DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
FACILITIES DEVELOPMENT DIVISION

APPLICATION FOR HCAI PREAPPROVAL OF MANUFACTURER'S CERTIFICATION (OPM)

HCAI Preapproval of Manufacturer's Certification (OPM)

Type: ☐ New ☒ Renewal/Update

Manufacturer Information

Manufacturer: Certified Medical Sales

Manufacturer's Technical Representative: Jake Granger

Mailing Address: 41551 Date Street, Murrieta, CA 92562

Telephone: (800) 537-3090   Email: Sales@CertifiedMedicalSales.com

Product Information

Product Name: JT RACKING SYSTEMS

Product Type: Rack for containing gas cylinders

Product Model Number: Various

General Description: Welded steel racks with chain restraints

Applicant Information

Applicant Company Name: Spire Structural Engineering Inc.

Contact Person: Jeremy Welton

Mailing Address: 26461 Rancho Parkway South, Lake Forest, CA 92630

Telephone: (949) 916-3440   Email: jwelton@spirestructures.com

Title:

"Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs"

STATE OF CALIFORNIA – HEALTH AND HUMAN SERVICES AGENCY

DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
FACILITIES DEVELOPMENT DIVISION

Registered Design Professional Preparing Engineering Recommendations

Company Name: SPIRE STRUCTURAL ENGINEERING, INC.

Name: Jeremy Welton   California License Number: S4614

Mailing Address: 26461 Rancho Parkway South, Lake Forest, CA 92630

Telephone: (949) 916-3440   Email: jwelton@spirestructures.com

HCAI Special Seismic Certification Preapproval (OSP)

☐ Special Seismic Certification is preapproved under OSP   OSP Number: _____

Certification Method

Testing in accordance with: ☐ ICC-ES AC156   ☐ FM 1950-16

☐ Other(s) (Please Specify): _____

*Use of criteria other than those adopted by the California Building Standards Code, 2019 (CBSC 2019) for component supports and attachments are not permitted. For distribution system, interior partition wall, and suspended ceiling seismic bracings, test criteria other than those adopted in the CBSC 2019 may be used when approved by HCAI prior to testing.

☒ Analysis

☐ Experience Data

☐ Combination of Testing, Analysis, and/or Experience Data (Please Specify): _____

HCAI Approval

Date: 1/4/2023

Name: William Staehlin   Title: Senior Structural Engineer

Condition of Approval (if applicable): _____

REVIEWED FOR CODE COMPLIANCE
HCAI
OPM-0453
BY: William Staehlin
DATE: 01/04/2023
© CALIFORNIA BUILDING CODE, 2019

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STATE OF CALIFORNIA – HEALTH AND HUMAN SERVICES AGENCY

| SPIRE STRUCTURAL ENGINEERING inc
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www.spirestructures.com
ENG: JCW | GENERAL NOTES

JT RACKING SYSTEMS

MEDICAL GAS ANCHORING SYSTEMS | SHEET: **1** OF **8**

DATE: **01.04.23** |

DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
PREAPPROVAL OF MANUFACTURER'S CERTIFICATION
OPM-0453

(THIS PREAPPROVAL CONFORMS TO THE 2022 CALIFORNIA BUILDING CODE)
THE DEMAND (DESIGN FORCES) FOR USE WITH THIS OPM SHALL BE BASED ON THE CBC 2022.

EQUIPMENT MANUFACTURER: JT RACKING SYSTEMS
EQUIPMENT TYPE: MEDICAL COMPRESSED GAS SUPPORT AND ANCHOR SYSTEM

GENERAL NOTES

FORCES PER ASCE 7-16 SECTION 13.3.1, EQUATIONS 13.3-1, 13.3-2, AND 13.3-3, WHERE $S_{DS} \leq 1.93$, $a_p = 2.5$, $R_p = 2.5$, $\Omega_0 = 2.0$, $I_p = 1.5$ AND $z/h \leq 1.0$.

1. THIS PREAPPROVAL CONFORMS TO THE 2022 CALIFORNIA BUILDING CODE. THE DEMAND (DESIGN FORCES) FOR USE WITH THIS OPM SHALL BE BASED ON THE 2022 CBC.
2. THE DETAILS IN THIS PREAPPROVAL MAY BE USED AT ANY HEIGHT ($z/h \leq 1.0$) AND AT ANY LOCATION IN THE STATE OF CALIFORNIA WHERE $S_{DS} \leq 1.93$ BASED ON THE LIMITATIONS SHOWN IN TABLE 1.
3. EXPANSION ANCHORS [CARBON STEEL (CS) OR STAINLESS STEEL (SS)] SHALL BE HILTI KB-TZ2 (ICC ESR-4266):
   A. ATTACHMENT IS TO BE MADE WITH ANCHORS LISTED BELOW AND INSTALLED AS DESCRIBED IN THE CORRESPONDING ICC REPORT.

