



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT  
FACILITIES DEVELOPMENT DIVISION

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

OFFICE USE ONLY

APPLICATION #: OPM-0453-10

OSHPD Preapproval of Manufacturer's Certification (OPM)

Type: ☒ New ☐ Renewal ☒ Update to Pre-CBC 2013 OPA Number: OPA-2878-10

Manufacturer Information

Manufacturer: Certified Medical Sales

Manufacturer's Technical Representative: Jake Granger, President

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: Welded steel support rack for medical gas cylinder storage

Product Model Number: 1D Series, 2D Series, 3D Series and 4D Series (various models within each series)

General Description: Modular welded steel support racks for medical gas cylinder storage

Applicant Information

Applicant Company Name: Certified Medical Sales

Contact Person: Jake Granger

Mailing Address: 41551 Date Street, Murrieta, CA 92562

Telephone: 800.537.3090

Email: Sales@CertifiedMedicalSales.com

I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in accordance with the California Administrative Code, 2016.

Signature of Applicant:

*Jacob H. Granger*

Date: 10.20.17

Title: President

Company Name: Certified Medical Sales

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



## OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT FACILITIES DEVELOPMENT DIVISION

### Registered Design Professional Preparing Engineering Recommendations

Company Name: Spire Structural Engineering Inc.

Name: Jeremy Welton, SE California License Number: S4614

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

Telephone: 949.916.3440 Email: jwelton@spirestructures.com

### OSHPD Special Seismic Certification Preapproval (OSP)

- ☐ Special Seismic Certification is preapproved under OSP-  
(Separate application for OSP is required)
- ☒ Special Seismic Certification is not preapproved

### Certification Method(s)

- ☐ Testing in accordance with: ☐ ICC-ES AC156 ☐ FM 1950-16
- ☐ Other\* (Please Specify): \_\_\_\_\_

\*Use of criteria other than those adopted by the California Building Standards Code, 2016 (CBSC 2016) 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 2016 may be used when approved by OSHPD prior to testing.

- ☒ Analysis
- ☐ Experience Data
- ☐ Combination of Testing, Analysis, and/or Experience Data (Please Specify): \_\_\_\_\_

### List of Attachments Supporting the Manufacturer's Certification

- ☐ Test Report ☒ Drawings ☒ Calculations ☐ Manufacturer's Catalog
- ☐ Other(s) (Please Specify): \_\_\_\_\_

### OFFICE USE ONLY – OSHPD APPROVAL VALID FOR CBC 2016 & ALL PRE-2016 CODE BASED PROJECTS

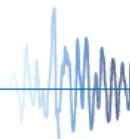
Signature: Jeffrey Kikumoto Date: 2/8/2019

Print Name: Jeffrey Kikumoto

Title: SSE

Condition of Approval (if applicable): \_\_\_\_\_

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





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Lake Forest, CA 92630 www.spirestructures.com  
ENG: JCW

## GENERAL NOTES

## JT RACKING SYSTEMS

## MEDICAL GAS ANCHORING SYSTEMS

SHEET:

1

OF

8

DATE:

10.04.18

# OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT PREAPPROVAL OF MANUFACTURER'S CERTIFICATION

## OPM-0453-13

(THIS PREAPPROVAL CONFORMS TO THE 2016 CALIFORNIA BUILDING CODE)  
THE DEMAND (DESIGN FORCES) FOR USE WITH THIS OPM SHALL BE BASED ON THE CBC 2016.

EQUIPMENT MANUFACTURER: JT RACKING SYSTEMS

EQUIPMENT TYPE: MEDICAL COMPRESSED GAS SUPPORT AND ANCHOR SYSTEM

## GENERAL NOTES

FORCES PER ASCE 7-10 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 2016 CALIFORNIA BUILDING CODE. THE DEMAND (DESIGN FORCES) FOR USE WITH THIS OPM SHALL BE BASED ON THE 2016 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. OPM-0453-13
3. EXPANSION ANCHORS:
  - A. ATTACHMENT IS TO BE MADE WITH ANCHORS LISTED BELOW AND INSTALLED AS DESCRIBED IN THE CORRESPONDING ICC REPORT.

