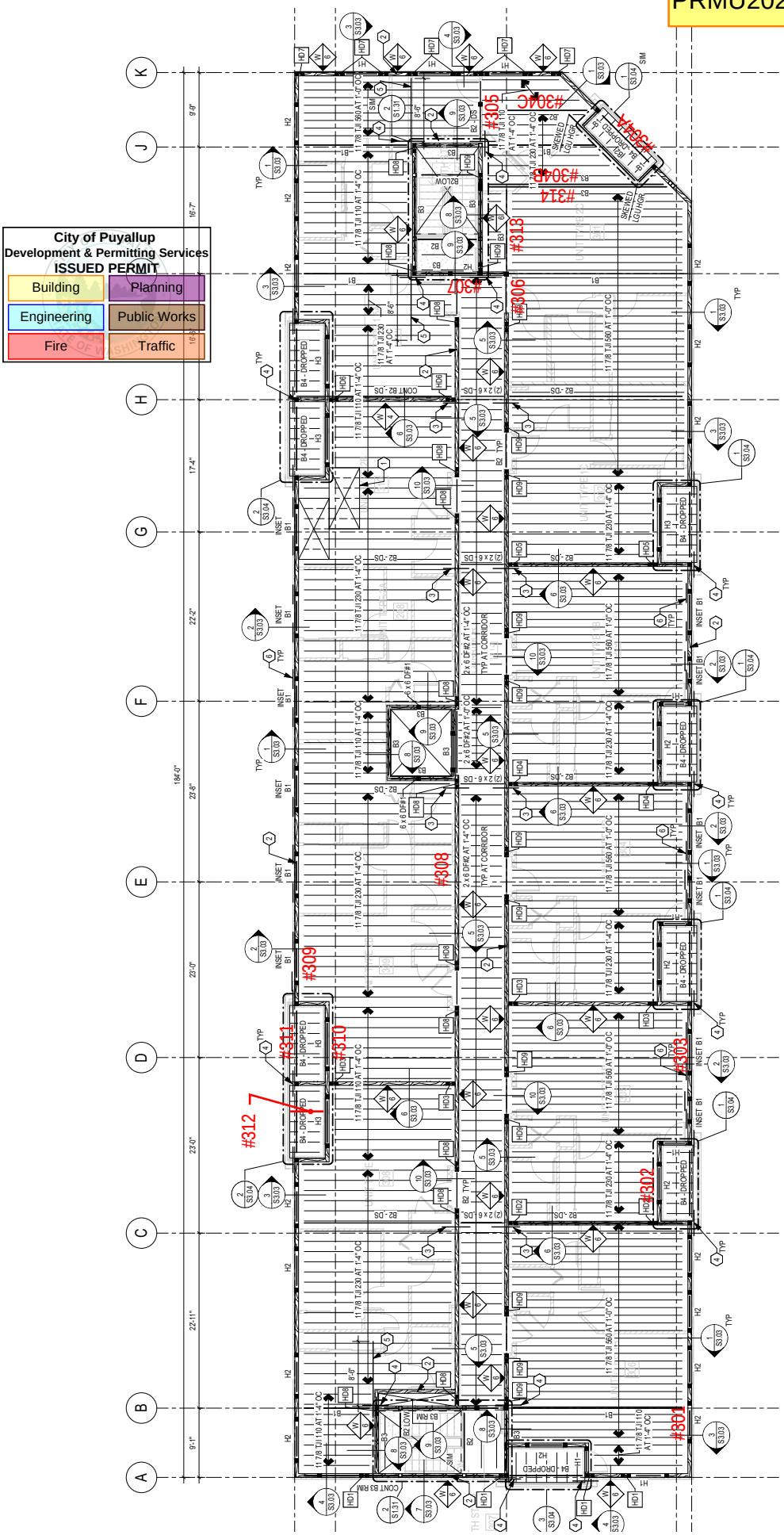
Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.2172	4.785		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	4.199	4.199
Overall MINimum	2.470	2.470
+D+H	1.729	1.729
+D+L+H	4.199	4.199
+D+Lr+H	1.729	1.729
+D+S+H	1.729	1.729
+D+0.750Lr+0.750L+H	3.582	3.582
+D+0.750L+0.750S+H	3.582	3.582
+D+0.60W+H	1.729	1.729
+D+0.70E+H	1.729	1.729
+D+0.750Lr+0.750L+0.450W+H	3.582	3.582
+D+0.750L+0.750S+0.450W+H	3.582	3.582
+D+0.750L+0.750S+0.5250E+H	3.582	3.582
+0.60D+0.60W+0.60H	1.037	1.037
+0.60D+0.70E+0.60H	1.037	1.037
D Only	1.729	1.729
L Only	2.470	2.470
H Only		

PRMU20220123



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Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

File: Puyallup 2nd St Apts.ec6
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DESCRIPTION: #301 - Typ East/West Hdr

CODE REFERENCES

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning | Engineering | Public Works | Fire | Traffic

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combination Set : IBC 2018

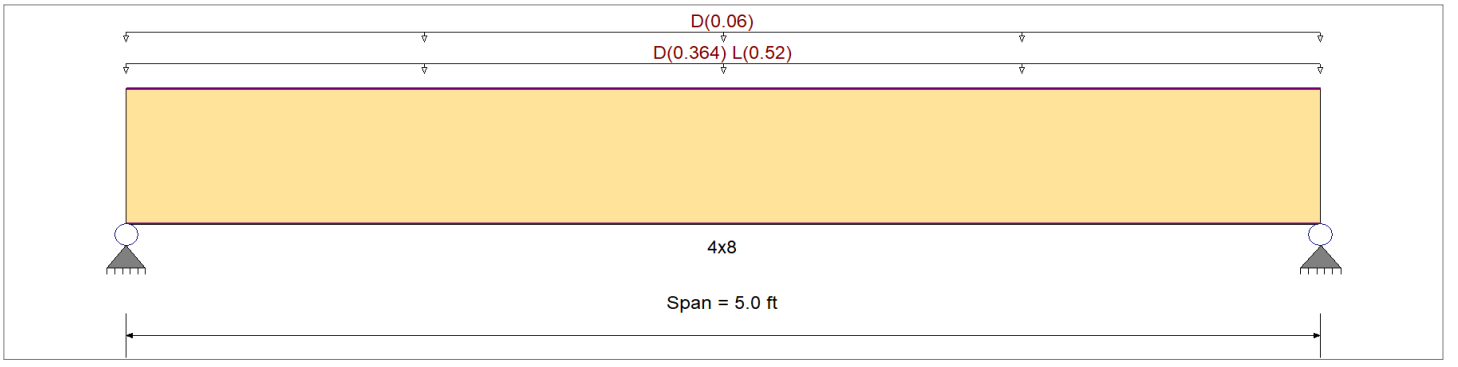
Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2018

Wood Species : Douglas Fir-Larch
Wood Grade : No.2

Fb +	900.0 psi	*E : Modulus of Elasticity*	
Fb -	900.0 psi	Ebend- xx	1,600.0 ksi
Fc - Prll	1,350.0 psi	Eminbend - xx	580.0 ksi
Fc - Perp	625.0 psi		
Fv	180.0 psi		
Ft	575.0 psi	Density	31.210 pcf

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.0280, L = 0.040 ksf, Tributary Width = 13.0 ft, (Floor)
Uniform Load : D = 0.0150 ksf, Tributary Width = 4.0 ft, (Wall)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.987 : 1	Maximum Shear Stress Ratio	=	0.588 : 1
Section used for this span		4x8	Section used for this span		4x8
fb: Actual	=	1,154.54 psi	fv: Actual	=	105.90 psi
Fb: Allowable	=	1,170.00 psi	Fv: Allowable	=	180.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	2.500 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.041 in	Ratio =	1450 >=360
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.075 in	Ratio =	799 >=240
Max Upward Total Deflection	0.000 in	Ratio =	0 <240

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.492	0.294	0.90							1.33	518.57	1053.00	0.80	47.57	162.00
+D+L+H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.987	0.588	1.00							2.95	1,154.54	1170.00	1.79	105.90	180.00
+D+Lr+H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.355	0.211	1.25							1.33	518.57	1462.50	0.80	47.57	225.00
+D+S+H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.385	0.230	1.15							1.33	518.57	1345.50	0.80	47.57	207.00
+D+0.750Lr+0.750L+H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.681	0.406	1.25							2.54	995.55	1462.50	1.54	91.32	225.00
+D+0.750L+0.750S+H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.740	0.441	1.15							2.54	995.55	1345.50	1.54	91.32	207.00
+D+0.60W+H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00

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Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

File: Puyallup 2nd St Apts.ec6
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Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: #301 - Typ East/West Hdr

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning | Engineering | Public Works | Fire | Traffic

Load Combination	Segment Length	Span #	M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	M	fb	F'b	V	fv	F'v
			Max Stress Ratios									Moment Values			Shear Values		
Length = 5.0 ft		1	0.277	0.165	1.60	1.300	1.00	1.00	1.00	1.00	1.00	1.33	518.57	1872.00	0.80	47.57	288.00
+D+0.70E+H						1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft		1	0.277	0.165	1.60	1.300	1.00	1.00	1.00	1.00	1.00	1.33	518.57	1872.00	0.80	47.57	288.00
+D+0.750L+0.750S+0.450W+H						1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft		1	0.532	0.317	1.60	1.300	1.00	1.00	1.00	1.00	1.00	2.54	995.55	1872.00	1.54	91.32	288.00
+D+0.750L+0.750S+0.450W+H						1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft		1	0.532	0.317	1.60	1.300	1.00	1.00	1.00	1.00	1.00	2.54	995.55	1872.00	1.54	91.32	288.00
+D+0.750L+0.750S+0.5250E+H						1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft		1	0.532	0.317	1.60	1.300	1.00	1.00	1.00	1.00	1.00	2.54	995.55	1872.00	1.54	91.32	288.00
+0.60D+0.60W+0.60H						1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft		1	0.166	0.099	1.60	1.300	1.00	1.00	1.00	1.00	1.00	0.80	311.14	1872.00	0.48	28.54	288.00
+0.60D+0.70E+0.60H						1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft		1	0.166	0.099	1.60	1.300	1.00	1.00	1.00	1.00	1.00	0.80	311.14	1872.00	0.48	28.54	288.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0751	2.518		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	2.360	2.360
Overall MINimum	1.300	1.300
+D+H	1.060	1.060
+D+L+H	2.360	2.360
+D+Lr+H	1.060	1.060
+D+S+H	1.060	1.060
+D+0.750Lr+0.750L+H	2.035	2.035
+D+0.750L+0.750S+H	2.035	2.035
+D+0.60W+H	1.060	1.060
+D+0.70E+H	1.060	1.060
+D+0.750Lr+0.750L+0.450W+H	2.035	2.035
+D+0.750L+0.750S+0.450W+H	2.035	2.035
+D+0.750L+0.750S+0.5250E+H	2.035	2.035
+0.60D+0.60W+0.60H	0.636	0.636
+0.60D+0.70E+0.60H	0.636	0.636
D Only	1.060	1.060
L Only	1.300	1.300
H Only		

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Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

File: Puyallup 2nd St Apts.ec6
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Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: #302 - Typ West Hdr at Balcony

CODE REFERENCES

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning | Engineering | Public Works | Fire | Traffic

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Set : IBC 2018

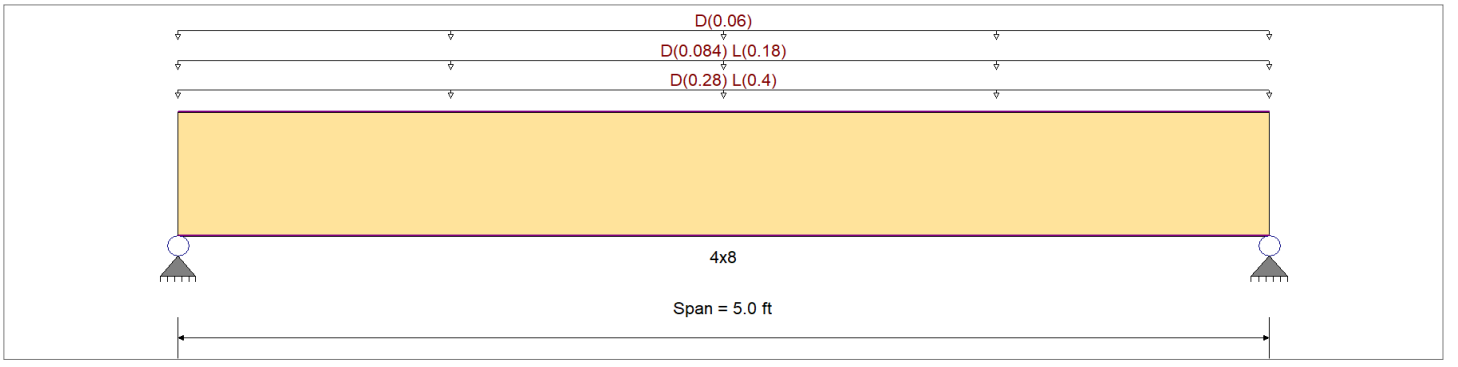
Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2018

Wood Species : Douglas Fir-Larch
Wood Grade : No.1

Fb +	1000 psi	*E : Modulus of Elasticity*	
Fb -	1000 psi	Ebend- xx	1700 ksi
Fc - Prll	1500 psi	Eminbend - xx	620 ksi
Fc - Perp	625 psi		
Fv	180 psi		
Ft	675 psi	Density	31.21 pcf

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.0280, L = 0.040 ksf, Tributary Width = 10.0 ft, (Floor)
Uniform Load : D = 0.0280, L = 0.060 ksf, Tributary Width = 3.0 ft, (Deck)
Uniform Load : D = 0.0150 ksf, Tributary Width = 4.0 ft, (Wall)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.945 : 1	Maximum Shear Stress Ratio	=	0.626 : 1
Section used for this span		4x8	Section used for this span		4x8
fb: Actual	=	1,227.93 psi	fv: Actual	=	112.63 psi
Fb: Allowable	=	1,300.00 psi	Fv: Allowable	=	180.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	2.500 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.043 in	Ratio =	1381 >=360
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.075 in	Ratio =	798 >=240
Max Upward Total Deflection	0.000 in	Ratio =	0 <240

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.443	0.294	0.90							1.33	518.57	1170.00	0.80	47.57	162.00
+D+L+H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.945	0.626	1.00							3.14	1,227.93	1300.00	1.91	112.63	180.00
+D+Lr+H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.319	0.211	1.25							1.33	518.57	1625.00	0.80	47.57	225.00
+D+S+H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.347	0.230	1.15							1.33	518.57	1495.00	0.80	47.57	207.00
+D+0.750Lr+0.750L+H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.647	0.428	1.25							2.68	1,050.59	1625.00	1.63	96.37	225.00
+D+0.750L+0.750S+H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.703	0.466	1.15							2.68	1,050.59	1495.00	1.63	96.37	207.00

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Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

File: Puyallup 2nd St Apts.ec6

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Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: #302 - Typ West Hdr at Balcony

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building Planning
Engineering Public Works
Fire Traffic

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+0.60W+H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.249	0.165	1.60	1.300	1.00	1.00	1.00	1.00	1.00	1.33	518.57	2080.00	0.80	47.57	288.00
+D+0.70E+H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.249	0.165	1.60	1.300	1.00	1.00	1.00	1.00	1.00	1.33	518.57	2080.00	0.80	47.57	288.00
+D+0.750Lr+0.750L+0.450W+H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.505	0.335	1.60	1.300	1.00	1.00	1.00	1.00	1.00	2.68	1,050.59	2080.00	1.63	96.37	288.00
+D+0.750L+0.750S+0.450W+H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.505	0.335	1.60	1.300	1.00	1.00	1.00	1.00	1.00	2.68	1,050.59	2080.00	1.63	96.37	288.00
+D+0.750L+0.750S+0.5250E+H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.505	0.335	1.60	1.300	1.00	1.00	1.00	1.00	1.00	2.68	1,050.59	2080.00	1.63	96.37	288.00
+0.60D+0.60W+0.60H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.150	0.099	1.60	1.300	1.00	1.00	1.00	1.00	1.00	0.80	311.14	2080.00	0.48	28.54	288.00
+0.60D+0.70E+0.60H					1.300	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.150	0.099	1.60	1.300	1.00	1.00	1.00	1.00	1.00	0.80	311.14	2080.00	0.48	28.54	288.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0752	2.518		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	2.510	2.510
Overall MINimum	1.450	1.450
+D+H	1.060	1.060
+D+L+H	2.510	2.510
+D+Lr+H	1.060	1.060
+D+S+H	1.060	1.060
+D+0.750Lr+0.750L+H	2.148	2.148
+D+0.750L+0.750S+H	2.148	2.148
+D+0.60W+H	1.060	1.060
+D+0.70E+H	1.060	1.060
+D+0.750Lr+0.750L+0.450W+H	2.148	2.148
+D+0.750L+0.750S+0.450W+H	2.148	2.148
+D+0.750L+0.750S+0.5250E+H	2.148	2.148
+0.60D+0.60W+0.60H	0.636	0.636
+0.60D+0.70E+0.60H	0.636	0.636
D Only	1.060	1.060
L Only	1.450	1.450
H Only		

Title Block Line 1
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Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

File: Puyallup 2nd St Apts.ec6
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DESCRIPTION: #303 - Typ West Flush BM at Openings

CODE REFERENCES

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building Planning
Engineering Public Works
Fire Traffic

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Set : IBC 2018

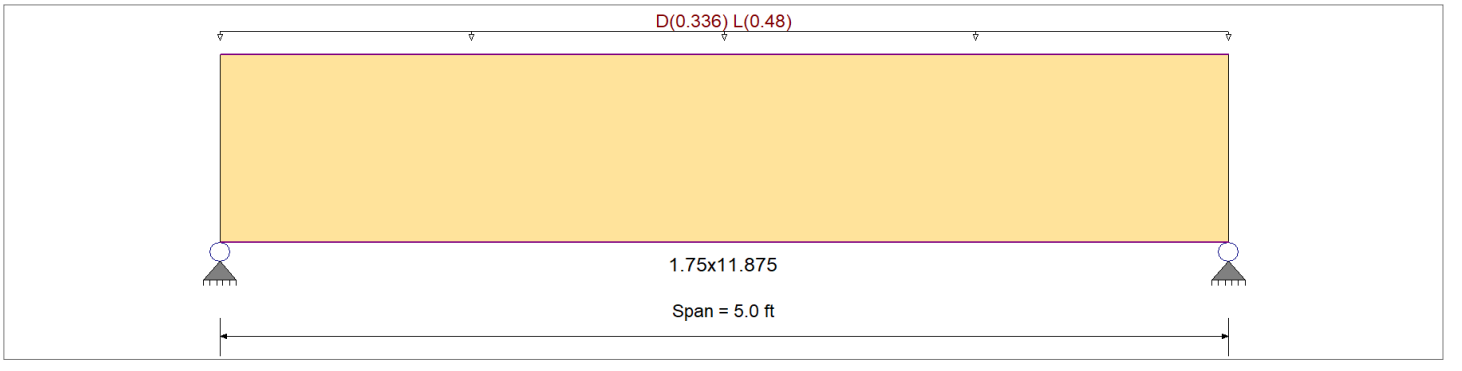
Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2018

Wood Species : iLevel Truss Joist
Wood Grade : TimberStrand LSL 1.55E

Fb +	2,325.0 psi	*E : Modulus of Elasticity*	
Fb -	2,325.0 psi	Ebend- xx	1,550.0 ksi
Fc - Prll	2,050.0 psi	Eminbend - xx	787.82 ksi
Fc - Perp	800.0 psi		
Fv	310.0 psi		
Ft	1,070.0 psi	Density	45.010 pcf

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.0280, L = 0.040 ksf, Tributary Width = 12.0 ft, (Floor)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.320 : 1	Maximum Shear Stress Ratio	=	0.288 : 1
Section used for this span		1.75x11.875	Section used for this span		1.75x11.875
fb: Actual	=	743.99 psi	fv: Actual	=	89.21 psi
Fb: Allowable	=	2,325.00 psi	Fv: Allowable	=	310.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	2.500 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.018 in	Ratio =	3345	>=360
Max Upward Transient Deflection	0.000 in	Ratio =	0	<360
Max Downward Total Deflection	0.030 in	Ratio =	1967	>=240
Max Upward Total Deflection	0.000 in	Ratio =	0	<240

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	Moment Values fb	Moment Values F'b	Shear Values V	Shear Values fv	Shear Values F'v
+D+H													0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.146	0.132	0.90	1.000	1.00	1.00	1.00	1.00	1.00	1.05	306.35	2092.50	0.51	36.73	279.00
+D+L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.320	0.288	1.00	1.000	1.00	1.00	1.00	1.00	1.00	2.55	743.99	2325.00	1.24	89.21	310.00
+D+Lr+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.105	0.095	1.25	1.000	1.00	1.00	1.00	1.00	1.00	1.05	306.35	2906.25	0.51	36.73	387.50
+D+S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.115	0.103	1.15	1.000	1.00	1.00	1.00	1.00	1.00	1.05	306.35	2673.75	0.51	36.73	356.50
+D+0.750Lr+0.750L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.218	0.196	1.25	1.000	1.00	1.00	1.00	1.00	1.00	2.18	634.58	2906.25	1.05	76.09	387.50
+D+0.750L+0.750S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.237	0.213	1.15	1.000	1.00	1.00	1.00	1.00	1.00	2.18	634.58	2673.75	1.05	76.09	356.50
+D+0.60W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.082	0.074	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.05	306.35	3720.00	0.51	36.73	496.00

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and then using the "Printing &
Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

Printed: 8 MAR 2021, 2:37PM

Wood Beam

File: Puyallup 2nd St Apts.ec6
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DESCRIPTION: #303 - Typ West Flush BM at Openings

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+0.70E+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.082	0.074	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.05	306.35	3720.00	0.51	36.73	496.00
+D+0.750Lr+0.750L+0.450W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.171	0.153	1.60	1.000	1.00	1.00	1.00	1.00	1.00	2.18	634.58	3720.00	1.05	76.09	496.00
+D+0.750L+0.750S+0.450W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.171	0.153	1.60	1.000	1.00	1.00	1.00	1.00	1.00	2.18	634.58	3720.00	1.05	76.09	496.00
+D+0.750L+0.750S+0.5250E+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.171	0.153	1.60	1.000	1.00	1.00	1.00	1.00	1.00	2.18	634.58	3720.00	1.05	76.09	496.00
+0.60D+0.60W+0.60H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.049	0.044	1.60	1.000	1.00	1.00	1.00	1.00	1.00	0.63	183.81	3720.00	0.31	22.04	496.00
+0.60D+0.70E+0.60H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.049	0.044	1.60	1.000	1.00	1.00	1.00	1.00	1.00	0.63	183.81	3720.00	0.31	22.04	496.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0305	2.518		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	2.040	2.040
Overall MINimum	1.200	1.200
+D+H	0.840	0.840
+D+L+H	2.040	2.040
+D+Lr+H	0.840	0.840
+D+S+H	0.840	0.840
+D+0.750Lr+0.750L+H	1.740	1.740
+D+0.750L+0.750S+H	1.740	1.740
+D+0.60W+H	0.840	0.840
+D+0.70E+H	0.840	0.840
+D+0.750Lr+0.750L+0.450W+H	1.740	1.740
+D+0.750L+0.750S+0.450W+H	1.740	1.740
+D+0.750L+0.750S+0.5250E+H	1.740	1.740
+0.60D+0.60W+0.60H	0.504	0.504
+0.60D+0.70E+0.60H	0.504	0.504
D Only	0.840	0.840
L Only	1.200	1.200
H Only		

Title Block Line 1
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Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

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DESCRIPTION: #304A - Corner Balcony BM (NE-SW)

CODE REFERENCES

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning | Engineering | Public Works | Fire | Traffic

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combination Set : IBC 2018

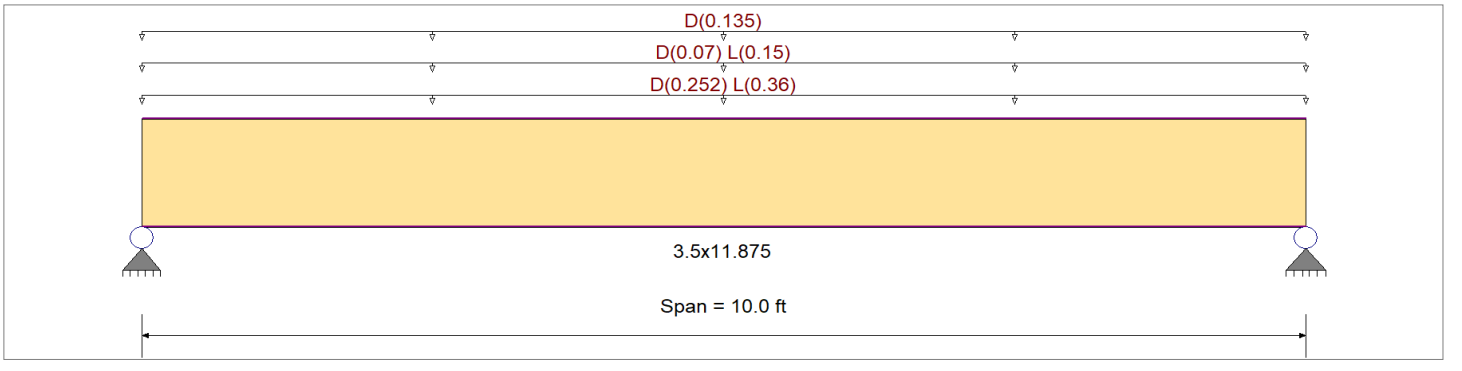
Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2018

Wood Species : iLevel Truss Joist
Wood Grade : TimberStrand LSL 1.55E

Fb +	2,325.0 psi	*E : Modulus of Elasticity*	
Fb -	2,325.0 psi	Ebend- xx	1,550.0 ksi
Fc - Prll	2,050.0 psi	Eminbend - xx	787.82 ksi
Fc - Perp	800.0 psi		
Fv	310.0 psi		
Ft	1,070.0 psi	Density	45.010 pcf

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.0280, L = 0.040 ksf, Tributary Width = 9.0 ft, (Floor)
Uniform Load : D = 0.0280, L = 0.060 ksf, Tributary Width = 2.50 ft, (Deck)
Uniform Load : D = 0.0150 ksf, Tributary Width = 9.0 ft, (Wall)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.758 : 1	Maximum Shear Stress Ratio	=	0.452 : 1
Section used for this span		3.5x11.875	Section used for this span		3.5x11.875
fb: Actual	=	1,763.33 psi	fv: Actual	=	140.11 psi
Fb: Allowable	=	2,325.00 psi	Fv: Allowable	=	310.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	5.000 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.152 in	Ratio =	787 >=360
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.289 in	Ratio =	415 >=240
Max Upward Total Deflection	0.000 in	Ratio =	0 <240

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	Moment Values fb	Moment Values F'b	Shear Values V	Shear Values fv	Shear Values F'v
+D+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.398	0.237	0.90	1.000	1.00	1.00	1.00	1.00	1.00	5.71	833.34	2092.50	1.83	66.21	279.00
+D+L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.758	0.452	1.00	1.000	1.00	1.00	1.00	1.00	1.00	12.09	1,763.33	2325.00	3.88	140.11	310.00
+D+Lr+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.287	0.171	1.25	1.000	1.00	1.00	1.00	1.00	1.00	5.71	833.34	2906.25	1.83	66.21	387.50
+D+S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.312	0.186	1.15	1.000	1.00	1.00	1.00	1.00	1.00	5.71	833.34	2673.75	1.83	66.21	356.50
+D+0.750Lr+0.750L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.527	0.314	1.25	1.000	1.00	1.00	1.00	1.00	1.00	10.49	1,530.83	2906.25	3.37	121.63	387.50
+D+0.750L+0.750S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.573	0.341	1.15	1.000	1.00	1.00	1.00	1.00	1.00	10.49	1,530.83	2673.75	3.37	121.63	356.50

Title Block Line 1
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Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

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DESCRIPTION: #304A - Corner Balcony BM (NE-SW)

City of Puyallup
Development & Permitting Services
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Building
Planning
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Public Works
Fire
Traffic

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+0.60W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.224	0.133	1.60	1.000	1.00	1.00	1.00	1.00	1.00	5.71	833.34	3720.00	1.83	66.21	496.00
+D+0.70E+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.224	0.133	1.60	1.000	1.00	1.00	1.00	1.00	1.00	5.71	833.34	3720.00	1.83	66.21	496.00
+D+0.750Lr+0.750L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.412	0.245	1.60	1.000	1.00	1.00	1.00	1.00	1.00	10.49	1,530.83	3720.00	3.37	121.63	496.00
+D+0.750L+0.750S+0.450W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.412	0.245	1.60	1.000	1.00	1.00	1.00	1.00	1.00	10.49	1,530.83	3720.00	3.37	121.63	496.00
+D+0.750L+0.750S+0.5250E+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.412	0.245	1.60	1.000	1.00	1.00	1.00	1.00	1.00	10.49	1,530.83	3720.00	3.37	121.63	496.00
+0.60D+0.60W+0.60H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.134	0.080	1.60	1.000	1.00	1.00	1.00	1.00	1.00	3.43	500.01	3720.00	1.10	39.73	496.00
+0.60D+0.70E+0.60H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.134	0.080	1.60	1.000	1.00	1.00	1.00	1.00	1.00	3.43	500.01	3720.00	1.10	39.73	496.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.2891	5.036		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	4.835	4.835
Overall MINimum	2.550	2.550
+D+H	2.285	2.285
+D+L+H	4.835	4.835
+D+Lr+H	2.285	2.285
+D+S+H	2.285	2.285
+D+0.750Lr+0.750L+H	4.198	4.198
+D+0.750L+0.750S+H	4.198	4.198
+D+0.60W+H	2.285	2.285
+D+0.70E+H	2.285	2.285
+D+0.750Lr+0.750L+0.450W+H	4.198	4.198
+D+0.750L+0.750S+0.450W+H	4.198	4.198
+D+0.750L+0.750S+0.5250E+H	4.198	4.198
+0.60D+0.60W+0.60H	1.371	1.371
+0.60D+0.70E+0.60H	1.371	1.371
D Only	2.285	2.285
L Only	2.550	2.550
H Only		

Title Block Line 1
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Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

Printed: 15 APR 2021, 12:53PM
File: Puyallup 2nd St Apts.ec6

Wood Beam

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Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: #304B - Corner Balcony BM (E-W) - LONG

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building
Planning
Engineering
Public Works
Fire
Traffic

CODE REFERENCES

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Used : IBC 2018

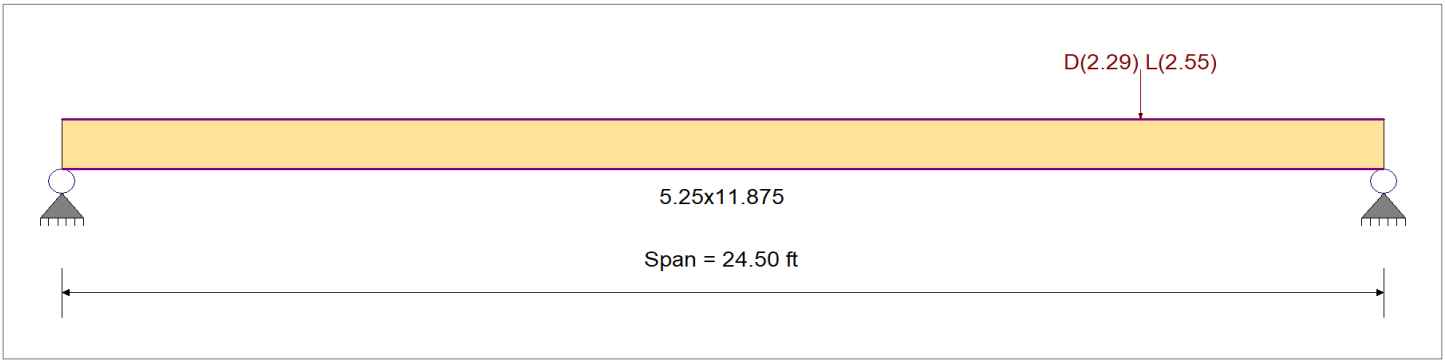
Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2018

Wood Species : iLevel Truss Joist
Wood Grade : MicroLam LVL 2.0 E

Fb +	2600 psi	*E : Modulus of Elasticity*	
Fb -	2600 psi	Ebend- xx	2000 ksi
Fc - Prll	2510 psi	Eminbend - xx	1016.535 ksi
Fc - Perp	750 psi		
Fv	285 psi		
Ft	1555 psi	Density	42.01 pcf

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Point Load : D = 2.290, L = 2.550 k @ 20.0 ft, (#304A)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.663 : 1	Maximum Shear Stress Ratio	=	0.334 : 1
Section used for this span		5.25x11.875	Section used for this span		5.25x11.875
fb: Actual	=	1,723.92 psi	fv: Actual	=	95.06 psi
Fb: Allowable	=	2,600.00 psi	Fv: Allowable	=	285.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	19.940 ft	Location of maximum on span	=	20.029 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.497 in	Ratio =	591 >=360
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.944 in	Ratio =	311 >=240
Max Upward Total Deflection	0.000 in	Ratio =	0 <240

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	Moment Values fb	Moment Values F'b	Shear Values V	Shear Values fv	Shear Values F'v
+D+H													0.00	0.00	0.00	0.00
Length = 24.50 ft	1	0.349	0.175	0.90	1.000	1.00	1.00	1.00	1.00	1.00	8.39	815.66	2340.00	1.87	44.98	256.50
+D+L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 24.50 ft	1	0.663	0.334	1.00	1.000	1.00	1.00	1.00	1.00	1.00	17.73	1,723.92	2600.00	3.95	95.06	285.00
+D+Lr+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 24.50 ft	1	0.251	0.126	1.25	1.000	1.00	1.00	1.00	1.00	1.00	8.39	815.66	3250.00	1.87	44.98	356.25
+D+S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 24.50 ft	1	0.273	0.137	1.15	1.000	1.00	1.00	1.00	1.00	1.00	8.39	815.66	2990.00	1.87	44.98	327.75
+D+0.750Lr+0.750L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 24.50 ft	1	0.461	0.232	1.25	1.000	1.00	1.00	1.00	1.00	1.00	15.39	1,496.86	3250.00	3.43	82.54	356.25
+D+0.750L+0.750S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 24.50 ft	1	0.501	0.252	1.15	1.000	1.00	1.00	1.00	1.00	1.00	15.39	1,496.86	2990.00	3.43	82.54	327.75
+D+0.60W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 24.50 ft	1	0.196	0.099	1.60	1.000	1.00	1.00	1.00	1.00	1.00	8.39	815.66	4160.00	1.87	44.98	456.00

Title Block Line 1
You can change this area
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and then using the "Printing &
Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

Printed: 15 APR 2021, 12:53PM

Wood Beam

File: Puyallup 2nd St Apts.ec6
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Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: #304B - Corner Balcony BM (E-W) - LONG

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

Load Combination / Segment	Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+0.70E+H						1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length =	24.50 ft	1	0.196	0.099	1.60	1.000	1.00	1.00	1.00	1.00	1.00	8.39	815.66	4160.00	1.87	44.98	456.00
+D+0.750Lr+0.750L+H						1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length =	24.50 ft	1	0.360	0.181	1.60	1.000	1.00	1.00	1.00	1.00	1.00	15.39	1,496.86	4160.00	3.43	82.54	456.00
+D+0.750L+0.750S+0.450W+H						1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length =	24.50 ft	1	0.360	0.181	1.60	1.000	1.00	1.00	1.00	1.00	1.00	15.39	1,496.86	4160.00	3.43	82.54	456.00
+D+0.750L+0.750S+0.5250E+H						1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length =	24.50 ft	1	0.360	0.181	1.60	1.000	1.00	1.00	1.00	1.00	1.00	15.39	1,496.86	4160.00	3.43	82.54	456.00
+0.60D+0.60W+0.60H						1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length =	24.50 ft	1	0.118	0.059	1.60	1.000	1.00	1.00	1.00	1.00	1.00	5.03	489.39	4160.00	1.12	26.99	456.00
+0.60D+0.70E+0.60H						1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length =	24.50 ft	1	0.118	0.059	1.60	1.000	1.00	1.00	1.00	1.00	1.00	5.03	489.39	4160.00	1.12	26.99	456.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.9440	13.949		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.889	3.951
Overall MINimum	0.468	2.082
+D+H	0.421	1.869
+D+L+H	0.889	3.951
+D+Lr+H	0.421	1.869
+D+S+H	0.421	1.869
+D+0.750Lr+0.750L+H	0.772	3.431
+D+0.750L+0.750S+H	0.772	3.431
+D+0.60W+H	0.421	1.869
+D+0.70E+H	0.421	1.869
+D+0.750Lr+0.750L+0.450W+H	0.772	3.431
+D+0.750L+0.750S+0.450W+H	0.772	3.431
+D+0.750L+0.750S+0.5250E+H	0.772	3.431
+0.60D+0.60W+0.60H	0.252	1.122
+0.60D+0.70E+0.60H	0.252	1.122
D Only	0.421	1.869
L Only	0.468	2.082
H Only		

Title Block Line 1
You can change this area
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and then using the "Printing &
Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

File: Puyallup 2nd St Apts.ec6
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Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: #304C - Corner Balcony BM (E-W) - SHORT

CODE REFERENCES

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning | Engineering | Public Works | Fire | Traffic

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Set : IBC 2018

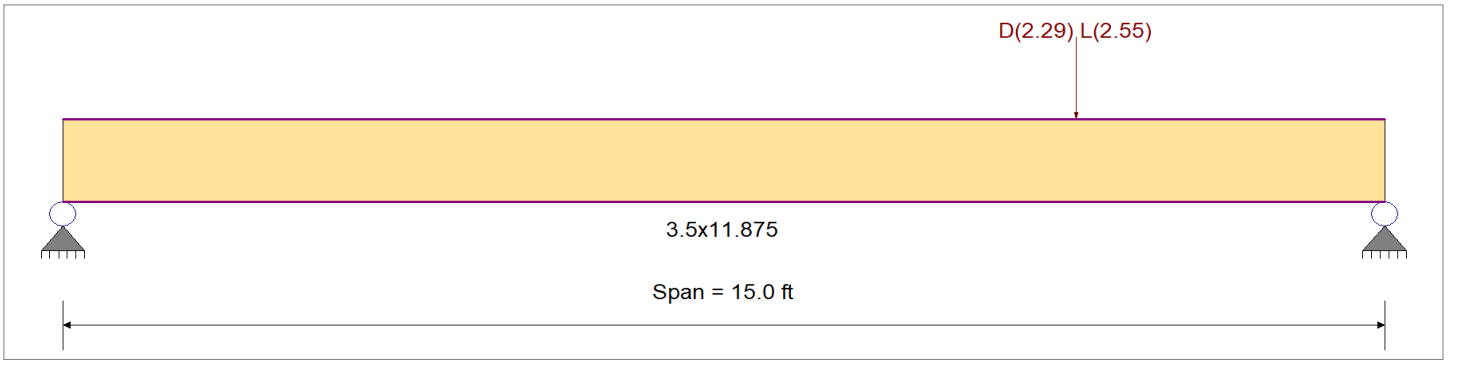
Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2018

Wood Species : iLevel Truss Joist
Wood Grade : TimberStrand LSL 1.55E

Fb +	2,325.0 psi	*E : Modulus of Elasticity*	
Fb -	2,325.0 psi	Ebend- xx	1,550.0 ksi
Fc - Prll	2,050.0 psi	Eminbend - xx	787.82 ksi
Fc - Perp	800.0 psi		
Fv	310.0 psi		
Ft	1,070.0 psi	Density	45.010 pcf

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Point Load : D = 2.290, L = 2.550 k @ 11.50 ft, (#304A)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.815 : 1	Maximum Shear Stress Ratio	=	0.432 : 1
Section used for this span		3.5x11.875	Section used for this span		3.5x11.875
fb: Actual	=	1,894.00 psi	fv: Actual	=	133.92 psi
Fb: Allowable	=	2,325.00 psi	Fv: Allowable	=	310.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	11.496 ft	Location of maximum on span	=	11.551 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.272 in	Ratio =	662 >=360
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.516 in	Ratio =	349 >=240
Max Upward Total Deflection	0.000 in	Ratio =	0 <240

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	Moment Values fb	Moment Values F'b	Shear Values V	Shear Values fv	Shear Values F'v
+D+H													0.00	0.00	0.00	0.00
Length = 15.0 ft	1	0.428	0.227	0.90	1.000	1.00	1.00	1.00	1.00	1.00	6.14	896.13	2092.50	1.76	63.36	279.00
+D+L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 15.0 ft	1	0.815	0.432	1.00	1.000	1.00	1.00	1.00	1.00	1.00	12.98	1,894.00	2325.00	3.71	133.92	310.00
+D+Lr+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 15.0 ft	1	0.308	0.164	1.25	1.000	1.00	1.00	1.00	1.00	1.00	6.14	896.13	2906.25	1.76	63.36	387.50
+D+S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 15.0 ft	1	0.335	0.178	1.15	1.000	1.00	1.00	1.00	1.00	1.00	6.14	896.13	2673.75	1.76	63.36	356.50
+D+0.750Lr+0.750L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 15.0 ft	1	0.566	0.300	1.25	1.000	1.00	1.00	1.00	1.00	1.00	11.27	1,644.53	2906.25	3.22	116.28	387.50
+D+0.750L+0.750S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 15.0 ft	1	0.615	0.326	1.15	1.000	1.00	1.00	1.00	1.00	1.00	11.27	1,644.53	2673.75	3.22	116.28	356.50
+D+0.60W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 15.0 ft	1	0.241	0.128	1.60	1.000	1.00	1.00	1.00	1.00	1.00	6.14	896.13	3720.00	1.76	63.36	496.00

Title Block Line 1
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Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

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DESCRIPTION: #304C - Corner Balcony BM (E-W) - SHORT

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+0.70E+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 15.0 ft	1	0.241	0.128	1.60	1.000	1.00	1.00	1.00	1.00	1.00	6.14	896.13	3720.00	1.76	63.36	496.00
+D+0.750Lr+0.750L+0.450W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 15.0 ft	1	0.442	0.234	1.60	1.000	1.00	1.00	1.00	1.00	1.00	11.27	1,644.53	3720.00	3.22	116.28	496.00
+D+0.750L+0.750S+0.450W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 15.0 ft	1	0.442	0.234	1.60	1.000	1.00	1.00	1.00	1.00	1.00	11.27	1,644.53	3720.00	3.22	116.28	496.00
+D+0.750L+0.750S+0.5250E+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 15.0 ft	1	0.442	0.234	1.60	1.000	1.00	1.00	1.00	1.00	1.00	11.27	1,644.53	3720.00	3.22	116.28	496.00
+0.60D+0.60W+0.60H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 15.0 ft	1	0.145	0.077	1.60	1.000	1.00	1.00	1.00	1.00	1.00	3.69	537.68	3720.00	1.05	38.02	496.00
+0.60D+0.70E+0.60H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 15.0 ft	1	0.145	0.077	1.60	1.000	1.00	1.00	1.00	1.00	1.00	3.69	537.68	3720.00	1.05	38.02	496.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.5157	8.431		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	1.129	3.711
Overall MINimum	0.595	1.955
+D+H	0.534	1.756
+D+L+H	1.129	3.711
+D+Lr+H	0.534	1.756
+D+S+H	0.534	1.756
+D+0.750Lr+0.750L+H	0.981	3.222
+D+0.750L+0.750S+H	0.981	3.222
+D+0.60W+H	0.534	1.756
+D+0.70E+H	0.534	1.756
+D+0.750Lr+0.750L+0.450W+H	0.981	3.222
+D+0.750L+0.750S+0.450W+H	0.981	3.222
+D+0.750L+0.750S+0.5250E+H	0.981	3.222
+0.60D+0.60W+0.60H	0.321	1.053
+0.60D+0.70E+0.60H	0.321	1.053
D Only	0.534	1.756
L Only	0.595	1.955
H Only		

Title Block Line 1
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Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

File: Puyallup 2nd St Apts.ec6
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DESCRIPTION: #305 - North Unit Floor BM

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building Planning
Engineering Public Works
Fire Traffic

CODE REFERENCES

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Set : IBC 2018

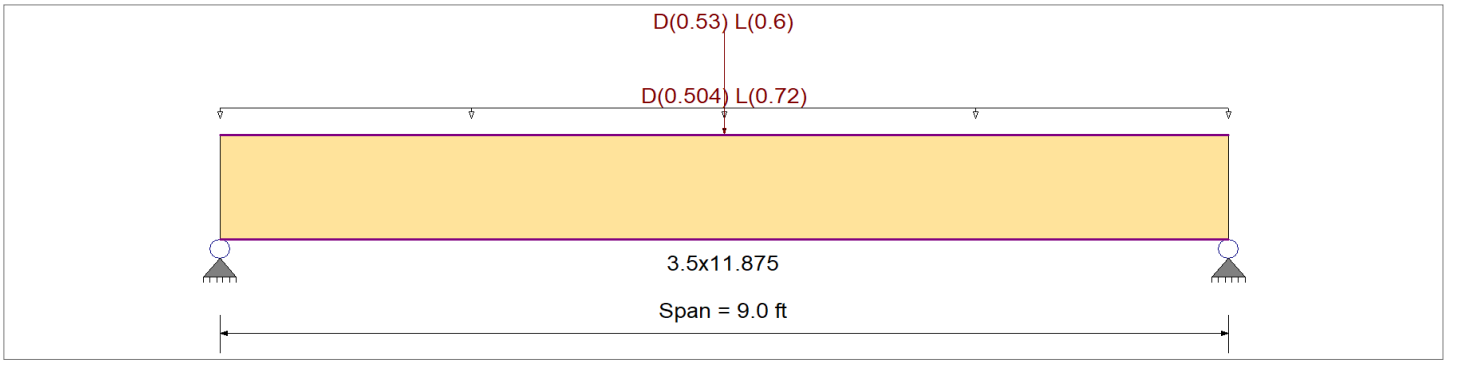
Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2018

Wood Species : iLevel Truss Joist
Wood Grade : TimberStrand LSL 1.55E

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling

Fb +	2,325.0 psi	*E : Modulus of Elasticity*	
Fb -	2,325.0 psi	Ebend- xx	1,550.0 ksi
Fc - Prll	2,050.0 psi	Eminbend - xx	787.82 ksi
Fc - Perp	800.0 psi		
Fv	310.0 psi		
Ft	1,070.0 psi	Density	45.010 pcf



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.0280, L = 0.040 ksf, Tributary Width = 18.0 ft, (Floor)
Point Load : D = 0.530, L = 0.60 k @ 4.50 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.937 : 1	Maximum Shear Stress Ratio	=	0.567 : 1
Section used for this span		3.5x11.875	Section used for this span		3.5x11.875
fb: Actual	=	2,178.80 psi	fv: Actual	=	175.65 psi
Fb: Allowable	=	2,325.00 psi	Fv: Allowable	=	310.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	4.500 ft	Location of maximum on span	=	8.015 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.162 in	Ratio =	666 >=360
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.279 in	Ratio =	386 >=240
Max Upward Total Deflection	0.000 in	Ratio =	0 <240

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.439	0.263	0.90							6.30	918.39	2092.50	2.04	73.49	279.00
+D+L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.937	0.567	1.00							14.94	2,178.80	2325.00	4.87	175.65	310.00
+D+Lr+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.316	0.190	1.25							6.30	918.39	2906.25	2.04	73.49	387.50
+D+S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.343	0.206	1.15							6.30	918.39	2673.75	2.04	73.49	356.50
+D+0.750Lr+0.750L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.641	0.387	1.25							12.78	1,863.70	2906.25	4.16	150.11	387.50
+D+0.750L+0.750S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.697	0.421	1.15							12.78	1,863.70	2673.75	4.16	150.11	356.50
+D+0.60W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00

Title Block Line 1
You can change this area
using the "Settings" menu item
and then using the "Printing &
Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

Printed: 9 MAR 2021, 11:28AM

Wood Beam

File: Puyallup 2nd St Apts.ec6
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Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: #305 - North Unit Floor BM

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning | Engineering | Public Works | Fire | Traffic

Load Combination	Max Stress Ratios										Moment Values			Shear Values		
Segment Length	Span #	M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	M	fb	F'b	V	fv	F'v
Length = 9.0 ft	1	0.247	0.148	1.60	1.000	1.00	1.00	1.00	1.00	1.00	6.30	918.39	3720.00	2.04	73.49	496.00
+D+0.70E+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.247	0.148	1.60	1.000	1.00	1.00	1.00	1.00	1.00	6.30	918.39	3720.00	2.04	73.49	496.00
+D+0.750Lr+0.750L+0.450W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.501	0.303	1.60	1.000	1.00	1.00	1.00	1.00	1.00	12.78	1,863.70	3720.00	4.16	150.11	496.00
+D+0.750L+0.750S+0.450W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.501	0.303	1.60	1.000	1.00	1.00	1.00	1.00	1.00	12.78	1,863.70	3720.00	4.16	150.11	496.00
+D+0.750L+0.750S+0.5250E+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.501	0.303	1.60	1.000	1.00	1.00	1.00	1.00	1.00	12.78	1,863.70	3720.00	4.16	150.11	496.00
+0.60D+0.60W+0.60H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.148	0.089	1.60	1.000	1.00	1.00	1.00	1.00	1.00	3.78	551.03	3720.00	1.22	44.10	496.00
+0.60D+0.70E+0.60H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.148	0.089	1.60	1.000	1.00	1.00	1.00	1.00	1.00	3.78	551.03	3720.00	1.22	44.10	496.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.2795	4.533		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	6.073	6.073
Overall MINimum	3.540	3.540
+D+H	2.533	2.533
+D+L+H	6.073	6.073
+D+Lr+H	2.533	2.533
+D+S+H	2.533	2.533
+D+0.750Lr+0.750L+H	5.188	5.188
+D+0.750L+0.750S+H	5.188	5.188
+D+0.60W+H	2.533	2.533
+D+0.70E+H	2.533	2.533
+D+0.750Lr+0.750L+0.450W+H	5.188	5.188
+D+0.750L+0.750S+0.450W+H	5.188	5.188
+D+0.750L+0.750S+0.5250E+H	5.188	5.188
+0.60D+0.60W+0.60H	1.520	1.520
+0.60D+0.70E+0.60H	1.520	1.520
D Only	2.533	2.533
L Only	3.540	3.540
H Only		

Title Block Line 1
You can change this area
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and then using the "Printing &
Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

File: Puyallup 2nd St Apts.ec6
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Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: #306 - Typ Corridor BM

CODE REFERENCES

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building Planning
Engineering Public Works
Fire Traffic

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combination Set : IBC 2018

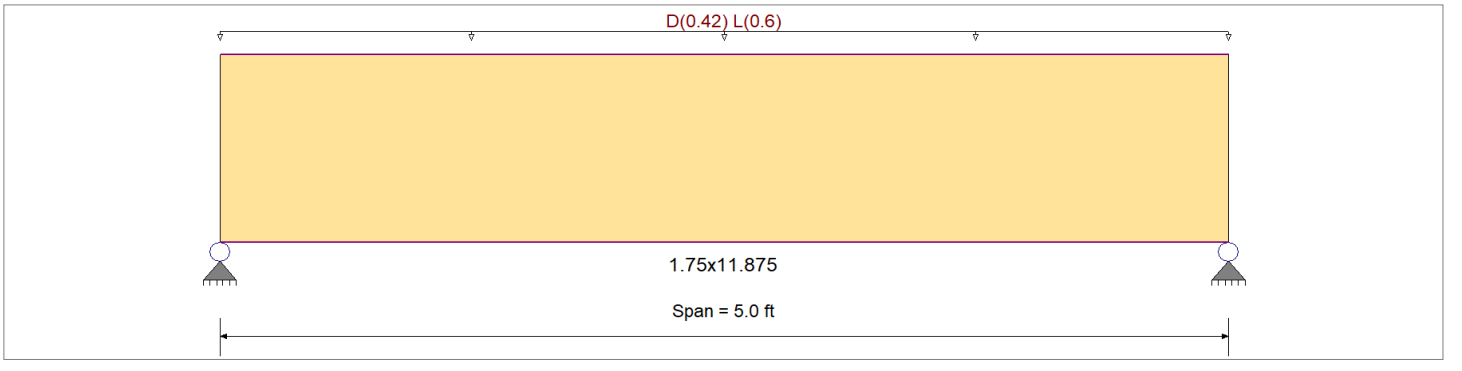
Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2018

Wood Species : iLevel Truss Joist
Wood Grade : TimberStrand LSL 1.55E

Fb +	2,325.0 psi	*E : Modulus of Elasticity*	
Fb -	2,325.0 psi	Ebend- xx	1,550.0 ksi
Fc - Prll	2,050.0 psi	Eminbend - xx	787.82 ksi
Fc - Perp	800.0 psi		
Fv	310.0 psi		
Ft	1,070.0 psi	Density	45.010 pcf

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.0280, L = 0.040 ksf, Tributary Width = 15.0 ft, (Floor)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.400 : 1	Maximum Shear Stress Ratio	=	0.360 : 1
Section used for this span		1.75x11.875	Section used for this span		1.75x11.875
fb: Actual	=	929.99 psi	fv: Actual	=	111.51 psi
Fb: Allowable	=	2,325.00 psi	Fv: Allowable	=	310.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	2.500 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.022 in	Ratio =	2676	>=360
Max Upward Transient Deflection	0.000 in	Ratio =	0	<360
Max Downward Total Deflection	0.038 in	Ratio =	1574	>=240
Max Upward Total Deflection	0.000 in	Ratio =	0	<240

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	Moment Values fb	Moment Values F'b	Shear Values V	Shear Values fv	Shear Values F'v
+D+H													0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.183	0.165	0.90	1.000	1.00	1.00	1.00	1.00	1.00	1.31	382.94	2092.50	0.64	45.92	279.00
+D+L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.400	0.360	1.00	1.000	1.00	1.00	1.00	1.00	1.00	3.19	929.99	2325.00	1.54	111.51	310.00
+D+Lr+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.132	0.118	1.25	1.000	1.00	1.00	1.00	1.00	1.00	1.31	382.94	2906.25	0.64	45.92	387.50
+D+S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.143	0.129	1.15	1.000	1.00	1.00	1.00	1.00	1.00	1.31	382.94	2673.75	0.64	45.92	356.50
+D+0.750Lr+0.750L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.273	0.245	1.25	1.000	1.00	1.00	1.00	1.00	1.00	2.72	793.23	2906.25	1.32	95.11	387.50
+D+0.750L+0.750S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.297	0.267	1.15	1.000	1.00	1.00	1.00	1.00	1.00	2.72	793.23	2673.75	1.32	95.11	356.50
+D+0.60W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.103	0.093	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.31	382.94	3720.00	0.64	45.92	496.00

Title Block Line 1
You can change this area
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Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

Printed: 8 MAR 2021, 2:21PM

Wood Beam

File: Puyallup 2nd St Apts.ec6
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DESCRIPTION: #306 - Typ Corridor BM

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

Load Combination / Segment Length	Span #	M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	Moment Values fb	Moment Values F'b	Shear Values V	Shear Values fv	Shear Values F'v
+D+0.70E+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.093	0.093	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.31	382.94	3720.00	0.64	45.92	496.00
+D+0.750Lr+0.750L+0.450W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.213	0.192	1.60	1.000	1.00	1.00	1.00	1.00	1.00	2.72	793.23	3720.00	1.32	95.11	496.00
+D+0.750L+0.750S+0.450W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.213	0.192	1.60	1.000	1.00	1.00	1.00	1.00	1.00	2.72	793.23	3720.00	1.32	95.11	496.00
+D+0.750L+0.750S+0.5250E+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.213	0.192	1.60	1.000	1.00	1.00	1.00	1.00	1.00	2.72	793.23	3720.00	1.32	95.11	496.00
+0.60D+0.60W+0.60H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.062	0.056	1.60	1.000	1.00	1.00	1.00	1.00	1.00	0.79	229.76	3720.00	0.38	27.55	496.00
+0.60D+0.70E+0.60H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.062	0.056	1.60	1.000	1.00	1.00	1.00	1.00	1.00	0.79	229.76	3720.00	0.38	27.55	496.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0381	2.518		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	2.550	2.550
Overall MINimum	1.500	1.500
+D+H	1.050	1.050
+D+L+H	2.550	2.550
+D+Lr+H	1.050	1.050
+D+S+H	1.050	1.050
+D+0.750Lr+0.750L+H	2.175	2.175
+D+0.750L+0.750S+H	2.175	2.175
+D+0.60W+H	1.050	1.050
+D+0.70E+H	1.050	1.050
+D+0.750Lr+0.750L+0.450W+H	2.175	2.175
+D+0.750L+0.750S+0.450W+H	2.175	2.175
+D+0.750L+0.750S+0.5250E+H	2.175	2.175
+0.60D+0.60W+0.60H	0.630	0.630
+0.60D+0.70E+0.60H	0.630	0.630
D Only	1.050	1.050
L Only	1.500	1.500
H Only		

Title Block Line 1
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Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

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DESCRIPTION: #307 - South Corridor Hdr

CODE REFERENCES

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning | Engineering | Public Works | Fire | Traffic

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Set : IBC 2018

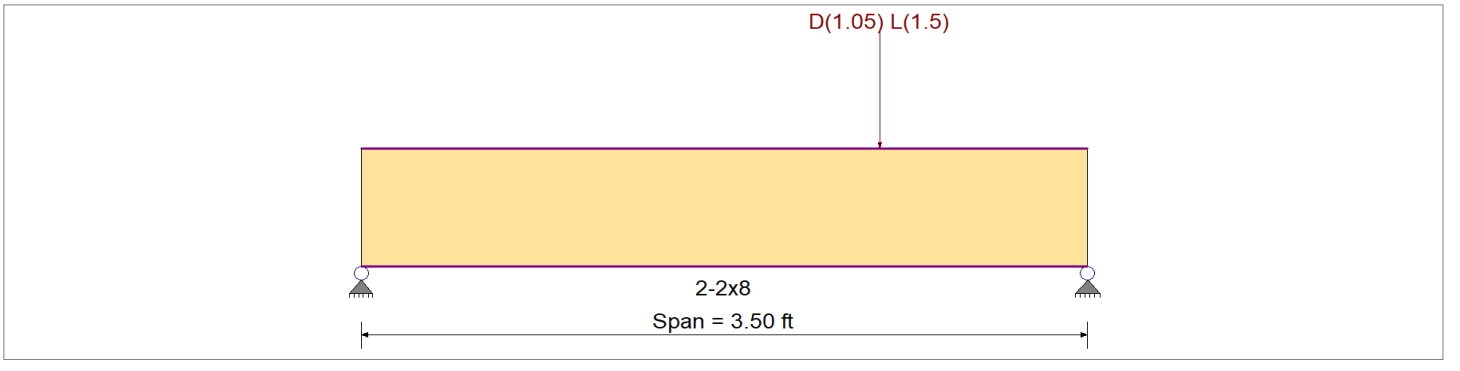
Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2018

Wood Species : iLevel Truss Joist
Wood Grade : TimberStrand LSL 1.55E

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling

Fb +	2,325.0 psi	*E : Modulus of Elasticity*	
Fb -	2,325.0 psi	Ebend- xx	1,550.0 ksi
Fc - Prll	2,050.0 psi	Eminbend - xx	787.82 ksi
Fc - Perp	800.0 psi		
Fv	310.0 psi		
Ft	1,070.0 psi	Density	45.010 pcf



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Point Load : D = 1.050, L = 1.50 k @ 2.50 ft, (#306)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.356 : 1	Maximum Shear Stress Ratio	=	0.405 : 1
Section used for this span		2-2x8	Section used for this span		2-2x8
fb: Actual	=	828.63 psi	fv: Actual	=	125.62 psi
Fb: Allowable	=	2,325.00 psi	Fv: Allowable	=	310.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	2.491 ft	Location of maximum on span	=	2.504 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.012 in	Ratio =	3442	>=360
Max Upward Transient Deflection	0.000 in	Ratio =	0	<360
Max Downward Total Deflection	0.021 in	Ratio =	2025	>=240
Max Upward Total Deflection	0.000 in	Ratio =	0	<240

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	Moment Values fb	Moment Values F'b	Shear Values V	Shear Values fv	Shear Values F'v
+D+H													0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.163	0.185	0.90	1.000	1.00	1.00	1.00	1.00	1.00	0.75	341.20	2092.50	0.75	51.72	279.00
+D+L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.356	0.405	1.00	1.000	1.00	1.00	1.00	1.00	1.00	1.81	828.63	2325.00	1.82	125.62	310.00
+D+Lr+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.117	0.133	1.25	1.000	1.00	1.00	1.00	1.00	1.00	0.75	341.20	2906.25	0.75	51.72	387.50
+D+S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.128	0.145	1.15	1.000	1.00	1.00	1.00	1.00	1.00	0.75	341.20	2673.75	0.75	51.72	356.50
+D+0.750Lr+0.750L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.243	0.276	1.25	1.000	1.00	1.00	1.00	1.00	1.00	1.55	706.77	2906.25	1.55	107.14	387.50
+D+0.750L+0.750S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.264	0.301	1.15	1.000	1.00	1.00	1.00	1.00	1.00	1.55	706.77	2673.75	1.55	107.14	356.50
+D+0.60W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.092	0.104	1.60	1.000	1.00	1.00	1.00	1.00	1.00	0.75	341.20	3720.00	0.75	51.72	496.00

Title Block Line 1
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Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

Printed: 8 MAR 2021, 2:24PM

Wood Beam

File: Puyallup 2nd St Apts.ec6
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Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: #307 - South Corridor Hdr

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+0.70E+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.092	0.104	1.60	1.000	1.00	1.00	1.00	1.00	1.00	0.75	341.20	3720.00	0.75	51.72	496.00
+D+0.750Lr+0.750L+0.450W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.190	0.216	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.55	706.77	3720.00	1.55	107.14	496.00
+D+0.750L+0.750S+0.450W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.190	0.216	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.55	706.77	3720.00	1.55	107.14	496.00
+D+0.750L+0.750S+0.5250E+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.190	0.216	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.55	706.77	3720.00	1.55	107.14	496.00
+0.60D+0.60W+0.60H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.055	0.063	1.60	1.000	1.00	1.00	1.00	1.00	1.00	0.45	204.72	3720.00	0.45	31.03	496.00
+0.60D+0.70E+0.60H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.055	0.063	1.60	1.000	1.00	1.00	1.00	1.00	1.00	0.45	204.72	3720.00	0.45	31.03	496.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0207	1.942		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.729	1.821
Overall MINimum	0.429	1.071
+D+H	0.300	0.750
+D+L+H	0.729	1.821
+D+Lr+H	0.300	0.750
+D+S+H	0.300	0.750
+D+0.750Lr+0.750L+H	0.621	1.554
+D+0.750L+0.750S+H	0.621	1.554
+D+0.60W+H	0.300	0.750
+D+0.70E+H	0.300	0.750
+D+0.750Lr+0.750L+0.450W+H	0.621	1.554
+D+0.750L+0.750S+0.450W+H	0.621	1.554
+D+0.750L+0.750S+0.5250E+H	0.621	1.554
+0.60D+0.60W+0.60H	0.180	0.450
+0.60D+0.70E+0.60H	0.180	0.450
D Only	0.300	0.750
L Only	0.429	1.071
H Only		