ANCHOR DIAMETER	MIN f'_c (psi)	NOMINAL EMBED	EFFECTIVE EMBED (h_{ef})	MIN SPACING (NOTE D)	MIN EDGE DIST	MIN CONC THICKNESS	TORQUE TEST LOADS
3/8"	2,500	3"	2½"	4"	4"	6"	30 FT-LBS
5/8"	2,500	4½"	4"	12"	13"	6"	40 FT-LBS (CS) 60 FT-LBS (SS)

   B. THIS PREAPPROVAL DOES NOT ALLOW CONCRETE EDGE DISTANCES LESS THAN MINIMUM.
   C. POST-INSTALLED ANCHORS INTO NORMAL WEIGHT CONCRETE SHALL SATISFY SECTION 13.4.2.1, INCLUDING THE OVERSTRENGTH FACTOR, Ω_0 PER TABLE 13.6-1 (AS LIMITED BY CBC SECTION 1617A.1.23, "ASCE 7 TABLES 13.5-1 AND 13.6-1").
   D. UNLESS NOTED OTHERWISE. SEE DETAILS FOR LOCATIONS WHERE SPACING IS LESS (THIS IS ACCEPTABLE).
4. TESTING OF EXPANSION ANCHORS PER 2022 CBC, 1910A.5.3: TESTING SHALL BE DONE IN THE PRESENCE OF THE SPECIAL INSPECTOR AND A REPORT OF THE TEST RESULTS SHALL BE SUBMITTED TO HCAI.
   A. TORQUE TEST AT LEAST 50% OF THE ANCHORS TO THE INSTALLATION TORQUE.
   B. ACCEPTANCE CRITERIA: THE ANCHOR SHOULD HAVE NO OBSERVABLE MOVEMENT AT THE TEST LOAD. A PRACTICAL WAY TO DETERMINE OBSERVABLE MOVEMENT IS THAT THE WASHER BECOMES LOOSE. ANCHORS TESTED WITH A CALIBRATED TORQUE WRENCH MUST ATTAIN THE SPECIFIED TORQUE WITHIN ½ TURN OF THE NUT.
   C. IF ANY ANCHOR FAILS, TEST ALL ANCHORS.
5. THIS PREAPPROVAL COVERS ONLY THE SUPPORTS AND ATTACHMENTS OF THE UNIT TO THE STRUCTURE.
6. BOLTS THROUGH CONCRETE ON STEEL DECK
   A. BOLTS SHALL BE TORQUED BY ¾ TURN OF THE NUTS AFTER THE SNUG-TIGHT CONDITION IS ACHIEVED (SNUG-TIGHT IS DEFINED AS THE TIGHTNESS REQUIRED TO BRING THE CONNECTED PLIES INTO FIRM CONTACT).
   B. THROUGH BOLT HOLES IN CONCRETE SHALL BE 11/16" DIAMETER (BOLT DIAMETER +1/16").
   C. THROUGH-BOLTS IN CONCRETE SHALL RECEIVE SPECIAL INSPECTION AND TESTING IN ACCORDANCE WITH REQUIREMENTS FOR POST-INSTALLED ANCHORS (THROUGH BOLTS WITH STEEL-TO-STEEL CONNECTION IN TENSION DO NOT REQUIRE TENSION TESTING).

JEREMY C. WELTON — S 4614 — REGISTERED PROFESSIONAL ENGINEER — STRUCTURAL — STATE OF CALIFORNIA
Signed 01.04.23

RESPONSIBILITIES OF THE STRUCTURAL ENGINEER OF RECORD (SEOR)

1. VERIFY RACK CAPACITY BASED ON THE COMBINATION OF S_{DS} AND z/h AS LIMITED BY TABLE 1 OF THIS PREAPPROVAL.
2. VERIFY THAT THE CONCRETE SLAB WHERE THE EQUIPMENT IS BEING ANCHORED MEETS THE REQUIREMENTS OF THE APPLICABLE ICC REPORT.
3. VERIFY THAT THE ANCHORS ARE AN ADEQUATE DISTANCE FROM ANY SLAB EDGES OR OPENINGS.
4. PROVIDE ANY SUPPORTING STRUCTURE REQUIRED TO SUPPORT THE WEIGHTS AND FORCES SHOWN IN TABLE 2 ON SHEET 8/8 OF THIS PREAPPROVAL.
5. VERIFY THAT THE INSTALLATION IS IN CONFORMANCE WITH THE 2022 CBC AND WITH THE DETAILS SHOWN IN THIS PREAPPROVAL. VERIFY THAT THE ACTUAL EQUIPMENT WEIGHT, CENTER OF GRAVITY LOCATION, ANCHOR LOCATIONS, ANCHOR DETAILS AND THE MATERIAL AND GAGE OF THE UNIT WHERE ATTACHMENTS ARE MADE AGREE WITH THE INFORMATION SHOWN ON THE PREAPPROVAL. DOCUMENTS.
6. VERIFY THAT ALL NEW OR EXISTING ANCHORS ARE AN ADEQUATE DISTANCE FROM THE ANCHORS SHOWN IN THIS PREAPPROVAL. SEOR SHALL VERIFY THAT THERE IS NO ADVERSE INTERACTION WHERE OTHER ANCHORS ARE WITHIN 18" OR 6 h_{ef} FROM THIS UNIT'S ANCHORS.

