



civil & structural
engineering & planning



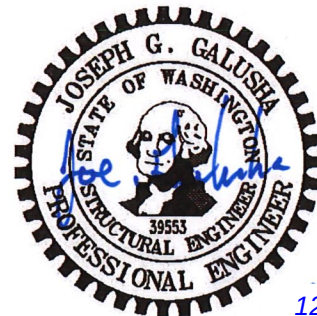
Town of
La Conner
Planning Department

Received
12-20-24

SUPPLEMENTAL STRUCTURAL CALCULATIONS

The Talmon

306 Centre Street
La Conner, WA 98257



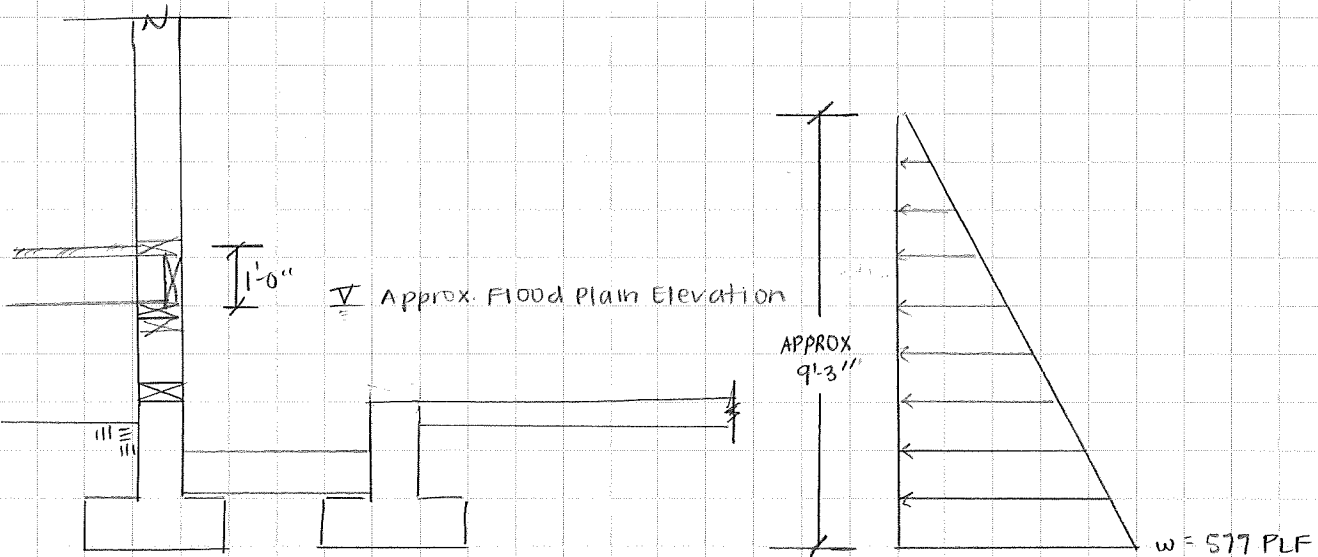
12/20/2024

250 4th Ave S Ste 200
Edmonds, WA 98020
Phone: (425) 778-8500
Fax: (425) 778-5536

CG Project No.: 23154.10

FLOOD LOADING

TOP OF FLOOR IS 1' ABOVE FLOOD PLAIN



Hydrostatic Load: 62.4 lb/ft^2

- increase design depth by 1' for surfaces exposed to free water

Hydrodynamic Load: assume water velocity $\leq 10 \text{ ft/s}$
 → convert to hydrostatic load. Determine equivalent surcharge depth.

assume $V = 10 \text{ ft/s}$

assume $a = 1.25$

$g = 32.2 \text{ ft/s}^2$

$$d_h = \frac{aV^2}{2g} = \frac{(1.25)(10 \text{ ft/s})^2}{2(32.2 \text{ ft/s}^2)} = 1.94'$$

increase design depth by this amount



250 4th Ave. South
 Suite 200
 Edmonds, WA 98020
 425.778.8500
 www.cgeengineering.com

Description

FLOOD LOADING

Project

THE TALMON

By

ERA

Date

7/24/24

Checked

Date

Scale

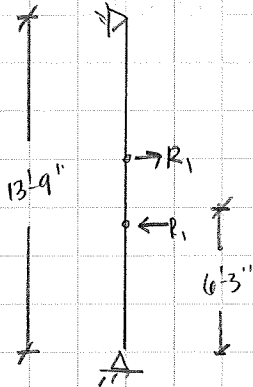
NTS

Sheet No.

