SHUTLER
CONSULTING
ENGINEERS, Inc.

12503 Bel-Red Road, Suite 100
Bellevue, Washington 98005
(425) 450-4075

PRCTI20251201

JOB Prologis Trimlite TI
SHEET NO. COVER OF
CALCULATED BY jch DATE 9/4/2025
CHECKED BY DATE
SCALE
JOB NUMBER 25-01.102

STRUCTURAL CALCULATIONS FOR:

These calculations must be on site and made available by the Permittee for all inspections.

PROLOGIS TRIMLITE T.I. --
RIVERFRONT BLDG 1
1601 INDUSTRIAL WAY
PUYALLUP, WASINGTON

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Building	Planning
Engineering	Public Works
Fire	Traffic

JOHN C. HEADLAND
STATE OF WASHINGTON
31757
STRUCTURAL ENGINEER
PROFESSIONAL ENGINEER
9-4-25

PROPOSED BY:

HAWK BUILDING LLC
ryan@hawkbuilding.com
(425) 273-1583

DESIGN CRITERIA:

CODE.....	INTERNATIONAL BUILDING CODE, 2021 EDITION
ROOF LIVE LOAD.....	25 PSF SNOW LOAD, Is=1.0
WIND LOAD.....	110 MPH ZONE, EXPOSURE "B"
SEISMIC ZONE.....	SITE CLASS 'D', Sds=0.855, Sd1=0.547, R=3.0, Ie=1.0 DESIGN CATEGORY 'D',

ALLOWABLE SOIL BEARING IS 1500 PSF.

City of Puyallup
Building
REVIEWED
FOR
COMPLIANCE
BSnowden
09/10/2025
3:41:33 PM

CITY OF PUYALLUP
STATE OF WASHINGTON

SHUTLER
CONSULTING
ENGINEERS, INC
12503 NE Bel-Red Rd, Suite 100
Bellevue, WA 98005
(425) 450-4075