ANCHOR DIAMETER	CONCRETE TYPE	MIN. $F'_c$ (PSI)	ANCHOR TYPE	ICC REPORT NO.	NOMINAL EMBED	EFFECTIVE EMBED ( $H_{EF}$ )	MIN. SPACING (NOTE D)	MIN. EDGE DIST.	MIN. CONC. THICKNESS	TORQUE TEST LOADS
5/8"	NORMAL WEIGHT	2,500	HILTI KB-TZ	ESR-1917	4 7/16"	4"	12"	13"	6"	60 Ft-lbs

- B. THIS PREAPPROVAL DOES NOT ALLOW CONCRETE EDGE DISTANCES LESS THAN MINIMUM.
  - C. POST-INSTALLED ANCHORS INTO CONCRETE SHALL SATISFY SECTION 13.4.2.1, INCLUDING THE OVERSTRENGTH FACTOR,  $\Omega_0$  PER TABLE 13.6-1 (AS LIMITED BY CBC SECTION 1616A.1.23, ITEM 1).
  - D. UNLESS NOTED OTHERWISE, SEE DETAILS FOR LOCATIONS WHERE SPACING IS LESS (THIS IS ACCEPTABLE).
4. TESTING OF EXPANSION ANCHORS PER 2016 CBC, 1910A.5.4: TESTING SHALL BE DONE IN THE PRESENCE OF THE SPECIAL INSPECTOR AND A REPORT OF THE TEST RESULTS SHALL BE SUBMITTED TO OSHPD.
    - A. TORQUE TEST AT LEAST 50% OF THE ANCHORS TO THE INSTALLATION TORQUE AFTER A MINIMUM OF 24 HOURS HAVE ELAPSED SINCE INSTALLATION.
    - 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 1/2 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 3/4 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 1 1/16" 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).



SIGNED 1/17/19  
02/08/2019

OPM-0453-13: Reviewed for Code Compliance by Jeffrey Kikumoto

Page 3 of 10



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ENG: JCW

## GENERAL NOTES (CONTINUED)

### JT RACKING SYSTEMS

### MEDICAL GAS ANCHORING SYSTEMS

SHEET:

2

OF

8

DATE:

10.04.18

## 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 2016 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.

BY: Jeffrey Kikumoto

DATE: 02/08/2019

TABLE 1 - SEISMIC QUALIFICATION SUMMARY (RACK CAPACITY)

RACK	MAX $S_{DS}^*$	RACK	MAX $S_{DS}^*$
1D1W	1.93	2D2W	1.17
1D1W-L	1.93	2D2W-L	1.93
1D2W	1.93	3D1W	0.92
1D2W-L	1.93	3D1W-L	1.93
1D3W	1.93	3D2W	1.01
1D3W-L	1.93	3D2W-L	1.43
2D1W	1.40	4D2W	0.87
2D1W-L	1.93	4D2W-L	1.16

\* MAX  $S_{DS}$  FOR  $z/h \leq 1.0$ . THE MAX  $S_{DS}$  FOR A GIVEN HEIGHT RATIO CAN BE CALCULATED BASED ON ASCE7-10 EQUATIONS 13.3-1 AND 13.3-3.

FOR EXAMPLE, FOR THE "2D1W" RACK:

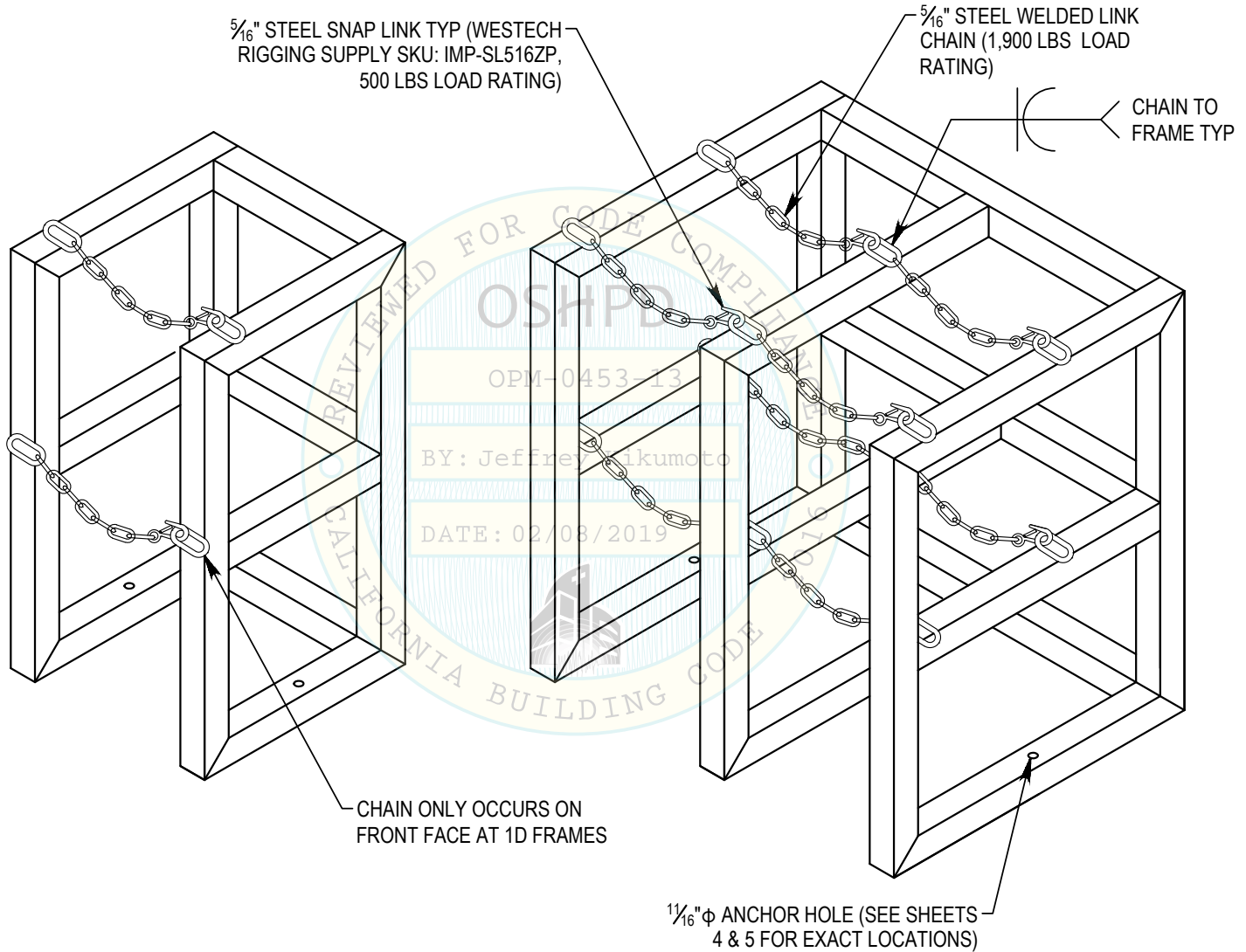
SEISMICALLY QUALIFIED FOR MAX  $S_{DS} = 1.40$  WHEN  $z/h \leq 1.0$ ;  $1.4 * [1 + (2 * 1.0)] = 4.20$

IF  $z/h \leq 0.5$ , THEN MAX  $S_{DS} * [1.0 + (2 * 0.5)] \leq 4.2$ ;  $S_{DS} = 4.2 / 2 = 2.10$



SIGNED 1/17/19  
02/08/2019

TYPICAL GAS RACK FRAME BY JT RACKING SYSTEMS



NOTES:

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



# RACK CONFIGURATIONS

## JT RACKING SYSTEMS

### MEDICAL GAS ANCHORING SYSTEMS

SHEET:

4

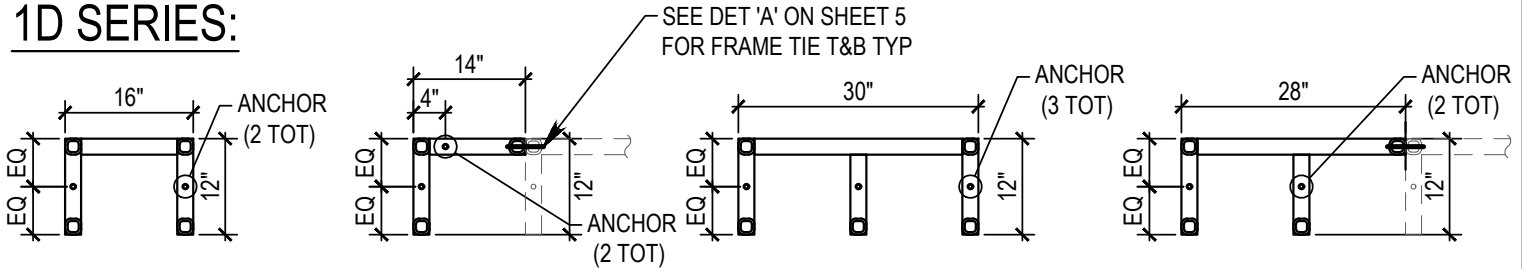
OF

8

DATE:

10.04.18

### 1D SERIES:



#### MODEL: 1D1W

DESCRIPTION: 1 DEEP x 1 WIDE

#### MODEL: 1D1W-(L OR R)

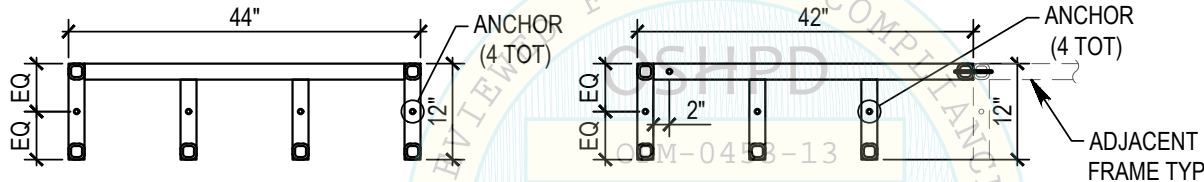
DESCRIPTION: 1 DEEP x 1 WIDE  
(LEFT OR RIGHT SIDE ADD-ON,  
LEFT SHOWN)

#### 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)



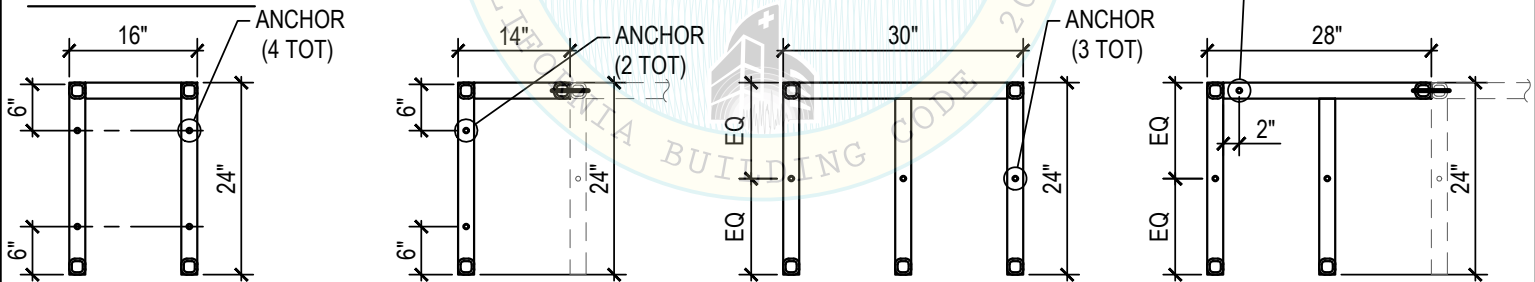
#### MODEL: 1D3W

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.  $\frac{1}{16}$ "  $\phi$  ANCHOR HOLES ARE PROVIDED BY MFR.
4. SEE TABLE ON SHEET 1/8 FOR MINIMUM EDGE DISTANCE CRITERIA.