Job No.

CHECK FULL HEIGHT ELEVATOR POST

POST SUPPORTING RAIL



ELEVATOR
R1: RAIL SUPPORT FORCE
932 #

R2

6'-3"



Resultant, RH

Hmax

$$H_{max} = 6'-3" \times 62.4 \text{ lb/ft}^3 \times 2' = 0.78 \text{ klf}$$

✓TRIB,

$$\text{Resultant, } R_H = 0.78 \text{ klf} \times 6'-3" \times \frac{1}{2} = 2.44 \text{ k}$$

@ 2'-1"

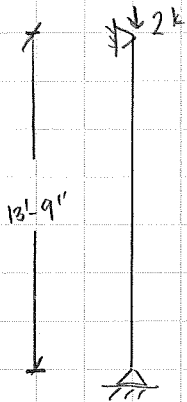
from Base

PER ENERCALL,

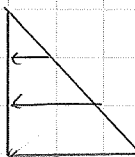
6x12 DF#1

84%

POST SUPPORTING HOIST BEAM



6'-3"



Resultant = 2.44k

PER ENERCALL,

6x12 DF#1



250 4th Ave. South
Suite 200
Edmonds, WA 98020
425.778.8500
www.cgengineering.com

Description	By	Date
	Checked	Date
	Scale	Sheet No.
Project	Job No.	
The Talmon	23154.10	2

Project Title:
 Engineer:
 Project ID:
 Project Descr:

Wood Column

Project File: talmon.ec6

LIC# : KW-06015244, Build:20.24.06.04

CG ENGINEERING

(c) ENERCALC INC 1983-2023

DESCRIPTION: Elevator Posts - R1+R2

Code References

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
 Load Combinations Used : IBC 2021

General Information

Analysis Method		Allowable Stress Design		Wood Section Name		6x12	
End Fixities		Top & Bottom Pinned		Wood Grading/Manuf.		Graded Lumber	
Overall Column Height		13.75 ft		Wood Member Type		Sawn	
(Used for non-slender calculations)							
Wood Species		Douglas Fir-Larch		Exact Width		5.50 in	
Wood Grade		No.1		Exact Depth		11.50 in	
Fb +		1,200.0 psi	Fv	170.0 psi	Area	63.250 in^2	Allow Stress Modification Factors
Fb -		1,200.0 psi	Ft	825.0 psi	Ix	697.07 in^4	Cf or Cv for Bending
Fc - Prll		1,000.0 psi	Density	31.210 pcf	Iy	159.443 in^4	Cf or Cv for Compression
Fc - Perp		625.0 psi					Cf or Cv for Tension
E : Modulus of Elasticity . . .		x-x Bending	y-y Bending	Axial			Cm : Wet Use Factor
Basic		1,600.0	1,600.0	1,600.0 ksi			Ct : Temperature Fact
Minimum		580.0	580.0				Cfu : Flat Use Factor
				Column Buckling Condition:			Kf : Built-up columns
							Use Cr : Repetitive ?
							No

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 188.493 lbs * Dead Load Factor

BENDING LOADS . . .

Lat. Point Load at 5.875 ft creating My-y, L = 0.9320 k
 Lat. Point Load at 7.875 ft creating My-y, L = -0.9320 k
 Lat. Point Load at 5.875 ft creating Mx-x, L = 0.260 k
 Lat. Point Load at 2.080 ft creating My-y, H = 2.440 k
 Lat. Point Load at 7.875 ft creating Mx-x, L = 0.260 k

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.8406 : 1**
 Load Combination +D+L+H
 Governing NDS Formula Comp + Mxx + Myy, NDS Eq. 3.9-
 Location of max.above base 2.122 ft
 At maximum location values are .
 Applied Axial 0.1885 k
 Applied Mx 0.5518 k-ft
 Applied My 4.580 k-ft
 Fc : Allowable 454.158 psi

Maximum SERVICE Lateral Load Reactions . .