Title Block Line 1
You can change this area
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Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

Printed: 8 MAR 2021, 2:17PM

Wood Beam

File: Puyallup 2nd St Apts.ec6
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Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: #308 - Typ Corridor Joist

CODE REFERENCES

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning | Engineering | Public Works | Fire | Traffic

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Set : IBC 2018

Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2018

Wood Species : Douglas Fir-Larch
Wood Grade : No.2

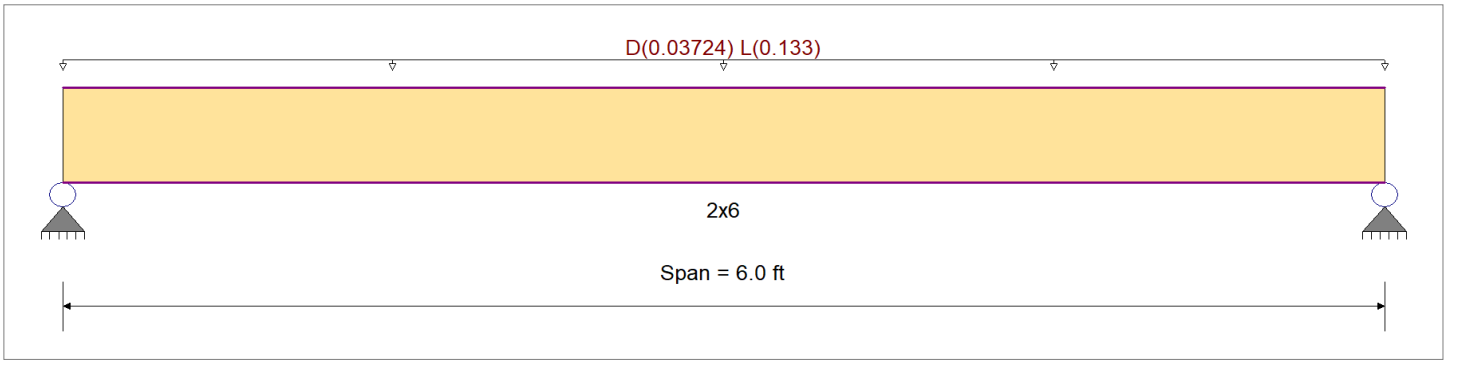
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling

Fb +	900.0 psi
Fb -	900.0 psi
Fc - Prll	1,350.0 psi
Fc - Perp	625.0 psi
Fv	180.0 psi
Ft	575.0 psi

E : Modulus of Elasticity

Ebend- xx	1,600.0 ksi
Eminbend - xx	580.0 ksi
Density	31.210 pcf

Repetitive Member Stress Increase



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.0280, L = 0.10 ksf, Tributary Width = 1.330 ft, (Floor Common)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.903 : 1	Maximum Shear Stress Ratio	=	0.441 : 1
Section used for this span		2x6	Section used for this span		2x6
fb: Actual	=	1,215.60 psi	fv: Actual	=	79.30 psi
Fb: Allowable	=	1,345.50 psi	Fv: Allowable	=	180.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	3.000 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.117 in	Ratio =	614	>=360
Max Upward Transient Deflection	0.000 in	Ratio =	0	<360
Max Downward Total Deflection	0.150 in	Ratio =	479	>=240
Max Upward Total Deflection	0.000 in	Ratio =	0	<240

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	Moment Values fb	Moment Values F'b	Shear Values V	Shear Values fv	Shear Values F'v
+D+H													0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.220	0.107	0.90	1.300	1.00	1.15	1.00	1.00	1.00	0.17	265.91	1210.95	0.10	17.35	162.00
+D+L+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.903	0.441	1.00	1.300	1.00	1.15	1.00	1.00	1.00	0.77	1,215.60	1345.50	0.44	79.30	180.00
+D+Lr+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.158	0.077	1.25	1.300	1.00	1.15	1.00	1.00	1.00	0.17	265.91	1681.88	0.10	17.35	225.00
+D+S+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.172	0.084	1.15	1.300	1.00	1.15	1.00	1.00	1.00	0.17	265.91	1547.33	0.10	17.35	207.00
+D+0.750Lr+0.750L+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.582	0.284	1.25	1.300	1.00	1.15	1.00	1.00	1.00	0.62	978.18	1681.88	0.35	63.81	225.00
+D+0.750L+0.750S+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.632	0.308	1.15	1.300	1.00	1.15	1.00	1.00	1.00	0.62	978.18	1547.33	0.35	63.81	207.00
+D+0.60W+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.124	0.060	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.17	265.91	2152.80	0.10	17.35	288.00

Title Block Line 1
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and then using the "Printing &
Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

Printed: 8 MAR 2021, 2:17PM

Wood Beam

File: Puyallup 2nd St Apts.ec6

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Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: #308 - Typ Corridor Joist

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building
Planning
Engineering
Public Works
Fire
Traffic

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+0.70E+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.024	0.060	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.17	265.91	2152.80	0.10	17.35	288.00
+D+0.750Lr+0.750L+0.450W+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.454	0.222	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.62	978.18	2152.80	0.35	63.81	288.00
+D+0.750L+0.750S+0.450W+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.454	0.222	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.62	978.18	2152.80	0.35	63.81	288.00
+D+0.750L+0.750S+0.5250E+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.454	0.222	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.62	978.18	2152.80	0.35	63.81	288.00
+0.60D+0.60W+0.60H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.074	0.036	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.10	159.55	2152.80	0.06	10.41	288.00
+0.60D+0.70E+0.60H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.074	0.036	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.10	159.55	2152.80	0.06	10.41	288.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.1501	3.022		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.511	0.511
Overall MINimum	0.399	0.399
+D+H	0.112	0.112
+D+L+H	0.511	0.511
+D+Lr+H	0.112	0.112
+D+S+H	0.112	0.112
+D+0.750Lr+0.750L+H	0.411	0.411
+D+0.750L+0.750S+H	0.411	0.411
+D+0.60W+H	0.112	0.112
+D+0.70E+H	0.112	0.112
+D+0.750Lr+0.750L+0.450W+H	0.411	0.411
+D+0.750L+0.750S+0.450W+H	0.411	0.411
+D+0.750L+0.750S+0.5250E+H	0.411	0.411
+0.60D+0.60W+0.60H	0.067	0.067
+0.60D+0.70E+0.60H	0.067	0.067
D Only	0.112	0.112
L Only	0.399	0.399
H Only		

Title Block Line 1
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Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

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DESCRIPTION: #309 - Typ East Flush BM at Openings

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning | Engineering | Public Works | Fire | Traffic

CODE REFERENCES

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Set : IBC 2018

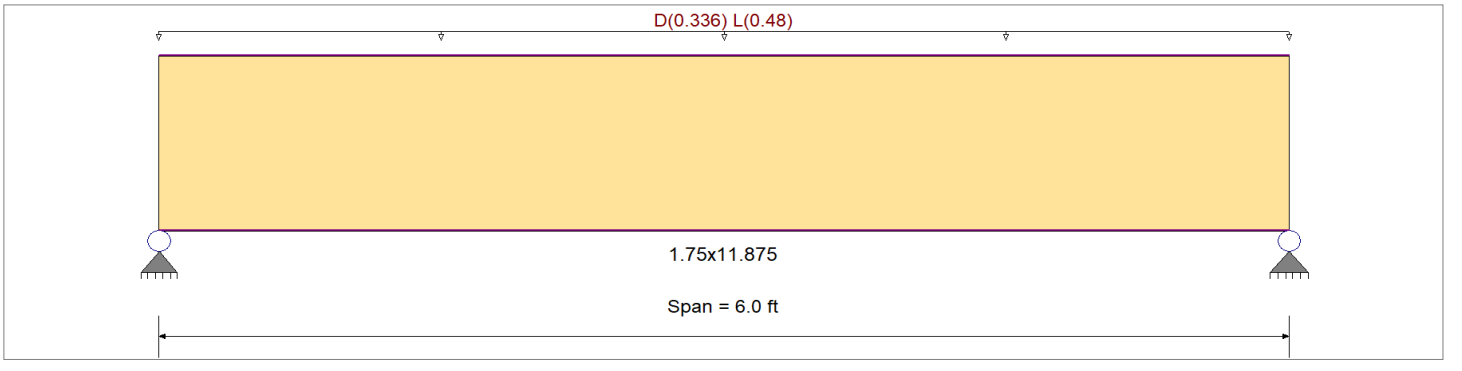
Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2018

Wood Species : iLevel Truss Joist
Wood Grade : TimberStrand LSL 1.55E

Fb +	2,325.0 psi	*E : Modulus of Elasticity*	
Fb -	2,325.0 psi	Ebend- xx	1,550.0 ksi
Fc - Prll	2,050.0 psi	Eminbend - xx	787.82 ksi
Fc - Perp	800.0 psi		
Fv	310.0 psi		
Ft	1,070.0 psi	Density	45.010 pcf

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.0280, L = 0.040 ksf, Tributary Width = 12.0 ft, (Floor)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.461 : 1	Maximum Shear Stress Ratio	=	0.383 : 1
Section used for this span		1.75x11.875	Section used for this span		1.75x11.875
fb: Actual	=	1,071.35 psi	fv: Actual	=	118.66 psi
Fb: Allowable	=	2,325.00 psi	Fv: Allowable	=	310.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	3.000 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.037 in	Ratio =	1935	>=360
Max Upward Transient Deflection	0.000 in	Ratio =	0	<360
Max Downward Total Deflection	0.063 in	Ratio =	1138	>=240
Max Upward Total Deflection	0.000 in	Ratio =	0	<240

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+H													0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.211	0.175	0.90	1.000	1.00	1.00	1.00	1.00	1.00	1.51	441.14	2092.50	0.68	48.86	279.00
+D+L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.461	0.383	1.00	1.000	1.00	1.00	1.00	1.00	1.00	3.67	1,071.35	2325.00	1.64	118.66	310.00
+D+Lr+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.152	0.126	1.25	1.000	1.00	1.00	1.00	1.00	1.00	1.51	441.14	2906.25	0.68	48.86	387.50
+D+S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.165	0.137	1.15	1.000	1.00	1.00	1.00	1.00	1.00	1.51	441.14	2673.75	0.68	48.86	356.50
+D+0.750Lr+0.750L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.314	0.261	1.25	1.000	1.00	1.00	1.00	1.00	1.00	3.13	913.80	2906.25	1.40	101.21	387.50
+D+0.750L+0.750S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.342	0.284	1.15	1.000	1.00	1.00	1.00	1.00	1.00	3.13	913.80	2673.75	1.40	101.21	356.50
+D+0.60W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.119	0.099	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.51	441.14	3720.00	0.68	48.86	496.00

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Wood Beam

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DESCRIPTION: #309 - Typ East Flush BM at Openings

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
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Engineering | Public Works
Fire | Traffic

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+0.70E+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.099	0.099	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.51	441.14	3720.00	0.68	48.86	496.00
+D+0.750Lr+0.750L+0.450W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.246	0.204	1.60	1.000	1.00	1.00	1.00	1.00	1.00	3.13	913.80	3720.00	1.40	101.21	496.00
+D+0.750L+0.750S+0.450W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.246	0.204	1.60	1.000	1.00	1.00	1.00	1.00	1.00	3.13	913.80	3720.00	1.40	101.21	496.00
+D+0.750L+0.750S+0.5250E+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.246	0.204	1.60	1.000	1.00	1.00	1.00	1.00	1.00	3.13	913.80	3720.00	1.40	101.21	496.00
+0.60D+0.60W+0.60H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.071	0.059	1.60	1.000	1.00	1.00	1.00	1.00	1.00	0.91	264.69	3720.00	0.41	29.32	496.00
+0.60D+0.70E+0.60H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.071	0.059	1.60	1.000	1.00	1.00	1.00	1.00	1.00	0.91	264.69	3720.00	0.41	29.32	496.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0632	3.022		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	2.448	2.448
Overall MINimum	1.440	1.440
+D+H	1.008	1.008
+D+L+H	2.448	2.448
+D+Lr+H	1.008	1.008
+D+S+H	1.008	1.008
+D+0.750Lr+0.750L+H	2.088	2.088
+D+0.750L+0.750S+H	2.088	2.088
+D+0.60W+H	1.008	1.008
+D+0.70E+H	1.008	1.008
+D+0.750Lr+0.750L+0.450W+H	2.088	2.088
+D+0.750L+0.750S+0.450W+H	2.088	2.088
+D+0.750L+0.750S+0.5250E+H	2.088	2.088
+0.60D+0.60W+0.60H	0.605	0.605
+0.60D+0.70E+0.60H	0.605	0.605
D Only	1.008	1.008
L Only	1.440	1.440
H Only		

Title Block Line 1
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Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

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DESCRIPTION: #310 - Typ East Hdr at Balcony

CODE REFERENCES

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building Planning
Engineering Public Works
Fire Traffic

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Set : IBC 2018

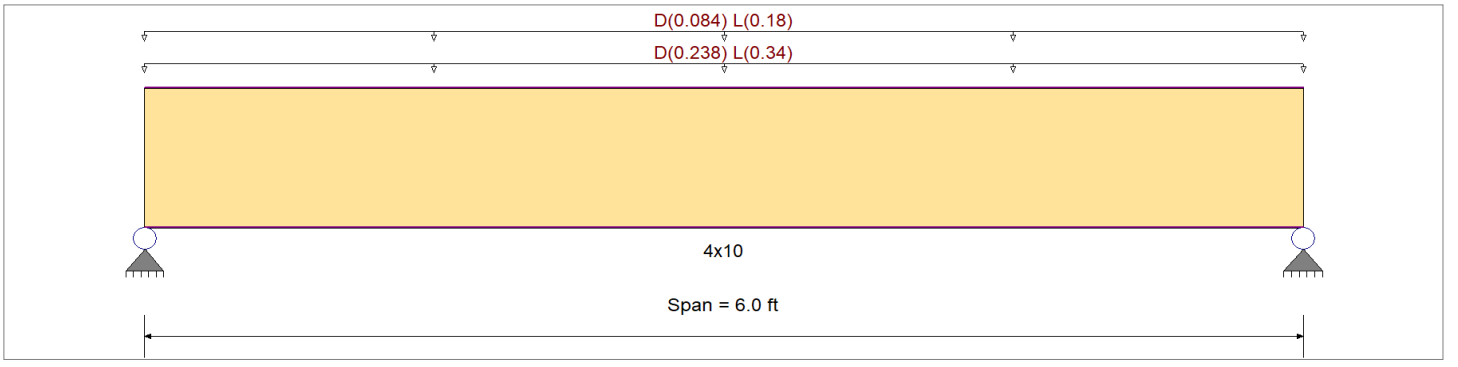
Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2018

Wood Species : Douglas Fir-Larch
Wood Grade : No.2

Fb +	900 psi	*E : Modulus of Elasticity*	
Fb -	900 psi	Ebend- xx	1600 ksi
Fc - Prll	1350 psi	Eminbend - xx	580 ksi
Fc - Perp	625 psi		
Fv	180 psi		
Ft	575 psi	Density	31.21 pcf

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.0280, L = 0.040 ksf, Tributary Width = 8.50 ft, (Floor)
Uniform Load : D = 0.0280, L = 0.060 ksf, Tributary Width = 3.0 ft, (Deck)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.843 : 1	Maximum Shear Stress Ratio	=	0.484 : 1
Section used for this span		4x10	Section used for this span		4x10
fb: Actual	=	910.97 psi	fv: Actual	=	87.14 psi
Fb: Allowable	=	1,080.00 psi	Fv: Allowable	=	180.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	3.000 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.041 in	Ratio =	1743 >=360
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.067 in	Ratio =	1076 >=240
Max Upward Total Deflection	0.000 in	Ratio =	0 <240

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.358	0.206	0.90							1.45	348.38	972.00	0.72	33.32	162.00
+D+L+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.843	0.484	1.00							3.79	910.97	1080.00	1.88	87.14	180.00
+D+Lr+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.258	0.148	1.25							1.45	348.38	1350.00	0.72	33.32	225.00
+D+S+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.280	0.161	1.15							1.45	348.38	1242.00	0.72	33.32	207.00
+D+0.750Lr+0.750L+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.571	0.327	1.25							3.20	770.32	1350.00	1.59	73.68	225.00
+D+0.750L+0.750S+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.620	0.356	1.15							3.20	770.32	1242.00	1.59	73.68	207.00
+D+0.60W+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00

Title Block Line 1
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Wood Beam

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DESCRIPTION: #310 - Typ East Hdr at Balcony

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning | Engineering | Public Works | Fire | Traffic

Load Combination	Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
	Length = 6.0 ft	1	0.202	0.116	1.60	1.200	1.00	1.00	1.00	1.00	1.00	1.45	348.38	1728.00	0.72	33.32	288.00
+D+0.70E+H						1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
	Length = 6.0 ft	1	0.202	0.116	1.60	1.200	1.00	1.00	1.00	1.00	1.00	1.45	348.38	1728.00	0.72	33.32	288.00
+D+0.750L+0.750S+0.450W+H						1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
	Length = 6.0 ft	1	0.446	0.256	1.60	1.200	1.00	1.00	1.00	1.00	1.00	3.20	770.32	1728.00	1.59	73.68	288.00
+D+0.750L+0.750S+0.5250E+H						1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
	Length = 6.0 ft	1	0.446	0.256	1.60	1.200	1.00	1.00	1.00	1.00	1.00	3.20	770.32	1728.00	1.59	73.68	288.00
+0.60D+0.60W+0.60H						1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
	Length = 6.0 ft	1	0.121	0.069	1.60	1.200	1.00	1.00	1.00	1.00	1.00	0.87	209.03	1728.00	0.43	19.99	288.00
+0.60D+0.70E+0.60H						1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
	Length = 6.0 ft	1	0.121	0.069	1.60	1.200	1.00	1.00	1.00	1.00	1.00	0.87	209.03	1728.00	0.43	19.99	288.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.0669	3.022		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	2.526	2.526
Overall MINimum	1.560	1.560
+D+H	0.966	0.966
+D+L+H	2.526	2.526
+D+Lr+H	0.966	0.966
+D+S+H	0.966	0.966
+D+0.750Lr+0.750L+H	2.136	2.136
+D+0.750L+0.750S+H	2.136	2.136
+D+0.60W+H	0.966	0.966
+D+0.70E+H	0.966	0.966
+D+0.750Lr+0.750L+0.450W+H	2.136	2.136
+D+0.750L+0.750S+0.450W+H	2.136	2.136
+D+0.750L+0.750S+0.5250E+H	2.136	2.136
+0.60D+0.60W+0.60H	0.580	0.580
+0.60D+0.70E+0.60H	0.580	0.580
D Only	0.966	0.966
L Only	1.560	1.560
H Only		

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Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

File: Puyallup 2nd St Apts.ec6
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DESCRIPTION: #311 - Typ Dropped Balcony BM

CODE REFERENCES

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning | Engineering | Public Works | Fire | Traffic

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Used : IBC 2018

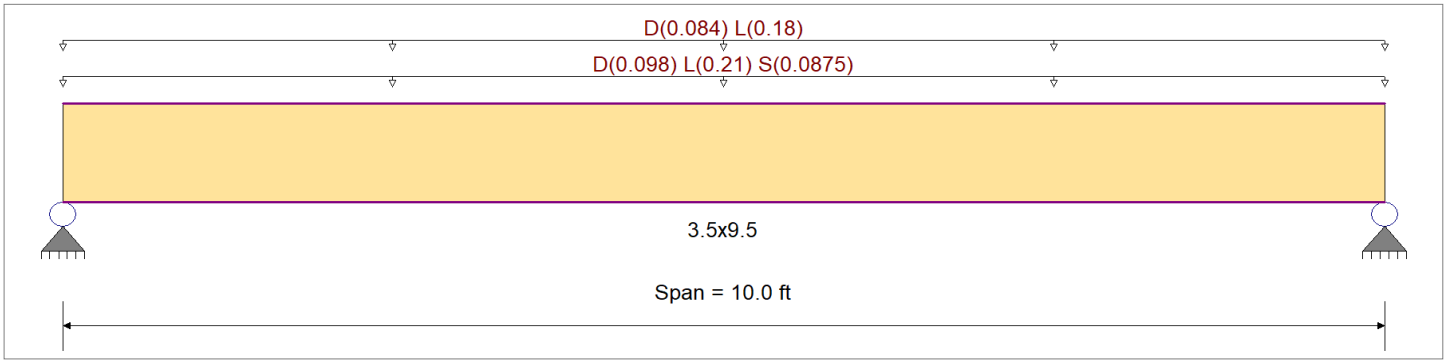
Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2018

Wood Species : iLevel Truss Joist
Wood Grade : TimberStrand LSL 1.55E

Fb +	2325 psi	*E : Modulus of Elasticity*	
Fb -	2325 psi	Ebend- xx	1550 ksi
Fc - Prll	2050 psi	Eminbend - xx	787.815 ksi
Fc - Perp	800 psi		
Fv	310 psi		
Ft	1070 psi	Density	45.01 pcf

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.0280, L = 0.060, S = 0.0250 ksf, Tributary Width = 3.50 ft, (Balcony)
Uniform Load : D = 0.0280, L = 0.060 ksf, Tributary Width = 3.0 ft, (Deck)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.701 : 1	Maximum Shear Stress Ratio	=	0.352 : 1
Section used for this span		3.5x9.5	Section used for this span		3.5x9.5
fb: Actual	=	1,629.76 psi	fv: Actual	=	109.25 psi
Fb: Allowable	=	2,325.00 psi	Fv: Allowable	=	310.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	5.000 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.228 in	Ratio =	526 >=360
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.334 in	Ratio =	359 >=240
Max Upward Total Deflection	0.000 in	Ratio =	0 <240

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.248	0.125	0.90							2.28	518.56	2092.50	0.77	34.76	279.00
+D+L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.701	0.352	1.00							7.15	1,629.76	2325.00	2.42	109.25	310.00
+D+Lr+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.178	0.090	1.25							2.28	518.56	2906.25	0.77	34.76	387.50
+D+S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.287	0.144	1.15							3.37	767.87	2673.75	1.14	51.47	356.50
+D+0.750Lr+0.750L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.465	0.234	1.25							5.93	1,351.96	2906.25	2.01	90.62	387.50
+D+0.750L+0.750S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.576	0.289	1.15							6.75	1,538.94	2673.75	2.29	103.16	356.50
+D+0.60W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00

Title Block Line 1
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Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

File: Puyallup 2nd St Apts.ec6

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Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: #311 - Typ Dropped Balcony BM

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
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Engineering | Public Works
Fire | Traffic

Load Combination	Max Stress Ratios				Cd	C F/V	Ci	Cr	Cm	Ct	CL	Moment Values			Shear Values		
Segment Length	Span #	M	V									M	fb	F'b	V	fv	F'v
Length = 10.0 ft	1	0.139	0.070	1.60	1.000	1.00	1.00	1.00	1.00	1.00		2.28	518.56	3720.00	0.77	34.76	496.00
+D+0.70E+H					1.000	1.00	1.00	1.00	1.00	1.00				0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.139	0.070	1.60	1.000	1.00	1.00	1.00	1.00	1.00		2.28	518.56	3720.00	0.77	34.76	496.00
+D+0.750Lr+0.750L+H					1.000	1.00	1.00	1.00	1.00	1.00				0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.363	0.183	1.60	1.000	1.00	1.00	1.00	1.00	1.00		5.93	1,351.96	3720.00	2.01	90.62	496.00
+D+0.750L+0.750S+0.450W+H					1.000	1.00	1.00	1.00	1.00	1.00				0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.414	0.208	1.60	1.000	1.00	1.00	1.00	1.00	1.00		6.75	1,538.94	3720.00	2.29	103.16	496.00
+D+0.750L+0.750S+0.5250E+H					1.000	1.00	1.00	1.00	1.00	1.00				0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.414	0.208	1.60	1.000	1.00	1.00	1.00	1.00	1.00		6.75	1,538.94	3720.00	2.29	103.16	496.00
+0.60D+0.60W+0.60H					1.000	1.00	1.00	1.00	1.00	1.00				0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.084	0.042	1.60	1.000	1.00	1.00	1.00	1.00	1.00		1.37	311.14	3720.00	0.46	20.86	496.00
+0.60D+0.70E+0.60H					1.000	1.00	1.00	1.00	1.00	1.00				0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.084	0.042	1.60	1.000	1.00	1.00	1.00	1.00	1.00		1.37	311.14	3720.00	0.46	20.86	496.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.3340	5.036		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	2.860	2.860
Overall MINimum	0.438	0.438
+D+H	0.910	0.910
+D+L+H	2.860	2.860
+D+Lr+H	0.910	0.910
+D+S+H	1.348	1.348
+D+0.750Lr+0.750L+H	2.373	2.373
+D+0.750L+0.750S+H	2.701	2.701
+D+0.60W+H	0.910	0.910
+D+0.70E+H	0.910	0.910
+D+0.750Lr+0.750L+0.450W+H	2.373	2.373
+D+0.750L+0.750S+0.450W+H	2.701	2.701
+D+0.750L+0.750S+0.5250E+H	2.701	2.701
+0.60D+0.60W+0.60H	0.546	0.546
+0.60D+0.70E+0.60H	0.546	0.546
D Only	0.910	0.910
L Only	1.950	1.950
S Only	0.438	0.438
H Only		

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Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

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DESCRIPTION: #312 - Typ Balcony Joists

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning | Engineering | Public Works | Fire | Traffic

CODE REFERENCES

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Used : IBC 2018

Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2018

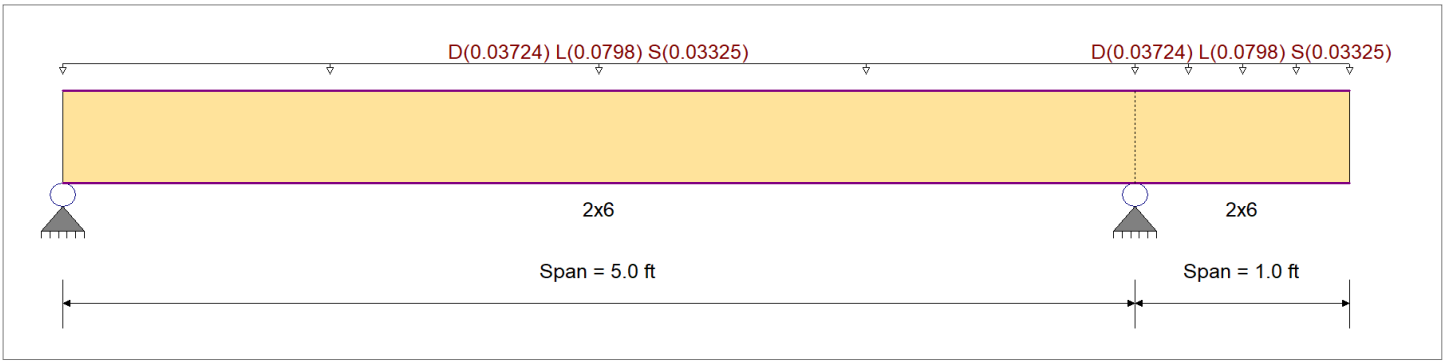
Wood Species : Douglas Fir-Larch
Wood Grade : No.2
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling

Fb +	900.0 psi
Fb -	900.0 psi
Fc - Prll	1,350.0 psi
Fc - Perp	625.0 psi
Fv	180.0 psi
Ft	575.0 psi

E : Modulus of Elasticity

Ebend- xx	1,600.0 ksi
Eminbend - xx	580.0 ksi
Density	31.210 pcf

Repetitive Member Stress Increase



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Load for Span Number 1
Uniform Load : D = 0.0280, L = 0.060, S = 0.0250 ksf, Tributary Width = 1.330 ft, (Floor Common)
Load for Span Number 2
Uniform Load : D = 0.0280, L = 0.060, S = 0.0250 ksf, Tributary Width = 1.330 ft, (Deck)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.398 : 1	Maximum Shear Stress Ratio	=	0.255 : 1
Section used for this span		2x6	Section used for this span		2x6
fb: Actual	=	534.86 psi	fv: Actual	=	45.82 psi
Fb: Allowable	=	1,345.50 psi	Fv: Allowable	=	180.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	2.402 ft	Location of maximum on span	=	4.553 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.031 in	Ratio =	1949 >=360
Max Upward Transient Deflection	-0.018 in	Ratio =	1362 >=360
Max Downward Total Deflection	0.047 in	Ratio =	1275 >=240
Max Upward Total Deflection	-0.027 in	Ratio =	890 >=240

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	Moment Values fb	Moment Values F'b	Shear Values V	Shear Values fv	Shear Values F'v
+D+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.141	0.090	0.90	1.300	1.00	1.15	1.00	1.00	1.00	0.11	170.18	1210.95	0.08	14.58	162.00
Length = 1.0 ft	2	0.024	0.090	0.90	1.300	1.00	1.15	1.00	1.00	1.00	0.02	29.55	1210.95	0.02	14.58	162.00
+D+L+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.398	0.255	1.00	1.300	1.00	1.15	1.00	1.00	1.00	0.34	534.86	1345.50	0.25	45.82	180.00
Length = 1.0 ft	2	0.069	0.255	1.00	1.300	1.00	1.15	1.00	1.00	1.00	0.06	92.86	1345.50	0.06	45.82	180.00
+D+Lr+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.101	0.065	1.25	1.300	1.00	1.15	1.00	1.00	1.00	0.11	170.18	1681.88	0.08	14.58	225.00
Length = 1.0 ft	2	0.018	0.065	1.25	1.300	1.00	1.15	1.00	1.00	1.00	0.02	29.55	1681.88	0.02	14.58	225.00
+D+S+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.208	0.133	1.15	1.300	1.00	1.15	1.00	1.00	1.00	0.20	322.13	1547.33	0.15	27.59	207.00

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Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

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DESCRIPTION: #312 - Typ Balcony Joists

City of Puyallup
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Load Combination / Segment	Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
Length =	1.0 ft	2	0.036	0.133	1.15	1.300	1.00	1.15	1.00	1.00	1.00	0.04	55.93	1547.33	0.04	27.59	207.00
+D+0.750Lr+0.750L+H						1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length =	5.0 ft	1	0.264	0.169	1.25	1.300	1.00	1.15	1.00	1.00	1.00	0.28	443.69	1681.88	0.21	38.01	225.00
Length =	1.0 ft	2	0.046	0.169	1.25	1.300	1.00	1.15	1.00	1.00	1.00	0.05	77.03	1681.88	0.05	38.01	225.00
+D+0.750L+0.750S+H						1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length =	5.0 ft	1	0.360	0.231	1.15	1.300	1.00	1.15	1.00	1.00	1.00	0.35	557.66	1547.33	0.26	47.77	207.00
Length =	1.0 ft	2	0.063	0.231	1.15	1.300	1.00	1.15	1.00	1.00	1.00	0.06	96.82	1547.33	0.07	47.77	207.00
+D+0.60W+H						1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length =	5.0 ft	1	0.079	0.051	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.11	170.18	2152.80	0.08	14.58	288.00
Length =	1.0 ft	2	0.014	0.051	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.02	29.55	2152.80	0.02	14.58	288.00
+D+0.70E+H						1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length =	5.0 ft	1	0.079	0.051	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.11	170.18	2152.80	0.08	14.58	288.00
Length =	1.0 ft	2	0.014	0.051	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.02	29.55	2152.80	0.02	14.58	288.00
+D+0.750Lr+0.750L+0.450W+H						1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length =	5.0 ft	1	0.206	0.132	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.28	443.69	2152.80	0.21	38.01	288.00
Length =	1.0 ft	2	0.036	0.132	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.05	77.03	2152.80	0.05	38.01	288.00
+D+0.750L+0.750S+0.450W+H						1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length =	5.0 ft	1	0.259	0.166	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.35	557.66	2152.80	0.26	47.77	288.00
Length =	1.0 ft	2	0.045	0.166	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.06	96.82	2152.80	0.07	47.77	288.00
+D+0.750L+0.750S+0.5250E+H						1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length =	5.0 ft	1	0.259	0.166	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.35	557.66	2152.80	0.26	47.77	288.00
Length =	1.0 ft	2	0.045	0.166	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.06	96.82	2152.80	0.07	47.77	288.00
+0.60D+0.60W+0.60H						1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length =	5.0 ft	1	0.047	0.030	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.06	102.11	2152.80	0.05	8.75	288.00
Length =	1.0 ft	2	0.008	0.030	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.01	17.73	2152.80	0.01	8.75	288.00
+0.60D+0.70E+0.60H						1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length =	5.0 ft	1	0.047	0.030	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.06	102.11	2152.80	0.05	8.75	288.00
Length =	1.0 ft	2	0.008	0.030	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.01	17.73	2152.80	0.01	8.75	288.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.750L+0.750S+0.5250E+H	1	0.0471	2.486		0.0000	0.000
	2	0.0000	2.486	+D+0.750L+0.750S+0.5250E+H	-0.0269	1.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Overall MAXimum	0.293	0.439	
Overall MINimum	0.080	0.120	
+D+H	0.089	0.134	
+D+L+H	0.281	0.421	
+D+Lr+H	0.089	0.134	
+D+S+H	0.169	0.254	
+D+0.750Lr+0.750L+H	0.233	0.350	
+D+0.750L+0.750S+H	0.293	0.439	
+D+0.60W+H	0.089	0.134	
+D+0.70E+H	0.089	0.134	
+D+0.750Lr+0.750L+0.450W+H	0.233	0.350	
+D+0.750L+0.750S+0.450W+H	0.293	0.439	
+D+0.750L+0.750S+0.5250E+H	0.293	0.439	
+0.60D+0.60W+0.60H	0.054	0.080	
+0.60D+0.70E+0.60H	0.054	0.080	
D Only	0.089	0.134	
L Only	0.192	0.287	
S Only	0.080	0.120	
H Only			

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Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

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DESCRIPTION: #313 - South Floor Bm Near Stairs

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning | Engineering | Public Works | Fire | Traffic

CODE REFERENCES

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Used : IBC 2018

Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2018

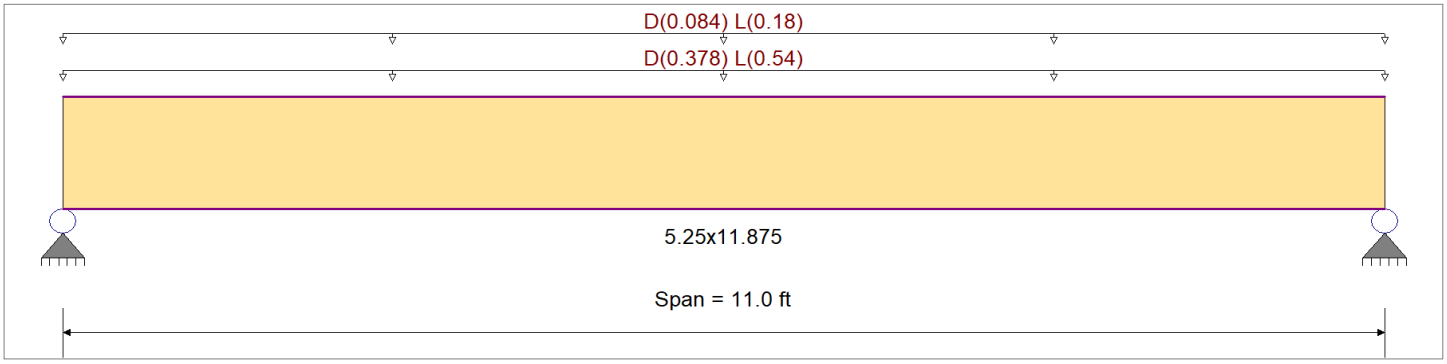
Wood Species : iLevel Truss Joist
Wood Grade : MicroLam LVL 2.0 E

Fb +	2,600.0 psi
Fb -	2,600.0 psi
Fc - Prll	2,510.0 psi
Fc - Perp	750.0 psi
Fv	285.0 psi
Ft	1,555.0 psi

E : Modulus of Elasticity

Ebend- xx	2,000.0 ksi
Eminbend - xx	1,016.54 ksi
Density	42.010 pcf

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.0280, L = 0.040 ksf, Tributary Width = 13.50 ft, (Floor)
Uniform Load : D = 0.0280, L = 0.060 ksf, Tributary Width = 3.0 ft, (Deck)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.669 : 1	Maximum Shear Stress Ratio	=	0.453 : 1
Section used for this span		5.25x11.875	Section used for this span		5.25x11.875
fb: Actual	=	1,738.68 psi	fv: Actual	=	129.01 psi
Fb: Allowable	=	2,600.00 psi	Fv: Allowable	=	285.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	5.500 ft	Location of maximum on span	=	10.036 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.163 in	Ratio =	810 >=360
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.267 in	Ratio =	493 >=240
Max Upward Total Deflection	0.000 in	Ratio =	0 <240

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	Moment Values fb	Moment Values F'b	Shear Values V	Shear Values fv	Shear Values F'v
+D+H													0.00	0.00	0.00	0.00
Length = 11.0 ft	1	0.290	0.197	0.90	1.000	1.00	1.00	1.00	1.00	1.00	6.99	679.58	2340.00	2.10	50.43	256.50
+D+L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 11.0 ft	1	0.669	0.453	1.00	1.000	1.00	1.00	1.00	1.00	1.00	17.88	1,738.68	2600.00	5.36	129.01	285.00
+D+Lr+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 11.0 ft	1	0.209	0.142	1.25	1.000	1.00	1.00	1.00	1.00	1.00	6.99	679.58	3250.00	2.10	50.43	356.25
+D+S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 11.0 ft	1	0.227	0.154	1.15	1.000	1.00	1.00	1.00	1.00	1.00	6.99	679.58	2990.00	2.10	50.43	327.75
+D+0.750Lr+0.750L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 11.0 ft	1	0.454	0.307	1.25	1.000	1.00	1.00	1.00	1.00	1.00	15.16	1,473.90	3250.00	4.55	109.37	356.25
+D+0.750L+0.750S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 11.0 ft	1	0.493	0.334	1.15	1.000	1.00	1.00	1.00	1.00	1.00	15.16	1,473.90	2990.00	4.55	109.37	327.75
+D+0.60W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00

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Project Title:
Engineer:
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Wood Beam

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DESCRIPTION: #313 - South Floor Bm Near Stairs

City of Puyallup
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Load Combination	Max Stress Ratios				C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values			Shear Values		
Segment Length	Span #	M	V									M	fb	F'b	V	fv	F'v
Length = 11.0 ft	1	0.163	0.111	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	6.99	679.58	4160.00	2.10	50.43	456.00
+D+0.70E+H					1.000	1.00	1.00	1.00	1.00	1.00				0.00	0.00	0.00	0.00
Length = 11.0 ft	1	0.163	0.111	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	6.99	679.58	4160.00	2.10	50.43	456.00
+D+0.750Lr+0.750L+0.450W+H					1.000	1.00	1.00	1.00	1.00	1.00				0.00	0.00	0.00	0.00
Length = 11.0 ft	1	0.354	0.240	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	15.16	1,473.90	4160.00	4.55	109.37	456.00
+D+0.750L+0.750S+0.450W+H					1.000	1.00	1.00	1.00	1.00	1.00				0.00	0.00	0.00	0.00
Length = 11.0 ft	1	0.354	0.240	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	15.16	1,473.90	4160.00	4.55	109.37	456.00
+D+0.750L+0.750S+0.5250E+H					1.000	1.00	1.00	1.00	1.00	1.00				0.00	0.00	0.00	0.00
Length = 11.0 ft	1	0.354	0.240	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	15.16	1,473.90	4160.00	4.55	109.37	456.00
+0.60D+0.60W+0.60H					1.000	1.00	1.00	1.00	1.00	1.00				0.00	0.00	0.00	0.00
Length = 11.0 ft	1	0.098	0.066	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	4.19	407.75	4160.00	1.26	30.26	456.00
+0.60D+0.70E+0.60H					1.000	1.00	1.00	1.00	1.00	1.00				0.00	0.00	0.00	0.00
Length = 11.0 ft	1	0.098	0.066	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	4.19	407.75	4160.00	1.26	30.26	456.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.2673	5.540		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	6.501	6.501
Overall MINimum	3.960	3.960
+D+H	2.541	2.541
+D+L+H	6.501	6.501
+D+Lr+H	2.541	2.541
+D+S+H	2.541	2.541
+D+0.750Lr+0.750L+H	5.511	5.511
+D+0.750L+0.750S+H	5.511	5.511
+D+0.60W+H	2.541	2.541
+D+0.70E+H	2.541	2.541
+D+0.750Lr+0.750L+0.450W+H	5.511	5.511
+D+0.750L+0.750S+0.450W+H	5.511	5.511
+D+0.750L+0.750S+0.5250E+H	5.511	5.511
+0.60D+0.60W+0.60H	1.525	1.525
+0.60D+0.70E+0.60H	1.525	1.525
D Only	2.541	2.541
L Only	3.960	3.960
H Only		

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Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

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Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: #314 - Corner Balcony BM (E-W)

CODE REFERENCES

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building Planning Engineering Public Works Fire Traffic

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Used : IBC 2018

Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2018

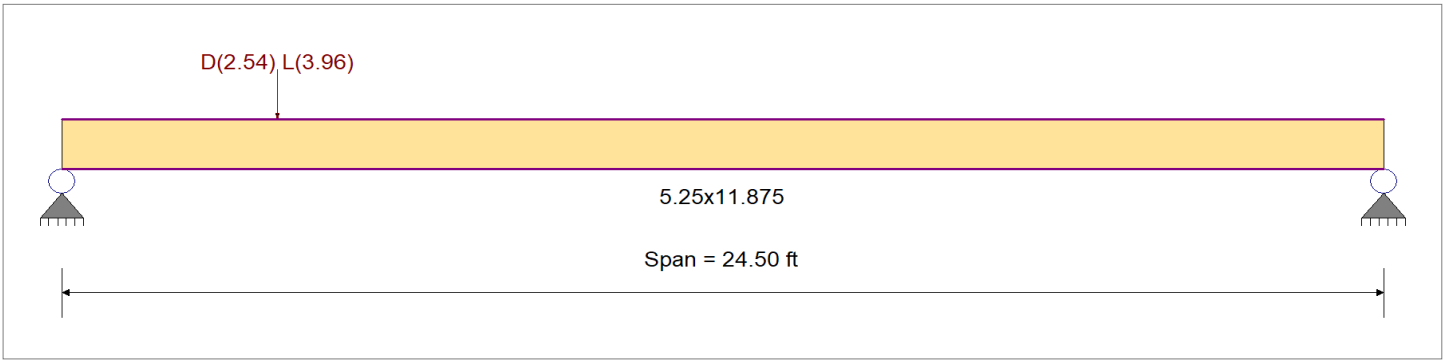
Wood Species : iLevel Truss Joist
Wood Grade : MicroLam LVL 2.0 E

Fb +	2,600.0 psi
Fb -	2,600.0 psi
Fc - Prll	2,510.0 psi
Fc - Perp	750.0 psi
Fv	285.0 psi
Ft	1,555.0 psi

E : Modulus of Elasticity

Ebend- xx	2,000.0 ksi
Eminbend - xx	1,016.54 ksi
Density	42.010 pcf

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Point Load : D = 2.540, L = 3.960 k @ 4.0 ft, (#312)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.813 : 1	Maximum Shear Stress Ratio	=	0.459 : 1
Section used for this span		5.25x11.875	Section used for this span		5.25x11.875
fb: Actual	=	2,113.31 psi	fv: Actual	=	130.86 psi
Fb: Allowable	=	2,600.00 psi	Fv: Allowable	=	285.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	4.024 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.696 in	Ratio =	422 >=360
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	1.142 in	Ratio =	257 >=240
Max Upward Total Deflection	0.000 in	Ratio =	0 <240

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+H													0.00	0.00	0.00	0.00
Length = 24.50 ft	1	0.353	0.199	0.90	1.000	1.00	1.00	1.00	1.00	1.00	8.49	825.82	2340.00	2.13	51.14	256.50
+D+L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 24.50 ft	1	0.813	0.459	1.00	1.000	1.00	1.00	1.00	1.00	1.00	21.73	2,113.31	2600.00	5.44	130.86	285.00
+D+Lr+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 24.50 ft	1	0.254	0.144	1.25	1.000	1.00	1.00	1.00	1.00	1.00	8.49	825.82	3250.00	2.13	51.14	356.25
+D+S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 24.50 ft	1	0.276	0.156	1.15	1.000	1.00	1.00	1.00	1.00	1.00	8.49	825.82	2990.00	2.13	51.14	327.75
+D+0.750Lr+0.750L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 24.50 ft	1	0.551	0.311	1.25	1.000	1.00	1.00	1.00	1.00	1.00	18.42	1,791.44	3250.00	4.61	110.93	356.25
+D+0.750L+0.750S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 24.50 ft	1	0.599	0.338	1.15	1.000	1.00	1.00	1.00	1.00	1.00	18.42	1,791.44	2990.00	4.61	110.93	327.75
+D+0.60W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 24.50 ft	1	0.199	0.112	1.60	1.000	1.00	1.00	1.00	1.00	1.00	8.49	825.82	4160.00	2.13	51.14	456.00

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Title Block Line 6

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Wood Beam

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Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: #314 - Corner Balcony BM (E-W)

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
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Planning
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Public Works
Fire
Traffic

Load Combination / Segment	Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+0.70E+H						1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length =	24.50 ft	1	0.199	0.112	1.60	1.000	1.00	1.00	1.00	1.00	1.00	8.49	825.82	4160.00	2.13	51.14	456.00
+D+0.750Lr+0.750L+0.450W+H						1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length =	24.50 ft	1	0.431	0.243	1.60	1.000	1.00	1.00	1.00	1.00	1.00	18.42	1,791.44	4160.00	4.61	110.93	456.00
+D+0.750L+0.750S+0.450W+H						1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length =	24.50 ft	1	0.431	0.243	1.60	1.000	1.00	1.00	1.00	1.00	1.00	18.42	1,791.44	4160.00	4.61	110.93	456.00
+D+0.750L+0.750S+0.5250E+H						1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length =	24.50 ft	1	0.431	0.243	1.60	1.000	1.00	1.00	1.00	1.00	1.00	18.42	1,791.44	4160.00	4.61	110.93	456.00
+0.60D+0.60W+0.60H						1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length =	24.50 ft	1	0.119	0.067	1.60	1.000	1.00	1.00	1.00	1.00	1.00	5.09	495.49	4160.00	1.28	30.68	456.00
+0.60D+0.70E+0.60H						1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length =	24.50 ft	1	0.119	0.067	1.60	1.000	1.00	1.00	1.00	1.00	1.00	5.09	495.49	4160.00	1.28	30.68	456.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	1.1424	10.551		0.0000	0.000

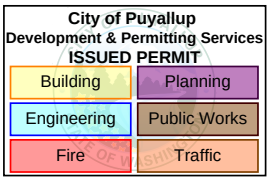
Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	5.439	1.061
Overall MINimum	3.313	0.647
+D+H	2.125	0.415
+D+L+H	5.439	1.061
+D+Lr+H	2.125	0.415
+D+S+H	2.125	0.415
+D+0.750Lr+0.750L+H	4.610	0.900
+D+0.750L+0.750S+H	4.610	0.900
+D+0.60W+H	2.125	0.415
+D+0.70E+H	2.125	0.415
+D+0.750Lr+0.750L+0.450W+H	4.610	0.900
+D+0.750L+0.750S+0.450W+H	4.610	0.900
+D+0.750L+0.750S+0.5250E+H	4.610	0.900
+0.60D+0.60W+0.60H	1.275	0.249
+0.60D+0.70E+0.60H	1.275	0.249
D Only	2.125	0.415
L Only	3.313	0.647
H Only		

PRMU20220123

Level 2-3			
Member Name	Results	Current Solution	Comments
Typ 17' Max Span - TJI 110 at 16" oc	Passed	1 piece(s) 11 7/8" TJI® 110 @ 16" OC	
Typ 20' Span - TJI 230 at 16" oc	Passed	1 piece(s) 11 7/8" TJI® 230 @ 16" OC	
Typ 24' Span - TJI 560 at 12" oc	Passed	1 piece(s) 11 7/8" TJI® 560 @ 12" OC	



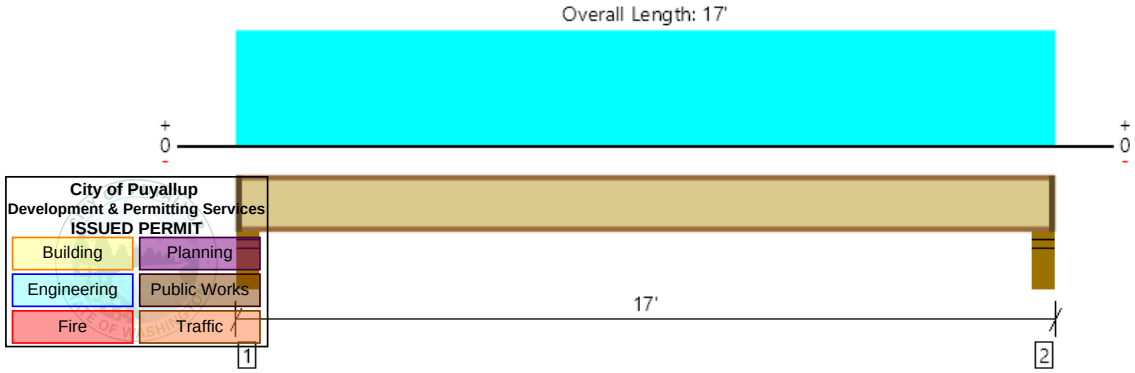
ForteWEB Software Operator	Job Notes
Jerad Harmon AHBL (206) 267-2425 jharmon@ahbl.com	

Weyerhaeuser

8/17/2021 8:15:42 PM UTC
ForteWEB v3.2
File Name: 2190606.20 Puyallup 2nd Street Apts

PRMU20220123

Level 2-3, Typ 17' Max Span - TJI 110 at 16" o
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)	759 @ 4 1/2"	1375 (3.50")	Passed (55%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	729 @ 5 1/2"	1560	Passed (47%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	2993 @ 8' 6"	3160	Passed (95%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.306 @ 8' 6"	0.406	Passed (L/638)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.520 @ 8' 6"	0.813	Passed (L/375)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	50	40	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" Panel (24" Span Rating) that is nailed down.
- Additional considerations for the TJ-Pro™ Rating include: 1/2" Gypsum ceiling, Perpendicular Partitions, Pour Flooring Overlay.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - DF	5.50"	4.00"	1.75"	317	453	770	1 1/2" Rim Board
2 - Stud wall - DF	5.50"	4.00"	1.75"	317	453	770	1 1/2" 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' 2" o/c	
Bottom Edge (Lu)	16' 9" 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)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 17'	16"	28.0	40.0	gypcrete topping

Member Notes

Typ 17' Max Floor Joist - TJI 110 at 16" oc

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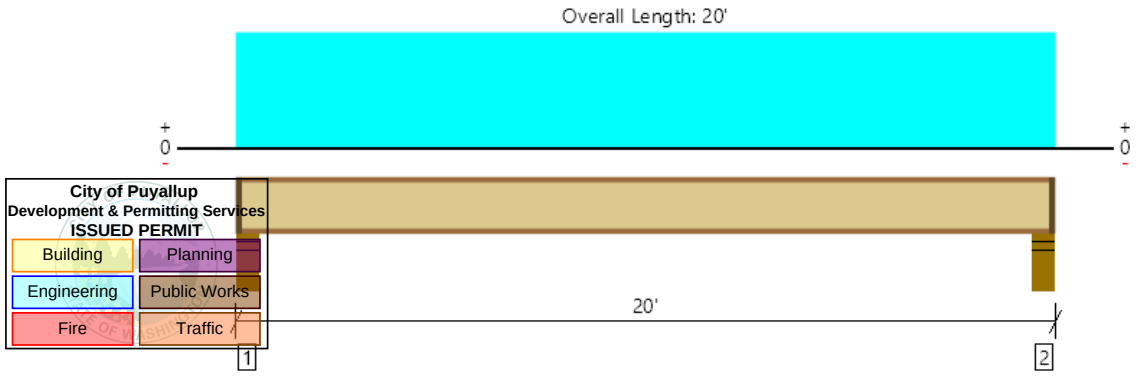
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Jerad Harmon AHBL (206) 267-2425 jharmon@ahbl.com	

Weyerhaeuser

PRMU20220123

Level 2-3, Typ 20' Span - TJI 230 at 16" oc
1 piece(s) 11 7/8" TJI® 230 @ 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)	895 @ 4 1/2"	1485 (3.50")	Passed (60%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	865 @ 5 1/2"	1655	Passed (52%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4200 @ 10'	4215	Passed (100%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.469 @ 10'	0.481	Passed (L/493)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.797 @ 10'	0.962	Passed (L/290)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	40	40	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" Panel (24" Span Rating) that is nailed down.
- Additional considerations for the TJ-Pro™ Rating include: 1/2" Gypsum ceiling, Perpendicular Partitions, Pour Flooring Overlay.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - DF	5.50"	4.00"	1.75"	373	533	906	1 1/2" Rim Board
2 - Stud wall - DF	5.50"	4.00"	1.75"	373	533	906	1 1/2" 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' 11" o/c	
Bottom Edge (Lu)	19' 9" 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)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 20'	16"	28.0	40.0	gypcrete topping

Member Notes

Typ 20' Max Floor Joist - TJI 230 at 16" oc

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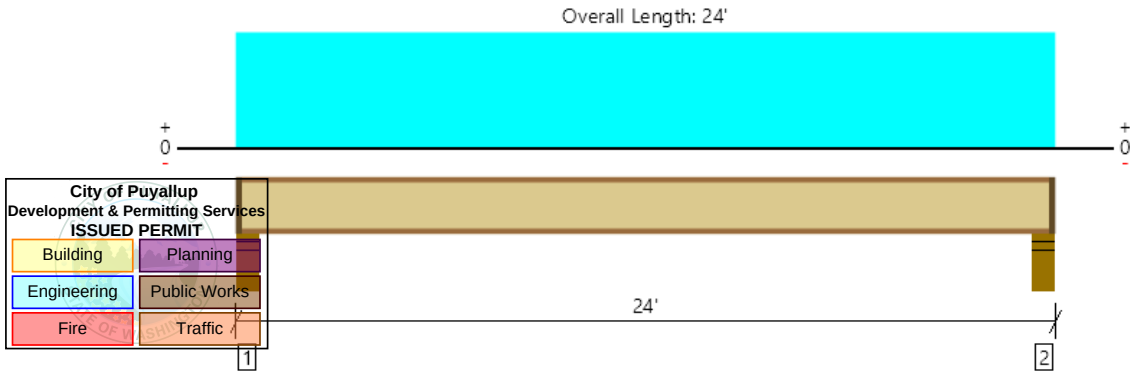
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Jerad Harmon AHBL (206) 267-2425 jharmon@ahbl.com	

Weyerhaeuser

PRMU20220123

Level 2-3, Typ 24' Span - TJI 560 at 12" oc
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)	808 @ 4 1/2"	1725 (3.50")	Passed (47%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	785 @ 5 1/2"	2050	Passed (38%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	4595 @ 12'	9500	Passed (48%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.432 @ 12'	0.581	Passed (L/646)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.735 @ 12'	1.163	Passed (L/380)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	42	40	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" Panel (24" Span Rating) that is nailed down.
- Additional considerations for the TJ-Pro™ Rating include: 1/2" Gypsum ceiling, Perpendicular Partitions, Pour Flooring Overlay.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Stud wall - DF	5.50"	4.00"	1.75"	336	480	816	1 1/2" Rim Board
2 - Stud wall - DF	5.50"	4.00"	1.75"	336	480	816	1 1/2" 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' 3" o/c	
Bottom Edge (Lu)	23' 9" 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)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 24'	12"	28.0	40.0	gypcrete topping

Member Notes

Typ 24' Max Floor Joist - TJI 560 at 12" oc

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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
Jerad Harmon AHBL (206) 267-2425 jharmon@ahbl.com	

Weyerhaeuser

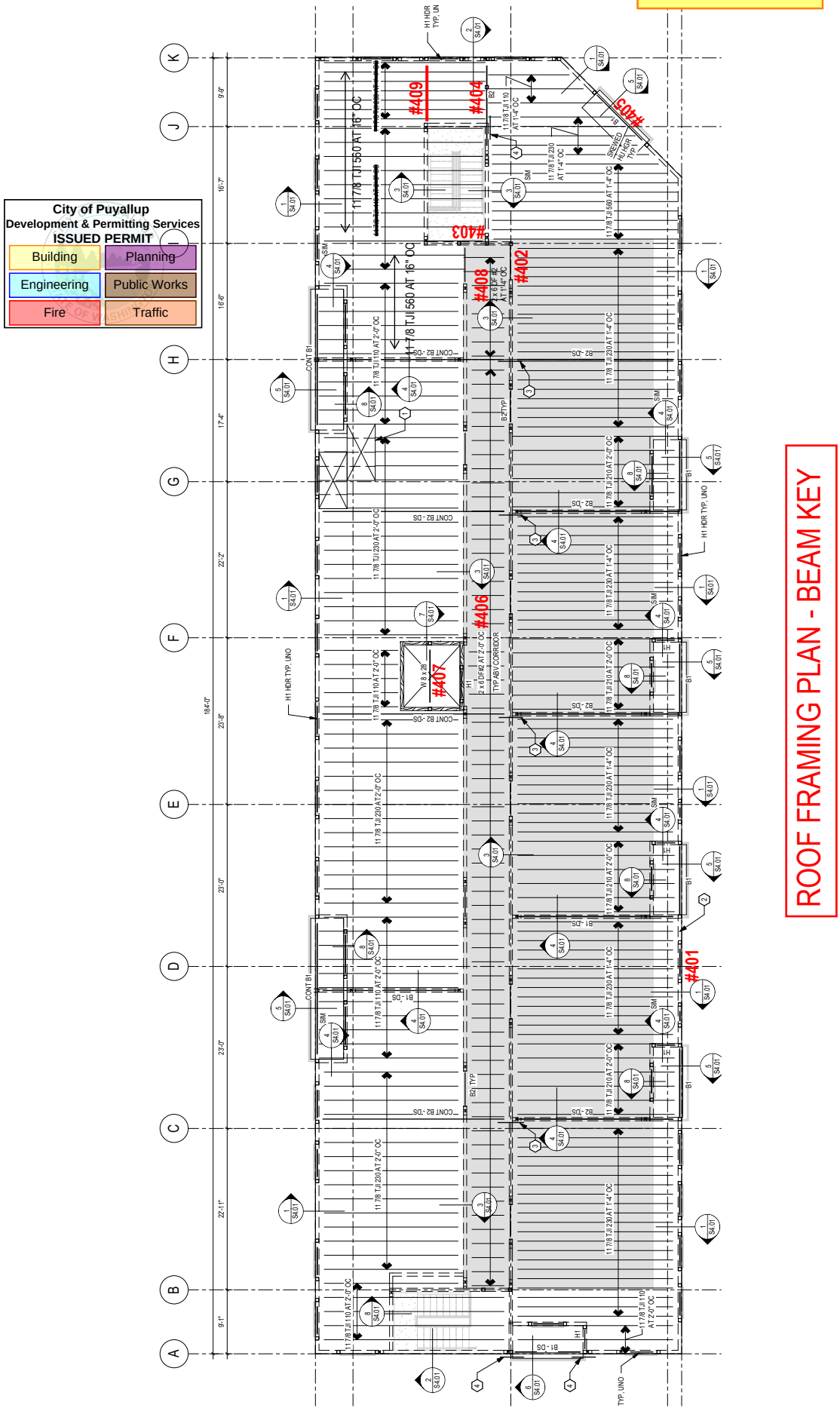
PRMU20220123

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Building	Planning
Engineering	Public Works
Fire	Traffic

Section 5.0
Wood Framed Roof Design

PRMU20220123



ROOF FRAMING PLAN - BEAM KEY

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Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

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DESCRIPTION: #401 - Typ Hdr

CODE REFERENCES

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Set : IBC 2018

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building
Planning
Engineering
Public Works
Fire
Traffic

Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2018

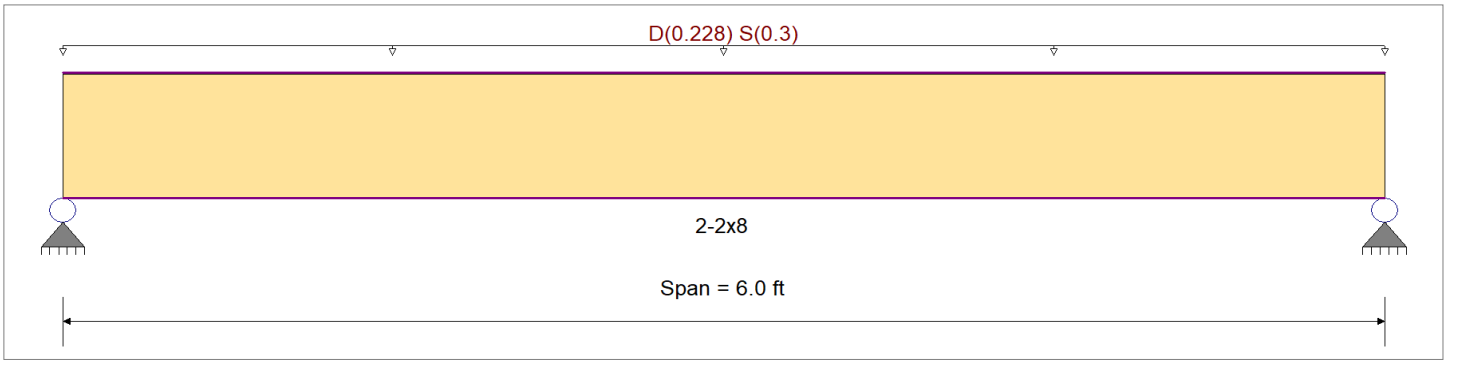
Wood Species : Douglas Fir-Larch
Wood Grade : No.2

Fb +	900.0 psi
Fb -	900.0 psi
Fc - Prll	1,350.0 psi
Fc - Perp	625.0 psi
Fv	180.0 psi
Ft	575.0 psi

