PRCTI20240063

City of Puyallup
Building
ACCEPTED
JMontgomery
02/16/2024
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City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

FULL SIZED LEDGIBLE REPORT ARE REQUIRED TO BE PROVIDED BY THE PERMITTEE ON SITE FOR ALL INSPECTIONS

HOHBACH-LEWIN, INC.
STRUCTURAL & CIVIL ENGINEERS

Structural Calculations

FOR

JD SPORTS #1315
South Hill Mall, Puyallup, WA 98373

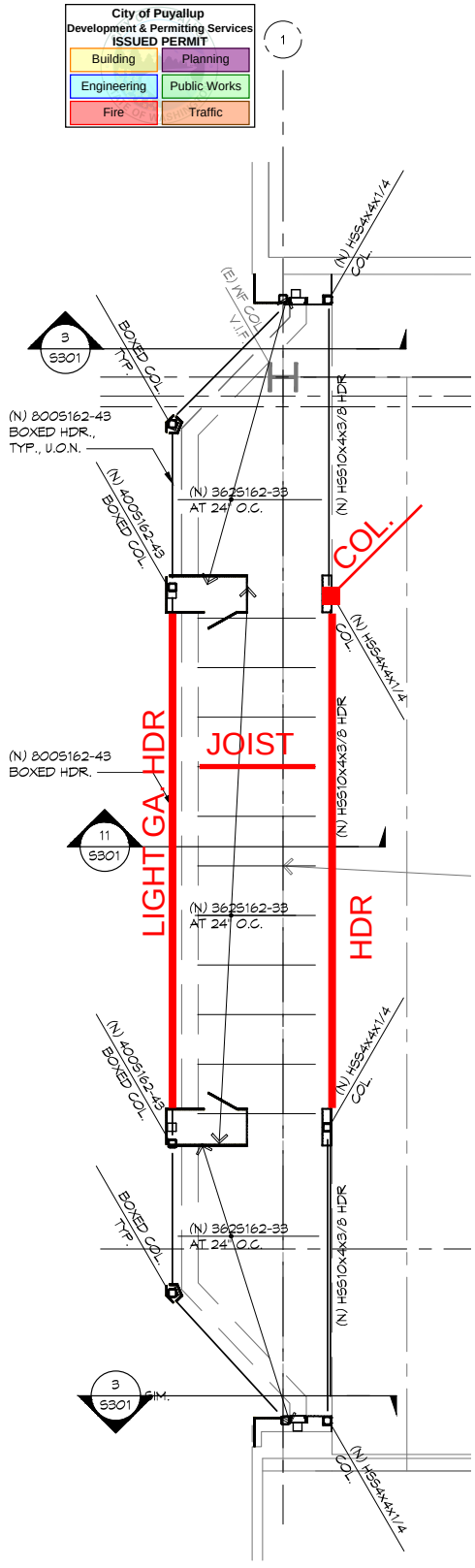
Citv Submittal
January 10th, 2024

Project No: 17016.8

PRCTI20240063

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Building	Planning
Engineering	Public Works
Fire	Traffic