Top along Y-Y	0.260 k	Bottom along Y-Y	0.260 k
Top along X-X	0.3691 k	Bottom along X-X	2.206 k

Maximum SERVICE Load Lateral Deflections . . .

Along Y-Y	0.04275 in	at	6.921 ft	above base
for load combination : +D+L+H				
Along X-X	0.4207 in	at	5.629 ft	above base
for load combination : +D+L+H				

Other Factors used to calculate allowable stresses . . .

<u>Bending</u>	<u>Compression</u>	<u>Tension</u>
----------------	--------------------	----------------

PASS Maximum Shear Stress Ratio = **0.3210 : 1**
 Load Combination +D+H
 Location of max.above base 2.030 ft
 Applied Design Shear 73.668 psi
 Allowable Shear 153.0 psi

Load Combination Results

Load Combination	C _D	C _P	Maximum Axial + Bending Stress Ratios			Maximum Shear Ratios		
			Stress Ratio	Status	Location	Stress Ratio	Status	Location
+D+H	0.900	0.493	0.8272	PASS	2.122 ft	0.3210	PASS	2.030 ft
+D+L+H	1.000	0.454	0.8406	PASS	2.122 ft	0.3078	PASS	2.030 ft
+D+0.750L+H	1.250	0.378	0.6533	PASS	2.122 ft	0.2425	PASS	2.030 ft
+0.60D+0.60H	1.600	0.304	0.2785	PASS	2.122 ft	0.1083	PASS	2.030 ft

Project Title:
 Engineer:
 Project ID:
 Project Descr:

Wood Column

Project File: talmon.ec6

LIC# : KW-06015244, Build:20.24.06.04

CG ENGINEERING

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DESCRIPTION: Elevator Posts - R1+R2

Maximum Reactions

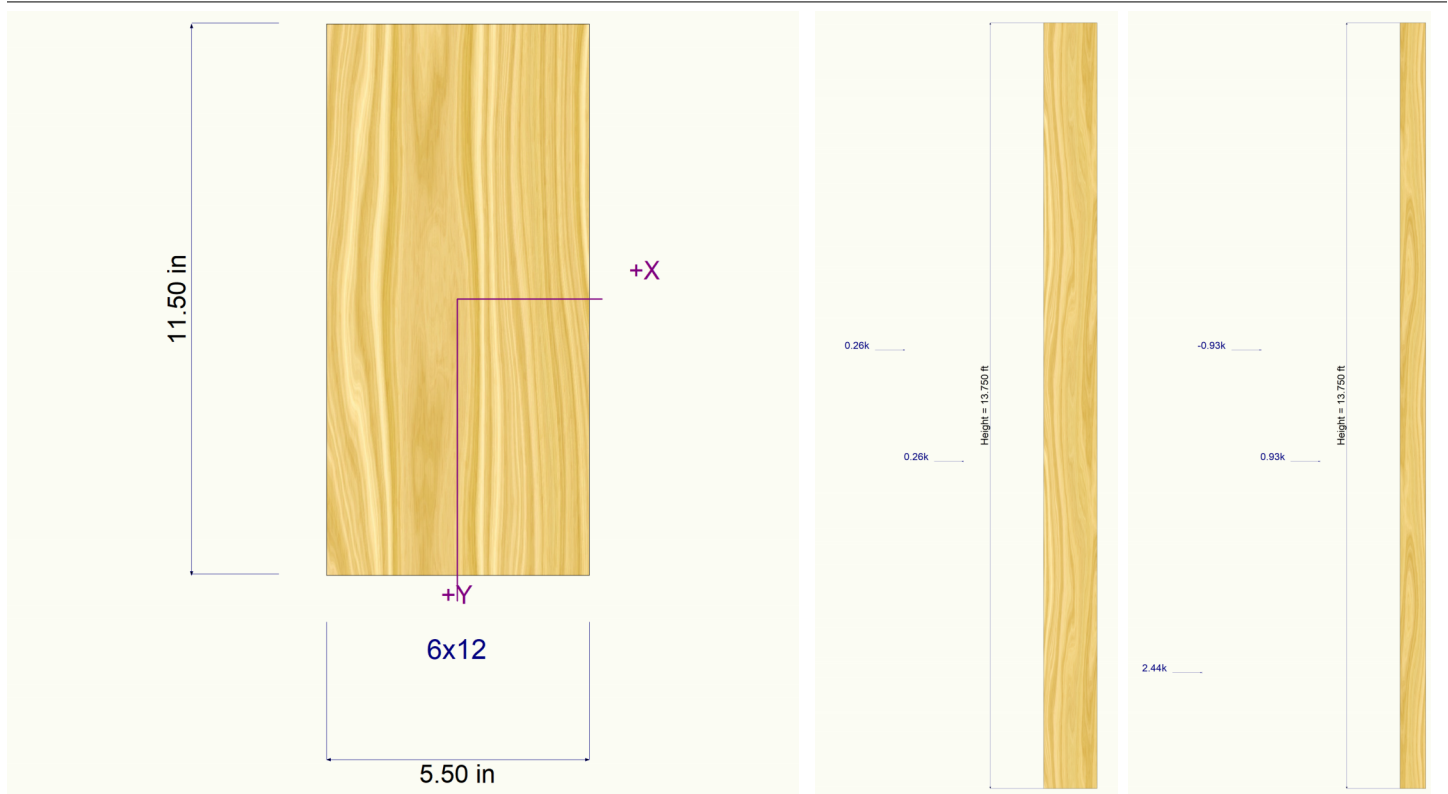
Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		k	Y-Y Axis Reaction		Axial Reaction	My - End Moments		k-ft	Mx - End Moments	
	@ Base	@ Top		@ Base	@ Top	@ Base	@ Base	@ Top		@ Base	@ Top
+D+H	2.071	0.369				0.188					
+D+L+H	2.206	0.234		0.260	0.260	0.188					
+D+0.750L+H	2.173	0.267		0.195	0.195	0.188					
+0.60D+0.60H	1.243	0.221				0.113					
D Only						0.188					
L Only	0.136	-0.136		0.260	0.260						
H Only	2.071	0.369									

