



Company:	Myer Hill Consulting	Date:	1/8/2024
Engineer:	Glyn R. Boone, P.E.	Page:	1/5
Project:	MHC-23-711		
Address:			
Phone:	717-413-1832		
E-mail:	glynboone@myerhill.com		

1. Project information

Customer company: Total Improvement Services, Inc.
Customer contact name: Dhaval Dadhania
Customer e-mail: it@fcgit.com
Comment: Allure Aluminum Railing Systems
Intertek CCRR-0430 Code Compliance Report

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): 0.375
Nominal Embedment depth (inch): 3.000
Effective Embedment depth, h_{ef} (inch): 2.190
Code report: ICC-ES ESR-2713
Anchor category: 1
Anchor ductility: No
 h_{min} (inch): 4.67
 c_{ac} (inch): 3.31
 c_{min} (inch): 1.75
 s_{min} (inch): 3.00

Base Material

Concrete: Normal-weight
Concrete thickness, h (inch): 5.50
State: Cracked
Compressive strength, f'_c (psi): 3000
 $\Psi_{e,v}$: 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

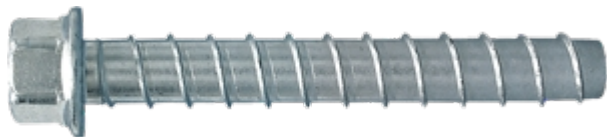
Base Plate

Length x Width x Thickness (inch): 4.75 x 4.75 x 0.50
Yield stress: 36000 psi

Profile type/size: HSS3X3X1/8

Recommended Anchor

Anchor Name: Titen HD® - 3/8"Ø Titen HD, h_{nom} : 3" (76mm)
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

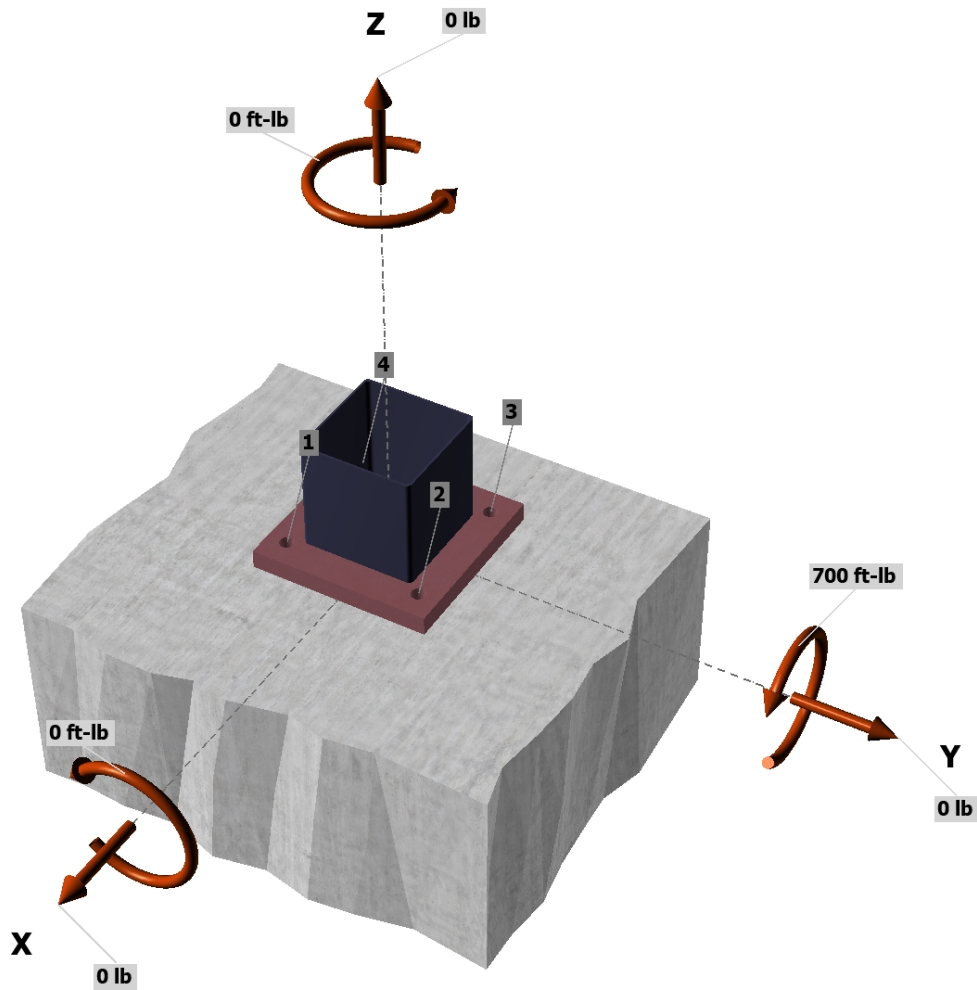
Apply entire shear load at front row: No

Anchors only resisting wind and/or seismic loads: No

Strength level loads:

- N_{ua} [lb]: 0
- V_{uax} [lb]: 0
- V_{uay} [lb]: 0
- M_{ux} [ft-lb]: 0
- M_{uy} [ft-lb]: 700
- M_{uz} [ft-lb]: 0