FRAMING KEY PLAN

JOISTS

PRCTI20240063

Interior Allowable Ceiling/Soffit Spans (S-Sections) - L/240

Section	Fy (ksi)	4 psf						6 psf						13 psf *					
		Lateral Support of Compression Flange						Lateral Support of Compression Flange						Lateral Support of Compression Flange					
		Unsupported			Midspan			Unsupported			Midspan			Unsupported			Midspan		
		Joist Spacing (in) on center			Joist Spacing (in) on center			Joist Spacing (in) on center			Joist Spacing (in) on center			Joist Spacing (in) on center			Joist Spacing (in) on center		
		12	16	24	12	16	24	12	16	24	12	16	24	12	16	24	12	16	24
162S125-18	33	7' 3"	6' 7"	5' 10"	8' 6"	7' 8"	6' 7"	6' 5"	5' 10"	5' 1"	7' 4"	6' 7"	5' 9"	5' 0"	4' 5"	3' 9"	5' 7"	4' 10"	3' 11"
162S125-27	33	8' 7"	7' 11"	7' 1"	9' 8"	8' 10"	7' 8"	7' 8"	7' 1"	6' 3"	8' 6"	7' 8"	6' 8"	6' 1"	5' 6"	4' 9"	6' 6"	5' 11"	5' 2"
162S125-30	33	9' 0"	8' 3"	7' 4"	10' 0"	9' 1"	7' 11"	8' 0"	7' 4"	6' 7"	8' 9"	7' 11"	6' 11"	6' 5"	5' 10"	5' 0"	6' 9"	6' 1"	5' 4"
162S125-33	33	9' 6"	8' 8"	7' 8"	10' 4"	9' 5"	8' 2"	8' 4"	7' 8"	6' 10"	9' 0"	8' 2"	7' 2"	6' 8"	6' 1"	5' 4"	7' 0"	6' 4"	5' 6"
162S137-27	33	9' 11"	9' 2"	8' 0"	10' 1"	9' 2"	8' 0"	8' 10"	8' 0"	7' 0"	8' 10"	8' 0"	7' 0"	6' 10"	6' 2"	5' 5"	6' 10"	6' 2"	5' 5"
162S137-30	33	10' 4"	9' 6"	8' 3"	10' 5"	9' 6"	8' 3"	9' 1"	8' 3"	7' 3"	9' 1"	8' 3"	7' 3"	7' 0"	6' 5"	5' 7"	7' 0"	6' 5"	5' 7"
162S137-33	33	10' 9"	9' 9"	8' 7"	10' 9"	9' 9"	8' 7"	9' 5"	8' 7"	7' 6"	9' 5"	8' 7"	7' 6"	7' 3"	6' 7"	5' 9"	7' 3"	6' 7"	5' 9"
250S125-18	33	8' 5"	7' 9"	6' 11"	11' 7"	10' 6"	9' 1"	7' 6"	6' 11"	6' 2"	10' 1"	9' 1"	7' 8"	6' 0"	5' 6"	4' 10"e	7' 5"	6' 3"e	5' 2"e
250S125-27	33	9' 8"	8' 11"	8' 0"	13' 5"	12' 2"	10' 7"	8' 8"	8' 0"	7' 2"	11' 8"	10' 7"	9' 3"	7' 0"	6' 6"	5' 9"	9' 0"	8' 2"	6' 10"
250S125-30	33	10' 1"	9' 3"	8' 3"	13' 10"	12' 7"	10' 11"	9' 0"	8' 3"	7' 5"	12' 1"	10' 11"	9' 7"	7' 3"	6' 8"	6' 0"	9' 4"	8' 5"	7' 3"
250S125-33	33	10' 6"	9' 8"	8' 7"	14' 3"	13' 0"	11' 4"	9' 4"	8' 7"	7' 8"	12' 6"	11' 4"	9' 11"	7' 6"	6' 11"	6' 2"	9' 7"	8' 9"	7' 7"
250S125-43	33	11' 9"	10' 10"	9' 7"	15' 6"	14' 1"	12' 4"	10' 5"	9' 7"	8' 6"	13' 7"	12' 4"	10' 9"	8' 4"	7' 8"	6' 10"	10' 6"	9' 6"	8' 4"
250S137-27	33	11' 0"	10' 2"	9' 2"	14' 0"	12' 9"	11' 1"	9' 10"	9' 2"	8' 2"	12' 3"	11' 1"	9' 9"	8' 0"	7' 5"	6' 8"	9' 6"	8' 7"	7' 6"
250S137-30	33	11' 5"	10' 6"	9' 5"	14' 5"	13' 2"	11' 6"	10' 2"	9' 5"	8' 5"	12' 8"	11' 6"	10' 0"	8' 3"	7' 8"	6' 10"	9' 9"	8' 10"	7' 9"
250S137-33	33	11' 10"	10' 11"	9' 9"	14' 11"	13' 7"	11' 10"	10' 7"	9' 9"	8' 9"	13' 1"	11' 10"	10' 4"	8' 7"	7' 11"	7' 1"	10' 1"	9' 2"	8' 0"
250S137-43	33	13' 3"	12' 2"	10' 10"	16' 3"	14' 9"	12' 11"	11' 9"	10' 10"	9' 7"	14' 2"	12' 11"	11' 3"	9' 5"	8' 8"	7' 9"	10' 11"	9' 11"	8' 8"
250S162-33	33	13' 6"	12' 5"	11' 2"	15' 8"	14' 3"	12' 5"	12' 1"	11' 2"	10' 0"	13' 8"	12' 5"	10' 10"	9' 10"	9' 1"	8' 1"	10' 7"	9' 7"	8' 5"
250S162-43	33	15' 0"	13' 9"	12' 3"	17' 1"	15' 6"	13' 6"	13' 4"	12' 3"	10' 11"	14' 11"	13' 6"	11' 10"	10' 9"	9' 11"	8' 10"	11' 6"	10' 5"	9' 2"
350S125-18	33	9' 2"	8' 6"	7' 6"	12' 6"	11' 5"	9' 11"	8' 3"	7' 6"	6' 8"	11' 0"	9' 11"	8' 5"e	6' 6"	5' 11"e	5' 3"e	8' 2"e	7' 2"e	6' 0"e
350S125-27	33	10' 7"	9' 9"	8' 9"	14' 11"	13' 9"	12' 3"	9' 5"	8' 9"	7' 9"	13' 4"	12' 3"	10' 7"	7' 7"	7' 1"	6' 4"	10' 4"	9' 3"	7' 9"
350S125-30	33	10' 11"	10' 1"	9' 0"	15' 5"	14' 2"	12' 9"	9' 9"	9' 0"	8' 1"	13' 9"	12' 9"	11' 2"	7' 11"	7' 3"	6' 6"	10' 11"	9' 9"	8' 3"
350S125-33	33	11' 4"	10' 5"	9' 4"	16' 0"	14' 9"	13' 2"	10' 1"	9' 4"	8' 4"	14' 3"	13' 2"	11' 9"	8' 2"	7' 7"	6' 9"	11' 5"	10' 4"	8' 10"
350S125-43	33	12' 7"	11' 7"	10' 4"	17' 7"	16' 3"	14' 6"	11' 2"	10' 4"	9' 2"	15' 8"	14' 6"	12' 11"	9' 0"	8' 3"	7' 5"	12' 7"	11' 6"	10' 1"
350S137-27	33	11' 11"	11' 0"	9' 11"	17' 0"	15' 9"	14' 1"	10' 8"	9' 11"	8' 11"	15' 3"	14' 1"	12' 4"	8' 8"	8' 1"	7' 3"	11' 11"	10' 7"	8' 11"e
350S137-30	33	12' 4"	11' 5"	10' 3"	17' 7"	16' 3"	14' 7"	11' 0"	10' 3"	9' 2"	15' 9"	14' 7"	12' 10"	9' 0"	8' 4"	7' 6"	12' 6"	11' 3"	9' 6"
350S137-33	33	12' 9"	11' 10"	10' 7"	18' 2"	16' 9"	15' 1"	11' 5"	10' 7"	9' 6"	16' 3"	15' 1"	13' 4"	9' 3"	8' 7"	7' 8"	13' 0"	11' 9"	10' 0"
350S137-43	33	14' 2"	13' 0"	11' 7"	19' 10"	18' 4"	16' 5"	12' 7"	11' 7"	10' 4"	17' 9"	16' 5"	14' 7"	10' 2"	9' 4"	8' 5"	14' 2"	12' 11"	11' 3"
350S162-33	33	14' 6"	13' 5"	12' 1"	20' 3"	18' 5"	16' 1"	13' 0"	12' 1"	10' 10"	17' 9"	16' 1"	14' 1"	10' 7"	9' 10"	8' 10"	13' 8"	12' 5"	10' 10"
350S162-43	33	16' 0"	14' 9"	13' 2"	22' 1"	20' 0"	17' 6"	14' 3"	13' 2"	11' 9"	19' 3"	17' 6"	15' 3"	11' 6"	10' 8"	9' 7"	14' 11"	13' 6"	11' 10"