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection		Distance	Max. Y-Y Deflection		Distance
+D+H	0.4085 in	5.906ft		0.000 in	0.000 ft	
+D+L+H	0.4207 in	5.629ft		0.043 in	6.921 ft	
+D+0.750L+H	0.4174 in	5.629ft		0.032 in	6.921 ft	
+0.60D+0.60H	0.2451 in	5.906ft		0.000 in	0.000 ft	
D Only	0.0000 in	0.000ft		0.000 in	0.000 ft	
L Only	0.0189 in	3.968ft		0.043 in	6.921 ft	
H Only	0.4085 in	5.906ft		0.000 in	0.000 ft	

Sketches



Project Title:
 Engineer:
 Project ID:
 Project Descr:

Wood Column

Project File: talmon.ec6

LIC# : KW-06015244, Build:20.24.06.04

CG ENGINEERING

(c) ENERCALC INC 1983-2023

DESCRIPTION: Hoist Beam Post

Code References

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
 Load Combinations Used : IBC 2021

General Information

Analysis Method	Allowable Stress Design			Wood Section Name	6x12		
End Fixities	Top & Bottom Pinned			Wood Grading/Manuf.	Graded Lumber		
Overall Column Height	13.75 ft			Wood Member Type	Sawn		
(Used for non-slender calculations)							
Wood Species	Douglas Fir-Larch			Exact Width	5.50 in	Allow Stress Modification Factors	
Wood Grade	No.1			Exact Depth	11.50 in	Cf or Cv for Bending	1.0
Fb +	1,200.0 psi	Fv	170.0 psi	Area	63.250 in^2	Cf or Cv for Compression	1.0
Fb -	1,200.0 psi	Ft	825.0 psi	Ix	697.07 in^4	Cf or Cv for Tension	1.0
Fc - Prll	1,000.0 psi	Density	31.210 pcf	Iy	159.443 in^4	Cm : Wet Use Factor	1.0
Fc - Perp	625.0 psi					Ct : Temperature Fact	1.0
E : Modulus of Elasticity . . .		x-x Bending	y-y Bending	Axial		Cfu : Flat Use Factor	1.0
	Basic	1,600.0	1,600.0	1,600.0 ksi		Kf : Built-up columns	1.0
	Minimum	580.0	580.0			Use Cr : Repetitive ?	No
				Column Buckling Condition:			
				ABOUT X-X Axis:	Lux = 13.750 ft, Kx = 1.0		
				ABOUT Y-Y Axis:	Luy = 13.750 ft, Ky = 1.0		

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 188.493 lbs * Dead Load Factor

AXIAL LOADS . . .