E : Modulus of Elasticity

Ebend- xx	1,600.0 ksi
Eminbend - xx	580.0 ksi
Density	31.210 pcf

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.0190, S = 0.0250 ksf, Tributary Width = 12.0 ft, (Roof)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.873 : 1	Maximum Shear Stress Ratio	=	0.424 : 1
Section used for this span		2-2x8	Section used for this span		2-2x8
fb: Actual	=	1,084.88 psi	fv: Actual	=	87.71 psi
Fb: Allowable	=	1,242.00 psi	Fv: Allowable	=	207.00 psi
Load Combination		+D+S+H	Load Combination		+D+S+H
Location of maximum on span	=	3.000 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.058 in	Ratio =	1247 >=360
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.102 in	Ratio =	708 >=240
Max Upward Total Deflection	0.000 in	Ratio =	0 <240

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+H													0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.482	0.234	0.90	1.200	1.00	1.00	1.00	1.00	1.00	1.03	468.47	972.00	0.55	37.88	162.00
+D+L+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.434	0.210	1.00	1.200	1.00	1.00	1.00	1.00	1.00	1.03	468.47	1080.00	0.55	37.88	180.00
+D+Lr+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.347	0.168	1.25	1.200	1.00	1.00	1.00	1.00	1.00	1.03	468.47	1350.00	0.55	37.88	225.00
+D+S+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.873	0.424	1.15	1.200	1.00	1.00	1.00	1.00	1.00	2.38	1,084.88	1242.00	1.27	87.71	207.00
+D+0.750Lr+0.750L+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.347	0.168	1.25	1.200	1.00	1.00	1.00	1.00	1.00	1.03	468.47	1350.00	0.55	37.88	225.00
+D+0.750L+0.750S+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.749	0.364	1.15	1.200	1.00	1.00	1.00	1.00	1.00	2.04	930.78	1242.00	1.09	75.25	207.00
+D+0.60W+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.271	0.132	1.60	1.200	1.00	1.00	1.00	1.00	1.00	1.03	468.47	1728.00	0.55	37.88	288.00

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Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

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DESCRIPTION: #401 - Typ Hdr

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

Load Combination / Segment	Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+0.70E+H						1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft		1	0.271	0.132	1.60	1.200	1.00	1.00	1.00	1.00	1.00	1.03	468.47	1728.00	0.55	37.88	288.00
+D+0.750Lr+0.750L+0.450W+H						1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft		1	0.271	0.132	1.60	1.200	1.00	1.00	1.00	1.00	1.00	1.03	468.47	1728.00	0.55	37.88	288.00
+D+0.750L+0.750S+0.450W+H						1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft		1	0.539	0.261	1.60	1.200	1.00	1.00	1.00	1.00	1.00	2.04	930.78	1728.00	1.09	75.25	288.00
+D+0.750L+0.750S+0.5250E+H						1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft		1	0.539	0.261	1.60	1.200	1.00	1.00	1.00	1.00	1.00	2.04	930.78	1728.00	1.09	75.25	288.00
+0.60D+0.60W+0.60H						1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft		1	0.163	0.079	1.60	1.200	1.00	1.00	1.00	1.00	1.00	0.62	281.08	1728.00	0.33	22.73	288.00
+0.60D+0.70E+0.60H						1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft		1	0.163	0.079	1.60	1.200	1.00	1.00	1.00	1.00	1.00	0.62	281.08	1728.00	0.33	22.73	288.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S+H	1	0.1016	3.022		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	1.584	1.584
Overall MINimum	0.900	0.900
+D+H	0.684	0.684
+D+L+H	0.684	0.684
+D+Lr+H	0.684	0.684
+D+S+H	1.584	1.584
+D+0.750Lr+0.750L+H	0.684	0.684
+D+0.750L+0.750S+H	1.359	1.359
+D+0.60W+H	0.684	0.684
+D+0.70E+H	0.684	0.684
+D+0.750Lr+0.750L+0.450W+H	0.684	0.684
+D+0.750L+0.750S+0.450W+H	1.359	1.359
+D+0.750L+0.750S+0.5250E+H	1.359	1.359
+0.60D+0.60W+0.60H	0.410	0.410
+0.60D+0.70E+0.60H	0.410	0.410
D Only	0.684	0.684
S Only	0.900	0.900
H Only		

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Project Title:
Engineer:
Project ID: PRMU20220123
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Wood Beam

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DESCRIPTION: #402 - Typ Corridor BM

CODE REFERENCES

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building Planning
Engineering Public Works
Fire Traffic

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combination Set : IBC 2018

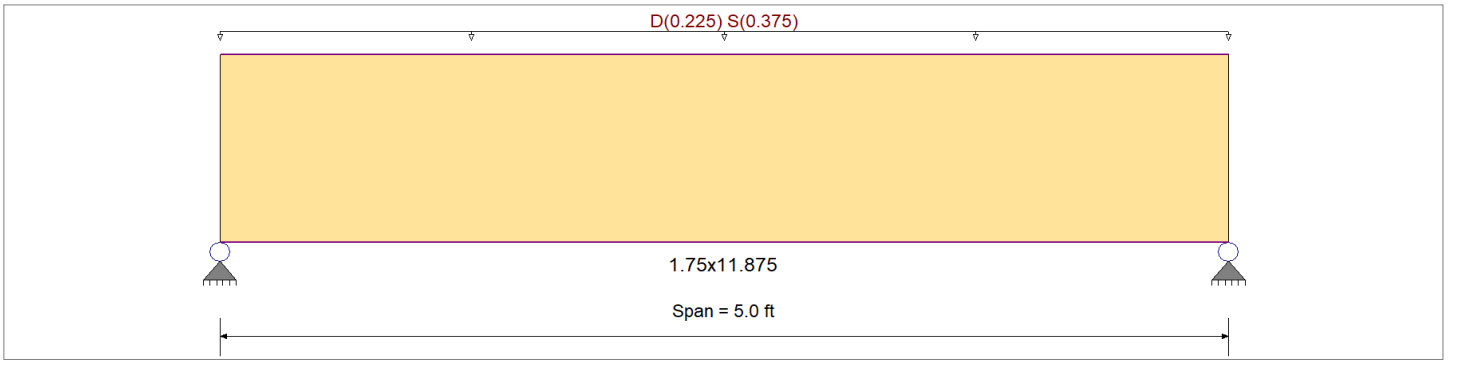
Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2018

Wood Species : iLevel Truss Joist
Wood Grade : TimberStrand LSL 1.55E

Fb +	2,325.0 psi	*E : Modulus of Elasticity*	
Fb -	2,325.0 psi	Ebend- xx	1,550.0 ksi
Fc - Prll	2,050.0 psi	Eminbend - xx	787.82 ksi
Fc - Perp	800.0 psi		
Fv	310.0 psi		
Ft	1,070.0 psi	Density	45.010 pcf

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.0150, S = 0.0250 ksf, Tributary Width = 15.0 ft, (Roof)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.205 : 1	Maximum Shear Stress Ratio	=	0.184 : 1
Section used for this span		1.75x11.875	Section used for this span		1.75x11.875
fb: Actual	=	547.05 psi	fv: Actual	=	65.59 psi
Fb: Allowable	=	2,673.75 psi	Fv: Allowable	=	356.50 psi
Load Combination		+D+S+H	Load Combination		+D+S+H
Location of maximum on span	=	2.500 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.014 in	Ratio =	4281 >=360
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.022 in	Ratio =	2676 >=240
Max Upward Total Deflection	0.000 in	Ratio =	0 <240

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+H													0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.098	0.088	0.90	1.000	1.00	1.00	1.00	1.00	1.00	0.70	205.14	2092.50	0.34	24.60	279.00
+D+L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.088	0.079	1.00	1.000	1.00	1.00	1.00	1.00	1.00	0.70	205.14	2325.00	0.34	24.60	310.00
+D+Lr+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.071	0.063	1.25	1.000	1.00	1.00	1.00	1.00	1.00	0.70	205.14	2906.25	0.34	24.60	387.50
+D+S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.205	0.184	1.15	1.000	1.00	1.00	1.00	1.00	1.00	1.88	547.05	2673.75	0.91	65.59	356.50
+D+0.750Lr+0.750L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.071	0.063	1.25	1.000	1.00	1.00	1.00	1.00	1.00	0.70	205.14	2906.25	0.34	24.60	387.50
+D+0.750L+0.750S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.173	0.155	1.15	1.000	1.00	1.00	1.00	1.00	1.00	1.58	461.57	2673.75	0.77	55.35	356.50
+D+0.60W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.055	0.050	1.60	1.000	1.00	1.00	1.00	1.00	1.00	0.70	205.14	3720.00	0.34	24.60	496.00

Title Block Line 1
You can change this area
using the "Settings" menu item
and then using the "Printing &
Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

Printed: 8 MAR 2021, 5:13PM

Wood Beam

File: Puyallup 2nd St Apts.ec6

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Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: #402 - Typ Corridor BM

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+0.70E+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.055	0.050	1.60	1.000	1.00	1.00	1.00	1.00	1.00	0.70	205.14	3720.00	0.34	24.60	496.00
+D+0.750Lr+0.750L+0.450W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.055	0.050	1.60	1.000	1.00	1.00	1.00	1.00	1.00	0.70	205.14	3720.00	0.34	24.60	496.00
+D+0.750L+0.750S+0.450W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.124	0.112	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.58	461.57	3720.00	0.77	55.35	496.00
+D+0.750L+0.750S+0.5250E+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.124	0.112	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.58	461.57	3720.00	0.77	55.35	496.00
+0.60D+0.60W+0.60H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.033	0.030	1.60	1.000	1.00	1.00	1.00	1.00	1.00	0.42	123.09	3720.00	0.20	14.76	496.00
+0.60D+0.70E+0.60H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 5.0 ft	1	0.033	0.030	1.60	1.000	1.00	1.00	1.00	1.00	1.00	0.42	123.09	3720.00	0.20	14.76	496.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S+H	1	0.0224	2.518		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	1.500	1.500
Overall MINimum	0.938	0.938
+D+H	0.563	0.563
+D+L+H	0.563	0.563
+D+Lr+H	0.563	0.563
+D+S+H	1.500	1.500
+D+0.750Lr+0.750L+H	0.563	0.563
+D+0.750L+0.750S+H	1.266	1.266
+D+0.60W+H	0.563	0.563
+D+0.70E+H	0.563	0.563
+D+0.750Lr+0.750L+0.450W+H	0.563	0.563
+D+0.750L+0.750S+0.450W+H	1.266	1.266
+D+0.750L+0.750S+0.5250E+H	1.266	1.266
+0.60D+0.60W+0.60H	0.338	0.338
+0.60D+0.70E+0.60H	0.338	0.338
D Only	0.563	0.563
S Only	0.938	0.938
H Only		

Title Block Line 1
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Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

File: Puyallup 2nd St Apts.ec6
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Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: #403 - South Corridor Hdr

CODE REFERENCES

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building Planning
Engineering Public Works
Fire Traffic

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Set : IBC 2018

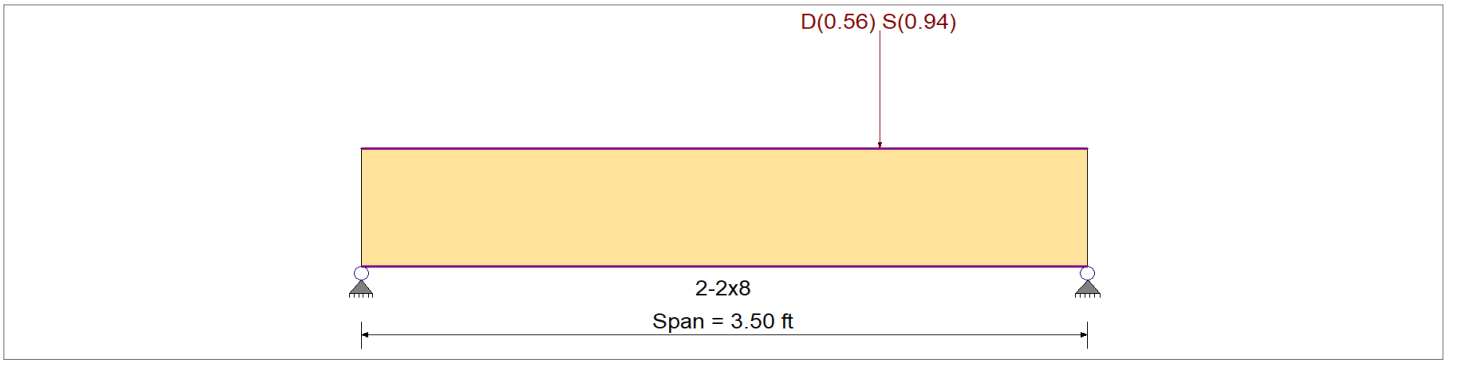
Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2018

Wood Species : Douglas Fir-Larch
Wood Grade : No.2

Fb +	900.0 psi	*E : Modulus of Elasticity*	
Fb -	900.0 psi	Ebend- xx	1,600.0 ksi
Fc - Prll	1,350.0 psi	Eminbend - xx	580.0 ksi
Fc - Perp	625.0 psi		
Fv	180.0 psi		
Ft	575.0 psi	Density	31.210 pcf

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Point Load : D = 0.560, S = 0.940 k @ 2.50 ft, (#402)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.392 : 1	Maximum Shear Stress Ratio	=	0.357 : 1
Section used for this span		2-2x8	Section used for this span		2-2x8
fb: Actual	=	487.43 psi	fv: Actual	=	73.89 psi
Fb: Allowable	=	1,242.00 psi	Fv: Allowable	=	207.00 psi
Load Combination		+D+S+H	Load Combination		+D+S+H
Location of maximum on span	=	2.491 ft	Location of maximum on span	=	2.504 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.007 in	Ratio =	5670 >=360
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.012 in	Ratio =	3553 >=240
Max Upward Total Deflection	0.000 in	Ratio =	0 <240

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+H													0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.187	0.170	0.90	1.200	1.00	1.00	1.00	1.00	1.00	0.40	181.97	972.00	0.40	27.59	162.00
+D+L+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.168	0.153	1.00	1.200	1.00	1.00	1.00	1.00	1.00	0.40	181.97	1080.00	0.40	27.59	180.00
+D+Lr+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.135	0.123	1.25	1.200	1.00	1.00	1.00	1.00	1.00	0.40	181.97	1350.00	0.40	27.59	225.00
+D+S+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.392	0.357	1.15	1.200	1.00	1.00	1.00	1.00	1.00	1.07	487.43	1242.00	1.07	73.89	207.00
+D+0.750Lr+0.750L+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.135	0.123	1.25	1.200	1.00	1.00	1.00	1.00	1.00	0.40	181.97	1350.00	0.40	27.59	225.00
+D+0.750L+0.750S+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.331	0.301	1.15	1.200	1.00	1.00	1.00	1.00	1.00	0.90	411.06	1242.00	0.90	62.32	207.00
+D+0.60W+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.105	0.096	1.60	1.200	1.00	1.00	1.00	1.00	1.00	0.40	181.97	1728.00	0.40	27.59	288.00

Title Block Line 1
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Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

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DESCRIPTION: #403 - South Corridor Hdr

City of Puyallup
Development & Permitting Services
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Planning
Engineering
Public Works
Fire
Traffic

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+0.70E+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.105	0.096	1.60	1.200	1.00	1.00	1.00	1.00	1.00	0.40	181.97	1728.00	0.40	27.59	288.00
+D+0.750Lr+0.750L+0.450W+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.105	0.096	1.60	1.200	1.00	1.00	1.00	1.00	1.00	0.40	181.97	1728.00	0.40	27.59	288.00
+D+0.750L+0.750S+0.450W+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.238	0.216	1.60	1.200	1.00	1.00	1.00	1.00	1.00	0.90	411.06	1728.00	0.90	62.32	288.00
+D+0.750L+0.750S+0.5250E+H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.238	0.216	1.60	1.200	1.00	1.00	1.00	1.00	1.00	0.90	411.06	1728.00	0.90	62.32	288.00
+0.60D+0.60W+0.60H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.063	0.057	1.60	1.200	1.00	1.00	1.00	1.00	1.00	0.24	109.18	1728.00	0.24	16.55	288.00
+0.60D+0.70E+0.60H					1.200	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 3.50 ft	1	0.063	0.057	1.60	1.200	1.00	1.00	1.00	1.00	1.00	0.24	109.18	1728.00	0.24	16.55	288.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S+H	1	0.0118	1.942		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.429	1.071
Overall MINimum	0.269	0.671
+D+H	0.160	0.400
+D+L+H	0.160	0.400
+D+Lr+H	0.160	0.400
+D+S+H	0.429	1.071
+D+0.750Lr+0.750L+H	0.160	0.400
+D+0.750L+0.750S+H	0.361	0.904
+D+0.60W+H	0.160	0.400
+D+0.70E+H	0.160	0.400
+D+0.750Lr+0.750L+0.450W+H	0.160	0.400
+D+0.750L+0.750S+0.450W+H	0.361	0.904
+D+0.750L+0.750S+0.5250E+H	0.361	0.904
+0.60D+0.60W+0.60H	0.096	0.240
+0.60D+0.70E+0.60H	0.096	0.240
D Only	0.160	0.400
S Only	0.269	0.671
H Only		

Title Block Line 1
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Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

File: Puyallup 2nd St Apts.ec6
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Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: #404 -Roof Bm Over South Unit

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building
Planning
Engineering
Public Works
Fire
Traffic

CODE REFERENCES

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combination Set : IBC 2018

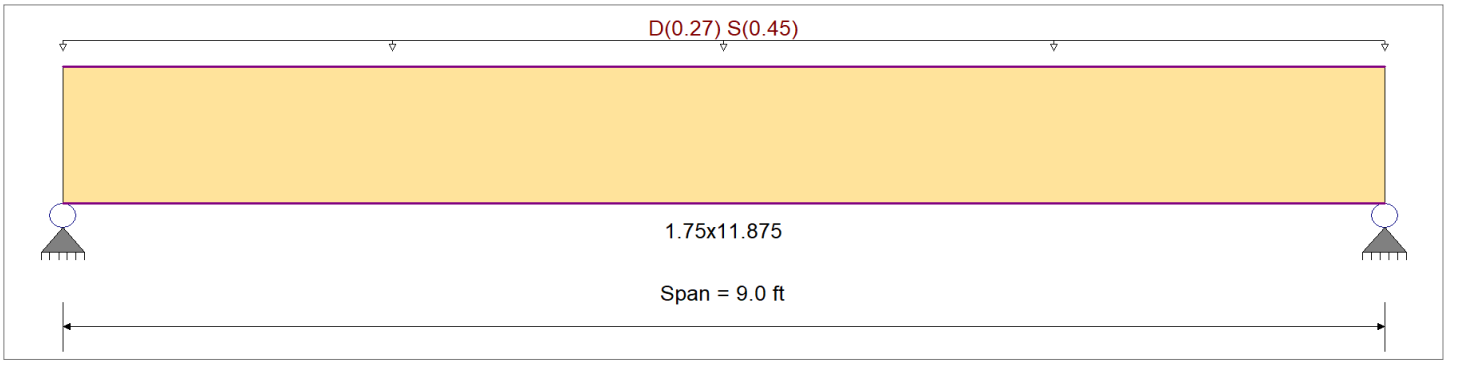
Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2018

Wood Species : iLevel Truss Joist
Wood Grade : TimberStrand LSL 1.55E

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling

Fb +	2,325.0 psi	*E : Modulus of Elasticity*	
Fb -	2,325.0 psi	Ebend- xx	1,550.0 ksi
Fc - Prll	2,050.0 psi	Eminbend - xx	787.82 ksi
Fc - Perp	800.0 psi		
Fv	310.0 psi		
Ft	1,070.0 psi	Density	45.010 pcf



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.0150, S = 0.0250 ksf, Tributary Width = 18.0 ft, (Roof)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.795 : 1	Maximum Shear Stress Ratio	=	0.512 : 1
Section used for this span		1.75x11.875	Section used for this span		1.75x11.875
fb: Actual	=	2,126.94 psi	fv: Actual	=	182.65 psi
Fb: Allowable	=	2,673.75 psi	Fv: Allowable	=	356.50 psi
Load Combination		+D+S+H	Load Combination		+D+S+H
Location of maximum on span	=	4.500 ft	Location of maximum on span	=	8.015 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.177 in	Ratio =	611	>=360
Max Upward Transient Deflection	0.000 in	Ratio =	0	<360
Max Downward Total Deflection	0.282 in	Ratio =	382	>=240
Max Upward Total Deflection	0.000 in	Ratio =	0	<240

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.381	0.246	0.90							2.73	797.60	2092.50	0.95	68.50	279.00
+D+L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.343	0.221	1.00							2.73	797.60	2325.00	0.95	68.50	310.00
+D+Lr+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.274	0.177	1.25							2.73	797.60	2906.25	0.95	68.50	387.50
+D+S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.795	0.512	1.15							7.29	2,126.94	2673.75	2.53	182.65	356.50
+D+0.750Lr+0.750L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.274	0.177	1.25							2.73	797.60	2906.25	0.95	68.50	387.50
+D+0.750L+0.750S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.671	0.432	1.15							6.15	1,794.60	2673.75	2.14	154.11	356.50
+D+0.60W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.214	0.138	1.60							2.73	797.60	3720.00	0.95	68.50	496.00

Title Block Line 1
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Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
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Wood Beam

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DESCRIPTION: #404 -Roof Bm Over South Unit

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+0.70E+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.214	0.138	1.60	1.000	1.00	1.00	1.00	1.00	1.00	2.73	797.60	3720.00	0.95	68.50	496.00
+D+0.750Lr+0.750L+0.450W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.214	0.138	1.60	1.000	1.00	1.00	1.00	1.00	1.00	2.73	797.60	3720.00	0.95	68.50	496.00
+D+0.750L+0.750S+0.450W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.482	0.311	1.60	1.000	1.00	1.00	1.00	1.00	1.00	6.15	1,794.60	3720.00	2.14	154.11	496.00
+D+0.750L+0.750S+0.5250E+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.482	0.311	1.60	1.000	1.00	1.00	1.00	1.00	1.00	6.15	1,794.60	3720.00	2.14	154.11	496.00
+0.60D+0.60W+0.60H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.129	0.083	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.64	478.56	3720.00	0.57	41.10	496.00
+0.60D+0.70E+0.60H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.129	0.083	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.64	478.56	3720.00	0.57	41.10	496.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S+H	1	0.2824	4.533		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	3.240	3.240
Overall MINimum	2.025	2.025
+D+H	1.215	1.215
+D+L+H	1.215	1.215
+D+Lr+H	1.215	1.215
+D+S+H	3.240	3.240
+D+0.750Lr+0.750L+H	1.215	1.215
+D+0.750L+0.750S+H	2.734	2.734
+D+0.60W+H	1.215	1.215
+D+0.70E+H	1.215	1.215
+D+0.750Lr+0.750L+0.450W+H	1.215	1.215
+D+0.750L+0.750S+0.450W+H	2.734	2.734
+D+0.750L+0.750S+0.5250E+H	2.734	2.734
+0.60D+0.60W+0.60H	0.729	0.729
+0.60D+0.70E+0.60H	0.729	0.729
D Only	1.215	1.215
S Only	2.025	2.025
H Only		

Title Block Line 1
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Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

File: Puyallup 2nd St Apts.ec6
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Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: #405 - Exterior BM Over Southwest Corner

CODE REFERENCES

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building Planning
Engineering Public Works
Fire Traffic

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Used : IBC 2018

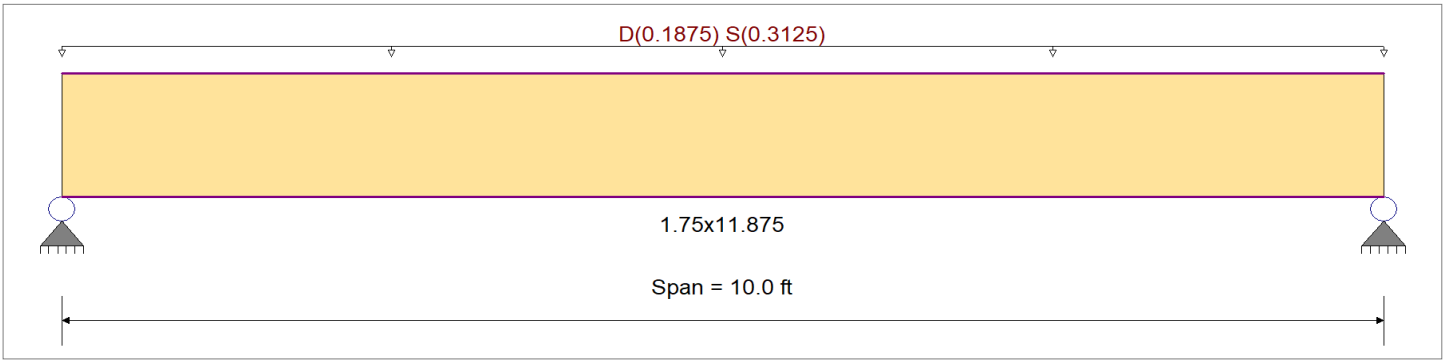
Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2018

Wood Species : iLevel Truss Joist
Wood Grade : TimberStrand LSL 1.55E

Fb +	2,325.0 psi	*E : Modulus of Elasticity*	
Fb -	2,325.0 psi	Ebend- xx	1,550.0 ksi
Fc - Prll	2,050.0 psi	Eminbend - xx	787.82 ksi
Fc - Perp	800.0 psi		
Fv	310.0 psi		
Ft	1,070.0 psi	Density	45.010 pcf

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.0150, S = 0.0250 ksf, Tributary Width = 12.50 ft, (Roof)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.682 : 1	Maximum Shear Stress Ratio	=	0.406 : 1
Section used for this span		1.75x11.875	Section used for this span		1.75x11.875
fb: Actual	=	1,823.51 psi	fv: Actual	=	144.89 psi
Fb: Allowable	=	2,673.75 psi	Fv: Allowable	=	356.50 psi
Load Combination		+D+S+H	Load Combination		+D+S+H
Location of maximum on span	=	5.000 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.187 in	Ratio =	642 >=360
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.299 in	Ratio =	401 >=240
Max Upward Total Deflection	0.000 in	Ratio =	0 <240

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+H													0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.327	0.195	0.90	1.000	1.00	1.00	1.00	1.00	1.00	2.34	683.81	2092.50	0.75	54.33	279.00
+D+L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.294	0.175	1.00	1.000	1.00	1.00	1.00	1.00	1.00	2.34	683.81	2325.00	0.75	54.33	310.00
+D+Lr+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.235	0.140	1.25	1.000	1.00	1.00	1.00	1.00	1.00	2.34	683.81	2906.25	0.75	54.33	387.50
+D+S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.682	0.406	1.15	1.000	1.00	1.00	1.00	1.00	1.00	6.25	1,823.51	2673.75	2.01	144.89	356.50
+D+0.750Lr+0.750L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.235	0.140	1.25	1.000	1.00	1.00	1.00	1.00	1.00	2.34	683.81	2906.25	0.75	54.33	387.50
+D+0.750L+0.750S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.575	0.343	1.15	1.000	1.00	1.00	1.00	1.00	1.00	5.27	1,538.58	2673.75	1.69	122.25	356.50
+D+0.60W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 10.0 ft	1	0.184	0.110	1.60	1.000	1.00	1.00	1.00	1.00	1.00	2.34	683.81	3720.00	0.75	54.33	496.00

Title Block Line 1
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Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

Printed: 14 APR 2021, 3:58PM

Wood Beam

File: Puyallup 2nd St Apts.ec6

Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.24

Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: #405 - Exterior BM Over Southwest Corner

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building
Planning
Engineering
Public Works
Fire
Traffic

Load Combination / Segment	Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+0.70E+H						1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length =	10.0 ft	1	0.184	0.110	1.60	1.000	1.00	1.00	1.00	1.00	1.00	2.34	683.81	3720.00	0.75	54.33	496.00
+D+0.750Lr+0.750L+0.450W+H						1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length =	10.0 ft	1	0.184	0.110	1.60	1.000	1.00	1.00	1.00	1.00	1.00	2.34	683.81	3720.00	0.75	54.33	496.00
+D+0.750L+0.750S+0.450W+H						1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length =	10.0 ft	1	0.414	0.246	1.60	1.000	1.00	1.00	1.00	1.00	1.00	5.27	1,538.58	3720.00	1.69	122.25	496.00
+D+0.750L+0.750S+0.5250E+H						1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length =	10.0 ft	1	0.414	0.246	1.60	1.000	1.00	1.00	1.00	1.00	1.00	5.27	1,538.58	3720.00	1.69	122.25	496.00
+0.60D+0.60W+0.60H						1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length =	10.0 ft	1	0.110	0.066	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.41	410.29	3720.00	0.45	32.60	496.00
+0.60D+0.70E+0.60H						1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length =	10.0 ft	1	0.110	0.066	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.41	410.29	3720.00	0.45	32.60	496.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S+H	1	0.2989	5.036		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	2.500	2.500
Overall MINimum	1.563	1.563
+D+H	0.938	0.938
+D+L+H	0.938	0.938
+D+Lr+H	0.938	0.938
+D+S+H	2.500	2.500
+D+0.750Lr+0.750L+H	0.938	0.938
+D+0.750L+0.750S+H	2.109	2.109
+D+0.60W+H	0.938	0.938
+D+0.70E+H	0.938	0.938
+D+0.750Lr+0.750L+0.450W+H	0.938	0.938
+D+0.750L+0.750S+0.450W+H	2.109	2.109
+D+0.750L+0.750S+0.5250E+H	2.109	2.109
+0.60D+0.60W+0.60H	0.563	0.563
+0.60D+0.70E+0.60H	0.563	0.563
D Only	0.938	0.938
S Only	1.563	1.563
H Only		

Title Block Line 1
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Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

File: Puyallup 2nd St Apts.ec6
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Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: #406 - Typ Roof Joist Abv Corridor

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

CODE REFERENCES

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Used : IBC 2018

Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2018

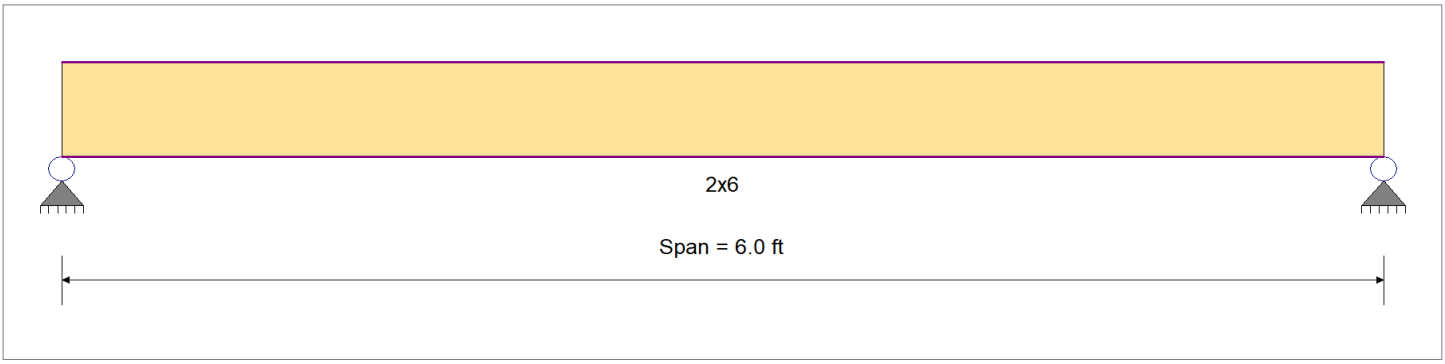
Wood Species : Douglas Fir-Larch
Wood Grade : No.2
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling

Fb +	900.0 psi
Fb -	900.0 psi
Fc - Prll	1,350.0 psi
Fc - Perp	625.0 psi
Fv	180.0 psi
Ft	575.0 psi

E : Modulus of Elasticity

Ebend- xx	1,600.0 ksi
Eminbend - xx	580.0 ksi
Density	31.210 pcf

Repetitive Member Stress Increase



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.0190, S = 0.0250 ksf, Tributary Width = 2.0 ft, (Roof)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.406 : 1	Maximum Shear Stress Ratio	=	0.198 : 1
Section used for this span		2x6	Section used for this span		2x6
fb: Actual	=	628.36 psi	fv: Actual	=	40.99 psi
Fb: Allowable	=	1,547.33 psi	Fv: Allowable	=	207.00 psi
Load Combination		+D+S+H	Load Combination		+D+S+H
Location of maximum on span	=	3.000 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.044 in	Ratio =	1633 >=240
Max Upward Transient Deflection	0.000 in	Ratio =	0 <240
Max Downward Total Deflection	0.078 in	Ratio =	928 >=180
Max Upward Total Deflection	0.000 in	Ratio =	0 <180

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	Moment Values fb	Moment Values F'b	Shear Values V	Shear Values fv	Shear Values F'v
+D+H													0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.224	0.109	0.90	1.300	1.00	1.15	1.00	1.00	1.00	0.17	271.34	1210.95	0.10	17.70	162.00
+D+L+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.202	0.098	1.00	1.300	1.00	1.15	1.00	1.00	1.00	0.17	271.34	1345.50	0.10	17.70	180.00
+D+Lr+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.161	0.079	1.25	1.300	1.00	1.15	1.00	1.00	1.00	0.17	271.34	1681.88	0.10	17.70	225.00
+D+S+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.406	0.198	1.15	1.300	1.00	1.15	1.00	1.00	1.00	0.40	628.36	1547.33	0.23	40.99	207.00
+D+0.750Lr+0.750L+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.161	0.079	1.25	1.300	1.00	1.15	1.00	1.00	1.00	0.17	271.34	1681.88	0.10	17.70	225.00
+D+0.750L+0.750S+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.348	0.170	1.15	1.300	1.00	1.15	1.00	1.00	1.00	0.34	539.11	1547.33	0.19	35.17	207.00
+D+0.60W+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.126	0.061	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.17	271.34	2152.80	0.10	17.70	288.00

Title Block Line 1
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and then using the "Printing &
Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

Printed: 14 APR 2021, 3:58PM

Wood Beam

File: Puyallup 2nd St Apts.ec6

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Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: #406 - Typ Roof Joist Abv Corridor

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building
Planning
Engineering
Public Works
Fire
Traffic

Load Combination / Segment	Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+0.70E+H						1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft		1	0.126	0.061	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.17	271.34	2152.80	0.10	17.70	288.00
+D+0.750Lr+0.750L+H						1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft		1	0.126	0.061	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.17	271.34	2152.80	0.10	17.70	288.00
+D+0.750L+0.750S+0.450W+H						1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft		1	0.250	0.122	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.34	539.11	2152.80	0.19	35.17	288.00
+D+0.750L+0.750S+0.5250E+H						1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft		1	0.250	0.122	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.34	539.11	2152.80	0.19	35.17	288.00
+0.60D+0.60W+0.60H						1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft		1	0.076	0.037	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.10	162.80	2152.80	0.06	10.62	288.00
+0.60D+0.70E+0.60H						1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft		1	0.076	0.037	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.10	162.80	2152.80	0.06	10.62	288.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+S+H	1	0.0776	3.022		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.264	0.264
Overall MINimum	0.150	0.150
+D+H	0.114	0.114
+D+L+H	0.114	0.114
+D+Lr+H	0.114	0.114
+D+S+H	0.264	0.264
+D+0.750Lr+0.750L+H	0.114	0.114
+D+0.750L+0.750S+H	0.227	0.227
+D+0.60W+H	0.114	0.114
+D+0.70E+H	0.114	0.114
+D+0.750Lr+0.750L+0.450W+H	0.114	0.114
+D+0.750L+0.750S+0.450W+H	0.227	0.227
+D+0.750L+0.750S+0.5250E+H	0.227	0.227
+0.60D+0.60W+0.60H	0.068	0.068
+0.60D+0.70E+0.60H	0.068	0.068
D Only	0.114	0.114
S Only	0.150	0.150
H Only		

Title Block Line 1
You can change this area
using the "Settings" menu item
and then using the "Printing &
Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

Printed: 16 APR 2021, 2:07PM

Steel Beam

File: Puyallup 2nd St Apts.ec6
Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.24
Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: #407 - Elevator Hoist BM

CODE REFERENCES

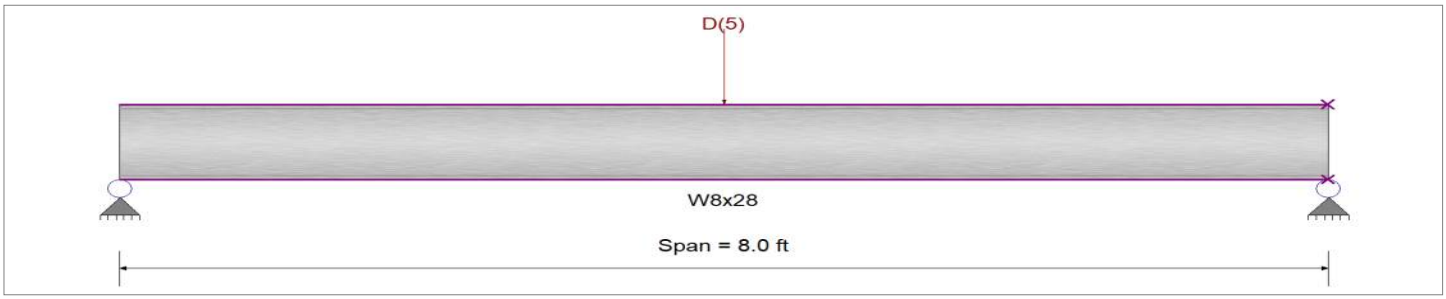
Calculations per AISC 360-10, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Used : IBC 2018

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning | Engineering | Public Works | Fire | Traffic

Material Properties

Analysis Method : Allowable Strength Design
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling
Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 ksi
E: Modulus : 29,000.0 ksi



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added
Load(s) for Span Number 1
Point Load : D = 5.0 k @ 4.0 ft, (Elevator)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	0.147 : 1	Maximum Shear Stress Ratio =	0.054 : 1
Section used for this span	W8x28	Section used for this span	W8x28
Ma : Applied	10.000 k-ft	Va : Applied	2.50 k
Mn / Omega : Allowable	67.864 k-ft	Vn/Omega : Allowable	45.942 k
Load Combination	+D+H	Load Combination	+D+H
Location of maximum on span	4.000 ft	Location of maximum on span	0.000 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.000 in	Ratio =	0 <360
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.033 in	Ratio =	2948 >=240.
Max Upward Total Deflection	0.000 in	Ratio =	0 <240.0

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	Summary of Moment Values Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Summary of Shear Values Va Max	Vnx	Vnx/Omega
+D+H													
Dsgn. L = 8.00 ft	1	0.147	0.054	10.00		10.00	113.33	67.86	1.00	1.00	2.50	68.91	45.94
+D+L+H													
Dsgn. L = 8.00 ft	1	0.147	0.054	10.00		10.00	113.33	67.86	1.00	1.00	2.50	68.91	45.94
+D+Lr+H													
Dsgn. L = 8.00 ft	1	0.147	0.054	10.00		10.00	113.33	67.86	1.00	1.00	2.50	68.91	45.94
+D+S+H													
Dsgn. L = 8.00 ft	1	0.147	0.054	10.00		10.00	113.33	67.86	1.00	1.00	2.50	68.91	45.94
+D+0.750Lr+0.750L+H													
Dsgn. L = 8.00 ft	1	0.147	0.054	10.00		10.00	113.33	67.86	1.00	1.00	2.50	68.91	45.94
+D+0.750L+0.750S+H													
Dsgn. L = 8.00 ft	1	0.147	0.054	10.00		10.00	113.33	67.86	1.00	1.00	2.50	68.91	45.94
+D+0.60W+H													
Dsgn. L = 8.00 ft	1	0.147	0.054	10.00		10.00	113.33	67.86	1.00	1.00	2.50	68.91	45.94
+D+0.70E+H													
Dsgn. L = 8.00 ft	1	0.147	0.054	10.00		10.00	113.33	67.86	1.00	1.00	2.50	68.91	45.94
+D+0.750Lr+0.750L+0.450W+H													
Dsgn. L = 8.00 ft	1	0.147	0.054	10.00		10.00	113.33	67.86	1.00	1.00	2.50	68.91	45.94
+D+0.750L+0.750S+0.450W+H													
Dsgn. L = 8.00 ft	1	0.147	0.054	10.00		10.00	113.33	67.86	1.00	1.00	2.50	68.91	45.94
+D+0.750L+0.750S+0.5250E+H													
Dsgn. L = 8.00 ft	1	0.147	0.054	10.00		10.00	113.33	67.86	1.00	1.00	2.50	68.91	45.94
+0.60D+0.60W+0.60H													

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Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Steel Beam

Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.24

Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: #407 - Elevator Hoist BM

City of Puyallup
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Load Combination		Max Stress Ratios		Summary of Moment Values							Summary of Shear Values		
Segment Length	Span #	M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega
Dsgn. L = 8.00 ft	1	0.088	0.033	6.00		6.00	113.33	67.86	1.00	1.00	1.50	68.91	45.94
+0.60D+0.70E+0.60H													
Dsgn. L = 8.00 ft	1	0.088	0.033	6.00		6.00	113.33	67.86	1.00	1.00	1.50	68.91	45.94

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D Only	1	0.0326	4.000		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	2.500	2.500
Overall MINimum	1.500	1.500
+D+H	2.500	2.500
+D+L+H	2.500	2.500
+D+Lr+H	2.500	2.500
+D+S+H	2.500	2.500
+D+0.750Lr+0.750L+H	2.500	2.500
+D+0.750L+0.750S+H	2.500	2.500
+D+0.60W+H	2.500	2.500
+D+0.70E+H	2.500	2.500
+D+0.750Lr+0.750L+0.450W+H	2.500	2.500
+D+0.750L+0.750S+0.450W+H	2.500	2.500
+D+0.750L+0.750S+0.5250E+H	2.500	2.500
+0.60D+0.60W+0.60H	1.500	1.500
+0.60D+0.70E+0.60H	1.500	1.500
D Only	2.500	2.500
H Only		

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Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

File: Puyallup 2nd St Apts.ec6

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Lic. # : KW-06014847 AHBL, INC

DESCRIPTION: #408 - Roof Joist Abv Corridor At Roof Deck

City of Puyallup
Development & Permitting Services
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Building
Planning
Engineering
Public Works
Fire
Traffic

CODE REFERENCES

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Used : IBC 2018

Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2018

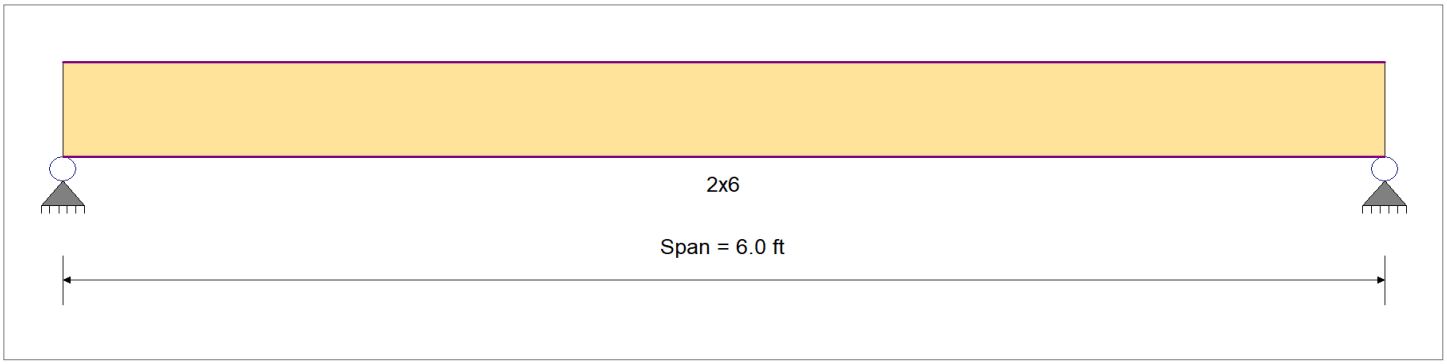
Wood Species : Douglas Fir-Larch
Wood Grade : No.2
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling

Fb +	900.0 psi
Fb -	900.0 psi
Fc - Prll	1,350.0 psi
Fc - Perp	625.0 psi
Fv	180.0 psi
Ft	575.0 psi

E : Modulus of Elasticity

Ebend- xx	1,600.0 ksi
Eminbend - xx	580.0 ksi
Density	31.210 pcf

Repetitive Member Stress Increase



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.0350, L = 0.10, S = 0.0250 ksf, Tributary Width = 1.330 ft, (Roof)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.953 : 1	Maximum Shear Stress Ratio	=	0.465 : 1
Section used for this span		2x6	Section used for this span		2x6
fb: Actual	=	1,282.08 psi	fv: Actual	=	83.64 psi
Fb: Allowable	=	1,345.50 psi	Fv: Allowable	=	180.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	3.000 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.117 in	Ratio =	614 >=240
Max Upward Transient Deflection	0.000 in	Ratio =	0 <240
Max Downward Total Deflection	0.158 in	Ratio =	454 >=180
Max Upward Total Deflection	0.000 in	Ratio =	0 <180

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	Moment Values fb	Moment Values F'b	Shear Values V	Shear Values fv	Shear Values F'v
+D+H													0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.274	0.134	0.90	1.300	1.00	1.15	1.00	1.00	1.00	0.21	332.39	1210.95	0.12	21.68	162.00
+D+L+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.953	0.465	1.00	1.300	1.00	1.15	1.00	1.00	1.00	0.81	1,282.08	1345.50	0.46	83.64	180.00
+D+Lr+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.198	0.096	1.25	1.300	1.00	1.15	1.00	1.00	1.00	0.21	332.39	1681.88	0.12	21.68	225.00
+D+S+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.368	0.180	1.15	1.300	1.00	1.15	1.00	1.00	1.00	0.36	569.81	1547.33	0.20	37.17	207.00
+D+0.750Lr+0.750L+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.621	0.303	1.25	1.300	1.00	1.15	1.00	1.00	1.00	0.66	1,044.65	1681.88	0.37	68.15	225.00
+D+0.750L+0.750S+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.790	0.385	1.15	1.300	1.00	1.15	1.00	1.00	1.00	0.77	1,222.72	1547.33	0.44	79.77	207.00
+D+0.60W+H					1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft	1	0.154	0.075	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.21	332.39	2152.80	0.12	21.68	288.00

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Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

File: Puyallup 2nd St Apts.ec6

Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.24

Lic. # : KW-06014847 AHBL, INC

DESCRIPTION: #408 - Roof Joist Abv Corridor At Roof Deck

City of Puyallup
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Load Combination / Segment	Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+0.70E+H						1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft		1	0.154	0.075	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.21	332.39	2152.80	0.12	21.68	288.00
+D+0.750Lr+0.750L+0.450W+H						1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft		1	0.485	0.237	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.66	1,044.65	2152.80	0.37	68.15	288.00
+D+0.750L+0.750S+0.450W+H						1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft		1	0.568	0.277	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.77	1,222.72	2152.80	0.44	79.77	288.00
+D+0.750L+0.750S+0.5250E+H						1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft		1	0.568	0.277	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.77	1,222.72	2152.80	0.44	79.77	288.00
+0.60D+0.60W+0.60H						1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft		1	0.093	0.045	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.13	199.43	2152.80	0.07	13.01	288.00
+0.60D+0.70E+0.60H						1.300	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 6.0 ft		1	0.093	0.045	1.60	1.300	1.00	1.15	1.00	1.00	1.00	0.13	199.43	2152.80	0.07	13.01	288.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L+H	1	0.1583	3.022		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.539	0.539
Overall MINimum	0.100	0.100
+D+H	0.140	0.140
+D+L+H	0.539	0.539
+D+Lr+H	0.140	0.140
+D+S+H	0.239	0.239
+D+0.750Lr+0.750L+H	0.439	0.439
+D+0.750L+0.750S+H	0.514	0.514
+D+0.60W+H	0.140	0.140
+D+0.70E+H	0.140	0.140
+D+0.750Lr+0.750L+0.450W+H	0.439	0.439
+D+0.750L+0.750S+0.450W+H	0.514	0.514
+D+0.750L+0.750S+0.5250E+H	0.514	0.514
+0.60D+0.60W+0.60H	0.084	0.084
+0.60D+0.70E+0.60H	0.084	0.084
D Only	0.140	0.140
L Only	0.399	0.399
S Only	0.100	0.100
H Only		

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Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

File: Puyallup 2nd St Apts.ec6

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Lic. # : KW-06014847 AHBL, INC

DESCRIPTION: #409 -Roof Bm Over South Unit Bath

CODE REFERENCES

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Used : IBC 2018

City of Puyallup
Development & Permitting Services
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Material Properties

Analysis Method : Allowable Stress Design
Load Combination : IBC 2018

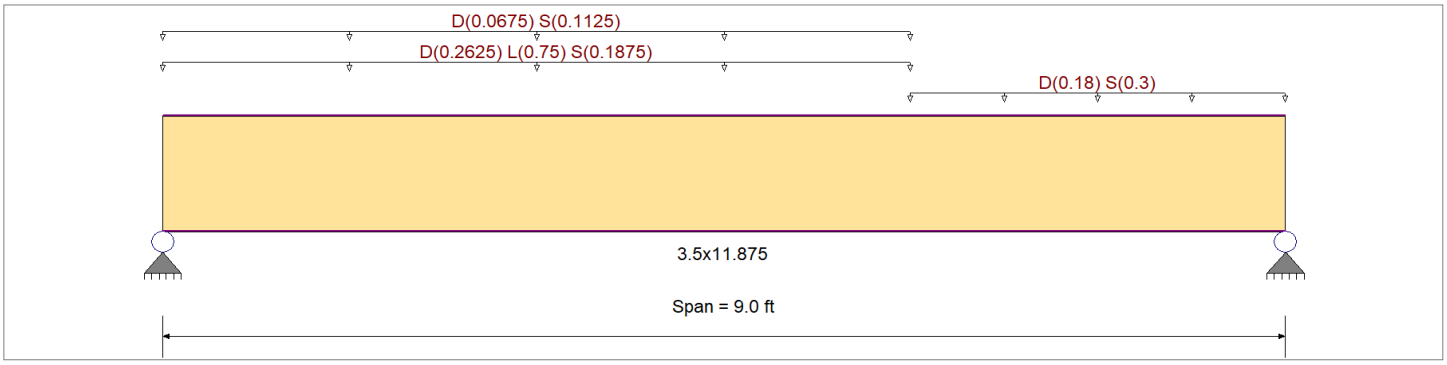
Wood Species : iLevel Truss Joist
Wood Grade : TimberStrand LSL 1.55E

Fb +	2,325.0 psi
Fb -	2,325.0 psi
Fc - Prll	2,050.0 psi
Fc - Perp	800.0 psi
Fv	310.0 psi
Ft	1,070.0 psi

E : Modulus of Elasticity

Ebend- xx	1,550.0 ksi
Eminbend - xx	787.82 ksi
Density	45.010 pcf

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Load for Span Number 1
- Uniform Load : D = 0.0150, S = 0.0250 ksf, Extent = 6.0 -->> 9.0 ft, Tributary Width = 12.0 ft, (Roof)
- Uniform Load : D = 0.0350, L = 0.10, S = 0.0250 ksf, Extent = 0.0 -->> 6.0 ft, Tributary Width = 7.50 ft, (Roof Deck)
- Uniform Load : D = 0.0150, S = 0.0250 ksf, Extent = 0.0 -->> 6.0 ft, Tributary Width = 4.50 ft, (Roof)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.565 : 1	Maximum Shear Stress Ratio	=	0.390 : 1
Section used for this span		3.5x11.875	Section used for this span		3.5x11.875
fb: Actual	=	1,313.46 psi	fv: Actual	=	120.75 psi
Fb: Allowable	=	2,325.00 psi	Fv: Allowable	=	310.00 psi
Load Combination		+D+L+H	Load Combination		+D+L+H
Location of maximum on span	=	4.073 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.111 in	Ratio =	972 >=360
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.185 in	Ratio =	584 >=240
Max Upward Total Deflection	0.000 in	Ratio =	0 <240

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	Moment Values fb	Moment Values F'b	Shear Values V	Shear Values fv	Shear Values F'v
+D+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.210	0.140	0.90							3.01	439.43	2092.50	1.08	39.15	279.00
+D+L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.565	0.390	1.00							9.00	1,313.46	2325.00	3.35	120.75	310.00
+D+Lr+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.151	0.101	1.25							3.01	439.43	2906.25	1.08	39.15	387.50
+D+S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.330	0.217	1.15							6.05	881.94	2673.75	2.14	77.20	356.50
+D+0.750Lr+0.750L+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.377	0.259	1.25							7.50	1,094.76	2906.25	2.78	100.35	387.50
+D+0.750L+0.750S+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00

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Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Beam

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Lic. # : KW-06014847 AHBL, INC

DESCRIPTION: #409 -Roof Bm Over South Unit Bath

City of Puyallup
Development & Permitting Services
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Load Combination	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
Length = 9.0 ft	1	0.533	0.362	1.15	1.000	1.00	1.00	1.00	1.00	1.00	9.77	1,425.00	2673.75	3.57	128.89	356.50
+D+0.60W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.118	0.079	1.60	1.000	1.00	1.00	1.00	1.00	1.00	3.01	439.43	3720.00	1.08	39.15	496.00
+D+0.70E+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.118	0.079	1.60	1.000	1.00	1.00	1.00	1.00	1.00	3.01	439.43	3720.00	1.08	39.15	496.00
+D+0.750Lr+0.750L+0.450W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.294	0.202	1.60	1.000	1.00	1.00	1.00	1.00	1.00	7.50	1,094.76	3720.00	2.78	100.35	496.00
+D+0.750L+0.750S+0.450W+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.383	0.260	1.60	1.000	1.00	1.00	1.00	1.00	1.00	9.77	1,425.00	3720.00	3.57	128.89	496.00
+D+0.750L+0.750S+0.5250E+H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.383	0.260	1.60	1.000	1.00	1.00	1.00	1.00	1.00	9.77	1,425.00	3720.00	3.57	128.89	496.00
+0.60D+0.60W+0.60H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.071	0.047	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.81	263.66	3720.00	0.65	23.49	496.00
+0.60D+0.70E+0.60H					1.000	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 9.0 ft	1	0.071	0.047	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.81	263.66	3720.00	0.65	23.49	496.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.750L+0.750S+0.5250E+H	1	0.1848	4.434		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	4.673	3.248
Overall MINimum	1.350	1.350
+D+H	1.410	1.110
+D+L+H	4.410	2.610
+D+Lr+H	1.410	1.110
+D+S+H	2.760	2.460
+D+0.750Lr+0.750L+H	3.660	2.235
+D+0.750L+0.750S+H	4.673	3.248
+D+0.60W+H	1.410	1.110
+D+0.70E+H	1.410	1.110
+D+0.750Lr+0.750L+0.450W+H	3.660	2.235
+D+0.750L+0.750S+0.450W+H	4.673	3.248
+D+0.750L+0.750S+0.5250E+H	4.673	3.248
+0.60D+0.60W+0.60H	0.846	0.666
+0.60D+0.70E+0.60H	0.846	0.666
D Only	1.410	1.110
L Only	3.000	1.500
S Only	1.350	1.350
H Only		

Roof			
Member Name	Results	Current Solution	Comments
Typ 19.5' Max Span - TJI 110 AT 24" OC	Passed	1 piece(s) 11 7/8" TJI® 110 @ 24" OC	
Typ 21.5' Max Span - TJI 230 AT 24" OC	Passed	1 piece(s) 11 7/8" TJI® 230 @ 24" OC	
Typ 24' Span - TJI 210 AT 16" OC	Passed	1 piece(s) 11 7/8" TJI® 210 @ 16" OC	
Typ 24' Span - TJI 560 AT 24" OC	Passed	1 piece(s) 11 7/8" TJI® 560 @ 24" OC	
Typ 27' Span - TJI 210 AT 16" OC	Passed	1 piece(s) 11 7/8" TJI® 560 @ 16" OC	
Typ 20' Span w/Solar - TJI 210 AT 24" OC	Passed	1 piece(s) 11 7/8" TJI® 210 @ 24" OC	
Typ 24' Span w/Solar - TJI 230 AT 16" OC	Passed	1 piece(s) 11 7/8" TJI® 230 @ 16" OC	

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

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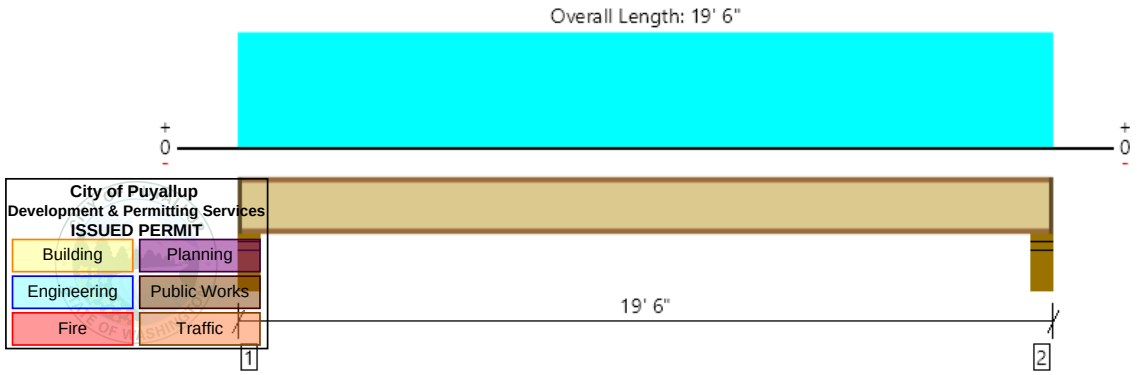
Weyerhaeuser

8/17/2021 8:15:42 PM UTC
ForteWEB v3.2
File Name: 2190606.20 Puyallup 2nd Street Apts

PRMU20220123

Roof, Typ 19.5' Max Span - TJI 110 AT 24" OC
1 piece(s) 11 7/8" TJI® 110 @ 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)	773 @ 4 1/2"	1581 (3.50")	Passed (49%)	1.15	1.0 D + 1.0 S (All Spans)
Shear (lbs)	743 @ 5 1/2"	1794	Passed (41%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	3516 @ 9' 9"	3634	Passed (97%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.560 @ 9' 9"	0.625	Passed (L/402)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.897 @ 9' 9"	0.938	Passed (L/251)	--	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 : 0.25/12

- 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	5.50"	4.50"	1.75"	293	487	780	1" Rim Board
2 - Stud wall - DF	5.50"	4.50"	1.75"	293	487	780	1" 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)	2' 11" o/c	
Bottom Edge (Lu)	19' 4" 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 19' 6"	24"	15.0	25.0	Default Load

Member Notes

Typ 19.5' Max Span - TJI 110 AT 24" OC

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

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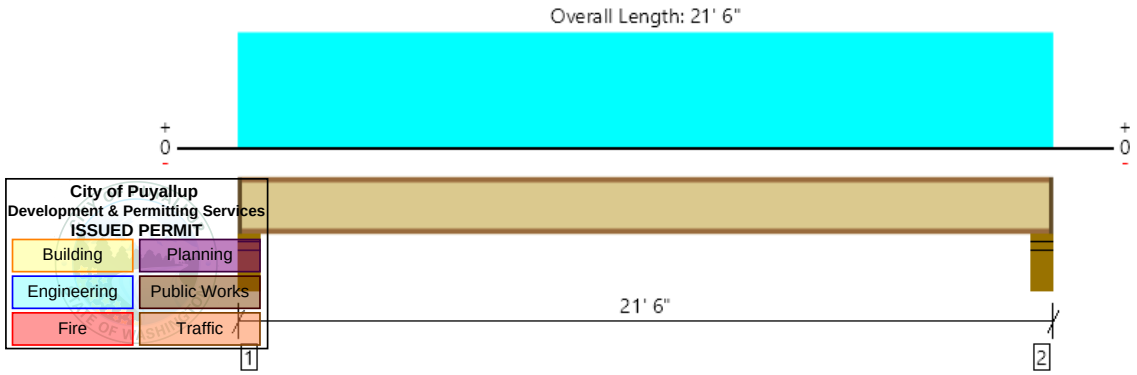
Weyerhaeuser

PRMU20220123

Roof, Typ 21.5' Max Span - TJI 230 AT 24" OC
1 piece(s) 11 7/8" TJI® 230 @ 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)	853 @ 4 1/2"	1708 (3.50")	Passed (50%)	1.15	1.0 D + 1.0 S (All Spans)
Shear (lbs)	823 @ 5 1/2"	1903	Passed (43%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	4306 @ 10' 9"	4847	Passed (89%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.650 @ 10' 9"	0.692	Passed (L/383)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	1.039 @ 10' 9"	1.038	Passed (L/240)	--	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 : 0.25/12

- 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	5.50"	4.50"	1.75"	323	537	860	1" Rim Board
2 - Stud wall - DF	5.50"	4.50"	1.75"	323	537	860	1" 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' o/c	
Bottom Edge (Lu)	21' 4" 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 21' 6"	24"	15.0	25.0	Default Load

Member Notes

Typ 21.5' Max Span - TJI 230 AT 24" OC

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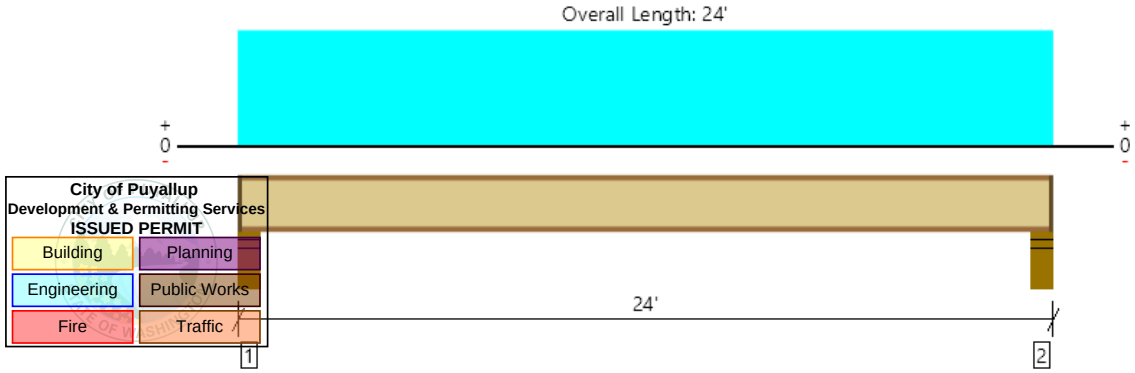
PRMU20220123

