



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT  
FACILITIES DEVELOPMENT DIVISION

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

OFFICE USE ONLY

APPLICATION #: OPM-0400-13

OSHPD Preapproval of Manufacturer's Certification (OPM)

Type: ☒ New ☐ Renewal ☒ Update to Pre-CBC 2013 OPA Number: OPA-1570-07 to OPA-1574-07

Manufacturer Information

Manufacturer: Trumpf Medical Systems, Inc.  
Manufacturer's Technical Representative: Andrew Knight  
Mailing Address: 1046 LeGrand Blvd., Charleston, SC 29492  
Telephone: 843-416-1377 Email: Andrew.Knight@trumpfmedical.com


Product Information

Product Name: Overhead Boom Mounting Systems  
Product Type: Double Arm Solo Boom and Double Arm Tandem Boom  
Product Model Number: Truport  
General Description: Boom Mounting Systems with an 8-inch and 12-inch Interstitial Space

Applicant Information

Applicant Company Name: Trumpf Medical Systems, Inc.  
Contact Person: Andrew Knight  
Mailing Address: 1046 LeGrand Blvd., Charleston, SC 29492  
Telephone: 843-416-1377 Email: Andrew.Knight@trumpfmedical.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:  Date: 12/13/2016  
Title: Product Manager Company Name: Trumpf Medical Systems, Inc.

"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: CYS Structural Engineers, Inc.  
Name: Dieter T. Siebald California License Number: S4346  
Mailing Address: 2495 Natomas Park Drive, Suite 650, Sacramento, CA 95833  
Telephone: 916-920-2020 Email: dieters@cyseng.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: 12-18-2017  
Print Name: Jeffrey Kikumoto  
Title: SSE  
Condition of Approval (if applicable): \_\_\_\_\_

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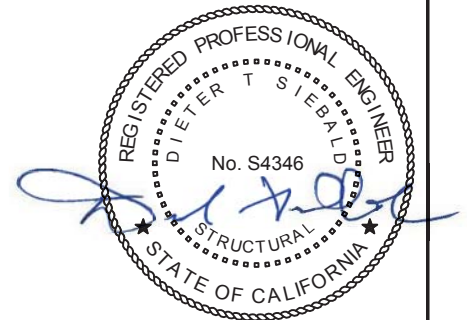


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- NOTES:**
1. THESE DRAWINGS ARE PREPARED FOR TRUMPF MEDICAL SYSTEMS, INC., CHARLESTON, SOUTH CAROLINA.
  2. THE CONTRACTOR & INSPECTOR OF RECORD SHALL OBTAIN A COPY OF THIS PRE-APPROVAL FROM THE OSHPD PRE-APPROVAL PROGRAMS WEBSITE.
  3. THIS PRE-APPROVAL COVERS THE SUPPORTS & ATTACHMENTS OF THE OVERHEAD BOOMS TO THE SUPPORTING STRUCTURE. THE BOOMS & BOOM MOUNTING PLATES WITH CONNECTION HARDWARE ARE SUPPLIED BY TRUMPF. ALL THREADED RODS, STRUCTURAL SUPPORT PLATE & REQUIRED ABOVE CEILING SUPPORT ELEMENTS SHALL BE SUPPLIED & INSTALLED BY THE CONTRACTOR.



SHEET TITLE: TABLE OF CONTENTS



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TEL (916) 920-2020  
www.cyseng.com

Job No:	16070.03
Date:	12-7-2017
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**GENERAL NOTES:**

1. THIS OSHPD PRE-APPROVAL OF MANUFACTURER'S CERTIFICATION (OPM) IS BASED ON THE CBC 2016. THE DEMAND (DESIGN FORCES) FOR USE WITH THIS OPM SHALL BE BASED ON THE CBC 2016.
2. IT IS THE RESPONSIBILITY OF THE STRUCTURAL ENGINEER OF RECORD (SEOR) OF A SITE SPECIFIC PROJECT TO VERIFY:
  - A. THE ADEQUACY OF THE NEW OR EXISTING STRUCTURE TO RESIST THE FORCES & WT SPECIFIED FOR EA EQUIP IN ADDITION TO ALL OTHER LOADS. PROVIDE & DESIGN SUPPLEMENTARY MEMBERS AS REQ.
  - B. THAT THE ANCHORS INTO THE SOFFIT OF CONCRETE OVER METAL DECK FLOOR AND ROOF ASSEMBLIES ARE LOCATED AT AN ADEQUATE DISTANCE FROM ANY SLAB EDGES OR OPENINGS.
  - C. THAT THE ANCHORS INTO THE SOFFIT OF CONCRETE OVER METAL DECK FLOOR AND ROOF ASSEMBLIES ARE AT AN ADEQUATE DISTANCE FROM ANY NEW OR EXISTING ANCHORS. THE SPACING SHOWN IN THE TEST TORQUE TABLE ON PG 3 IS THE REQUIRED MINIMUM SPACING OF THE GIVEN DIAMETER ANCHORS. THE REQUIRED SPACING FROM ANCHORS OF OTHER DIAMETERS & EMBEDMENTS MAY VARY & SHALL BE EVALUATED BY THE SEOR.
  - D. THAT THE INSTALLATION IS IN CONFORMANCE W/ THE CBC 2016 & W/ THE DETAILS SHOWN IN THIS PRE-APPROVAL.
  - E. THAT THE ACTUAL EQUIP'S WT, CENTER OF GRAVITY (CG) LOCATION, SUPPORT & ATTACHMENT LOCATIONS, SUPPORT & ATTACHMENT DETAILS, & THE MATERIAL & GA OF THE EQUIP WHERE ATTACHMENTS ARE MADE, AGREE W/ THE INFORMATION SHOWN ON THE PRE-APPROVAL DOCUMENTS.
3. EXPANSION ANCHORS INSTALLED IN NWC OR SLWC SHALL BE CARBON STEEL HILTI KB-TZ EXPANSION ANCHORS COMPLYING W/ ESR-1917 REISSUED MAY 2015 AND REVISED SEPTEMBER 2016.
  - A. INSTALLATION: INSTALL THE EXPANSION ANCHORS IN ACCORDANCE W/ THE REQUIREMENTS GIVEN IN THE ICC EVALUATION REPORT FOR THE SPECIFIC ANCHOR & THE PARAMETERS GIVEN IN THE TABLE ON PG 3.
  - B. JOB TESTING: FOR VERIFYING SATISFACTORY INSTALLATION WORKMANSHIP, PERFORM JOBSITE TESTING IN ACCORDANCE W/ THE TEST LOAD TABLE PROVIDED IN THIS DOCUMENT. TEST 50% OF THE INSTALLED ANCHORS. THE TEST LOAD MAY BE APPLIED BY ANY METHOD THAT WILL EFFECTIVELY MEASURE THE TORQUE IN THE ANCHOR SUCH AS CALIBRATED TORQUE WRENCH METHOD. ALL TESTS SHALL BE CONDUCTED IN THE PRESENCE OF THE INSPECTOR OF RECORD (IOR). IF ANY ANCHOR FAILS THE TEST, TEST ALL ANCHORS. THE TEST SHALL BE PERFORMED 24 HOURS OR MORE AFTER INSTALLATION. TESTING MAY BE DONE PRIOR TO EQUIP INSTALLATION. ALSO REFER TO CBC 1910A.5 "FIELD TESTS FOR POST-INSTALLED ANCHORS IN CONCRETE".
  - C. FAILURE/ACCEPTANCE CRITERIA: THE FOLLOWING CRITERIA APPLY FOR THE ACCEPTANCE OF INSTALLED ANCHORS:
    - TORQUE WRENCH METHOD: THE APPLICABLE TEST TORQUE MUST BE REACHED WITHIN THE FOLLOWING LIMITS:  
WEDGE TYPE: ONE-HALF ( $\frac{1}{2}$ ) TURN OF THE NUT.