Axial Load at 13.750 ft, L = 2.0 k

BENDING LOADS . . .

Lat. Point Load at 2.080 ft creating My-y, H = 2.440 k

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio =	0.8272 : 1	Maximum SERVICE Lateral Load Reactions . .					
Load Combination	+D+H	Top along Y-Y	0.0 k	Bottom along Y-Y	0.0 k		
Governing NDS Formula	Comp + Myy, NDS Eq. 3.9-3	Top along X-X	0.3691 k	Bottom along X-X	2.071 k		
Location of max.above base	2.122 ft	Maximum SERVICE Load Lateral Deflections . . .					
At maximum location values are .		Along Y-Y	0.0 in	at	0.0 ft	above base	
Applied Axial	0.1885 k	for load combination : n/a					
Applied Mx	0.0 k-ft	Along X-X	0.4085 in	at	5.906 ft	above base	
Applied My	4.292 k-ft	for load combination : +D+H					
Fc : Allowable	443.538 psi	Other Factors used to calculate allowable stresses . . .					
PASS Maximum Shear Stress Ratio =	0.3210 : 1						
Load Combination	+D+H						
Location of max.above base	2.030 ft						
Applied Design Shear	73.668 psi						
Allowable Shear	153.0 psi						

Load Combination Results

Load Combination	C _D	C _P	Maximum Axial + Bending Stress Ratios			Maximum Shear Ratios		
			Stress Ratio	Status	Location	Stress Ratio	Status	Location
+D+H	0.900	0.493	0.8272	PASS	2.122 ft	0.3210	PASS	2.030 ft
+D+L+H	1.000	0.454	0.7978	PASS	2.122 ft	0.2889	PASS	2.030 ft
+D+0.750L+H	1.250	0.378	0.6268	PASS	2.122 ft	0.2311	PASS	2.030 ft
+0.60D+0.60H	1.600	0.304	0.2785	PASS	2.122 ft	0.1083	PASS	2.030 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		Y-Y Axis Reaction		Axial Reaction	My - End Moments		Mx - End Moments	
	@ Base	@ Top	@ Base	@ Top	@ Base	@ Base	@ Top	@ Base	@ Top
+D+H	2.071	0.369			0.188				

Project Title:
 Engineer:
 Project ID:
 Project Descr:

Wood Column

Project File: talmon.ec6

LIC# : KW-06015244, Build:20.24.06.04

CG ENGINEERING

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DESCRIPTION: Hoist Beam Post

