PRCTI20250140

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STRUCTURAL CALCULATIONS

FOR

MHS GOOD SAMARITAN HOSPITAL
X-RAY EQUIPMENT REPLACEMENT
401 15TH AVE SE
PUYALLUP, WA 98372

PREPARED BY
PCS STRUCTURAL *SOLUTIONS*

City of Puyallup
Building
REVIEWED
FOR
COMPLIANCE
SKinnear
02/04/2025
3:45:49 PM

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

DECEMBER 16, 2024
25-078

Calculations required to be provided by the Permittee on site for all Inspections

GOOD SAM HOSPITAL X-RAY AND IR ROOM EQUIPMENT Replacement

The purpose of these calculations is to

1.Demonstrate that the anchorage and support for Imaging detector, Patient table and their system components are structurally adequate.

2.Verify Existing Sturtcure can support the proposed equipment

Design Criteria (IBC 2018)

Risk Category:	IV
Site Class:	D(From GeoReport)
Short-Period Response Coefficient:	$S_{DS} := 1.013$

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

Seismic

Site Soil Class: D - Default (see Section 11.4.3)

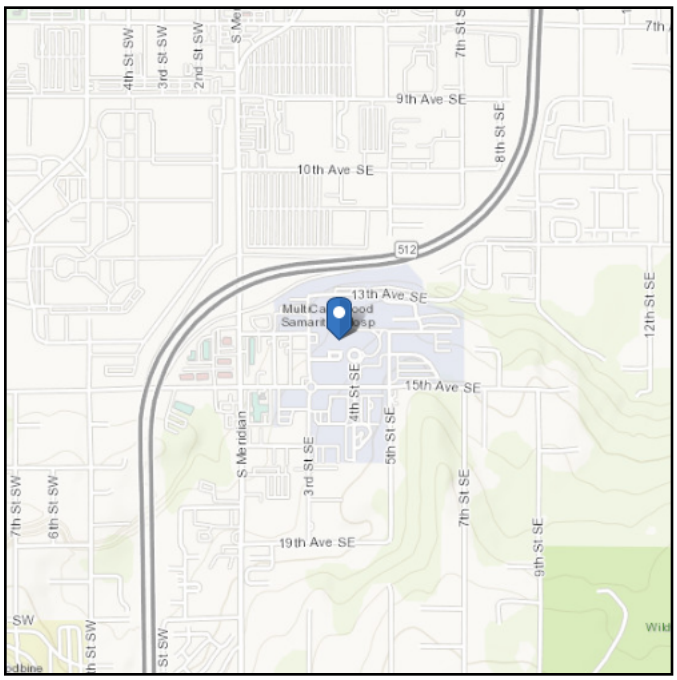
Results:

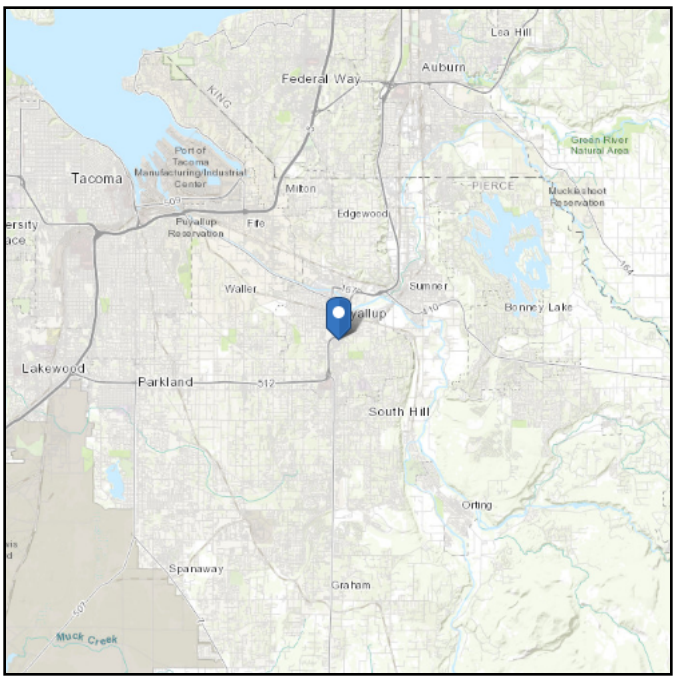
S_S :	1.267	S_{D1} :	N/A
S_1 :	0.436	T_L :	6
F_a :	1.2	PGA :	0.5
F_v :	N/A	PGA_M :	0.6
S_{MS} :	1.52	F_{PGA} :	1.2
S_{M1} :	N/A	I_e :	1.5
S_{DS} :	1.013	C_v :	1.353

ASCE Hazards Report

Address:
401 15th Ave SE
Puyallup, Washington
98372

Standard:	ASCE/SEI 7-16	**Latitude:**	47.178536
Risk Category:	IV	**Longitude:**	-122.290015
Soil Class:	D - Default (see Section 11.4.3)	**Elevation:**	132.37311568935164 ft (NAVD 88)





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S_{MS} :	1.52	F_{PGA} :	1.2
S_{M1} :	N/A	I_e :	1.5
S_{DS} :	1.013	C_v :	1.353

Ground motion hazard analysis may be required. See ASCE/SEI 7-16 Section 11.4.8.