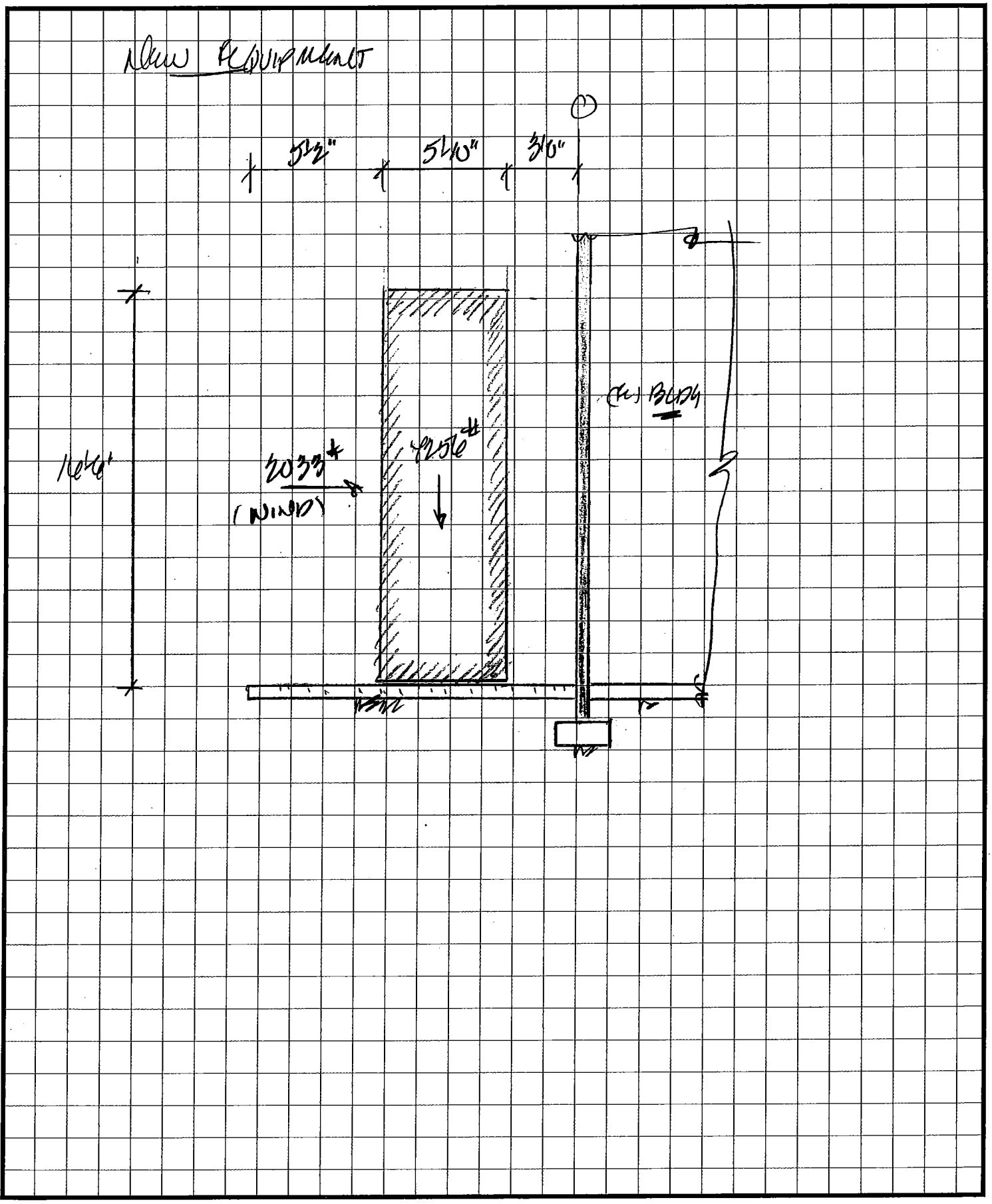
JOB RUNKFIGURE 1

SHEET NO. 3-1 OF

CALCULATED BY

DATE

SCALE



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JOB RIVERFRONT 1
SHEET NO. 5-2 OF
CALCULATED BY JCH
DATE 9-2-25
SCALE

CHECK CONCRETE PAD

SEISMIC - $S_{DS} = 0.855$, $R_p = 3.0$, $a_p = 1.0$

$$F_{p\,WS} = \frac{S_{DS} a_p}{R_p}(0.70) = 0.20\ W_t$$

WIND - 110 MPH, EXP. 'B'

$$q_h = 0.00256 K_z K_{zt} K_d V^2$$
$$= 0.00256(0.70)(1.00)(0.85)(110)^2 = 18.0\ PSF$$

$$F_{p\,WS} = q_h C_f G (0.100)$$
$$= 18.0(1.0)(0.85)(0.100) = 13.2\ PSF$$

SIZE = 10 × 11.2 × 1.96" (H)
WEIGHT = 12256 #

SEISMIC = $0.20 \times W_t = 852$ #

WIND = $\frac{11.2 \times 19.6}{144}(13.2) = 2033$ # ← CONTROLS

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JOB RIVERFRONT 1
SHEET NO. 7-13 OF
CALCULATED BY JCH
DATE 9-2-25
SCALE

CONCRETE PAD (CONT.)

$M_{OT} = 2033\left(\frac{19'6''}{2}\right) = 201^{k'} \text{ or } 160.6^{k'}$

EQUIPMENT = — = 49.2^{k}
CONC. PAD = 14'(16'x 5½"x 150) = 160.8
210

$M_x = P \times 140'/2 = 147^{k'}$

$x = \frac{M_x - M_{OT}}{P} = 0.70' \times 3 = 15.16' > 14.0'$

$e = \frac{14}{2} - x = 0.60'$

$p = \frac{P}{A}\left[1 \pm \frac{6e}{14'}\right] = 124 < 1500$ psf
$= 62$

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JOB RICHMOND 1
SHEET NO. 7-4 OF
CALCULATED BY OCH
DATE 9-3-25
SCALE

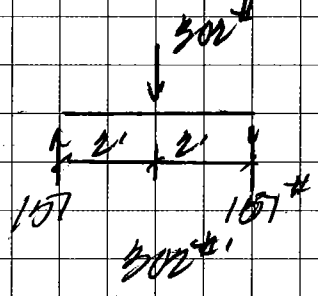
DUCT SUPPORT

$$P = \frac{175 + 2(125) + 130 + 105/2}{2} = 302^{\#}/\text{Rod}$$

- 3/8" Ø A36
  $P_{allow} = 0.33(58^{ksi})(0.11\,in^2) = 2105^{\#}$ (OK)