362S125-18	33	9' 3"	8' 7"	7' 7"	12' 8"	11' 7"	10' 0"	8' 4"	7' 7"	6' 9"	11' 1"	10' 0"	8' 6"e	6' 7"	6' 0"e	5' 4"e	8' 3"e	7' 4"e	6' 1"e
362S125-27	33	10' 8"	9' 10"	8' 10"	15' 0"	13' 11"	12' 4"	9' 6"	8' 10"	7' 10"	13' 5"	12' 4"	10' 9"	7' 8"	7' 1"	6' 5"	10' 5"	9' 4"	7' 11"
362S125-30	33	11' 0"	10' 2"	9' 1"	15' 6"	14' 4"	12' 10"	9' 10"	9' 1"	8' 2"	13' 11"	12' 10"	11' 4"	8' 0"	7' 4"	6' 7"	11' 0"	9' 11"	8' 5"
362S125-33	33	11' 5"	10' 7"	9' 5"	16' 2"	14' 10"	13' 3"	10' 3"	9' 5"	8' 5"	14' 5"	13' 3"	11' 10"	8' 3"	7' 8"	6' 10"	11' 7"	10' 6"	9' 0"
362S125-43	33	12' 8"	11' 8"	10' 5"	17' 9"	16' 5"	14' 8"	11' 3"	10' 5"	9' 3"	15' 10"	14' 8"							2"
362S137-27	33	12' 0"	11' 2"	10' 0"	17' 2"	15' 11"	14' 3"	10' 10"	10' 0"	9' 0"	15' 5"	14' 3"							"e
362S137-30	33	12' 5"	11' 6"	10' 4"	17' 8"	16' 5"	14' 8"	11' 2"	10' 4"	9' 3"	15' 10"	14' 8"	13' 0"	9' 1"	8' 5"	7' 6"	12' 8"	11' 5"	9' 8"
362S137-33	33	12' 11"	11' 11"	10' 8"	18' 4"	16' 11"	15' 2"	11' 6"	10' 8"	9' 7"	16' 5"	15' 2"	13' 6"	9' 4"	8' 8"	7' 9"	13' 2"	11' 11"	10' 2"
362S137-43	33	14' 3"	13' 2"	11' 8"	20' 0"	18' 6"	16' 7"	12' 8"	11' 8"	10' 5"	17' 11"	16' 7"	14' 9"	10' 3"	9' 5"	8' 6"	14' 5"	13' 2"	11' 5"
362S162-33	33	14' 8"	13' 7"	12' 2"	20' 10"	18' 11"	16' 6"	13' 2"	12' 2"	10' 11"	18' 2"	16' 6"	14' 5"	10' 8"	9' 11"	8' 11"	14' 1"	12' 9"	11' 2"
362S162-43	33	16' 2"	14' 11"	13' 4"	22' 8"	20' 7"	18' 0"	14' 5"	13' 4"	11' 11"	19' 10"	18' 0"	15' 9"	11' 8"	10' 9"	9' 8"	15' 4"	13' 11"	12' 2"
400S125-18	33	9' 6"e	8' 9"e	7' 10"e	13' 0"e	11' 11"e	10' 5"e	8' 6"e	7' 10"e	6' 11"e	11' 6"e	10' 5"e	8' 11"e	6' 9"e	6' 2"e	5' 6"e	8' 7"e	7' 8"e	6' 5"e
400S125-27	33	10' 11"	10' 1"	9' 1"	15' 5"	14' 3"	12' 9"	9' 9"	9' 1"	8' 1"	13' 10"	12' 9"	11' 2"	7' 11"	7' 4"	6' 7"	10' 10"	9' 9"	8' 3"
400S125-30	33	11' 4"	10' 5"	9' 4"	16' 0"	14' 9"	13' 2"	10' 1"	9' 4"	8' 4"	14' 3"	13' 2"	11' 9"	8' 2"	7' 7"	6' 9"	11' 5"	10' 4"	8' 9"
400S125-33	33	11' 9"	10' 10"	9' 8"	16' 7"	15' 3"	13' 8"	10' 6"	9' 8"	8' 8"	14' 9"	13' 8"	12' 2"	8' 6"	7' 10"	7' 0"	11' 11"	10' 11"	9' 4"
400S125-43	33	13' 0"	12' 0"	10' 8"	18' 3"	16' 10"	15' 0"	11' 7"	10' 8"	9' 6"	16' 3"	15' 0"	13' 5"	9' 4"	8' 7"	7' 8"	13' 1"	12' 0"	10' 7"
400S137-27	33	12' 4"	11' 5"	10' 3"	17' 7"	16' 4"	14' 8"	11' 1"	10' 3"	9' 2"	15' 10"	14' 8"	13' 0"	9' 0"	8' 4"	7' 6"	12' 7"	11' 3"	9' 6"e
400S137-30	33	12' 9"	11' 10"	10' 7"	18' 2"	16' 10"	15' 1"	11' 5"	10' 7"	9' 6"	16' 4"	15' 1"	13' 5"	9' 3"	8' 7"	7' 9"	13' 1"	11' 10"	10' 1"
400S137-33	33	13' 3"	12' 3"	10' 11"	18' 9"	17' 4"	15' 7"	11' 10"	10' 11"	9' 10"	16' 10"	15' 7"	13' 11"	9' 7"	8' 11"	8' 0"	13' 7"	12' 4"	10' 8"
400S137-43	33	14' 7"	13' 6"	12' 0"	20' 7"	19' 0"	17' 0"	13' 0"	12' 0"	10' 9"	18' 4"	17' 0"	15' 2"	10' 6"	9' 8"	8' 8"	14' 10"	13' 7"	11' 10"
400S162-33	33	15' 0"	13' 11"	12' 6"	21' 5"	19' 10"	17' 9"	13' 6"	12' 6"	11' 2"	19' 3"	17' 9"	15' 7"	10' 11"	10' 2"	9' 1"	15' 2"	13' 9"	11' 9"
400S162-43	33	16' 7"	15' 3"	13' 8"	23' 4"	21' 7"	19' 4"	14' 9"	13' 8"	12' 2"	20' 11"	19' 4"	16' 11"	11' 11"	11' 0"	9' 11"	16' 6"	15' 0"	13' 1"
600S125-27	33	12' 5"e	11' 6"e	10' 4"e	17' 11"e	16' 6"e	14' 9"e	11' 2"e	10' 4"e	9' 4"e	16' 0"e	14' 9"e	13' 2"e	9' 2"e	8' 6"e	7' 7"e	12' 11"e	11' 10"e	10' 4"e
600S125-30	33	12' 9"	11' 10"	10' 8"	18' 5"	17' 1"	15' 3"	11' 6"	10' 8"	9' 7"	16' 7"	15' 3"	13' 8"	9' 5"	8' 9"	7' 10"	13' 4"	12' 4"	10' 11"e
600S125-33	33	13' 2"	12' 3"	11' 0"	18' 11"	17' 7"	15' 10"	11' 10"	11' 0"	9' 10"	17' 0"	15' 10"	14' 2"	9' 8"	8' 11"	8' 1"	13' 10"	12' 9"	11' 5"
600S125-43	33	14' 6"	13' 4"	11' 11"	20' 6"	19' 0"	17' 0"	12' 11"	11' 11"	10' 8"	18' 4"	17' 0"	15' 3"	10' 5"	9' 8"	8' 8"	15' 0"	13' 11"	12' 6"
600S137-27	33	14' 0"e	13' 0"e	11' 9"e	20' 2"e	18' 8"e	16' 9"e	12' 7"e	11' 9"e	10' 6"e	18' 1"e	16' 9"e	15' 0"e	10' 4"e	9' 7"e	8' 7"e	14' 8"e	13' 7"e	11' 10"e
600S137-30	33	14' 5"	13' 4"	12' 0"	20' 10"	19' 3"	17' 3"	13' 0"	12' 0"	10' 10"	18' 8"	17' 3"	15' 6"	10' 7"	9' 10"	8' 10"	15' 2"	14' 0"	12' 5"e
600S137-33	33	14' 11"	13' 9"	12' 5"	21' 5"	19' 10"	17' 10"	13' 4"	12' 5"	11' 2"	19' 3"	17' 10"	16' 0"	10' 11"	10' 2"	9' 2"	15' 8"	14' 6"	12' 11"e
600S137-43	33	16' 3"	15' 0"	13' 5"	23' 1"	21' 5"	19' 3"	14' 6"	13' 5"	12' 0"	20' 9"	19' 3"	17' 4"	11' 9"	10' 11"	9' 10"	16' 11"	15' 9"	14' 2"
600S162-33	33	16' 11"	15' 8"	14' 1"	24' 5"	22' 8"	20' 5"	15' 2"	14' 1"	12' 8"	22' 0"	20' 5"	18' 5"	12' 5"	11' 7"	10' 5"	18' 0"	16' 8"	14' 9"e
600S162-43	33	18' 5"	17' 0"	15' 3"	26' 4"	24' 4"	21' 11"	16' 6"	15' 3"	13' 8"	23' 8"	21' 11"	19' 9"	13' 5"	12' 5"	11' 2"	19' 4"	17' 11"	16' 0"