Roof, Typ 24' Span - TJI 210 AT 16" OC
1 piece(s) 11 7/8" TJI® 210 @ 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)	636 @ 4 1/2"	1679 (3.50")	Passed (38%)	1.15	1.0 D + 1.0 S (All Spans)
Shear (lbs)	616 @ 5 1/2"	1903	Passed (32%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	3604 @ 12'	4364	Passed (83%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.736 @ 12'	0.775	Passed (L/379)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	1.178 @ 12'	1.163	Passed (L/237)	--	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 : 0.25/12

- 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	5.50"	4.50"	1.75"	240	400	640	1" Rim Board
2 - Stud wall - DF	5.50"	4.50"	1.75"	240	400	640	1" 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' 9" o/c	
Bottom Edge (Lu)	23' 10" 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 24'	16"	15.0	25.0	Default Load

Member Notes

Typ 24' Span - TJI 210 AT 16" OC

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

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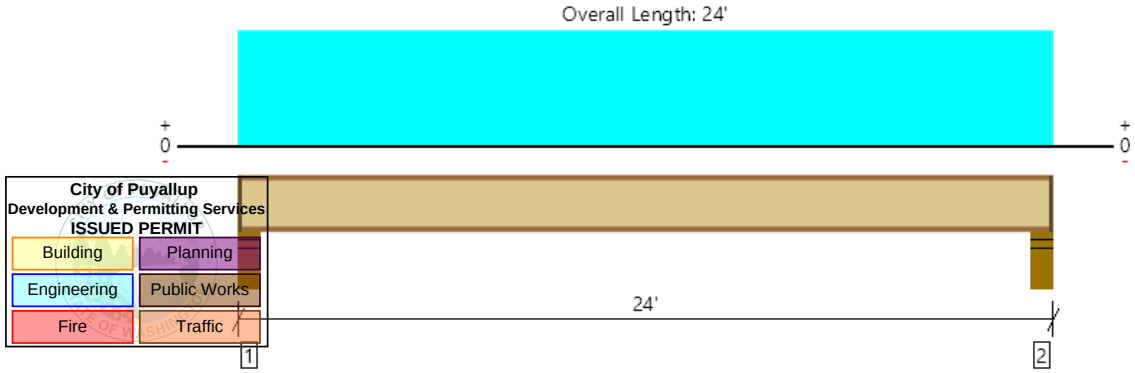
Weyerhaeuser

PRMU20220123

Roof, Typ 24' Span - TJI 560 AT 24" OC
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)	953 @ 4 1/2"	1984 (3.50")	Passed (48%)	1.15	1.0 D + 1.0 S (All Spans)
Shear (lbs)	923 @ 5 1/2"	2358	Passed (39%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	5406 @ 12'	10925	Passed (49%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.569 @ 12'	0.775	Passed (L/490)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.911 @ 12'	1.163	Passed (L/306)	--	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 : 0.25/12

- 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	5.50"	4.50"	1.75"	360	600	960	1" Rim Board
2 - Stud wall - DF	5.50"	4.50"	1.75"	360	600	960	1" 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' 7" o/c	
Bottom Edge (Lu)	23' 10" 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 24'	24"	15.0	25.0	Default Load

Member Notes

Typ 24' Span - TJI 560 AT 24" OC

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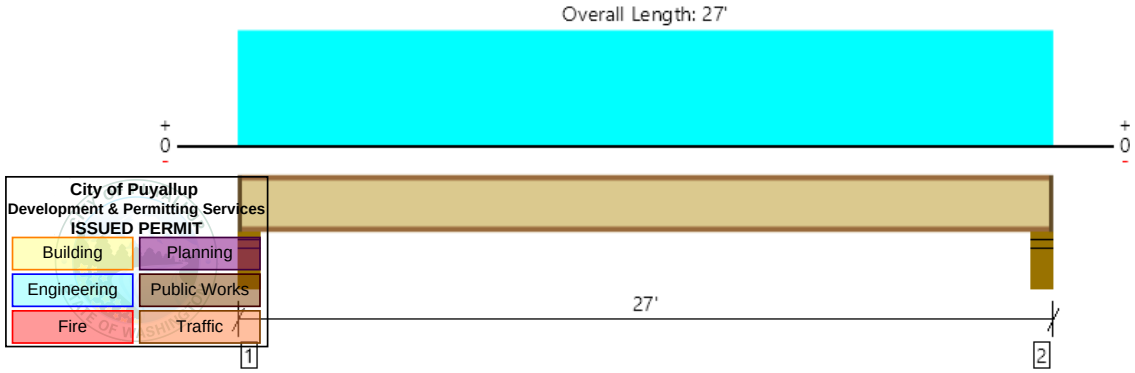
Weyerhaeuser

PRMU20220123

Roof, Typ 27' Span - TJI 210 AT 16" OC
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.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	716 @ 4 1/2"	1984 (3.50")	Passed (36%)	1.15	1.0 D + 1.0 S (All Spans)
Shear (lbs)	696 @ 5 1/2"	2358	Passed (30%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	4594 @ 13' 6"	10925	Passed (42%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.604 @ 13' 6"	0.875	Passed (L/521)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.967 @ 13' 6"	1.313	Passed (L/326)	--	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 : 0.25/12

- 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	5.50"	4.50"	1.75"	270	450	720	1" Rim Board
2 - Stud wall - DF	5.50"	4.50"	1.75"	270	450	720	1" 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' 3" o/c	
Bottom Edge (Lu)	26' 10" 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 27'	16"	15.0	25.0	Default Load

Member Notes

Typ 27' Span - TJI 560 AT 16" OC

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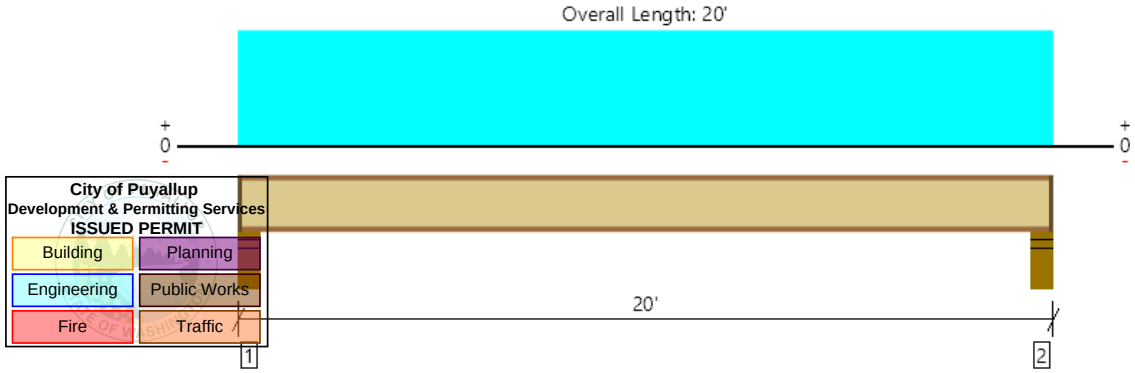
PRMU20220123

Roof, Typ 20' Span w/Solar - TJI 210 AT 24" O
1 piece(s) 11 7/8" TJI® 210 @ 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)	873 @ 4 1/2"	1679 (3.50")	Passed (52%)	1.15	1.0 D + 1.0 S (All Spans)
Shear (lbs)	840 @ 5 1/2"	1903	Passed (44%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	4077 @ 10'	4364	Passed (93%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.532 @ 10'	0.642	Passed (L/434)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	0.937 @ 10'	0.963	Passed (L/247)	--	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 : 0.25/12

- 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	5.50"	4.50"	1.75"	380	500	880	1" Rim Board
2 - Stud wall - DF	5.50"	4.50"	1.75"	380	500	880	1" 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' 6" o/c	
Bottom Edge (Lu)	19' 10" 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 20'	24"	19.0	25.0	Default Load

Member Notes

Typ 20' Span w/ Solar - TJI 210 AT 24" OC

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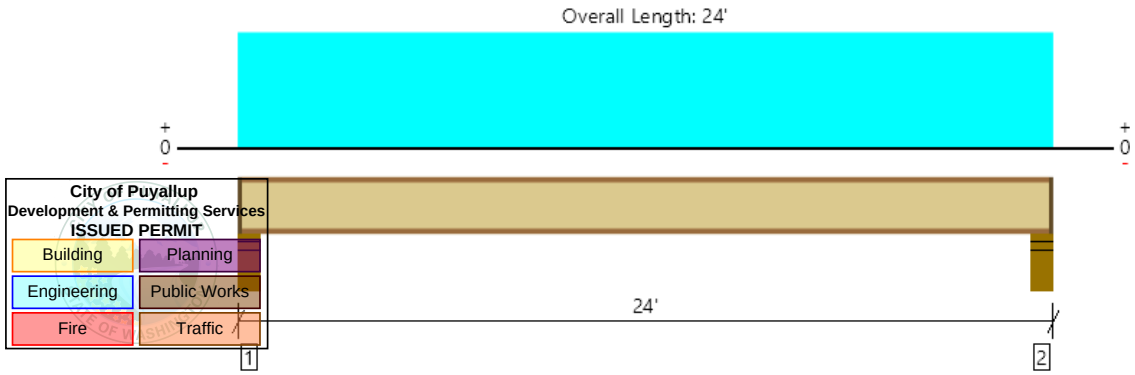
Weyerhaeuser

PRMU20220123

Roof, Typ 24' Span w/Solar - TJI 230 AT 16" O
1 piece(s) 11 7/8" TJI® 230 @ 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)	699 @ 4 1/2"	1708 (3.50")	Passed (41%)	1.15	1.0 D + 1.0 S (All Spans)
Shear (lbs)	677 @ 5 1/2"	1903	Passed (36%)	1.15	1.0 D + 1.0 S (All Spans)
Moment (Ft-lbs)	3964 @ 12'	4847	Passed (82%)	1.15	1.0 D + 1.0 S (All Spans)
Live Load Defl. (in)	0.672 @ 12'	0.775	Passed (L/415)	--	1.0 D + 1.0 S (All Spans)
Total Load Defl. (in)	1.183 @ 12'	1.163	Passed (L/236)	--	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 : 0.25/12

- 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	5.50"	4.50"	1.75"	304	400	704	1" Rim Board
2 - Stud wall - DF	5.50"	4.50"	1.75"	304	400	704	1" 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' 2" o/c	
Bottom Edge (Lu)	23' 10" 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 24'	16"	19.0	25.0	Default Load

Member Notes

Typ 24' Span w/ Solar - TJI 230 AT 16" OC

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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
Jerad Harmon AHBL (206) 267-2425 jharmon@ahbl.com	

Weyerhaeuser

FORTE WEB

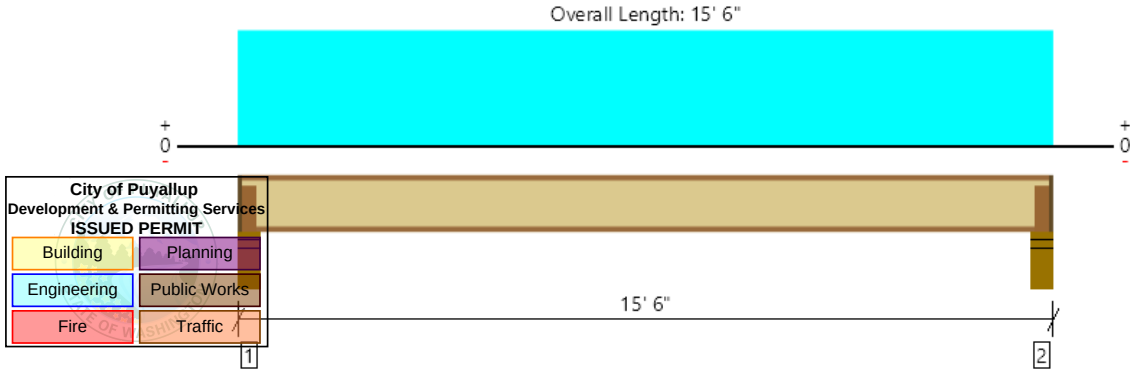
MEMBER REPORT

PASSED

PRMU20220123

Roof, Typ 15' Span at Roof Deck - TJI 560 AT 24

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)	2070 @ 4 1/2"	2200 (3.50")	Passed (94%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1969 @ 5 1/2"	2050	Passed (96%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	7343 @ 7' 9"	9500	Passed (77%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.419 @ 7' 9"	0.492	Passed (L/423)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.565 @ 7' 9"	0.738	Passed (L/313)	--	1.0 D + 1.0 L (All Spans)

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0.25/12

- 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	Floor Live	Total	
1 - Stud wall - DF	5.50"	4.50"	3.01"	543	1550	2093	1" Rim Board, Web Stiffeners
2 - Stud wall - DF	5.50"	4.50"	3.01"	543	1550	2093	1" Rim Board, Web Stiffeners

- 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' 3" o/c	
Bottom Edge (Lu)	15' 4" 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)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 15' 6"	24"	35.0	100.0	Default Load

Member Notes

Typ 15' Span at Roof Deck - TJI 560 AT 24" OC

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ForteWEB Software Operator	Job Notes
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Weyerhaeuser

12/1/2021 11:21:14 PM UTC

ForteWEB v3.2, Engine: V8.2.0.17, Data: V8.1.0.16

File Name: 2190606.20 Puyallup 2nd Street Apts

FORTE WEB

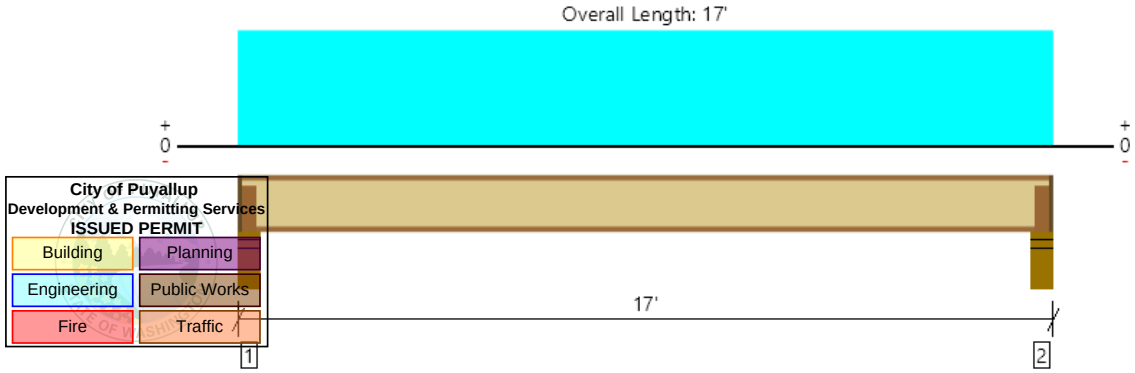
MEMBER REPORT

PASSED

PRMU20220123

Roof, Typ 17' Span at Roof Deck - TJI 560 AT 19.2

1 piece(s) 11 7/8" TJI® 560 @ 19.2" 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)	1818 @ 4 1/2"	2200 (3.50")	Passed (83%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1737 @ 5 1/2"	2050	Passed (85%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	7130 @ 8' 6"	9500	Passed (75%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.476 @ 8' 6"	0.542	Passed (L/410)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.643 @ 8' 6"	0.813	Passed (L/303)	--	1.0 D + 1.0 L (All Spans)

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0.25/12

- 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	Floor Live	Total	
1 - Stud wall - DF	5.50"	4.50"	2.05"	476	1360	1836	1" Rim Board, Web Stiffeners
2 - Stud wall - DF	5.50"	4.50"	2.05"	476	1360	1836	1" Rim Board, Web Stiffeners

- 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)	16' 10" 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)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 17'	19.2"	35.0	100.0	Default Load

Member Notes

Typ 17' Span at Roof Deck - TJI 560 AT 19.2" OC MIN

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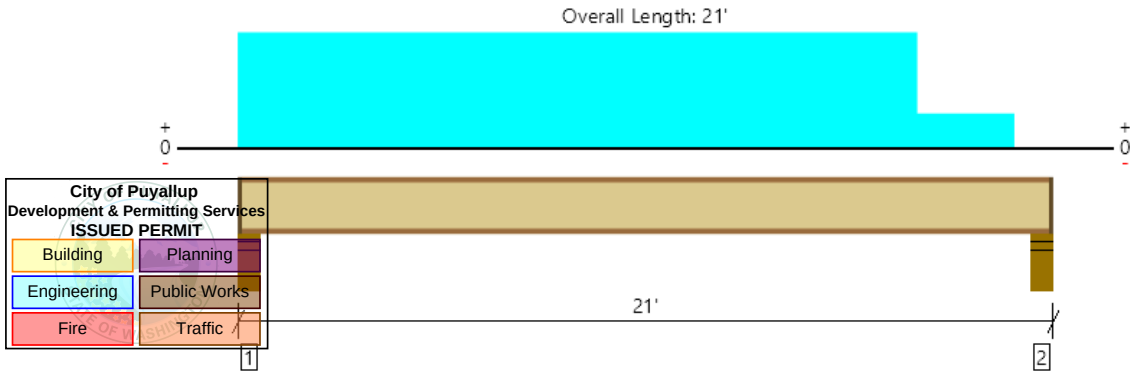
12/1/2021 11:15:36 PM UTC

ForteWEB v3.2, Engine: V8.2.0.17, Data: V8.1.0.16

File Name: 2190606.20 Puyallup 2nd Street Apts

PRMU20220123

Roof, Typ 20' Span at Roof Deck - TJI 560 AT 12"
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)	1377 @ 4 1/2"	1725 (3.50")	Passed (80%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	1327 @ 5 1/2"	2050	Passed (65%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	6629 @ 10' 3 7/16"	9500	Passed (70%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.637 @ 10' 5"	1.013	Passed (L/382)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.865 @ 10' 5 1/8"	1.350	Passed (L/281)	--	1.0 D + 1.0 L (All Spans)

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0.25/12

- 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	Floor Live	Snow	Total	
1 - Stud wall - DF	5.50"	4.50"	2.18"	363	1026	6	1395	1" Rim Board
2 - Stud wall - DF	5.50"	4.50"	1.75"	288	724	57	1069	1" 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' 8" o/c	
Bottom Edge (Lu)	20' 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)	Snow (1.15)	Comments
1 - Uniform (PSF)	0 to 17' 6"	12"	35.0	100.0	-	Default Load
2 - Uniform (PSF)	17' 6" to 20'	12"	15.0	-	25.0	

Member Notes

Typ 20' Span at Roof Deck - TJI 560 AT 12" OC

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ForteWEB Software Operator	Job Notes
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Weyerhaeuser

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PRMU20220123

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Building	Planning
Engineering	Public Works
Fire	Traffic

Section 6.0
Wall Design

PRMU20220123

Project PUYALLUP 2ND ST | Project No. 2190606.20

Subject | Phone

With/To | Fax #

Address | # Faxed Pages

Date | By

☐ Page ____ of ____
☐ Calculations
☐ Fax
☐ Memorandum
☐ Meeting Minutes
☐ Telephone Memo

AHBL

Civil Engineers
Structural Engineers
Landscape Architects
Community Planners
Land Surveyors
Neighbors

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning | Engineering | Public Works | Fire | Traffic

BEARING WALL DESIGN (SEE ENERCALC PRINTOUT)

ROOF (LEVEL 3 FRMG) (9' STUD HT, TYP)

DL W/ SOLAR PANELS = 19 PSF, SNOW = 25 PSF, WALLS = 15 PSF

$W = (0.019D + 0.025S)\,24'/2 + 0.015D(9') = (0.36D + 0.30S)\,1.33'\,OC$
ROOF — WALLS $P = 0.48D + 0.40S$ (k)

LATERAL WIND PRESSURE (C&C ZONE 5) = −22.3 PSF (1.33) = −30 PSF

⇒ USE 2x6 DF #2 AT 16" OC

3RD FL, TYP (LEVEL 2 FRMG)

DL = 28 PSF, LIVE = 40 PSF

$W = (0.36D + 0.30S) + (0.028D + 0.04L)(24'/2) + 0.015(9')$ k/l
ROOF — 3RD FL — WALLS

$P = (0.83D + 0.48L + 0.30S)\,1.33 = 1.1D + 0.63L + 0.40S$ (k)

LAT. WIND PRESSURE = −30 PSF (ZONE 5)

⇒ USE 2x6 DF #2 AT 16" OC

2ND FL, TYP (LEVEL 1 FRMG)

DL = 28 PSF, LIVE = 40 PSF

$W = (0.83D + 0.48L + 0.30S) + (0.028D + 0.04L)(24'/2) + 0.015(9')$ k/l
ROOF + 3RD — 2ND FL — WALLS

$P = (1.31D + 0.96L + 0.30S)\,1.33'\,OC = 1.74D + 1.28L + 0.4S$ (k)

LAT. WIND PRESSURE = −30 PSF (ZONE 5)

⇒ USE 2x6 DF #2 AT 16" OC

If this does not meet with your understanding, please contact us in writing within seven days. THANK YOU.

PRMU20220123

Project PUYALLUP 2ND ST | Project No. 2190606.20

Subject | Phone

With/To | Fax #

Address | # Faxed Pages

Date | By

- ☐ [illegible]
- ☐ Calculations
- ☐ Fax
- ☐ Memorandum
- ☐ Meeting Minutes
- ☐ Telephone Memo

AHBL

Civil Engineers

Structural Engineers

Landscape Architects

Community Planners

Land Surveyors

Neighbors

TYP VARIES STUD DESIGN (LEVEL 1 CONTROLS)

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning | Engineering | Public Works | Fire | Traffic

8' WALL HEIGHT, 9' MAX STUD HT

TRIMMER STUDS

$P = (1.3D + 0.96L + 0.30S)^{K_{ii}} (8 + 1.33'oc)/2 = 6.1D + 4.5L + 1.4S$

⇒ USE (2) TRIMMER STUDS, MIN EA SIDE OF OPENING

KING STUDS

LATERAL WIND PRESSURE (C & C ZONE 5) = -22.3 PSF (8 + 1.33'oc)/2
= 104.0 PLF

⇒ USE (1) FULL HT KING STUD, MIN EA SIDE OF OPENING

If this does not meet with your understanding, please contact us in writing within seven days. THANK YOU.

Title Block Line 1
You can change this area
using the "Settings" menu item
and then using the "Printing &
Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

Printed: 16 APR 2021, 12:35PM

Wood Column

File: Puyallup 2nd St Apts.ec6

Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.24

Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: Typ Bearing Wall Studs - 2x6 at 16" oc

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

Code References

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Used : IBC 2018

General Information

Analysis Method : Allowable Stress Design
End Fixities : Top & Bottom Pinned
Overall Column Height : 9 ft
(Used for non-slender calculations)

Wood Species : Douglas Fir-Larch
Wood Grade : No.2

Fb +	900.0 psi	Fv	180.0 psi
Fb -	900.0 psi	Ft	575.0 psi
Fc - Prll	1,350.0 psi	Density	31.210 pcf
Fc - Perp	625.0 psi		

E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial
Basic	1,600.0	1,600.0	1,600.0 ksi
Minimum	580.0	580.0	

Wood Section Name : 2x6
Wood Grading/Manuf. : Graded Lumber
Wood Member Type : Sawn

Exact Width	1.50	in
Exact Depth	5.50	in
Area	8.250	in^2
Ix	20.797	in^4
Iy	1.547	in^4

Allow Stress Modification Factors

Cf or Cv for Bending	1.30
Cf or Cv for Compression	1.10
Cf or Cv for Tension	1.30
Cm : Wet Use Factor	1.0
Ct : Temperature Factor	1.0
Cfu : Flat Use Factor	1.0
Kf : Built-up columns	1.0 NDS 15.3.2
Use Cr : Repetitive ?	Yes

Brace condition for deflection (buckling) along columns :
X-X (width) axis : Fully braced against buckling ABOUT Y-Y Axis
Y-Y (depth) axis : Unbraced Length for buckling ABOUT X-X Axis = 9 ft, K = 1.0

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 16.093 lbs * Dead Load Factor
AXIAL LOADS . . .
Roof + 3rd + 2nd + Walls: Axial Load at 9.0 ft, D = 1.740, L = 1.280, S = 0.40 k
BENDING LOADS . . .
Lateral Wind: Lat. Uniform Load creating Mx-x, W = 0.030 k/ft

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = 0.3967 : 1

Load Combination	+D+L+H
Governing NDS Forumla	Comp Only, fc/Fc'
Location of max.above base	0.0 ft
At maximum location values are . . .	
Applied Axial	3.036 k
Applied Mx	0.0 k-ft
Applied My	0.0 k-ft
Fc : Allowable	927.65 psi

PASS Maximum Shear Stress Ratio = 0.05114 : 1

Load Combination	+D+0.60W+H
Location of max.above base	9.0 ft
Applied Design Shear	14.727 psi
Allowable Shear	288.0 psi

Maximum SERVICE Lateral Load Reactions . .

Top along Y-Y	0.1350 k	Bottom along Y-Y	0.1350 k
Top along X-X	0.0 k	Bottom along X-X	0.0 k

Maximum SERVICE Load Lateral Deflections . . .
Along Y-Y 0.1345 in at 4.530 ft above base
for load combination : W Only
Along X-X 0.0 in at 0.0 ft above base
for load combination : n/a

Other Factors used to calculate allowable stresses . . .

	Bending	Compression	Tension

Load Combination Results

Load Combination	C_D	C_P	Max Axial + Bending Stress Ratios: Stress Ratio	Status	Location	Max Shear Ratios: Stress Ratio	Status	Location
+D+H	0.900	0.663	0.240	PASS	0.0 ft	0.0	PASS	9.0 ft
+D+L+H	1.000	0.625	0.3967	PASS	0.0 ft	0.0	PASS	9.0 ft
+D+Lr+H	1.250	0.540	0.2125	PASS	0.0 ft	0.0	PASS	9.0 ft
+D+S+H	1.150	0.572	0.2678	PASS	0.0 ft	0.0	PASS	9.0 ft
+D+0.750Lr+0.750L+H	1.250	0.540	0.3287	PASS	0.0 ft	0.0	PASS	9.0 ft
+D+0.750L+0.750S+H	1.150	0.572	0.3746	PASS	0.0 ft	0.0	PASS	9.0 ft
+D+0.60W+H	1.600	0.448	0.2023	PASS	4.470 ft	0.05114	PASS	9.0 ft
+D+0.70E+H	1.600	0.448	0.2001	PASS	0.0 ft	0.0	PASS	9.0 ft
+D+0.750Lr+0.750L+0.450W+H	1.600	0.448	0.3094	PASS	0.0 ft	0.03835	PASS	9.0 ft

Title Block Line 1
You can change this area
using the "Settings" menu item
and then using the "Printing &
Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

Printed: 16 APR 2021, 12:35PM

Wood Column

File: Puyallup 2nd St Apts.ec6

Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.24

Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: Typ Bearing Wall Studs - 2x6 at 16" oc

Load Combination Results

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building
Planning
Engineering
Public Works
Fire
Traffic

Load Combination	C_D	C_P	Maximum Axial + Bending Stress Ratios: Stress Ratio	Status	Location	Maximum Shear Ratios: Stress Ratio	Status	Location
+D+0.750L+0.750S+0.450W+H	1.600	0.448	0.3436	PASS	0.06040 ft	0.03835	PASS	9.0 ft
+D+0.750L+0.750S+0.5250E+H	1.600	0.448	0.3436	PASS	0.0 ft	0.0	PASS	9.0 ft
+0.60D+0.60W+0.60H	1.600	0.448	0.1642	PASS	4.470 ft	0.05114	PASS	9.0 ft
+0.60D+0.70E+0.60H	1.600	0.448	0.120	PASS	0.0 ft	0.0	PASS	9.0 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction k @ Base	@ Top	Y-Y Axis Reaction @ Base	@ Top	Axial Reaction @ Base	My - End Moments k-ft @ Base	@ Top	Mx - End Moments @ Base	@ Top
+D+H					1.756				
+D+L+H					3.036				
+D+Lr+H					1.756				
+D+S+H					2.156				
+D+0.750Lr+0.750L+H					2.716				
+D+0.750L+0.750S+H					3.016				
+D+0.60W+H			0.081	0.081	1.756				
+D+0.70E+H					1.756				
+D+0.750Lr+0.750L+0.450W+H			0.061	0.061	2.716				
+D+0.750L+0.750S+0.450W+H			0.061	0.061	3.016				
+D+0.750L+0.750S+0.5250E+H					3.016				
+0.60D+0.60W+0.60H			0.081	0.081	1.054				
+0.60D+0.70E+0.60H					1.054				
D Only					1.756				
Lr Only									
L Only					1.280				
S Only					0.400				
W Only			0.135	0.135					
E Only									
H Only									

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
+D+H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
+D+L+H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
+D+Lr+H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
+D+S+H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
+D+0.750Lr+0.750L+H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
+D+0.750L+0.750S+H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
+D+0.60W+H	0.0000 in	0.000 ft	0.0807 in	4.530 ft
+D+0.70E+H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
+D+0.750Lr+0.750L+0.450W+H	0.0000 in	0.000 ft	0.0605 in	4.530 ft
+D+0.750L+0.750S+0.450W+H	0.0000 in	0.000 ft	0.0605 in	4.530 ft
+D+0.750L+0.750S+0.5250E+H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
+0.60D+0.60W+0.60H	0.0000 in	0.000 ft	0.0807 in	4.530 ft
+0.60D+0.70E+0.60H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
D Only	0.0000 in	0.000 ft	0.0000 in	0.000 ft
Lr Only	0.0000 in	0.000 ft	0.0000 in	0.000 ft
L Only	0.0000 in	0.000 ft	0.0000 in	0.000 ft
S Only	0.0000 in	0.000 ft	0.0000 in	0.000 ft
W Only	0.0000 in	0.000 ft	0.1345 in	4.530 ft
E Only	0.0000 in	0.000 ft	0.0000 in	0.000 ft
H Only	0.0000 in	0.000 ft	0.0000 in	0.000 ft

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Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

Printed: 16 APR 2021, 12:35PM

Wood Column

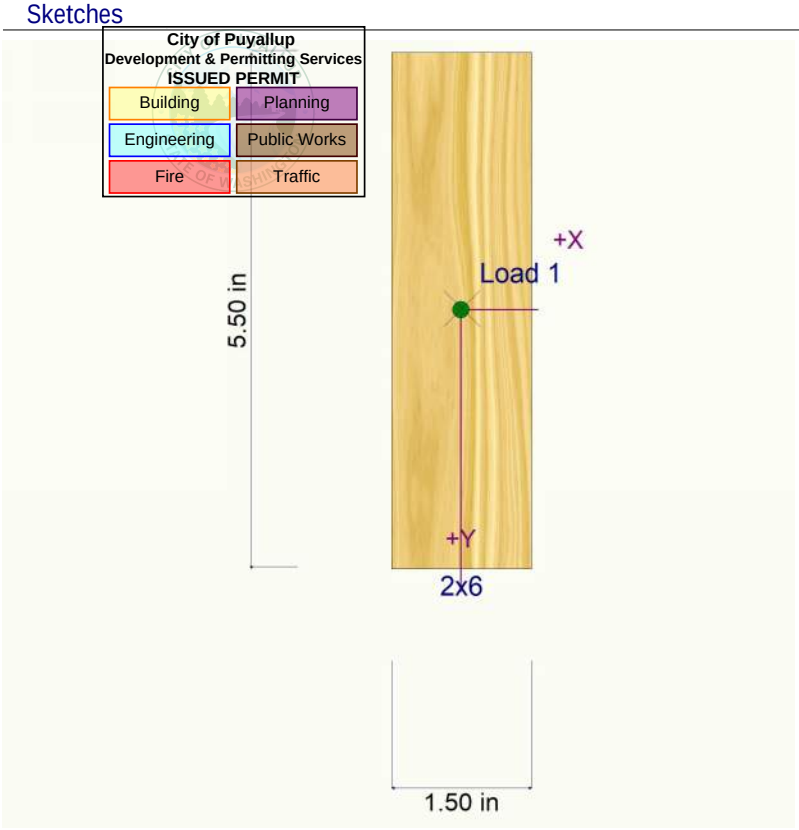
File: Puyallup 2nd St Apts.ec6

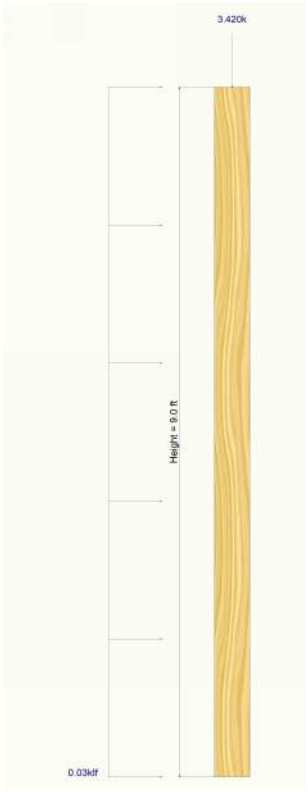
Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.24

Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: Typ Bearing Wall Studs - 2x6 at 16" oc

Sketches







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Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

Printed: 16 APR 2021, 1:08PM

Wood Column

File: Puyallup 2nd St Apts.ec6

Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.24

Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: Typ Trimmer Studs (6' Max Opening) - (2) 2x6

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning | Engineering | Public Works | Fire | Traffic

Code References

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Used : IBC 2018

General Information

Analysis Method : Allowable Stress Design
End Fixities : Top & Bottom Pinned
Overall Column Height : 9 ft
(Used for non-slender calculations)

Wood Species : Douglas Fir-Larch
Wood Grade : No.2

Fb +	900.0 psi	Fv	180.0 psi
Fb -	900.0 psi	Ft	575.0 psi
Fc - Prll	1,350.0 psi	Density	31.210 pcf
Fc - Perp	625.0 psi		

E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial
Basic	1,600.0	1,600.0	1,600.0 ksi
Minimum	580.0	580.0	

Wood Section Name : **2-2x6**
Wood Grading/Manuf. : Graded Lumber
Wood Member Type : Sawn

Exact Width	**3.0**	in
Exact Depth	**5.50**	in
Area	16.50	in^2
Ix	41.594	in^4
Iy	12.375	in^4

Allow Stress Modification Factors

Cf or Cv for Bending	1.30
Cf or Cv for Compression	1.10
Cf or Cv for Tension	1.30
Cm : Wet Use Factor	1.0
Ct : Temperature Factor	1.0
Cfu : Flat Use Factor	1.0
Kf : Built-up columns	1.0 *NDS 15.3.2*
Use Cr : Repetitive ?	Yes

Brace condition for deflection (buckling) along columns :
X-X (width) axis : Fully braced against buckling ABOUT Y-Y Axis
Y-Y (depth) axis : Unbraced Length for buckling ABOUT X-X Axis = 9 ft, K = 1.0

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 32.185 lbs * Dead Load Factor
AXIAL LOADS . . .
2nd FL Wt: Axial Load at 9.0 ft, D = 6.10, L = 4.480, S = 1.40 k

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.6933** : 1
Load Combination +D+L+H
Governing NDS Forumla Comp Only, fc/Fc'
Location of max.above base 0.0 ft
At maximum location values are . . .
Applied Axial 10.612 k
Applied Mx 0.0 k-ft
Applied My 0.0 k-ft
Fc : Allowable 927.65 psi

PASS Maximum Shear Stress Ratio = **0.0** : 1
Load Combination +0.60D+0.70E+0.60H
Location of max.above base 9.0 ft
Applied Design Shear 0.0 psi
Allowable Shear 288.0 psi

Maximum SERVICE Lateral Load Reactions . .

Top along Y-Y	0.0 k	Bottom along Y-Y	0.0 k
Top along X-X	0.0 k	Bottom along X-X	0.0 k

Maximum SERVICE Load Lateral Deflections . . .
Along Y-Y 0.0 in at 0.0 ft above base
for load combination : n/a
Along X-X 0.0 in at 0.0 ft above base
for load combination : n/a

Other Factors used to calculate allowable stresses . . .

	Bending	Compression	Tension

Load Combination Results

Load Combination	C_D	C_P	Maximum Axial + Bending Stress Ratios: Stress Ratio	Status	Location	Maximum Shear Ratios: Stress Ratio	Status	Location
+D+H	0.900	0.663	0.4191	PASS	0.0 ft	0.0	PASS	9.0 ft
+D+L+H	1.000	0.625	0.6933	PASS	0.0 ft	0.0	PASS	9.0 ft
+D+Lr+H	1.250	0.540	0.3710	PASS	0.0 ft	0.0	PASS	9.0 ft
+D+S+H	1.150	0.572	0.4677	PASS	0.0 ft	0.0	PASS	9.0 ft
+D+0.750Lr+0.750L+H	1.250	0.540	0.5743	PASS	0.0 ft	0.0	PASS	9.0 ft
+D+0.750L+0.750S+H	1.150	0.572	0.6546	PASS	0.0 ft	0.0	PASS	9.0 ft
+D+0.60W+H	1.600	0.448	0.3493	PASS	0.0 ft	0.0	PASS	9.0 ft
+D+0.70E+H	1.600	0.448	0.3493	PASS	0.0 ft	0.0	PASS	9.0 ft
+D+0.750Lr+0.750L+0.450W+H	1.600	0.448	0.5407	PASS	0.0 ft	0.0	PASS	9.0 ft
+D+0.750L+0.750S+0.450W+H	1.600	0.448	0.6005	PASS	0.0 ft	0.0	PASS	9.0 ft
+D+0.750L+0.750S+0.5250E+H	1.600	0.448	0.6005	PASS	0.0 ft	0.0	PASS	9.0 ft
+0.60D+0.60W+0.60H	1.600	0.448	0.2096	PASS	0.0 ft	0.0	PASS	9.0 ft

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Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Column

File: Puyallup 2nd St Apts.ec6

Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.24

Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: Typ Trimmer Studs (6' Max Opening) - (2) 2x6

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
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Engineering | Public Works
Fire | Traffic

Load Combination Results

Load Combination	C_D	C_P	Maximum Axial + Bending Stress Ratios: Stress Ratio	Status	Location	Maximum Shear Ratios: Stress Ratio	Status	Location
+0.60D+0.70E+0.60H	1.600	0.448	0.2096	PASS	0.0 ft	0.0	PASS	9.0 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction k @ Base	@ Top	Y-Y Axis Reaction @ Base	@ Top	Axial Reaction @ Base	My - End Moments k-ft @ Base	@ Top	Mx - End Moments @ Base	@ Top
+D+H					6.132				
+D+L+H					10.612				
+D+Lr+H					6.132				
+D+S+H					7.532				
+D+0.750Lr+0.750L+H					9.492				
+D+0.750L+0.750S+H					10.542				
+D+0.60W+H					6.132				
+D+0.70E+H					6.132				
+D+0.750Lr+0.750L+0.450W+H					9.492				
+D+0.750L+0.750S+0.450W+H					10.542				
+D+0.750L+0.750S+0.5250E+H					10.542				
+0.60D+0.60W+0.60H					3.679				
+0.60D+0.70E+0.60H					3.679				
D Only					6.132				
Lr Only									
L Only					4.480				
S Only					1.400				
W Only									
E Only									
H Only									

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
+D+H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
+D+L+H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
+D+Lr+H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
+D+S+H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
+D+0.750Lr+0.750L+H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
+D+0.750L+0.750S+H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
+D+0.60W+H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
+D+0.70E+H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
+D+0.750Lr+0.750L+0.450W+H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
+D+0.750L+0.750S+0.450W+H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
+D+0.750L+0.750S+0.5250E+H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
+0.60D+0.60W+0.60H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
+0.60D+0.70E+0.60H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
D Only	0.0000 in	0.000 ft	0.0000 in	0.000 ft
Lr Only	0.0000 in	0.000 ft	0.0000 in	0.000 ft
L Only	0.0000 in	0.000 ft	0.0000 in	0.000 ft
S Only	0.0000 in	0.000 ft	0.0000 in	0.000 ft
W Only	0.0000 in	0.000 ft	0.0000 in	0.000 ft
E Only	0.0000 in	0.000 ft	0.0000 in	0.000 ft
H Only	0.0000 in	0.000 ft	0.0000 in	0.000 ft

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Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Wood Column

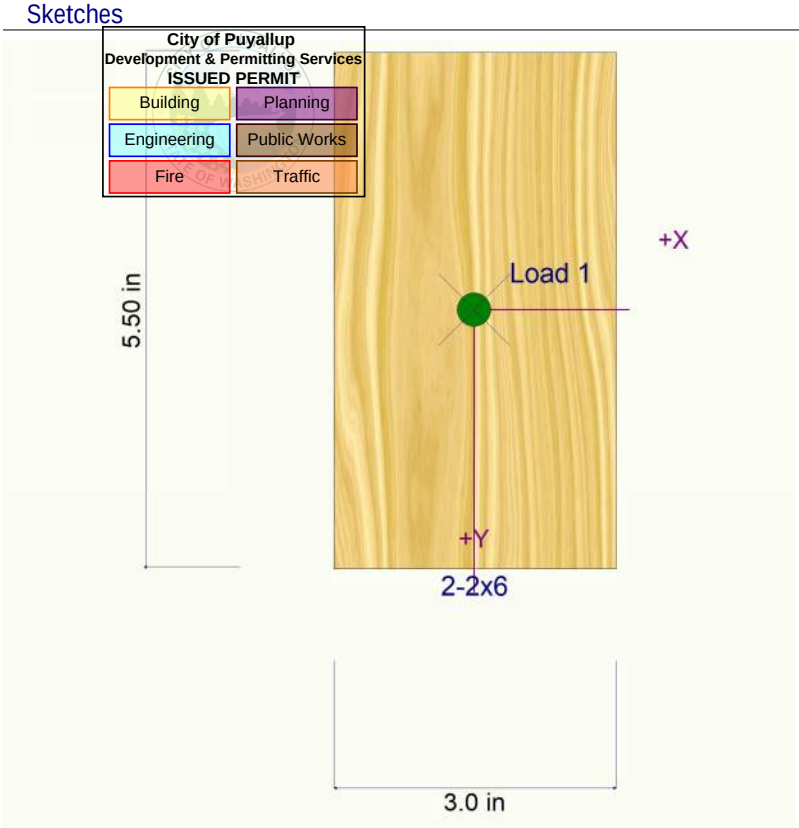
File: Puyallup 2nd St Apts.ec6

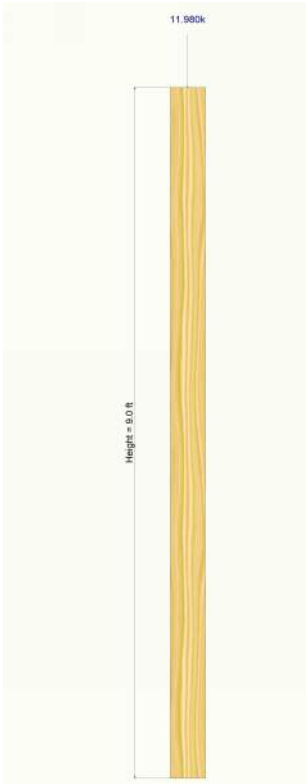
Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.24

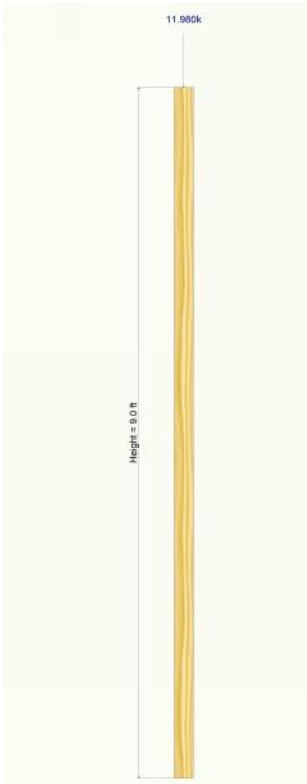
Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: Typ Trimmer Studs (6' Max Opening) - (2) 2x6

Sketches







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Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

Printed: 16 APR 2021, 1:09PM

Wood Column

File: Puyallup 2nd St Apts.ec6
Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.24
Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: Typ King Studs (6' Max Opening) - (1) 2x6 min

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

Code References

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Used : IBC 2018

General Information

Analysis Method : Allowable Stress Design
End Fixities : Top & Bottom Pinned
Overall Column Height : 9 ft
(Used for non-slender calculations)

Wood Species : Douglas Fir-Larch
Wood Grade : No.2

Fb +	900.0 psi	Fv	180.0 psi
Fb -	900.0 psi	Ft	575.0 psi
Fc - Prll	1,350.0 psi	Density	31.210 pcf
Fc - Perp	625.0 psi		

E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial
Basic	1,600.0	1,600.0	1,600.0 ksi
Minimum	580.0	580.0	

Wood Section Name : 2x6
Wood Grading/Manuf. : Graded Lumber
Wood Member Type : Sawn

Exact Width	1.50	in
Exact Depth	5.50	in
Area	8.250	in^2
Ix	20.797	in^4
Iy	1.547	in^4

Allow Stress Modification Factors

Cf or Cv for Bending	1.30
Cf or Cv for Compression	1.10
Cf or Cv for Tension	1.30
Cm : Wet Use Factor	1.0
Ct : Temperature Factor	1.0
Cfu : Flat Use Factor	1.0
Kf : Built-up columns	1.0 NDS 15.3.2
Use Cr : Repetitive ?	Yes

Brace condition for deflection (buckling) along columns :
X-X (width) axis : Fully braced against buckling ABOUT Y-Y Axis
Y-Y (depth) axis : Unbraced Length for buckling ABOUT X-X Axis = 9 ft, K = 1.0

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 16.093 lbs * Dead Load Factor
BENDING LOADS . . .
Lat. Uniform Load creating Mx-x, W = 0.1040 k/ft

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.4664** : 1
Load Combination +D+0.60W+H
Governing NDS Forumla 1Comp + Mxx, NDS Eq. 3.9-3
Location of max.above base 4.530 ft
At maximum location values are . . .
Applied Axial 0.01609 k
Applied Mx 0.6318 k-ft
Applied My 0.0 k-ft
Fc : Allowable 1,063.92 psi

PASS Maximum Shear Stress Ratio = **0.1773** : 1
Load Combination +D+0.60W+H
Location of max.above base 9.0 ft
Applied Design Shear 51.055 psi
Allowable Shear 288.0 psi

Maximum SERVICE Lateral Load Reactions . .

Top along Y-Y	0.4680 k	Bottom along Y-Y	0.4680 k
Top along X-X	0.0 k	Bottom along X-X	0.0 k

Maximum SERVICE Load Lateral Deflections . . .
Along Y-Y 0.4664 in at 4.530 ft above base
for load combination : W Only
Along X-X 0.0 in at 0.0 ft above base
for load combination : n/a

Other Factors used to calculate allowable stresses . . .

	Bending	Compression	Tension

Load Combination Results

Load Combination	C_D	C_P	Maximum Axial + Bending Stress Ratios: Stress Ratio	Status	Location	Maximum Shear Ratios: Stress Ratio	Status	Location
+D+H	0.900	0.663	0.00220	PASS	0.0 ft	0.0	PASS	9.0 ft
+D+L+H	1.000	0.625	0.002103	PASS	0.0 ft	0.0	PASS	9.0 ft
+D+Lr+H	1.250	0.540	0.001947	PASS	0.0 ft	0.0	PASS	9.0 ft
+D+S+H	1.150	0.572	0.001998	PASS	0.0 ft	0.0	PASS	9.0 ft
+D+0.750Lr+0.750L+H	1.250	0.540	0.001947	PASS	0.0 ft	0.0	PASS	9.0 ft
+D+0.750L+0.750S+H	1.150	0.572	0.001998	PASS	0.0 ft	0.0	PASS	9.0 ft
+D+0.60W+H	1.600	0.448	0.4664	PASS	4.530 ft	0.1773	PASS	9.0 ft
+D+0.70E+H	1.600	0.448	0.001833	PASS	0.0 ft	0.0	PASS	9.0 ft
+D+0.750Lr+0.750L+0.450W+H	1.600	0.448	0.3498	PASS	4.470 ft	0.1330	PASS	0.0 ft
+D+0.750L+0.750S+0.450W+H	1.600	0.448	0.3498	PASS	4.470 ft	0.1330	PASS	0.0 ft
+D+0.750L+0.750S+0.5250E+H	1.600	0.448	0.001833	PASS	0.0 ft	0.0	PASS	9.0 ft
+0.60D+0.60W+0.60H	1.600	0.448	0.4661	PASS	4.530 ft	0.1773	PASS	9.0 ft

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Engineer:
Project ID: PRMU20220123
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Wood Column

File: Puyallup 2nd St Apts.ec6

Software copyright ENERCALC, INC. 1983-2020, Build:12.20.8.24

Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: Typ King Studs (6' Max Opening) - (1) 2x6 min

Load Combination Results

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

Load Combination	C_D	C_P	Maximum Axial + Bending Stress Ratios: Stress Ratio	Status	Location	Maximum Shear Ratios: Stress Ratio	Status	Location
+0.60D+0.70E+0.60H	1.600	0.448	0.00110	PASS	0.0 ft	0.0	PASS	9.0 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction @ Base (k)	X-X Axis Reaction @ Top (k)	Y-Y Axis Reaction @ Base (k)	Y-Y Axis Reaction @ Top (k)	Axial Reaction @ Base (k)	My - End Moments @ Base (k-ft)	My - End Moments @ Top (k-ft)	Mx - End Moments @ Base (k-ft)	Mx - End Moments @ Top (k-ft)
+D+H					0.016				
+D+L+H					0.016				
+D+Lr+H					0.016				
+D+S+H					0.016				
+D+0.750Lr+0.750L+H					0.016				
+D+0.750L+0.750S+H					0.016				
+D+0.60W+H			0.281	0.281	0.016				
+D+0.70E+H					0.016				
+D+0.750Lr+0.750L+0.450W+H			0.211	0.211	0.016				
+D+0.750L+0.750S+0.450W+H			0.211	0.211	0.016				
+D+0.750L+0.750S+0.5250E+H					0.016				
+0.60D+0.60W+0.60H			0.281	0.281	0.010				
+0.60D+0.70E+0.60H					0.010				
D Only					0.016				
Lr Only									
L Only									
S Only									
W Only			0.468	0.468					
E Only									
H Only									

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
+D+H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
+D+L+H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
+D+Lr+H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
+D+S+H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
+D+0.750Lr+0.750L+H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
+D+0.750L+0.750S+H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
+D+0.60W+H	0.0000 in	0.000 ft	0.2798 in	4.530 ft
+D+0.70E+H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
+D+0.750Lr+0.750L+0.450W+H	0.0000 in	0.000 ft	0.2099 in	4.530 ft
+D+0.750L+0.750S+0.450W+H	0.0000 in	0.000 ft	0.2099 in	4.530 ft
+D+0.750L+0.750S+0.5250E+H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
+0.60D+0.60W+0.60H	0.0000 in	0.000 ft	0.2798 in	4.530 ft
+0.60D+0.70E+0.60H	0.0000 in	0.000 ft	0.0000 in	0.000 ft
D Only	0.0000 in	0.000 ft	0.0000 in	0.000 ft
Lr Only	0.0000 in	0.000 ft	0.0000 in	0.000 ft
L Only	0.0000 in	0.000 ft	0.0000 in	0.000 ft
S Only	0.0000 in	0.000 ft	0.0000 in	0.000 ft
W Only	0.0000 in	0.000 ft	0.4664 in	4.530 ft
E Only	0.0000 in	0.000 ft	0.0000 in	0.000 ft
H Only	0.0000 in	0.000 ft	0.0000 in	0.000 ft

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Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

Printed: 16 APR 2021, 1:09PM

Wood Column

File: Puyallup 2nd St Apts.ec6

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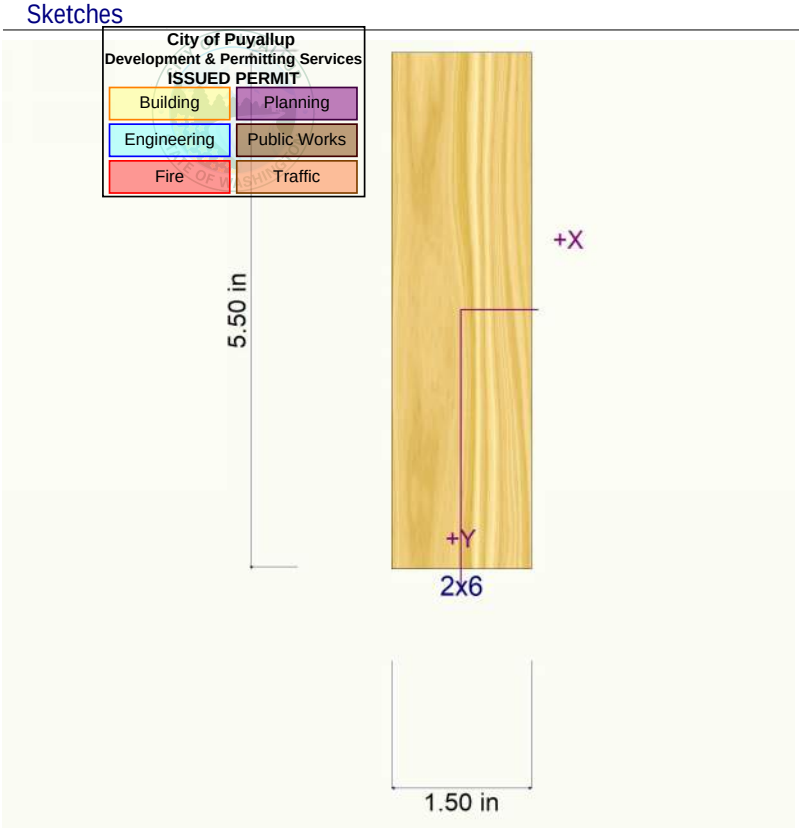
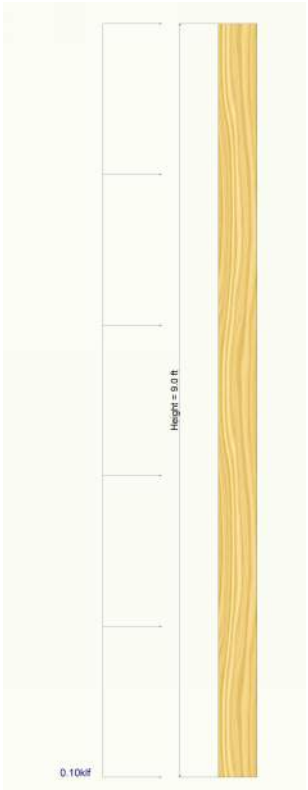
Lic. # : KW-06001735 AHBL, INC SEA

DESCRIPTION: Typ King Studs (6' Max Opening) - (1) 2x6 min

Sketches







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PRMU20220123

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Building	Planning
Engineering	Public Works
Fire	Traffic

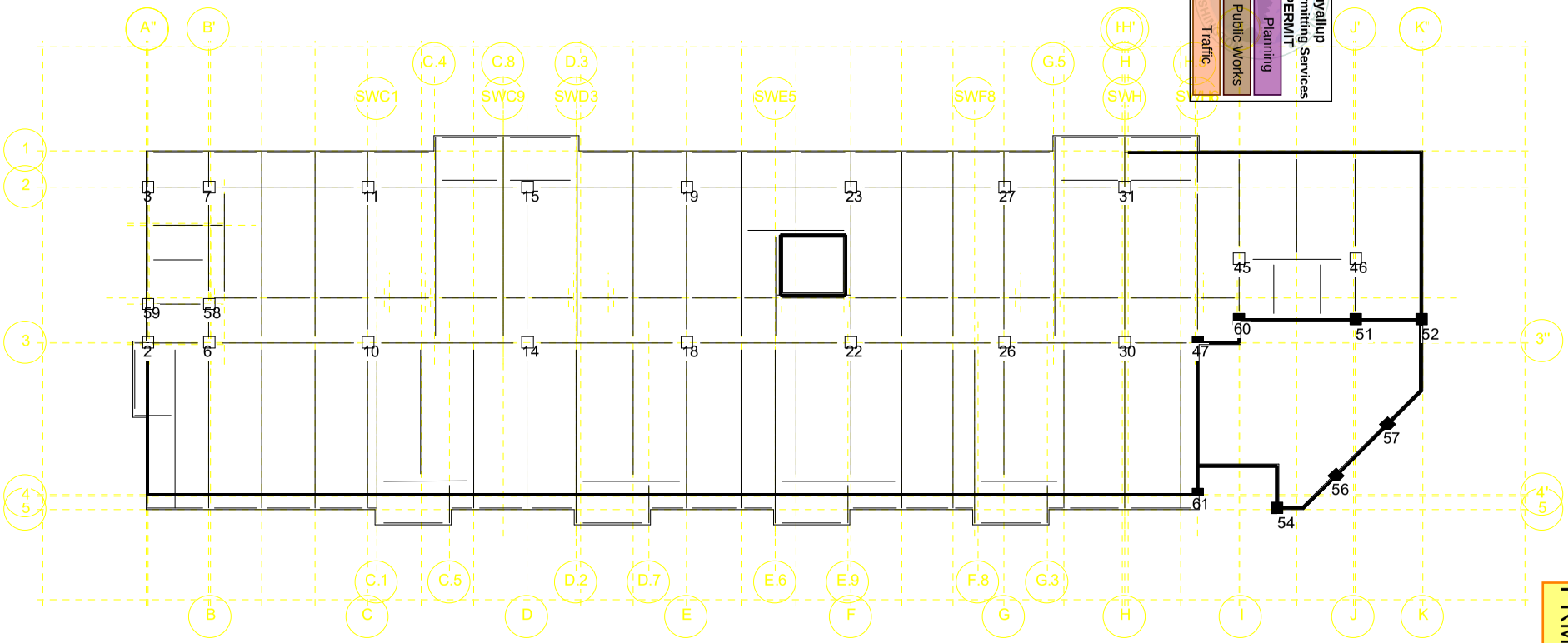
Section 7.0
Column Design

Floor Map

RAM Steel 17.02.01.23
DataBase: 2190606 Transfer Level w Omega - Update 210422
Building Code: IBC

10/28/21 18:03:22
Steel Code: AISC 360-16 LRFD

Floor Type: FIRST FLOOR



Fire
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PRMU2022012

Gravity Column Desi

PRMU20220123

RAM Steel 17.02.01.23
DataBase: 2190606 Transfer Level w Omega - Update 210422 10/28/21 18:19:44
Building Code: IBC Steel Code: AISC 360-10 LRFD

Story level FIRST FLOOR, Column Line 0.25ft-22.25ft, Column # 2

Fy (ksi) = 50.00 Column Size = HSS5X5X3/16
Orientation (deg.) = 0.0

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INPUT DESIGN PARAMETERS:

	X-Axis	Y-Axis
Lu (ft)	9.00	9.00
K	1	1
Braced Against Joint Translation	Yes	Yes
Column Eccentricity (in) Top	0.00	0.00
Bottom	0.00	0.00

CONTROLLING AXIAL COLUMN LOADS - Skip-Load Case 1:

	Dead	Live	Roof
Axial (kip)	14.80	9.92	2.01

DEMAND CAPACITY RATIO: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	34.64	0.90Pnx (kip)	=	118.21	Pu/0.90Pnx	=	0.293
			0.90Pny (kip)	=	118.21	Pu/0.90Pny	=	0.293
			0.90Pn (kip)	=	118.21	Pu/0.90Pn	=	0.293

DEMAND/CAPACITY LIMIT FOR STRENGTH : 1.000

CONTROLLING COMBINED COLUMN LOADS - Skip-Load Case 1:

		Dead	Live	Roof
Axial (kip)		14.80	9.92	2.01
Moments	Top Mx (kip-ft)	0.00	0.00	0.00
	My (kip-ft)	0.00	0.00	0.00
	Bot Mx (kip-ft)	0.00	0.00	0.00
	My (kip-ft)	0.00	0.00	0.00

Single curvature about X-Axis
Single curvature about Y-Axis

CALCULATED PARAMETERS: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	34.64	0.90*Pn (kip)	=	118.21
Mux (kip-ft)	=	0.00	0.90*Mnx (kip-ft)	=	22.09
Muy (kip-ft)	=	0.00	0.90*Mny (kip-ft)	=	22.09
Rm	=	1.00			
Cbx	=	1.00	Cby	=	1.00
Cmx	=	1.00	Cmy	=	1.00
Pex (kip)	=	309.19	Pey (kip)	=	309.19
B1x	=	1.13	B1y	=	1.13

INTERACTION EQUATION

Pu/0.90*Pn = 0.293

Eq H1-1a: 0.293 + 0.000 + 0.000 = 0.293

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Story level FIRST FLOOR, Column Line 0.25ft-27.79ft, Column # 59

Fy (ksi) = 50.00 Column Size = HSS5X5X1/4
Orientation (deg.) = 0.0

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INPUT DESIGN PARAMETERS:

	X-Axis	Y-Axis
Lu (ft)	9.00	9.00
K	1	1
Braced Against Joint Translation	Yes	Yes
Column Eccentricity (in) Top	5.00	5.00
Bottom	0.00	0.00

CONTROLLING AXIAL COLUMN LOADS - Skip-Load Case 1:

	Dead	Live	Roof
Axial (kip)	10.54	12.60	0.63

DEMAND CAPACITY RATIO: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	33.12	0.90Pnx (kip)	=	153.87	Pu/0.90Pnx	= 0.215
			0.90Pny (kip)	=	153.87	Pu/0.90Pny	= 0.215
			0.90Pn (kip)	=	153.87	Pu/0.90Pn	= 0.215

DEMAND/CAPACITY LIMIT FOR STRENGTH : 1.000

CONTROLLING COMBINED COLUMN LOADS - Skip-Load Case 1:

		Dead	Live	Roof
Axial (kip)		10.54	12.60	0.63
Moments	Top Mx (kip-ft)	0.02	0.00	0.00
	My (kip-ft)	-0.73	-0.89	-0.23
	Bot Mx (kip-ft)	0.00	0.00	0.00
	My (kip-ft)	0.00	0.00	0.00

Single curvature about X-Axis
Single curvature about Y-Axis

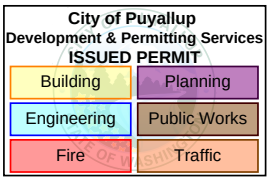
CALCULATED PARAMETERS: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	33.12	0.90*Pn (kip)	=	153.87
Mux (kip-ft)	=	0.03	0.90*Mnx (kip-ft)	=	28.54
Muy (kip-ft)	=	-2.41	0.90*Mny (kip-ft)	=	28.54
Rm	=	1.00			
Cbx	=	1.67	Cby	=	1.67
Cmx	=	0.60	Cmy	=	0.60
Pex (kip)	=	392.62	Pey (kip)	=	392.62
B1x	=	1.00	B1y	=	1.00