STRUT

$L = 4'-0"$
$P = 302^{\#}$



- 1 5/8" x 1 5/8" x 12 GA
  $S_x = 0.202\,in^3$
  $I_x = 0.185$

$F_b = 17.9 < 0.6(33) = 19.8^{ksi}$
$K = 0.13" \Rightarrow 4370$

$P_{allow} = 850 \times 0.50 \times 0.85 \times 0.86 = 318^{\#}$ (OK)
($\Sigma_{At\ Long}$, T_{UT}, $T_{Unbraced}$)

CONN. TO 2x

$P_{req} = 302^{\#}$

- 1/4"Ø x 3" SIMPSON SDS SCREWS
  $P_{allow} = 3405^{\#} \times 0.90_{C_D} = 310^{\#}$

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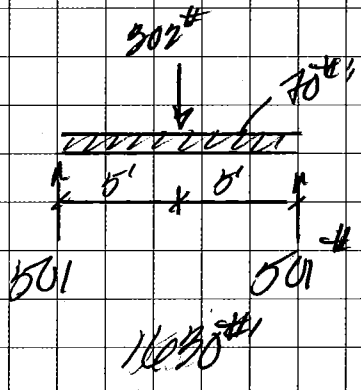
JOB RIVERFRONT 1
SHEET NO. 5-5 OF
CALCULATED BY JCH
DATE 9-3-25
SCALE

COLUMN (R) STIFFNER

L = 10'-0"
DL = 20.0' (10) = 20 #/'
LL = " (25) = 50
70

P = 302#



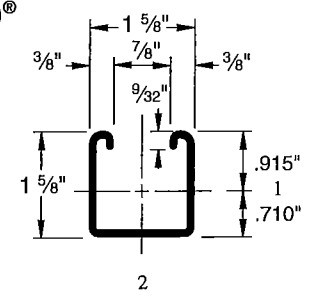
(R) 2x6 DF#2

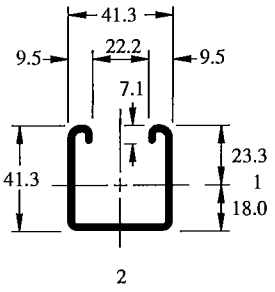
A = 8.25 in²
S = 7.56
I = 20.8

Fv = 85 psi
Fb = 2067
Δ = 0.80" → L/150

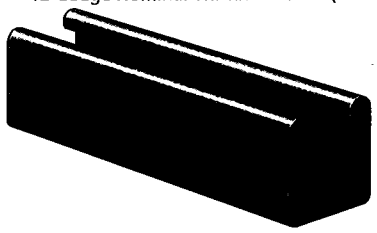
⇒ ADD (2) 2x6 TO (R) 2x6

P1000®

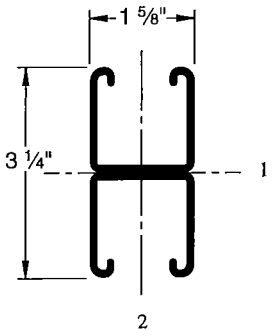


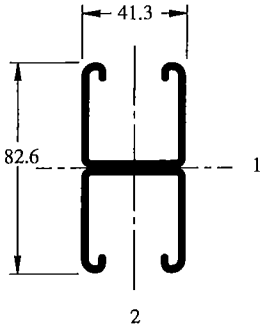


Wt/100 Ft:189 Lbs (281 kg/100 m)
Allowable Moment 5,070 In-Lbs (570 N•m)
12 Gauge Nominal Thickness .105" (2.7mm)

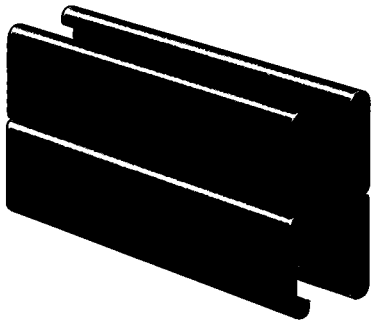


P1001





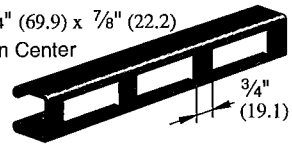
Wt/100 Ft: 378 Lbs (562 kg/100 m)
Allowable Moment 14,360 In-Lbs (1,620 N•m)
12 Gauge Nominal Thickness .105" (2.7mm)