Data Accessed: Wed Nov 27 2024

Date Source: USGS Seismic Design Maps

The ASCE Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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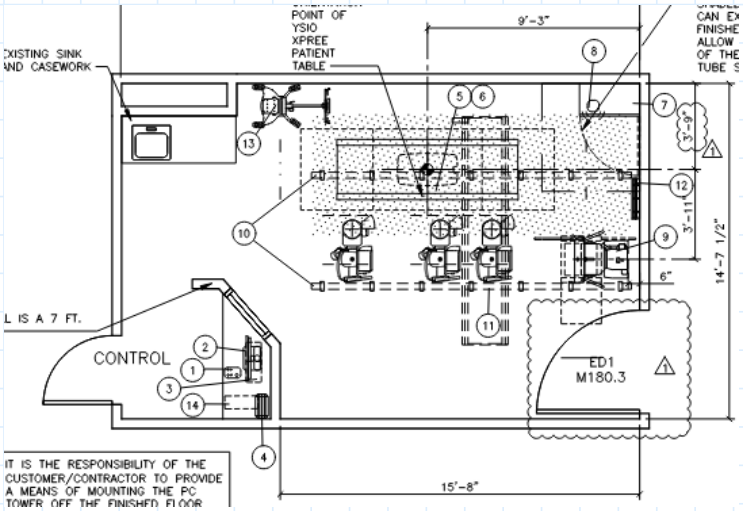
Overview of New Equipmemt X-RAY ROOM (Level 1)



EQUIPMENT LEGEND

NO	DESCRIPTION	SMS SYM	WEIGHT (LBS)	BTU/HR TO AIR	DIMENSIONS (INCHES) W	D	H
1	CONTROL MODULE	XW	2	–	4 3/4	10	2 3/4
2	LED TOUCHSCREEN MONITOR		18	205	22 1/2	8 5/8	15 1/4
3	IMAGING SYSTEM CONTAINER (UNDER COUNTER)		15	1,468	8	21	15
4	CHARGING STATION FOR MAX DETECTORS		4	–	12 1/2	6 3/4	2
5	YSIO XPREE TABLE WITH MOBILE DETECTOR	TI	970	2,560	94 13/16	31 1/2	***
6	FLAT TABLE TOP		–	–	–	–	–
7	POLYDOROS R80-2 (80 kW) GENERATOR CABINET	RU	944	2,048**	31 1/2	17 1/8	86 3/4
8	ACCESS POINT (TOP OF GENERATOR)	AP	1	–	5	6 3/8 *	1
9	YSIO XPREE WALL STAND WITH FIXED DETECTOR (RIGHT LOADING GRID)	WS	496	751	30	35*A	83
10	4.25M CEILING RAILS FOR X-RAY TUBE SUSPENSION		59	–	167 3/8	3	4
11	3M YSIO XPREE BRIDGE & X-RAY TUBE STAND	TS	772	853	119 1/4	39	*43
12	GRID HOLDER (WALL MOUNTED)		22	–	21 11/16	4	16 9/16
13	MOBILE DETECTOR HOLDER ON WHEELS		121	–	24 1/2	40 3/16	70 1/2
14	EATON UPS 5P 850G FOR IMAGING SYSTEM ONLY	UP	22	135	6	13 5/8	9 1/4

By Inspection, they highlighted equipment will require seismic supports

1. YSIO XPREE TABLE WITH MOBILE DETECTOR

Design Forces

Per ASCE 7-16 Chapter 13 - Seismic Design Requirements for Non-Structural Components

Seismic Coefficients per Table 13.6-1, Other Mechanical and Electrical Components:

Component Importance Factor: $I_p := 1.5$

Component Amplification Factor: $a_p := 1.0$ (T13.6-1)

Response Modification Factor: $R_p := 1.5$ (T13.6-1)

Overstrength Factor: $\Omega := 2.0$ (T13.6-1)

Building Height: $H := 146\ ft$

Height of Attachment: $z := 0 \cdot ft$ Anchor to S.O.G.

Calculated Horizontal Force Coefficient: $f_p := \frac{0.4 \cdot a_p \cdot S_{DS}}{\left(\frac{R_p}{I_p}\right)} \cdot \left(1 + 2 \cdot \frac{z}{H}\right) = 0.405$ (13.3-1)

Maximum Horizontal Force Coefficient: $f_{pmax} := 1.6 \cdot S_{DS} \cdot I_p = 2.43$ (13.3-2)

Minimum Horizontal Force Coefficient: $f_{pmin} := 0.3 \cdot S_{DS} \cdot I_p = 0.46$ (13.3-3)

Governing Horizontal Force Coefficient: $f_p := min\left(f_{pmax}, \max\left(f_p, f_{pmin}\right)\right) = 0.46$

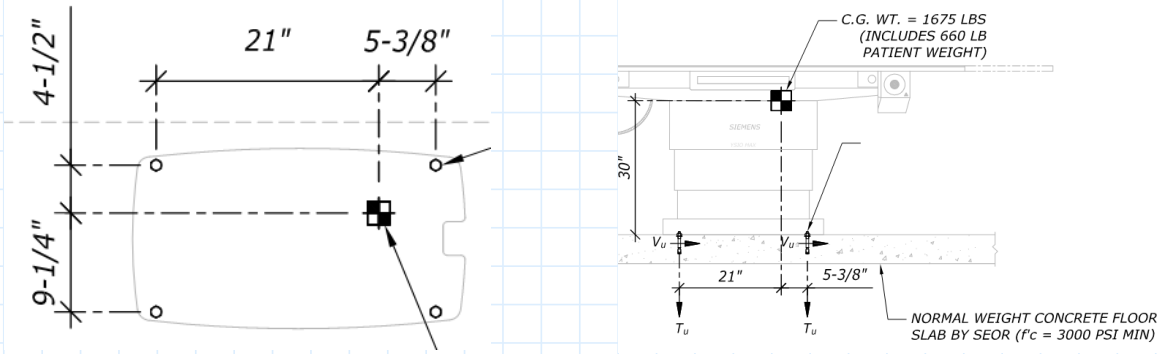
Vertical Force Coefficient: $f_{pv} := 0.2 \cdot S_{DS} = 0.203$