<Figure 1>

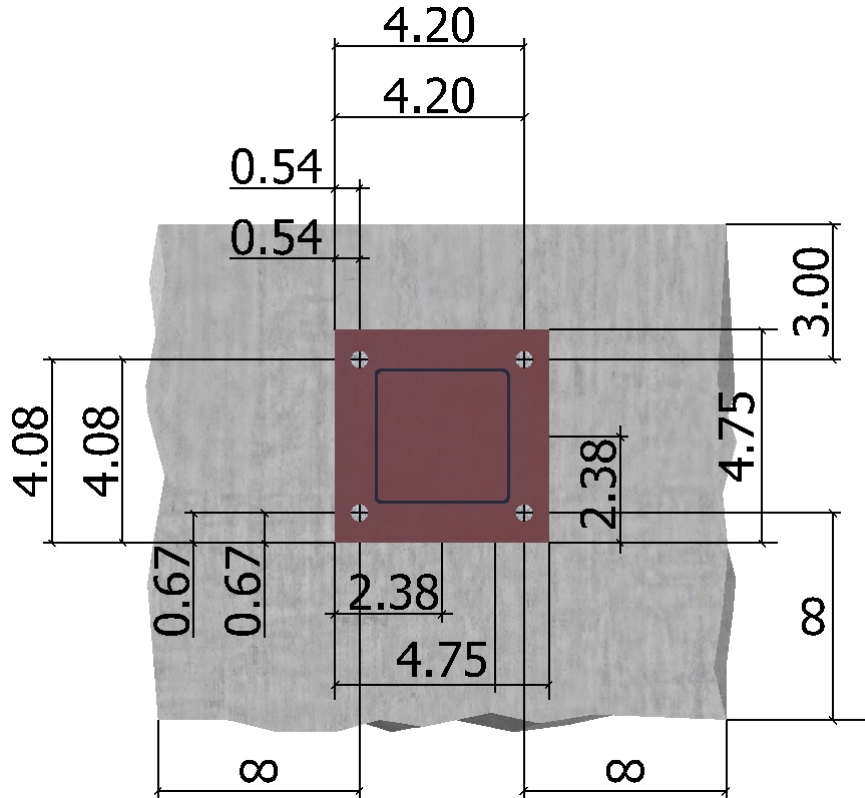


Input data and results must be checked for agreement with the existing circumstances, the standards and guidelines must be checked for plausibility.



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<Figure 2>





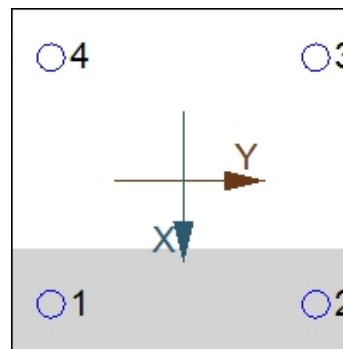
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3. Resulting Anchor Forces

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	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0
3	1166.6	0.0	0.0	0.0
4	1164.5	0.0	0.0	0.0
Sum	2331.0	0.0	0.0	0.0

Maximum concrete compression strain (%): 0.16
 Maximum concrete compression stress (psi): 687
 Resultant tension force (lb): 2331
 Resultant compression force (lb): 2331
 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

<Figure 3>



4. Steel Strength of Anchor in Tension (Sec. 17.4.1)

N _{sa} (lb)	φ	φN _{sa} (lb)
10890	0.65	7079

5. Concrete Breakout Strength of Anchor in Tension (Sec. 17.4.2)

$$N_b = k_c \lambda_a \sqrt{f_c} h_{ef}^{1.5} \text{ (Eq. 17.4.2.2a)}$$

k _c	λ _a	f _c (psi)	h _{ef} (in)	N _b (lb)
17.0	1.00	3000	2.190	3018

$$\phi N_{cbg} = \phi (A_{Nc} / A_{Nco}) \Psi_{ec,N} \Psi_{ed,N} \Psi_{c,N} \Psi_{cp,N} N_b \text{ (Sec. 17.3.1 \& Eq. 17.4.2.1b)}$$

A _{Nc} (in ²)	A _{Nco} (in ²)	c _{a,min} (in)	Ψ _{ec,N}	Ψ _{ed,N}	Ψ _{c,N}	Ψ _{cp,N}	N _b (lb)	φ	φN _{cbg} (lb)
64.30	43.16	3.00	0.999	0.974	1.00	1.000	3018	0.65	2844

6. Pullout Strength of Anchor in Tension (Sec. 17.4.3)

$$\phi N_{pn} = \phi \Psi_{c,P} \lambda_a N_p (f_c / 2,500)^n \text{ (Sec. 17.3.1, Eq. 17.4.3.1 \& Code Report)}$$

Ψ _{c,P}	λ _a	N _p (lb)	f _c (psi)	n	φ	φN _{pn} (lb)
1.0	1.00	2212	3000	0.50	0.65	1575

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Anchor Designer™
Software
Version 3.0.7947.7

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11. Results

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

Tension	Factored Load, N_{ua} (lb)	Design Strength, ϕN_n (lb)	Ratio	Status
Steel	1167	7079	0.16	Pass
Concrete breakout	2331	2844	0.82	Pass (Governs)
Pullout	1167	1575	0.74	Pass

3/8"Ø Titen HD, hnom:3" (76mm) meets the selected design criteria.

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.