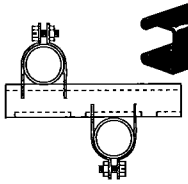


P1000 DS

Wt/100 Ft: 173 Lbs (257 kg/100 m)

Slots are 2 3/4" (69.9) x 7/8" (22.2)
3 1/2" (88.9) on Center



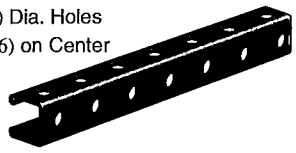


Pipe Clamps can be Mounted on Both Sides

P1000 H3

Wt/100 Ft: 175 Lbs (260 kg/100 m)

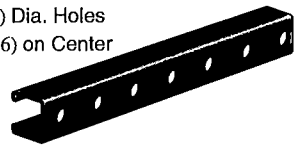
9/16" (14.3) Dia. Holes
1 7/8" (47.6) on Center



P1000 HS

Wt/100 Ft:185 Lbs (275 kg/100 m)

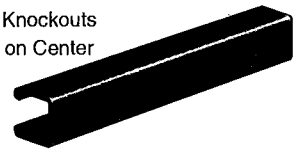
9/16" (14.3) Dia. Holes
1 7/8" (47.6) on Center



P1000 KO

Wt/100 Ft: 190 Lbs (283 kg/100 m)

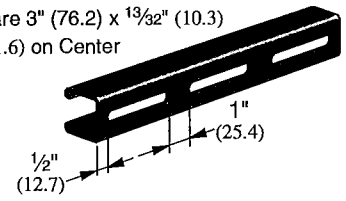
7/8" (22.2) Knockouts
6" (152.4) on Center



P1000 SL

Wt/100 Ft: 185 Lbs (275 kg/100 m)

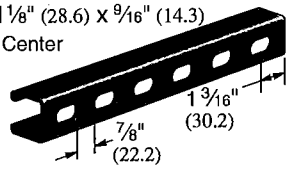
Slots are 3" (76.2) x 13/32" (10.3)
4" (101.6) on Center



P1000 T

Wt/100 Ft: 185 Lbs (275 kg/100 m)

Slots are 1 1/8" (28.6) x 9/16" (14.3)
2" (51) on Center



Channel Nuts (Refer to Hardware Section for Details)

P1006-0832
P1006-1024
P1006-1420
P1007
P1008
P1009
P1010

P1008T
P1006T1420
P1010T

P1024
P1012S
P1023S

P1012
P1023
P1024S

P3006-0832
P3006-1024
P3006-1420
P3007
P3008
P3009
P3010

P3016-0632
P3016-0832
P3016-1024
P3016-1420

Channel Finishes: PL, GR, HG, PG; Standard Lengths: 10' & 20'

BEAM LOADING – P1000

Span In	Max Allowable Uniform Load Lbs	Defl. at Uniform Load In	Uniform Loading at Deflection Span/180 Lbs	Span/240 Lbs	Span/360 Lbs
24	1,690	0.06	1,690	1,690	1,690
36	1,130	0.13	1,130	1,130	900
48	850	0.22	850	760	500
60	680	0.35	650	480	320
72	560	0.50	450	340	220
84	480	0.68	330	250	160
96	420	0.89	250	190	130
108	380	1.14	200	150	100
120	340	1.40	160	120	80
144	280	2.00	110	80	60
168	240	2.72	80	60	40
192	210	3.55	60	50	NR
216	190	4.58	50	40	NR
240	170	5.62	40	NR	NR

BEAM LOADING – P1001

Span In	Max Allowable Uniform Load Lbs	Defl. at Uniform Load In	Uniform Loading at Deflection Span/180 Lbs	Span/240 Lbs	Span/360 Lbs
24	3,500 *	0.02	3,500 *	3,500 *	3,500 *
36	3,190	0.07	3,190	3,190	3,190
48	2,390	0.13	2,390	2,390	2,390
60	1,910	0.20	1,910	1,910	1,620
72	1,600	0.28	1,600	1,600	1,130
84	1,370	0.39	1,370	1,240	830
96	1,200	0.51	1,200	950	630
108	1,060	0.64	1,000	750	500
120	960	0.79	810	610	410
144	800	1.14	560	420	280
168	680	1.53	410	310	210
192	600	2.02	320	240	160
216	530	2.54	250	190	130
240	480	3.16	200	150	100