TABLE 1 - SEISMIC QUALIFICATION SUMMARY (RACK CAPACITY)

RACK	MAX S_{DS}*	COEFF C		RACK	MAX S_{DS}*	COEFF C
1D1W	1.93	2.48		2D2W	1.17	2.25
1D1W-L	1.93	2.42		2D2W-L	1.93	2.42
1D2W	1.93	2.54		3D1W	0.92	2.30
1D2W-L	1.93	2.10		3D1W-L	1.93	1.58
1D3W	1.93	2.61		3D2W	1.01	2.97
1D3W-L	1.93	2.22		3D2W-L	1.43	2.51
2D1W	1.40	2.51		4D2W	0.87	2.33
2D1W-L	1.93	1.76		4D2W-L	1.16	2.10

* MAX S_{DS} FOR z/h ≤ 1.0. THE MAX S_{DS} FOR A GIVEN HEIGHT RATIO CAN BE CALCULATED BASED ON ASCE7-16 EQUATIONS 13.3-1 AND 13.3-3.

* FOR EXPANSION ANCHOR APPLICACTION AT z/h > 0, (SEE TABLE 3, NOTE 4), FOR A GIVEN S_{DS}, MAX z/h CAN BE CALCULATED AS:
$(z/h)_{max} = (C \, S_{DS} - 1)/2$
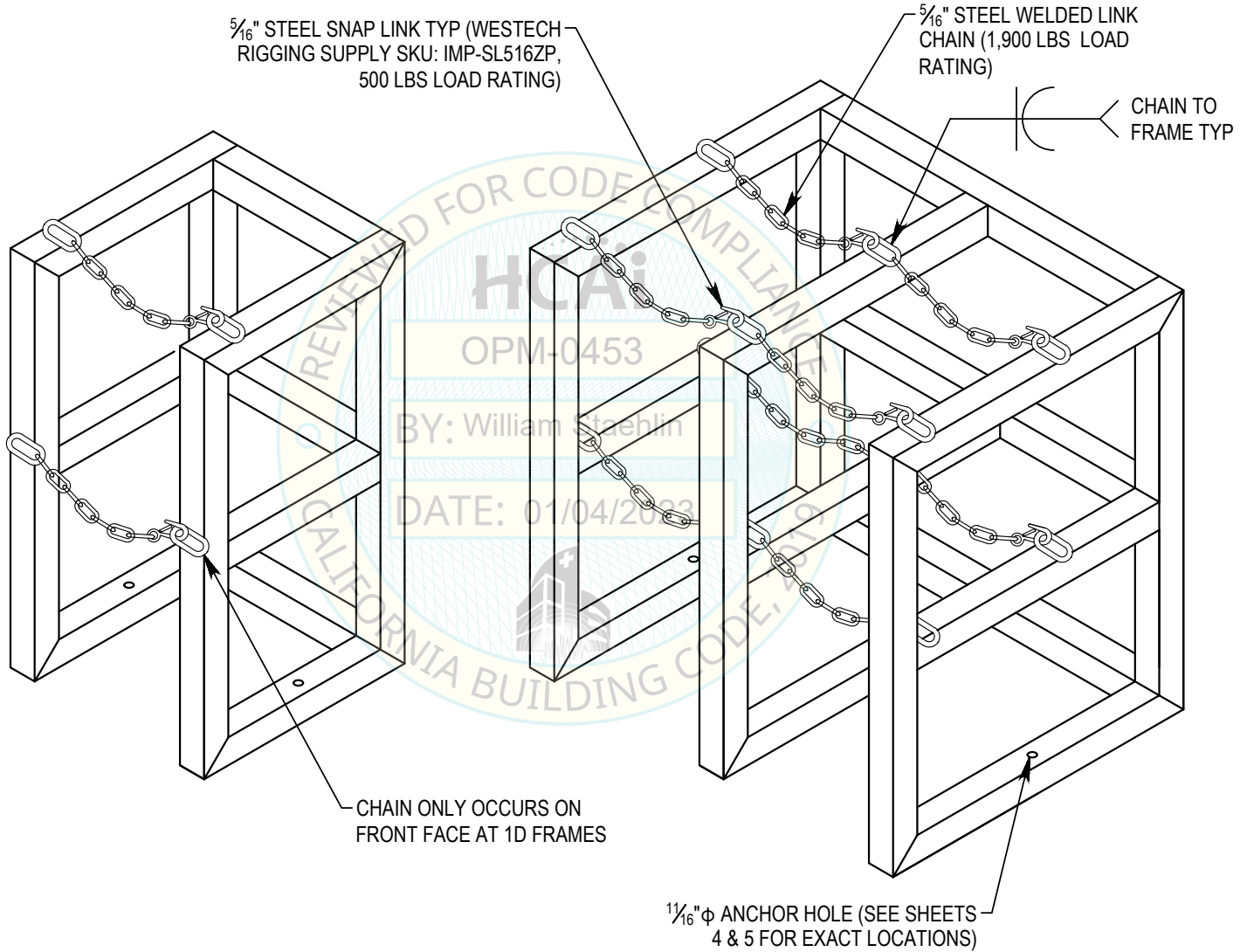
RACK SEISMIC QUALIFICATION
FOR EXAMPLE, FOR THE "2D1W" RACK:
SEISMICALLY QUALIFIED FOR MAX S_{DS}= 1.40g WHEN z/h ≤ 1.0; 1.4*[1+(2*1.0)] = 4.20
IF z/h ≤ 0.5, THEN MAX S_{DS}*[1.0+(2*0.5)] ≤ 4.2; S_{DS} = 4.2/2 = 2.10