SHEET TITLE: GENERAL NOTES



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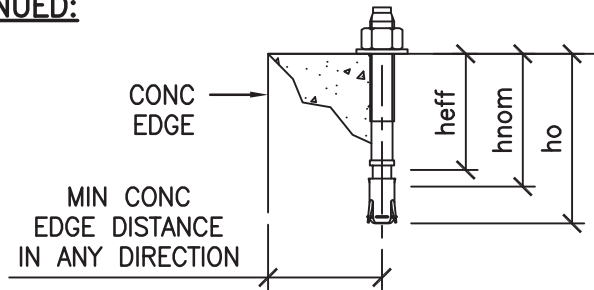
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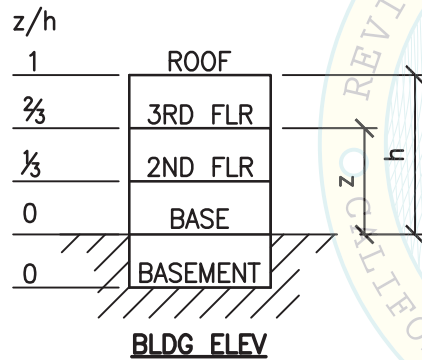


**GENERAL NOTES CONTINUED:**



ANCHOR DIA (INCH)	INSTALLATION EMBED (INCH) hnom	EFFECTIVE EMBED (INCH) heff	HOLE DEPTH (INCH) ho	MIN CONC THK (INCH) h	MIN CONC EDGE DISTANCE (INCH)	MIN ANCHOR SPCG (INCH)	TEST TORQUE (FT-LBS)
1/2	3 5/8	3/4	4	SEE PG 18	SEE PG 18	SEE PG 18	40

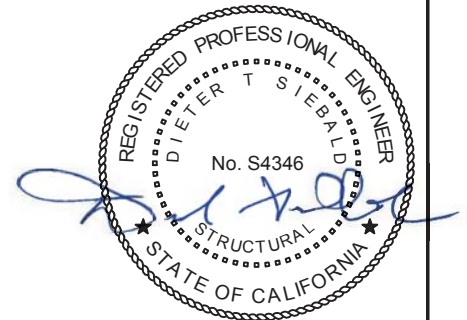
4. A SINGLE CASE OF ATTACHMENT IS SPECIFIED & PRESENTED IN THIS PRE-APPROVAL:



ATTACHMENT DETAILS LOCATED AT UPPER FLRS & ROOF ABV THE BASE OF A BLDG. THE FLRS & ROOFS ARE ASSUMED TO BE BUILT OF A MIN 3/4" SLWC TOPPING OVER 3" DEEP MIN 20 GA MTL DECK ( $f'_c = 3000$  PSI, MIN). FOR  $z/h$  RATIOS &  $S_{ps}$  VALUES SEE DESIGN CRITERIA & COMPONENT DWGS

DATE: 12/18/2017

5. THIS PRE-APPROVAL MAY BE USED AT ANY GEOGRAPHICAL LOCATION IN THE STATE OF CALIFORNIA. WHERE  $S_{ps}$  IS LESS THAN OR EQ TO MAX  $S_{ps}$  VALUE AT EACH COMPONENT AS NOTED ON DRAWINGS.



SHEET TITLE: GENERAL NOTES (CONTINUED)



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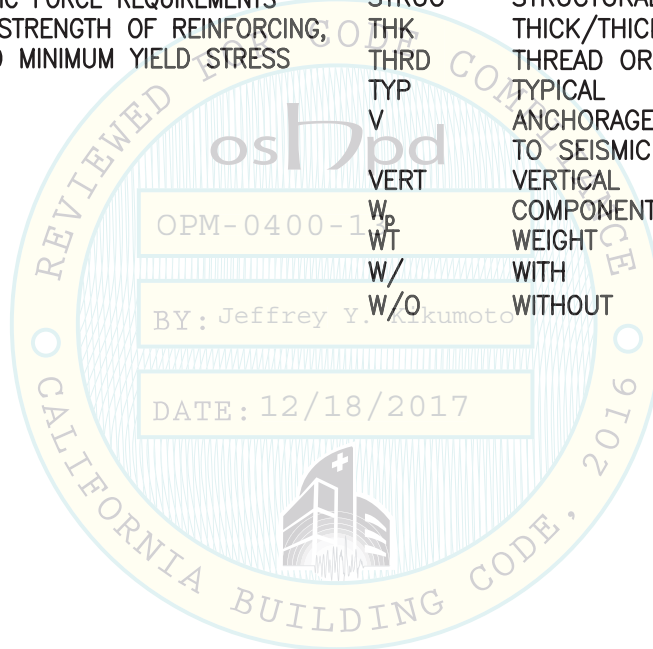
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TRUMPF MEDICAL SYSTEMS  
OVERHEAD BOOM MOUNTING SYSTEMS SOLO & TANDEM



**ABBREVIATIONS:**

ASTM	AMERICAN SOCIETY FOR TESTING & MATERIALS	IN (")	INCH
BLDG	BUILDING	KSI	KIPS PER SQUARE INCH
BRCC	BRACING	LBS	POUNDS
CBC	CALIFORNIA BUILDING CODE	LRFD	LOAD & RESISTANCE FACTOR DESIGN
CG	CENTER OF GRAVITY	MAX	MAXIMUM
CLG	CEILING	MIN	MINIMUM
CL	CENTERLINE	OPM	OSPHD PRE-APPROVAL OF
DIA (Ø)	DIAMETER		MANUFACTURER'S CERTIFICATION
(E)	EXISTING	OSHPD	OFFICE OF STATEWIDE HEALTH PLANNING
FIN	FINISH		& DEVELOPMENT
Fp	HORIZONTAL SEISMIC FORCE PER	PG	PAGE
	ASCE 7-10 SEISMIC FORCE REQUIREMENTS	PL	PLATE
FT (')	FOOT/FEET	SEOR	STRUCTURAL ENGINEER OF RECORD
F <sub>pv</sub>	VERTICAL SEISMIC FORCE PER	STL	STEEL
	ASCE 7-10 SEISMIC FORCE REQUIREMENTS	STRUC	STRUCTURAL
F <sub>y</sub>	SPECIFIED YIELD STRENGTH OF REINFORCING,	THK	THICK/THICKNESS
	PSI OR SPECIFIED MINIMUM YIELD STRESS	THRD	THREAD OR THREADED
	OF STEEL, KSI	TYP	TYPICAL
GRD	GRADE	V	ANCHORAGE SHEAR REACTION DUE
			TO SEISMIC FORCE
		VERT	VERTICAL
		W <sub>p</sub>	COMPONENT OPERATING WEIGHT
		WT	WEIGHT
		W/	WITH
		W/O	WITHOUT



SHEET TITLE: ABBREVIATIONS



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### SUPPORT & ATTACHMENT DESIGN CRITERIA

DESIGN FOR OVERHEAD BOOM MOUNTING SYSTEM IS PER 2016 CBC AT LRFD LEVEL FORCES.

$$W_p = \text{SEE PGS 6 \& 7}$$

$$z/h = \text{SEE PGS 6 \& 7}$$

$$S_{DS} = \text{SEE PGS 6 \& 7}$$

$$I_p = 1.5$$

$$q_p = 2.5$$

$$R_p = 2.5 \quad \Omega_o = 2.0 \text{ (FOR ATTACHMENT TO CONCRETE)}$$

$$\text{MIN } F_p = 0.30 S_{DS} I_p W_p$$

$$\text{MAX } F_p = 1.60 S_{DS} I_p W_p$$

$$F_p = 0.4 q_p S_{DS} I_p W_p (1 + 2 z/h) / R_p$$

$$F_{pv} = \pm 0.20 S_{DS} W_p$$

#### LOAD COMBINATIONS

$$(0.9 - 0.2 S_{DS}) D - F_p$$

$$(1.2 + 0.2 S_{DS}) D + F_p \quad \text{CRITICAL}$$

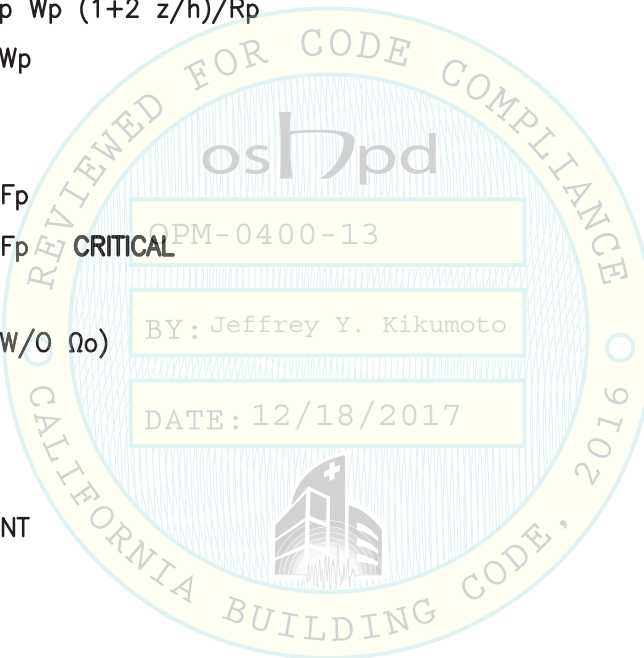
#### COMPONENT FORCES (LRFD W/O $\Omega_o$ )