# RACK CONFIGURATIONS (CONTINUED)

## JT RACKING SYSTEMS

## MEDICAL GAS ANCHORING SYSTEMS

SHEET:

5

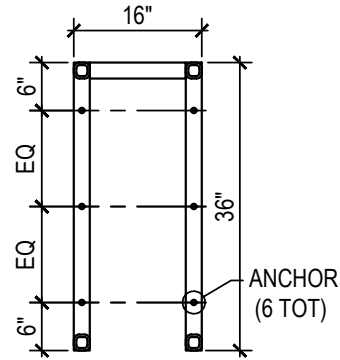
OF

8

DATE:

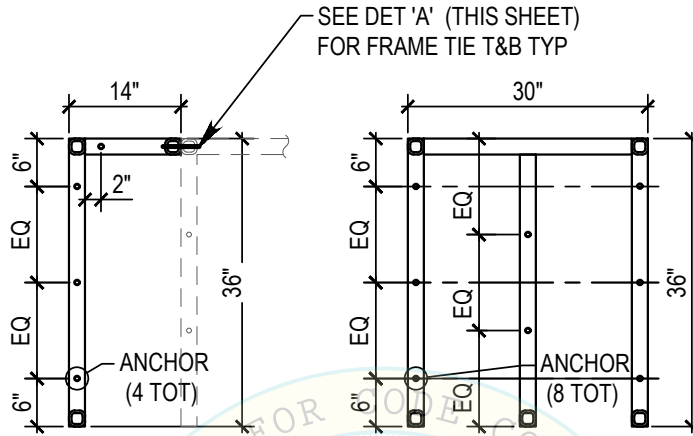
10.04.18

### 3D SERIES:



#### MODEL: 3D1W

DESCRIPTION: 3 DEEP x 1 WIDE

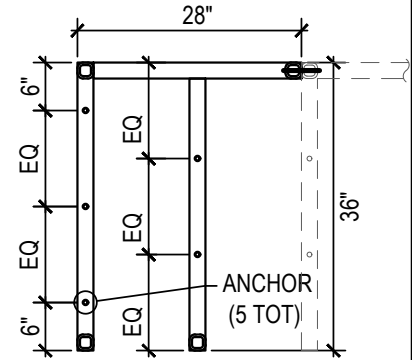


#### MODEL: 3D1W-(L OR R)

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

#### MODEL: 3D2W

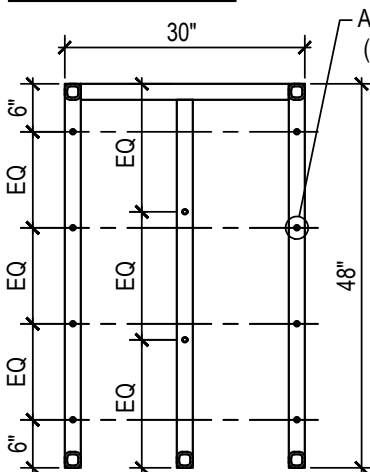
DESCRIPTION: 3 DEEP x 2 WIDE



#### MODEL: 3D2W-(L OR R)

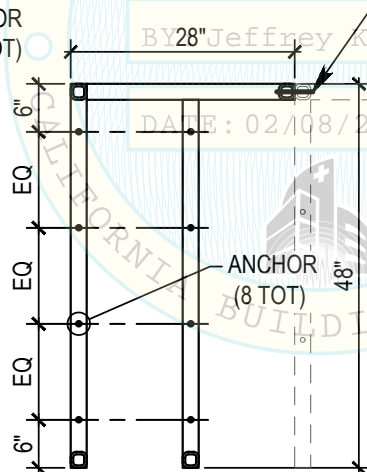
DESCRIPTION: 3 DEEP x 2 WIDE  
(LEFT OR RIGHT SIDE ADD-ON,  
LEFT SHOWN)