USE OF EXPANSION ANCHORS FOR z/h > 0 (WITH 6" MIN SLAB THICKNESS PER NOTE 3 ON SHEET 1/8)
FOR EXAMPLE, FOR THE "4D2W" RACK w/ S_{DS}=1.00g:
C= 2.33
$(z/h)_{max} = (C \, S_{DS} - 1)/2 = (2.33*1.00 - 1)/2 = 0.67$

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ENG: JCW

TYPICAL GAS RACK FRAME BY JT RACKING SYSTEMS

$\frac{5}{16}$" STEEL SNAP LINK TYP (WESTECH RIGGING SUPPLY SKU: IMP-SL516ZP, 500 LBS LOAD RATING)

$\frac{5}{16}$" STEEL WELDED LINK CHAIN (1,900 LBS LOAD RATING)

CHAIN TO FRAME TYP

CHAIN ONLY OCCURS ON FRONT FACE AT 1D FRAMES

$\frac{11}{16}$"φ ANCHOR HOLE (SEE SHEETS 4 & 5 FOR EXACT LOCATIONS)

NOTES:
1. SEE SHEETS 4 & 5 FOR DIFFERENT RACK CONFIGURATIONS.
2. ALL CHAINS ARE TO BE LOOSE AROUND TANK.

Signed 01.04.23

|		
SPIRE STRUCTURAL ENGINEERING inc	RACK CONFIGURATIONS	SHEET: 4
	JT RACKING SYSTEMS	OF 8
26461 Rancho Parkway South, Lake Forest, CA 92630 — tel: 949.916.3440 — www.spirestructures.com — ENG: JCW	MEDICAL GAS ANCHORING SYSTEMS	DATE: 01.04.23

1D SERIES:
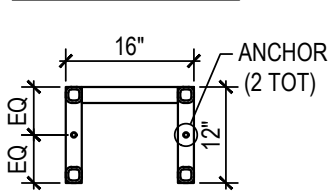
MODEL: 1D1W
DESCRIPTION: 1 DEEP x 1 WIDE
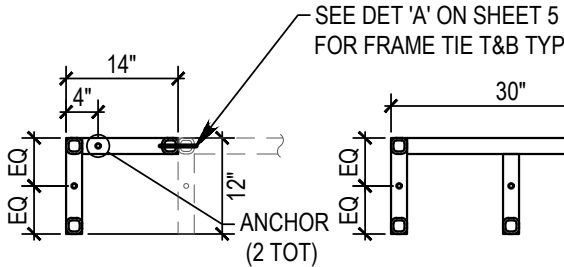
MODEL: 1D1W-(L OR R)
DESCRIPTION: 1 DEEP x 1 WIDE
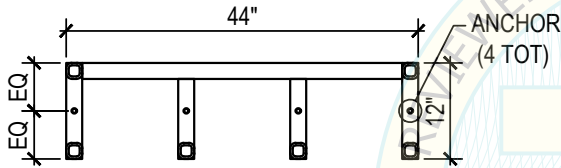(LEFT OR RIGHT SIDE ADD-ON,
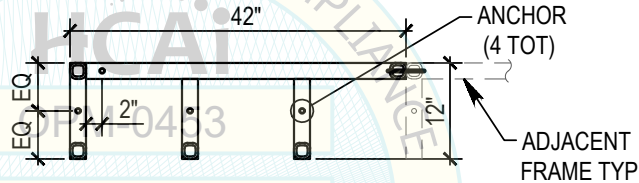LEFT SHOWN)
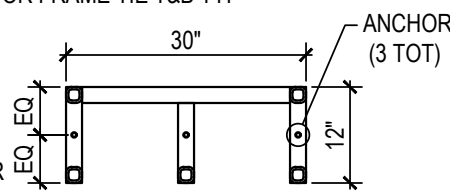
MODEL: 1D2W
DESCRIPTION: 1 DEEP x 2 WIDE
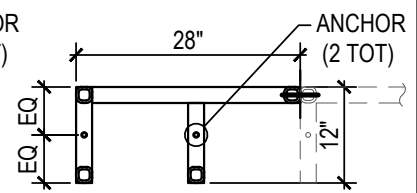
MODEL: 1D2W-(L OR R)
DESCRIPTION: 1 DEEP x 2 WIDE
(LEFT OR RIGHT SIDE ADD-ON,
LEFT SHOWN)