INTERACTION EQUATION

Pu/0.90*Pn = 0.215

Eq H1-1a: 0.215 + 0.001 + 0.075 = 0.291



Story level FIRST FLOOR, Column Line A'-2, Column # 3

Fy (ksi) = 50.00 Column Size = HSS6X6X3/16
Orientation (deg.) = 0.0

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INPUT DESIGN PARAMETERS:

	X-Axis	Y-Axis
Lu (ft)	9.00	9.00
K	1	1
Braced Against Joint Translation	Yes	Yes
Column Eccentricity (in) Top	0.00	0.00
Bottom	0.00	0.00

CONTROLLING AXIAL COLUMN LOADS - Skip-Load Case 1:

	Dead	Live	Roof
Axial (kip)	18.63	11.69	2.04

DEMAND CAPACITY RATIO: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	42.08	0.90Pnx (kip)	=	153.81	Pu/0.90Pnx	= 0.274
			0.90Pny (kip)	=	153.81	Pu/0.90Pny	= 0.274
			0.90Pn (kip)	=	153.81	Pu/0.90Pn	= 0.274

DEMAND/CAPACITY LIMIT FOR STRENGTH : 1.000

CONTROLLING COMBINED COLUMN LOADS - Skip-Load Case 1:

		Dead	Live	Roof
Axial (kip)		18.63	11.69	2.04
Moments	Top Mx (kip-ft)	0.00	0.00	0.00
	My (kip-ft)	0.00	0.00	0.00
	Bot Mx (kip-ft)	0.00	0.00	0.00
	My (kip-ft)	0.00	0.00	0.00

Single curvature about X-Axis
Single curvature about Y-Axis

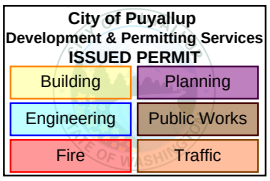
CALCULATED PARAMETERS: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	42.08	0.90*Pn (kip)	=	153.81
Mux (kip-ft)	=	0.00	0.90*Mnx (kip-ft)	=	29.34
Muy (kip-ft)	=	0.00	0.90*Mny (kip-ft)	=	29.34
Rm	=	1.00			
Cbx	=	1.00	Cby	=	1.00
Cmx	=	1.00	Cmy	=	1.00
Pex (kip)	=	547.21	Pey (kip)	=	547.21
B1x	=	1.08	B1y	=	1.08

INTERACTION EQUATION

Pu/0.90*Pn = 0.274

Eq H1-1a: 0.274 + 0.000 + 0.000 = 0.274



Story level FIRST FLOOR, Column Line 9.08ft-22.25ft, Column # 6

Fy (ksi) = 50.00 Column Size = HSS6X6X1/2

Orientation (deg.) = 0.0

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INPUT DESIGN PARAMETERS:

		X-Axis	Y-Axis
Lu (ft)		9.00	9.00
K		1	1
Braced Against Joint Translation		Yes	Yes
Column Eccentricity (in)	Top	5.50	5.50
	Bottom	0.00	0.00

CONTROLLING AXIAL COLUMN LOADS - Skip-Load Case 1:

	Dead	Live	Roof
Axial (kip)	51.87	24.49	7.31

DEMAND CAPACITY RATIO: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	105.07	0.90Pnx (kip)	=	369.05	Pu/0.90Pnx	= 0.285
			0.90Pny (kip)	=	369.05	Pu/0.90Pny	= 0.285
			0.90Pn (kip)	=	369.05	Pu/0.90Pn	= 0.285

DEMAND/CAPACITY LIMIT FOR STRENGTH : 1.000

CONTROLLING COMBINED COLUMN LOADS - Skip-Load Case 14:

			Dead	Live	Roof
Axial (kip)			51.87	19.25	5.37
Moments	Top	Mx (kip-ft)	11.64	8.18	2.45
		My (kip-ft)	0.68	0.65	0.01
	Bot	Mx (kip-ft)	0.00	0.00	0.00
		My (kip-ft)	0.00	0.00	-0.00

Single curvature about X-Axis
Single curvature about Y-Axis

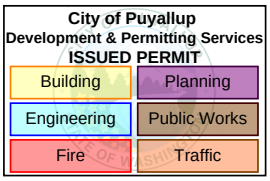
CALCULATED PARAMETERS: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	95.72	0.90*Pn (kip)	=	369.05
Mux (kip-ft)	=	28.27	0.90*Mnx (kip-ft)	=	74.25
Muy (kip-ft)	=	1.86	0.90*Mny (kip-ft)	=	74.25
Rm	=	1.00			
Cbx	=	1.67	Cby	=	1.67
Cmx	=	0.60	Cmy	=	0.60
Pex (kip)	=	1185.22	Pey (kip)	=	1185.22
B1x	=	1.00	B1y	=	1.00

INTERACTION EQUATION

Pu/0.90*Pn = 0.259

Eq H1-1a: 0.259 + 0.338 + 0.022 = 0.620



Story level FIRST FLOOR, Column Line 9.08ft-27.79ft, Column # 58

Fy (ksi) = 50.00 Column Size = HSS5X5X1/4
Orientation (deg.) = 0.0

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INPUT DESIGN PARAMETERS:

	X-Axis	Y-Axis
Lu (ft)	9.00	9.00
K	1	1
Braced Against Joint Translation	Yes	Yes
Column Eccentricity (in) Top	5.00	5.00
Bottom	0.00	0.00

CONTROLLING AXIAL COLUMN LOADS - Skip-Load Case 1:

	Dead	Live	Roof
Axial (kip)	18.70	15.31	1.65

DEMAND CAPACITY RATIO: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	47.75	0.90Pnx (kip)	=	153.87	Pu/0.90Pnx	= 0.310
			0.90Pny (kip)	=	153.87	Pu/0.90Pny	= 0.310
			0.90Pn (kip)	=	153.87	Pu/0.90Pn	= 0.310

DEMAND/CAPACITY LIMIT FOR STRENGTH : 1.000

CONTROLLING COMBINED COLUMN LOADS - Skip-Load Case 10:

		Dead	Live	Roof
Axial (kip)		18.70	10.42	1.65
Moments	Top Mx (kip-ft)	-0.02	0.00	0.00
	My (kip-ft)	-3.59	-4.34	-0.69
	Bot Mx (kip-ft)	0.00	0.00	0.00
	My (kip-ft)	0.00	-0.00	0.00

Single curvature about X-Axis
Single curvature about Y-Axis

CALCULATED PARAMETERS: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	39.93	0.90*Pn (kip)	=	153.87
Mux (kip-ft)	=	-0.03	0.90*Mnx (kip-ft)	=	28.54
Muy (kip-ft)	=	-11.60	0.90*Mny (kip-ft)	=	28.54
Rm	=	1.00			
Cbx	=	1.67	Cby	=	1.67
Cmx	=	0.60	Cmy	=	0.60
Pex (kip)	=	392.62	Pey (kip)	=	392.62
B1x	=	1.00	B1y	=	1.00

INTERACTION EQUATION

Pu/0.90*Pn = 0.260

Eq H1-1a: 0.260 + 0.001 + 0.361 = 0.622

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Story level FIRST FLOOR, Column Line B'-2, Column # 7

Fy (ksi) = 50.00 Column Size = HSS6X6X3/16
Orientation (deg.) = 0.0

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INPUT DESIGN PARAMETERS:

	X-Axis	Y-Axis
Lu (ft)	9.00	9.00
K	1	1
Braced Against Joint Translation	Yes	Yes
Column Eccentricity (in) Top	0.00	0.00
Bottom	0.00	0.00

CONTROLLING AXIAL COLUMN LOADS - Skip-Load Case 1:

	Dead	Live	Roof
Axial (kip)	50.53	23.12	6.44

DEMAND CAPACITY RATIO: (1.2DL + 1.6LL + 0.5RF)

Pu (kip) =	100.85	0.90Pnx (kip) =	153.81	Pu/0.90Pnx =	0.656
		0.90Pny (kip) =	153.81	Pu/0.90Pny =	0.656
		0.90Pn (kip) =	153.81	Pu/0.90Pn =	0.656

DEMAND/CAPACITY LIMIT FOR STRENGTH : 1.000

CONTROLLING COMBINED COLUMN LOADS - Skip-Load Case 1:

		Dead	Live	Roof
Axial (kip)		50.53	23.12	6.44
Moments	Top Mx (kip-ft)	0.00	0.00	0.00
	My (kip-ft)	0.00	0.00	0.00
	Bot Mx (kip-ft)	0.00	0.00	0.00
	My (kip-ft)	0.00	0.00	0.00

Single curvature about X-Axis
Single curvature about Y-Axis

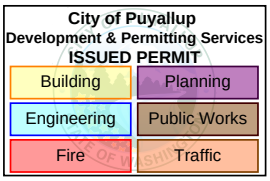
CALCULATED PARAMETERS: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	100.85	0.90*Pn (kip)	=	153.81
Mux (kip-ft)	=	0.00	0.90*Mnx (kip-ft)	=	29.34
Muy (kip-ft)	=	0.00	0.90*Mny (kip-ft)	=	29.34
Rm	=	1.00			
Cbx	=	1.00	Cby	=	1.00
Cmx	=	1.00	Cmy	=	1.00
Pex (kip)	=	547.21	Pey (kip)	=	547.21
B1x	=	1.23	B1y	=	1.23

INTERACTION EQUATION

Pu/0.90*Pn = 0.656

Eq H1-1a: 0.656 + 0.000 + 0.000 = 0.656



Story level FIRST FLOOR, Column Line C-3, Column # 10

Fy (ksi) = 50.00 Column Size = HSS6X6X1/2

Orientation (deg.) = 0.0

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INPUT DESIGN PARAMETERS:

	X-Axis	Y-Axis
Lu (ft)	9.00	9.00
K	1	1
Braced Against Joint Translation	Yes	Yes
Column Eccentricity (in) Top	5.50	5.50
Bottom	0.00	0.00

CONTROLLING AXIAL COLUMN LOADS - Skip-Load Case 1:

	Dead	Live	Roof
Axial (kip)	86.14	39.38	8.96

DEMAND CAPACITY RATIO: (1.2DL + 1.6LL + 0.5RF)

Pu (kip) = 170.85	0.90Pnx (kip) =	369.05	Pu/0.90Pnx =	0.463
	0.90Pny (kip) =	369.05	Pu/0.90Pny =	0.463
	0.90Pn (kip) =	369.05	Pu/0.90Pn =	0.463

DEMAND/CAPACITY LIMIT FOR STRENGTH : 1.000

CONTROLLING COMBINED COLUMN LOADS - Skip-Load Case 17:

		Dead	Live	Roof
Axial (kip)		86.14	22.91	4.99
Moments	Top Mx (kip-ft)	0.17	7.30	1.66
	My (kip-ft)	-4.50	-3.20	-0.62
	Bot Mx (kip-ft)	0.00	0.00	0.00
	My (kip-ft)	0.00	0.00	0.00

Single curvature about X-Axis
Single curvature about Y-Axis

CALCULATED PARAMETERS: (1.2DL + 1.6LL + 0.5RF)

Pu (kip) =	142.51	0.90*Pn (kip) =	369.05
Mux (kip-ft) =	12.71	0.90*Mnx (kip-ft) =	74.25
Muy (kip-ft) =	-10.84	0.90*Mny (kip-ft) =	74.25
Rm =	1.00		
Cbx =	1.67	Cby =	1.67
Cmx =	0.60	Cmy =	0.60
Pex (kip) =	1185.22	Pey (kip) =	1185.22
B1x =	1.00	B1y =	1.00

INTERACTION EQUATION

Pu/0.90*Pn = 0.386

Eq H1-1a: 0.386 + 0.152 + 0.130 = 0.668

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Story level FIRST FLOOR, Column Line C-2, Column # 11

Fy (ksi) = 50.00 Column Size = HSS6X6X3/16
Orientation (deg.) = 0.0

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INPUT DESIGN PARAMETERS:

	X-Axis	Y-Axis
Lu (ft)	9.00	9.00
K	1	1
Braced Against Joint Translation	Yes	Yes
Column Eccentricity (in) Top	0.00	0.00
Bottom	0.00	0.00

CONTROLLING AXIAL COLUMN LOADS - Skip-Load Case 1:

	Dead	Live	Roof
Axial (kip)	77.19	31.23	8.62

DEMAND CAPACITY RATIO: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	146.90	0.90Pnx (kip)	=	153.81	Pu/0.90Pnx	= 0.955
			0.90Pny (kip)	=	153.81	Pu/0.90Pny	= 0.955
			0.90Pn (kip)	=	153.81	Pu/0.90Pn	= 0.955

DEMAND/CAPACITY LIMIT FOR STRENGTH : 1.000

CONTROLLING COMBINED COLUMN LOADS - Skip-Load Case 1:

		Dead	Live	Roof
Axial (kip)		77.19	31.23	8.62
Moments	Top Mx (kip-ft)	0.00	0.00	0.00
	My (kip-ft)	0.00	0.00	0.00
	Bot Mx (kip-ft)	0.00	0.00	0.00
	My (kip-ft)	0.00	0.00	0.00

Single curvature about X-Axis
Single curvature about Y-Axis

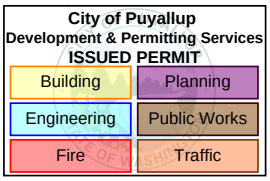
CALCULATED PARAMETERS: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	146.90	0.90*Pn (kip)	=	153.81
Mux (kip-ft)	=	0.00	0.90*Mnx (kip-ft)	=	29.34
Muy (kip-ft)	=	0.00	0.90*Mny (kip-ft)	=	29.34
Rm	=	1.00			
Cbx	=	1.00	Cby	=	1.00
Cmx	=	1.00	Cmy	=	1.00
Pex (kip)	=	547.21	Pey (kip)	=	547.21
B1x	=	1.37	B1y	=	1.37

INTERACTION EQUATION

Pu/0.90*Pn = 0.955

Eq H1-1a: 0.955 + 0.000 + 0.000 = 0.955



Story level FIRST FLOOR, Column Line D-3, Column # 14

Fy (ksi) = 50.00 Column Size = HSS6X6X1/2

Orientation (deg.) = 0.0

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INPUT DESIGN PARAMETERS:

	X-Axis	Y-Axis
Lu (ft)	9.00	9.00
K	1	1
Braced Against Joint Translation	Yes	Yes
Column Eccentricity (in) Top	5.50	5.50
Bottom	0.00	0.00

CONTROLLING AXIAL COLUMN LOADS - Skip-Load Case 1:

	Dead	Live	Roof
Axial (kip)	85.62	38.23	8.93

DEMAND CAPACITY RATIO: (1.2DL + 1.6LL + 0.5RF)

Pu (kip) = 168.39	0.90Pnx (kip) =	369.05	Pu/0.90Pnx =	0.456
	0.90Pny (kip) =	369.05	Pu/0.90Pny =	0.456
	0.90Pn (kip) =	369.05	Pu/0.90Pn =	0.456

DEMAND/CAPACITY LIMIT FOR STRENGTH : 1.000

CONTROLLING COMBINED COLUMN LOADS - Skip-Load Case 16:

		Dead	Live	Roof
Axial (kip)		85.62	21.12	4.94
Moments Top	Mx (kip-ft)	-0.67	-7.80	-1.92
	My (kip-ft)	-2.01	-1.88	-0.34
Bot	Mx (kip-ft)	0.00	-0.00	0.00
	My (kip-ft)	0.00	0.00	0.00

Single curvature about X-Axis
Single curvature about Y-Axis

CALCULATED PARAMETERS: (1.2DL + 1.6LL + 0.5RF)

Pu (kip) =	139.01	0.90*Pn (kip) =	369.05
Mux (kip-ft) =	-14.25	0.90*Mnx (kip-ft) =	74.25
Muy (kip-ft) =	-5.59	0.90*Mny (kip-ft) =	74.25
Rm =	1.00		
Cbx =	1.67	Cby =	1.67
Cmx =	0.60	Cmy =	0.60
Pex (kip) =	1185.22	Pey (kip) =	1185.22
B1x =	1.00	B1y =	1.00

INTERACTION EQUATION

Pu/0.90*Pn = 0.377

Eq H1-1a: 0.377 + 0.171 + 0.067 = 0.614

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Story level FIRST FLOOR, Column Line D-2, Column # 15

Fy (ksi) = 50.00 Column Size = HSS6X6X1/2

Orientation (deg.) = 0.0

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INPUT DESIGN PARAMETERS:

		X-Axis	Y-Axis
Lu (ft)		9.00	9.00
K		1	1
Braced Against Joint Translation		Yes	Yes
Column Eccentricity (in)	Top	5.50	5.50
	Bottom	0.00	0.00

CONTROLLING AXIAL COLUMN LOADS - Skip-Load Case 1:

	Dead	Live	Roof
Axial (kip)	80.41	33.61	8.20

DEMAND CAPACITY RATIO: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	154.36	0.90Pnx (kip)	=	369.05	Pu/0.90Pnx	= 0.418
			0.90Pny (kip)	=	369.05	Pu/0.90Pny	= 0.418
			0.90Pn (kip)	=	369.05	Pu/0.90Pn	= 0.418

DEMAND/CAPACITY LIMIT FOR STRENGTH : 1.000

CONTROLLING COMBINED COLUMN LOADS - Skip-Load Case 12:

			Dead	Live	Roof
Axial (kip)			80.41	21.46	4.94
Moments	Top	Mx (kip-ft)	-5.94	-8.59	-2.08
		My (kip-ft)	2.98	1.24	0.18
	Bot	Mx (kip-ft)	0.00	0.00	0.00
		My (kip-ft)	0.00	0.00	0.00

Single curvature about X-Axis
Single curvature about Y-Axis

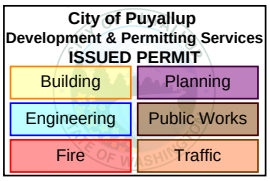
CALCULATED PARAMETERS: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	133.30	0.90*Pn (kip)	=	369.05
Mux (kip-ft)	=	-21.92	0.90*Mnx (kip-ft)	=	74.25
Muy (kip-ft)	=	5.66	0.90*Mny (kip-ft)	=	74.25
Rm	=	1.00			
Cbx	=	1.67	Cby	=	1.67
Cmx	=	0.60	Cmy	=	0.60
Pex (kip)	=	1185.22	Pey (kip)	=	1185.22
B1x	=	1.00	B1y	=	1.00

INTERACTION EQUATION

Pu/0.90*Pn = 0.361

Eq H1-1a: 0.361 + 0.262 + 0.068 = 0.691



Story level FIRST FLOOR, Column Line E-3, Column # 18

Fy (ksi) = 50.00 Column Size = HSS6X6X1/2

Orientation (deg.) = 0.0

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INPUT DESIGN PARAMETERS:

	X-Axis	Y-Axis
Lu (ft)	9.00	9.00
K	1	1
Braced Against Joint Translation	Yes	Yes
Column Eccentricity (in) Top	5.50	5.50
Bottom	0.00	0.00

CONTROLLING AXIAL COLUMN LOADS - Skip-Load Case 1:

	Dead	Live	Roof
Axial (kip)	84.38	38.09	8.94

DEMAND CAPACITY RATIO: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	166.66	0.90Pnx (kip)	=	369.05	Pu/0.90Pnx	=	0.452
			0.90Pny (kip)	=	369.05	Pu/0.90Pny	=	0.452
			0.90Pn (kip)	=	369.05	Pu/0.90Pn	=	0.452

DEMAND/CAPACITY LIMIT FOR STRENGTH : 1.000

CONTROLLING COMBINED COLUMN LOADS - Skip-Load Case 16:

		Dead	Live	Roof
Axial (kip)		84.38	22.03	5.30
Moments Top	Mx (kip-ft)	-1.34	-7.23	-1.86
	My (kip-ft)	-2.84	-2.87	-0.57
Bot	Mx (kip-ft)	0.00	0.00	0.00
	My (kip-ft)	0.00	0.00	0.00

Single curvature about X-Axis
Single curvature about Y-Axis

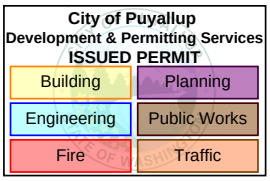
CALCULATED PARAMETERS: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	139.16	0.90*Pn (kip)	=	369.05
Mux (kip-ft)	=	-14.12	0.90*Mnx (kip-ft)	=	74.25
Muy (kip-ft)	=	-8.28	0.90*Mny (kip-ft)	=	74.25
Rm	=	1.00			
Cbx	=	1.67	Cby	=	1.67
Cmx	=	0.60	Cmy	=	0.60
Pex (kip)	=	1185.22	Pey (kip)	=	1185.22
B1x	=	1.00	B1y	=	1.00

INTERACTION EQUATION

Pu/0.90*Pn = 0.377

Eq H1-1a: 0.377 + 0.169 + 0.099 = 0.645



Story level FIRST FLOOR, Column Line E-2, Column # 19

Fy (ksi) = 50.00 Column Size = HSS6X6X3/16
Orientation (deg.) = 0.0

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INPUT DESIGN PARAMETERS:

	X-Axis	Y-Axis
Lu (ft)	9.00	9.00
K	1	1
Braced Against Joint Translation	Yes	Yes
Column Eccentricity (in) Top	0.00	0.00
Bottom	0.00	0.00

CONTROLLING AXIAL COLUMN LOADS - Skip-Load Case 1:

	Dead	Live	Roof
Axial (kip)	73.86	30.40	8.75

DEMAND CAPACITY RATIO: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	141.64	0.90Pnx (kip)	=	153.81	Pu/0.90Pnx	= 0.921
			0.90Pny (kip)	=	153.81	Pu/0.90Pny	= 0.921
			0.90Pn (kip)	=	153.81	Pu/0.90Pn	= 0.921

DEMAND/CAPACITY LIMIT FOR STRENGTH : 1.000

CONTROLLING COMBINED COLUMN LOADS - Skip-Load Case 1:

		Dead	Live	Roof
Axial (kip)		73.86	30.40	8.75
Moments	Top Mx (kip-ft)	0.00	0.00	0.00
	My (kip-ft)	0.00	0.00	0.00
	Bot Mx (kip-ft)	0.00	0.00	0.00
	My (kip-ft)	0.00	0.00	0.00

Single curvature about X-Axis
Single curvature about Y-Axis

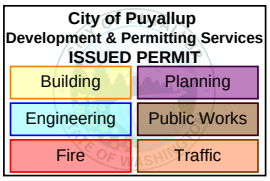
CALCULATED PARAMETERS: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	141.64	0.90*Pn (kip)	=	153.81
Mux (kip-ft)	=	0.00	0.90*Mnx (kip-ft)	=	29.34
Muy (kip-ft)	=	0.00	0.90*Mny (kip-ft)	=	29.34
Rm	=	1.00			
Cbx	=	1.00	Cby	=	1.00
Cmx	=	1.00	Cmy	=	1.00
Pex (kip)	=	547.21	Pey (kip)	=	547.21
B1x	=	1.35	B1y	=	1.35

INTERACTION EQUATION

Pu/0.90*Pn = 0.921

Eq H1-1a: 0.921 + 0.000 + 0.000 = 0.921



Story level FIRST FLOOR, Column Line F-3, Column # 22

Fy (ksi) = 50.00 Column Size = HSS6X6X3/8
Orientation (deg.) = 0.0

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INPUT DESIGN PARAMETERS:

	X-Axis	Y-Axis
Lu (ft)	9.00	9.00
K	1	1
Braced Against Joint Translation	Yes	Yes
Column Eccentricity (in) Top	5.50	5.50
Bottom	0.00	0.00

CONTROLLING AXIAL COLUMN LOADS - Skip-Load Case 1:

	Dead	Live	Roof
Axial (kip)	77.53	35.61	8.72

DEMAND CAPACITY RATIO: (1.2DL + 1.6LL + 0.5RF)

Pu (kip) = 154.38	0.90Pnx (kip) =	289.60	Pu/0.90Pnx =	0.533
	0.90Pny (kip) =	289.60	Pu/0.90Pny =	0.533
	0.90Pn (kip) =	289.60	Pu/0.90Pn =	0.533

DEMAND/CAPACITY LIMIT FOR STRENGTH : 1.000

CONTROLLING COMBINED COLUMN LOADS - Skip-Load Case 17:

		Dead	Live	Roof
Axial (kip)		77.53	20.73	5.07
Moments Top	Mx (kip-ft)	1.16	7.17	1.96
	My (kip-ft)	-1.00	-2.33	-0.36
Bot	Mx (kip-ft)	0.00	0.00	0.00
	My (kip-ft)	0.00	0.00	0.00

Single curvature about X-Axis
Single curvature about Y-Axis

CALCULATED PARAMETERS: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	128.74	0.90*Pn (kip)	=	289.60
Mux (kip-ft)	=	13.85	0.90*Mnx (kip-ft)	=	59.25
Muy (kip-ft)	=	-5.11	0.90*Mny (kip-ft)	=	59.25
Rm	=	1.00			
Cbx	=	1.67	Cby	=	1.67
Cmx	=	0.60	Cmy	=	0.60
Pex (kip)	=	969.28	Pey (kip)	=	969.28
B1x	=	1.00	B1y	=	1.00

INTERACTION EQUATION

Pu/0.90*Pn = 0.445

Eq H1-1a: 0.445 + 0.208 + 0.077 = 0.729

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Story level FIRST FLOOR, Column Line F-2, Column # 23

Fy (ksi) = 50.00 Column Size = HSS6X6X3/16
Orientation (deg.) = 0.0

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INPUT DESIGN PARAMETERS:

		X-Axis	Y-Axis
Lu (ft)		9.00	9.00
K		1	1
Braced Against Joint Translation		Yes	Yes
Column Eccentricity (in)	Top	0.00	0.00
	Bottom	0.00	0.00

CONTROLLING AXIAL COLUMN LOADS - Skip-Load Case 1:

	Dead	Live	Roof
Axial (kip)	64.28	27.58	8.16

DEMAND CAPACITY RATIO: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	125.35	0.90Pnx (kip)	=	153.81	Pu/0.90Pnx	= 0.815
			0.90Pny (kip)	=	153.81	Pu/0.90Pny	= 0.815
			0.90Pn (kip)	=	153.81	Pu/0.90Pn	= 0.815

DEMAND/CAPACITY LIMIT FOR STRENGTH : 1.000

CONTROLLING COMBINED COLUMN LOADS - Skip-Load Case 1:

			Dead	Live	Roof
Axial (kip)			64.28	27.58	8.16
Moments	Top	Mx (kip-ft)	0.00	0.00	0.00
		My (kip-ft)	0.00	0.00	0.00
	Bot	Mx (kip-ft)	0.00	0.00	0.00
		My (kip-ft)	0.00	0.00	0.00

Single curvature about X-Axis
Single curvature about Y-Axis

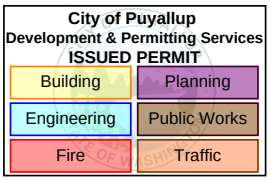
CALCULATED PARAMETERS: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	125.35	0.90*Pn (kip)	=	153.81
Mux (kip-ft)	=	0.00	0.90*Mnx (kip-ft)	=	29.34
Muy (kip-ft)	=	0.00	0.90*Mny (kip-ft)	=	29.34
Rm	=	1.00			
Cbx	=	1.00	Cby	=	1.00
Cmx	=	1.00	Cmy	=	1.00
Pex (kip)	=	547.21	Pey (kip)	=	547.21
B1x	=	1.30	B1y	=	1.30

INTERACTION EQUATION

Pu/0.90*Pn = 0.815

Eq H1-1a: 0.815 + 0.000 + 0.000 = 0.815



Story level FIRST FLOOR, Column Line G-3, Column # 26

Fy (ksi) = 50.00 Column Size = HSS6X6X1/2

Orientation (deg.) = 0.0

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INPUT DESIGN PARAMETERS:

	X-Axis	Y-Axis
Lu (ft)	9.00	9.00
K	1	1
Braced Against Joint Translation	Yes	Yes
Column Eccentricity (in) Top	5.50	5.50
Bottom	0.00	0.00

CONTROLLING AXIAL COLUMN LOADS - Skip-Load Case 1:

	Dead	Live	Roof
Axial (kip)	73.73	34.13	8.64

DEMAND CAPACITY RATIO: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	147.41	0.90Pnx (kip)	=	369.05	Pu/0.90Pnx	= 0.399
			0.90Pny (kip)	=	369.05	Pu/0.90Pny	= 0.399
			0.90Pn (kip)	=	369.05	Pu/0.90Pn	= 0.399

DEMAND/CAPACITY LIMIT FOR STRENGTH : 1.000

CONTROLLING COMBINED COLUMN LOADS - Skip-Load Case 16:

		Dead	Live	Roof
Axial (kip)		73.73	22.08	5.60
Moments	Top Mx (kip-ft)	-5.50	-7.33	-1.98
	My (kip-ft)	-2.83	-2.79	-0.59
	Bot Mx (kip-ft)	0.00	0.00	0.00
	My (kip-ft)	0.00	0.00	0.00

Single curvature about X-Axis
Single curvature about Y-Axis

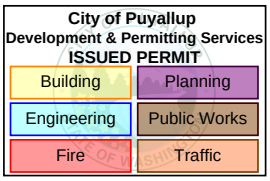
CALCULATED PARAMETERS: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	126.60	0.90*Pn (kip)	=	369.05
Mux (kip-ft)	=	-19.32	0.90*Mnx (kip-ft)	=	74.25
Muy (kip-ft)	=	-8.16	0.90*Mny (kip-ft)	=	74.25
Rm	=	1.00			
Cbx	=	1.67	Cby	=	1.67
Cmx	=	0.60	Cmy	=	0.60
Pex (kip)	=	1185.22	Pey (kip)	=	1185.22
B1x	=	1.00	B1y	=	1.00

INTERACTION EQUATION

Pu/0.90*Pn = 0.343

Eq H1-1a: 0.343 + 0.231 + 0.098 = 0.672



Story level FIRST FLOOR, Column Line G-2, Column # 27

Fy (ksi) = 50.00 Column Size = HSS6X6X3/16
Orientation (deg.) = 0.0

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INPUT DESIGN PARAMETERS:

	X-Axis	Y-Axis
Lu (ft)	9.00	9.00
K	1	1
Braced Against Joint Translation	Yes	Yes
Column Eccentricity (in) Top	0.00	0.00
Bottom	0.00	0.00

CONTROLLING AXIAL COLUMN LOADS - Skip-Load Case 1:

	Dead	Live	Roof
Axial (kip)	64.81	27.51	7.77

DEMAND CAPACITY RATIO: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	125.68	0.90Pnx (kip)	=	153.81	Pu/0.90Pnx	= 0.817
			0.90Pny (kip)	=	153.81	Pu/0.90Pny	= 0.817
			0.90Pn (kip)	=	153.81	Pu/0.90Pn	= 0.817

DEMAND/CAPACITY LIMIT FOR STRENGTH : 1.000

CONTROLLING COMBINED COLUMN LOADS - Skip-Load Case 1:

		Dead	Live	Roof
Axial (kip)		64.81	27.51	7.77
Moments	Top Mx (kip-ft)	0.00	0.00	0.00
	My (kip-ft)	0.00	0.00	0.00
	Bot Mx (kip-ft)	0.00	0.00	0.00
	My (kip-ft)	0.00	0.00	0.00

Single curvature about X-Axis
Single curvature about Y-Axis

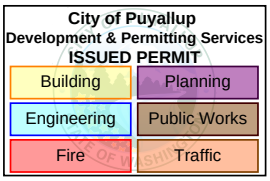
CALCULATED PARAMETERS: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	125.68	0.90*Pn (kip)	=	153.81
Mux (kip-ft)	=	0.00	0.90*Mnx (kip-ft)	=	29.34
Muy (kip-ft)	=	0.00	0.90*Mny (kip-ft)	=	29.34
Rm	=	1.00			
Cbx	=	1.00	Cby	=	1.00
Cmx	=	1.00	Cmy	=	1.00
Pex (kip)	=	547.21	Pey (kip)	=	547.21
B1x	=	1.30	B1y	=	1.30

INTERACTION EQUATION

Pu/0.90*Pn = 0.817

Eq H1-1a: 0.817 + 0.000 + 0.000 = 0.817



Story level FIRST FLOOR, Column Line H-3, Column # 30

Fy (ksi) = 50.00 Column Size = HSS6X6X1/2

Orientation (deg.) = 0.0

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INPUT DESIGN PARAMETERS:

		X-Axis	Y-Axis
Lu (ft)		9.00	9.00
K		1	1
Braced Against Joint Translation		Yes	Yes
Column Eccentricity (in)	Top	5.50	5.50
	Bottom	0.00	0.00

CONTROLLING AXIAL COLUMN LOADS - Skip-Load Case 1:

	Dead	Live	Roof
Axial (kip)	52.08	26.01	7.23

DEMAND CAPACITY RATIO: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	107.72	0.90Pnx (kip)	=	369.05	Pu/0.90Pnx	= 0.292
			0.90Pny (kip)	=	369.05	Pu/0.90Pny	= 0.292
			0.90Pn (kip)	=	369.05	Pu/0.90Pn	= 0.292

DEMAND/CAPACITY LIMIT FOR STRENGTH : 1.000

CONTROLLING COMBINED COLUMN LOADS - Skip-Load Case 16:

			Dead	Live	Roof
Axial (kip)			52.08	19.66	5.42
Moments	Top	Mx (kip-ft)	-5.75	-5.02	-1.63
		My (kip-ft)	-4.47	-3.99	-0.85
	Bot	Mx (kip-ft)	0.00	0.00	0.00
		My (kip-ft)	0.00	0.00	0.00

Single curvature about X-Axis
Single curvature about Y-Axis

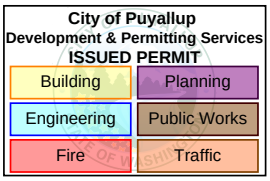
CALCULATED PARAMETERS: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	96.66	0.90*Pn (kip)	=	369.05
Mux (kip-ft)	=	-15.75	0.90*Mnx (kip-ft)	=	74.25
Muy (kip-ft)	=	-12.18	0.90*Mny (kip-ft)	=	74.25
Rm	=	1.00			
Cbx	=	1.67	Cby	=	1.67
Cmx	=	0.60	Cmy	=	0.60
Pex (kip)	=	1185.22	Pey (kip)	=	1185.22
B1x	=	1.00	B1y	=	1.00

INTERACTION EQUATION

Pu/0.90*Pn = 0.262

Eq H1-1a: 0.262 + 0.189 + 0.146 = 0.596



Story level FIRST FLOOR, Column Line H-2, Column # 31

Fy (ksi) = 50.00 Column Size = HSS6X6X1/4
Orientation (deg.) = 0.0

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INPUT DESIGN PARAMETERS:

	X-Axis	Y-Axis
Lu (ft)	9.00	9.00
K	1	1
Braced Against Joint Translation	Yes	Yes
Column Eccentricity (in) Top	0.00	0.00
Bottom	0.00	0.00

CONTROLLING AXIAL COLUMN LOADS - Skip-Load Case 1:

	Dead	Live	Roof
Axial (kip)	56.33	26.56	6.40

DEMAND CAPACITY RATIO: (1.2DL + 1.6LL + 0.5RF)

Pu (kip) = 113.29	0.90Pnx (kip)	=	201.69	Pu/0.90Pnx	=	0.562
	0.90Pny (kip)	=	201.69	Pu/0.90Pny	=	0.562
	0.90Pn (kip)	=	201.69	Pu/0.90Pn	=	0.562

DEMAND/CAPACITY LIMIT FOR STRENGTH : 1.000

CONTROLLING COMBINED COLUMN LOADS - Skip-Load Case 1:

		Dead	Live	Roof
Axial (kip)		56.33	26.56	6.40
Moments	Top Mx (kip-ft)	0.00	0.00	0.00
	My (kip-ft)	0.00	0.00	0.00
	Bot Mx (kip-ft)	0.00	0.00	0.00
	My (kip-ft)	0.00	0.00	0.00

Single curvature about X-Axis
Single curvature about Y-Axis

CALCULATED PARAMETERS: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	113.29	0.90*Pn (kip)	=	201.69
Mux (kip-ft)	=	0.00	0.90*Mnx (kip-ft)	=	42.00
Muy (kip-ft)	=	0.00	0.90*Mny (kip-ft)	=	42.00
Rm	=	1.00			
Cbx	=	1.00	Cby	=	1.00
Cmx	=	1.00	Cmy	=	1.00
Pex (kip)	=	701.80	Pey (kip)	=	701.80
B1x	=	1.19	B1y	=	1.19

INTERACTION EQUATION

Pu/0.90*Pn = 0.562

Eq H1-1a: 0.562 + 0.000 + 0.000 = 0.562

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Story level FIRST FLOOR, Column Line 157.67ft-34.33ft, Column # 45

Fy (ksi) = 50.00 Column Size = HSS5X5X5/16
Orientation (deg.) = 0.0

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INPUT DESIGN PARAMETERS:

	X-Axis	Y-Axis
Lu (ft)	9.00	9.00
K	1	1
Braced Against Joint Translation	Yes	Yes
Column Eccentricity (in) Top	5.00	5.00
Bottom	0.00	0.00

CONTROLLING AXIAL COLUMN LOADS - Skip-Load Case 1:

	Dead	Live	Roof
Axial (kip)	27.73	15.19	3.30

DEMAND CAPACITY RATIO: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	59.22	0.90Pnx (kip)	=	186.92	Pu/0.90Pnx	=	0.317
			0.90Pny (kip)	=	186.92	Pu/0.90Pny	=	0.317
			0.90Pn (kip)	=	186.92	Pu/0.90Pn	=	0.317

DEMAND/CAPACITY LIMIT FOR STRENGTH : 1.000

CONTROLLING COMBINED COLUMN LOADS - Skip-Load Case 10:

		Dead	Live	Roof
Axial (kip)		27.73	11.77	2.93
Moments Top	Mx (kip-ft)	6.04	3.66	1.06
	My (kip-ft)	-0.98	-1.25	-0.16
Bot	Mx (kip-ft)	0.00	0.00	0.00
	My (kip-ft)	0.00	0.00	-0.00

Single curvature about X-Axis
Single curvature about Y-Axis

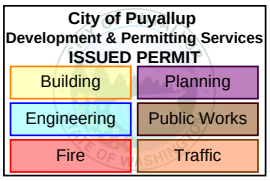
CALCULATED PARAMETERS: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	53.58	0.90*Pn (kip)	=	186.92
Mux (kip-ft)	=	13.63	0.90*Mnx (kip-ft)	=	34.35
Muy (kip-ft)	=	-3.25	0.90*Mny (kip-ft)	=	34.35
Rm	=	1.00			
Cbx	=	1.67	Cby	=	1.67
Cmx	=	0.60	Cmy	=	0.60
Pex (kip)	=	466.23	Pey (kip)	=	466.23
B1x	=	1.00	B1y	=	1.00

INTERACTION EQUATION

Pu/0.90*Pn = 0.287

Eq H1-1a: 0.287 + 0.353 + 0.084 = 0.724



Story level FIRST FLOOR, Column Line 174.50ft-34.33ft, Column # 46

Fy (ksi) = 50.00 Column Size = HSS5X5X5/16
Orientation (deg.) = 0.0

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INPUT DESIGN PARAMETERS:

	X-Axis	Y-Axis
Lu (ft)	9.00	9.00
K	1	1
Braced Against Joint Translation	Yes	Yes
Column Eccentricity (in) Top	5.00	5.00
Bottom	0.00	0.00

CONTROLLING AXIAL COLUMN LOADS - Skip-Load Case 1:

	Dead	Live	Roof
Axial (kip)	22.86	13.73	2.54

DEMAND CAPACITY RATIO: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	50.67	0.90Pnx (kip)	=	186.92	Pu/0.90Pnx	= 0.271
			0.90Pny (kip)	=	186.92	Pu/0.90Pny	= 0.271
			0.90Pn (kip)	=	186.92	Pu/0.90Pn	= 0.271

DEMAND/CAPACITY LIMIT FOR STRENGTH : 1.000

CONTROLLING COMBINED COLUMN LOADS - Skip-Load Case 10:

		Dead	Live	Roof
Axial (kip)		22.86	11.04	2.54
Moments	Top Mx (kip-ft)	-5.83	-3.84	-1.06
	My (kip-ft)	-0.53	-0.76	0.00
	Bot Mx (kip-ft)	0.00	0.00	0.00
	My (kip-ft)	0.00	0.00	0.00

Single curvature about X-Axis
Single curvature about Y-Axis

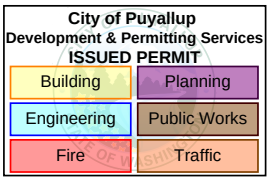
CALCULATED PARAMETERS: (1.2DL + 1.6LL + 0.5RF)

Pu (kip)	=	46.37	0.90*Pn (kip)	=	186.92
Mux (kip-ft)	=	-13.67	0.90*Mnx (kip-ft)	=	34.35
Muy (kip-ft)	=	-1.85	0.90*Mny (kip-ft)	=	34.35
Rm	=	1.00			
Cbx	=	1.67	Cby	=	1.67
Cmx	=	0.60	Cmy	=	0.60
Pex (kip)	=	466.23	Pey (kip)	=	466.23
B1x	=	1.00	B1y	=	1.00

INTERACTION EQUATION

Pu/0.90*Pn = 0.248

Eq H1-1a: 0.248 + 0.354 + 0.048 = 0.650



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Section 8.0
Lower Level Lateral Design

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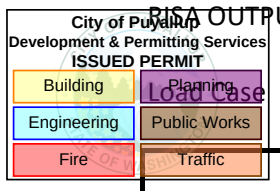
TORSIONAL IRREGULARITY

X DEFLECTION - COMPARE NORTH TO SOUTH
Z DEFLECTION - COMPARE EAST TO WEST



PISA OUTPUT

Load Case	Node Label		Deflection (In) X	Y	Z	DELTA MAX	DELTA AVG	Ax
	4	NORTHWEST CORNER	3.9724	0	-0.5644	3.9724	2.4542	1.819381
X+Z	4	NORTHEAST CORNER	3.9724	0	0.2824			
	4	SOUTHEAST CORNER	0.936	0	0.2824			
	5	NORTHWEST CORNER	5.1445	0	-0.806	5.1445	2.8294	2.295806
X-Z	5	NORTHEAST CORNER	5.1445	0	0.5103			
	5	SOUTHEAST CORNER	0.5143	0	0.5103			
	6	NORTHWEST CORNER	0.0084	0	0.6515	0.7002	0.67585	1
Z+X	6	NORTHEAST CORNER	0.0084	0	0.7002			
	6	SOUTHEAST CORNER	-0.4265	0	0.7002			
	7	NORTHWEST CORNER	-0.3309	0	0.7229	0.7229	0.67785	1
Z-X	7	NORTHEAST CORNER	-0.3309	0	0.6328			
	7	SOUTHEAST CORNER	-0.2972	0	0.6328			

STORY DRIFT

	48	NORTHWEST CORNER	0.0759	0	-0.0114	Max Drift
	48	NORTHEAST CORNER	0.0759	0	0.0066	
	48	SOUTHEAST CORNER	0.0122	0	0.0066	0.0759 inches
	49	NORTHWEST CORNER	0.0262	0	-0.0012	
	49	NORTHEAST CORNER	0.0262	0	0.0003	
	49	SOUTHEAST CORNER	0.0229	0	0.0003	
	50	NORTHWEST CORNER	0.0452	0	-0.0036	
	50	NORTHEAST CORNER	0.0452	0	0.0064	
	50	SOUTHEAST CORNER	0.012	0	0.0064	
	51	NORTHWEST CORNER	-0.0027	0	0.0114	
	51	NORTHEAST CORNER	-0.0027	0	0.0111	
	51	SOUTHEAST CORNER	-0.0061	0	0.0111	
	52	NORTHWEST CORNER	0.0001	0	0.0109	
	52	NORTHEAST CORNER	0.0001	0	0.0117	
	52	SOUTHEAST CORNER	-0.0071	0	0.0117	
	53	NORTHWEST CORNER	-0.0055	0	0.012	
	53	NORTHEAST CORNER	-0.0055	0	0.0105	
	53	SOUTHEAST CORNER	-0.005	0	0.0105	

Model Settings

Solution

Members

Number of Reported Sections	5
Number of Internal Sections	100
Member Area Load Mesh Size (in^2)	36
Consider Shear Deformation	Yes
Consider Torsional Warping	Yes

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Wall Panels

Approximate Mesh Size (in)	12
Transfer Forces Between Intersecting Wood Walls	Yes
Increase Wood Wall Nailing Capacity for Wind Loads	Yes
Include P-Delta for Walls	Yes
Optimize Masonry and Wood Walls	Yes
Maximum Number of Iterations	3

Processor Core Utilization

Single	No
Multiple (Optimum)	Yes
Maximum	No

Axis

Vertical Global Axis

Global Axis corresponding to vertical direction	Y
Convert Existing Data	Yes

Default Member Orientation

Default Global Plane for z-axis	XZ

Plate Axis

Plate Local Axis Orientation	Global

Codes

Hot Rolled Steel	AISC 15th (360-16): ASD
Stiffness Adjustment	Yes (Iterative)
Notional Annex	None
Connections	AISC 14th (360-10): ASD
Cold Formed Steel	AISI S100-16: ASD
Stiffness Adjustment	Yes (Iterative)
Wood	AWC NDS-18: ASD
Temperature	< 100F
Concrete	ACI 318-14
Masonry	TMS 402-16: ASD
Aluminum	AA ADM1-15: ASD
Structure Type	Building
Stiffness Adjustment	Yes (Iterative)
Stainless	AISC 14th (360-10): ASD
Stiffness Adjustment	Yes (Iterative)

Concrete

Column Design

Analysis Methodology	Exact Integration Method
Parme Beta Factor	0.65

Model Settings (Continued)

Compression Stress Block	Rectangular Stress Block
Analyze using Cracked Sections	Yes
Leave room for horizontal rebar splices (2*d bar spacing)	No
List forces which were ignored for design in the Detail Report	Yes

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Rebar

Column Min Steel	1
Column Max Steel	8
Rebar Material Spec	ASTM A615
Warn if beam-column framing arrangement is not understood	No

Shear Reinforcement

Number of Shear Regions	4
Region 2 & 3 Spacing Increase Increment (in)	4

Seismic

RISA-3D Seismic Load Options

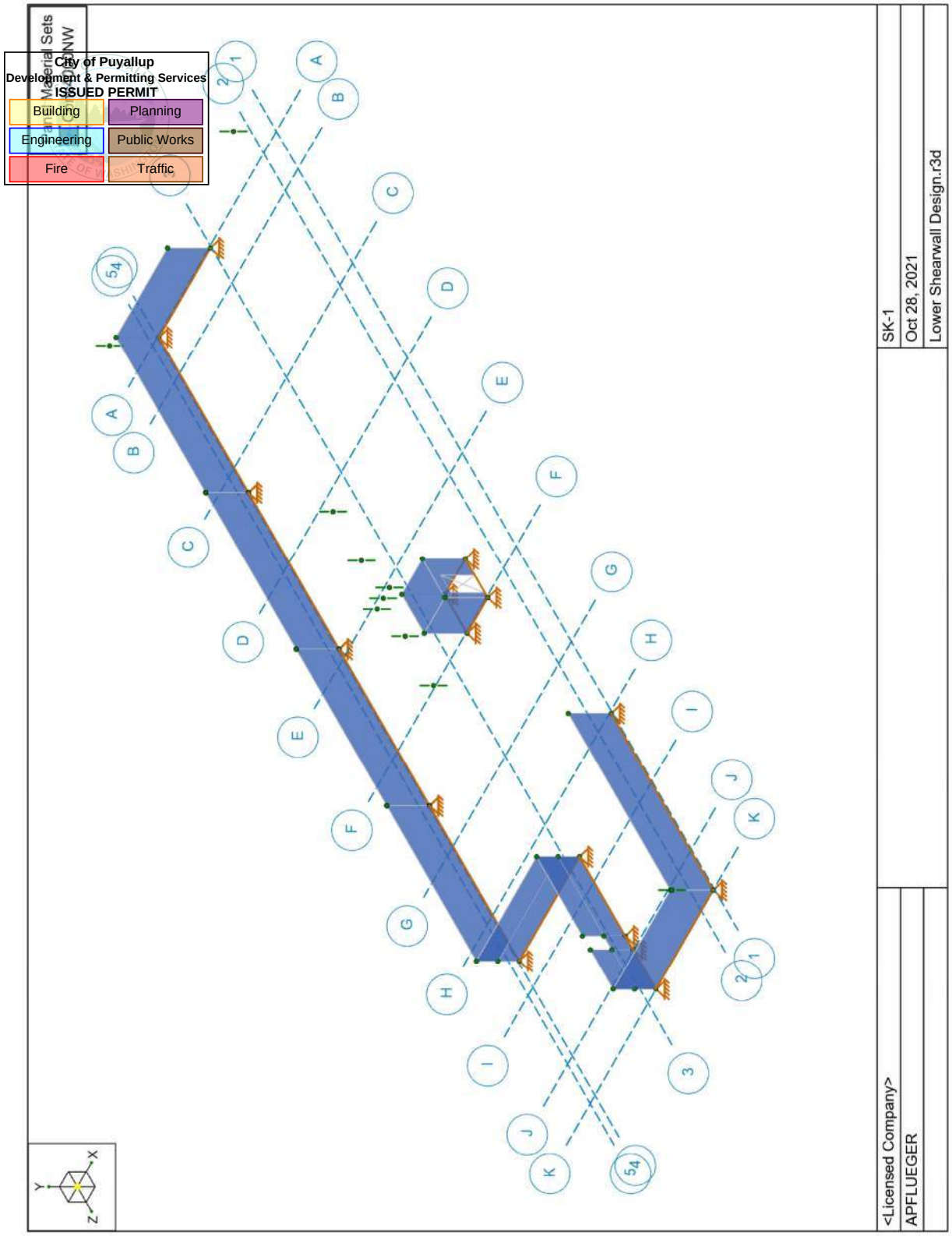
Code	ASCE 7-16
Risk Category	I or II
Drift Cat	Other
Base Elevation (ft)	0
Include the weight of the structure in base shear calcs	Yes