> MAX JOIST SPAN = 6'-0", OK.

**Loads that exceed 10 psf limit require an approved CP60 coating.*

"e" web stiffeners required at ends.

See Table Notes and figures on page 61.

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

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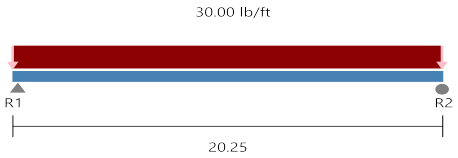
Project Name: 17016.8_Light Ga HDR
Model: HEADER
Code: 2012 NASPEC [AISI S100-2012]

Date: 12/20/2023
Simpson Strong-Tie® CFS Designer™ 5.2.1.0

Section: (2) 800S162-43 (50 ksi) Boxed C Stud (punched)
Maxo = 4321.3 ft-lb **Va =** 2102.3 lb **I =** 8.86 in^4

Loads have not been modified for strength checks
Loads have not been modified for deflection calculations



Bridging Connectors - Design Method =AISI S100

Span	Axial KyLy, KtLt	Flexual, Distortional	Connector	Stress Ratio
Span	NA	None, N/A	N/A	-

Web Crippling

Support	Load (lb)	Bearing (in)	Pa (lb)	M (ft-lbs)	Max Int.	Stiffener?
R1	303.75	1.00	748.3	0.0	0.21	NO
R2	303.75	1.00	748.3	0.0	0.21	NO

	Code Check	Required	Allowed	Interaction	Notes
Span	Max. Axial, lbs	0.0(t)	-	0%	KΦ=0.00 lb-in/in Max KL/r = N/A
	Max. Shear, lbs	303.8	2102.3	14%	Shear (Punched)
	Max. Moment (MaFy, Ma-dist), ft-lbs	1537.7	4321.3	36%	
	Moment Stability, ft-lbs	1537.7	4321.3	36%	
	Shear/Moment	0.36	1.00	36%	Shear 0.0, Moment 1537.7
	Axial/Moment	0.36	1.00	36%	Axial 0.0(c), Moment 1537.7
	Deflection Span, in	0.434	--meets L/559--		

Support	Rx(lb)	Ry(lb)	Simpson Strong-Tie Connector	Connector Interaction	Anchor Interaction
R1	0.0	303.8	LSSC4.25 Max (5#10) & (4) #10 to Carrying (18/33) (Side Attached)	69.03 %	69.03 %
R2	0.0	303.8	SSC4.25 Max (5#10) & (4) #10 to Carrying (20/33) (Side Attached)	50.63 %	83.22 %

* Reference catalog for connector and anchor requirement notes as well as screw placement requirements