SEE DET 'A' ON SHEET 5 FOR FRAME TIE T&B TYP
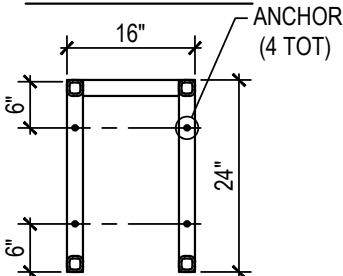
MODEL: 1D3W
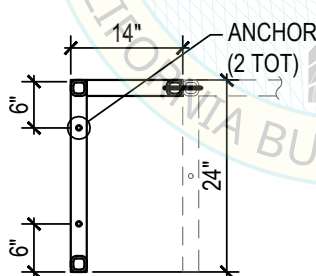DESCRIPTION: 1 DEEP x 3 WIDE

MODEL: 1D3W-(L OR R)
DESCRIPTION: 1 DEEP x 3 WIDE
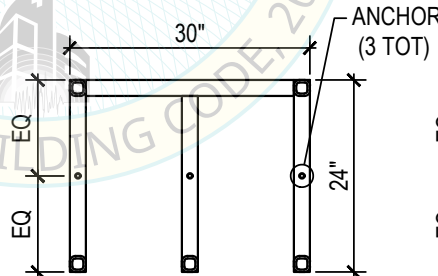(LEFT OR RIGHT SIDE ADD-ON,
LEFT SHOWN)

2D SERIES:

MODEL: 2D1W
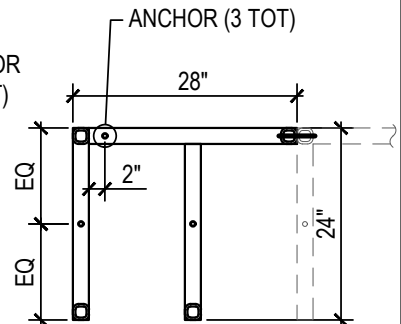DESCRIPTION: 2 DEEP x 1 WIDE

MODEL: 2D1W-(L OR R)
DESCRIPTION: 2 DEEP x 1 WIDE
(LEFT OR RIGHT SIDE ADD-ON,
LEFT SHOWN)

MODEL: 2D2W
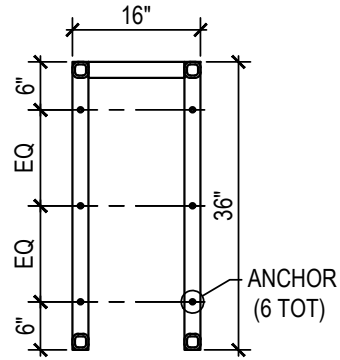DESCRIPTION: 2 DEEP x 2 WIDE

MODEL: 2D2W-(L OR R)
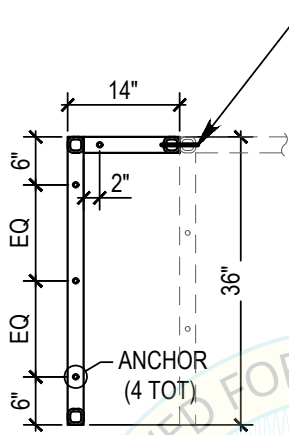DESCRIPTION: 2 DEEP x 2 WIDE
(LEFT OR RIGHT SIDE ADD-ON,
LEFT SHOWN)

NOTES:
1. ALL FRAME CONFIGURATIONS SHOWN ARE COVERED UNDER THIS OPM.
2. TYPICAL FRAMES ARE HSS2x2x$\frac{1}{8}$ (ASTM A500 GRADE B) EXCEPT 4D SERIES ARE HSS2x2x$\frac{1}{4}$.
3. $\frac{11}{16}$"ϕ ANCHOR HOLES ARE PROVIDED BY MFR.
4. SEE TABLE ON SHEET 1/8 FOR MINIMUM EDGE DISTANCE CRITERIA.

JEREMY C. WELTON — REGISTERED PROFESSIONAL ENGINEER — S4614 — STRUCTURAL — STATE OF CALIFORNIA
Signed 01.04.23

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ENG: JCW

3D SERIES:

SEE DET 'A' (THIS SHEET)
FOR FRAME TIE T&B TYP

MODEL: 3D1W
DESCRIPTION: 3 DEEP x 1 WIDE

ANCHOR (6 TOT)

MODEL: 3D1W-(L OR R)
DESCRIPTION: 3 DEEP x 1 WIDE
(LEFT OR RIGHT SIDE ADD-ON,
LEFT SHOWN)

ANCHOR (4 TOT)
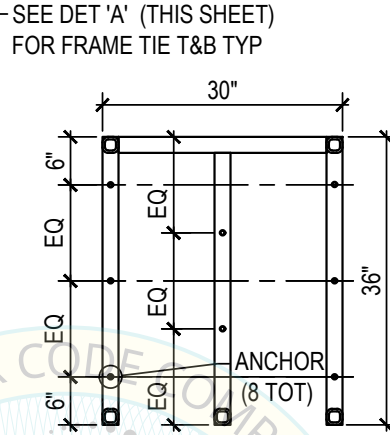
MODEL: 3D2W
DESCRIPTION: 3 DEEP x 2 WIDE