$$T_u = \text{TENSION}$$

$$V_u = \text{SHEAR}$$

$$M_u = \text{MOMENT}$$

$$M_{T_u} = \text{TORSIONAL MOMENT}$$



SHEET TITLE: DESIGN CRITERIA

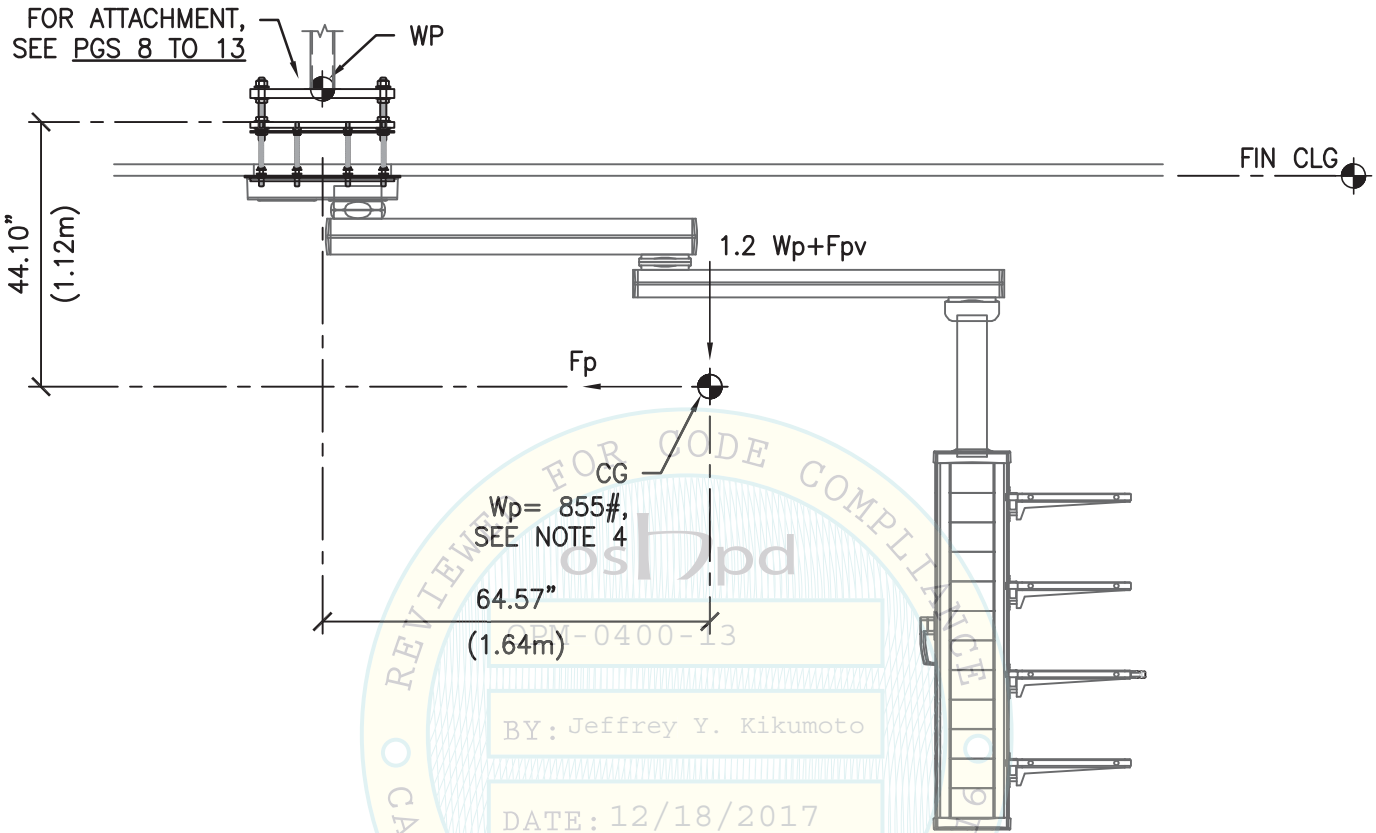


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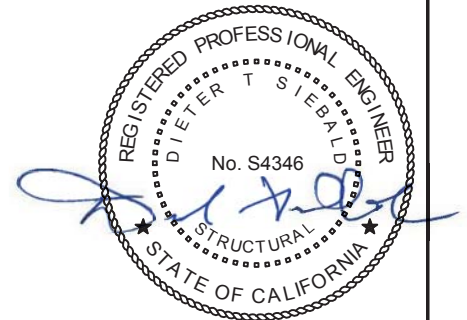


$z/h$ $\leq$	MAX $S_{DS}$ $\leq$	$T_u$ (LBS)	$V_u$ (LBS)	$M_u$ (LB-FT)	$M_{T_u}$ (LB-FT)
1.0	2.40	1436	3694	22,993	215
0.9	2.50	1454	3591	22,661	215

LRFD FORCES W/O  $\Omega$ . SEE PGS 8 & 9 FOR APPLICATION OF FORCES.

**NOTES:**

1. CG WT IS A MAX. THIS PRE-APPROVAL ENCOMPASSES ALL WTS UP TO THE MAX WT SHOWN.
2. SEOR FOR THE BLDG SHALL PROVIDE SUPPORT STRUCTURE & BRCG DESIGNED TO SUPPORT WTS & FORCES SHOWN, IN ADDITION TO ALL OTHER LOADS.
3. THIS OPM CONSIDERS THAT THE COMPONENT IS IN AN UNLOCKED POSITION AFTER OVERCOMING A BRAKE FORCE OF 40 LBS (160N).
4.  $W_p$  INCLUDES WEIGHT OF ALL ITEMS SUPPLIED BY TRUMPF, INCLUDING BOOM  $R_L$  & BOOM MOUNTING  $R_L$ .



SHEET TITLE: TRUPOINT DOUBLE ARM SOLO BOOM



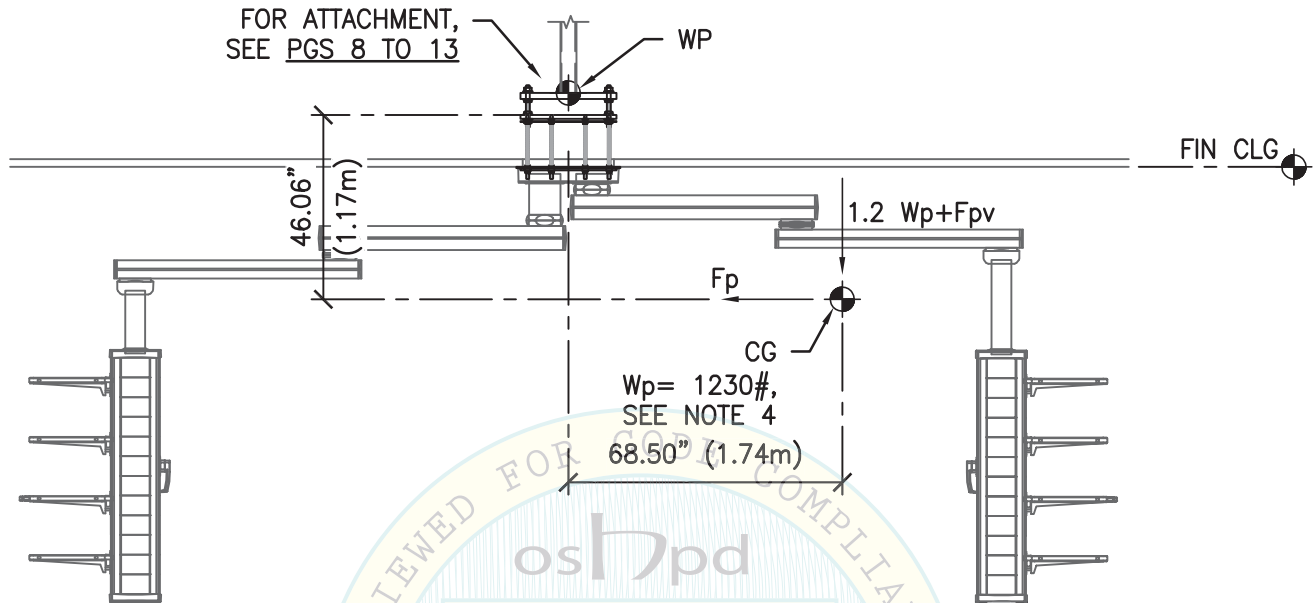
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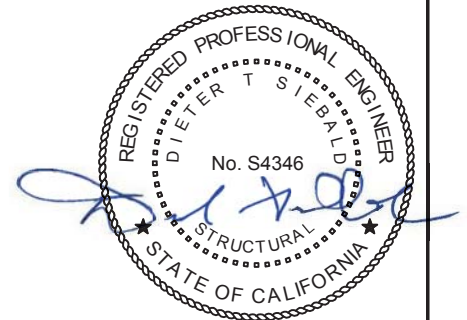
BY: Jeffrey Y. Kikumoto