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

Steel Beam

LIC# : KW-06014324, Build:20.23.08.30 HOHBACH-LEWIN (c) ENERCALC INC 1983-2023

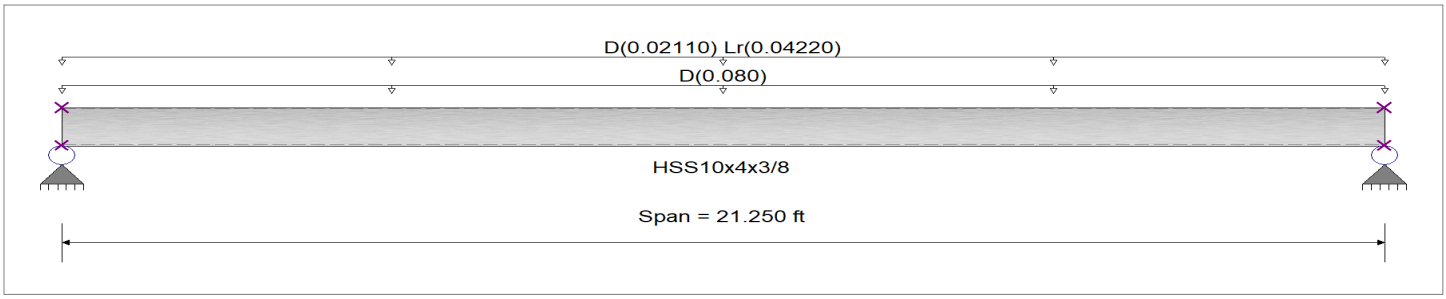
DESCRIPTION: HDR

CODE REFERENCES

Calculations per AISC 360-16, IBC 2021, ASCE 7-16
Load Combination Set : IBC 2021

Material Properties

Analysis Method :	Load Resistance Factor Design	Fy : Steel Yield :	46.0 ksi
Beam Bracing :	Completely Unbraced	E: Modulus :	29,000.0 ksi
Bending Axis :	Major Axis Bending		



Applied Loads

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

Beam self weight calculated and added to loading
Uniform Load : D = 0.080 k/ft, Tributary Width = 1.0 ft, (SOFFIT WALL (H = 8'-0))

Uniform Load : D = 0.010, Lr = 0.020 ksf, Tributary Width = 2.110 ft, (JOISTS)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	**0.138** : 1	Maximum Shear Stress Ratio =	**0.016** : 1
Section used for this span	**HSS10x4x3/8**	Section used for this span	**HSS10x4x3/8**
Mu : Applied	12.866 k-ft	Vu : Applied	2.422 k
Mn * Phi : Allowable	93.150 k-ft	Vn * Phi : Allowable	155.230 k
Load Combination	+1.20D+1.60Lr	Load Combination	+1.20D+1.60Lr
		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	0.064 in	Ratio =	3,954	>=360	Span: 1 : Lr Only
Max Upward Transient Deflection	0 in	Ratio =	0	<360	n/a
Max Downward Total Deflection	0.269 in	Ratio =	949	>=240.	Span: 1 : +D+Lr
Max Upward Total Deflection	0 in	Ratio =	0	<240.0	n/a

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	Summary of Moment Values max Mu +	max Mu -	Mu Max	Mnx	Phi*Mnx	Cb	Rm	Summary of Shear Values VuMax	Vnx	Phi*Vnx
+1.40D													
Dsgn. L = 21.25 ft	1	0.113	0.013	10.56		10.56	103.50	93.15	1.14	1.00	1.99	172.48	155.23
+1.20D+0.50Lr													
Dsgn. L = 21.25 ft	1	0.110	0.012	10.25		10.25	103.50	93.15	1.14	1.00	1.93	172.48	155.23
+1.20D													
Dsgn. L = 21.25 ft	1	0.097	0.011	9.05		9.05	103.50	93.15	1.14	1.00	1.70	172.48	155.23
+1.20D+1.60Lr													
Dsgn. L = 21.25 ft	1	0.138	0.016	12.87		12.87	103.50	93.15	1.14	1.00	2.42	172.48	155.23
+0.90D													
Dsgn. L = 21.25 ft	1	0.073	0.008	6.79		6.79	103.50	93.15	1.14	1.00	1.28	172.48	155.23

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+Lr	1	0.2688	10.686		0.0000	0.000

Vertical Reactions

Support notation : Far left is #: Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	1.869	1.869
Max Upward from Load Combinations	1.869	1.869
Max Upward from Load Cases	1.420	1.420

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Steel Beam

LIC# : KW-06014324, Build:20.23.08.30 HOHBACH-LEWIN (c) ENERCALC INC 1983-2023

DESCRIPTION: HDR

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
D Only	1.420	1.420
+D+Lr	1.869	1.869
+D+0.750Lr	1.757	1.757
+0.60D	0.852	0.852
Lr Only	0.448	0.448

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Steel Column

Project File: 17016.8F_JD Sports.ec6

LIC# : KW-06014324, Build:20.23.08.30 HOHBACH-LEWIN (c) ENERCALC INC 1983-2023

DESCRIPTION: COL

Code References

Calculations per AISC 360-16, IBC 2021, ASCE 7-16
Load Combinations Used : IBC 2021

General Information

Steel Section Name : **HSS4x4x1/4**

Analysis Method :	Load Resistance Factor
Steel Stress Grade	
Fy : Steel Yield	46.0 ksi
E : Elastic Bending Modulus	29,000.0 ksi

Overall Column Height	18.0 ft
Top & Bottom Fixity	Top & Bottom Pinned
Brace condition :	

Unbraced Length for buckling ABOUT X-X Axis = 18.0 ft, K = 1.0
Unbraced Length for buckling ABOUT Y-Y Axis = 18.0 ft, K = 1.0

Applied Loads

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

Column self weight included : 219.780 lbs * Dead Load Factor
AXIAL LOADS . . .
HDR x2: Axial Load at 18.0 ft, D = 2.840, LR = 0.880 k

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.1347** : 1

Load Combination	+1.20D+1.60Lr
Location of max.above base	0.0 ft
At maximum location values are . . .	
Pu	5.080 k
0.9 * Pn	37.701 k
Mu-x	0.0 k-ft
0.9 * Mn-x :	16.181 k-ft
Mu-y	0.0 k-ft
0.9 * Mn-y :	16.181 k-ft

PASS Maximum Shear Stress Ratio **0.0** : 1

Load Combination	0.0
Location of max.above base	0.0 ft
At maximum location values are . . .	
Vu : Applied	0.0 k
Vn * Phi : Allowable	0.0 k

Maximum Load Reactions . .