ANCHOR (8 TOT)
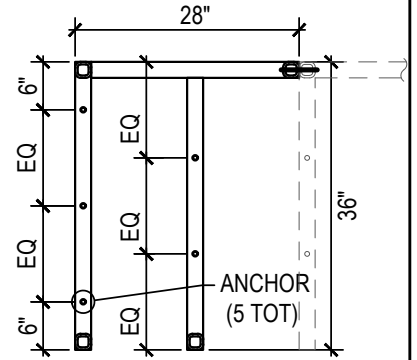
MODEL: 3D2W-(L OR R)
DESCRIPTION: 3 DEEP x 2 WIDE
(LEFT OR RIGHT SIDE ADD-ON,
LEFT SHOWN)

ANCHOR (5 TOT)

4D SERIES:

ANCHOR (10 TOT)
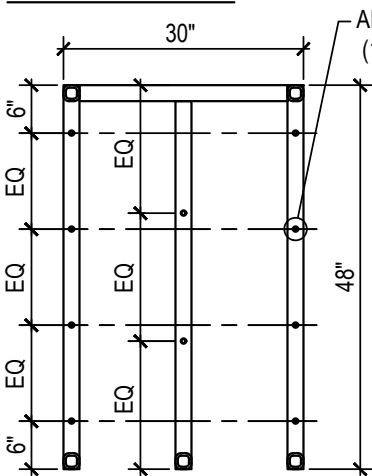
MODEL: 4D2W
DESCRIPTION: 4 DEEP x 2 WIDE

SEE DET 'A' FOR
FRAME TIE T&B TYP

ADJACENT
FRAME TYP

ANCHOR (8 TOT)

MODEL: 4D2W-(L OR R)
DESCRIPTION: 4 DEEP x 2 WIDE
(LEFT OR RIGHT SIDE ADD-ON,
LEFT SHOWN)

"L" OR "R"
FRAME END

⅝"ϕ A307 MB TYP IN
¹¹⁄₁₆"ϕ HOLE PER
MFR CTR'D IN HSS)

ADJACENT
FULL FRAME
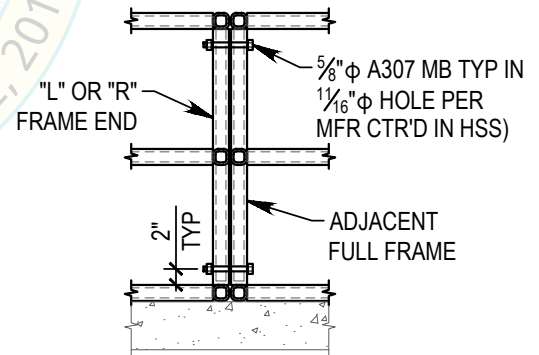
2" TYP

DETAIL 'A': TYPICAL FRAME TIE

NOTES:
1. ALL FRAME CONFIGURATIONS SHOWN ARE COVERED UNDER THIS OPM.
2. TYPICAL FRAMES ARE HSS2x2x1/8 (ASTM A500 GRADE B) EXCEPT 4D SERIES ARE HSS2x2x1/4.
3. ¹¹⁄₁₆"ϕ ANCHOR HOLES ARE PROVIDED BY MFR.
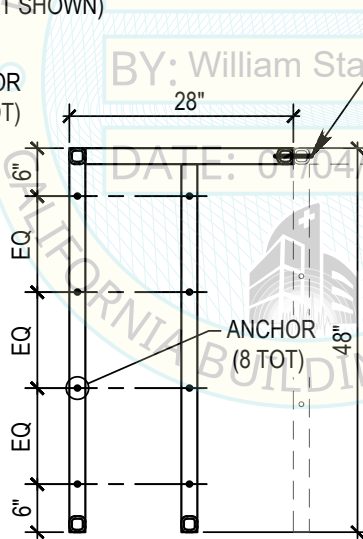4. SEE TABLE ON SHEET 1/8 FOR MINIMUM EDGE DISTANCE CRITERIA.

SIDE ELEVATION (NOTE 2)