Site Parameters

S_1 (g)	0.438
SD_1 (g)	0.661
SD_S (g)	0.833
T_L (sec)	6

Structure Characteristics

T Z (sec)	
T X (sec)	
C_tX	0.02
C_tExp. Z	0.75
C_tExp. X	0.75
R Z	5
R X	5
Ω_0Z	2.5
Ω_0X	2.5
C_dZ	5
C_dX	5
ρ Z	1
ρ X	1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Material Sets
SK-1
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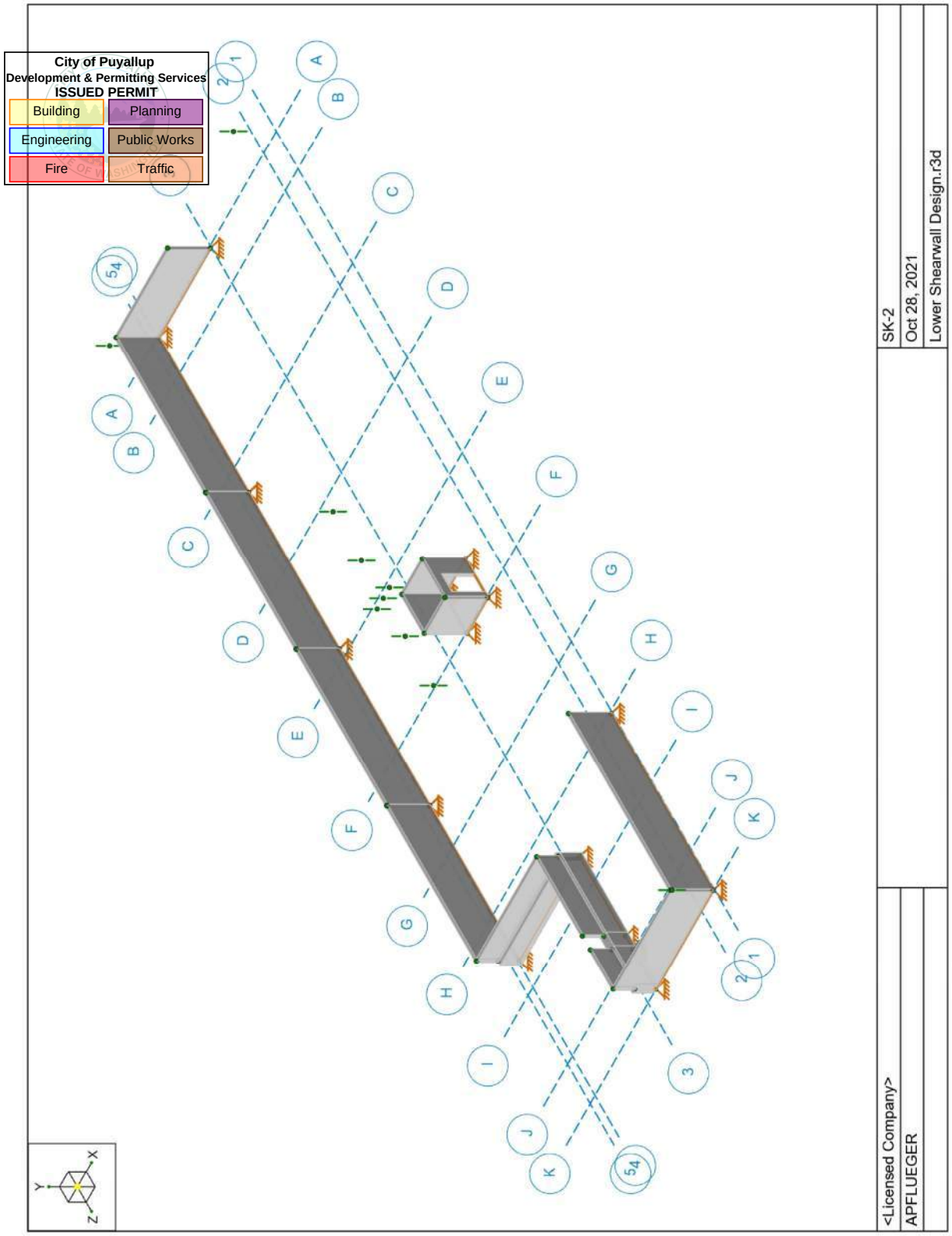
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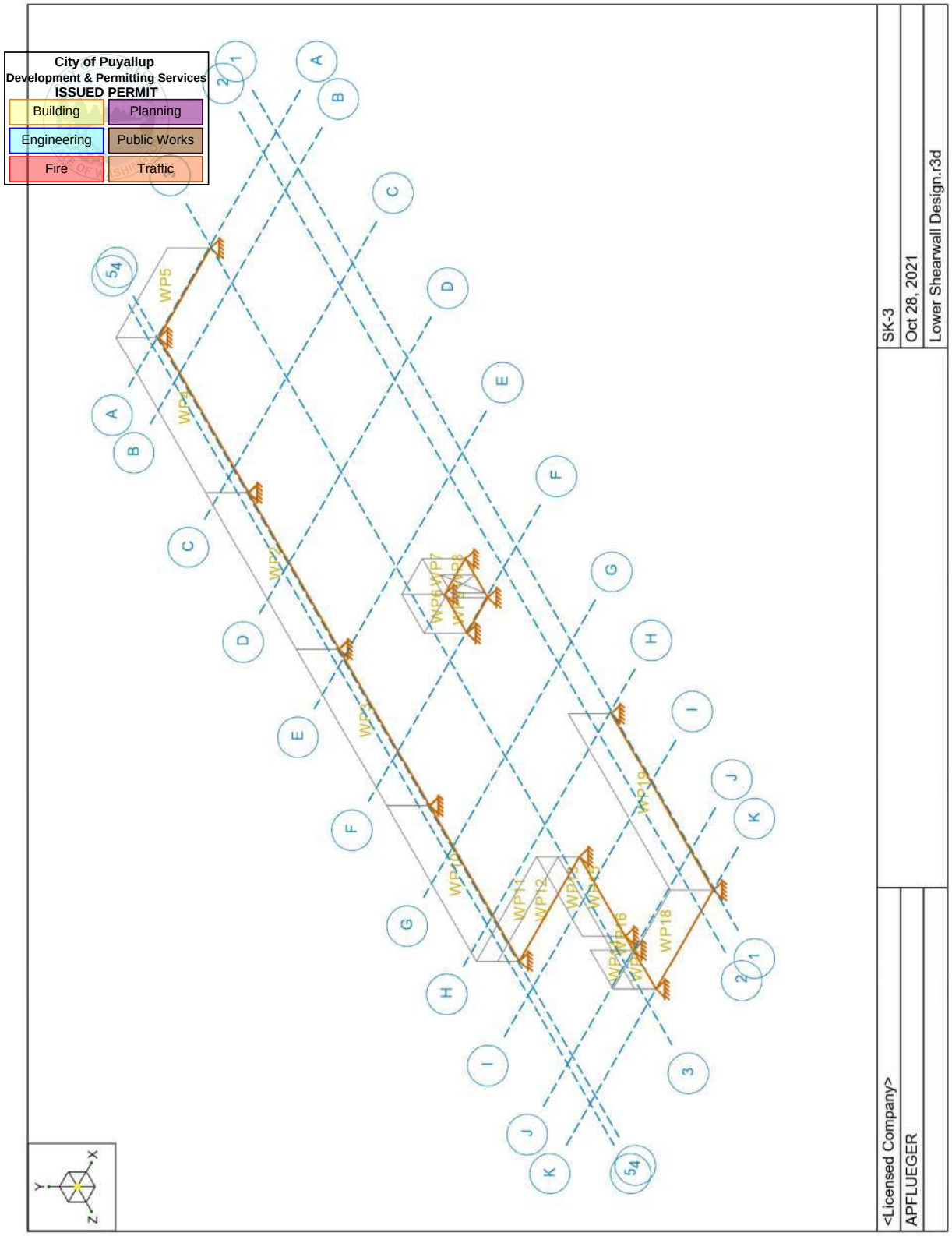
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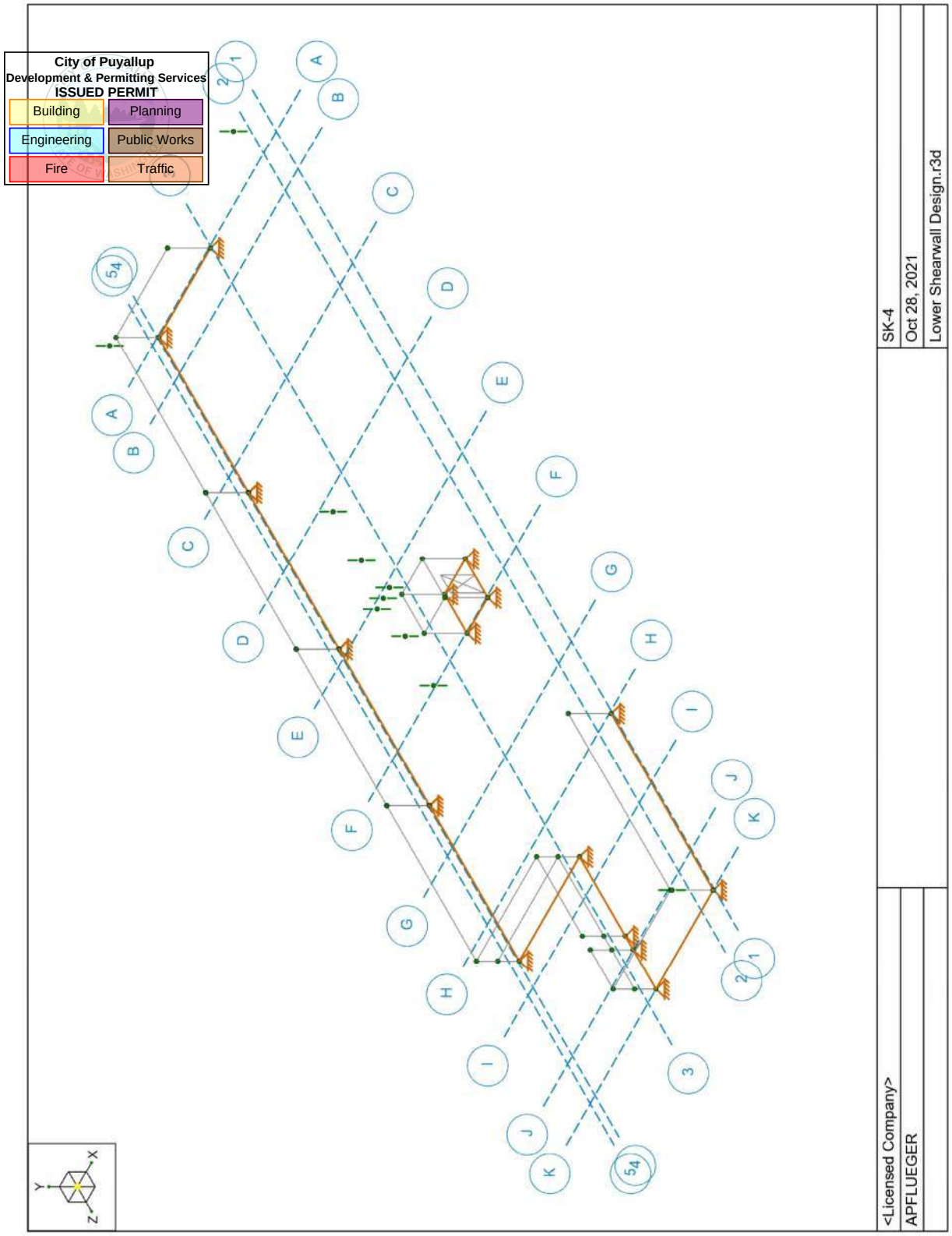
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SK-4
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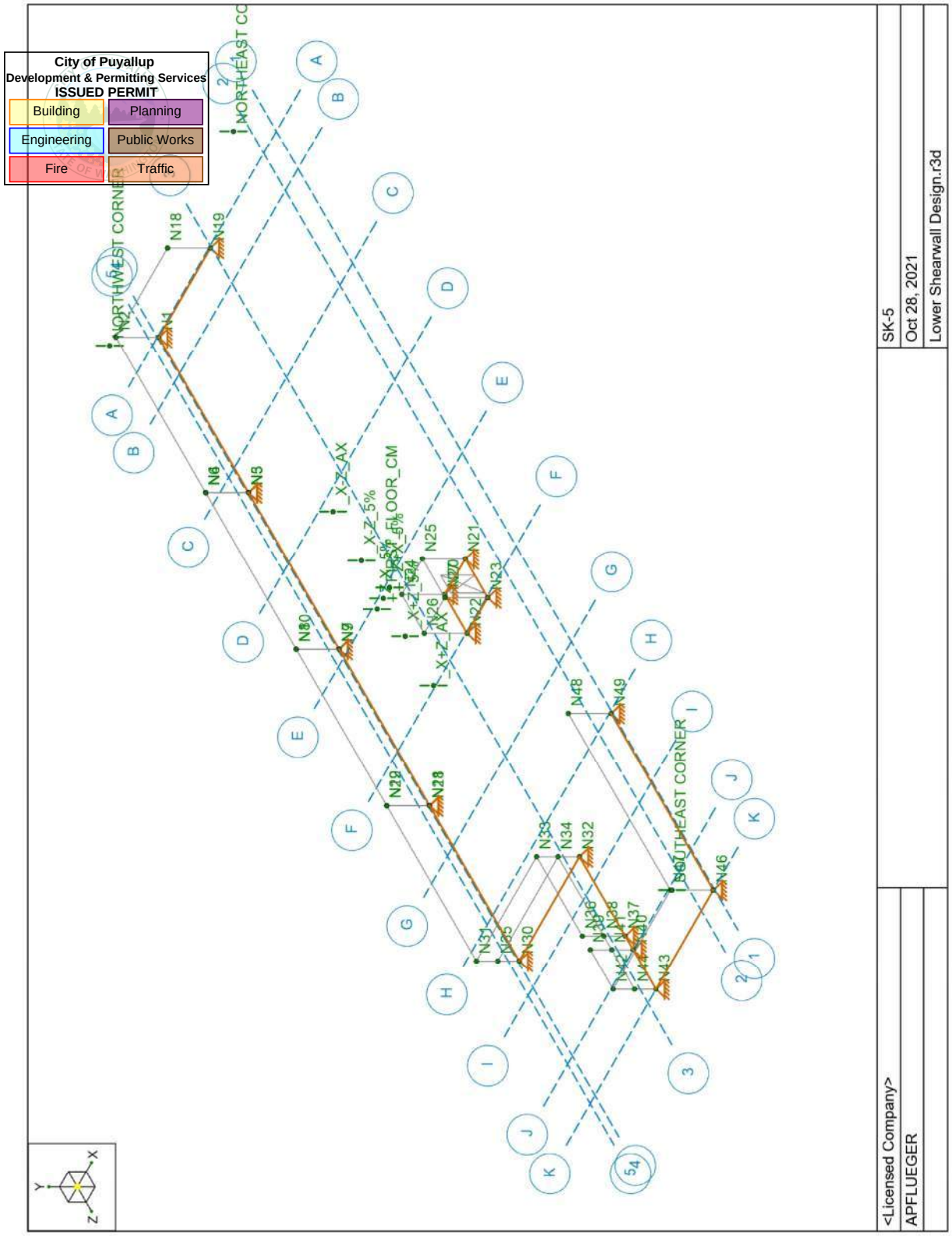
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NORTHEAST CO
NORTHWEST CORNER
SOUTHEAST CORNER
FLOOR_CM
SK-5
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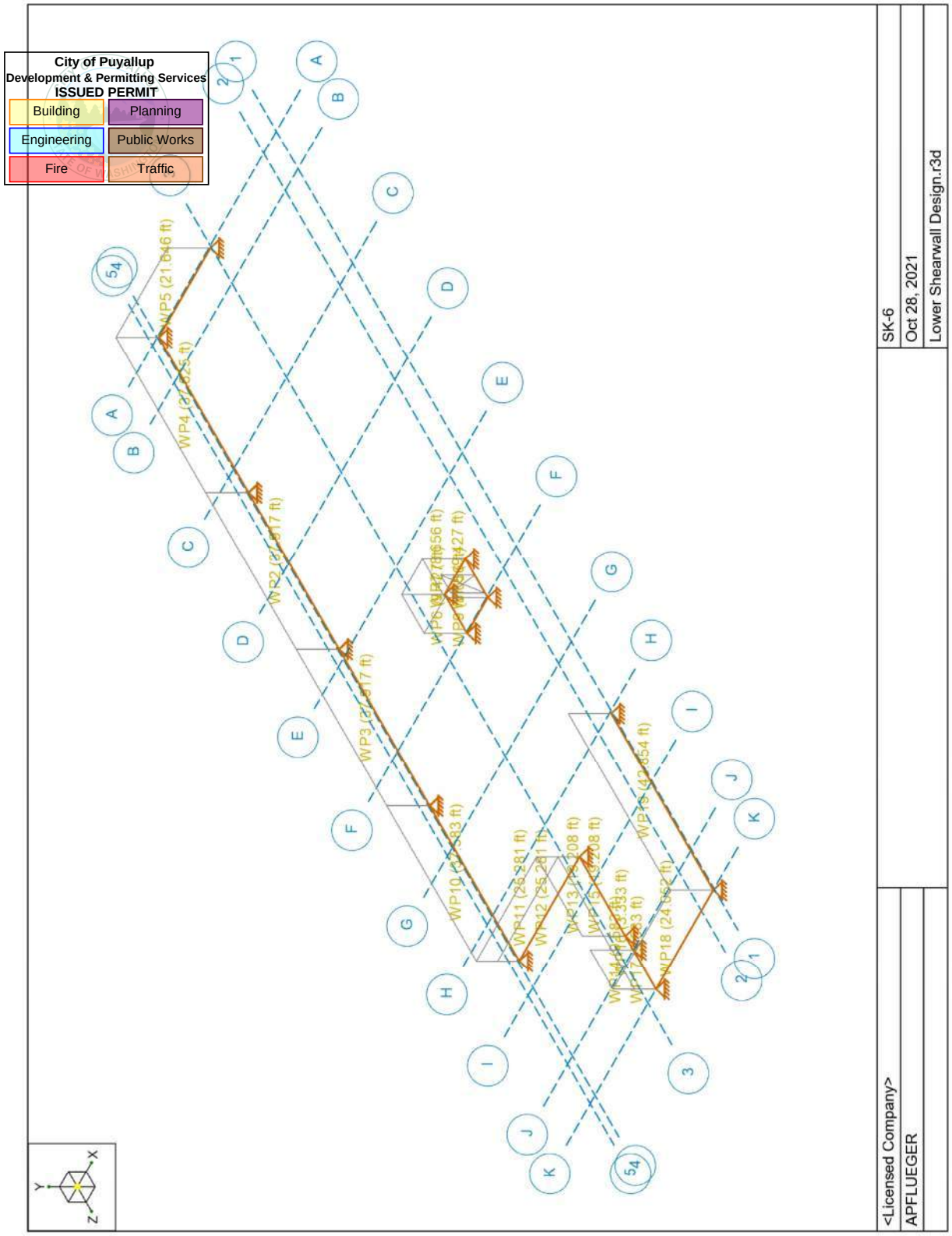
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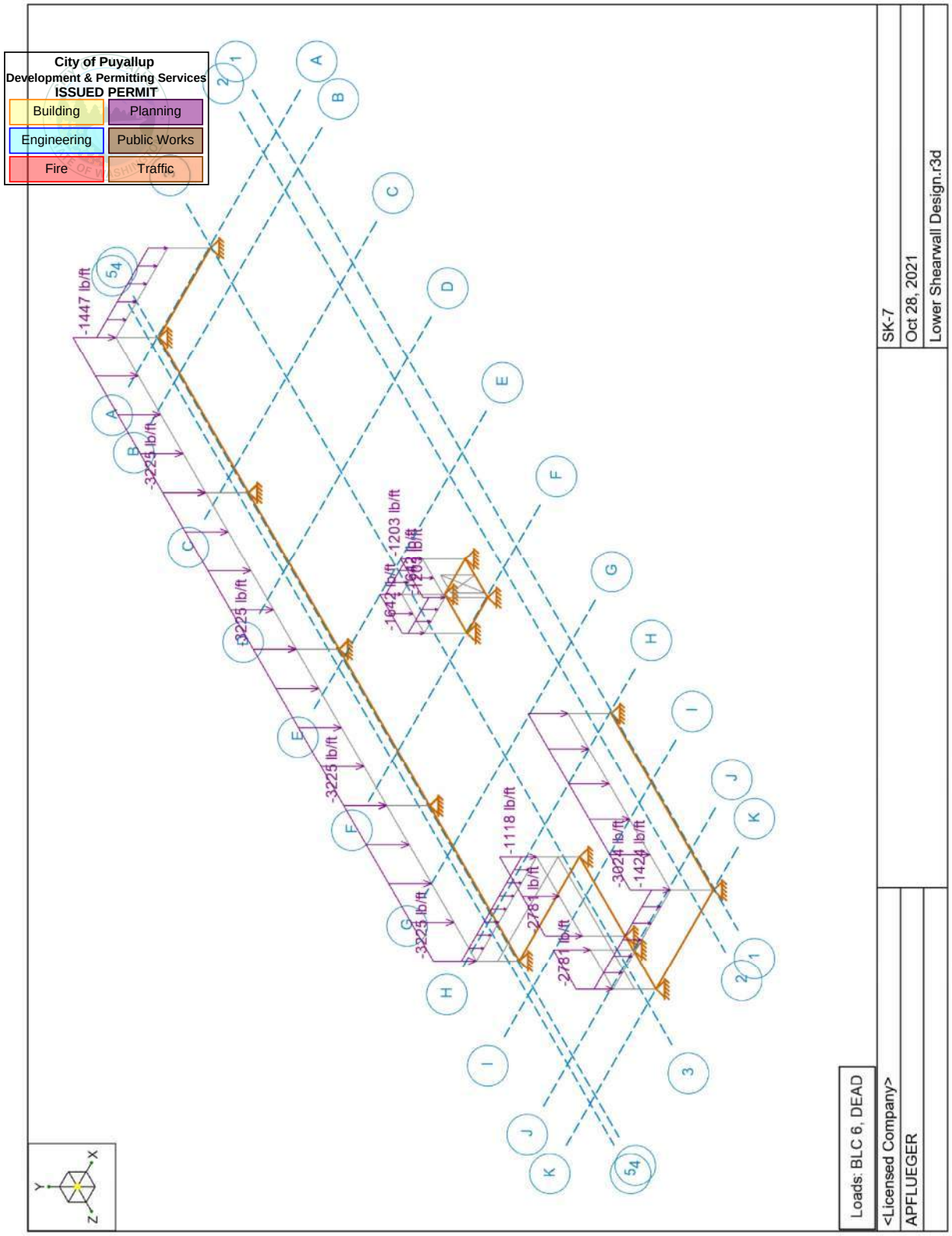
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-1447 lb/ft
-3225 lb/ft
-3225 lb/ft
-3225 lb/ft
-3225 lb/ft
-1642 lb/ft
-1203 lb/ft
-1118 lb/ft
2781 lb/ft
-2781 lb/ft
-3021 lb/ft
-1424 lb/ft
SK-7
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Loads: BLC 6, DEAD
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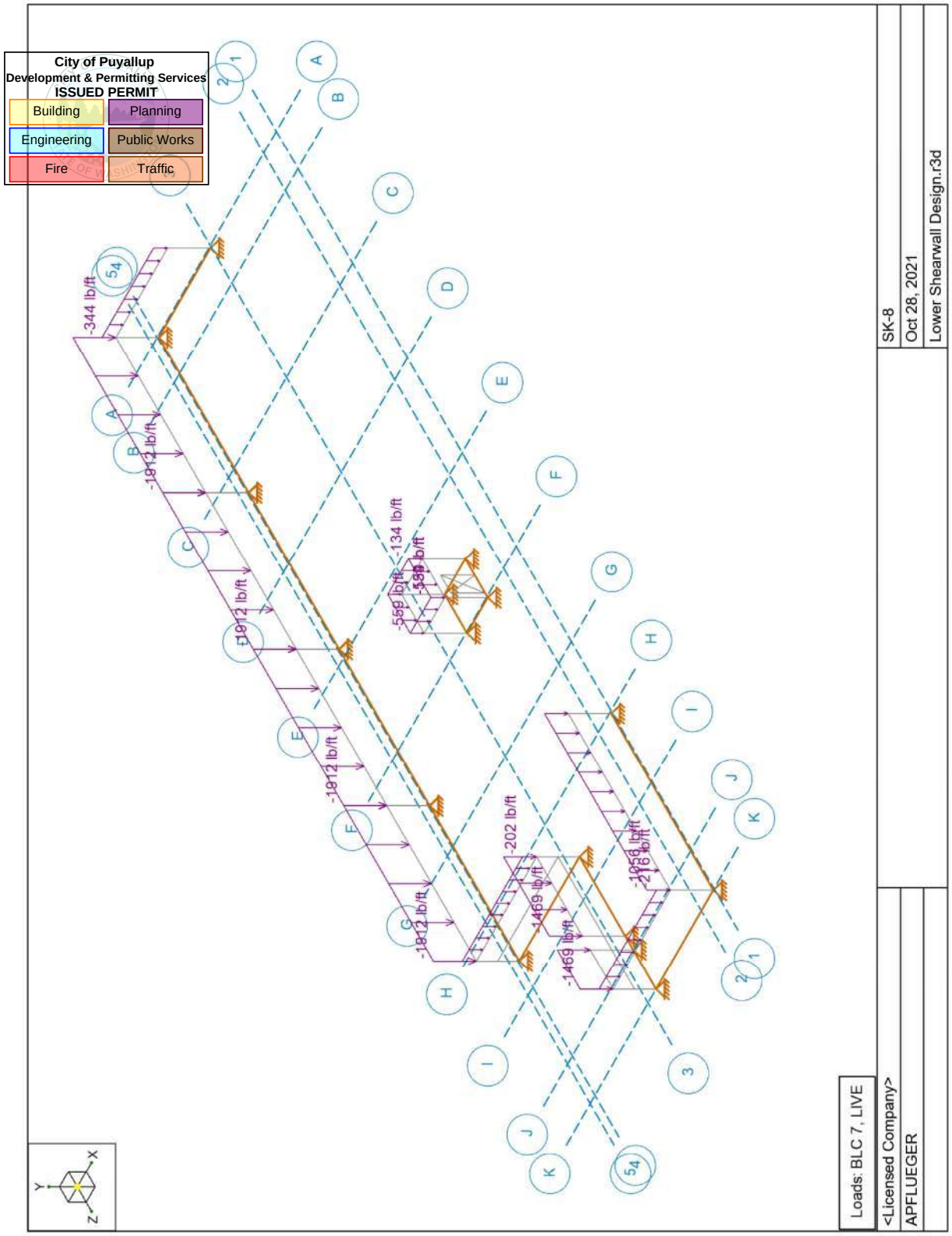
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-344 lb/ft
-1912 lb/ft
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-134 lb/ft
-569 lb/ft
-202 lb/ft
-1469 lb/ft
-1469 lb/ft
-1056 lb/ft
-216 lb/ft
SK-8
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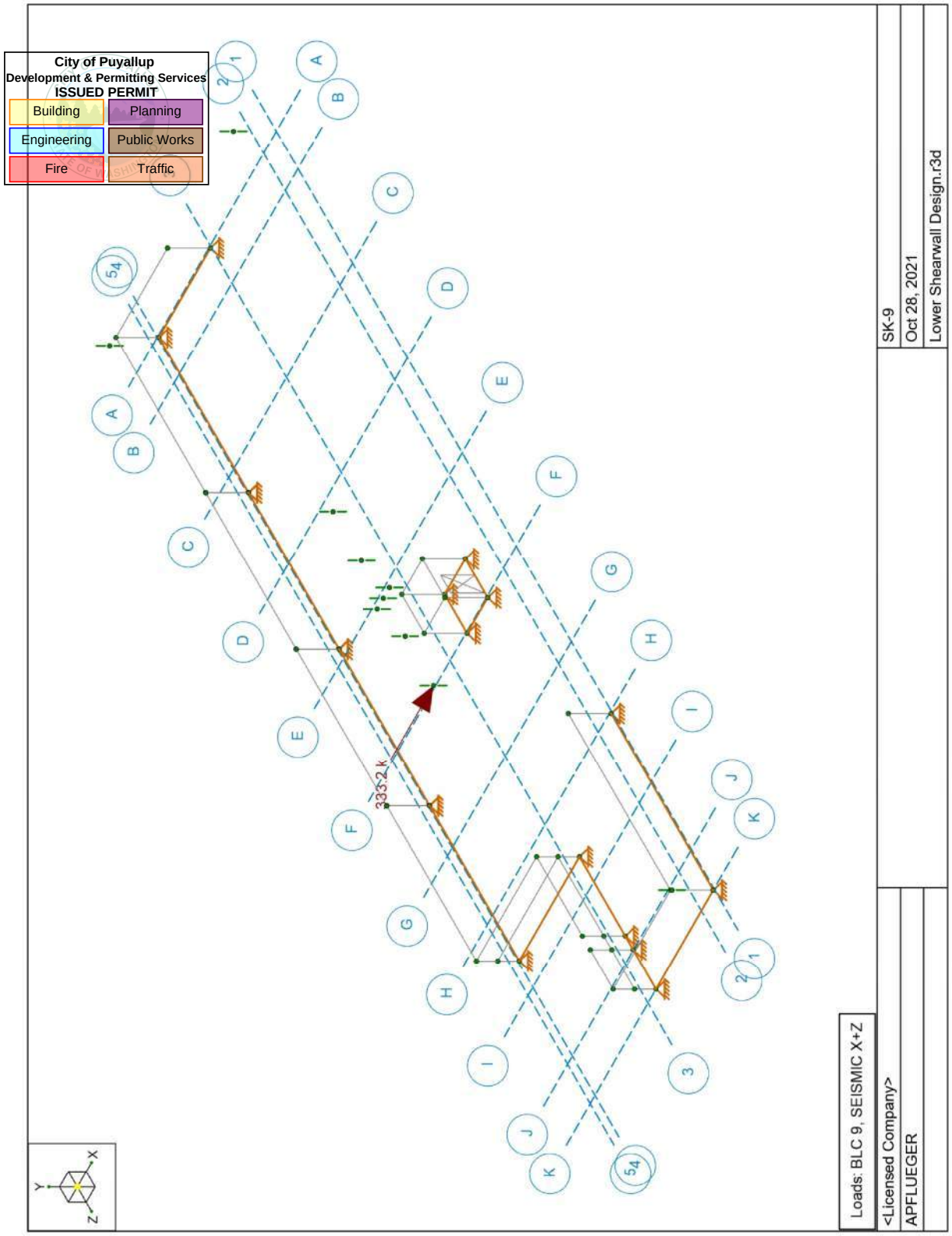
Loads: BLC 7, LIVE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333.2 k
SK-9
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Loads: BLC 9, SEISMIC X+Z
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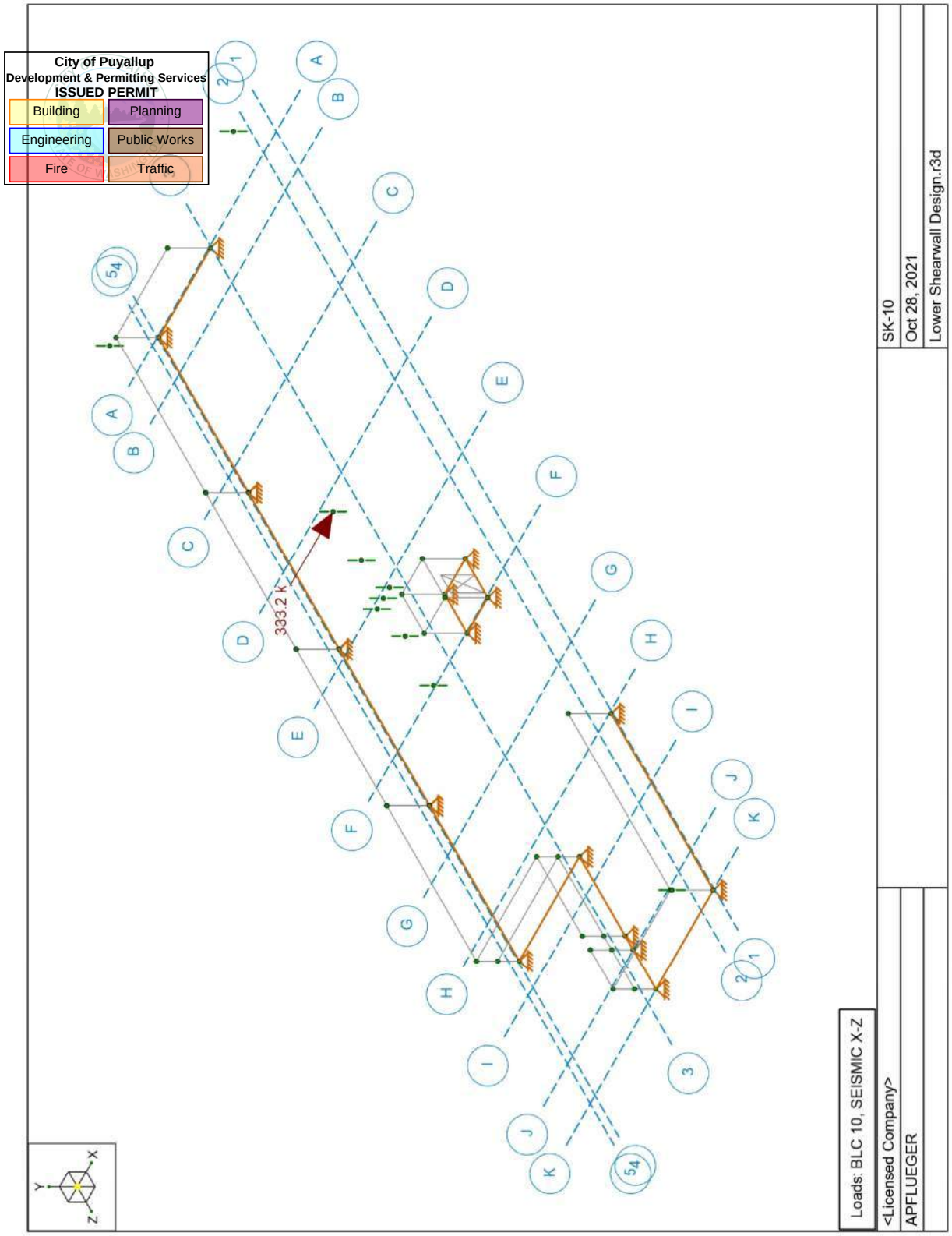
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Traffic
333.2 k
SK-10
Oct 28, 2021
Lower Shearwall Design.r3d
Loads: BLC 10, SEISMIC X-Z
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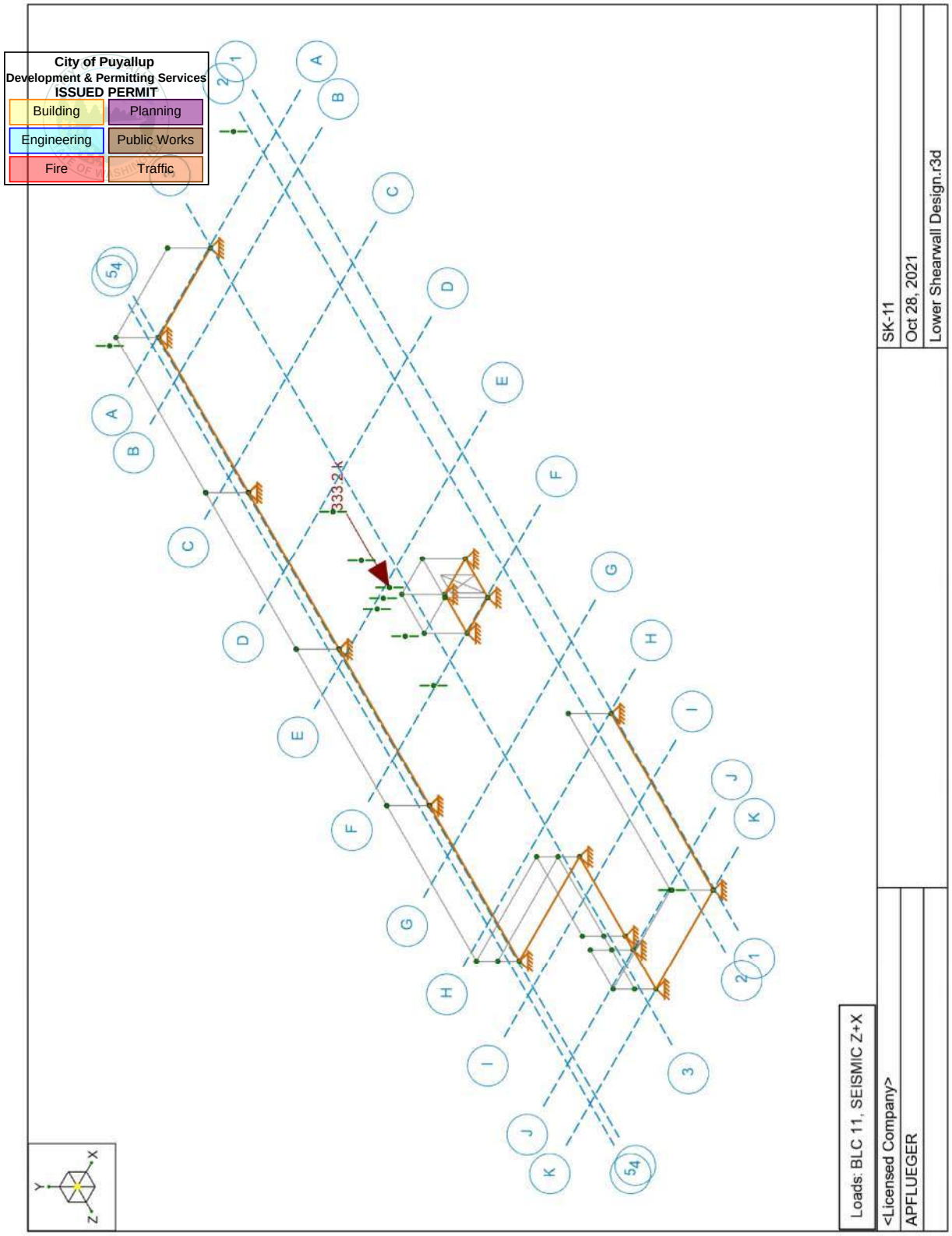
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333.2k
Loads: BLC 11, SEISMIC Z+X
SK-11
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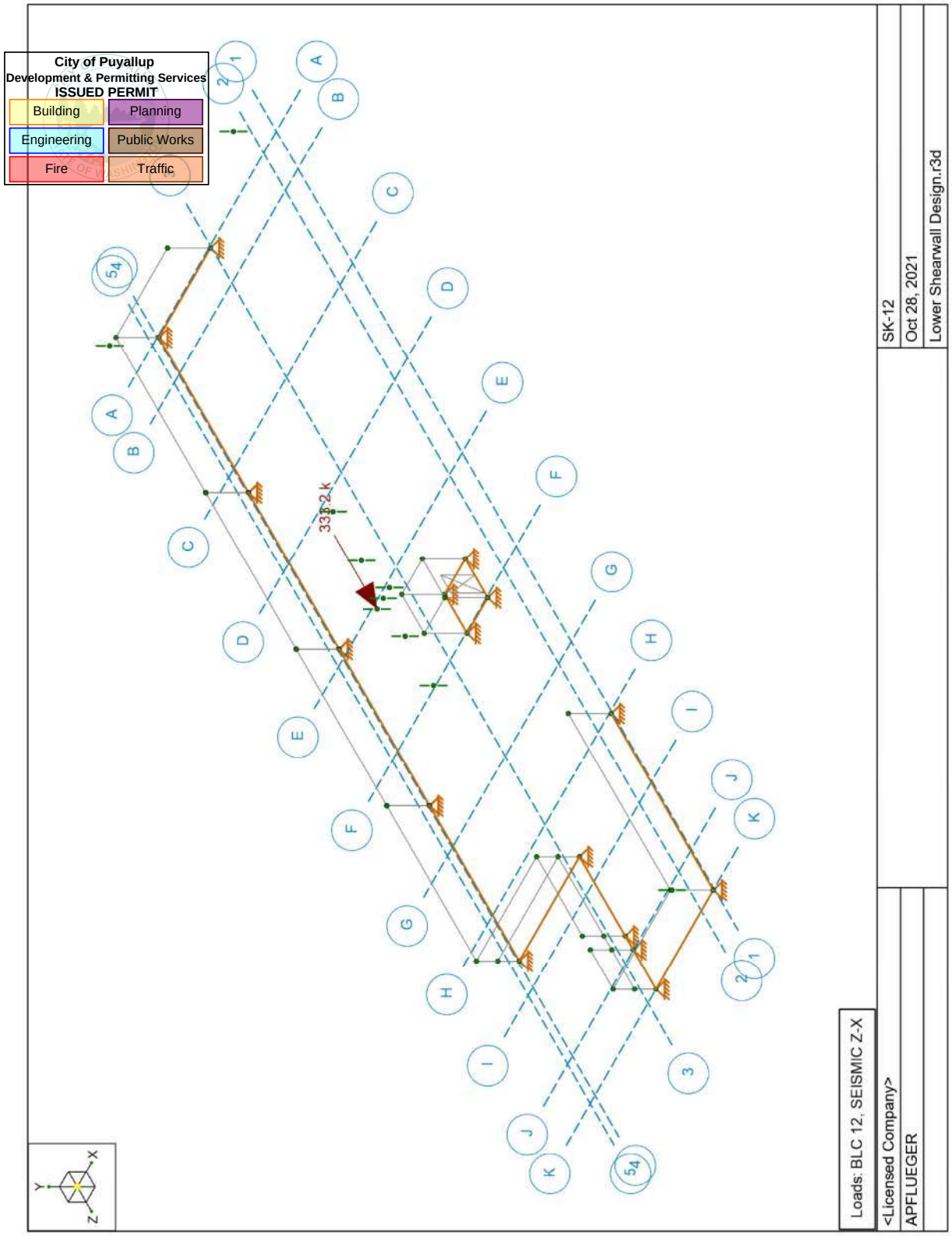
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Traffic
3312 k
Loads: BLC 12, SEISMIC Z-X
SK-12
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Lower Shearwall Design.r3d
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Project Grid Lines

	Label	Start [ft]	End [ft]	Start [ft]	End [ft]	Start Bubble	End Bubble
1	A	0	0	-10	62	Yes	Yes
2	B	9.083	9.083	-10	62	Yes	Yes
3	C	32	32	-10	62	Yes	Yes
4	D	55	55	-10	62	Yes	Yes
5	E	78	78	-10	62	Yes	Yes
6	F	100.667	100.667	-10	62	Yes	Yes
7	G	123.833	123.833	-10	62	Yes	Yes
8	H	140.5	140.5	-10	62	Yes	Yes
9	I	157.667	157.667	-10	62	Yes	Yes
10	J	174.25	174.25	-10	62	Yes	Yes
11	K	183.75	183.75	-10	62	Yes	Yes
12	1	-10	193.75	52	52	Yes	Yes
13	2	-10	193.75	46.667	46.667	Yes	Yes
14	3	-10	193.75	24.25	24.25	Yes	Yes
15	4	-10	193.75	2	2	Yes	Yes
16	5	-10	193.75	0	0	Yes	Yes

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Node Coordinates

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	_FIRST_FLOOR_CM	26.763	9	88.117	
2	_X+Z_5%	26.763	9	97.3046	
3	_X-Z_5%	26.763	9	78.9295	
4	_Z+X_5%	29.363	9	88.117	
5	_Z-X_5%	24.163	9	88.117	
6	NORTHWEST CORNER	0	9	0	
7	NORTHEAST CORNER	52	9	0	
8	SOUTHEAST CORNER	52	9	184.0833	
9	N1	2.3333	0	0.3333	
10	N2	2.3333	9	0.3333	
11	N3	2.3333	0	37.9583	
12	N4	2.3333	9	37.9583	
13	N5	2.3333	0	38.0416	
14	N6	2.3333	9	38.0416	
15	N7	2.3333	0	75.9583	
16	N8	2.3333	9	75.9583	
17	N9	2.3333	0	76.0416	
18	N10	2.3333	9	76.0416	
19	N11	2.3333	0	113.9583	
20	N12	2.3333	9	113.9583	
21	N18	23.9791	9	0.3333	
22	N19	23.9791	0	0.3333	
23	N20	31.1146	0	91.5208	
24	N21	39.7708	0	91.5208	
25	N22	31.1146	0	100.9479	
26	N23	39.7708	0	100.9479	
27	N24	31.1146	9	91.5208	
28	N25	39.7708	9	91.5208	
29	N26	31.1146	9	100.9479	
30	N27	39.7708	9	100.9479	
31	N28	2.3333	0	114.0416	
32	N29	2.3333	9	114.0416	
33	N30	2.3333	0	151.6249	
34	N31	2.3333	9	151.6249	
35	N32	27.6146	0	151.6249	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
36	N33	27.6146	9	151.6249	
37	N34	27.6146	4.5	151.6249	
38	N35	2.3333	4.5	151.6249	
39	N36	27.6146	9	170.8332	
40	N37	27.6146	0	170.8332	
41	N38	27.6146	4.5	170.8332	
42	N39	27.6146	9	174.1665	
43	N40	27.6146	0	174.1665	
44	N41	27.6146	4.5	174.1665	
45	N42	27.6146	9	183.75	
46	N43	27.6146	0	183.75	
47	N44	27.6146	4.5	183.75	
48	N46	51.6667	0	183.75	
49	N47	51.6667	9	183.75	
50	N48	51.6667	9	140.8958	
51	N49	51.6667	0	140.8958	
52	_X+Z_AX	26.763	9	109.2155	
53	_X-Z_AX	26.763	9	67.0186	

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Node Boundary Conditions

	Node Label	Y [k/in]
1	_X+Z_5%	Reaction
2	_FIRST_FLOOR_CM	Reaction
3	_Z+X_5%	Reaction
4	_X-Z_5%	Reaction
5	_Z-X_5%	Reaction
6	NORTHWEST CORNER	Reaction
7	NORTHEAST CORNER	Reaction
8	SOUTHEAST CORNER	Reaction
9	_X+Z_AX	Reaction
10	_X-Z_AX	Reaction

Wall Panel Data

	Label	A Node	B Node	C Node	D Node	Material Type	Material Set	Thickness [in]	Design Rule	Panel/Spacing
1	WP2	N6	N5	N7	N8	Concrete	Conc4000NW	8	TYPICAL 8" RC CONC WALL	N/A
2	WP3	N10	N9	N11	N12	Concrete	Conc4000NW	8	TYPICAL 8" RC CONC WALL	N/A
3	WP4	N2	N1	N3	N4	Concrete	Conc4000NW	8	TYPICAL 8" RC CONC WALL	N/A
4	WP5	N1	N2	N18	N19	Concrete	Conc4000NW	8	TYPICAL 8" RC CONC WALL	N/A
5	WP6	N24	N20	N22	N26	Concrete	Conc4000NW	8	TYPICAL 8" RC CONC WALL	N/A
6	WP7	N24	N20	N21	N25	Concrete	Conc4000NW	8	TYPICAL 8" RC CONC WALL	N/A
7	WP8	N25	N21	N23	N27	Concrete	Conc4000NW	8	TYPICAL 8" RC CONC WALL	N/A
8	WP9	N26	N22	N23	N27	Concrete	Conc4000NW	8	TYPICAL 8" RC CONC WALL	N/A
9	WP10	N29	N28	N30	N31	Concrete	Conc4000NW	8	TYPICAL 8" RC CONC WALL	N/A
10	WP11	N31	N35	N34	N33	Concrete	Conc4000NW	8	TYPICAL 8" RC CONC WALL	N/A
11	WP12	N35	N30	N32	N34	Concrete	Conc4000NW	24	MAT FOUND STEP	N/A
12	WP13	N33	N34	N38	N36	Concrete	Conc4000NW	8	TYPICAL 8" RC CONC WALL	N/A
13	WP14	N39	N41	N44	N42	Concrete	Conc4000NW	8	TYPICAL 8" RC CONC WALL	N/A
14	WP15	N34	N32	N37	N38	Concrete	Conc4000NW	24	MAT FOUND STEP	N/A
15	WP16	N38	N37	N40	N41	Concrete	Conc4000NW	24	MAT FOUND STEP	N/A
16	WP17	N41	N40	N43	N44	Concrete	Conc4000NW	24	MAT FOUND STEP	N/A
17	WP18	N42	N43	N46	N47	Concrete	Conc4000NW	8	TYPICAL 8" RC CONC WALL	N/A
18	WP19	N48	N49	N46	N47	Concrete	Conc4000NW	8	TYPICAL 8" RC CONC WALL	N/A

Wall Panel Advanced Data

	Label	Seismic Rule	Design Method	SSAF	Stud Bracing	Sheathing Connect Dist [in]
1	WP2	SDR_Conc1	N/A	N/A	N/A	N/A
2	WP3	SDR_Conc1	N/A	N/A	N/A	N/A
3	WP4	SDR_Conc1	N/A	N/A	N/A	N/A
4	WP5	SDR_Conc1	N/A	N/A	N/A	N/A
5	WP6	SDR_Conc1	N/A	N/A	N/A	N/A
6	WP7	SDR_Conc1	N/A	N/A	N/A	N/A
7	WP8	SDR_Conc1	N/A	N/A	N/A	N/A
8	WP9	SDR_Conc1	N/A	N/A	N/A	N/A
9	WP10	SDR_Conc1	N/A	N/A	N/A	N/A
10	WP11	None	N/A	N/A	N/A	N/A
11	WP12	None	N/A	N/A	N/A	N/A
12	WP13	SDR_Conc1	N/A	N/A	N/A	N/A
13	WP14	SDR_Conc1	N/A	N/A	N/A	N/A
14	WP15	None	N/A	N/A	N/A	N/A
15	WP16	None	N/A	N/A	N/A	N/A
16	WP17	None	N/A	N/A	N/A	N/A
17	WP18	SDR_Conc1	N/A	N/A	N/A	N/A
18	WP19	SDR_Conc1	N/A	N/A	N/A	N/A

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Diaphragms

	Node Label	Plane	Inactive	No Wind/Drift
1	_FIRST_FLOOR_CM	ZX		

Concrete Wall Panel Rebar Parameters

	Label	Vert Bar Size	Max Vert Bar Space [in]	Min Vert Bar Space [in]	Vert Bar Inc [in]	Horz Bar Size	Max Horz Bar Space [in]	Min Horz Bar Space [in]	Horz Bar Inc [in]	Group Wall
1	TYPICAL 8" RC CONC WALL	#5	15	15	2	#5	15	15	2	
2	MAT FOUND STEP	#7	13	13	2	#5	12	12	2	

Concrete Wall Panel Cover Parameters

	Label	Outer Bars	Location	Int Cover -z [in]	Ext Cover +z [in]	Edge Cover [in]	Transfer In	Transfer Out
1	TYPICAL 8" RC CONC WALL	Horizontal	Centered	NA	NA	2		
2	MAT FOUND STEP	Horizontal	Each Face	1	1	2		

Node Loads and Enforced Displacements (BLC 1 : NOTIONAL LOAD X+Z)

	Node Label	L, D, M	Direction	Magnitude [(k, lb-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	_X+Z_5%	L	X	1e+05

Node Loads and Enforced Displacements (BLC 2 : NOTIONAL LOAD X-Z)

	Node Label	L, D, M	Direction	Magnitude [(k, lb-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	_X-Z_5%	L	X	1e+05

Node Loads and Enforced Displacements (BLC 3 : NOTIONAL LOAD Z+X)

	Node Label	L, D, M	Direction	Magnitude [(k, lb-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	_Z+X_5%	L	Z	1e+05

Node Loads and Enforced Displacements (BLC 4 : NOTIONAL LOAD Z-X)

	Node Label	L, D, M	Direction	Magnitude [(k, lb-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	_Z-X_5%	L	Z	1e+05

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Node Loads and Enforced Displacements (BLC 9 : SEISMIC X+Z)

	Node Label	L, D, M	Direction	Magnitude [(k, lb-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	_X+Z_AX	L	X	333.2

Node Loads and Enforced Displacements (BLC 10 : SEISMIC X-Z)

	Node Label	L, D, M	Direction	Magnitude [(k, lb-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	_X-Z_AX	L	X	333.2

Node Loads and Enforced Displacements (BLC 11 : SEISMIC Z+X)

	Node Label	L, D, M	Direction	Magnitude [(k, lb-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	_Z+X_5%	L	Z	333.2

Node Loads and Enforced Displacements (BLC 12 : SEISMIC Z-X)

	Node Label	L, D, M	Direction	Magnitude [(k, lb-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	_Z-X_5%	L	Z	333.2

Node Loads and Enforced Displacements (BLC 13 : SEISMIC X)

	Node Label	L, D, M	Direction	Magnitude [(k, lb-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	_FIRST_FLOOR_CM	L	X	333.2

Node Loads and Enforced Displacements (BLC 14 : SEISMIC Z)

	Node Label	L, D, M	Direction	Magnitude [(k, lb-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	_FIRST_FLOOR_CM	L	Z	333.2

Wall Panel Distributed Loads (BLC 6 : DEAD)

	Wall Label	Direction	Start Magnitude [lb/ft, F]	End Magnitude [lb/ft, F]	Start Location [(ft, %)]	End Location [(ft, %)]
1	WP5(9ft)	Y	-1447	-1447	0	21.646
2	WP10(9ft)	Y	-3225	-3225	0	37.583
3	WP3(9ft)	Y	-3225	-3225	0	37.917
4	WP2(9ft)	Y	-3225	-3225	0	37.917
5	WP4(9ft)	Y	-3225	-3225	0	37.625
6	WP6(9ft)	Y	-1642	-1642	0	9.427
7	WP9(9ft)	Y	-1203	-1203	0	8.656
8	WP7(9ft)	Y	-1203	-1203	0	8.656
9	WP8(9ft)	Y	-1642	-1642	0	9.427
10	WP11(4.5ft)	Y	-1118	-1118	0	25.281
11	WP13(4.5ft)	Y	-2781	-2781	0	19.208
12	WP14(4.5ft)	Y	-2781	-2781	0	9.584
13	WP18(9ft)	Y	-1424	-1424	0	24.052
14	WP19(9ft)	Y	-3024	-3024	0	42.854

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Wall Panel Distributed Loads (BLC 7 : LIVE)

	Wall Label	Direction	Start Magnitude [lb/ft, F]	End Magnitude [lb/ft, F]	Start Location [(ft, %)]	End Location [(ft, %)]
1	WP5(9ft)	Y	-344	-344	0	21.646
2	WP4(9ft)	Y	-1912	-1912	0	37.625
3	WP2(9ft)	Y	-1912	-1912	0	37.917
4	WP3(9ft)	Y	-1912	-1912	0	37.917
5	WP10(9ft)	Y	-1912	-1912	0	37.583
6	WP6(9ft)	Y	-559	-559	0	9.427
7	WP8(9ft)	Y	-559	-559	0	9.427
8	WP9(9ft)	Y	-134	-134	0	8.656
9	WP7(9ft)	Y	-134	-134	0	8.656
10	WP11(4.5ft)	Y	-202	-202	0	25.281
11	WP13(4.5ft)	Y	-1469	-1469	0	19.208
12	WP14(4.5ft)	Y	-1469	-1469	0	9.584
13	WP18(9ft)	Y	-216	-216	0	24.052
14	WP19(9ft)	Y	-1056	-1056	0	42.854

Basic Load Cases

	BLC Description	Category	Nodal	Distributed
1	NOTIONAL LOAD X+Z	None	1	
2	NOTIONAL LOAD X-Z	None	1	
3	NOTIONAL LOAD Z+X	None	1	
4	NOTIONAL LOAD Z-X	None	1	
6	DEAD	DL		14
7	LIVE	LL		14
8	SNOW	SL		
9	SEISMIC X+Z	ELX+Z	1	
10	SEISMIC X-Z	ELX-Z	1	
11	SEISMIC Z+X	ELZ+X	1	
12	SEISMIC Z-X	ELZ-X	1	
13	SEISMIC X	ELX	1	
14	SEISMIC Z	ELZ	1	

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1																	
2	*** CHECK TORSIONAL IRREGULARITY ***																
3																	
4	X+Z			1	1												
5	X-Z			2	1												
6	Z+X			3	1												
7	Z-X			4	1												
8																	
9	*** GRAVITY LOAD COMBINATIONS ***																
10																	
11	Deflection 1		Y	DL	1												
12	Deflection 2		Y	LL	1												
13	Deflection 3		Y	DL	1	LL	1										
14	IBC 16-1	Yes	Y	DL	1.4												
15	IBC 16-2 (a)	Yes	Y	DL	1.2	LL	1.6	LLS	1.6								
16	IBC 16-2 (b)	Yes	Y	DL	1.2	LL	1.6	LLS	1.6	SL	0.5	SLN	0.5				
17	IBC 16-3 (c)	Yes	Y	DL	1.2	SL	1.6	SLN	1.6	LL	0.5	LLS	1				
18																	
19	*** SEISMIC LOAD COMBINATIONS (STRENGTH) ***																

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Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
20																	
21	IBC 16-5 (a)	Yes	Y	DL	1.2	Sds*DL	0.2	ELX	1	LL	0.5	LLS	1	SL	0.2	SLN	0.7
22	IBC 16-5 (b)	Yes	Y	DL	1.2	Sds*DL	0.2	ELX+Z	1	LL	0.5	LLS	1	SL	0.2	SLN	0.7
23	IBC 16-5 (c)	Yes	Y	DL	1.2	Sds*DL	0.2	ELX-Z	1	LL	0.5	LLS	1	SL	0.2	SLN	0.7
24	IBC 16-5 (d)	Yes	Y	DL	1.2	Sds*DL	0.2	ELZ	1	LL	0.5	LLS	1	SL	0.2	SLN	0.7
25	IBC 16-5 (e)	Yes	Y	DL	1.2	Sds*DL	0.2	ELZ+X	1	LL	0.5	LLS	1	SL	0.2	SLN	0.7
26	IBC 16-5 (f)	Yes	Y	DL	1.2	Sds*DL	0.2	ELZ-X	1	LL	0.5	LLS	1	SL	0.2	SLN	0.7
27	IBC 16-5 (g)	Yes	Y	DL	1.2	Sds*DL	0.2	ELX	-1	LL	0.5	LLS	1	SL	0.2	SLN	0.7
28	IBC 16-5 (h)	Yes	Y	DL	1.2	Sds*DL	0.2	ELX+Z	-1	LL	0.5	LLS	1	SL	0.2	SLN	0.7
29	IBC 16-5 (i)	Yes	Y	DL	1.2	Sds*DL	0.2	ELX-Z	-1	LL	0.5	LLS	1	SL	0.2	SLN	0.7
30	IBC 16-5 (j)	Yes	Y	DL	1.2	Sds*DL	0.2	ELZ	-1	LL	0.5	LLS	1	SL	0.2	SLN	0.7
31	IBC 16-5 (k)	Yes	Y	DL	1.2	Sds*DL	0.2	ELZ+X	-1	LL	0.5	LLS	1	SL	0.2	SLN	0.7
32	IBC 16-5 (l)	Yes	Y	DL	1.2	Sds*DL	0.2	ELZ-X	-1	LL	0.5	LLS	1	SL	0.2	SLN	0.7
33	IBC 16-7 (a)	Yes	Y	DL	0.9	Sds*DL	-0.2	ELX	1								
34	IBC 16-7 (b)	Yes	Y	DL	0.9	Sds*DL	-0.2	ELX+Z	1								
35	IBC 16-7 (c)	Yes	Y	DL	0.9	Sds*DL	-0.2	ELX-Z	1								
36	IBC 16-7 (d)	Yes	Y	DL	0.9	Sds*DL	-0.2	ELZ	1								
37	IBC 16-7 (e)	Yes	Y	DL	0.9	Sds*DL	-0.2	ELZ+X	1								
38	IBC 16-7 (f)	Yes	Y	DL	0.9	Sds*DL	-0.2	ELZ-X	1								
39	IBC 16-7 (g)	Yes	Y	DL	0.9	Sds*DL	-0.2	ELX	-1								
40	IBC 16-7 (h)	Yes	Y	DL	0.9	Sds*DL	-0.2	ELX+Z	-1								
41	IBC 16-7 (i)	Yes	Y	DL	0.9	Sds*DL	-0.2	ELX-Z	-1								
42	IBC 16-7 (j)	Yes	Y	DL	0.9	Sds*DL	-0.2	ELZ	-1								
43	IBC 16-7 (k)	Yes	Y	DL	0.9	Sds*DL	-0.2	ELZ+X	-1								
44	IBC 16-7 (l)	Yes	Y	DL	0.9	Sds*DL	-0.2	ELZ-X	-1								
45																	
46	*** SEISMIC DRIFT ***																
47																	
48	DRIFT X		Y	DL	0.9	Sds*DL	-0.2	ELX	5								
49	DRIFT X+Z		Y	DL	0.9	Sds*DL	-0.2	ELX+Z	5								
50	DRIFT X-Z		Y	DL	0.9	Sds*DL	-0.2	ELX-Z	5								
51	DRIFT Z		Y	DL	0.9	Sds*DL	-0.2	ELZ	5								
52	DRIFT Z+X		Y	DL	0.9	Sds*DL	-0.2	ELZ+X	5								
53	DRIFT Z-X		Y	DL	0.9	Sds*DL	-0.2	ELZ-X	5								

Load Combination Design

	Description	Service	Hot Rolled	Cold Formed	Wood	Concrete	Masonry	Aluminum	Stainless	Connection
1			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	*** CHECK TORSIONAL IRREGULARITY ***		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	X+Z		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	X-Z		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	Z+X		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	Z-X		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	*** GRAVITY LOAD COMBINATIONS ***		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	Deflection 1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	Deflection 2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13	Deflection 3	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
14	IBC 16-1		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
15	IBC 16-2 (a)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
16	IBC 16-2 (b)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
17	IBC 16-3 (c)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
18			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Load Combination Design (Continued)

	Description	Service	Hot Rolled	Cold Formed	Wood	Concrete	Masonry	Aluminum	Stainless	Connection
19	*** SEISMIC LOAD COMBINATIONS (STRENGTH) ***		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
20	IBC 16-5		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
21	IBC 16-5 (a)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
22	IBC 16-5 (b)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
23	IBC 16-5 (c)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
24	IBC 16-5 (d)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
25	IBC 16-5 (e)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
26	IBC 16-5 (f)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
27	IBC 16-5 (g)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
28	IBC 16-5 (h)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
29	IBC 16-5 (i)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
30	IBC 16-5 (j)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
31	IBC 16-5 (k)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
32	IBC 16-5 (l)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
33	IBC 16-7 (a)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
34	IBC 16-7 (b)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
35	IBC 16-7 (c)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
36	IBC 16-7 (d)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
37	IBC 16-7 (e)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
38	IBC 16-7 (f)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
39	IBC 16-7 (g)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
40	IBC 16-7 (h)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
41	IBC 16-7 (i)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
42	IBC 16-7 (j)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
43	IBC 16-7 (k)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
44	IBC 16-7 (l)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
45			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
46	*** SEISMIC DRIFT ***		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
47			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
48	DRIFT X		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
49	DRIFT X+Z		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
50	DRIFT X-Z		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
51	DRIFT Z		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
52	DRIFT Z+X		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
53	DRIFT Z-X		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

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ACI 318-14 Wall Panel Concrete Code Checks (In-Plane)

	Wall Panel	Region	Max UC	LC	Shear UC	LC	Pn*phi[k]	Mn*phi[lb-ft]	Vn*phi[k]
1	WP2	R1	0.045	38	0.059	38	NC	9.34727e+6	790.845
2	WP3	R1	0.045	38	0.059	38	NC	9.34727e+6	790.845
3	WP4	R1	0.052	35	0.062	44	NC	9.56955e+6	784.761
4	WP5	R1	0.311	29	0.333	23	NC	3.10473e+6	451.476
5	WP6	R1	0.058	31	0.054	31	NC	598427.628	196.625
6	WP7	R1	0.246	41	0.169	29	NC	376984.265	180.546
7	WP8	R1	0.435	41	0.094	29	-35.268	7296.826	83.213
8		R2	0.037	29	0.047	31	NC	137032.596	90.382
9		R3	0.363	40	0.131	28	-20.549	1134.454	23.031
10	WP9	R1	0.245	41	0.147	29	NC	376984.265	180.546
11	WP10	R1	0.049	33	0.069	26	NC	8.39737e+6	812.147
12	WP11	R1	0.083	28	0.255	22	NC	4.21045e+6	527.303
13	WP12	R1	0.04	28	0.092	22	NC	1.84707e+7	1470.221
14	WP13	R1	0.067	37	0.108	43	NC	2.45289e+6	400.636
15	WP14	R1	0.124	43	0.078	43	NC	483392.094	199.887
16	WP15	R1	0.02	31	0.038	31	NC	9.50408e+6	1117.048
17	WP16	R1	0.039	37	0.04	25	NC	229680.457	193.846

ACI 318-14 Wall Panel Concrete Code Checks (In-Plane) (Continued)

	Wall Panel	Region	Max UC	LC	Shear UC	LC	Pn*phi[k]	Mn*phi[lb-ft]	Vn*phi[k]
18	WP17	R1	0.027	43	0.024	26	NC	2.15076e+6	557.323
19	WP18	R1	0.077	22	0.145	28	NC	3.83021e+6	501.665
20		R1	0.046	41	0.089	37	NC	1.18972e+7	893.829

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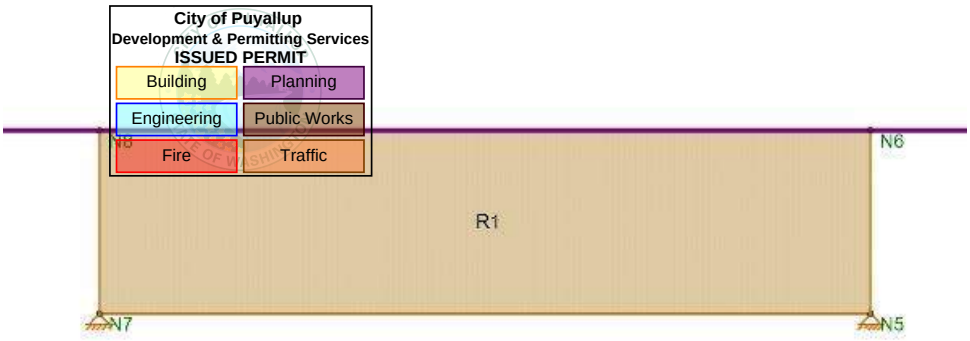
Concrete Wall Reinforcement

	Wall	Region	Thickness[in]	Hor. Bar Size	Vert. Bar Size	Diag. Bar Size
1	WP2	R1	8	#5@15in oc (ctr)	#5@15in oc (ctr)	
2	WP3	R1	8	#5@15in oc (ctr)	#5@15in oc (ctr)	
3	WP4	R1	8	#5@15in oc (ctr)	#5@15in oc (ctr)	
4	WP5	R1	8	#5@15in oc (ctr)	#5@15in oc (ctr)	
5	WP6	R1	8	#5@15in oc (ctr)	#5@15in oc (ctr)	
6	WP7	R1	8	#5@15in oc (ctr)	#5@15in oc (ctr)	
7	WP8	R1	8	#5@15in oc (ctr)	#5@15in oc (ctr)	
8		R2	8	#5@15in oc (ctr)	#5@15in oc (ctr)	Not Designed
9		R3	8	#5@15in oc (ctr)	#5@8.625in oc (ctr)	
10	WP9	R1	8	#5@15in oc (ctr)	#5@15in oc (ctr)	
11	WP10	R1	8	#5@15in oc (ctr)	#5@15in oc (ctr)	
12	WP11	R1	8	#5@15in oc (ctr)	#5@15in oc (ctr)	
13	WP12	R1	24	#5@12in oc (ef)	#7@13in oc (ef)	
14	WP13	R1	8	#5@15in oc (ctr)	#5@15in oc (ctr)	
15	WP14	R1	8	#5@15in oc (ctr)	#5@15in oc (ctr)	
16	WP15	R1	24	#5@12in oc (ef)	#7@13in oc (ef)	
17	WP16	R1	24	#5@12in oc (ef)	#7@13in oc (ef)	
18	WP17	R1	24	#5@12in oc (ef)	#7@13in oc (ef)	
19	WP18	R1	8	#5@15in oc (ctr)	#5@15in oc (ctr)	
20	WP19	R1	8	#5@15in oc (ctr)	#5@15in oc (ctr)	

Detail Report: WP2

Enveloped Results



Input Data:

Code:	ACI 318-14
Design Rule:	TYPICAL 8" RC CONC WALL
Seismic Rule:	SDR_Conc1
Loc of r/f:	Centered
Outer Bars:	Horizontal
Vert Bar Size:	#5
Horz Bar Size:	#5
Transfer In?:	No
Transfer Out?:	No
Group Wall?:	No

Material Properties:

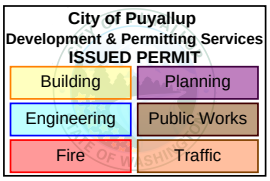
Material Set:	Conc4000NW	Conc Density (k/ft³):	0.145	Vert Bar Fy (ksi):	60
Concrete f'c (ksi):	4	Lambda:	1	Horz Bar Fy (ksi):	60
Concrete E (ksi):	3644	Conc Str Blk:	Rectangular	Steel E (ksi):	29000
Concrete G (ksi):	1584				

Geometry:

Total Height (ft):	9	Int Cover (-z, in):	1	Use Cracked ?:	Yes
Total Length (ft):	37.917	Ext Cover (+z, in):	1	In Icr Factor:	0.7
Thickness (in):	8	Cover Open/Edge (in):	2	Out Icr Factor:	0.35
K:	1				

Design Summary: Enveloped Results

Limit State	Gov. LC	Required	Available	Unity Check	Result
UC Max In-Plane				**0.045**	**PASS**
UC Shear In-Plane				**0.059**	**PASS**
Delta Max In-Plane					
UC Max Out-of-Plane				**0.04**	**PASS**
UC Shear Out-of-Plane				**0**	**PASS**
Delta Max Out-of-Plane					
Wall Reinforcement					
Region Design					**Result**
Region R1 (In-Plane)				**0.059**	**PASS**
Region R1 (Out-of-Plane)				**0.04**	**PASS**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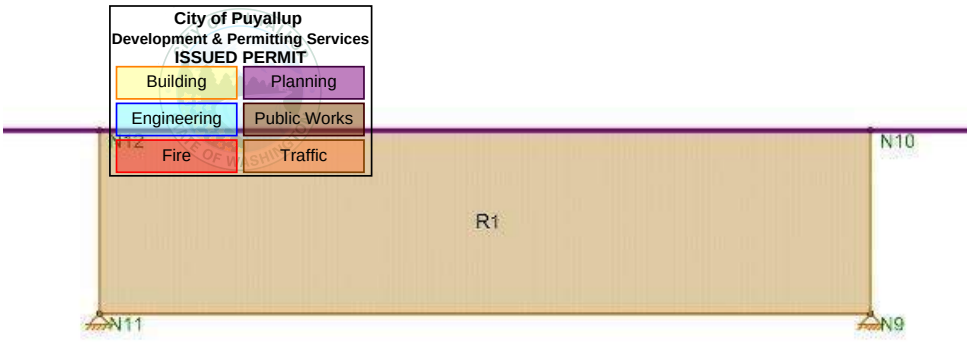
Detail Report: WP3

Enveloped Results



Input Data:

Code:	ACI 318-14
Design Rule:	TYPICAL 8" RC CONC WALL
Seismic Rule:	SDR_Conc1
Loc of r/f:	Centered
Outer Bars:	Horizontal
Vert Bar Size:	#5
Horz Bar Size:	#5
Transfer In?:	No
Transfer Out?:	No
Group Wall?:	No

Material Properties:

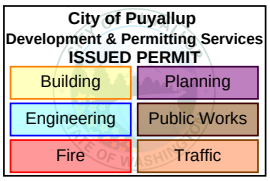
Material Set:	Conc4000NW	Conc Density (k/ft³):	0.145	Vert Bar Fy (ksi):	60
Concrete f'c (ksi):	4	Lambda:	1	Horz Bar Fy (ksi):	60
Concrete E (ksi):	3644	Conc Str Blk:	Rectangular	Steel E (ksi):	29000
Concrete G (ksi):	1584				

Geometry:

Total Height (ft):	9	Int Cover (-z, in):	1	Use Cracked ?:	Yes
Total Length (ft):	37.917	Ext Cover (+z, in):	1	In Icr Factor:	0.7
Thickness (in):	8	Cover Open/Edge (in):	2	Out Icr Factor:	0.35
K:	1				

Design Summary: Enveloped Results

Limit State	Gov. LC	Required	Available	Unity Check	Result
UC Max In-Plane				**0.045**	**PASS**
UC Shear In-Plane				**0.059**	**PASS**
Delta Max In-Plane					
UC Max Out-of-Plane				**0.04**	**PASS**
UC Shear Out-of-Plane				**0**	**PASS**
Delta Max Out-of-Plane					
Wall Reinforcement					
Region Design					**Result**
Region R1 (In-Plane)				**0.059**	**PASS**
Region R1 (Out-of-Plane)				**0.04**	**PASS**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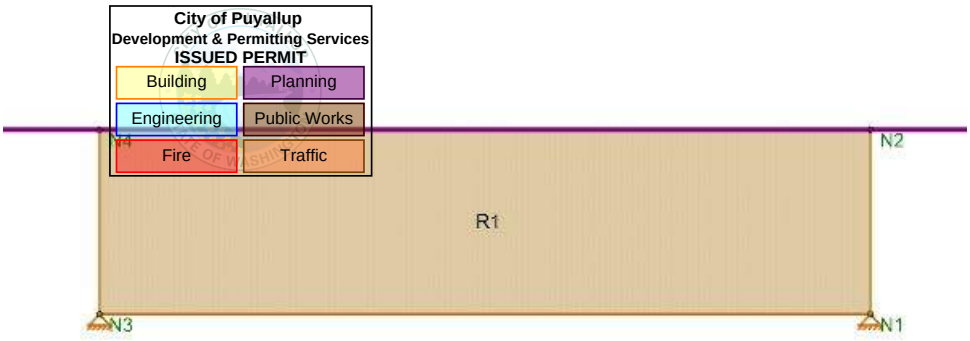
Detail Report: WP4

Enveloped Results



Input Data:

Code:	ACI 318-14
Design Rule:	TYPICAL 8" RC CONC WALL
Seismic Rule:	SDR_Conc1
Loc of r/f:	Centered
Outer Bars:	Horizontal
Vert Bar Size:	#5
Horz Bar Size:	#5
Transfer In?:	No
Transfer Out?:	No
Group Wall?:	No

Material Properties:

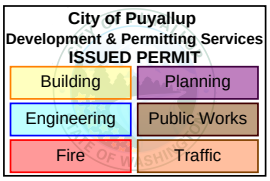
Material Set:	Conc4000NW	Conc Density (k/ft³):	0.145	Vert Bar Fy (ksi):	60
Concrete f'c (ksi):	4	Lambda:	1	Horz Bar Fy (ksi):	60
Concrete E (ksi):	3644	Conc Str Blk:	Rectangular	Steel E (ksi):	29000
Concrete G (ksi):	1584				

Geometry:

Total Height (ft):	9	Int Cover (-z, in):	1	Use Cracked ?:	Yes
Total Length (ft):	37.625	Ext Cover (+z, in):	1	In Icr Factor:	0.7
Thickness (in):	8	Cover Open/Edge (in):	2	Out Icr Factor:	0.35
K:	1				

Design Summary: Enveloped Results

Limit State	Gov. LC	Required	Available	Unity Check	Result
UC Max In-Plane				**0.052**	**PASS**
UC Shear In-Plane				**0.062**	**PASS**
Delta Max In-Plane					
UC Max Out-of-Plane				**0.056**	**PASS**
UC Shear Out-of-Plane				**0.003**	**PASS**
Delta Max Out-of-Plane					
Wall Reinforcement					
Region Design					**Result**
Region R1 (In-Plane)				**0.062**	**PASS**
Region R1 (Out-of-Plane)				**0.056**	**PASS**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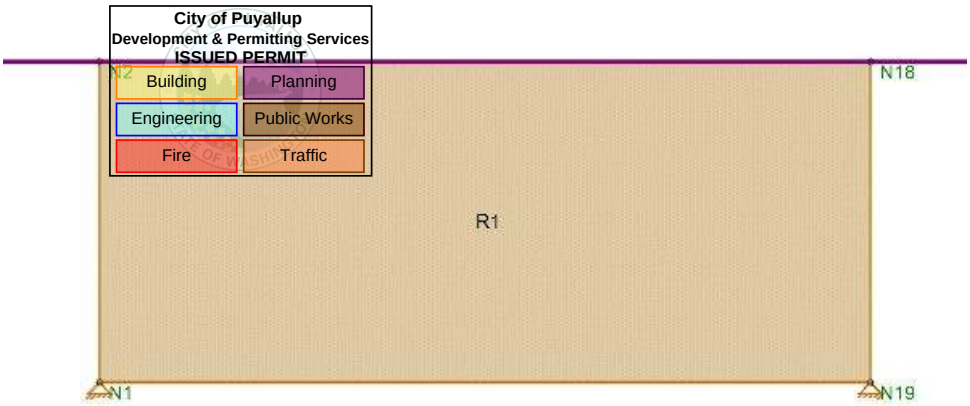
Detail Report: WP5

Enveloped Results



Input Data:

Code:	ACI 318-14
Design Rule:	TYPICAL 8" RC CONC WALL
Seismic Rule:	SDR_Conc1
Loc of r/f:	Centered
Outer Bars:	Horizontal
Vert Bar Size:	#5
Horz Bar Size:	#5
Transfer In?:	No
Transfer Out?:	No
Group Wall?:	No

Material Properties:

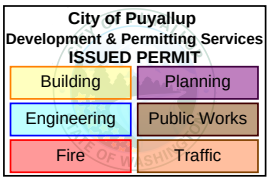
Material Set:	Conc4000NW	Conc Density (k/ft³):	0.145	Vert Bar Fy (ksi):	60
Concrete f'c (ksi):	4	Lambda:	1	Horz Bar Fy (ksi):	60
Concrete E (ksi):	3644	Conc Str Blk:	Rectangular	Steel E (ksi):	29000
Concrete G (ksi):	1584				

Geometry:

Total Height (ft):	9	Int Cover (-z, in):	1	Use Cracked ?:	Yes
Total Length (ft):	21.646	Ext Cover (+z, in):	1	In Icr Factor:	0.7
Thickness (in):	8	Cover Open/Edge (in):	2	Out Icr Factor:	0.35
K:	1				

Design Summary: Enveloped Results

Limit State	Gov. LC	Required	Available	Unity Check	Result
UC Max In-Plane				**0.311**	**PASS**
UC Shear In-Plane				**0.333**	**PASS**
Delta Max In-Plane					
UC Max Out-of-Plane				**0.069**	**PASS**
UC Shear Out-of-Plane				**0.002**	**PASS**
Delta Max Out-of-Plane					
Wall Reinforcement					
Region Design					**Result**
Region R1 (In-Plane)				**0.333**	**PASS**
Region R1 (Out-of-Plane)				**0.069**	**PASS**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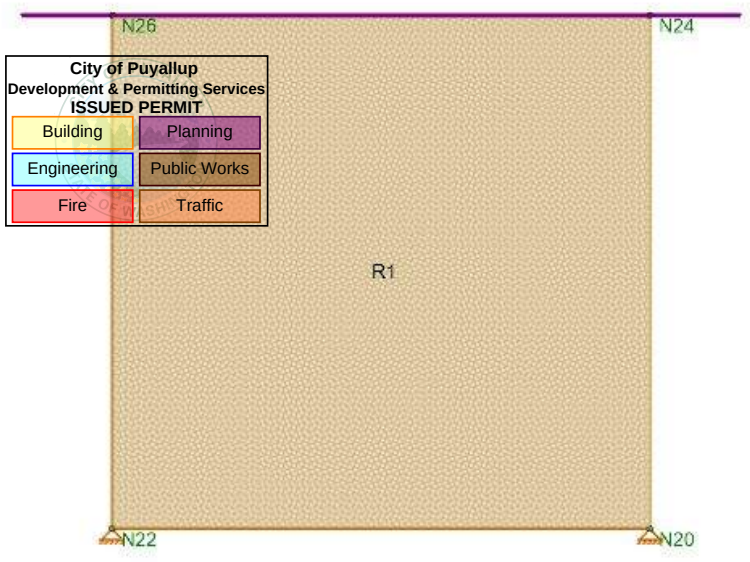
Detail Report: WP6

Enveloped Results



Input Data:

Code:	ACI 318-14
Design Rule:	TYPICAL 8" RC CONC WALL
Seismic Rule:	SDR_Conc1
Loc of r/f:	Centered
Outer Bars:	Horizontal
Vert Bar Size:	#5
Horz Bar Size:	#5
Transfer In?:	No
Transfer Out?:	No
Group Wall?:	No

Material Properties:

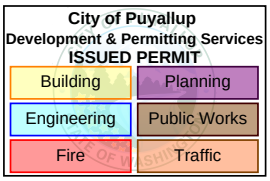
Material Set:	Conc4000NW	Conc Density (k/ft³):	0.145	Vert Bar Fy (ksi):	60
Concrete f'c (ksi):	4	Lambda:	1	Horz Bar Fy (ksi):	60
Concrete E (ksi):	3644	Conc Str Blk:	Rectangular	Steel E (ksi):	29000
Concrete G (ksi):	1584				

Geometry:

Total Height (ft):	9	Int Cover (-z, in):	1	Use Cracked ?:	Yes
Total Length (ft):	9.427	Ext Cover (+z, in):	1	In Icr Factor:	0.7
Thickness (in):	8	Cover Open/Edge (in):	2	Out Icr Factor:	0.35
K:	1				

Design Summary: Enveloped Results

Limit State	Gov. LC	Required	Available	Unity Check	Result
UC Max In-Plane				**0.058**	**PASS**
UC Shear In-Plane				**0.054**	**PASS**
Delta Max In-Plane					
UC Max Out-of-Plane				**0.098**	**PASS**
UC Shear Out-of-Plane				**0.007**	**PASS**
Delta Max Out-of-Plane					
Wall Reinforcement					
Region Design					**Result**
Region R1 (In-Plane)				**0.058**	**PASS**
Region R1 (Out-of-Plane)				**0.098**	**PASS**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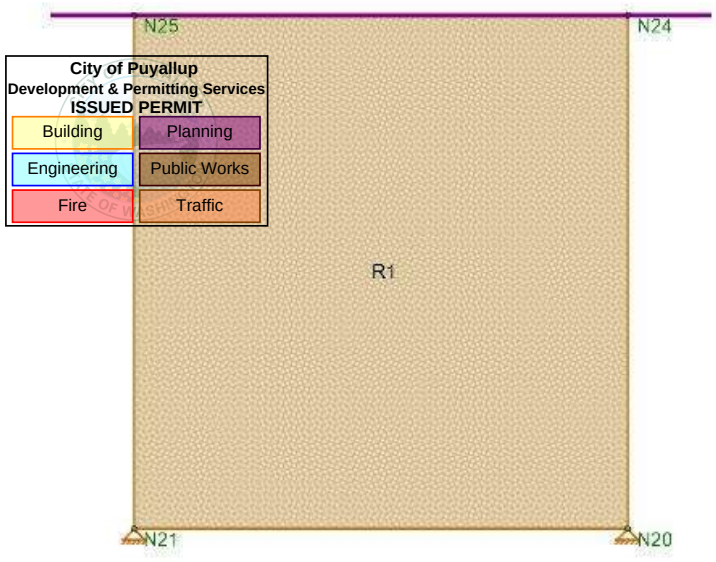
Detail Report: WP7

Enveloped Results



Input Data:

Code:	ACI 318-14
Design Rule:	TYPICAL 8" RC CONC WALL
Seismic Rule:	SDR_Conc1
Loc of r/f:	Centered
Outer Bars:	Horizontal
Vert Bar Size:	#5
Horz Bar Size:	#5
Transfer In?:	No
Transfer Out?:	No
Group Wall?:	No

Material Properties:

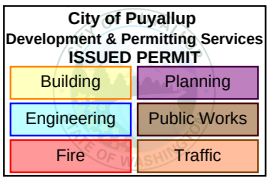
Material Set:	Conc4000NW	Conc Density (k/ft³):	0.145	Vert Bar Fy (ksi):	60
Concrete f'c (ksi):	4	Lambda:	1	Horz Bar Fy (ksi):	60
Concrete E (ksi):	3644	Conc Str Blk:	Rectangular	Steel E (ksi):	29000
Concrete G (ksi):	1584				

Geometry:

Total Height (ft):	9	Int Cover (-z, in):	1	Use Cracked ?:	Yes
Total Length (ft):	8.656	Ext Cover (+z, in):	1	In Icr Factor:	0.7
Thickness (in):	8	Cover Open/Edge (in):	2	Out Icr Factor:	0.35
K:	1				

Design Summary: Enveloped Results

Limit State	Gov. LC	Required	Available	Unity Check	Result
UC Max In-Plane				**0.246**	**PASS**
UC Shear In-Plane				**0.169**	**PASS**
Delta Max In-Plane					
UC Max Out-of-Plane				**0.058**	**PASS**
UC Shear Out-of-Plane				**0.006**	**PASS**
Delta Max Out-of-Plane					
Wall Reinforcement					
Region Design					**Result**
Region R1 (In-Plane)				**0.246**	**PASS**
Region R1 (Out-of-Plane)				**0.058**	**PASS**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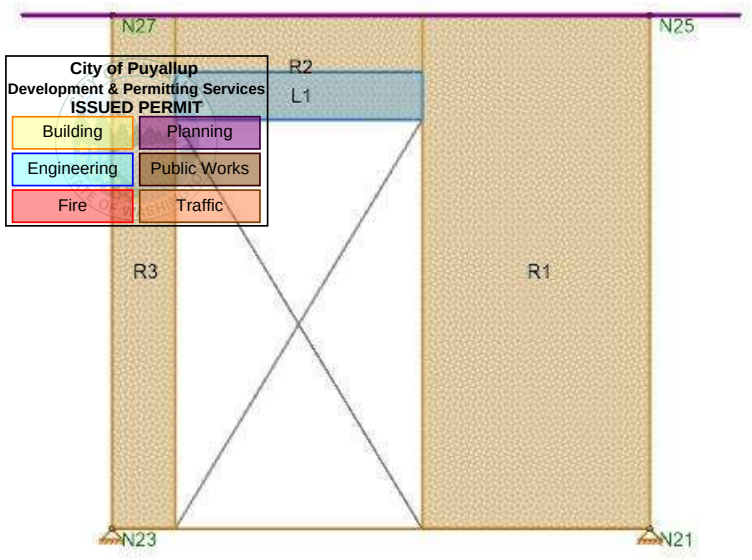
Detail Report: WP8

Enveloped Results



Input Data:

Code:	ACI 318-14
Design Rule:	TYPICAL 8" RC CONC WALL
Seismic Rule:	SDR_Conc1
Loc of r/f:	Centered
Outer Bars:	Horizontal
Vert Bar Size:	#5
Horz Bar Size:	#5
Transfer In?:	No
Transfer Out?:	No
Group Wall?:	No

Material Properties:

Material Set:	Conc4000NW	Conc Density (k/ft³):	0.145	Vert Bar Fy (ksi):	60
Concrete f'c (ksi):	4	Lambda:	1	Horz Bar Fy (ksi):	60
Concrete E (ksi):	3644	Conc Str Blk:	Rectangular	Steel E (ksi):	29000
Concrete G (ksi):	1584				

Geometry:

Total Height (ft):	9	Int Cover (-z, in):	1	Use Cracked ?:	Yes
Total Length (ft):	9.427	Ext Cover (+z, in):	1	In Icr Factor:	0.7
Thickness (in):	8	Cover Open/Edge (in):	2	Out Icr Factor:	0.35
K:	1				

Design Summary: Enveloped Results

Limit State	Gov. LC	Required	Available	Unity Check	Result
UC Max In-Plane				**0.435**	**PASS**
UC Shear In-Plane				**0.131**	**PASS**
Delta Max In-Plane					
UC Max Out-of-Plane				**0.309**	**PASS**
UC Shear Out-of-Plane				**0.037**	**PASS**
Delta Max Out-of-Plane					
Coupling Beam					**PASS**
Wall Reinforcement					
Region Design					**Result**
Region R1 (In-Plane)				**0.435**	**PASS**
Region R2 (In-Plane)				**0.047**	**PASS**

Region R3 (In-Plane)				**0.363**	**PASS**
Region R1 (Out-of-Plane)				**0.309**	**PASS**
Region R2 (Out-of-Plane)				**0.01**	**PASS**
Region R3 (Out-of-Plane)				**0.254**	**PASS**
Opening L1 (In-Plane)					
Opening L1 (Out-Of-Plane)					
Pier	**1**	**0 k**	**0 k**	**0**	**PASS**

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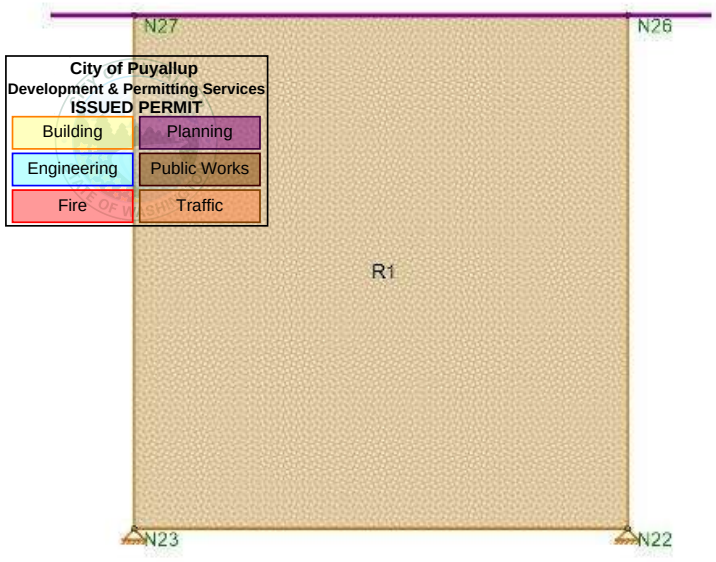
Detail Report: WP9

Enveloped Results



Input Data:

Code:	ACI 318-14
Design Rule:	TYPICAL 8" RC CONC WALL
Seismic Rule:	SDR_Conc1
Loc of r/f:	Centered
Outer Bars:	Horizontal
Vert Bar Size:	#5
Horz Bar Size:	#5
Transfer In?:	No
Transfer Out?:	No
Group Wall?:	No

Material Properties:

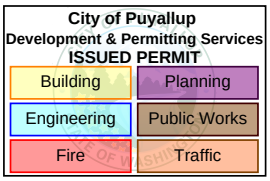
Material Set:	Conc4000NW	Conc Density (k/ft³):	0.145	Vert Bar Fy (ksi):	60
Concrete f'c (ksi):	4	Lambda:	1	Horz Bar Fy (ksi):	60
Concrete E (ksi):	3644	Conc Str Blk:	Rectangular	Steel E (ksi):	29000
Concrete G (ksi):	1584				

Geometry:

Total Height (ft):	9	Int Cover (-z, in):	1	Use Cracked ?:	Yes
Total Length (ft):	8.656	Ext Cover (+z, in):	1	In Icr Factor:	0.7
Thickness (in):	8	Cover Open/Edge (in):	2	Out Icr Factor:	0.35
K:	1				

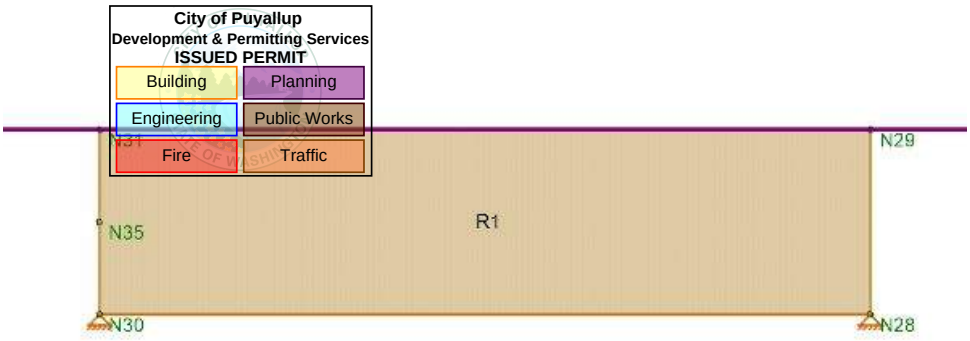
Design Summary: Enveloped Results

Limit State	Gov. LC	Required	Available	Unity Check	Result
UC Max In-Plane				**0.245**	**PASS**
UC Shear In-Plane				**0.147**	**PASS**
Delta Max In-Plane					
UC Max Out-of-Plane				**0.059**	**PASS**
UC Shear Out-of-Plane				**0.004**	**PASS**
Delta Max Out-of-Plane					
Wall Reinforcement					
Region Design					**Result**
Region R1 (In-Plane)				**0.245**	**PASS**
Region R1 (Out-of-Plane)				**0.059**	**PASS**


City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building
Planning
Engineering
Public Works
Fire
Traffic

Detail Report: WP10

Enveloped Results



Input Data:

Code:	ACI 318-14
Design Rule:	TYPICAL 8" RC CONC WALL
Seismic Rule:	SDR_Conc1
Loc of r/f:	Centered
Outer Bars:	Horizontal
Vert Bar Size:	#5
Horz Bar Size:	#5
Transfer In?:	No
Transfer Out?:	No
Group Wall?:	No

Material Properties:

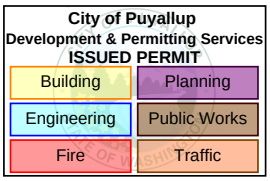
Material Set:	Conc4000NW	Conc Density (k/ft³):	0.145	Vert Bar Fy (ksi):	60
Concrete f'c (ksi):	4	Lambda:	1	Horz Bar Fy (ksi):	60
Concrete E (ksi):	3644	Conc Str Blk:	Rectangular	Steel E (ksi):	29000
Concrete G (ksi):	1584				

Geometry:

Total Height (ft):	9	Int Cover (-z, in):	1	Use Cracked ?:	Yes
Total Length (ft):	37.583	Ext Cover (+z, in):	1	In Icr Factor:	0.7
Thickness (in):	8	Cover Open/Edge (in):	2	Out Icr Factor:	0.35
K:	1				

Design Summary: Enveloped Results

Limit State	Gov. LC	Required	Available	Unity Check	Result
UC Max In-Plane				**0.049**	**PASS**
UC Shear In-Plane				**0.069**	**PASS**
Delta Max In-Plane					
UC Max Out-of-Plane				**0.043**	**PASS**
UC Shear Out-of-Plane				**0.002**	**PASS**
Delta Max Out-of-Plane					
Wall Reinforcement					
Region Design					**Result**
Region R1 (In-Plane)				**0.069**	**PASS**
Region R1 (Out-of-Plane)				**0.043**	**PASS**


City of Puyallup
Development & Permitting Services
ISSUED PERMIT
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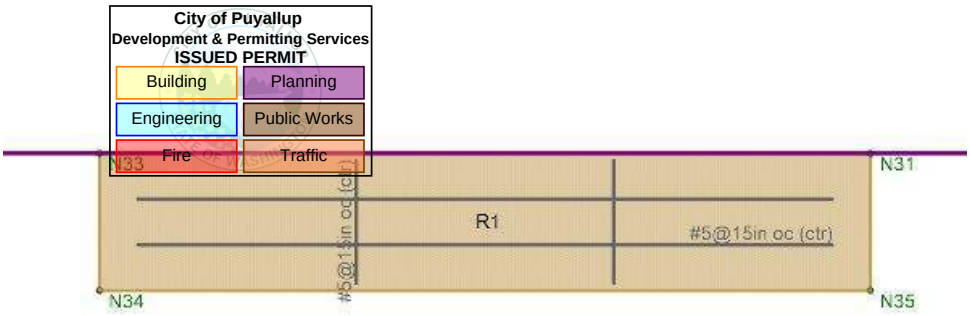
Planning
Engineering
Public Works
Fire
Traffic

Detail Report: WP11

Enveloped Results



Input Data:

Code:	ACI 318-14
Design Rule:	TYPICAL 8" RC CONC WALL
Seismic Rule:	None
Loc of r/f:	Centered
Outer Bars:	Horizontal
Vert Bar Size:	#5
Horz Bar Size:	#5
Transfer In?:	No
Transfer Out?:	No
Group Wall?:	No

Material Properties:

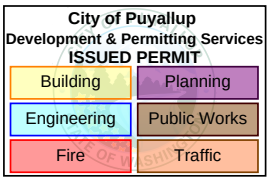
Material Set:	Conc4000NW	Conc Density (k/ft³):	0.145	Vert Bar Fy (ksi):	60
Concrete f'c (ksi):	4	Lambda:	1	Horz Bar Fy (ksi):	60
Concrete E (ksi):	3644	Conc Str Blk:	Rectangular	Steel E (ksi):	29000
Concrete G (ksi):	1584				

Geometry:

Total Height (ft):	4.5	Int Cover (-z, in):	1	Use Cracked ?:	Yes
Total Length (ft):	25.281	Ext Cover (+z, in):	1	In Icr Factor:	0.7
Thickness (in):	8	Cover Open/Edge (in):	2	Out Icr Factor:	0.35
K:	1				

Design Summary: Enveloped Results

Limit State	Gov. LC	Required	Available	Unity Check	Result
UC Max In-Plane				**0.083**	**PASS**
UC Shear In-Plane				**0.255**	**PASS**
Delta Max In-Plane					
UC Max Out-of-Plane				**0.036**	**PASS**
UC Shear Out-of-Plane				**0.003**	**PASS**
Delta Max Out-of-Plane					
Wall Reinforcement					
Region Design					**Result**
Region R1 (In-Plane)				**0.255**	**PASS**
Region R1 (Out-of-Plane)				**0.036**	**PASS**


City of Puyallup
Development & Permitting Services
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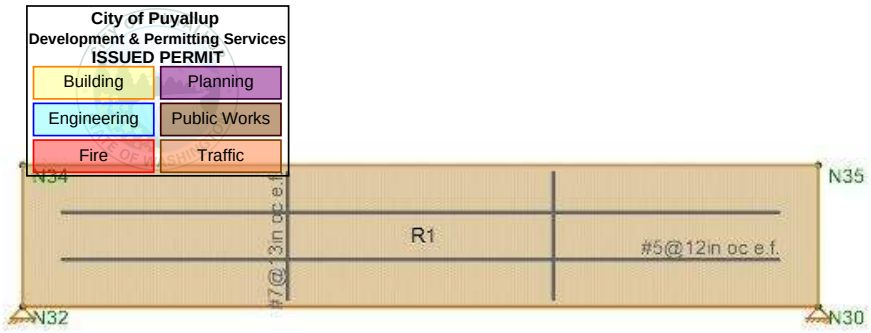
Engineering
Public Works
Fire
Traffic

Detail Report: WP12

Enveloped Results



Input Data:

Code:	ACI 318-14
Design Rule:	MAT FOUND STEP
Seismic Rule:	None
Loc of r/f:	Each Face
Outer Bars:	Horizontal
Vert Bar Size:	#7
Horz Bar Size:	#5
Transfer In?:	No
Transfer Out?:	No
Group Wall?:	No

Material Properties:

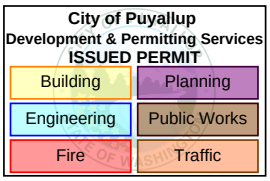
Material Set:	Conc4000NW	Conc Density (k/ft^3):	0.145	Vert Bar Fy (ksi):	60
Concrete f'c (ksi):	4	Lambda:	1	Horz Bar Fy (ksi):	60
Concrete E (ksi):	3644	Conc Str Blk:	Rectangular	Steel E (ksi):	29000
Concrete G (ksi):	1584				

Geometry:

Total Height (ft):	4.5	Int Cover (-z, in):	1	Use Cracked ?:	Yes
Total Length (ft):	25.281	Ext Cover (+z, in):	1	In Icr Factor:	0.7
Thickness (in):	24	Cover Open/Edge (in):	2	Out Icr Factor:	0.35
K:	1				

Design Summary: Enveloped Results

Limit State	Gov. LC	Required	Available	Unity Check	Result
UC Max In-Plane				**0.04**	**PASS**
UC Shear In-Plane				**0.092**	**PASS**
Delta Max In-Plane					
UC Max Out-of-Plane				**0.001**	**PASS**
UC Shear Out-of-Plane				**0.001**	**PASS**
Delta Max Out-of-Plane					
Wall Reinforcement					
Region Design					**Result**
Region R1 (In-Plane)				**0.092**	**PASS**
Region R1 (Out-of-Plane)				**0.001**	**PASS**


City of Puyallup
Development & Permitting Services
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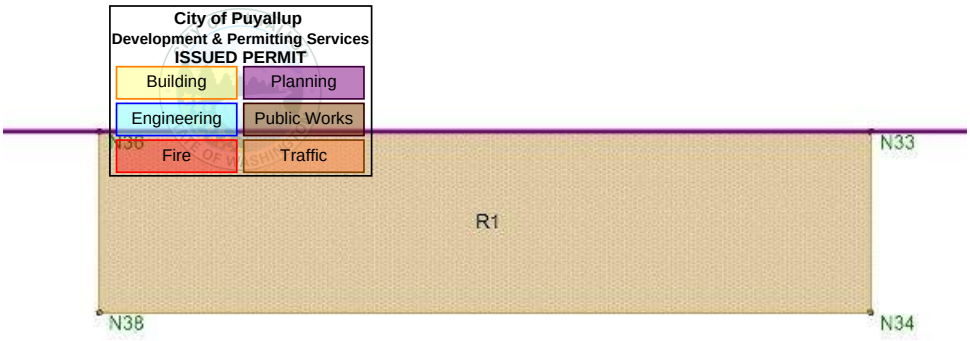
Planning
Engineering
Public Works
Fire
Traffic

Detail Report: WP13

Enveloped Results



Input Data:

Code:	ACI 318-14
Design Rule:	TYPICAL 8" RC CONC WALL
Seismic Rule:	SDR_Conc1
Loc of r/f:	Centered
Outer Bars:	Horizontal
Vert Bar Size:	#5
Horz Bar Size:	#5
Transfer In?:	No
Transfer Out?:	No
Group Wall?:	No

Material Properties:

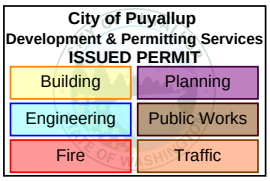
Material Set:	Conc4000NW	Conc Density (k/ft³):	0.145	Vert Bar Fy (ksi):	60
Concrete f'c (ksi):	4	Lambda:	1	Horz Bar Fy (ksi):	60
Concrete E (ksi):	3644	Conc Str Blk:	Rectangular	Steel E (ksi):	29000
Concrete G (ksi):	1584				

Geometry:

Total Height (ft):	4.5	Int Cover (-z, in):	1	Use Cracked ?:	Yes
Total Length (ft):	19.208	Ext Cover (+z, in):	1	In Icr Factor:	0.7
Thickness (in):	8	Cover Open/Edge (in):	2	Out Icr Factor:	0.35
K:	1				

Design Summary: Enveloped Results

Limit State	Gov. LC	Required	Available	Unity Check	Result
UC Max In-Plane				**0.067**	**PASS**
UC Shear In-Plane				**0.108**	**PASS**
Delta Max In-Plane					
UC Max Out-of-Plane				**0.07**	**PASS**
UC Shear Out-of-Plane				**0.005**	**PASS**
Delta Max Out-of-Plane					
Wall Reinforcement					
Region Design					**Result**
Region R1 (In-Plane)				**0.108**	**PASS**
Region R1 (Out-of-Plane)				**0.07**	**PASS**


City of Puyallup
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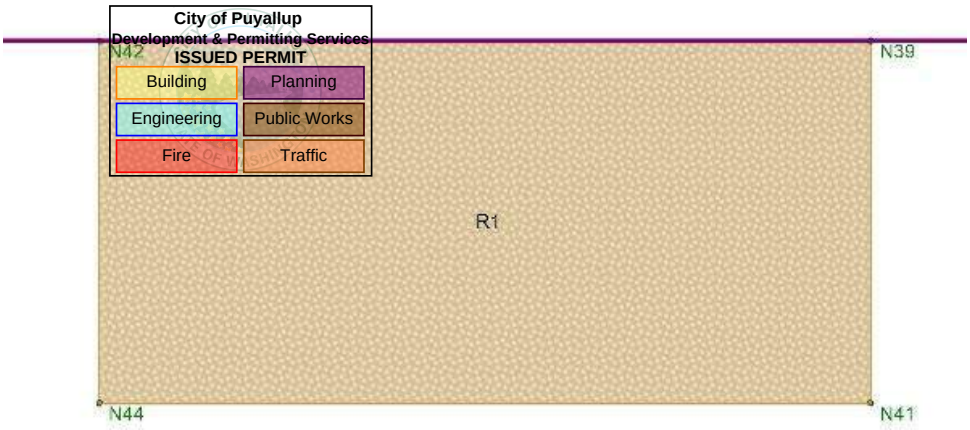
Traffic

Detail Report: WP14

Enveloped Results



Input Data:

Code:	ACI 318-14
Design Rule:	TYPICAL 8" RC CONC WALL
Seismic Rule:	SDR_Conc1
Loc of r/f:	Centered
Outer Bars:	Horizontal
Vert Bar Size:	#5
Horz Bar Size:	#5
Transfer In?:	No
Transfer Out?:	No
Group Wall?:	No

Material Properties:

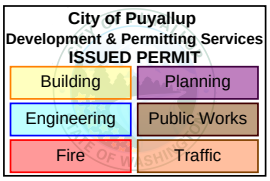
Material Set:	Conc4000NW	Conc Density (k/ft³):	0.145	Vert Bar Fy (ksi):	60
Concrete f'c (ksi):	4	Lambda:	1	Horz Bar Fy (ksi):	60
Concrete E (ksi):	3644	Conc Str Blk:	Rectangular	Steel E (ksi):	29000
Concrete G (ksi):	1584				

Geometry:

Total Height (ft):	4.5	Int Cover (-z, in):	1	Use Cracked ?:	Yes
Total Length (ft):	9.583	Ext Cover (+z, in):	1	In Icr Factor:	0.7
Thickness (in):	8	Cover Open/Edge (in):	2	Out Icr Factor:	0.35
K:	1				

Design Summary: Enveloped Results

Limit State	Gov. LC	Required	Available	Unity Check	Result
UC Max In-Plane				**0.124**	**PASS**
UC Shear In-Plane				**0.078**	**PASS**
Delta Max In-Plane					
UC Max Out-of-Plane				**0.07**	**PASS**
UC Shear Out-of-Plane				**0.006**	**PASS**
Delta Max Out-of-Plane					
Wall Reinforcement					
Region Design					**Result**
Region R1 (In-Plane)				**0.124**	**PASS**
Region R1 (Out-of-Plane)				**0.07**	**PASS**


City of Puyallup
Development & Permitting Services
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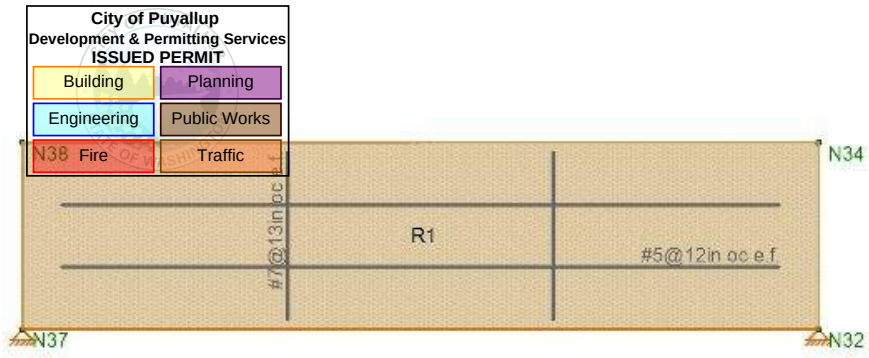
Public Works
Fire
Traffic

Detail Report: WP15

Enveloped Results



Input Data:

Code:	ACI 318-14
Design Rule:	MAT FOUND STEP
Seismic Rule:	None
Loc of r/f:	Each Face
Outer Bars:	Horizontal
Vert Bar Size:	#7
Horz Bar Size:	#5
Transfer In?:	No
Transfer Out?:	No
Group Wall?:	No

Material Properties:

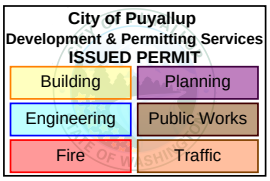
Material Set:	Conc4000NW	Conc Density (k/ft^3):	0.145	Vert Bar Fy (ksi):	60
Concrete f'c (ksi):	4	Lambda:	1	Horz Bar Fy (ksi):	60
Concrete E (ksi):	3644	Conc Str Blk:	Rectangular	Steel E (ksi):	29000
Concrete G (ksi):	1584				

Geometry:

Total Height (ft):	4.5	Int Cover (-z, in):	1	Use Cracked ?:	Yes
Total Length (ft):	19.208	Ext Cover (+z, in):	1	In Icr Factor:	0.7
Thickness (in):	24	Cover Open/Edge (in):	2	Out Icr Factor:	0.35
K:	1				

Design Summary: Enveloped Results

Limit State	Gov. LC	Required	Available	Unity Check	Result
UC Max In-Plane				**0.02**	**PASS**
UC Shear In-Plane				**0.038**	**PASS**
Delta Max In-Plane					
UC Max Out-of-Plane				**0.001**	**PASS**
UC Shear Out-of-Plane				**0.001**	**PASS**
Delta Max Out-of-Plane					
Wall Reinforcement					
Region Design					**Result**
Region R1 (In-Plane)				**0.038**	**PASS**
Region R1 (Out-of-Plane)				**0.001**	**PASS**


City of Puyallup
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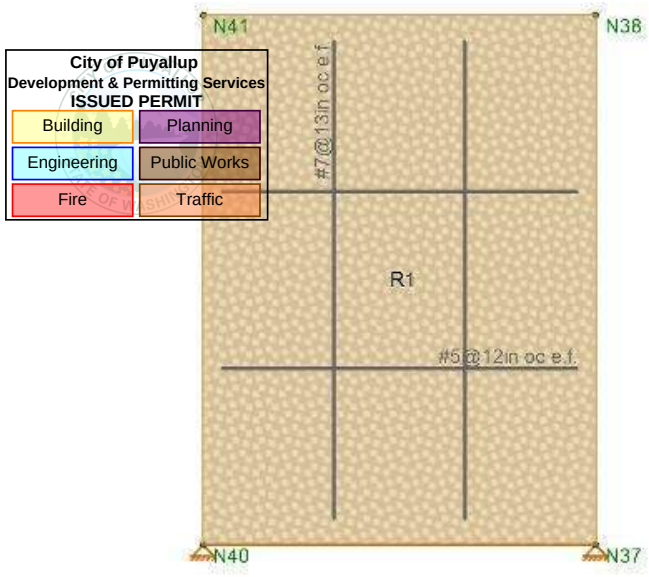
Detail Report: WP16

Enveloped Results



Input Data:

Code:	ACI 318-14
Design Rule:	MAT FOUND STEP
Seismic Rule:	None
Loc of r/f:	Each Face
Outer Bars:	Horizontal
Vert Bar Size:	#7
Horz Bar Size:	#5
Transfer In?:	No
Transfer Out?:	No
Group Wall?:	No

Material Properties:

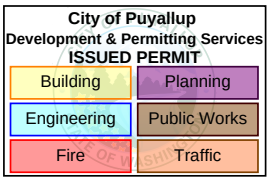
Material Set:	Conc4000NW	Conc Density (k/ft^3):	0.145	Vert Bar Fy (ksi):	60
Concrete f'c (ksi):	4	Lambda:	1	Horz Bar Fy (ksi):	60
Concrete E (ksi):	3644	Conc Str Blk:	Rectangular	Steel E (ksi):	29000
Concrete G (ksi):	1584				

Geometry:

Total Height (ft):	4.5	Int Cover (-z, in):	1	Use Cracked ?:	Yes
Total Length (ft):	3.333	Ext Cover (+z, in):	1	In Icr Factor:	0.7
Thickness (in):	24	Cover Open/Edge (in):	2	Out Icr Factor:	0.35
K:	1				

Design Summary: Enveloped Results

Limit State	Gov. LC	Required	Available	Unity Check	Result
UC Max In-Plane				**0.039**	**PASS**
UC Shear In-Plane				**0.04**	**PASS**
Delta Max In-Plane					
UC Max Out-of-Plane				**0**	**PASS**
UC Shear Out-of-Plane				**0**	**PASS**
Delta Max Out-of-Plane					
Wall Reinforcement					
Region Design					**Result**
Region R1 (In-Plane)				**0.04**	**PASS**
Region R1 (Out-of-Plane)				**0**	**PASS**


City of Puyallup
Development & Permitting Services
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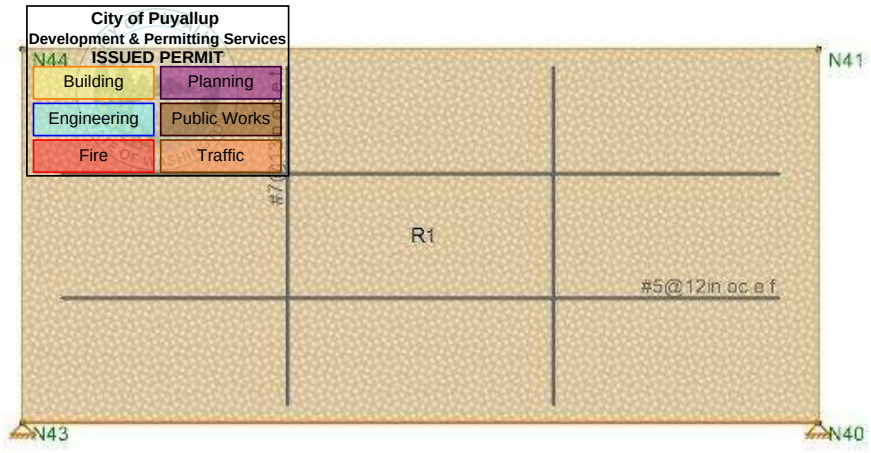
Fire
Traffic

Detail Report: WP17

Enveloped Results



Input Data:

Code:	ACI 318-14
Design Rule:	MAT FOUND STEP
Seismic Rule:	None
Loc of r/f:	Each Face
Outer Bars:	Horizontal
Vert Bar Size:	#7
Horz Bar Size:	#5
Transfer In?:	No
Transfer Out?:	No
Group Wall?:	No

Material Properties:

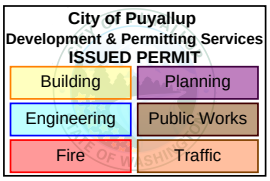
Material Set:	Conc4000NW	Conc Density (k/ft^3):	0.145	Vert Bar Fy (ksi):	60
Concrete f'c (ksi):	4	Lambda:	1	Horz Bar Fy (ksi):	60
Concrete E (ksi):	3644	Conc Str Blk:	Rectangular	Steel E (ksi):	29000
Concrete G (ksi):	1584				

Geometry:

Total Height (ft):	4.5	Int Cover (-z, in):	1	Use Cracked ?:	Yes
Total Length (ft):	9.583	Ext Cover (+z, in):	1	In Icr Factor:	0.7
Thickness (in):	24	Cover Open/Edge (in):	2	Out Icr Factor:	0.35
K:	1				

Design Summary: Enveloped Results

Limit State	Gov. LC	Required	Available	Unity Check	Result
UC Max In-Plane				**0.027**	**PASS**
UC Shear In-Plane				**0.024**	**PASS**
Delta Max In-Plane					
UC Max Out-of-Plane				**0**	**PASS**
UC Shear Out-of-Plane				**0.001**	**PASS**
Delta Max Out-of-Plane					
Wall Reinforcement					
Region Design					**Result**
Region R1 (In-Plane)				**0.027**	**PASS**
Region R1 (Out-of-Plane)				**0.001**	**PASS**


City of Puyallup
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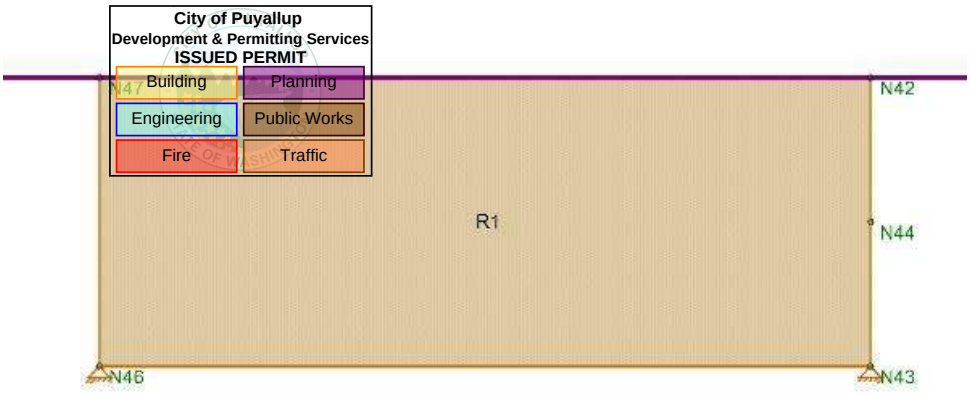
Detail Report: WP18

Enveloped Results



Input Data:

Code:	ACI 318-14
Design Rule:	TYPICAL 8" RC CONC WALL
Seismic Rule:	SDR_Conc1
Loc of r/f:	Centered
Outer Bars:	Horizontal
Vert Bar Size:	#5
Horz Bar Size:	#5
Transfer In?:	No
Transfer Out?:	No
Group Wall?:	No

Material Properties:

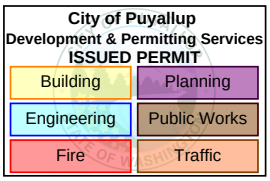
Material Set:	Conc4000NW	Conc Density (k/ft³):	0.145	Vert Bar Fy (ksi):	60
Concrete f'c (ksi):	4	Lambda:	1	Horz Bar Fy (ksi):	60
Concrete E (ksi):	3644	Conc Str Blk:	Rectangular	Steel E (ksi):	29000
Concrete G (ksi):	1584				

Geometry:

Total Height (ft):	9	Int Cover (-z, in):	1	Use Cracked ?:	Yes
Total Length (ft):	24.052	Ext Cover (+z, in):	1	In Icr Factor:	0.7
Thickness (in):	8	Cover Open/Edge (in):	2	Out Icr Factor:	0.35
K:	1				

Design Summary: Enveloped Results

Limit State	Gov. LC	Required	Available	Unity Check	Result
UC Max In-Plane				**0.077**	**PASS**
UC Shear In-Plane				**0.145**	**PASS**
Delta Max In-Plane					
UC Max Out-of-Plane				**0.046**	**PASS**
UC Shear Out-of-Plane				**0.003**	**PASS**
Delta Max Out-of-Plane					
Wall Reinforcement					
Region Design					**Result**
Region R1 (In-Plane)				**0.145**	**PASS**
Region R1 (Out-of-Plane)				**0.046**	**PASS**


City of Puyallup
Development & Permitting Services
ISSUED PERMIT
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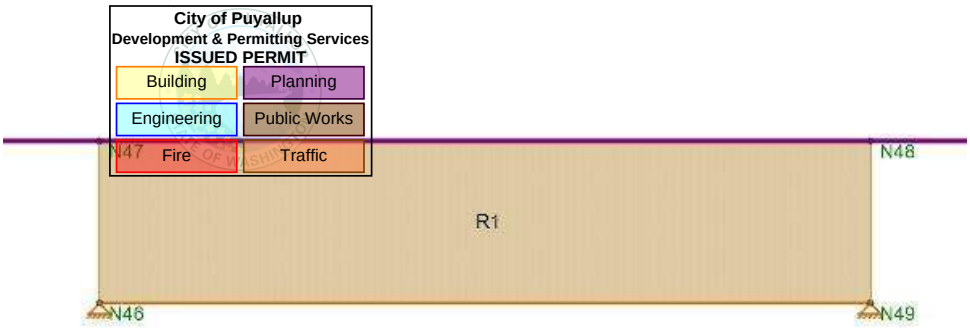
Public Works
Fire
Traffic

Detail Report: WP19

Enveloped Results



Input Data:

Code:	ACI 318-14
Design Rule:	TYPICAL 8" RC CONC WALL
Seismic Rule:	SDR_Conc1
Loc of r/f:	Centered
Outer Bars:	Horizontal
Vert Bar Size:	#5
Horz Bar Size:	#5
Transfer In?:	No
Transfer Out?:	No
Group Wall?:	No

Material Properties:

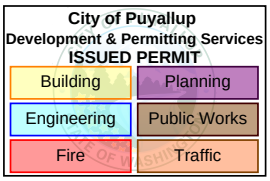
Material Set:	Conc4000NW	Conc Density (k/ft³):	0.145	Vert Bar Fy (ksi):	60
Concrete f'c (ksi):	4	Lambda:	1	Horz Bar Fy (ksi):	60
Concrete E (ksi):	3644	Conc Str Blk:	Rectangular	Steel E (ksi):	29000
Concrete G (ksi):	1584				

Geometry:

Total Height (ft):	9	Int Cover (-z, in):	1	Use Cracked ?:	Yes
Total Length (ft):	42.854	Ext Cover (+z, in):	1	In Icr Factor:	0.7
Thickness (in):	8	Cover Open/Edge (in):	2	Out Icr Factor:	0.35
K:	1				

Design Summary: Enveloped Results

Limit State	Gov. LC	Required	Available	Unity Check	Result
UC Max In-Plane				**0.046**	**PASS**
UC Shear In-Plane				**0.089**	**PASS**
Delta Max In-Plane					
UC Max Out-of-Plane				**0.04**	**PASS**
UC Shear Out-of-Plane				**0.001**	**PASS**
Delta Max Out-of-Plane					
Wall Reinforcement					
Region Design					**Result**
Region R1 (In-Plane)				**0.089**	**PASS**
Region R1 (Out-of-Plane)				**0.04**	**PASS**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Section 9.0
Upper Wood Levels Lateral Design

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Wind Speed	97	Length	184.0 ft
Risk Category	II	Width	52.0 ft
Kzt	1	Average Parapet Height	1.0 ft

Wind Pressures (PSF)

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Height	Kz	Kzt	Combined WW + LW		Combined WW + LW w/ Kzt	
			Normal to Ridge	Parallel to Ridge	Normal to Ridge	Parallel to Ridge
15.0 ft	0.57	1.00	14.6	10.9	14.6	10.9
20.0 ft	0.62	1.00	15.3	11.6	15.3	11.6
25.0 ft	0.67	1.00	15.8	12.2	15.8	12.2
30.0 ft	0.70	1.00	16.3	12.7	16.3	12.7
39.0 ft	0.76	1.00	17.1	13.4	17.1	13.4
40.0 ft	0.76	1.00	17.1	13.5	17.1	13.5

Level	Height above Grade	Dimension North/South	Dimension East/West	Story Height	Shear North/South	Shear East/West
Parpet	40.0 ft	52.0 ft	184.0 ft	1.0 ft	889 lbs	3146 lbs
Level 3	39.0 ft	52.0 ft	184.0 ft	10.0 ft	8892 lbs	31464 lbs
Level 2	29.0 ft	52.0 ft	184.0 ft	10.0 ft	8476 lbs	29992 lbs
Level 1	19.0 ft	52.0 ft	184.0 ft	10.0 ft	7956 lbs	28152 lbs

Design Shear at Each Diaphgram - Ultimate Level Forces

Level	Shear North/South	Shear East/West
Roof	5.3k	18.9k
Level 3	8.7k	30.7k
Level 2	8.2k	29.1k
SUM	**22.2k**	**78.7k**

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Seismic Weights

Roof	Area	Weight
Roof	9645 ft2	145 k
Solar Ready Area	3858 ft2	15 k
Interior Walls	6050 ft2	61 k
Perimeter Walls	2596 ft2	39 k
TOTAL		**260 k**

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Level 3	Area	Weight
Floor	9645 ft2	270 k
Interior Walls	9900 ft2	99 k
Perimeter Walls	4248 ft2	64 k
TOTAL		**433 k**

Level 2	Area	Weight
Floor	9645 ft2	270 k
Interior Walls	9900 ft2	99 k
Perimeter Walls	4248 ft2	64 k
TOTAL		**433 k**

Transfer Level 1	Area	Weight
Floor	8795 ft2	642 k
Interior Wood Walls	4950 ft2	50 k
Perimeter Wood Walls	2124 ft2	32 k
Concrete Walls	1400 ft2	147 k
TOTAL		**870 k**

Total Building Weight (Excl. Transfer Level 1)	1125 k
Base Shear	145 k
Amplified Transfer Force	**188 k**

Wood Shearwall Factors

Sds	0.833
Sd1	0.661
R	6.5
I	1
rho	1
Cs =	0.128
T =	0.45 s
TL =	6 s
Cs Max =	0.224
Cs Min =	0.037

Concrete Shearwall Factors

Sds	0.833
Sd1	0.661
R	5
I	1
rho	1
Cs =	0.167
T =	0.26 s
TL =	6 s
Cs Max =	0.509
Cs Min =	0.037

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Seismic Force Distribution

Level	Wi	Hi	WiHi	Dist	V
Roof	260 k	39.00 ft	10122 k-ft	0.328 k	47.4 k
Level 3	433 k	29.00 ft	12551 k-ft	0.406 k	58.7 k
Level 2	433 k	19.00 ft	8223 k-ft	0.266 k	38.5 k
Sum	**1125 k**		**30896 k-ft**	**1.000 k**	**144.5 k**

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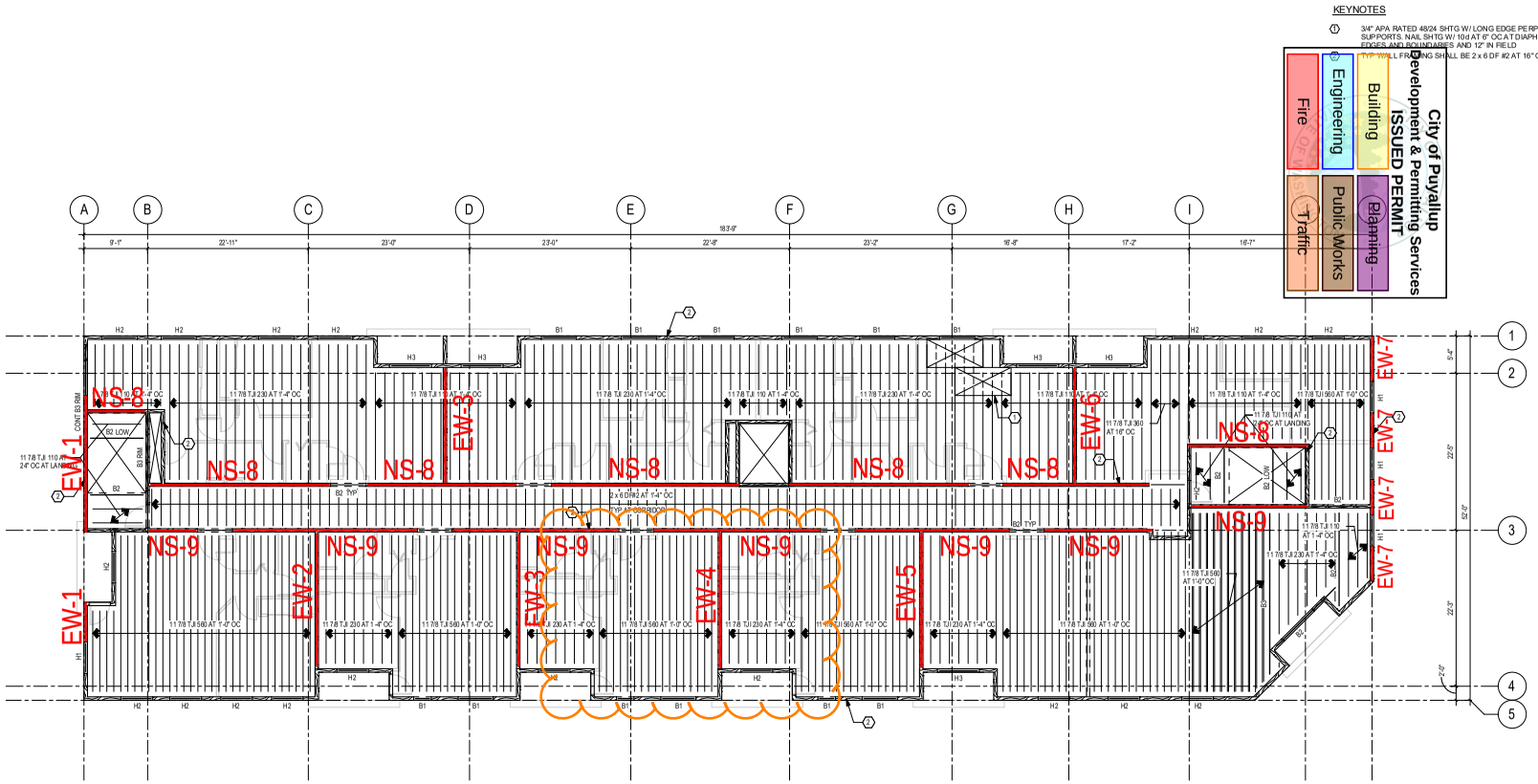
Base Shear 144.5 k



1 THIRD FLOOR FRAMING PLAN

1/8" = 1'-0"

WOOD BEAM SCHEDULE		
MARK	TYPE	HANGER ①
B1	1 3/4 x 11 7/8 1.55E LSL	HUS 1.81 / 10
B2	3 1/2 x 11 7/8 1.55E LSL	HHUS 4 10
B3	5 1/4 x 11 7/8 2.0E LSL	HGUS 5.5 / 10

① SKEW HGR AS REQ'D

WOOD HEADER SCHEDULE	
MARK	TYPE
H1	(2) 2 x 8 DF No. 1
H2	4 x 8 DF No. 1
H3	4 x 10 DF No. 1

0 4' 8' 16'
SCALE IN FEET

PRELIMINARY NOT FOR CONSTRUCTION

7520 Bridgeport Way West
Lakewood, WA 98499
Phone: (253) 581-6000
Website: www.jgarch.net
James Guerrero Architects, INC.