Maximum Reactions

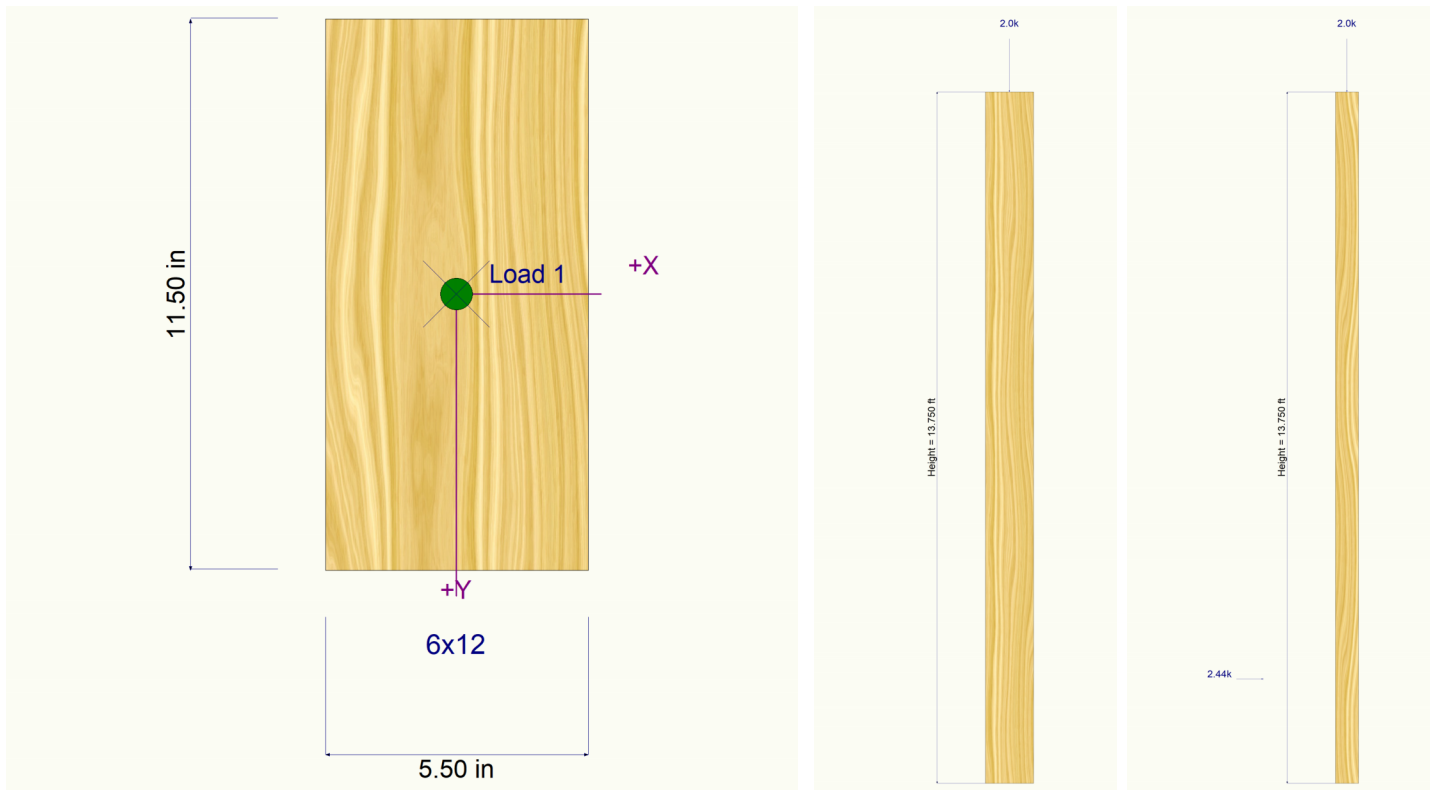
Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		k	Y-Y Axis Reaction		Axial Reaction	My - End Moments		k-ft	Mx - End Moments	
	@ Base	@ Top		@ Base	@ Top	@ Base	@ Base	@ Top		@ Base	@ Top
+D+L+H	2.071	0.369				2.188					
+D+0.750L+H	2.071	0.369				1.688					
+0.60D+0.60H	1.243	0.221				0.113					
D Only						0.188					
L Only						2.000					
H Only	2.071	0.369									