$z/h$ $\leq$	MAX $S_{DS}$ $\leq$	$T_u$ (LBS)	$V_u$ (LBS)	$M_u$ (LB-FT)	$M_{TU}$ (LB-FT)
1.0	1.30	1796	2878	22,618	228
0.5	1.80	1919	2657	22,369	228
0.33	2.00	1968	2450	21,762	228
0.25	2.20	2017	2435	21,979	228

LRFD FORCES W/O  $\Omega$ . SEE PGS 8 & 9 FOR APPLICATION OF FORCES.

**NOTES:**

1. CG WT IS A MAX. THIS PRE-APPROVAL ENCOMPASSES ALL WTS UP TO THE MAX WT SHOWN.
2. SEOR FOR THE BLDG SHALL PROVIDE SUPPORT STRUCTURE & BRCC DESIGNED TO SUPPORT WTS & FORCES SHOWN, IN ADDITION TO ALL OTHER LOADS.
3. THIS OPM CONSIDERS THAT THE COMPONENT IS IN AN UNLOCKED POSITION AFTER OVERCOMING A BRAKE FORCE OF 40 LBS (160N).
4.  $W_p$  INCLUDES WEIGHT OF ALL ITEMS SUPPLIED BY TRUMPF, INCLUDING BOOM  $R_L$  & BOOM MOUNTING  $R_L$ .



SHEET TITLE: TRUPORT DOUBLE ARM TANDEM BOOM



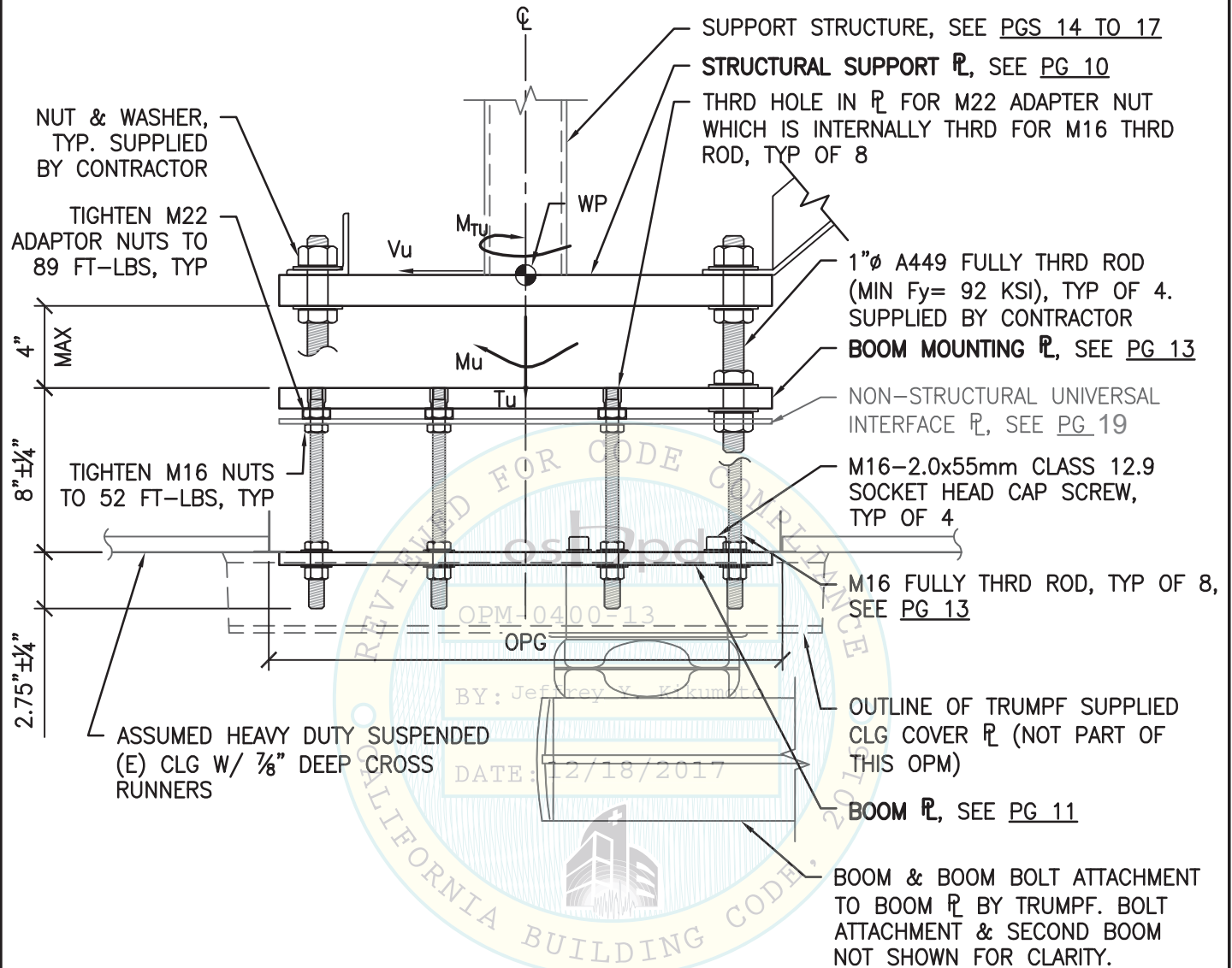
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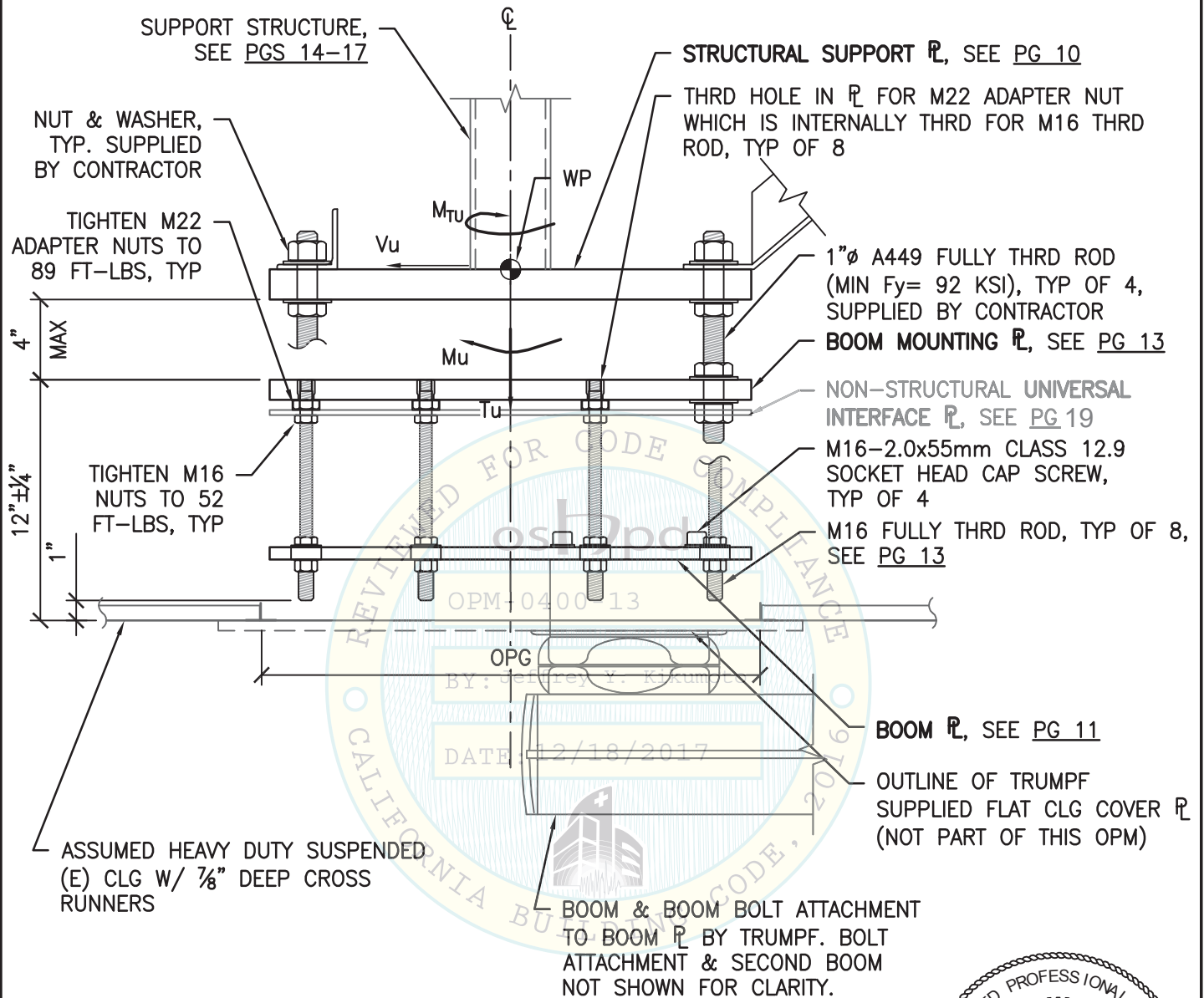
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**SHEET TITLE: MOUNTING PLATE DETAIL W/ 8" INTERSTITIAL SPACE**