- ⅝"φ EXPANSION ANCHOR PER TABLE 2 ON SHEET 8/8 (WHERE OCCURS)
- 6" MIN
- 30" MAX
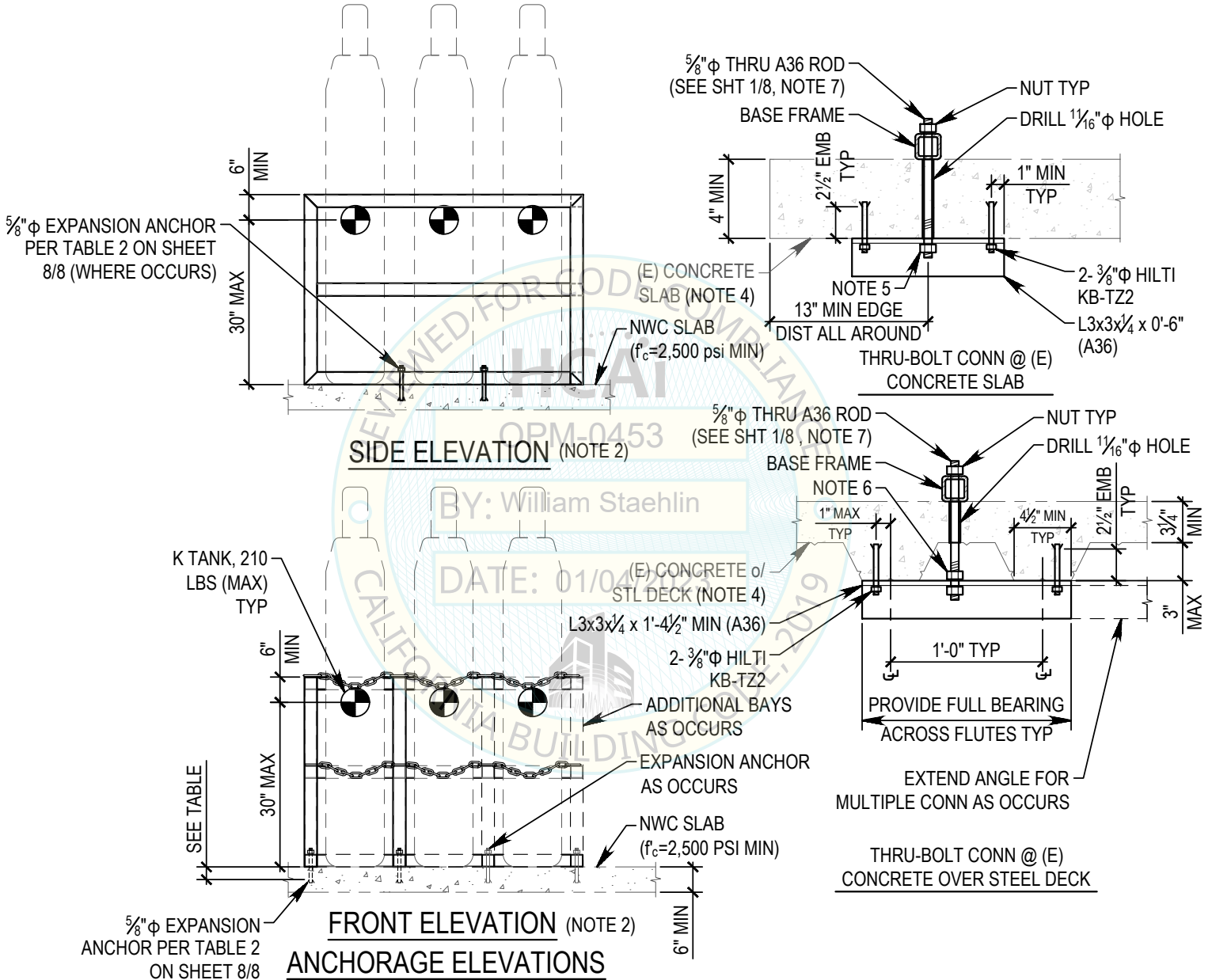- (E) CONCRETE SLAB (NOTE 4)
- NWC SLAB (f'_c=2,500 psi MIN)

FRONT ELEVATION (NOTE 2)
ANCHORAGE ELEVATIONS

- K TANK, 210 LBS (MAX) TYP
- 6" MIN
- 30" MAX
- SEE TABLE
- ⅝"φ EXPANSION ANCHOR PER TABLE 2 ON SHEET 8/8
- ADDITIONAL BAYS AS OCCURS
- EXPANSION ANCHOR AS OCCURS
- NWC SLAB (f'_c=2,500 PSI MIN)

THRU-BOLT CONN @ (E) CONCRETE SLAB

- ⅝"φ THRU A36 ROD (SEE SHT 1/8, NOTE 7)
- NUT TYP
- BASE FRAME
- DRILL ¹¹⁄₁₆"φ HOLE
- 2½" EMB TYP
- 4" MIN
- 1" MIN TYP
- NOTE 5
- 13" MIN EDGE DIST ALL AROUND
- 2- ⅜"φ HILTI KB-TZ2
- L3x3x¼ x 0'-6" (A36)

THRU-BOLT CONN @ (E) CONCRETE OVER STEEL DECK

- ⅝"φ THRU A36 ROD (SEE SHT 1/8, NOTE 7)
- NUT TYP
- BASE FRAME
- DRILL ¹¹⁄₁₆"φ HOLE
- NOTE 6
- 1" MAX TYP
- (E) CONCRETE o/ STL DECK (NOTE 4)
- L3x3x¼ x 1'-4½" MIN (A36)
- 2- ⅜"φ HILTI KB-TZ2
- 4½" MIN TYP
- 2½" EMB TYP
- ¾" MIN
- 3" MAX
- 1'-0" TYP
- PROVIDE FULL BEARING ACROSS FLUTES TYP
- EXTEND ANGLE FOR MULTIPLE CONN AS OCCURS
- 6" MIN

NOTES:
1. SEOR SHALL PROVIDE STRUCTURE TO SUPPORT WEIGHTS AND FORCES SHOWN IN TABLES 2 & 3 IN COMBINATION w/ ALL OTHERS THAT MAY APPLY.
2. 3D3W SHOWN FOR ILLUSTRATIVE PURPOSES; RACK CONFIGURATION IS NOT WITHIN THE SCOPE OF THIS OPM.
3. NWC= NORMAL WEIGHT CONCRETE.
4. CONCRETE SLAB MAY BE NORMAL WEIGHT OR SAND LIGHTWEIGHT UNLESS OTHERWISE NOTED (f'_c = 3,000 PSI MIN). STL DECK SHALL BE 20ga MIN.
5. FALLING HAZARD MUST BE ELIMINATED BY EITHER TACK WELDING NUT OR SEOR TO PROVIDE OTHER MEANS.
6. PROVIDE 30 FT-LBS TORQUE FOR TOP & BOT NUTS.
7. SEE TABLE ON SHEET 1/8 FOR MINIMUM EDGE DISTANCE CRITERIA.