Total Weight: $W_p := 1675\ lbf$ include 660lb patient weight

Design Force (Horizontal): $F_p := f_p \cdot W_p = 764\ lbf$

Design Force (Vertical): $F_{pv} := f_{pv} \cdot W_p = 339\ lbf$

Check seismic anchorage



Plan Elevation

Anchor Bolt Tension

Vertical Distance to C.G.: $Z_{cm} := 30 \cdot in$

X1: $X1 := 4.5 \cdot in$

X2: $X2 := 9.25 \cdot in$

Sum moment at thee lower left corner:

Total Tension (0.9DL - E): $T := \frac{(\Omega \cdot F_p \cdot Z_{cm}) - (0.9 \cdot W_p - F_{pv}) \cdot X1}{X1 + X2} = 2950\ lbf$

Bolts Resisting Overturning: $n := 2$

Tension/Bolt(Uplift): $T_b := \frac{T}{n} = 1475\ lbf$

Anchor Bolt Shear

Shear/Bolt: $S_b := \frac{\Omega \cdot F_p}{2\ n} = 382\ lbf$

See Hilti Analysis: Use (4) 5/8"Ø Kwik Hus EZ (Concrete Screw)with 3.0" Embed

2. Generator Cabinet

Design Forces

Component Importance Factor: $I_p := 1.5$

Component Amplification Factor: $a_p := 1.0$ (T13.6-1)

Response Modification Factor: $R_p := 1.5$ (T13.6-1)

Overstrength Factor: $\Omega := 2.0$ (T13.6-1)

Building Height: $H := 146\ ft$

Height of Attachment: $z := 0 \cdot ft$ Anchor to First Floor

Calculated Horizontal Force Coefficient: $f_p := \frac{0.4 \cdot a_p \cdot S_{DS}}{\left(\frac{R_p}{I_p}\right)} \cdot \left(1 + 2 \cdot \frac{z}{H}\right) = 0.405$ (13.3-1)

Maximum Horizontal Force Coefficient: $f_{pmax} := 1.6 \cdot S_{DS} \cdot I_p = 2.43$ (13.3-2)

Minimum Horizontal Force Coefficient: $f_{pmin} := 0.3 \cdot S_{DS} \cdot I_p = 0.46$ (13.3-3)

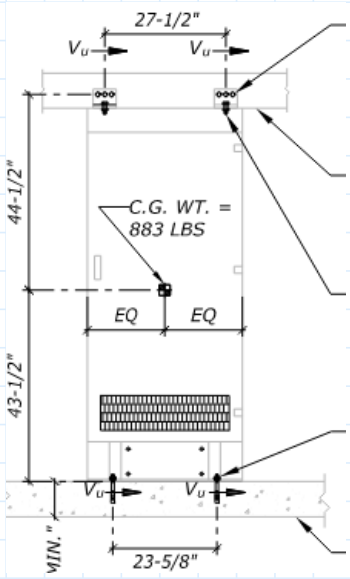
Governing Horizontal Force Coefficient: $f_p := min\left(f_{pmax}, \max\left(f_p, f_{pmin}\right)\right) = 0.46$

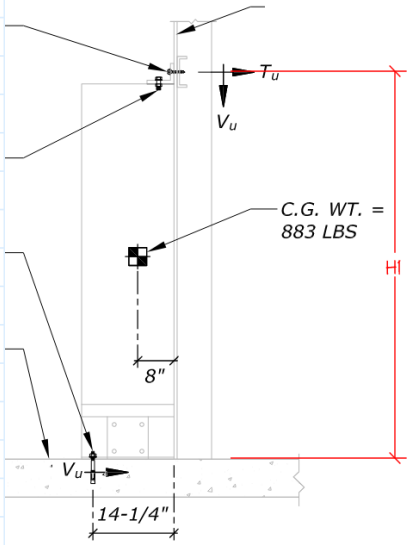
Vertical Force Coefficient: $f_{pv} := 0.2 \cdot S_{DS} = 0.203$

Total Weight: $W_p := 1102\ lbf$

Design Force (Horizontal): $F_p := f_p \cdot W_p = 502\ lbf$

Design Force (Vertical): $F_{pv} := f_{pv} \cdot W_p = 223\ lbf$





Anchor Bolt Tension

Vertical Distance to C.G.: $Z_{cm} := 43.5 \cdot in$

Top Anchor point: $H1 := 44.5\ in + 43.5\ in = 88\ in$

C.O.G to wall: $X1 := 8\ in$

Sum moment at thee lower left corner:

Total Tension @ Top (1DL +1E): $T := \frac{(\Omega \cdot F_p \cdot Z_{cm}) + (F_{pv}) \cdot X1}{H1} = 517\ lbf$

Anchor Resisting: $n := 2$

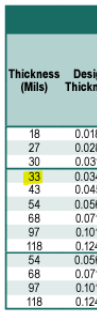
Tension/anchor: $T_b := \frac{T}{n} = 258\ lbf$

(4) #10 Screws to Cfs backing ok, 43 mils Min.