Top along X-X	0.0 k
Bottom along X-X	0.0 k
Top along Y-Y	0.0 k
Bottom along Y-Y	0.0 k

Maximum Load Deflections . . .

Along Y-Y 0.0 in at 0.0ft above base
for load combination :

Along X-X 0.0 in at 0.0ft above base
for load combination :

Load Combination Results

Load Combination	Max. Axial + Bending Stress Ratios: Stress Ratio	Status	Location	Cbx	Cby	KxLx/Ry	KyLy/Rx	Max. Shear Ratios: Stress Ratio	Status	Location
+1.40D	0.114	PASS	0.00 ft	1.00	1.00	142.11	142.11	0.000	PASS	0.00 ft
+1.20D+0.50Lr	0.109	PASS	0.00 ft	1.00	1.00	142.11	142.11	0.000	PASS	0.00 ft
+1.20D	0.097	PASS	0.00 ft	1.00	1.00	142.11	142.11	0.000	PASS	0.00 ft
+1.20D+1.60Lr	0.135	PASS	0.00 ft	1.00	1.00	142.11	142.11	0.000	PASS	0.00 ft
+0.90D	0.073	PASS	0.00 ft	1.00	1.00	142.11	142.11	0.000	PASS	0.00 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction @ Base	X-X Axis Reaction @ Base	@ Top	k	Y-Y Axis Reaction @ Base	@ Top	Mx - End Moments k-ft @ Base	@ Top	My - End Moments @ Base	@ Top
D Only	3.060									
+D+Lr	3.940									
+D+0.750Lr	3.720									
+0.60D	1.836									
Lr Only	0.880									

Extreme Reactions

Item	Extreme Value	Axial Reaction @ Base	X-X Axis Reaction @ Base	@ Top	k	Y-Y Axis Reaction @ Base	@ Top	Mx - End Moments k-ft @ Base	@ Top	My - End Moments @ Base	@ Top
Axial @ Base	Maximum	3.940									
"	Minimum	0.880									
Reaction, X-X Axis Base	Maximum	3.060									

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Steel Column

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DESCRIPTION: COL

Extreme Reactions

Item	Extreme Value	Axial Reaction @ Base	X-X Axis Reaction @ Base	@ Top	k	Y-Y Axis Reaction @ Base	@ Top	Mx - End Moments @ Base	@ Top	k-ft	My - End Moments @ Base	@ Top
"	Minimum	3.060										
Reaction, Y-Y Axis Base	Maximum	3.060										
"	Minimum	3.060										
Reaction, X-X Axis Top	Maximum	3.060										
"	Minimum	3.060										
Reaction, Y-Y Axis Top	Maximum	3.060										
"	Minimum	3.060										
Moment, X-X Axis Base	Maximum	3.060										
"	Minimum	3.060										
Moment, Y-Y Axis Base	Maximum	3.060										
"	Minimum	3.060										
Moment, X-X Axis Top	Maximum	3.060										
"	Minimum	3.060										
Moment, Y-Y Axis Top	Maximum	3.060										
"	Minimum	3.060										

Maximum Deflections for Load Combinations

Load Combination	Max. Deflection in X dir		Distance		Max. Deflection in Y dir		Distance	
D Only	0.0000	in	0.000	ft	0.000	in	0.000	ft
+D+Lr	0.0000	in	0.000	ft	0.000	in	0.000	ft
+D+0.750Lr	0.0000	in	0.000	ft	0.000	in	0.000	ft
+0.60D	0.0000	in	0.000	ft	0.000	in	0.000	ft
Lr Only	0.0000	in	0.000	ft	0.000	in	0.000	ft

Steel Section Properties : HSS4x4x1/4

Depth	=	4.000	in	I xx	=	7.80	in^4	J	= 12.800 in^4
Design Thick	=	0.233	in	S xx	=	3.90	in^3		
Width	=	4.000	in	R xx	=	1.520	in		
Wall Thick	=	0.250	in	Zx	=	4.690	in^3		
Area	=	3.370	in^2	I yy	=	7.800	in^4	C	= 6.560 in^3
Weight	=	12.210	plf	S yy	=	3.900	in^3		
				R yy	=	1.520	in		
Ycg	=	0.000	in						

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Steel Column

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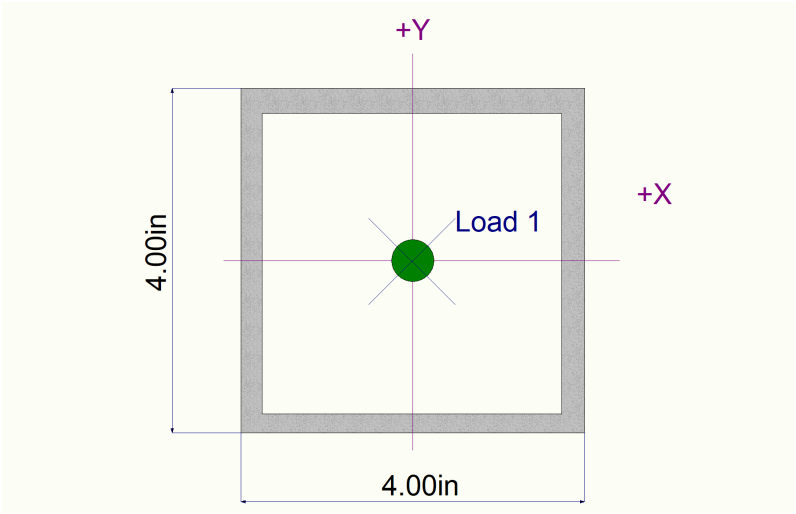
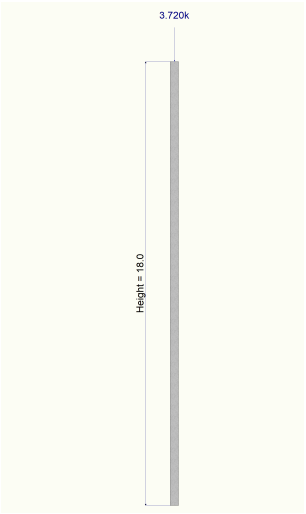
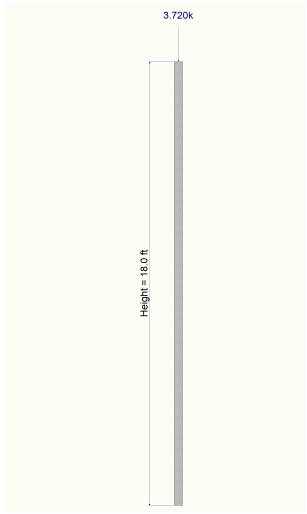
DESCRIPTION: COL