TYPICAL FRAME WELDS FOR ALL CONFIGURATIONS

PLAN

TOP & BOT

HSS BEAM

HSS BEAM

HSS BM

HSS BEAM BEYOND

HSS POST

HSS BEAM

HSS POST

ELEVATION A-A

ELEVATION B-B

NOTES:
1. ALL FILLET WELDS FOR ⅛" TUBE SHALL BE ⅛".
2. ALL FILLET WELDS FOR ¼" TUBE SHALL BE ³⁄₁₆".

TABLE 2 - MAXIMUM EXPANSION ANCHOR FORCES (LBS, z/h=0)

			WIDTH SERIES					
			1W	1W-(L or R)	2W	2W-(L or R)	3W	3W-(L or R)
DEPTH SERIES	1D	$\Omega_0 P_u$	2,592	2,645	2,503	3,053	2,455	2,894
		$\Omega_0 V_u$	585	386	583	660	586	467
	2D	$\Omega_0 P_u$	2,546	3,633	2,856	2,643	N.A.	
		$\Omega_0 V_u$	595	579	1,127	788		
	3D	$\Omega_0 P_u$	2,792	4,029	2,159	2,556		
		$\Omega_0 V_u$	670	657	751	739		
	4D	$\Omega_0 P_u$	N.A.		2,762	3,066		
		$\Omega_0 V_u$			968	687		

EXPANSION ANCHOR DESIGN (INCLUDING SEISMIC REDUCTION) IS PER ACI 318, CHAPTER 17, 2022 CBC, CHAPTER 19A AND IN ACCORDANCE WITH THE ICC REPORT.

NOTES:
1. FORCES SHOWN IN SCHEDULE ARE BASED ON ORTHOGONAL LOAD COMBINATIONS WITH 100% OF FORCE IN ONE DIRECTION AND 30% OF FORCE IN THE PERPENDICULAR DIRECTION.
2. "L" & "R" INDICATE LEFT AND RIGHT SIDE FRAMES.
3. AREA MARKED WITH N.A. INDICATES FRAMES OF THIS DIMENSION DO NOT EXIST.
4. EXPANSION ANCHORS SHALL BE ⅝"ϕ HILTI KB-TZ2 (ICC-4266) WITH 4½" NOMINAL EMBEDMENT & 4" EFFECTIVE EMBEDMENT.
5. MAXIMUM S_{DS} = 1.93g PER TABLE 1 ON SHEET 2/8.
6. SEOR TO CHECK STRUCTURE FOR THE LOADS SHOWN DIVIDED BY 2 (TO REMOVE THE OVERSTRENGTH FACTOR).

TABLE 3 - MAXIMUM THRU-BOLT ANCHOR FORCES (LBS, z/h≤1)

			WIDTH SERIES					
			1W	1W (L or R)	2W	2W (L or R)	3W	3W (L or R)
DEPTH SERIES	1D	P_u	3,888	3,968	3,754	4,580	3,683	4,341
		$\Omega_0 V_u$	1,754	1,158	1,750	1,980	1,758	701
	2D	P_u	3,819	5,449	4,284	3,965	N.A.	
		$\Omega_0 V_u$	1,784	1,736	3,380	2,366		
	3D	P_u	4,188	6,043	3,239	3,834		
		$\Omega_0 V_u$	2,010	1,972	2,254	2,218		
	4D	P_u	N.A.		4,144	4,599		
		$\Omega_0 V_u$			2,904	2,060		

NOTES:
1. SEE NOTES ON TABLE 2 FOR ADDITIONAL INFORMATION.
2. ANCHORS SHALL BE ⅝"ϕ A36 RODS (SEE DETAILS AND GENERAL NOTES FOR ADDITIONAL INFORMATION.
3. MAXIMUM S_{DS} = 1.93g PER TABLE 1 ON SHEET 2/8.
4. ALTERNATE DESIGN FOR EXPANSION ANCHORS (WHEN S_{DS} IS SMALLER & WHEN ADEQUATE SLABS ARE PRESENT: SEE TABLE 1 FOR COEFFICENTS & EXAMPLE CALCULATION FOR MAXIMUM (z/h) FOR APPLICABILITY.
5. SEOR TO CHECK STRUCTURE FOR THE LOADS SHOWN WITH $\Omega_0 V_U$ DIVIDED BY 2 (TO REMOVE OVERSTRENGTH FACTOR).