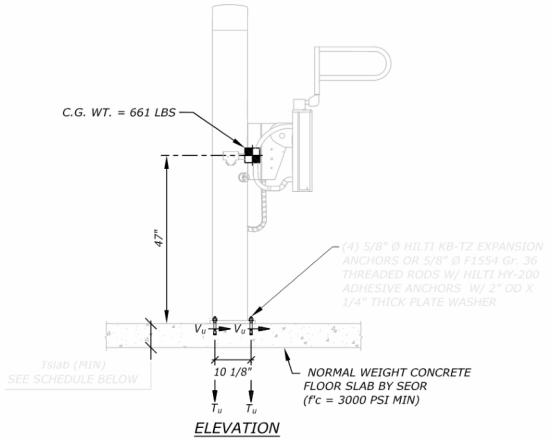
Anchor Bolt Shear

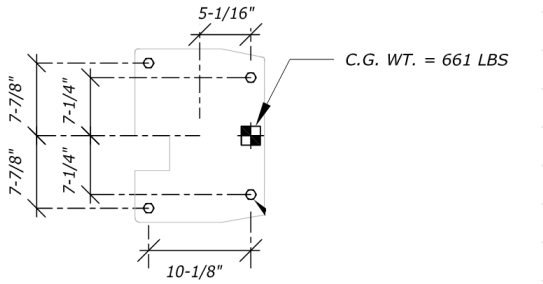
Shear/Bolt(assume resist by floor support 100%): $S_b := \frac{\Omega \cdot F_p}{2} = 502\ lbf$

See Hilti Analysis: Use (2) 3/8"Ø Concrete Screw with 3" Embed, one at each side of the generator cabinet



3. TSIO XPREE WALL STAND





Design Forces

Component Importance Factor: $I_p := 1.5$

Component Amplification Factor: $a_p := 2.5$

Response Modification Factor: $R_p := 2.5$

Overstrength Factor: $\Omega := 2.0$

Building Height: $H := 146\ ft$

Height of Attachment: $z := 0 \cdot ft$ Anchor to 1 Floor

Calculated Horizontal Force Coefficient:
$$f_p := \frac{0.4 \cdot a_p \cdot S_{DS}}{\left(\frac{R_p}{I_p}\right)} \cdot \left(1 + 2 \cdot \frac{z}{H}\right) = 0.608$$

Maximum Horizontal Force Coefficient: $f_{pmax} := 1.6 \cdot S_{DS} \cdot I_p = 2.43$

Minimum Horizontal Force Coefficient: $f_{pmin} := 0.3 \cdot S_{DS} \cdot I_p = 0.46$

Governing Horizontal Force Coefficient: $f_p := min\left(f_{pmax}, \max\left(f_p, f_{pmin}\right)\right) = 0.61$

Vertical Force Coefficient: $f_{pv} := 0.2 \cdot S_{DS} = 0.203$

Total Weight: $W_p := 661\ lbf$

Design Force (Horizontal): $F_p := f_p \cdot W_p = 402\ lbf$
Design Force (Vertical): $F_{pv} := f_{pv} \cdot W_p = 134\ lbf$

Anchor Bolt Tension

Sum moment at lower right point of the elevation view:

Vertical Distance to C.G.: $Z_{cm} := 47\ in$

C.O.G to wall: $X1 := 8\ in$

Anchor Spacing: $S := 10.125\ in$

$$T := \frac{\left(\Omega \cdot F_p \cdot Z_{cm}\right)}{S} = 3730\ lbf$$

Anchor Resisting: $n := 2$

Tension/anchor: $T_b := \frac{T}{n} = 1865\ lbf$

Anchor Bolt Shear

Shear/Bolt(assume resist by floor support 100%): $S_b := \frac{\Omega \cdot F_p}{4} = 201\ lbf$

See Hilti Analysis: Use (2) 5/8"Ø Concrete Screw with 3" Embed, one at each side of the generator cabinet

4. 3M FULLY AUTOMATED BRIDGE AND X-RAY TUBE STAND

By site investigation, the existing ceiling mounted equipment are a component of YSIO X.pree X-Ray system of Tube stand 3D V

California Department of Health Care have done testing on those equipment, which indicuates the weight of 803 lb

UUT_x-1	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI

Mounting Details: Rails and connecting parts of the 3D Tube Stand bolt with M10 bolts torqued at 36 ft-lb to unistrut grid spaced at 26.6" on center. The unistrut grid consisted of MURPO#150969 MPR-41/82/2.0 H Profiles (Unistrut P1001 equivalent) anchored with 2 - M10 bolts with clamping claws (MURPO 157219) at each intersection to the ceiling fixture framing spaced at 23.6" on center.

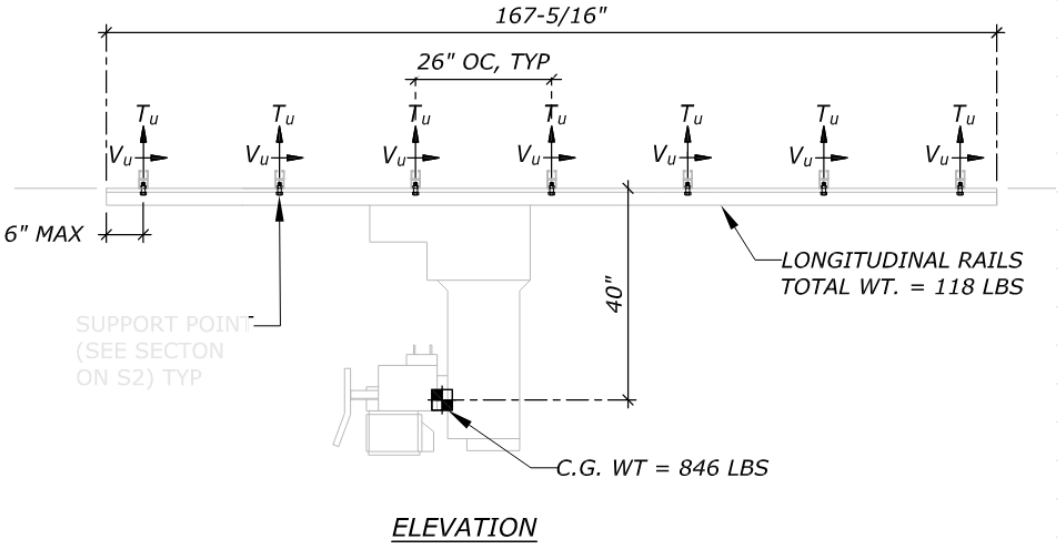
Manufacturer: Siemens Healthcare GmbH	**Test Location:** IABG - Munich, Germany
Component: Carriage 3D 3m manual Tube stand 3D V semi motorized	**Test Date:** September 2020
Model Number: 07042091	**Report Number:** TAB3-PB-20-134-V1
UUT Function: X-Ray stand, ceiling suspended, for use in radiography imaging, fully automated	
UUT Description: Component of the YSIO X.pree X-Ray System	