Sketches







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1.Project information

Customer company:
Customer contact name:
Customer e-mail:
Comment:

Project description:
Location:
Fastening description:

2. Input Data & Anchor Parameters

General
Design method:ACI 318-14
Units: Imperial units

Anchor Information:
Anchor type: Concrete screw
Material: Carbon Steel
Diameter (inch): 0.500
Nominal Embedment depth (inch): 3.250
Effective Embedment depth, h_{ef} (inch): 2.350
Code report: ICC-ES ESR-2713
Anchor category: 1
Anchor ductility: No
h_{min} (inch): 5.00
c_{ac} (inch): 3.56
C_{min} (inch): 1.75
S_{min} (inch): 3.00

Base Material
Concrete: Normal-weight
Concrete thickness, h (inch): 5.00
State: Cracked
Compressive strength, f'_c (psi): 2500
$\Psi_{c,V}$: 1.0
Reinforcement condition: B tension, B shear
Supplemental reinforcement: Not applicable
Reinforcement provided at corners: No
Ignore concrete breakout in tension: No
Ignore concrete breakout in shear: No
Ignore 6do requirement: Not applicable
Build-up grout pad: No

Base Plate
Length x Width x Thickness (inch): 5.00 x 10.00 x 0.50
Yield stress: 36000 psi

Profile type/size: HSS4X4X3/8

Recommended Anchor
Anchor Name: Titen HD® - 1/2"Ø Titen HD, hnom:3.25" (83mm)
Code Report: ICC-ES ESR-2713

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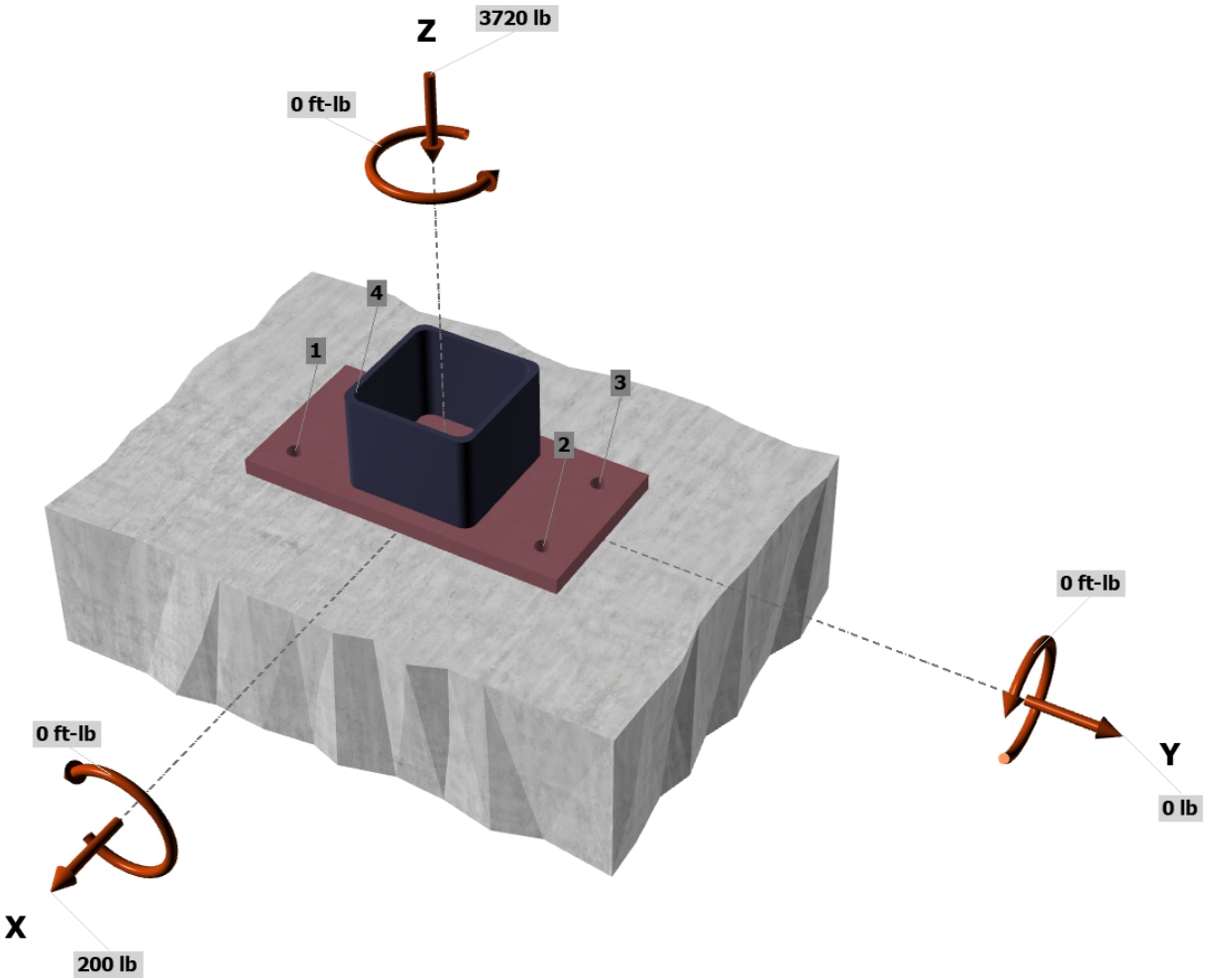
Load and Geometry
Load factor source: ACI 318 Section 5.3
Load combination: not set
Seismic design: No
Anchors subjected to sustained tension: Not applicable
Apply entire shear load at front row: No
Anchors only resisting wind and/or seismic loads: No