COLUMN LOADING – P1000

Unbraced Height In	Maximum Allowable Load at Slot Face Lbs	Maximum Column Load Applied at C.G. K = 0.65 Lbs	K = 0.80 Lbs	K =1.0 Lbs	K = 1.2 Lbs
24	3,550	10,740	9,890	8,770	7,740
36	3,190	8,910	7,740	6,390	5,310
48	2,770	7,260	6,010	4,690	3,800
60	2,380	5,910	4,690	3,630	2,960
72	2,080	4,840	3,800	2,960	2,400
84	1,860	4,040	3,200	2,480	1,980
96	1,670	3,480	2,750	2,110	1,660
108	1,510	3,050	2,400	1,810	**
120	1,380	2,700	2,110	**	**
144	1,150	2,180	1,660	**	**

COLUMN LOADING – P1001

Unbraced Height In	Maximum Allowable Load at Slot Face Lbs	Maximum Column Load Applied at C.G. K = 0.65 Lbs	K = 0.80 Lbs	K =1.0 Lbs	K = 1.2 Lbs
24	6,430	24,280	23,610	22,700	21,820
36	6,290	22,810	21,820	20,650	19,670
48	6,160	21,410	20,300	18,670	16,160
60	6,000	20,210	18,670	15,520	12,390
72	5,620	18,970	16,160	12,390	8,950
84	5,170	16,950	13,630	9,470	6,580
96	4,690	14,890	11,190	7,250	5,040
108	4,170	12,850	8,950	5,730	3,980
120	3,690	10,900	7,250	4,640	**
144	2,930	7,630	5,040	**	**

ELEMENTS OF SECTION P1000/P1001

Parameter	P1000	P1001
Area of Section	0.555 In^2	1.111 In^2
Axis 1-1		
Moment of Inertia (I)	0.185 In^4	0.928 In^4
Section Modulus (S)	0.202 In^3	0.571 In^3
Radius of Gyration (r)	0.577 In	0.914 In
Axis 2-2		
Moment of Inertia (I)	0.236 In^4	0.471 In^4
Section Modulus (S)	0.290 In^3	0.580 In^3
Radius of Gyration (r)	0.651 In	0.651 In

Notes:

* Load limited by spot weld shear.

** $KL/r > 200$

NR = Not Recommended.

1. Above loads include the weight of the member. This weight must be deducted to arrive at the net allowable load the beam will support.
2. Long span beams should be supported in such a manner as to prevent rotation and twist.
3. Allowable uniformly distributed loads are listed for various simple spans, that is, a beam on two supports. If load is concentrated at the center of the span, multiply load from the table by 0.5 and corresponding deflection by 0.8.
4. See page 61 for lateral bracing reduction charts.
5. For Pierced Channel, Beam Load Values in the tables are multiplied by the following factor:

"DS" Series	70%	"T" Series	85%
"KO" Series	95%	"H3" Series	90%
"SL" Series	85%	"HS" Series	90%

CONVERSION FACTORS FOR BEAMS WITH VARIOUS STATIC LOADING CONDITIONS

All Beam Load tables are for single-span (simple) beams supported at the ends. These can be used in the majority of the cases. However, there are times when it is necessary to know what happens with other loading and support conditions. Some common arrangements are shown below. Simply multiply the values from the Beam Load tables by factors given below

Load and Support Condition	Load Factor	Deflection Factor
1. Simple Beam, Uniform Load	1.00	1.00
2. Simple Beam, Concentrated Load at Center	.50	.80
3. Simple Beam, Two Equal Concentrated Loadcs at 1/4 pts	1.00	1.10
4. Beam Fixed at Both Ends, Uniform Load	1.50	.30
5. Beam Fixed at Both Ends, Concentrated Load at Center	1.00	.40
6. Cantilever Beam, Uniform Load	.25	2.40
7. Cantilever Beam, Concentrated Load at End	.12	3.20
8. Continuous Beam, Two Equal Spans, Uniform Load on One Span	1.30	.92
9. Continuous Beam, Two Equal Spans, Uniform Load on Both Ends	1.00	.42
10. Continuous Beam, Two Equal Spans, Concentrated Load at Center of One Span	.62	.71
11. Continuous Beam, Two Equal Spans, Concentrated Load at Center of Each Span	.67	.48

EXAMPLE I:

Determine load and deflection of a P 1000 beam continuous over one support and loaded uniformly on one span.