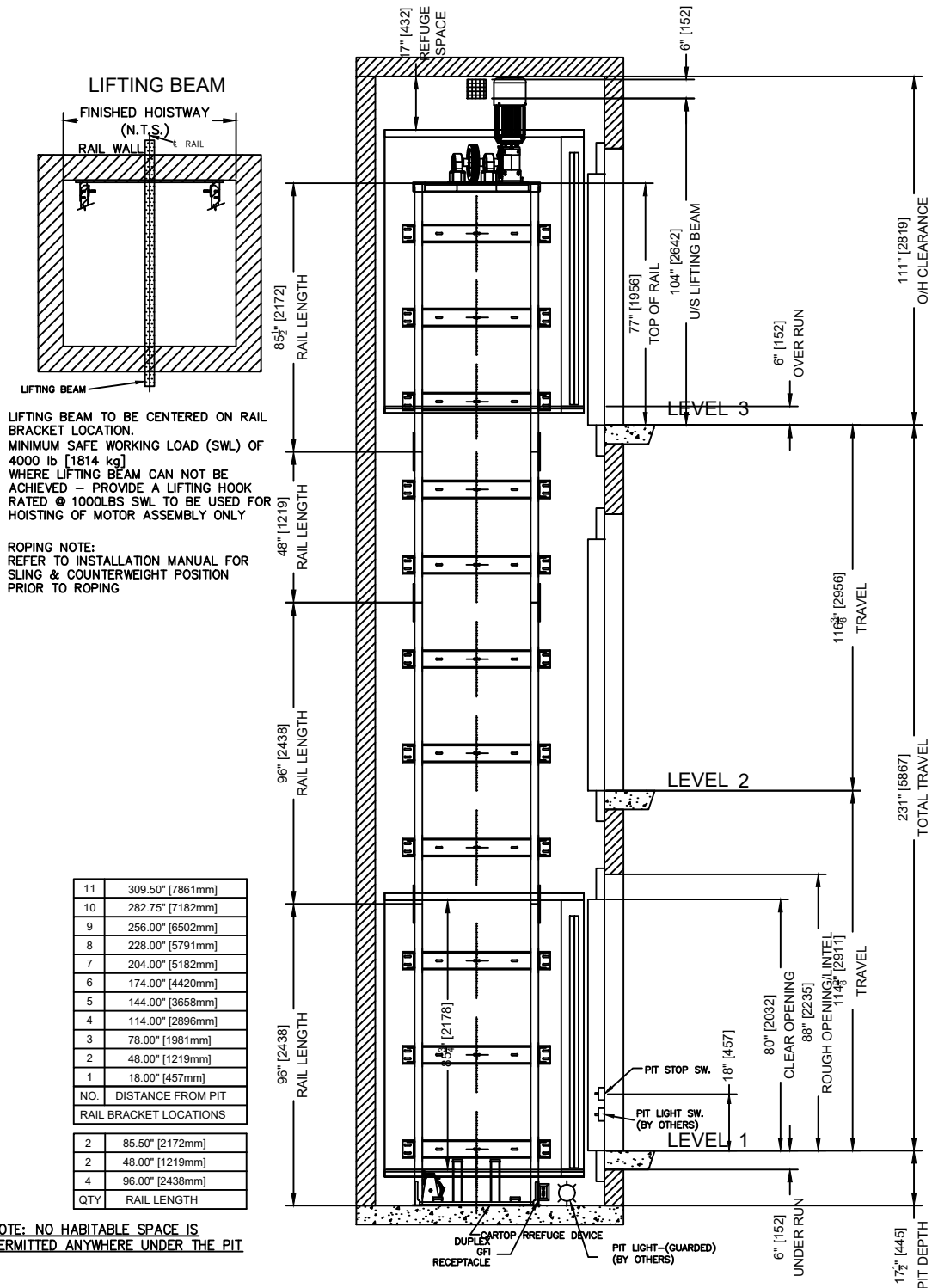
Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection		Distance	Max. Y-Y Deflection		Distance
+D+H	0.4085 in	5.906 ft		0.000 in	0.000 ft	
+D+L+H	0.4085 in	5.906 ft		0.000 in	0.000 ft	
+D+0.750L+H	0.4085 in	5.906 ft		0.000 in	0.000 ft	
+0.60D+0.60H	0.2451 in	5.906 ft		0.000 in	0.000 ft	
D Only	0.0000 in	0.000 ft		0.000 in	0.000 ft	
L Only	0.0000 in	0.000 ft		0.000 in	0.000 ft	
H Only	0.4085 in	5.906 ft		0.000 in	0.000 ft	

Sketches

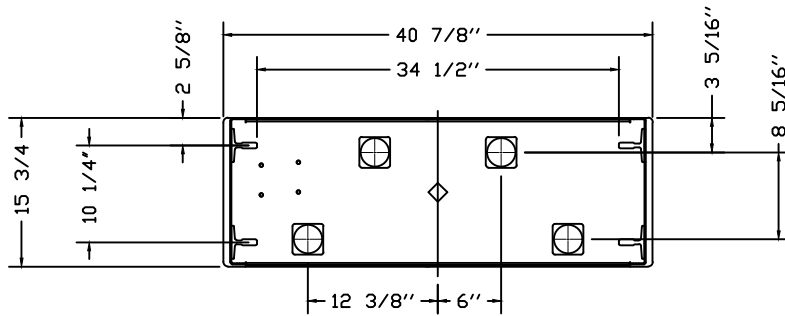


ELEVATION VIEW



A	REV A=INITIAL RELEASE. FOR ALL OTHERS SEE REVISION HISTORY (SHEET 9)	UNITS: MM [INCHES]	FEB/01/24	AU	
REV.	SCALE: N.T.S.	TOLERANCES: DIMENSIONAL ± 3 [$\pm 1/8$] ANGULAR $\pm 1^\circ$	PROJECTION:	DATE	DRN.BY CHK.BY
CONFIDENTIAL: NOT TO BE DISCLOSED OR REPRODUCED GARAVENTA LIFT WITHOUT WRITTEN PERMISSION OF GARAVENTA (CANADA) LTD.		ELVORON LULA THE TALMON CENTRE STREET LA CONNER WA 98257 MCI Elevator			iGOLDD-DRAWING PAGE 1 OF 9
		94218-IG-A			