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SHEET TITLE: MOUNTING PLATE DETAIL WITH 12" INTERSTITIAL SPACE



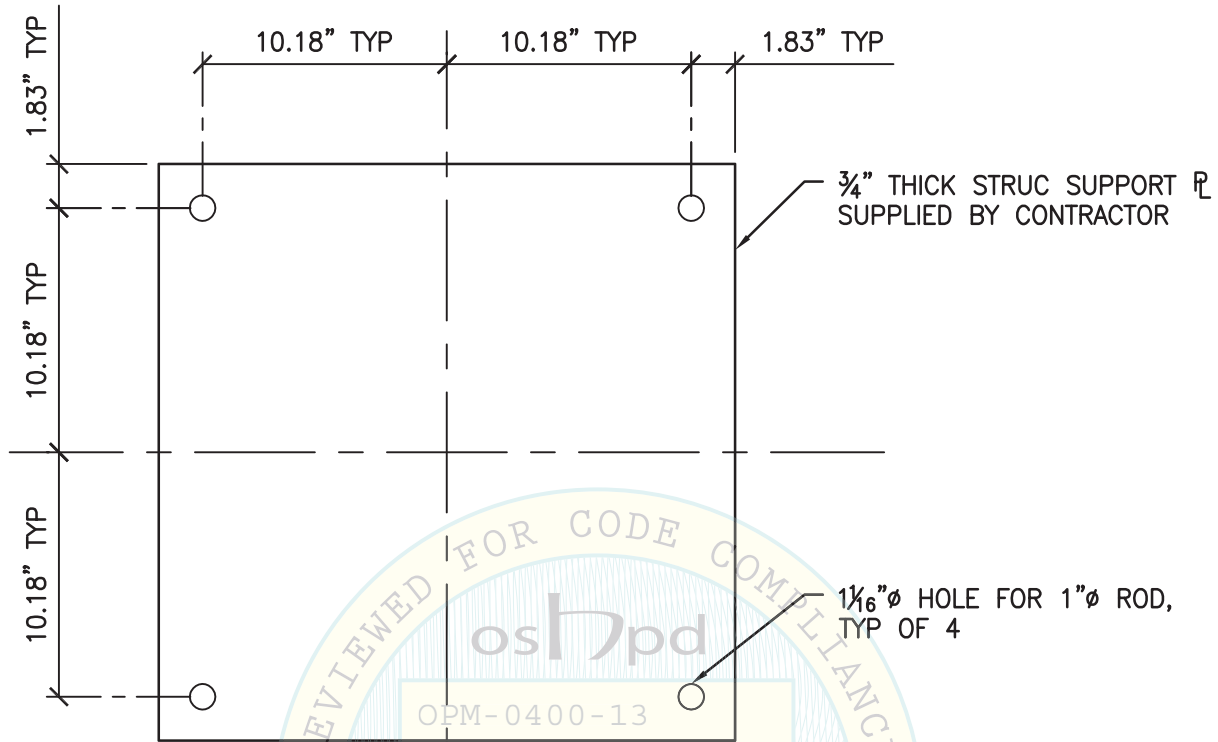
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TRUMPF MEDICAL SYSTEMS  
OVERHEAD BOOM MOUNTING SYSTEMS SOLO & TANDEM



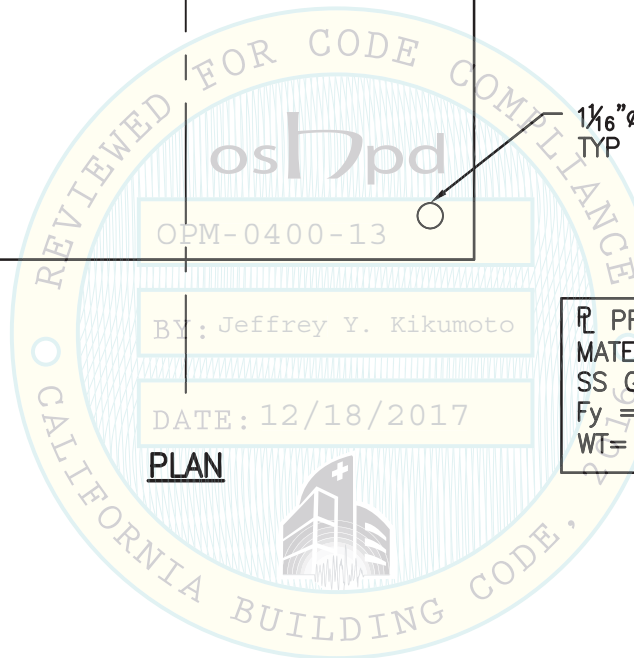
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BY: Jeffrey Y. Kikumoto