SOLUTION:

A. From load table for P1000 on page 26 load for a 5'-0" span is 680# and deflection is .35".
B. Multiply by factors from Table above.
Load = 680# x 1.30 = 884#
Deflection = .35" x .92 = .32"

EXAMPLE II

Determine load and deflection of a P 5500 cantilever beam with a concentrated load on the end.

SOLUTION:

A. From load table P5500 on page 57 load for a 3'-0" span is 2180# and deflection is .09".
B. Multiply by factors from Table above.
Load = 2180# x .12 = 262#
Deflection = .09" x 3.20 = .29"

Lateral Bracing Load Reduction Charts

Lateral Bracing Factors										
Span		Single Channel								
Ft. *(m)*	In. *(cm)*	P1000	P1100	P2000	P3000	P3300	P4000	P4100	P5000	P5500
2 *0.61*	24 *61.0*	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.99
3 *0.91*	36 *91.4*	0.94	0.89	0.88	0.96	1.00	0.94	0.98	0.85	0.89
4 *1.22*	48 *121.9*	0.88	0.78	0.75	0.91	1.00	0.88	0.94	0.70	0.77
5 *1.52*	60 *152.4*	0.82	0.68	0.61	0.88	0.98	0.83	0.91	0.55	0.67
6 *1.83*	72 *182.9*	0.78	0.59	0.48	0.84	0.97	0.79	0.89	0.44	0.58
7 *2.13*	84 *213.4*	0.75	0.52	0.41	0.82	0.96	0.75	0.86	0.38	0.51
8 *2.44*	96 *243.8*	0.71	0.47	0.35	0.79	0.94	0.72	0.84	0.33	0.46
9 *2.74*	108 *274.3*	0.69	0.43	0.32	0.77	0.93	0.69	0.82	0.30	0.42
10 *3.05*	120 *304.8*	0.66	0.40	0.29	0.75	0.92	0.66	0.80	0.28	0.40
12 *3.66*	144 *365.8*	0.61	0.36	0.25	0.70	0.89	0.60	0.76	0.24	0.36
14 *4.27*	168 *426.7*	0.55	0.32	0.23	0.66	0.86	0.55	0.73	0.22	0.32
16 *4.88*	192 *487.7*	0.51	0.30	0.21	0.62	0.84	0.50	0.69	0.21	0.30
18 *5.49*	216 *548.6*	0.47	0.28	0.19	0.58	0.81	0.47	0.65	0.19	0.28
20 *6.10*	240 *609.6*	0.44	0.26	0.18	0.54	0.78	0.43	0.61	0.18	0.26

Lateral Bracing Factors										
Span		Double Channel								
Ft. *(m)*	In. *(cm)*	P1001	P1101	P2001	P3001	P3301	P4001	P4101	P5001	P5501
2 *0.61*	24 *61.0*	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
3 *0.91*	36 *91.4*	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
4 *1.22*	48 *121.9*	1.00	0.98	0.98	1.00	1.00	0.98	1.00	0.97	0.98
5 *1.52*	60 *152.4*	0.97	0.93	0.92	0.98	1.00	0.93	0.96	0.90	0.93
6 *1.83*	72 *182.9*	0.93	0.87	0.85	0.95	0.97	0.88	0.92	0.83	0.87
7 *2.13*	84 *213.7*	0.89	0.82	0.78	0.92	0.95	0.83	0.89	0.76	0.81
8 *2.434*	96 *243.8*	0.85	0.76	0.71	0.88	0.92	0.79	0.85	0.68	0.76
9 *2.74*	108 *274.3*	0.81	0.70	0.64	0.85	0.90	0.74	0.81	0.61	0.70
10 *3.05*	120 *304.8*	0.78	0.65	0.57	0.82	0.87	0.69	0.78	0.54	0.64
12 *3.66*	144 *365.8*	0.70	0.54	0.45	0.76	0.82	0.60	0.71	0.43	0.53
14 *4.28*	168 *426.7*	0.63	0.45	0.38	0.70	0.78	0.51	0.64	0.35	0.45
16 *4.88*	192 *487.7*	0.56	0.39	0.32	0.64	0.73	0.44	0.57	0.30	0.39
18 *5.49*	216 *548.6*	0.49	0.34	0.28	0.58	0.68	0.39	0.50	0.27	0.34
20 *6.10*	240 *609.6*	0.44	0.31	0.25	0.52	0.63	0.35	0.45	0.24	0.30