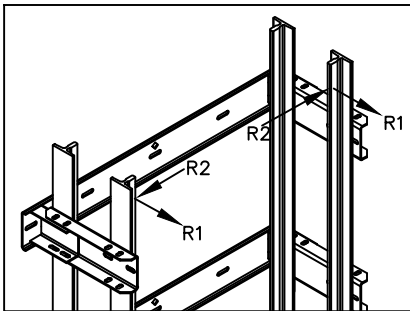
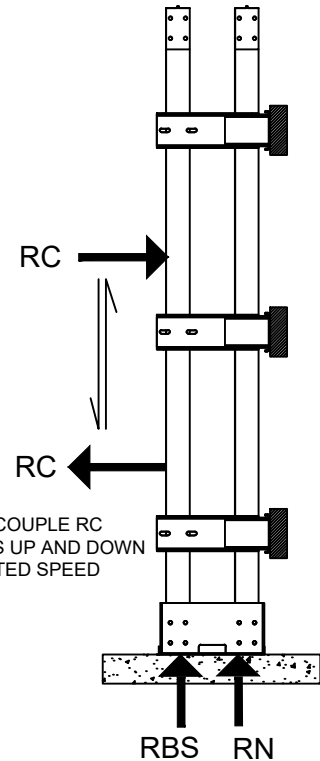
PIT PLATE DETAIL



PIT REACTION FORCES

LOAD	DESCRIPTION	COMBINED LOAD
RBS	IMPACT LOAD ON BUFFERS OR DUE TO SAFETIES ENGAGEMENT	13500 lbf [60 kN]
RN	LOAD DUE TO NORMAL OPERATION	9500 lbf [42 kN]
RC	MAX PULL OUT FORCE ON RAIL SUPPORT	1864 lbf [4.2 kN]

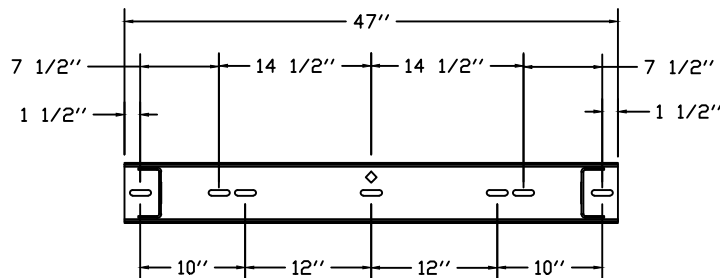
LOAD COUPLE RC
MOVES UP AND DOWN
AT RATED SPEED



RAIL REACTION FORCES

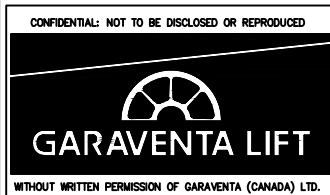
R1	R2
932 lbf [4.15 kN]	260 lbf [1.16 kN]

RAIL BRACKET DETAIL



NOTE: HOISTWAY WALLS SHALL BE FLUSH AND PLUMB FROM PIT FLOOR TO CEILING TO WITHIN +/- 1/8" TOLERANCE.

A	REV A=INITIAL RELEASE. FOR ALL OTHERS SEE REVISION HISTORY (SHEET 9)	UNITS: MM [INCHES]	FEB/01/24	AU	
REV.	SCALE: N.T.S.	TOLERANCES: DIMENSIONAL ± 3 [$\pm 1/8$] ANGULAR $\pm 1^\circ$	PROJECTION:	DATE	DRN.BY CHK.BY



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iGOLDD-DRAWING

THE TALMON
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PAGE 7 OF 9

MCI Elevator

94218-IG-A