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
803	119	167	33-104	N/A	N/A	N/A

The ceiling suspended tube stand moves laterally, rotates, and extends up and down to accommodate different patients and procedures. The system was tested in the normal operating position with the system horizontally centered, no rotation, and with a downard extension of 32in (height = 33in + 32in = 65in).

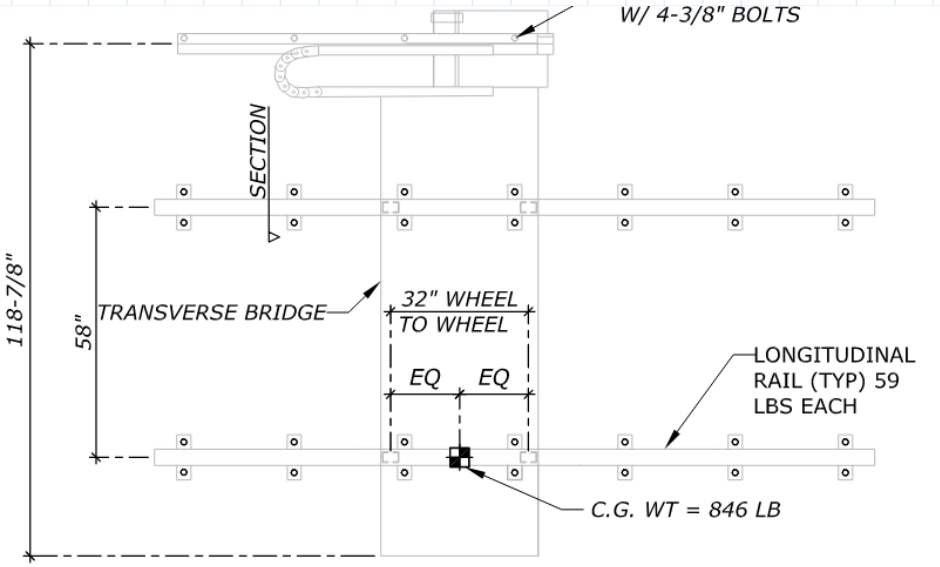
The new equipment has a similar weight of 846lb :



ELEVATION

$$\frac{846\ lbf - 803\ lbf}{803\ lbf} = 5.35\%$$

by inspection, the existing support should carry the new equipment gravity-wise



Seismic Design Forces for automated Bridge:

Per ASCE 7-16 Chapter 13 - Seismic Design Requirements for Non-Structural Components

ASCE 7-16 T13.5-1 for flexible components w/ high deformability

Component Importance Factor: $I_p = 1.5$

Component Amplification Factor: $a_p := 2.5$ (T13.6-1)

Response Modification Factor: $R_p := 25$ (T13.6-1)

Overstrength Factor: $\Omega := 2.5$ (T13.6-1)

Building Height: $H := 146\ ft$

Height of Attachment: $z := 12 \cdot ft$

Horizontal Force Coefficient:

$$f_p := \frac{0.4 \cdot a_p \cdot S_{DS}}{\left(\frac{R_p}{I_p}\right)} \cdot \left(1 + 2 \cdot \frac{z}{H}\right) = 0.071 \quad (13.3\text{-}1)$$

$$f_{pmax} := 1.6 \cdot S_{DS} \cdot I_p = 2.43 \quad (13.3\text{-}2)$$

$$f_{pmin} := 0.3 \cdot S_{DS} \cdot I_p = 0.46 \quad (13.3\text{-}3)$$

Governing Horizontal Force Coefficient:

$$f_p := min\left(f_{pmax}, \max\left(f_p, f_{pmin}\right)\right) = 0.46$$

Vertical Force Coefficient: $f_{pv} := 0.2 \cdot S_{DS} = 0.203$

Forces

Equipment Properties

Seismic Weight: $W := (846 + 59 + 59)\ lbf$

Seismic Design Forces

Horizontal Seismic Force: $F_p := f_p \cdot W = 439\ lbf$

Vertical Seismic Force: $F_{pv} := 0.2 \cdot S_{DS} \cdot W = 195\ lbf$

By infomation provided from Sellen, the contractor, the veritical hanger is construct with 1/2" threaded rod, spaced @ 4'-0" O.C. max

The unistruct above the ceiling are P1001

$P := 846\ lbf \cdot 1.0 \quad L := 48\ in$ ASD

$M := \frac{P \cdot L}{4} = \left(1.015 \cdot 10^4\right)\ in \cdot lbf$ Less than the allowable moment provide in Unistrut Catalog