### 4D SERIES:



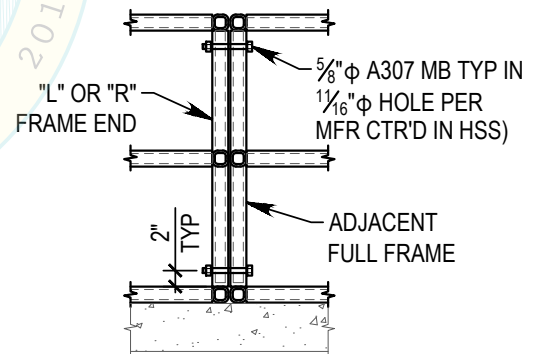
#### MODEL: 4D2W

DESCRIPTION: 4 DEEP x 2 WIDE



#### MODEL: 4D2W-(L OR R)

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



#### 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. 1 1/16 inch diameter ANCHOR HOLES ARE PROVIDED BY MFR.
4. SEE TABLE ON SHEET 1/8 FOR MINIMUM EDGE DISTANCE CRITERIA.



# TYPICAL RACK ELEVATION

## JT RACKING SYSTEMS

### MEDICAL GAS ANCHORING SYSTEMS

SHEET:

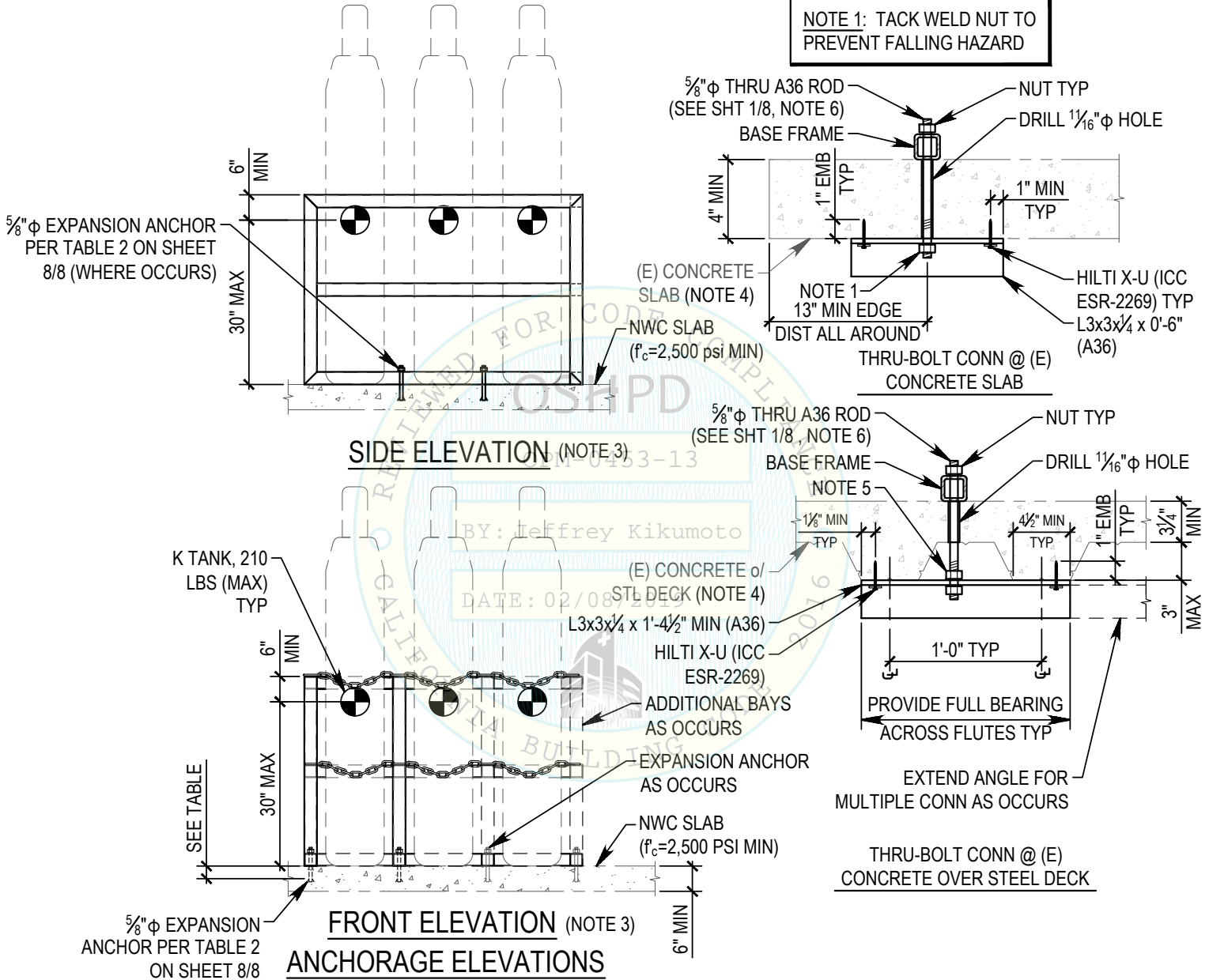
6

OF

8

DATE:

10.04.18



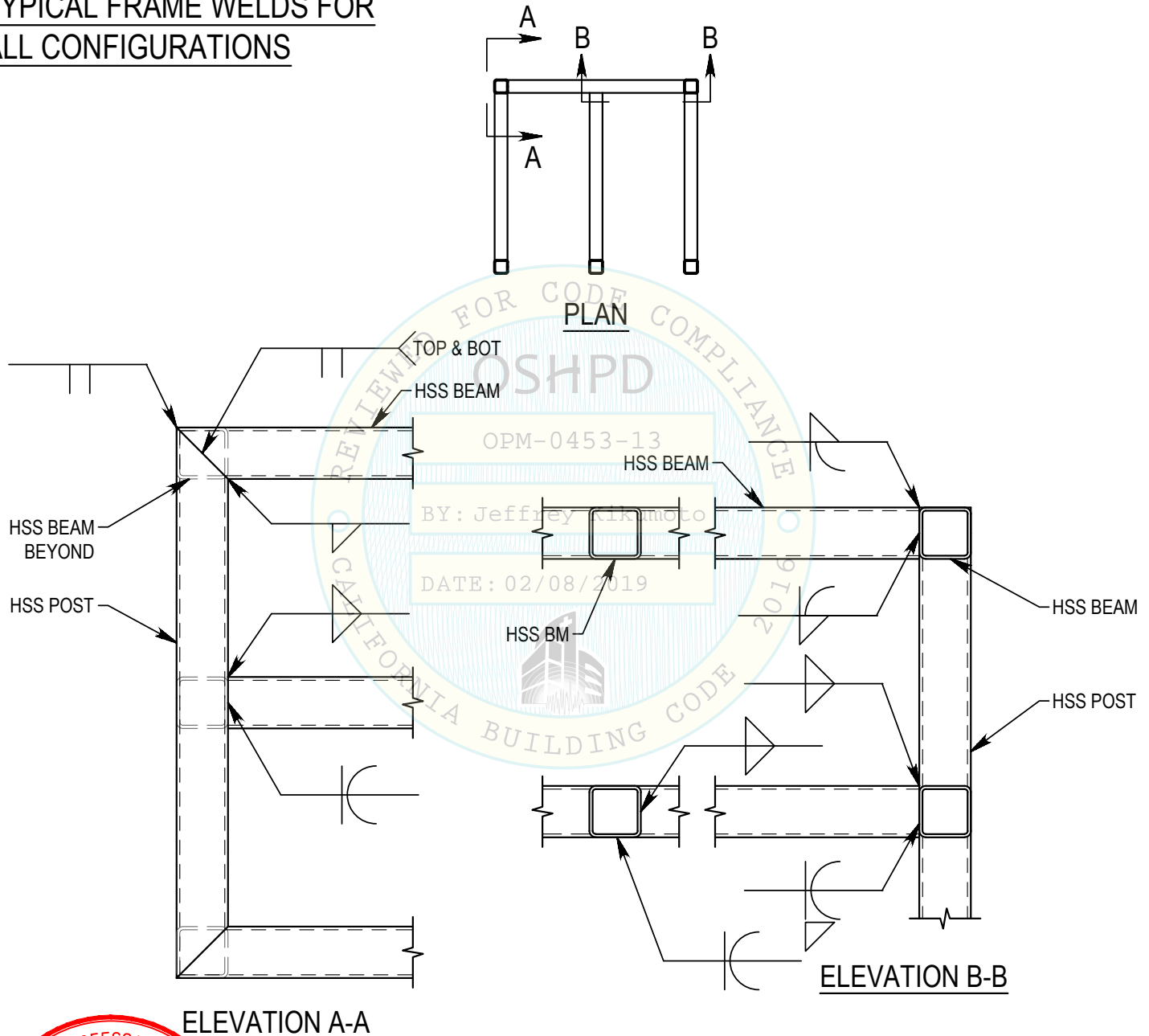
#### NOTES:

- SEOR SHALL PROVIDE STRUCTURE TO SUPPORT WEIGHTS AND FORCES SHOWN IN COMBINATION w/ ALL OTHERS THAT MAY APPLY.
- 3D3W SHOWN FOR ILLUSTRATIVE PURPOSES; RACK CONFIGURATION IS NOT WITHIN THE SCOPE OF THIS OPM.
- NWC= NORMAL WEIGHT CONCRETE.
- CONCRETE SLAB MAY BE NORMAL WEIGHT OR SAND LIGHTWEIGHT UNLESS OTHERWISE NOTED ( $f'_c$ = 3,000 PSI MIN). STL DECK SHALL BE 20ga MIN.
- PROVIDE TAPPED HOLE IN L3x3 WHERE NUT CANNOT BE PROVIDED.
- SEE TABLE ON SHEET 1/8 FOR MINIMUM EDGE DISTANCE CRITERIA.





TYPICAL FRAME WELDS FOR  
ALL CONFIGURATIONS



NOTES:

1. ALL FILLET WELDS FOR  $\frac{1}{8}$ " TUBE SHALL BE  $\frac{1}{8}$ ".
2. ALL FILLET WELDS FOR  $\frac{1}{4}$ " TUBE SHALL BE  $\frac{3}{16}$ ".



# EXPANSION ANCHOR FORCES

## JT RACKING SYSTEMS

## MEDICAL GAS ANCHORING SYSTEMS

SHEET:

8

OF

8

DATE:

10.04.18

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

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

EXPANSION ANCHOR DESIGN (INCLUDING SEISMIC REDUCTION) IS PER ACI 318, CHAPTER 17, 2016 CBC, CHAPTER 19A AND IN ACCORDANCE WITH THE ICC REPORT.

**NOTES:**

- 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.
- "L" & "R" INDICATE LEFT AND RIGHT SIDE FRAMES.
- AREA MARKED WITH N.A. INDICATES FRAMES OF THIS DIMENSION DO NOT EXIST.
- EXPANSION ANCHORS SHALL BE  $\frac{5}{8}$ "  $\phi$  HILTI KB-TZ WITH  $4\frac{7}{16}$ " NOMINAL EMBEDMENT & 4" EFFECTIVE EMBEDMENT PER ICC ESR-1917.
- MAXIMUM  $S_{DS} = 1.93g$  PER TABLE 1 ON SHEET 2/8.

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

			WIDTH					
			1	1 L&R	2	2 L&R	3	3 L&R
DEPTH	1	$P_u$	3,888	3,968	3,754	4,580	3,683	4,341
		$V_u$	877	579	875	990	879	701
	2	$P_u$	3,819	5,449	4,284	3,965	N.A.	
		$V_u$	892	868	1,690	1,183		
	3	$P_u$	4,188	6,043	3,239	3,834		
		$V_u$	1,005	986	1,127	1,109		
	4	$P_u$	N.A.		4,144	4,599		
		$V_u$			1,452	1,030		

(VALUES DO NOT INCLUDE  $\Omega_0$ )

**NOTES:**

- SEE NOTES ON TABLE 2 FOR ADDITIONAL INFORMATION.
- ANCHORS SHALL BE  $\frac{5}{8}$ "  $\phi$  A36 RODS (SEE DETAILS AND GENERAL NOTES FOR ADDITIONAL INFORMATION).
- MAXIMUM  $S_{DS} = 1.93g$  PER TABLE 1 ON SHEET 2/8.