DATE: 12/18/2017

PLAN

PL PROPERTIES:  
MATERIAL = ASTM A1011,  
SS GRD 50  
Fy = 50 KSI, MIN  
WT = 73#



SHEET TITLE: STRUCTURAL SUPPORT PLATE DETAIL

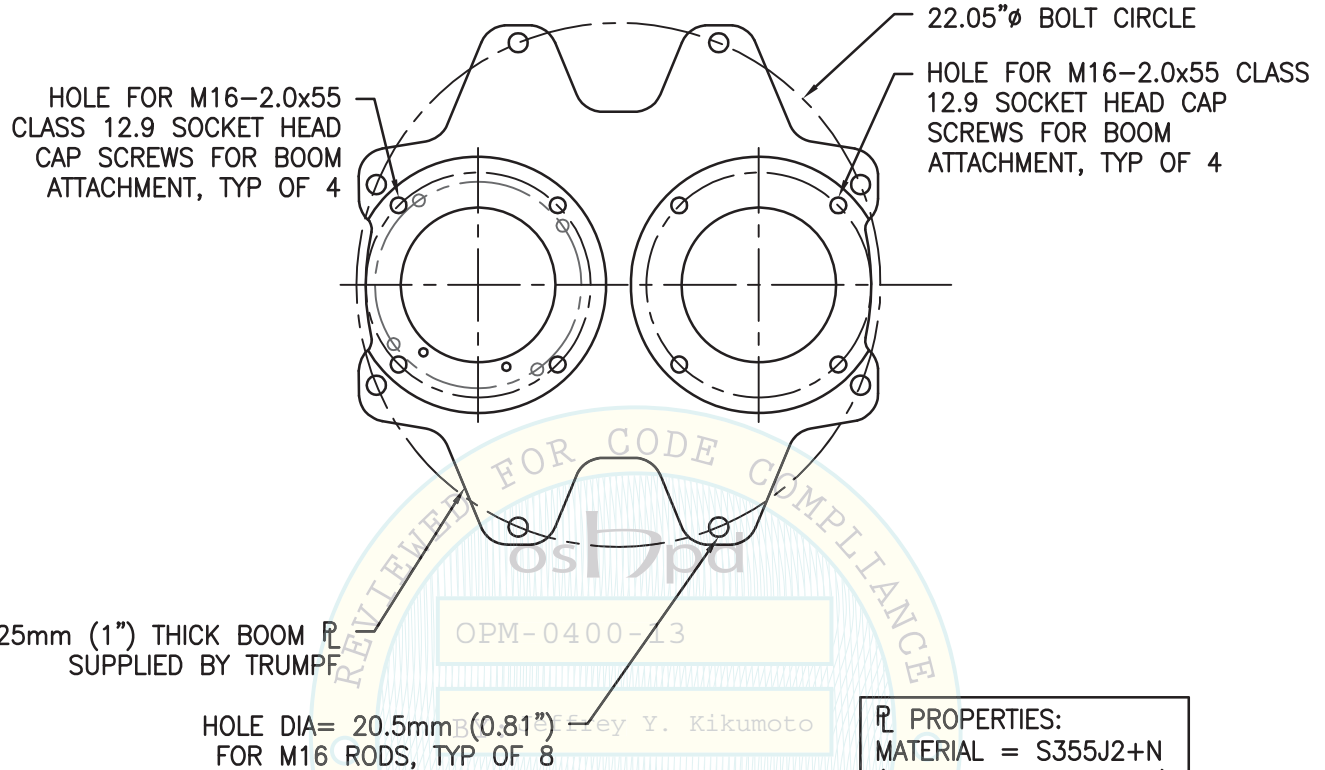


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PROPERTIES:  
MATERIAL = S355J2+N  
(EN 10025, EN 10029)  
Fy = 50 KSI MIN  
WT = 77#

**NOTES:**

1. FOUR (4) M16 BOLTS RESIST SOLO BOOM.
2. EIGHT (8) M16 BOLTS (2x4) RESIST TWO TANDEM BOOMS.



SHEET TITLE: BOOM PLATE FOR SOLO OR TANDEM BOOMS



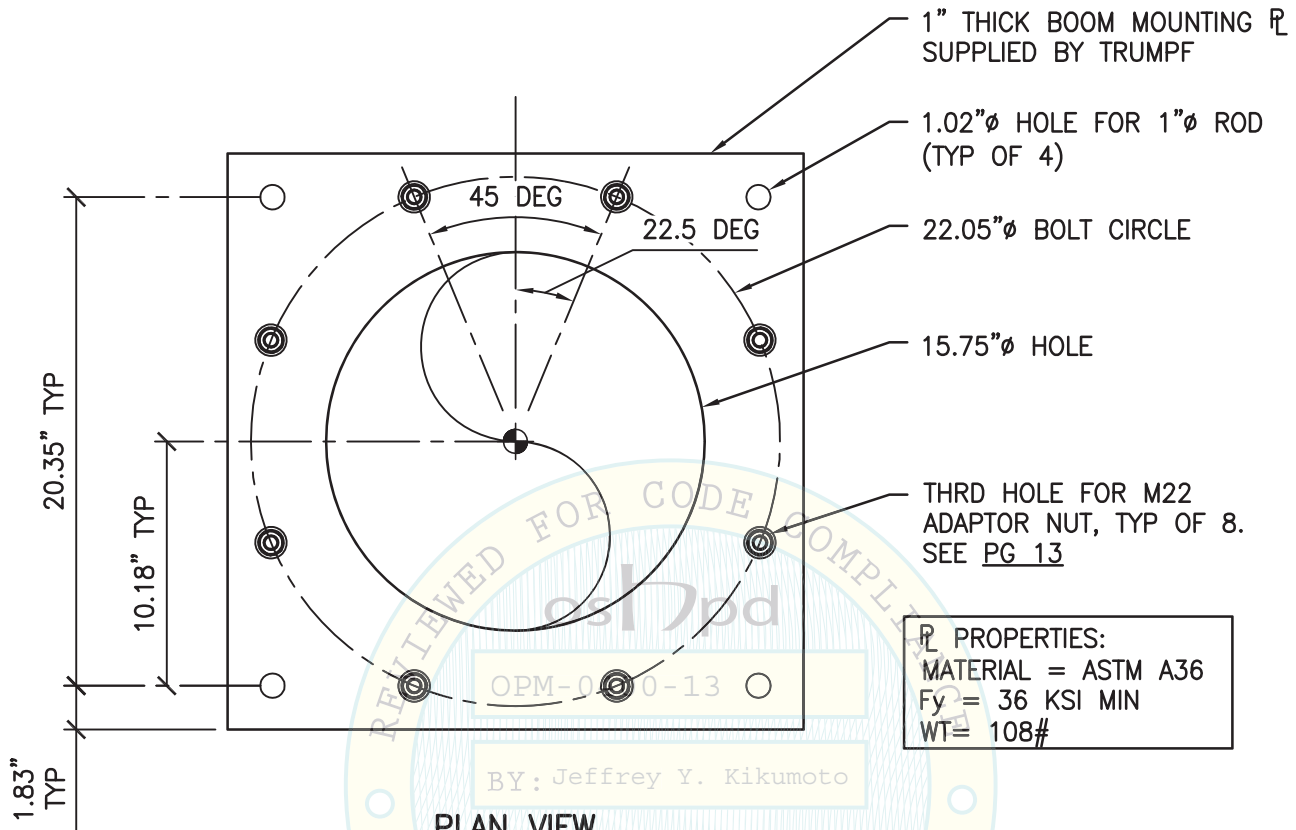
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SHEET TITLE: BOOM MOUNTING PLATE DETAIL

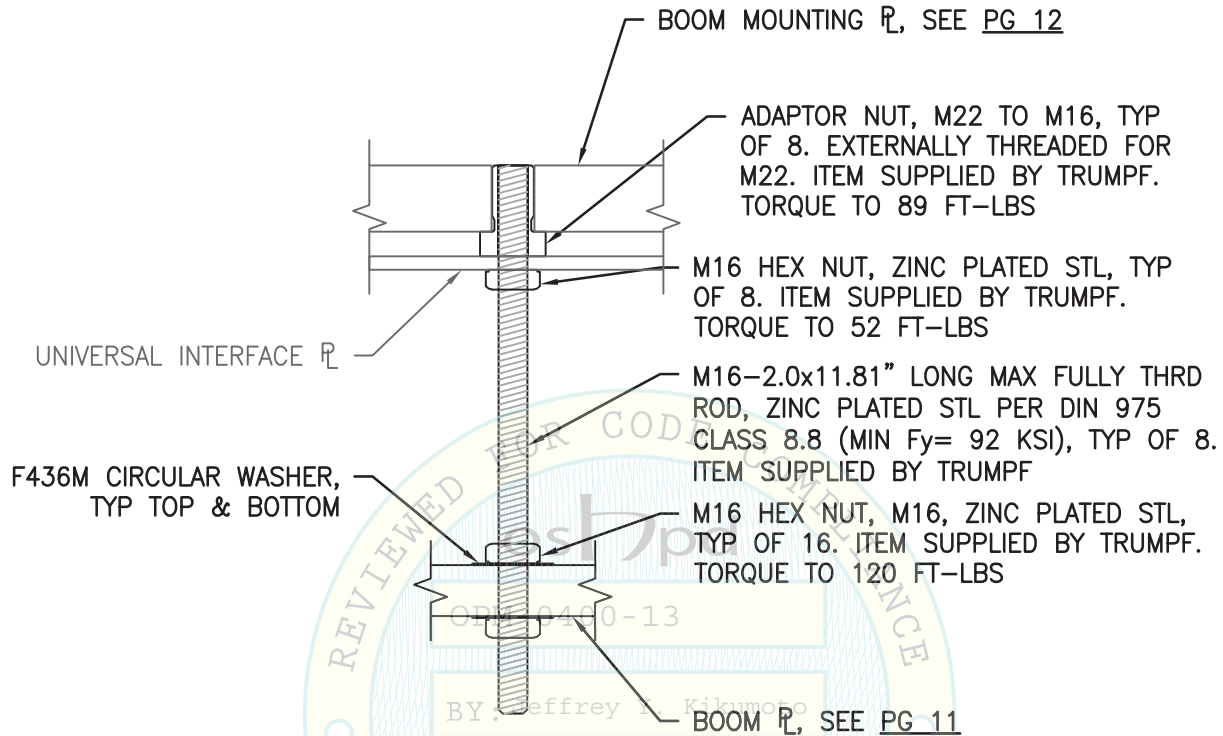


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SHEET TITLE: THREADED ROD DETAIL