Channels & Combinations in Descending Order of Strength

Channel	Area In² (cm²)	Weight lbs/ft (kg/m)	I In⁴ (cm⁴)	s In³(cm³)	Allow. Moment In-lbs (N•m)
P5001	1.793	6.10	6.227	1.916	48,180
	11.57	*9.1*	*259.2*	*31.4*	*5,440*
P1004A	1.965	6.68	4.068	1.669	41,980
	12.68	*9.9*	*169.3*	*27.4*	*4,740*
P5501	1.452	4.94	2.805	1.151	28,940
	9.37	*7.3*	*116.8*	*18.9*	*3,270*
P1001C41	2.221	7.55	1.856	1.142	28,720
	14.33	*11.2*	*77.2*	*18.7*	*3,250*
P5000	0.897	3.05	1.098	0.627	15,770
	5.78	*4.5*	*45.7*	*10.3*	*1,780*
P1001	1.111	3.78	0.928	0.571	14,360
	7.16	*5.6*	*38.6*	*9.4*	*1,620*
P1101	0.835	2.84	0.733	0.451	11,340
	5.39	*4.2*	*30.5*	*7.4*	*1,280*
	1.000	3.40	0.591	0.430	10,810

also compare it with the beam loading table

P1001 - Beam Loading

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

10. Continuous Beam, Two Equal Spans, Concentrated Load at Center of One Span		.62	.71

$2390\ lbf \cdot 0.62 = \left(1.482 \cdot 10^3\right)\ lbf$ The demand, 846 lbf are much less than the allowable point load

$0.13\ in \cdot 0.71 = 0.092\ in$ $\frac{48\ in}{0.092\ in} = 521.739$ Deflection acceptable

Recall lateral force

$F_p = 439.439\ lbf$ $\alpha := 60\ deg$ α is between 40-60deg by inspection, 60deg will result the max horizontal force, while 40 will result max length. use the max of both for conservative

$F_{Brace} := \frac{F_p}{2 \cdot \cos(\alpha)} = 439.439\ lbf$ two braces at each side

DETAIL 5A.1-1: TYPICAL FITTING CONNECTION TO STRUT

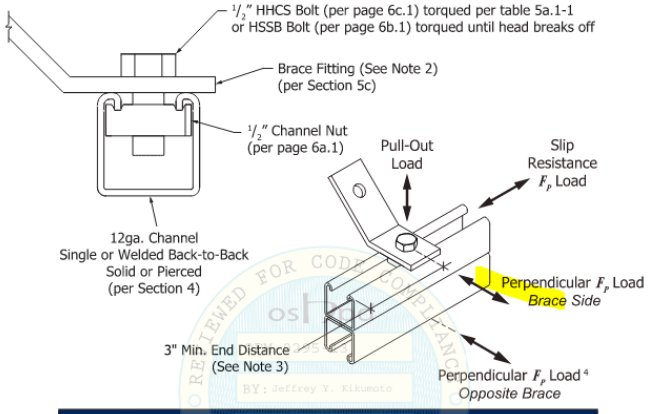


Table 5a.1-1

Bolt Size	Installation Torque (ft-lbs)	Max. Capacity (lbs) [ASD]	Maximum Horizontal F_p Force (lbs) [ASD]		
		Pull-Out	Slip Resistance	Perpendicular Brace Side	Perpendicular [4] Opposite Brace
½"	50 - 55	2,810	1,370	1,035	640

Brace fiting acceptbale

Story height=15ft

Ceiling to slab above= 4ft $\alpha := 40\ deg$

$L_{brace} := \frac{4\ ft}{\sin(\alpha)} = 74.675\ in$

P1000 - Column Loading

Unbraced Height In	Max. 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	**	**

P1000 Brace OK.

Contractor to verify (2) brace min. at each runs of unistrut p1001

Company:		Page:	1
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	Concrete - Nov 27, 2024	Date:	12/14/2024
Fastening point:			

Specifier's comments:

1 Input data

Anchor type and diameter:	**KWIK HUS-EZ (KH-EZ) (Carbon Steel) 5/8 (4)**
Item number:	418080 KH-EZ 5/8"x5 1/2"
Specification text:	Hilti ∅ 5/8 in KWIK HUS-EZ (KH-EZ) (Carbon Steel) with 4 in nominal embedment depth per ICC-ES ESR-3027 , Hammer drilled installation per MPII
Effective embedment depth:	$h_{ef,act}$ = 3.030 in., h_{nom} = 4.000 in.
Material:	Carbon Steel
Evaluation Service Report:	ESR-3027
Issued I Valid:	12/1/2023 | 12/1/2025
Proof:	Design Method ACI 318-19 / Mech
Shear edge breakout verification:	Row closest to edge (Case 3 only from ACI 318-19 Fig. R.17.7.2.1b)
Stand-off installation:	
Profile:	
Base material:	cracked concrete, 2500, f_c' = 2,500 psi; h = 6.000 in.
Installation:	**Hammer drilled hole, Installation condition: Dry**
Reinforcement:	tension: not present, shear: not present; no supplemental splitting reinforcement present
	edge reinforcement: none or < No. 4 bar