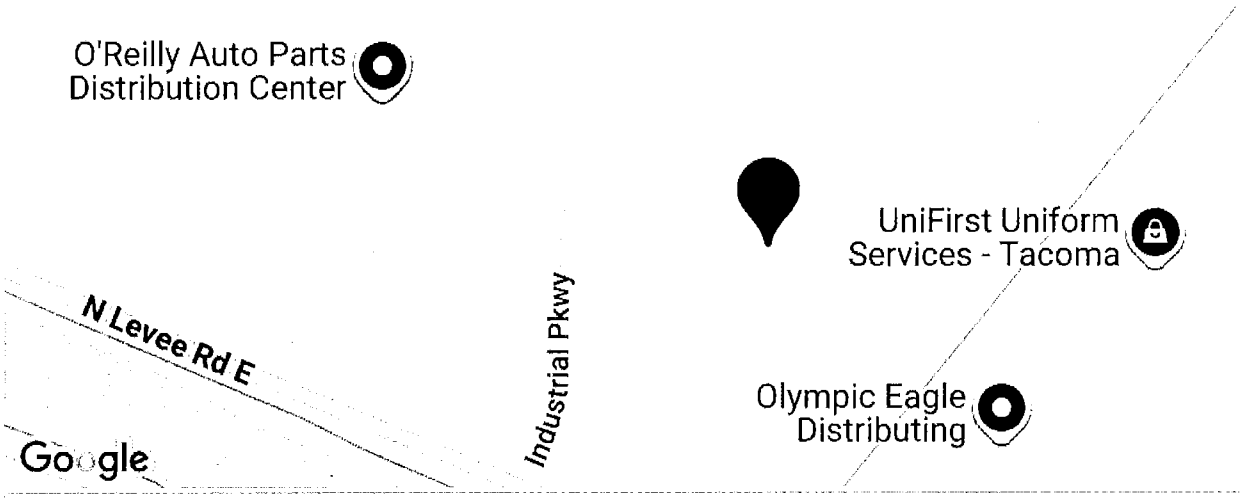
Announcement
ASCE 7-22 is now available.