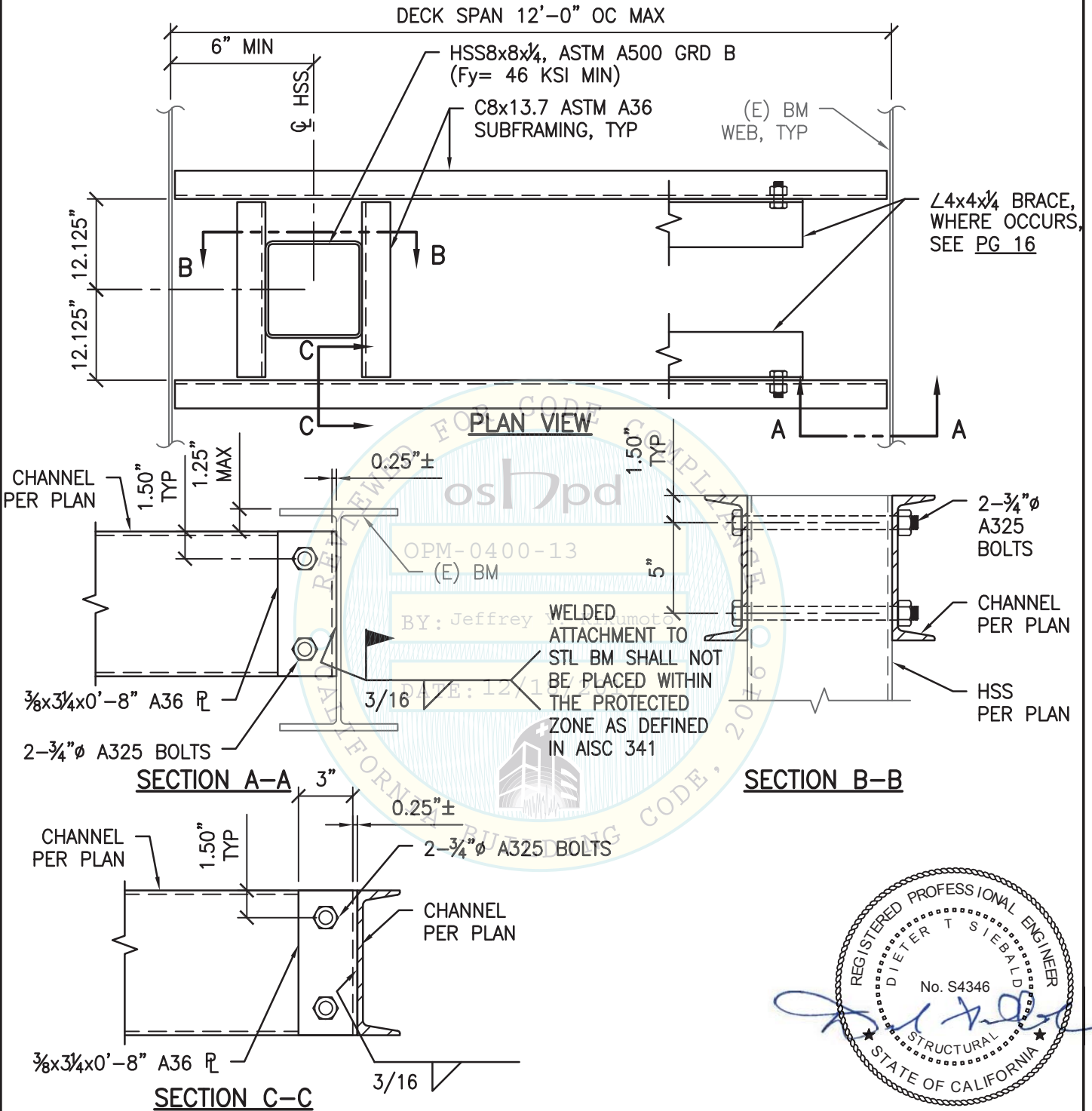
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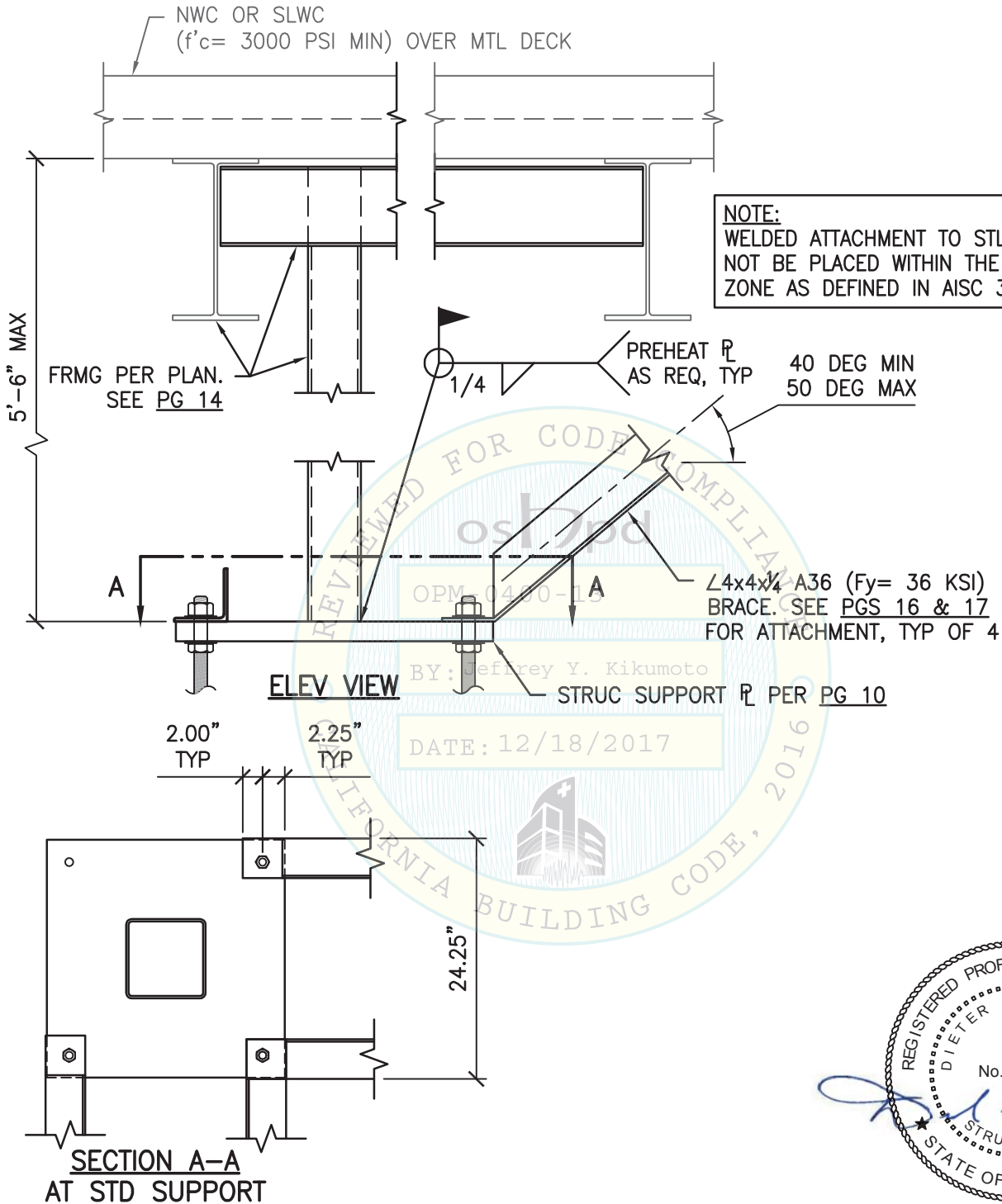
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OVERHEAD BOOM MOUNTING SYSTEMS SOLO & TANDEM



SHEET TITLE: TYPICAL SUPPORT & ATTACHMENT DETAILS  
SUPPORT DETAILS

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TRUMPF MEDICAL SYSTEMS  
OVERHEAD BOOM MOUNTING SYSTEMS SOLO & TANDEM



NOTE:  
WELDED ATTACHMENT TO STL BM SHALL  
NOT BE PLACED WITHIN THE PROTECTED  
ZONE AS DEFINED IN AISC 341.