Strength level loads:

N_{ua} [lb]: -3720
V_{uax} [lb]: 200
V_{uay} [lb]: 0
M_{ux} [ft-lb]: 0
M_{uy} [ft-lb]: 0
M_{uz} [ft-lb]: 0

<Figure 1>



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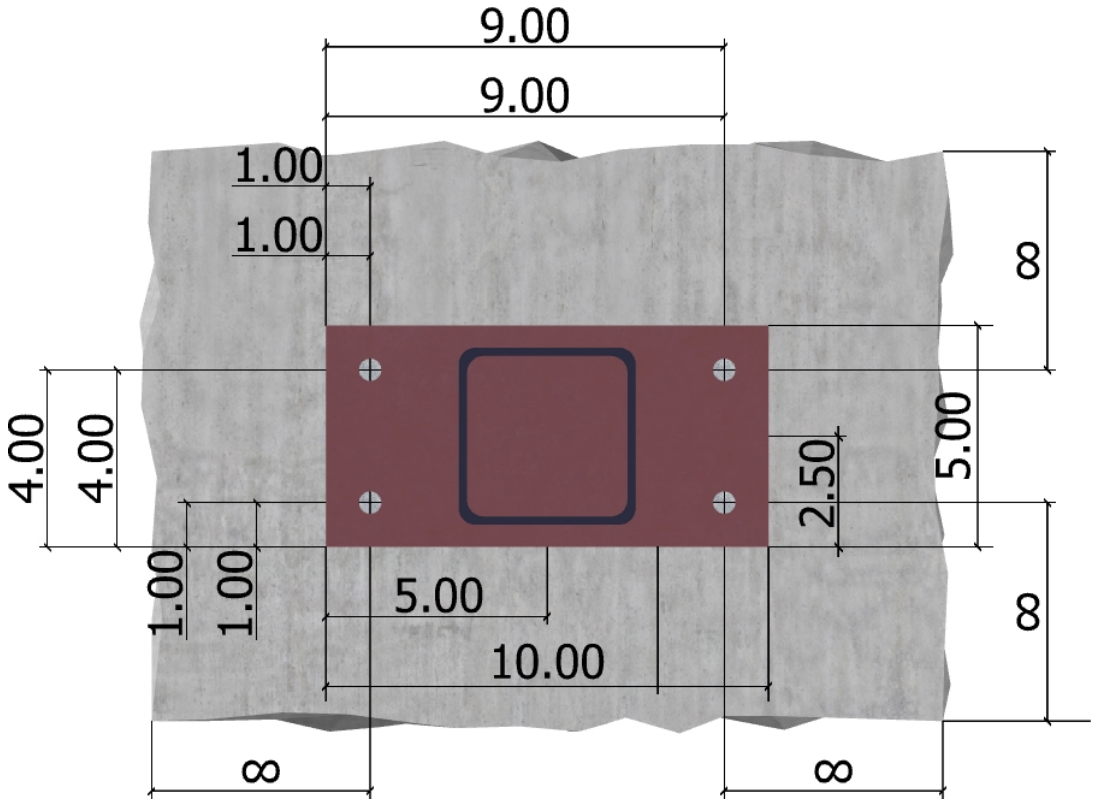
<Figure 2>



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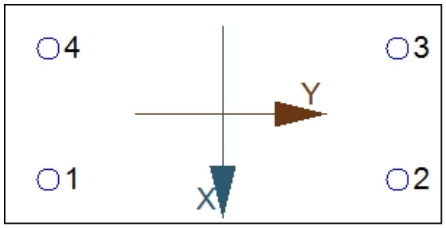
3. Resulting Anchor Forces

Anchor	Tension load, N_{ua} (lb)	Shear load x, V_{uax} (lb)	Shear load y, V_{uay} (lb)	Shear load combined, $\sqrt{(V_{uax})^2+(V_{uay})^2}$ (lb)
1	0.0	50.0	0.0	50.0
2	0.0	50.0	0.0	50.0
3	0.0	50.0	0.0	50.0
4	0.0	50.0	0.0	50.0
Sum	0.0	200.0	0.0	200.0

Maximum concrete compression strain (‰): 0.00
Maximum concrete compression stress (psi): 0
Resultant tension force (lb): 0
Resultant compression force (lb): 0
Eccentricity of resultant tension forces in x-axis, e'_{Nx} (inch): 0.00
Eccentricity of resultant tension forces in y-axis, e'_{Ny} (inch): 0.00
Eccentricity of resultant shear forces in x-axis, e'_{Vx} (inch): 0.00
Eccentricity of resultant shear forces in y-axis, e'_{Vy} (inch): 0.00

<Figure 3>



8. Steel Strength of Anchor in Shear (Sec. 17.5.1)

V_{sa} (lb)	ϕ_{grout}	ϕ	$\phi_{grout}\phi V_{sa}$ (lb)
7455	1.0	0.60	4473

10. Concrete Pryout Strength of Anchor in Shear (Sec. 17.5.3)

$\phi V_{cpg} = \phi k_{cp} N_{cbg} = \phi k_{cp}(A_{Nc}/A_{Nco})\Psi_{ec,N}\Psi_{ed,N}\Psi_{c,N}\Psi_{cp,N}N_b$ (Sec. 17.3.1 & Eq. 17.5.3.1b)

k_{cp}	A_{Nc} (in^2)	A_{Nco} (in^2)	$\Psi_{ec,N}$	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$	N_b (lb)	ϕ	ϕV_{cpg} (lb)
1.0	141.71	49.70	1.000	1.000	1.000	1.000	3062	0.70	6111

11. Results

11. Interaction of Tensile and Shear Forces (Sec. D.7)?

Shear	Factored Load, V_{ua} (lb)	Design Strength, øV_n (lb)	Ratio	Status
Steel	50	4473	0.01	Pass
Pryout	**200**	**6111**	**0.03**	**Pass (Governs)**

1/2"Ø Titen HD, hnom:3.25" (83mm) meets the selected design criteria.

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12. Warnings

- Designer must exercise own judgement to determine if this design is suitable.

- Refer to manufacturer's product literature for hole cleaning and installation instructions.