5/10

OSHPD

1601 Industrial Pkwy, Puyallup, WA 98371, USA

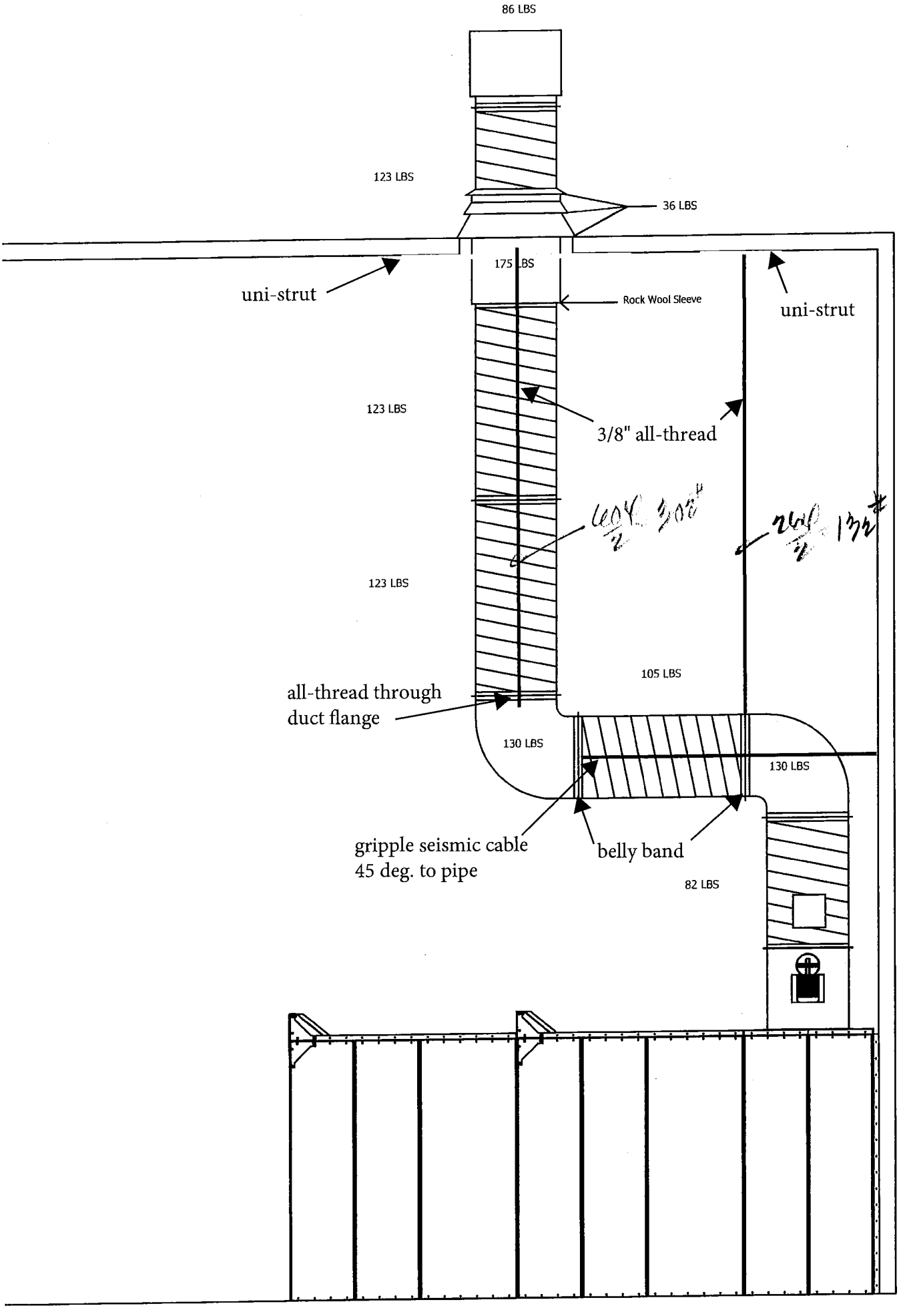
Latitude, Longitude: 47.2067695, -122.3098274



Date	9/2/2025, 3:10:35 PM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D

Type	Value	Description
S_S	1.283	MCE_R ground motion. (for 0.2 second period)
S_1	0.441	MCE_R ground motion. (for 1.0s period)
S_{MS}	1.283	Site-modified spectral acceleration value
S_{M1}	null -See Section 11.4.8	Site-modified spectral acceleration value
S_{DS}	0.855	Numeric seismic design value at 0.2 second SA
S_{D1}	~~null -See Section 11.4.8~~ 0.567	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	null -See Section 11.4.8	Seismic design category
F_a	1	Site amplification factor at 0.2 second
F_v	null -See Section 11.4.8	Site amplification factor at 1.0 second
PGA	0.5	MCE_G peak ground acceleration
F_{PGA}	1.1	Site amplification factor at PGA
PGA_M	0.55	Site modified peak ground acceleration
T_L	6	Long-period transition period in seconds
SsRT	1.283	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	1.404	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.5	Factored deterministic acceleration value. (0.2 second)
S1RT	0.441	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.491	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.6	Factored deterministic acceleration value. (1.0 second)
PGAd	0.5	Factored deterministic acceleration value. (Peak Ground Acceleration)
PGA_{UH}	0.543	Uniform-hazard (2% probability of exceedance in 50 years) Peak Ground Acceleration


86 LBS
123 LBS
36 LBS
175 LBS
uni-strut
Rock Wool Sleeve
uni-strut
123 LBS
3/8" all-thread
123 LBS
105 LBS
all-thread through
duct flange
130 LBS
130 LBS
gripple seismic cable
45 deg. to pipe
belly band
82 LBS