SCHEMATIC DESIGN

REET APARTMENTS

LOOR FRAMING PLAN

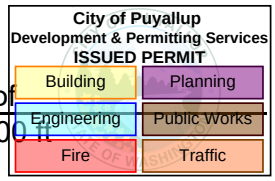
PRMU20220123

PROJECT NO.
2190606.20

PRMU20220123

Shearwall Design

Location:	**1** - East/West (Grid A)	R	6.5	(Wood SWs)
Totall Length of Shearwall:	25.75 ft	R	5	(Conc SWs)
Minimum Pier Length:	6.25 ft	Omega	2.5	
Wall Height:	10.00 ft (measured from top of sheathing to bottom of joist)			
2W/H:	1.00			



	Ultimate Loads		Allowable Loads	
Roof	V wind:	1.7 k	V wind:	1.0 k
39.00 ft	V seismic:	4.3 k	V seismic:	3.0 k
Level 3	V wind:	2.8 k	V wind:	1.7 k
29.00 ft	V seismic:	5.3 k	V seismic:	3.7 k
Level 2	V wind:	2.6 k	V wind:	1.6 k
19.00 ft	V seismic:	3.5 k	V seismic:	2.5 k
Level 1 - Transfer	V wind:	3.4 k	V wind:	2.1 k
9.00 ft	V seismic:	4.6 k	V seismic:	3.2 k
(Amplified Force)				
	V wind:	0.0 k	V wind:	0.0 k
	V seismic:	0.0 k	V seismic:	0.0 k

Allowable Design Shear Forces at Each Level

		Wind	Seismic	Shearwall
V roof	=	40 plf	117 plf	W/6
V level 3	=	105 plf	262 plf	W/6
V level 2	=	167 plf	358 plf	W/4
Transfer V level 1	=	217 plf	465 plf	Concrete SW

Allowable Holdown Forces at Each Level

		Wind	Seismic	Anchor Dia
Level 3	=	0.4 k	1.2 k	3/4"
Level 2	=	1.5 k	3.8 k	
Level 1	=	3.1 k	7.4 k	
Level 1 (Amplified w/ Omega)	=	7.8 k	18.4 k	N/A
Mat Foundation (Rw/Rc)	=	4.1 k	9.6 k	

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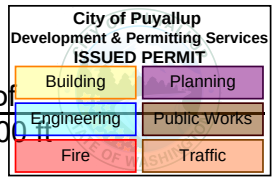
Shearwall Design

Location:	**2** - East/West (Grid C)	R	6.5	(Wood SWs)
Totall Length of Shearwall:	19.50 ft	R	5	(Conc SWs)
Minimum Pier Length:	19.50 ft	Omega	2.5	
Wall Height:	10.00 ft	(measured from top of sheathing to bottom of joist)		
2W/H:	1.00			



	Ultimate Loads		Allowable Loads	
Roof	V wind:	3.2 k	V wind:	1.9 k
39.00 ft	V seismic:	8.0 k	V seismic:	5.6 k
Level 3	V wind:	5.2 k	V wind:	3.1 k
29.00 ft	V seismic:	9.9 k	V seismic:	6.9 k
Level 2	V wind:	4.9 k	V wind:	2.9 k
19.00 ft	V seismic:	6.5 k	V seismic:	4.5 k
Level 1 - Transfer	V wind:	6.4 k	V wind:	3.8 k
9.00 ft	V seismic:	8.4 k	V seismic:	5.9 k
(Amplified Force)				
	V wind:	0.0 k	V wind:	0.0 k
	V seismic:	0.0 k	V seismic:	0.0 k

Allowable Design Shear Forces at Each Level

	Wind	Seismic	Shearwall
V roof =	98 plf	286 plf	W/6
V level 3 =	257 plf	641 plf	W/2
V level 2 =	408 plf	874 plf	2W/4
Transfer V level 1 =	530 plf	1136 plf	Concrete SW

Allowable Holdown Forces at Each Level

	Wind	Seismic	Anchor Dia
Level 3 =	1.0 k	2.9 k	
Level 2 =	3.6 k	9.3 k	1 1/8"
Level 1 =	7.6 k	18.0 k	
Level 1 (Amplified w/ Omega) =	19.1 k	45.0 k	N/A
Mat Foundation (Rw/Rc) =	9.9 k	23.4 k	

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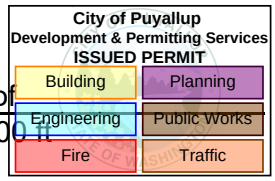
Shearwall Design

Location:	**3** - East/West (Grid D)	R	6.5	(Wood SWs)
Totall Length of Shearwall:	36.00 ft	R	5	(Conc SWs)
Minimum Pier Length:	16.50 ft	Omega	2.5	
Wall Height:	10.00 ft	(measured from top of sheathing to bottom of joist)		
2W/H:	1.00			



	Ultimate Loads		Allowable Loads	
Roof	V wind:	2.9 k	V wind:	1.8 k
39.00 ft	V seismic:	7.4 k	V seismic:	5.2 k
Level 3	V wind:	4.8 k	V wind:	2.9 k
29.00 ft	V seismic:	9.2 k	V seismic:	6.4 k
Level 2	V wind:	4.5 k	V wind:	2.7 k
19.00 ft	V seismic:	6.0 k	V seismic:	4.2 k
Level 1 - Transfer	V wind:	5.9 k	V wind:	3.5 k
9.00 ft	V seismic:	7.8 k	V seismic:	5.5 k
(Amplified Force)				
	V wind:	0.0 k	V wind:	0.0 k
	V seismic:	0.0 k	V seismic:	0.0 k

Allowable Design Shear Forces at Each Level

	Wind	Seismic	Shearwall
V roof =	49 plf	144 plf	W/6
V level 3 =	129 plf	322 plf	W/4
V level 2 =	205 plf	439 plf	W/4
Transfer V level 1 =	266 plf	571 plf	Concrete SW

Allowable Holdown Forces at Each Level

	Wind	Seismic	Anchor Dia
Level 3 =	0.5 k	1.4 k	
Level 2 =	1.8 k	4.7 k	3/4
Level 1 =	3.8 k	9.1 k	
Level 1 (Amplified w/ Omega) =	9.6 k	22.6 k	N/A
Mat Foundation (Rw/Rc) =	5.0 k	11.8 k	

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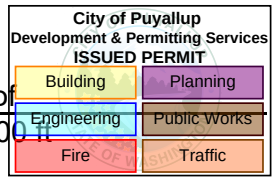
Shearwall Design

Location:	**4** - East/West (Grid E-F)	R	6.5	(Wood SWs)
Totall Length of Shearwall:	19.50 ft	R	5	(Conc SWs)
Minimum Pier Length:	19.50 ft	Omega	2.5	
Wall Height:	10.00 ft	(measured from top of sheathing to bottom of joist)		
2W/H:	1.00			



	Ultimate Loads		Allowable Loads	
Roof	V wind:	2.9 k	V wind:	1.8 k
39.00 ft	V seismic:	7.4 k	V seismic:	5.2 k
Level 3	V wind:	4.8 k	V wind:	2.9 k
29.00 ft	V seismic:	9.2 k	V seismic:	6.4 k
Level 2	V wind:	4.5 k	V wind:	2.7 k
19.00 ft	V seismic:	6.0 k	V seismic:	4.2 k
Level 1 - Transfer	V wind:	5.9 k	V wind:	3.5 k
9.00 ft	V seismic:	7.8 k	V seismic:	5.5 k
(Amplified Force)				
	V wind:	0.0 k	V wind:	0.0 k
	V seismic:	0.0 k	V seismic:	0.0 k

Allowable Design Shear Forces at Each Level

	Wind	Seismic	Shearwall
V roof =	91 plf	266 plf	W/6
V level 3 =	238 plf	595 plf	W/3
V level 2 =	378 plf	811 plf	2W/4
Transfer V level 1 =	492 plf	1054 plf	Concrete SW

Allowable Holdown Forces at Each Level

	Wind	Seismic	Anchor Dia
Level 3 =	0.9 k	2.7 k	
Level 2 =	3.3 k	8.6 k	1"
Level 1 =	7.1 k	16.7 k	
Level 1 (Amplified w/ Omega) =	17.7 k	41.8 k	N/A
Mat Foundation (Rw/Rc) =	9.2 k	21.7 k	

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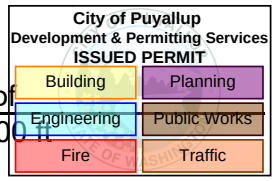
Shearwall Design

Location:	**5** - East/West (Grid G)	R	6.5	(Wood SWs)
Totall Length of Shearwall:	19.50 ft	R	5	(Conc SWs)
Minimum Pier Length:	19.50 ft	Omega	2.5	
Wall Height:	10.00 ft	(measured from top of sheathing to bottom of joist)		
2W/H:	1.00			



	Ultimate Loads		Allowable Loads	
Roof	V wind:	2.6 k	V wind:	1.6 k
39.00 ft	V seismic:	6.5 k	V seismic:	4.5 k
Level 3	V wind:	4.2 k	V wind:	2.5 k
29.00 ft	V seismic:	8.1 k	V seismic:	5.6 k
Level 2	V wind:	4.0 k	V wind:	2.4 k
19.00 ft	V seismic:	5.3 k	V seismic:	3.7 k
Level 1 - Transfer	V wind:	5.2 k	V wind:	3.1 k
9.00 ft (Amplified Force)	V seismic:	6.9 k	V seismic:	4.8 k
	V wind:	0.0 k	V wind:	0.0 k
	V seismic:	0.0 k	V seismic:	0.0 k

Allowable Design Shear Forces at Each Level

	Wind	Seismic	Shearwall
V roof =	80 plf	233 plf	W/6
V level 3 =	209 plf	522 plf	W/3
V level 2 =	332 plf	712 plf	W/2
Transfer V level 1 =	432 plf	926 plf	Concrete SW

Allowable Holdown Forces at Each Level

	Wind	Seismic	Anchor Dia
Level 3 =	0.8 k	2.3 k	1"
Level 2 =	2.9 k	7.6 k	
Level 1 =	6.2 k	14.7 k	
Level 1 (Amplified w/ Omega) =	15.5 k	36.7 k	N/A
Mat Foundation (Rw/Rc) =	8.1 k	19.1 k	

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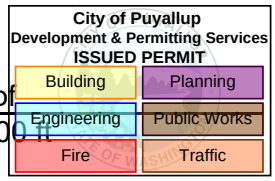
Shearwall Design

Location:	**6** - East/West (Grid H)	R	6.5	(Wood SWs)
Totall Length of Shearwall:	16.50 ft	R	5	(Conc SWs)
Minimum Pier Length:	16.50 ft	Omega	2.5	
Wall Height:	10.00 ft	(measured from top of sheathing to bottom of joist)		
2W/H:	1.00			



	Ultimate Loads		Allowable Loads	
Roof	V wind:	3.3 k	V wind:	2.0 k
39.00 ft	V seismic:	8.3 k	V seismic:	5.8 k
Level 3	V wind:	5.4 k	V wind:	3.2 k
29.00 ft	V seismic:	10.3 k	V seismic:	7.2 k
Level 2	V wind:	5.1 k	V wind:	3.1 k
19.00 ft	V seismic:	6.7 k	V seismic:	4.7 k
Level 1 - Transfer	V wind:	6.6 k	V wind:	4.0 k
9.00 ft	V seismic:	8.8 k	V seismic:	6.1 k
(Amplified Force)				
	V wind:	0.0 k	V wind:	0.0 k
	V seismic:	0.0 k	V seismic:	0.0 k

Allowable Design Shear Forces at Each Level

	Wind	Seismic	Shearwall
V roof =	120 plf	352 plf	W/4
V level 3 =	316 plf	789 plf	W/2
V level 2 =	501 plf	1075 plf	2W/3
Transfer V level 1 =	652 plf	1397 plf	Concrete SW

Allowable Holdown Forces at Each Level

	Wind	Seismic	Anchor Dia
Level 3 =	1.2 k	3.5 k	1 1/4"
Level 2 =	4.4 k	11.4 k	
Level 1 =	9.4 k	22.2 k	
Level 1 (Amplified w/ Omega) =	23.4 k	55.4 k	N/A
Mat Foundation (Rw/Rc) =	12.2 k	28.8 k	

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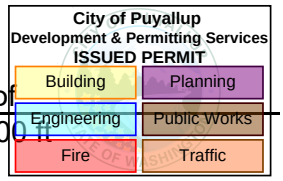
Shearwall Design

Location:	**7** - East/West (Grid K)	R	6.5	(Wood SWs)
Totall Length of Shearwall:	21.50 ft	R	5	(Conc SWs)
Minimum Pier Length:	5.00 ft	Omega	2.5	
Wall Height:	10.00 ft (measured from top of sheathing to bottom of joist)			
2W/H:	1.00			



	Ultimate Loads		Allowable Loads	
Roof	V wind:	2.2 k	V wind:	1.3 k
39.00 ft	V seismic:	5.5 k	V seismic:	3.8 k
Level 3	V wind:	3.5 k	V wind:	2.1 k
29.00 ft	V seismic:	6.8 k	V seismic:	4.7 k
Level 2	V wind:	3.4 k	V wind:	2.0 k
19.00 ft	V seismic:	4.4 k	V seismic:	3.1 k
Level 1 - Transfer	V wind:	4.4 k	V wind:	2.6 k
9.00 ft	V seismic:	5.8 k	V seismic:	4.0 k
(Amplified Force)				
	V wind:	0.0 k	V wind:	0.0 k
	V seismic:	0.0 k	V seismic:	0.0 k

Allowable Design Shear Forces at Each Level

	Wind	Seismic	Shearwall
V roof =	61 plf	178 plf	W/6
V level 3 =	160 plf	399 plf	W/4
V level 2 =	254 plf	543 plf	W/3
Transfer V level 1 =	330 plf	706 plf	Concrete SW

Allowable Holdown Forces at Each Level

	Wind	Seismic	Anchor Dia
Level 3 =	0.6 k	1.8 k	7/8"
Level 2 =	2.2 k	5.8 k	
Level 1 =	4.7 k	11.2 k	
Level 1 (Amplified w/ Omega) =	11.9 k	28.0 k	N/A
Mat Foundation (Rw/Rc) =	6.2 k	14.6 k	

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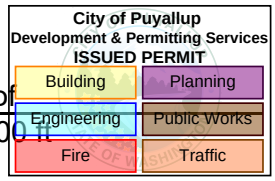
Shearwall Design

Location:	**8** - North/South (East Corridor)	R	6.5	(Wood SWs)
Totall Length of Shearwall:	145.75 ft	R	5	(Conc SWs)
Minimum Pier Length:	9.00 ft	Omega	2.5	
Wall Height:	10.00 ft	(measured from top of sheathing to bottom of joist)		
2W/H:	1.00			



		Ultimate Loads		Allowable Loads	
Roof		V wind:	2.5 k	V wind:	1.5 k
39.00 ft		V seismic:	22.3 k	V seismic:	15.6 k
Level 3		V wind:	4.1 k	V wind:	2.5 k
29.00 ft		V seismic:	27.7 k	V seismic:	19.4 k
Level 2		V wind:	3.9 k	V wind:	2.3 k
19.00 ft		V seismic:	18.1 k	V seismic:	12.7 k
Level 1 - Transfer		V wind:	5.0 k	V wind:	3.0 k
9.00 ft		V seismic:	23.6 k	V seismic:	16.5 k
(Amplified Force)					
		V wind:	0.0 k	V wind:	0.0 k
		V seismic:	0.0 k	V seismic:	0.0 k

Allowable Design Shear Forces at Each Level

		Wind	Seismic	Shearwall
V roof	=	10 plf	107 plf	W/6
V level 3	=	27 plf	240 plf	W/6
V level 2	=	43 plf	327 plf	W/4
Transfer V level 1	=	56 plf	425 plf	Concrete SW

Allowable Holdown Forces at Each Level

		Wind	Seismic	Anchor Dia
Level 3	=	0.1 k	1.1 k	
Level 2	=	0.4 k	3.5 k	3/4"
Level 1	=	0.8 k	6.7 k	
Level 1 (Amplified w/ Omega)	=	2.0 k	16.9 k	N/A
Mat Foundation (Rw/Rc)	=	1.0 k	8.8 k	

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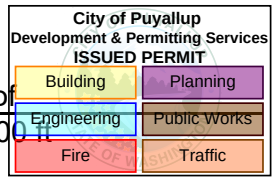
Shearwall Design

Location:	**9** - North/South (West Corridor	R	6.5	(Wood SWs)
Totall Length of Shearwall:	135.25 ft	R	5	(Conc SWs)
Minimum Pier Length:	6.75 ft	Omega	2.5	
Wall Height:	10.00 ft (measured from top of sheathing to bottom of joist)			
2W/H:	1.00			



	Ultimate Loads		Allowable Loads	
Roof	V wind:	2.8 k	V wind:	1.7 k
39.00 ft	V seismic:	25.0 k	V seismic:	17.5 k
Level 3	V wind:	4.6 k	V wind:	2.8 k
29.00 ft	V seismic:	31.1 k	V seismic:	21.7 k
Level 2	V wind:	4.3 k	V wind:	2.6 k
19.00 ft	V seismic:	20.3 k	V seismic:	14.2 k
Level 1 - Transfer	V wind:	5.6 k	V wind:	3.4 k
9.00 ft (Amplified Force)	V seismic:	26.4 k	V seismic:	18.5 k
	V wind:	0.0 k	V wind:	0.0 k
	V seismic:	0.0 k	V seismic:	0.0 k

Allowable Design Shear Forces at Each Level

	Wind	Seismic	Shearwall
V roof =	13 plf	130 plf	W/6
V level 3 =	33 plf	290 plf	W/6
V level 2 =	52 plf	396 plf	W/4
Transfer V level 1 =	68 plf	514 plf	Concrete SW

Allowable Holdown Forces at Each Level

	Wind	Seismic	Anchor Dia
Level 3 =	0.1 k	1.3 k	3/4"
Level 2 =	0.5 k	4.2 k	
Level 1 =	1.0 k	8.2 k	
Level 1 (Amplified w/ Omega) =	2.4 k	20.4 k	N/A
Mat Foundation (Rw/Rc) =	1.3 k	10.6 k	

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Shearwall Design - TYP Cantilevered Diaphragm in North/South Direction (3-Sided Box)

Location:	**Grid C SW (Typ 3-Sided Box Calc)**
Totall Length of wc E/W SW:	19.50 ft
Minimum Pier Length:	19.50 ft
Wall Height:	10.00 ft
2W/H:	1.00
Diaphragm Length (L):	24.50
Diaphragm Width (B):	33.00

Check Rotation at Exterior Walls in N/S load direction (Cantilevered Diaphgragm), resolving into E/W Partywall Shearwalls

$$T=C=\frac{wL^2}{2B}=\frac{VL}{2B}$$

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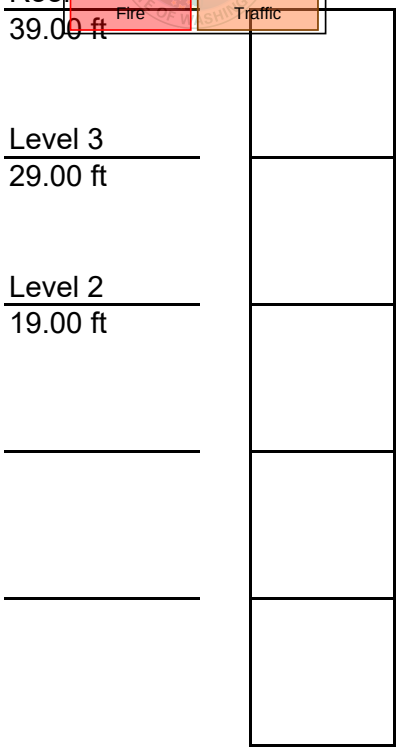

	Ultimate Loads		Allowable Loads	
Roof	V wind:	3.4 k	V wind:	2.0 k
39.00 ft	V seismic:	8.5 k	V seismic:	5.9 k
Level 3	V wind:	5.5 k	V wind:	3.3 k
29.00 ft	V seismic:	10.5 k	V seismic:	7.4 k
Level 2	V wind:	5.2 k	V wind:	3.1 k
19.00 ft	V seismic:	6.9 k	V seismic:	4.8 k
	V wind:	0.0 k	V wind:	0.0 k
	V seismic:	0.0 k	V seismic:	0.0 k
	V wind:	0.0 k	V wind:	0.0 k
	V seismic:	0.0 k	V seismic:	0.0 k

Allowable Design Shear Forces at Each Level

	Wind	Seismic	SW	Does not Control -
v roof =	39 plf	113 plf	W/6	See "**2** - East/West"
v level 3 =	102 plf	253 plf	W/6	for worst case
v level 2 =	161 plf	345 plf	W/4	shear in this wall

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Shearwall Design - Cantilevered Diaphragm in North/South Direction (3-Sided Box)

Location:	**Grid H SW (3-Sided Box Calc)**
Totall Length of wc E/W SW:	16.60 ft
Minimum Pier Length:	19.50 ft
Wall Height:	10.00 ft
2W/H:	1.00
Diaphragm Length (L):	24.50
Diaphragm Width (B):	42.50

Check Rotation at Exterior Walls in N/S load direction (Cantilevered Diaphgragm), resolving into E/W Partywall Shearwalls

$$T=C=\frac{wL^2}{2B}=\frac{VL}{2B}$$

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	Ultimate Loads		Allowable Loads	
Roof	V wind:	4.4 k	V wind:	2.6 k
39.00 ft	V seismic:	10.9 k	V seismic:	7.7 k
Level 3	V wind:	7.1 k	V wind:	4.3 k
29.00 ft	V seismic:	13.6 k	V seismic:	9.5 k
Level 2	V wind:	6.7 k	V wind:	4.0 k
19.00 ft	V seismic:	8.9 k	V seismic:	6.2 k
	V wind:	0.0 k	V wind:	0.0 k
	V seismic:	0.0 k	V seismic:	0.0 k
	V wind:	0.0 k	V wind:	0.0 k
	V seismic:	0.0 k	V seismic:	0.0 k

Allowable Design Shear Forces at Each Level

	Wind	Seismic	SW	Does not Control -
v roof =	45 plf	133 plf	W/6	See "**6** - East/West"
v level 3 =	119 plf	298 plf	W/6	for worst case
v level 2 =	189 plf	406 plf	W/4	shear in this wall

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Seismic Center Of Mass At Transfer Level

Datum at Grid A-5

Level	X-Coord	Y-Coord	Weight (K)	X*Weight	Y*Weight
Roof	91.17	26.35	260	23663	6840
Level 3	91.17	26.35	433	39457	11406
Level 2	91.17	26.35	433	39457	11406
Level 1	84.17	27.29	870	73261	23755
TOTAL			1996	175837	53406

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Weighted COM (from Grid A-5)	**X-Coord** (ft)	**Y-Coord** (ft)
	88.117	26.763

Cs	Wtotal (K)	**Seismic Base Shear**
0.167	1996	333.2 K

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D Steel Strong-Rods

Strong-Rod threaded rods are the tension transfer element within the Anchor Tiedown System for shearwall overturning restraint. Strong-Rod threaded rods are threaded on both ends with the top end having 12" or 48" of thread to allow for the distance that the rod sticks through the device, which can vary from a couple inches. Information clearly etched on the shank allows easy identification in the field.

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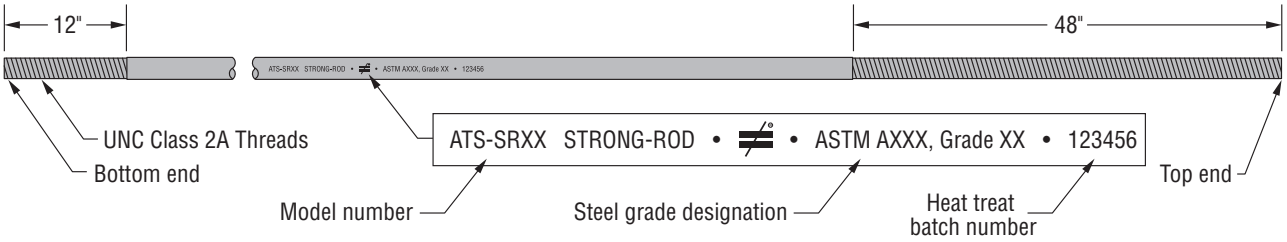
Naming Legend

ATS-SR9H

- Anchor Tiedown System
- Strong-Rod
- Rod Diameter in ⅛" Increments (Ex: 9 = ⅝" or 1⅛")
- High Strength



Strong-Rod

Standard-Strength, Strong-Rod Product Data

Anchor Tiedown System				
Allowable Tension Capacity for ATS Strong-Rods				
Rod Model No.	Rod Diameter (in.)	Material		Allowable Tension Capacity[2] (lb.)
		F_y (ksi)	F_u (ksi)	
ATS-SR4	½	36	58	4,270
ATS-SR5	⅝	36	58	6,675
ATS-SR6	¾	36	58	9,610
ATS-SR7	⅞	36	58	13,080
ATS-SR8	1	36	58	17,080
ATS-SR9	1⅛	36	58	21,620
ATS-SR10	1¼	36	58	26,690
ATS-SR11	1⅜	36	58	32,295
ATS-SR12	1½	36	58	38,435
ATS-SR14	1¾	36	58	52,315
ATS-SR16	2	36	58	68,330

1. Allowable tension capacities are based on AISC 360-10.
2. No further increase in allowable load is permitted.

High-Strength, Strong-Rod Product Data

Anchor Tiedown System				
Allowable Tension Capacity for ATS Strong-Rods				
Rod Model No.	Rod Diameter (in.)	Material		Allowable Tension Capacity[2] (lb.)
		F_y (ksi)	F_u (ksi)	
ATS-SR5H	⅝	92	120	13,805
ATS-SR6H	¾	92	120	19,880
ATS-SR7H	⅞	92	120	27,060
ATS-SR8H	1	92	120	35,345
ATS-SR9H	1⅛	105	125	46,595
ATS-SR10H	1¼	105	125	57,525
ATS-SR11H	1⅜	105	125	69,605
ATS-SR12H	1½	105	125	82,835
ATS-SR14H	1¾	105	125	112,745
ATS-SR16H	2	105	125	147,260

1. Allowable tension capacities are based on AISC 360-10.
2. No further increase in allowable load is permitted.

Super High-Strength, Strong-Rod Product Data

Anchor Tiedown System				
Allowable Tension Capacity for ATS Strong-Rods				
Rod Model No.	Rod Diameter (in.)	Material		Allowable Tension Capacity[2] (lb.)
		F_y (ksi)	F_u (ksi)	
ATS-SR9H150	1⅛	130	150	55,915
ATS-SR10H150	1¼	130	150	69,030

1. Allowable tension capacities are based on AISC 360-10.
2. No further increase in allowable load is permitted.

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Project PUYALLUP 2ND ST
Project No. 2190606.20
Subject
Phone
With/To
Fax #
Address
Faxed Pages
Date
By

- ☐ Page ____ of ____
- ☐ Calculations
- ☐ Fax
- ☐ Memorandum
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- ☐ Telephone Memo

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LATERAL ADD'L CHECKS

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EAST-WEST DIRECTION

(SEISMIC CONTROLS, UNO)
(LEVEL 3 DIAP. CONTROLS, UNO)

[1] EW-1 DRAG CONN

STRUCT IRREG

$V = (3.7^k - 6.25'(145PLF))(24'/52') = 1.3^k \cdot 1.25 = 1.6^k \Rightarrow$ CS16 OR (2) HTS30 ⊂

[2] EW-2, EW-4, EW-5, EW-6 DRAG CONN

$V_{MAX} = (7.2^k \cdot 27/52) \cdot 1.25 = 4.7^k \Rightarrow$ CMSTC16

If this does not meet with your understanding, please contact us in writing within seven days. THANK YOU.

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Project PUYALLUP 2ND ST | Project No. 2190620

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FLEXIBLE DIAPHRAGM DESIGN

(EAST/WEST SEISMIC CONTROLS)

3RD FL (CONTROLS) GRID H-K (WORST CASE)

$$V_{EQ} = \frac{58.7^k\ (2100SF/9645SF)}{2\ (52')} = 129\ PLF < 190\ PLF\ \text{ok} \checkmark$$

⇒ 15/32" (MIN) STHG W/ UNBLOCKED PANEL EDGES
NAIL W/ 10d AT 6" OC DIAP BOUNDARIES

CHORD

(3RD FL E/W SEISMIC (CONTROLS) – GRID H-K (WORST CASE))

$$T_{MAX} = \frac{M}{b} = \frac{wl^2}{8b} = \frac{Vl}{8b} = \frac{[58.7^k(2100SF/9645SF)]\ (43')}{8\ (52')} = 1.3^k$$

$T_A = AF_tC_D = (1.5 \cdot 5.5)(625)(1.6) = 8.0^k > 1.3^k$ ok ✓ OF #2

CHORD SPLICE

16d → Z' = 141 (1.6) $(\frac{1.5}{1.62})$ = 209#/NAIL

TYP LAP SPLICE = (2) 16d AT 12"OC [48" LAP] = 8 NAILS

(8 NAILS) (209#/NAIL) = 1.7^k CAP > 1.3^k ok ✓

⇒ USE (2) 16d AT 12" OC [48" LAP SPLICE]

⇒ AT BREAK IN TOP PLATES USE HTS30C (1.4^k CAP.)

If this does not meet with your understanding, please contact us in writing within seven days. THANK YOU.

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Section 10.0
Miscellaneous Design

Project PUYALLUP 2ND STREET | Project No. 219606.20

Subject | Phone

With/To | Fax #

Address | # Faxed Pages

Date | By

PRMU20220123

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- ☐ Fax
- ☐ Memorandum
- ☐ Meeting Minutes
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FACTORED LOADS AT BEAMS THAT DO NOT RUN OVER WALL:

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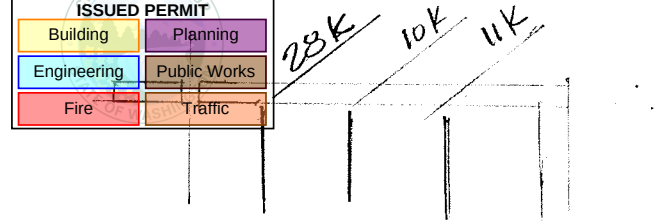
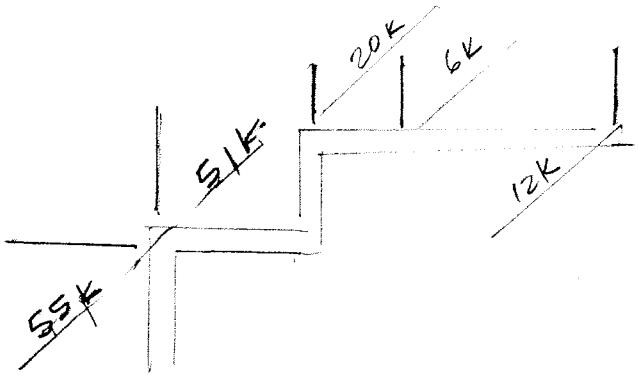
Engineering | Public Works
Fire | Traffic





(4) 7/8" DIA BOLTS

ϕR_n = 24.3 K/BOLT SHEAR

BEARING

ϕR_n = 91.4 K/IN

@ 3/8" = 34.3 K/BOLT

BRG @ TEAROUT

ϕR_n = 40.3 K/IN @ 1¼

53.8 K/IN @ 1½

@ 3/8" = 20.2 K/BOLT

BOLTS

(2) = 40.4 K

(3) = 60.6 K

(4) = 80.8 K

(5) = 101.0 K.

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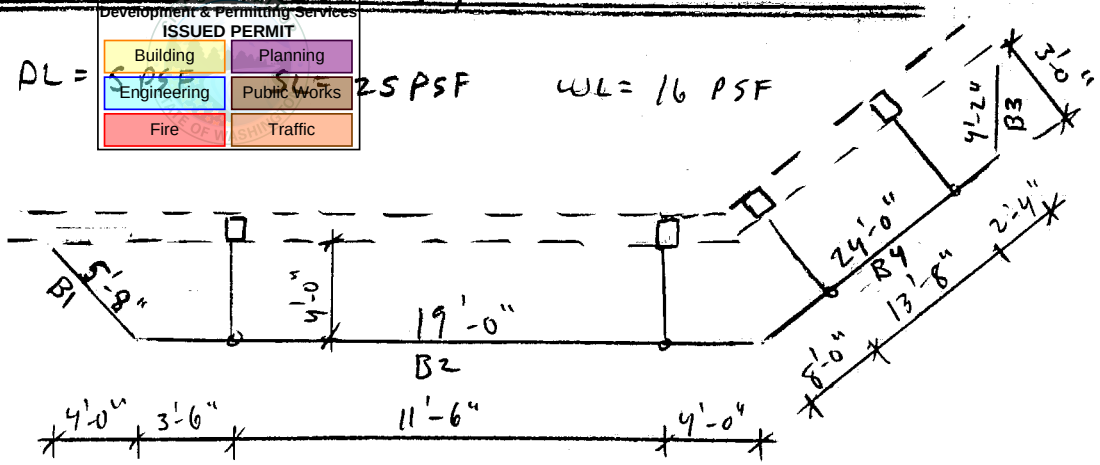
FRONT (SW) CANOPY

DL = 5 PSF SL = 25 PSF WL = 16 PSF

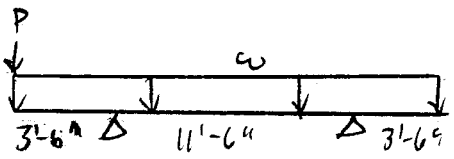


∴ CHECK C9 x 13.4 (MIN), TYP

B1 REACTIONS

$P = (0.005D + 0.025S + 0.016W)(4'/2)(4'/2)$
$+ (0.0134\ k/l\ D \cdot 5.67'/2)$
$= 0.06D + 0.10S + 0.064W\ (k)$

B2 BM



$P = 0.06D + 0.10S + 0.064W\ (k)$

$w(2'\ TRIB) = 0.01D + 0.05S + 0.032W\ (k/l)$

$R_1 = 0.17D + 0.58S + 0.37W\ (k)$
$R_2 = 0.08D + 0.47S + 0.30W\ (k)$

$M_a = 0.952^{k \cdot l} << 22.64^{k \cdot l}$
$\Delta_{TL} = 0.007"$

⇒ C9 x 13.4 ok ✓
(SEE ENERCALC OUTPUT)

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and then using the "Printing &
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Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

Printed: 21 DEC 2021, 1:44PM

Steel Beam

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DESCRIPTION: Canopy B2 BM

CODE REFERENCES

Calculations per AISC 360-10, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Used : IBC 2018

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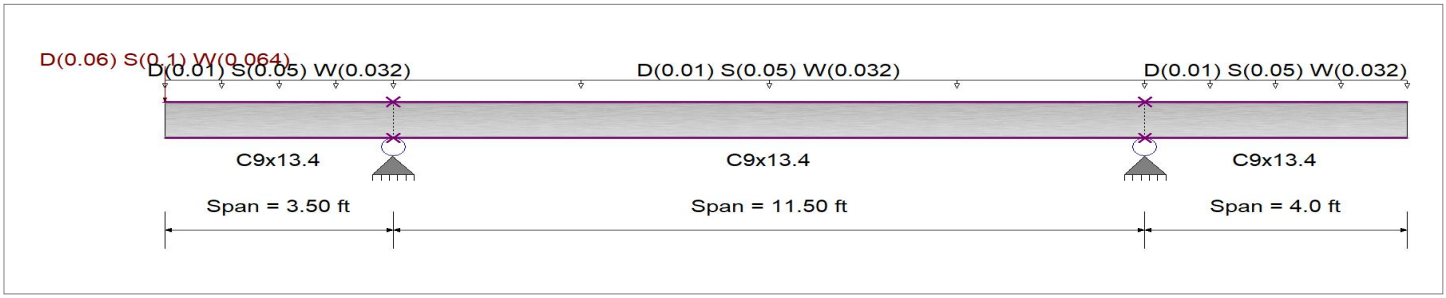
Material Properties

Analysis Method : Allowable Strength Design
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling
Bending Axis : Major Axis Bending

Fy : Steel Yield : 36.0 ksi
E: Modulus : 29,000.0 ksi



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added
Load for Span Number 1
Uniform Load : D = 0.0050, S = 0.0250, W = 0.0160 ksf, Tributary Width = 2.0 ft

Point Load : D = 0.060, S = 0.10, W = 0.0640 k @ 0.0 ft, (B1 BM)

Load for Span Number 2
Uniform Load : D = 0.0050, S = 0.0250, W = 0.0160 ksf, Tributary Width = 2.0 ft

Load for Span Number 3
Uniform Load : D = 0.0050, S = 0.0250, W = 0.0160 ksf, Tributary Width = 2.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	0.042 : 1	Maximum Shear Stress Ratio =	0.015 : 1
Section used for this span	C9x13.4	Section used for this span	C9x13.4
Ma : Applied	0.952 k-ft	Va : Applied	0.3957 k
Mn / Omega : Allowable	22.635 k-ft	Vn/Omega : Allowable	27.123 k
Load Combination	+D+0.750L+0.750S+0.450W+H	Load Combination	+D+0.750L+0.750S+0.450W+H
Location of maximum on span	0.000 ft	Location of maximum on span	0.000 ft
Span # where maximum occurs	Span # 2	Span # where maximum occurs	Span # 2

Maximum Deflection

Max Downward Transient Deflection	0.003 in	Ratio =	24,268 >=360
Max Upward Transient Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.007 in	Ratio =	11440 >=180
Max Upward Total Deflection	-0.001 in	Ratio =	140895 >=180

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	Summary of Moment Values Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Summary of Shear Values Va Max	Vnx	Vnx/Omega
+D+H													
Dsgn. L = 3.48 ft	1	0.012	0.003		-0.27	0.27	37.80	22.63	1.00	1.00	0.09	45.30	27.12
Dsgn. L = 11.52 ft	2	0.012	0.004	0.00	-0.27	0.27	37.80	22.63	1.00	1.00	0.10	45.30	27.12
Dsgn. L = 4.00 ft	3	0.004	0.001		-0.08	0.08	37.80	22.63	1.00	1.00	0.04	45.30	27.12
+D+L+H													
Dsgn. L = 3.48 ft	1	0.012	0.003		-0.27	0.27	37.80	22.63	1.00	1.00	0.09	45.30	27.12
Dsgn. L = 11.52 ft	2	0.012	0.004	0.00	-0.27	0.27	37.80	22.63	1.00	1.00	0.10	45.30	27.12
Dsgn. L = 4.00 ft	3	0.004	0.001		-0.08	0.08	37.80	22.63	1.00	1.00	0.04	45.30	27.12
+D+Lr+H													
Dsgn. L = 3.48 ft	1	0.012	0.003		-0.27	0.27	37.80	22.63	1.00	1.00	0.09	45.30	27.12
Dsgn. L = 11.52 ft	2	0.012	0.004	0.00	-0.27	0.27	37.80	22.63	1.00	1.00	0.10	45.30	27.12
Dsgn. L = 4.00 ft	3	0.004	0.001		-0.08	0.08	37.80	22.63	1.00	1.00	0.04	45.30	27.12

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and then using the "Printing &
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Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Steel Beam

File: Puyallup 2nd St Apts.ec6

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DESCRIPTION: Canopy B2 BM

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Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	Summary of Moment Values Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Summary of Shear Values Va Max	Vnx	Vnx/Omega
+D+S+H													
Dsgn. L = 3.48 ft	1	0.041	0.014		-0.92	0.92	37.80	22.63	1.00	1.00	0.37	45.30	27.12
Dsgn. L = 11.52 ft	2	0.041	0.014	0.30	-0.93	0.93	37.80	22.63	1.00	1.00	0.38	45.30	27.12
Dsgn. L = 4.00 ft	3	0.021	0.009		-0.48	0.48	37.80	22.63	1.00	1.00	0.24	45.30	27.12
+D+0.750Lr+0.750L+H													
Dsgn. L = 3.48 ft	1	0.012	0.003		-0.27	0.27	37.80	22.63	1.00	1.00	0.09	45.30	27.12
Dsgn. L = 11.52 ft	2	0.012	0.004	0.00	-0.27	0.27	37.80	22.63	1.00	1.00	0.10	45.30	27.12
Dsgn. L = 4.00 ft	3	0.004	0.001		-0.08	0.08	37.80	22.63	1.00	1.00	0.04	45.30	27.12
+D+0.750L+0.750S+H													
Dsgn. L = 3.48 ft	1	0.033	0.011		-0.76	0.76	37.80	22.63	1.00	1.00	0.30	45.30	27.12
Dsgn. L = 11.52 ft	2	0.034	0.011	0.23	-0.76	0.76	37.80	22.63	1.00	1.00	0.31	45.30	27.12
Dsgn. L = 4.00 ft	3	0.017	0.007		-0.38	0.38	37.80	22.63	1.00	1.00	0.19	45.30	27.12
+D+0.60W+H													
Dsgn. L = 3.48 ft	1	0.023	0.007		-0.52	0.52	37.80	22.63	1.00	1.00	0.20	45.30	27.12
Dsgn. L = 11.52 ft	2	0.023	0.007	0.12	-0.52	0.52	37.80	22.63	1.00	1.00	0.20	45.30	27.12
Dsgn. L = 4.00 ft	3	0.010	0.004		-0.23	0.23	37.80	22.63	1.00	1.00	0.12	45.30	27.12
+D+0.70E+H													
Dsgn. L = 3.48 ft	1	0.012	0.003		-0.27	0.27	37.80	22.63	1.00	1.00	0.09	45.30	27.12
Dsgn. L = 11.52 ft	2	0.012	0.004	0.00	-0.27	0.27	37.80	22.63	1.00	1.00	0.10	45.30	27.12
Dsgn. L = 4.00 ft	3	0.004	0.001		-0.08	0.08	37.80	22.63	1.00	1.00	0.04	45.30	27.12
+D+0.750Lr+0.750L+0.450W+H													
Dsgn. L = 3.48 ft	1	0.020	0.006		-0.46	0.46	37.80	22.63	1.00	1.00	0.17	45.30	27.12
Dsgn. L = 11.52 ft	2	0.020	0.006	0.09	-0.46	0.46	37.80	22.63	1.00	1.00	0.17	45.30	27.12
Dsgn. L = 4.00 ft	3	0.009	0.004		-0.20	0.20	37.80	22.63	1.00	1.00	0.10	45.30	27.12
+D+0.750L+0.750S+0.450W+H													
Dsgn. L = 3.48 ft	1	0.042	0.014		-0.94	0.94	37.80	22.63	1.00	1.00	0.38	45.30	27.12
Dsgn. L = 11.52 ft	2	0.042	0.015	0.31	-0.95	0.95	37.80	22.63	1.00	1.00	0.40	45.30	27.12
Dsgn. L = 4.00 ft	3	0.022	0.009		-0.50	0.50	37.80	22.63	1.00	1.00	0.25	45.30	27.12
+D+0.750L+0.750S+0.5250E+H													
Dsgn. L = 3.48 ft	1	0.033	0.011		-0.76	0.76	37.80	22.63	1.00	1.00	0.30	45.30	27.12
Dsgn. L = 11.52 ft	2	0.034	0.011	0.23	-0.76	0.76	37.80	22.63	1.00	1.00	0.31	45.30	27.12
Dsgn. L = 4.00 ft	3	0.017	0.007		-0.38	0.38	37.80	22.63	1.00	1.00	0.19	45.30	27.12
+0.60D+0.60W+0.60H													
Dsgn. L = 3.48 ft	1	0.018	0.006		-0.41	0.41	37.80	22.63	1.00	1.00	0.16	45.30	27.12
Dsgn. L = 11.52 ft	2	0.018	0.006	0.12	-0.41	0.41	37.80	22.63	1.00	1.00	0.16	45.30	27.12
Dsgn. L = 4.00 ft	3	0.009	0.004		-0.20	0.20	37.80	22.63	1.00	1.00	0.10	45.30	27.12
+0.60D+0.70E+0.60H													
Dsgn. L = 3.48 ft	1	0.007	0.002		-0.16	0.16	37.80	22.63	1.00	1.00	0.06	45.30	27.12
Dsgn. L = 11.52 ft	2	0.007	0.002	0.00	-0.16	0.16	37.80	22.63	1.00	1.00	0.06	45.30	27.12
Dsgn. L = 4.00 ft	3	0.002	0.001		-0.05	0.05	37.80	22.63	1.00	1.00	0.02	45.30	27.12

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.750L+0.750S+0.450W+H	1	0.0073	0.000		0.0000	0.000
S Only	2	0.0033	6.210	D Only	-0.0009	1.993
+D+0.750L+0.750S+0.450W+H	3	0.0015	4.000	S Only	-0.0003	0.907

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2	Support 3	Support 4
Overall MAXimum		0.776	0.564	
Overall MINimum		0.101	0.049	
+D+H		0.169	0.081	
+D+L+H		0.169	0.081	
+D+Lr+H		0.169	0.081	
+D+S+H		0.754	0.546	
+D+0.750Lr+0.750L+H		0.169	0.081	
+D+0.750L+0.750S+H		0.608	0.430	
+D+0.60W+H		0.394	0.260	
+D+0.70E+H		0.169	0.081	
+D+0.750Lr+0.750L+0.450W+H		0.338	0.215	
+D+0.750L+0.750S+0.450W+H		0.776	0.564	
+D+0.750L+0.750S+0.5250E+H		0.608	0.430	
+0.60D+0.60W+0.60H		0.326	0.227	
+0.60D+0.70E+0.60H		0.101	0.049	
D Only		0.169	0.081	
S Only		0.585	0.465	
W Only		0.374	0.298	

Title Block Line 1
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Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

Printed: 21 DEC 2021, 1:44PM

Steel Beam

File: Puyallup 2nd St Apts.ec6

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Lic. # : KW-06014847

AHBL, INC

DESCRIPTION: Canopy B2 BM

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2	Support 3	Support 4
H Only				

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

Project PUYALLUP 2ND ST | Project No. 21906.06.20

Subject | Phone

With/To | Fax #

Address | # Faxed Pages

Date | By

☐ PRMU20220123
☐ Calculations
☐ Fax
☐ Memorandum
☐ Meeting Minutes
☐ Telephone Memo

AHBL

Civil Engineers
Structural Engineers
Landscape Architects
Community Planners
Land Surveyors

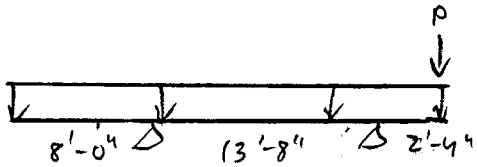
B3 REACTIONS

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

$P = (0.\ldots + 0.016w)(3'/2)(3'/2) + 0.0134 k/l (4.17'/2)$

$= 0.040 + 0.065 + 0.04w$

B4 BM



$P = 0.040 + 0.065 + 0.04w$

$w\ (2'\ TRIB) = 0.010 + 0.050 + 0.032w\ (k/l)$

$R_1 = 0.390 + 0.845 + 0.54w$

$R_2 = 0.210 + 0.425 + 0.27w$

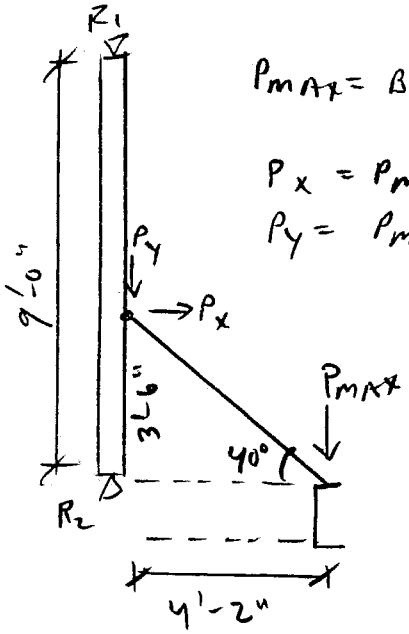
$M_a = 2.41\ k\text{-}l \ll 22.64\ k\text{-}l$

$\Delta_R = 0.09"$

$\Rightarrow$ C9 x 13.4 ok ✓

(SEE ENERCALC OUTPUT)

TYP SUPPORT COLUMN



$P_{MAX} = B4\ BM\ (R_1) = 0.390 + 0.845 + 0.54w$

$P_x = P_{MAX} / TAN\ 40° = 0.470 + 1.05 + 0.65w$

$P_y = P_{MAX}$

$R_1 = 0.6^k \quad R_2 = 0.9^k \Rightarrow$ (2) A35 TOP & BOT

$\Rightarrow$ USE 6x6 DF#1

ROD: $T = P_{MAX} / SIN\ 40° = A_S F_y / 1.67$

$= 0.60 + 0.75(1.35) + 0.6/0.75(0.84w) = 2.0^k$

$2.0^k = A_S (36\ KSI) / 1.67 \Rightarrow A_S = 0.10\ in^2 \Rightarrow$ 1/2" ø PIPE MIN

If this does not meet with your understanding, please contact us in writing within seven days. THANK YOU.

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Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

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Steel Beam

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Lic. # : KW-06014847 AHBL, INC

DESCRIPTION: Canopy B4 BM

CODE REFERENCES

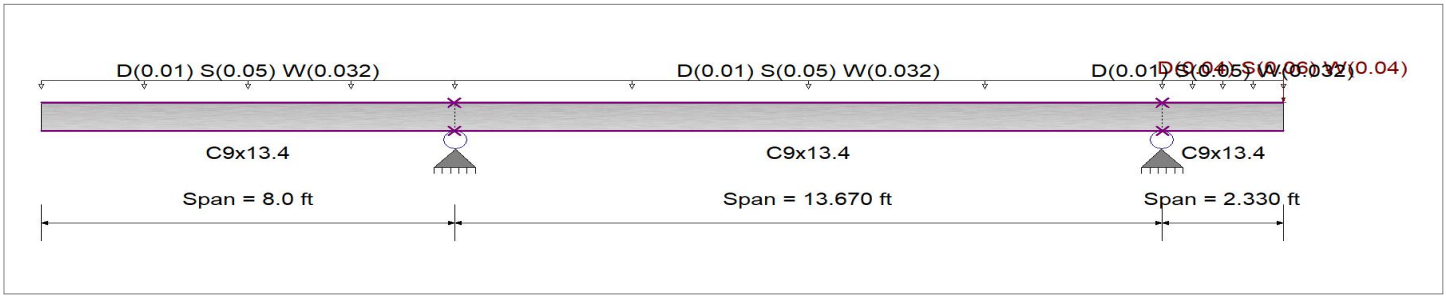
Calculations per AISC 360-10, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Used : IBC 2018

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building
Planning
Engineering
Public Works
Fire
Traffic

Material Properties

Analysis Method : Allowable Strength Design
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling
Bending Axis : Major Axis Bending

Fy : Steel Yield : 36.0 ksi
E: Modulus : 29,000.0 ksi



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading
Load for Span Number 1
Uniform Load : D = 0.0050, S = 0.0250, W = 0.0160 ksf, Tributary Width = 2.0 ft

Load for Span Number 2
Uniform Load : D = 0.0050, S = 0.0250, W = 0.0160 ksf, Tributary Width = 2.0 ft

Load for Span Number 3
Uniform Load : D = 0.0050, S = 0.0250, W = 0.0160 ksf, Tributary Width = 2.0 ft

Point Load : D = 0.040, S = 0.060, W = 0.040 k @ 2.330 ft, (B3)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	0.106 : 1	Maximum Shear Stress Ratio =	0.024 : 1
Section used for this span	C9x13.4	Section used for this span	C9x13.4
Ma : Applied	2.410 k-ft	Va : Applied	0.6584 k
Mn / Omega : Allowable	22.635 k-ft	Vn/Omega : Allowable	27.123 k
Load Combination	+D+0.750L+0.750S+0.450W+H	Load Combination	+D+0.750L+0.750S+0.450W+H
Location of maximum on span	8.000 ft	Location of maximum on span	8.000 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.058 in	Ratio =	3,313 >=360
Max Upward Transient Deflection	-0.003 in	Ratio =	48,904 >=360
Max Downward Total Deflection	0.088 in	Ratio =	2183 >=180
Max Upward Total Deflection	-0.005 in	Ratio =	31290 >=180

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	Summary of Moment Values Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Summary of Shear Values Va Max	Vnx	Vnx/Omega
+D+H													
Dsgn. L = 8.00 ft	1	0.033	0.007		-0.75	0.75	37.80	22.63	1.00	1.00	0.20	45.30	27.12
Dsgn. L = 13.67 ft	2	0.033	0.007	0.13	-0.75	0.75	37.80	22.63	1.00	1.00	0.20	45.30	27.12
Dsgn. L = 2.33 ft	3	0.007	0.003		-0.16	0.16	37.80	22.63	1.00	1.00	0.09	45.30	27.12
+D+L+H													
Dsgn. L = 8.00 ft	1	0.033	0.007		-0.75	0.75	37.80	22.63	1.00	1.00	0.20	45.30	27.12
Dsgn. L = 13.67 ft	2	0.033	0.007	0.13	-0.75	0.75	37.80	22.63	1.00	1.00	0.20	45.30	27.12
Dsgn. L = 2.33 ft	3	0.007	0.003		-0.16	0.16	37.80	22.63	1.00	1.00	0.09	45.30	27.12
+D+Lr+H													
Dsgn. L = 8.00 ft	1	0.033	0.007		-0.75	0.75	37.80	22.63	1.00	1.00	0.20	45.30	27.12
Dsgn. L = 13.67 ft	2	0.033	0.007	0.13	-0.75	0.75	37.80	22.63	1.00	1.00	0.20	45.30	27.12
Dsgn. L = 2.33 ft	3	0.007	0.003		-0.16	0.16	37.80	22.63	1.00	1.00	0.09	45.30	27.12

Title Block Line 1
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Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

Printed: 21 DEC 2021, 2:56PM

Steel Beam

File: Puyallup 2nd St Apts.ec6

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Lic. # : KW-06014847 AHBL, INC

DESCRIPTION: Canopy B4 BM

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

Load Combination / Segment Length	Span #	Max Stress Ratios M	Max Stress Ratios V	Summary of Moment Values Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Summary of Shear Values Va Max	Vnx	Vnx/Omega
+D+S+H													
Dsgn. L = 8.00 ft	1	0.104	0.024		-2.35	2.35	37.80	22.63	1.00	1.00	0.64	45.30	27.12
Dsgn. L = 13.67 ft	2	0.104	0.024	0.46	-2.35	2.35	37.80	22.63	1.00	1.00	0.64	45.30	27.12
Dsgn. L = 2.33 ft	3	0.019	0.010		-0.43	0.43	37.80	22.63	1.00	1.00	0.27	45.30	27.12
+D+0.750Lr+0.750L+H													
Dsgn. L = 8.00 ft	1	0.033	0.007		-0.75	0.75	37.80	22.63	1.00	1.00	0.20	45.30	27.12
Dsgn. L = 13.67 ft	2	0.033	0.007	0.13	-0.75	0.75	37.80	22.63	1.00	1.00	0.20	45.30	27.12
Dsgn. L = 2.33 ft	3	0.007	0.003		-0.16	0.16	37.80	22.63	1.00	1.00	0.09	45.30	27.12
+D+0.750L+0.750S+H													
Dsgn. L = 8.00 ft	1	0.086	0.020		-1.95	1.95	37.80	22.63	1.00	1.00	0.53	45.30	27.12
Dsgn. L = 13.67 ft	2	0.086	0.020	0.38	-1.95	1.95	37.80	22.63	1.00	1.00	0.53	45.30	27.12
Dsgn. L = 2.33 ft	3	0.016	0.008		-0.36	0.36	37.80	22.63	1.00	1.00	0.23	45.30	27.12
+D+0.60W+H													
Dsgn. L = 8.00 ft	1	0.060	0.014		-1.36	1.36	37.80	22.63	1.00	1.00	0.37	45.30	27.12
Dsgn. L = 13.67 ft	2	0.060	0.014	0.26	-1.36	1.36	37.80	22.63	1.00	1.00	0.37	45.30	27.12
Dsgn. L = 2.33 ft	3	0.012	0.006		-0.26	0.26	37.80	22.63	1.00	1.00	0.16	45.30	27.12
+D+0.70E+H													
Dsgn. L = 8.00 ft	1	0.033	0.007		-0.75	0.75	37.80	22.63	1.00	1.00	0.20	45.30	27.12
Dsgn. L = 13.67 ft	2	0.033	0.007	0.13	-0.75	0.75	37.80	22.63	1.00	1.00	0.20	45.30	27.12
Dsgn. L = 2.33 ft	3	0.007	0.003		-0.16	0.16	37.80	22.63	1.00	1.00	0.09	45.30	27.12
+D+0.750Lr+0.750L+0.450W+H													
Dsgn. L = 8.00 ft	1	0.053	0.012		-1.21	1.21	37.80	22.63	1.00	1.00	0.33	45.30	27.12
Dsgn. L = 13.67 ft	2	0.053	0.012	0.23	-1.21	1.21	37.80	22.63	1.00	1.00	0.33	45.30	27.12
Dsgn. L = 2.33 ft	3	0.011	0.005		-0.24	0.24	37.80	22.63	1.00	1.00	0.15	45.30	27.12
+D+0.750L+0.750S+0.450W+H													
Dsgn. L = 8.00 ft	1	0.106	0.024		-2.41	2.41	37.80	22.63	1.00	1.00	0.66	45.30	27.12
Dsgn. L = 13.67 ft	2	0.106	0.024	0.47	-2.41	2.41	37.80	22.63	1.00	1.00	0.66	45.30	27.12
Dsgn. L = 2.33 ft	3	0.020	0.010		-0.44	0.44	37.80	22.63	1.00	1.00	0.28	45.30	27.12
+D+0.750L+0.750S+0.5250E+H													
Dsgn. L = 8.00 ft	1	0.086	0.020		-1.95	1.95	37.80	22.63	1.00	1.00	0.53	45.30	27.12
Dsgn. L = 13.67 ft	2	0.086	0.020	0.38	-1.95	1.95	37.80	22.63	1.00	1.00	0.53	45.30	27.12
Dsgn. L = 2.33 ft	3	0.016	0.008		-0.36	0.36	37.80	22.63	1.00	1.00	0.23	45.30	27.12
+0.60D+0.60W+0.60H													
Dsgn. L = 8.00 ft	1	0.047	0.011		-1.06	1.06	37.80	22.63	1.00	1.00	0.29	45.30	27.12
Dsgn. L = 13.67 ft	2	0.047	0.011	0.20	-1.06	1.06	37.80	22.63	1.00	1.00	0.29	45.30	27.12
Dsgn. L = 2.33 ft	3	0.009	0.005		-0.20	0.20	37.80	22.63	1.00	1.00	0.13	45.30	27.12
+0.60D+0.70E+0.60H													
Dsgn. L = 8.00 ft	1	0.020	0.004		-0.45	0.45	37.80	22.63	1.00	1.00	0.12	45.30	27.12
Dsgn. L = 13.67 ft	2	0.020	0.004	0.08	-0.45	0.45	37.80	22.63	1.00	1.00	0.12	45.30	27.12
Dsgn. L = 2.33 ft	3	0.004	0.002		-0.09	0.09	37.80	22.63	1.00	1.00	0.06	45.30	27.12

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.750L+0.750S+0.450W+H	1	0.0879	0.000		0.0000	0.000
+D+0.750L+0.750S+0.450W+H	2	0.0028	9.478	+D+0.750L+0.750S+0.450W+H	-0.0052	2.369
	3	0.0000	9.478	S Only	-0.0007	2.330

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2	Support 3	Support 4
Overall MAXimum		1.261	0.649	
Overall MINimum		0.234	0.127	
+D+H		0.390	0.211	
+D+L+H		0.390	0.211	
+D+Lr+H		0.390	0.211	
+D+S+H		1.229	0.633	
+D+0.750Lr+0.750L+H		0.390	0.211	
+D+0.750L+0.750S+H		1.019	0.527	
+D+0.60W+H		0.712	0.374	
+D+0.70E+H		0.390	0.211	
+D+0.750Lr+0.750L+0.450W+H		0.632	0.333	
+D+0.750L+0.750S+0.450W+H		1.261	0.649	
+D+0.750L+0.750S+0.5250E+H		1.019	0.527	
+0.60D+0.60W+0.60H		0.556	0.290	
+0.60D+0.70E+0.60H		0.234	0.127	
D Only		0.390	0.211	
S Only		0.839	0.421	
W Only		0.536	0.272	

Title Block Line 1
You can change this area
using the "Settings" menu item
and then using the "Printing &
Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

Printed: 21 DEC 2021, 2:56PM

Steel Beam

File: Puyallup 2nd St Apts.ec6

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Lic. # : KW-06014847

AHBL, INC

DESCRIPTION: Canopy B4 BM

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2	Support 3	Support 4
H Only				

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

Title Block Line 1
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Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

Printed: 21 DEC 2021, 3:26PM

Wood Column

File: Puyallup 2nd St Apts.ec6

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DESCRIPTION: Typ Canopy Rod Support Column

Code References

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

Calculations per NDS 2015, IBC 2015, CBC 2016, ASCE 7-10
Load Combinations Used : IBC 2018

General Information

Analysis Method : Allowable Stress Design
End Fixities : Top & Bottom Pinned
Overall Column Height : 9 ft
(Used for non-slender calculations)

Wood Species : Douglas Fir-Larch
Wood Grade : No.1

Fb +	1200 psi	Fv	170 psi
Fb -	1200 psi	Ft	825 psi
Fc - Prll	1000 psi	Density	31.21 pcf
Fc - Perp	625 psi		

E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial
Basic	1600	1600	1600 ksi
Minimum	580	580	

Wood Section Name : **6x6**
Wood Grading/Manuf. : Graded Lumber
Wood Member Type : Sawn

Exact Width : **5.50** in
Exact Depth : **5.50** in

Area	30.250	in^2
Ix	76.255	in^4
Iy	76.255	in^4

Allow Stress Modification Factors

Cf or Cv for Bending	1.0
Cf or Cv for Compression	1.0
Cf or Cv for Tension	1.0
Cm : Wet Use Factor	1.0
Ct : Temperature Factor	1.0
Cfu : Flat Use Factor	1.0
Kf : Built-up columns	1.0 *NDS 15.3.2*
Use Cr : Repetitive ?	No

Brace condition for deflection (buckling) along columns :
X-X (width) axis : Fully braced against buckling ABOUT Y-Y Axis
Y-Y (depth) axis : Unbraced Length for buckling ABOUT X-X Axis = 8 ft, K = 1.0

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 59.006 lbs * Dead Load Factor
AXIAL LOADS . . .
Py: Axial Load at 3.50 ft, D = 0.390, S = 0.840, W = 0.540 k
BENDING LOADS . . .
Px: Lat. Point Load at 3.50 ft creating Mx-x, D = 0.470, S = 1.0, W = 0.650 k

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.9993** : 1

Load Combination	+D+S+H
Governing NDS Forumla	1Comp + Mxx, NDS Eq. 3.9-3
Location of max.above base	3.443 ft
At maximum location values are . . .	
Applied Axial	1.289 k
Applied Mx	3.093 k-ft
Applied My	0.0 k-ft
Fc : Allowable	903.32 psi

PASS Maximum Shear Stress Ratio = **0.2279** : 1

Load Combination	+D+S+H
Location of max.above base	3.443 ft
Applied Design Shear	44.545 psi
Allowable Shear	195.50 psi

Maximum SERVICE Lateral Load Reactions . .

Top along Y-Y	0.5882 k	Bottom along Y-Y	0.9243 k
Top along X-X	0.0 k	Bottom along X-X	0.0 k

Maximum SERVICE Load Lateral Deflections . . .
Along Y-Y 0.3080 in at 4.228 ft above base
for load combination : +D+0.750L+0.750S+0.450W+H
Along X-X 0.0 in at 0.0 ft above base
for load combination : n/a

Other Factors used to calculate allowable stresses . . .

	Bending	Compression	Tension

Load Combination Results

Load Combination	C_D	C_P	Maximum Axial + Bending Stress Ratios: Stress Ratio	Status	Location	Maximum Shear Ratios: Stress Ratio	Status	Location
+D+H	0.900	0.842	0.4031	PASS	3.503 ft	0.09309	PASS	3.443 ft
+D+L+H	1.000	0.820	0.3628	PASS	3.503 ft	0.08378	PASS	3.443 ft
+D+Lr+H	1.250	0.762	0.2902	PASS	3.503 ft	0.06702	PASS	3.443 ft
+D+S+H	1.150	0.785	0.9993	PASS	3.443 ft	0.2279	PASS	3.443 ft
+D+0.750Lr+0.750L+H	1.250	0.762	0.2902	PASS	3.503 ft	0.06702	PASS	3.443 ft
+D+0.750L+0.750S+H	1.150	0.785	0.8253	PASS	3.443 ft	0.1891	PASS	3.443 ft
+D+0.60W+H	1.600	0.683	0.4152	PASS	3.443 ft	0.09581	PASS	3.443 ft
+D+0.70E+H	1.600	0.683	0.2267	PASS	3.503 ft	0.05236	PASS	3.443 ft
+D+0.750Lr+0.750L+0.450W+H	1.600	0.683	0.3678	PASS	3.503 ft	0.08495	PASS	3.443 ft

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Project Title:
Engineer:
Project ID: PRMU20220123
Project Descr:

Printed: 21 DEC 2021, 3:26PM

Wood Column

File: Puyallup 2nd St Apts.ec6

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Lic. # : KW-06014847 AHBL, INC

DESCRIPTION: Typ Canopy Rod Support Column

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building
Planning
Engineering
Public Works
Fire
Traffic

Load Combination Results

Load Combination	C_D	C_P	Maximum Axial + Bending Stress Ratios: Stress Ratio	Status	Location	Maximum Shear Ratios: Stress Ratio	Status	Location
+D+0.750L+0.750S+0.450W+H	1.600	0.683	0.7395	PASS	3.443 ft	0.1685	PASS	3.443 ft
+D+0.750L+0.750S+0.5250E+H	1.600	0.683	0.5931	PASS	3.443 ft	0.1359	PASS	3.443 ft
+0.60D+0.60W+0.60H	1.600	0.683	0.3240	PASS	3.503 ft	0.07487	PASS	3.443 ft
+0.60D+0.70E+0.60H	1.600	0.683	0.1360	PASS	3.503 ft	0.03142	PASS	3.443 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction @ Base	X-X Axis Reaction @ Top	k	Y-Y Axis Reaction @ Base	Y-Y Axis Reaction @ Top	Axial Reaction @ Base	My - End Moments @ Base	My - End Moments @ Top	k-ft	Mx - End Moments @ Base	Mx - End Moments @ Top
+D+H				0.287	0.183	0.449					
+D+L+H				0.287	0.183	0.449					
+D+Lr+H				0.287	0.183	0.449					
+D+S+H				0.898	0.572	1.289					
+D+0.750Lr+0.750L+H				0.287	0.183	0.449					
+D+0.750L+0.750S+H				0.746	0.474	1.079					
+D+0.60W+H				0.526	0.334	0.773					
+D+0.70E+H				0.287	0.183	0.449					
+D+0.750Lr+0.750L+0.450W+H				0.466	0.297	0.692					
+D+0.750L+0.750S+0.450W+H				0.924	0.588	1.322					
+D+0.750L+0.750S+0.5250E+H				0.746	0.474	1.079					
+0.60D+0.60W+0.60H				0.411	0.261	0.593					
+0.60D+0.70E+0.60H				0.172	0.110	0.269					
D Only				0.287	0.183	0.449					
Lr Only											
L Only											
S Only				0.611	0.389	0.840					
W Only				0.397	0.253	0.540					
E Only											
H Only											

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection		Distance		Max. Y-Y Deflection		Distance	
+D+H	0.0000	in	0.000	ft	0.0957	in	4.228	ft
+D+L+H	0.0000	in	0.000	ft	0.0957	in	4.228	ft
+D+Lr+H	0.0000	in	0.000	ft	0.0957	in	4.228	ft
+D+S+H	0.0000	in	0.000	ft	0.2993	in	4.228	ft
+D+0.750Lr+0.750L+H	0.0000	in	0.000	ft	0.0957	in	4.228	ft
+D+0.750L+0.750S+H	0.0000	in	0.000	ft	0.2484	in	4.228	ft
+D+0.60W+H	0.0000	in	0.000	ft	0.1751	in	4.228	ft
+D+0.70E+H	0.0000	in	0.000	ft	0.0957	in	4.228	ft
+D+0.750Lr+0.750L+0.450W+H	0.0000	in	0.000	ft	0.1553	in	4.228	ft
+D+0.750L+0.750S+0.450W+H	0.0000	in	0.000	ft	0.3080	in	4.228	ft
+D+0.750L+0.750S+0.5250E+H	0.0000	in	0.000	ft	0.2484	in	4.228	ft
+0.60D+0.60W+0.60H	0.0000	in	0.000	ft	0.1368	in	4.228	ft
+0.60D+0.70E+0.60H	0.0000	in	0.000	ft	0.0574	in	4.228	ft
D Only	0.0000	in	0.000	ft	0.0957	in	4.228	ft
Lr Only	0.0000	in	0.000	ft	0.0000	in	0.000	ft
L Only	0.0000	in	0.000	ft	0.0000	in	0.000	ft
S Only	0.0000	in	0.000	ft	0.2036	in	4.228	ft
W Only	0.0000	in	0.000	ft	0.1324	in	4.228	ft
E Only	0.0000	in	0.000	ft	0.0000	in	0.000	ft
H Only	0.0000	in	0.000	ft	0.0000	in	0.000	ft

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Sketches