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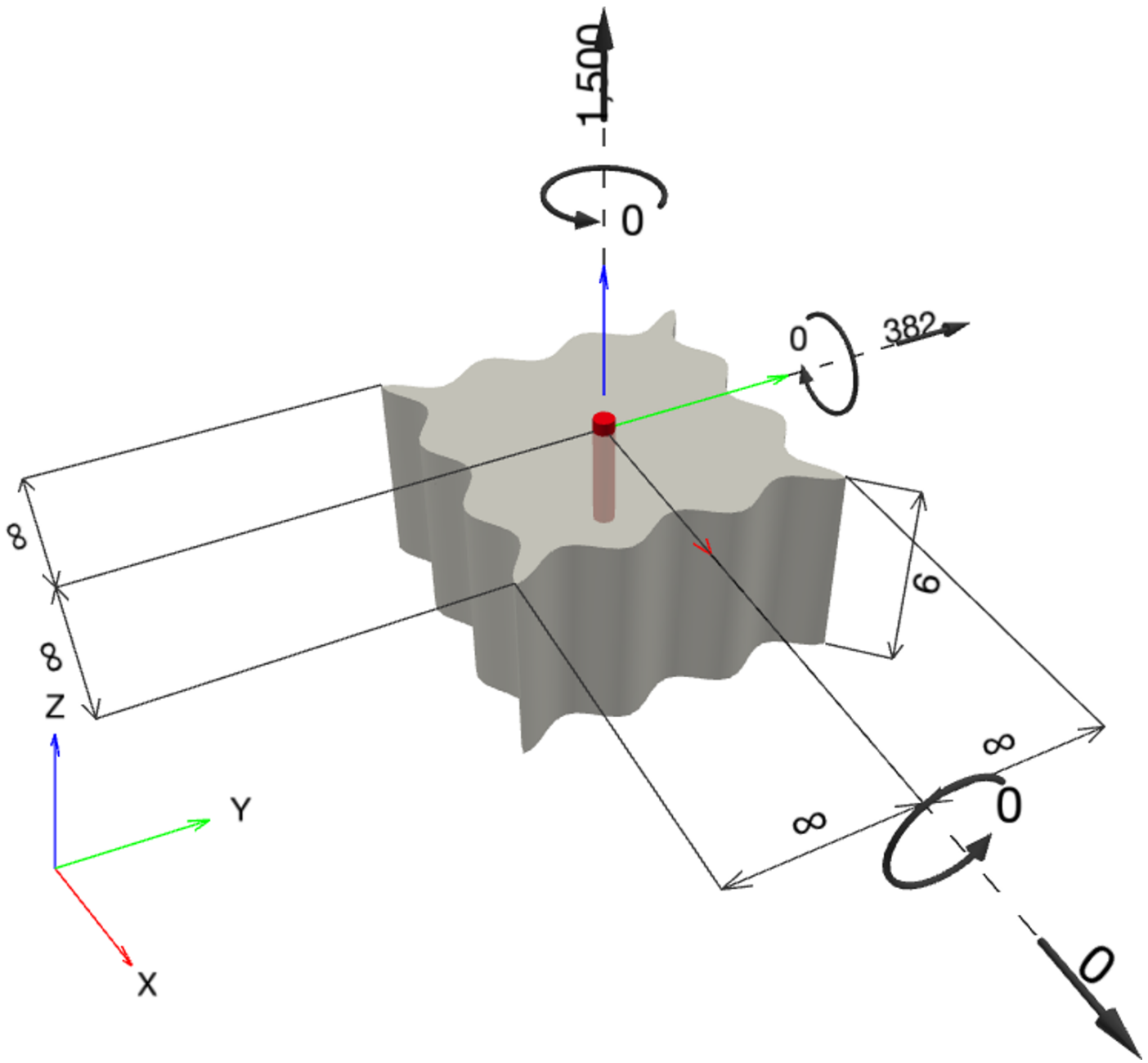
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	Concrete - Nov 27, 2024	Date:	12/14/2024
Fastening point:			

Geometry [in.] & Loading [lb, in.lb]



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Design:	Concrete - Nov 27, 2024	Date:	12/14/2024
Fastening point:			

1.1 Design results

Case	Description	Forces [lb] / Moments [in.lb]	Seismic	Max. Util. Anchor [%]
1	Combination 1	N = 1,500; V_x = 0; V_y = 382; M_x = 0; M_y = 0; M_z = 0;	no	52

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2 Proof I Utilization (Governing Cases)

		Design values [lb]		Utilization	
Loading	**Proof**	**Load**	**Capacity**	**β_N / β_V [%]**	**Status**
Tension	Concrete Breakout Failure	1,500	2,914	52 / -	OK
Shear	Pryout Strength	382	6,276	- / 7	OK

Loading	**β_N**	**β_V**	**ζ**	**Utilization $\beta_{N,V}$ [%]**	**Status**
Combined tension and shear loads	0.515	0.061	5/3	35	OK

3 Warnings

- Please consider all details and hints/warnings given in the detailed report!

Fastening meets the design criteria!

4 Remarks; Your Cooperation Duties

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Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	TSIO XPREE WALL STAND	Date:	12/14/2024
Fastening point:			

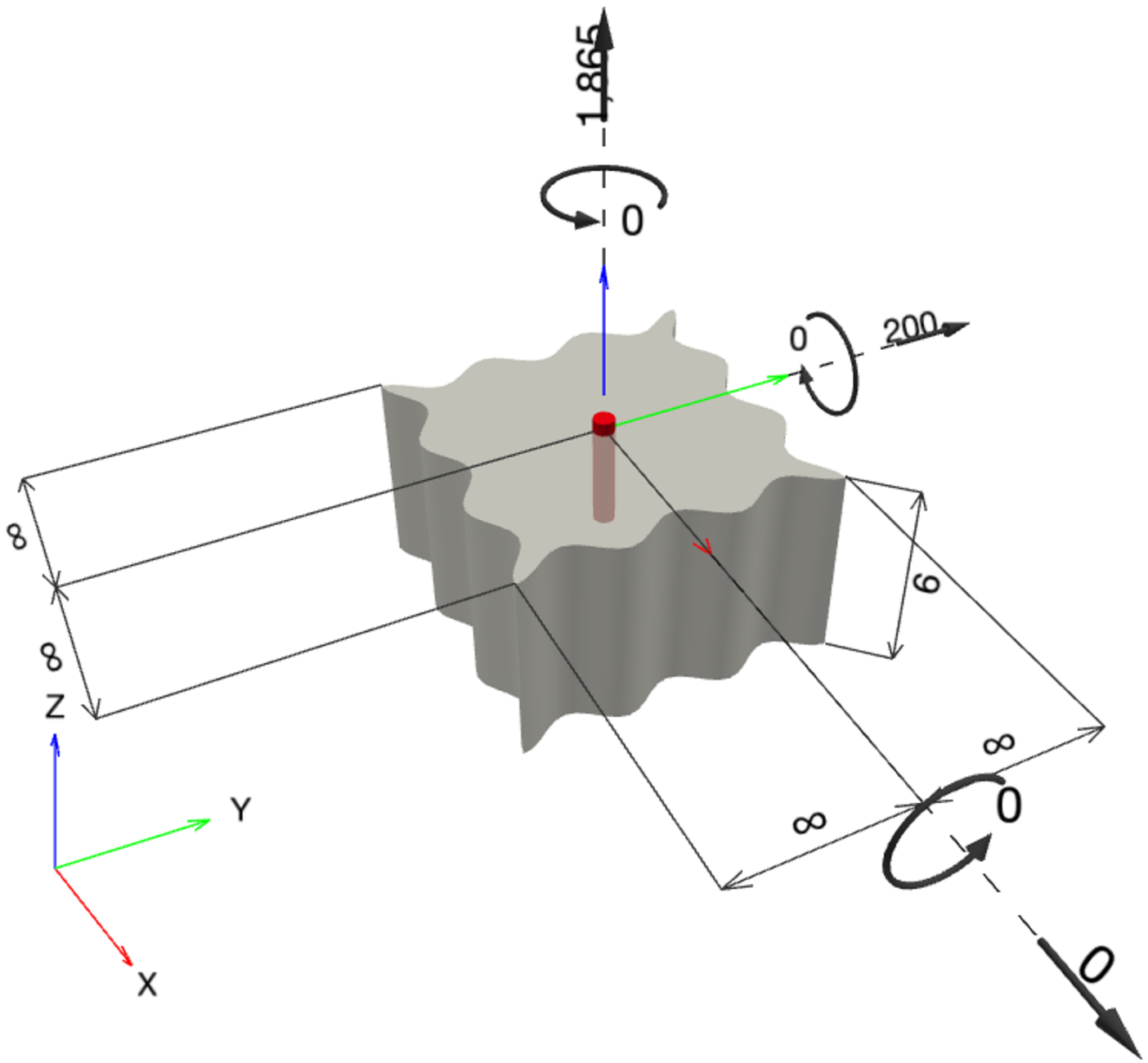
Specifier's comments:

1 Input data

Anchor type and diameter:	**KWIK HUS-EZ (KH-EZ) (Carbon Steel) 5/8 (4)**
Item number:	418080 KH-EZ 5/8"x5 1/2"
Specification text:	Hilti ∅ 5/8 in KWIK HUS-EZ (KH-EZ) (Carbon Steel) with 4 in nominal embedment depth per ICC-ES ESR-3027 , Hammer drilled installation per MPII
Effective embedment depth:	$h_{ef,act}$ = 3.030 in., h_{nom} = 4.000 in.
Material:	Carbon Steel
Evaluation Service Report:	ESR-3027
Issued I Valid:	12/1/2023 | 12/1/2025
Proof:	Design Method ACI 318-19 / Mech
Shear edge breakout verification:	Row closest to edge (Case 3 only from ACI 318-19 Fig. R.17.7.2.1b)
Stand-off installation:	
Profile:	
Base material:	cracked concrete, 2500, f_c' = 2,500 psi; h = 6.000 in.
Installation:	**Hammer drilled hole, Installation condition: Dry**
Reinforcement:	tension: not present, shear: not present; no supplemental splitting reinforcement present
	edge reinforcement: none or < No. 4 bar

Company:		Page:	2
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	TSIO XPREE WALL STAND	Date:	12/14/2024
Fastening point:			

Geometry [in.] & Loading [lb, in.lb]



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Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	TSIO XPREE WALL STAND	Date:	12/14/2024
Fastening point:			

1.1 Design results

Case	Description	Forces [lb] / Moments [in.lb]	Seismic	Max. Util. Anchor [%]
1	Combination 1	N = 1,865; V_x = 0; V_y = 200; M_x = 0; M_y = 0; M_z = 0;	no	65

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Design:	TSIO XPREE WALL STAND	Date:	12/14/2024
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2 Proof I Utilization (Governing Cases)

		Design values [lb]		Utilization	
Loading	**Proof**	**Load**	**Capacity**	**β_N / β_V [%]**	**Status**
Tension	Concrete Breakout Failure	1,865	2,914	65 / -	OK
Shear	Pryout Strength	200	6,276	- / 4	OK

Loading	**β_N**	**β_V**	**ζ**	**Utilization $\beta_{N,V}$ [%]**	**Status**
Combined tension and shear loads	0.640	0.032	5/3	48	OK

3 Warnings

- Please consider all details and hints/warnings given in the detailed report!

Fastening meets the design criteria!

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Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	TSIO XPREE WALL STAND	Date:	12/14/2024
Fastening point:			

4 Remarks; Your Cooperation Duties

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- You must take all necessary and reasonable steps to prevent or limit damage caused by the Software. In particular, you must arrange for the regular backup of programs and data and, if applicable, carry out the updates of the Software offered by Hilti on a regular basis. If you do not use the AutoUpdate function of the Software, you must ensure that you are using the current and thus up-to-date version of the Software in each case by carrying out manual updates via the Hilti Website. Hilti will not be liable for consequences, such as the recovery of lost or damaged data or programs, arising from a culpable breach of duty by you.