SHEET TITLE: TYPICAL SUPPORT & ATTACHMENT DETAILS  
SUPPORT DETAILS

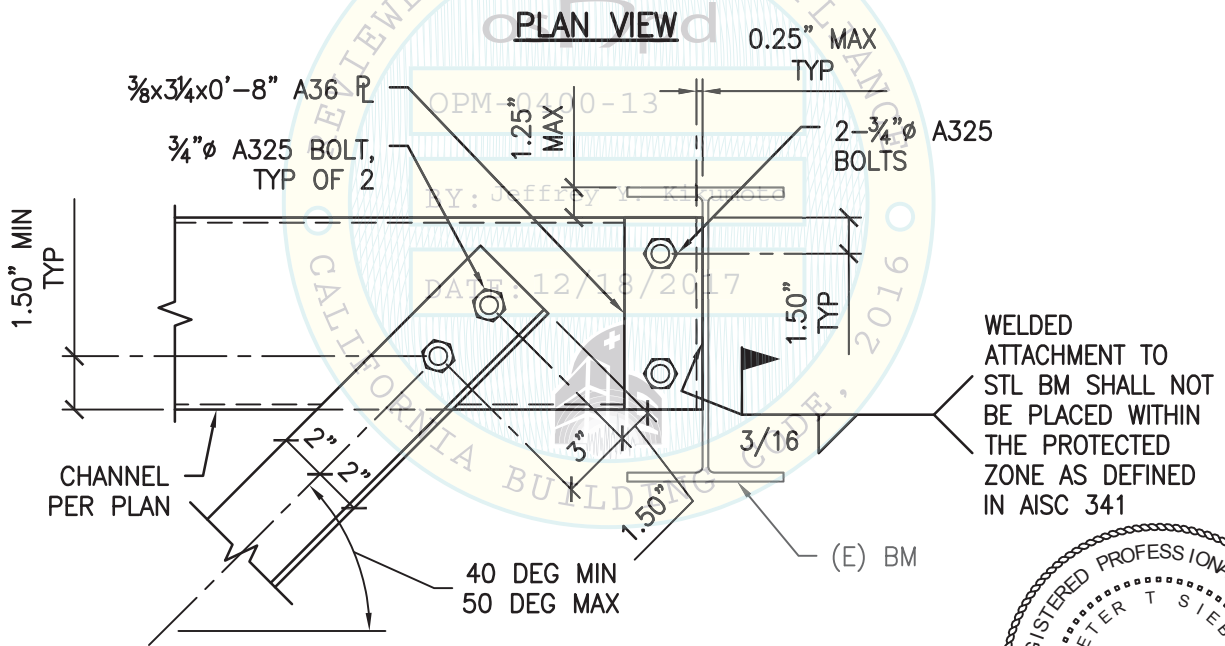
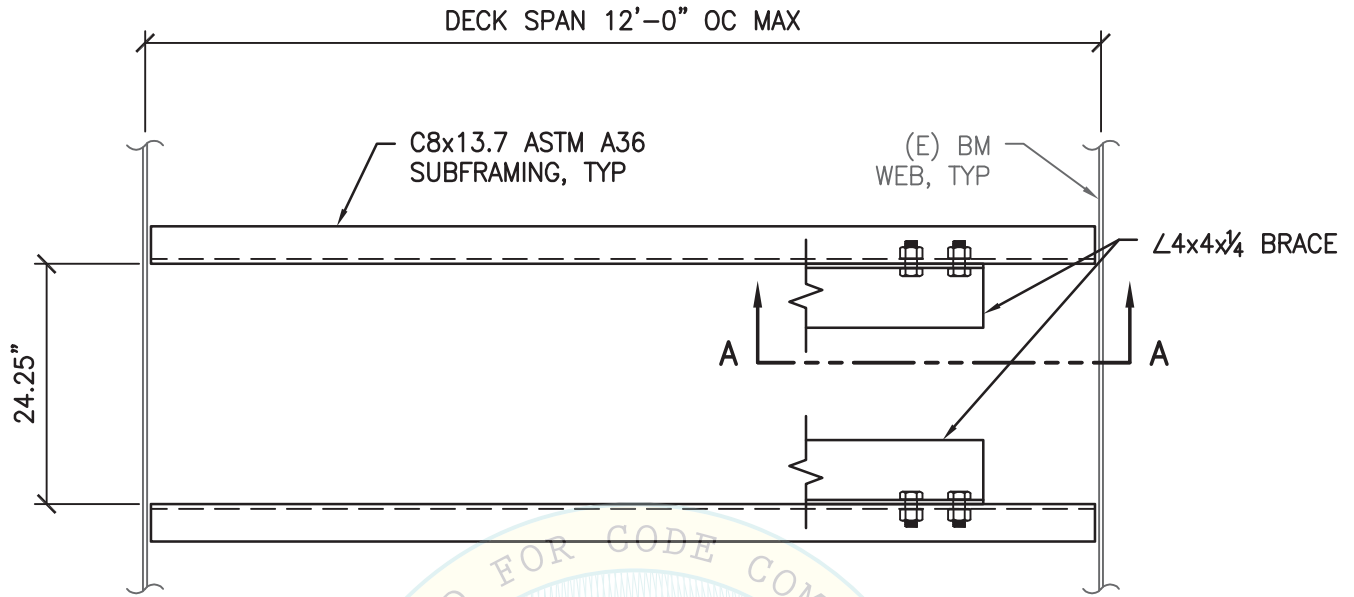


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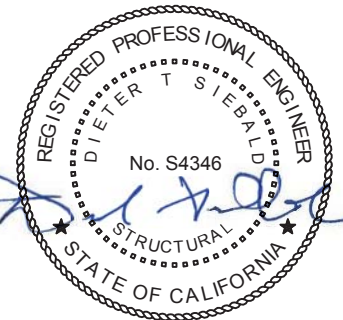
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**SECTION A-A**  
**BRACE ATTACHMENT PERP TO (E) WF BMS**



SHEET TITLE: TYPICAL SUPPORT & ATTACHMENT DETAILS  
BRACE ATTACHMENT DETAILS



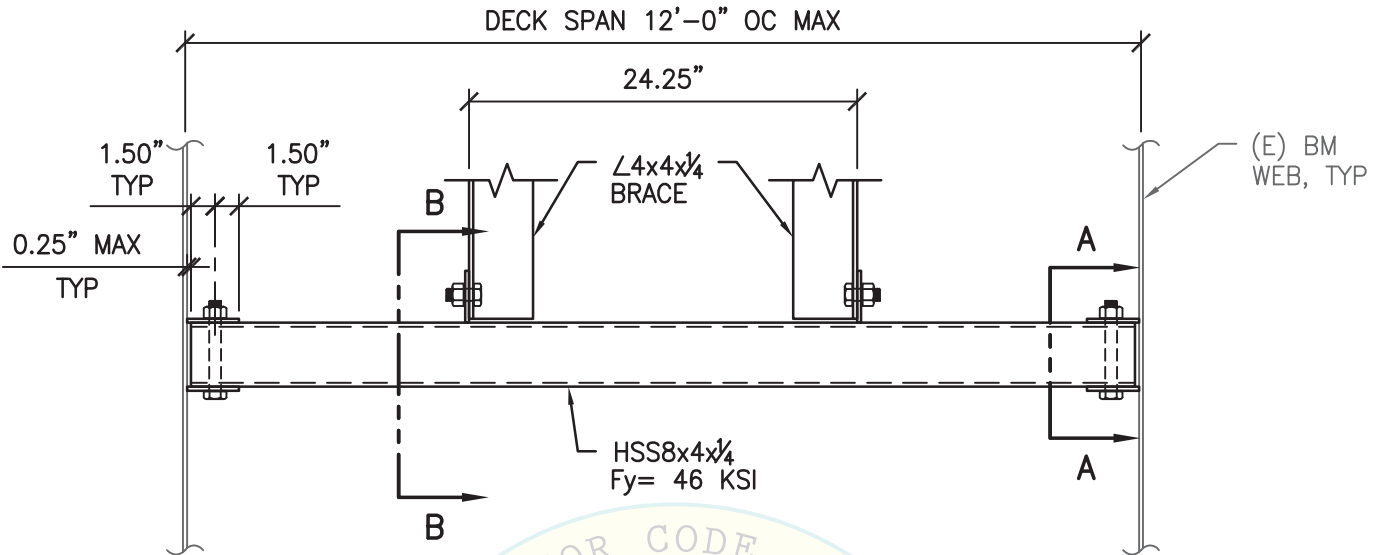
**CYS STRUCTURAL ENGINEERS, INC.**

2495 NATOMAS PARK DRIVE, SUITE 650  
SACRAMENTO, CA 95833

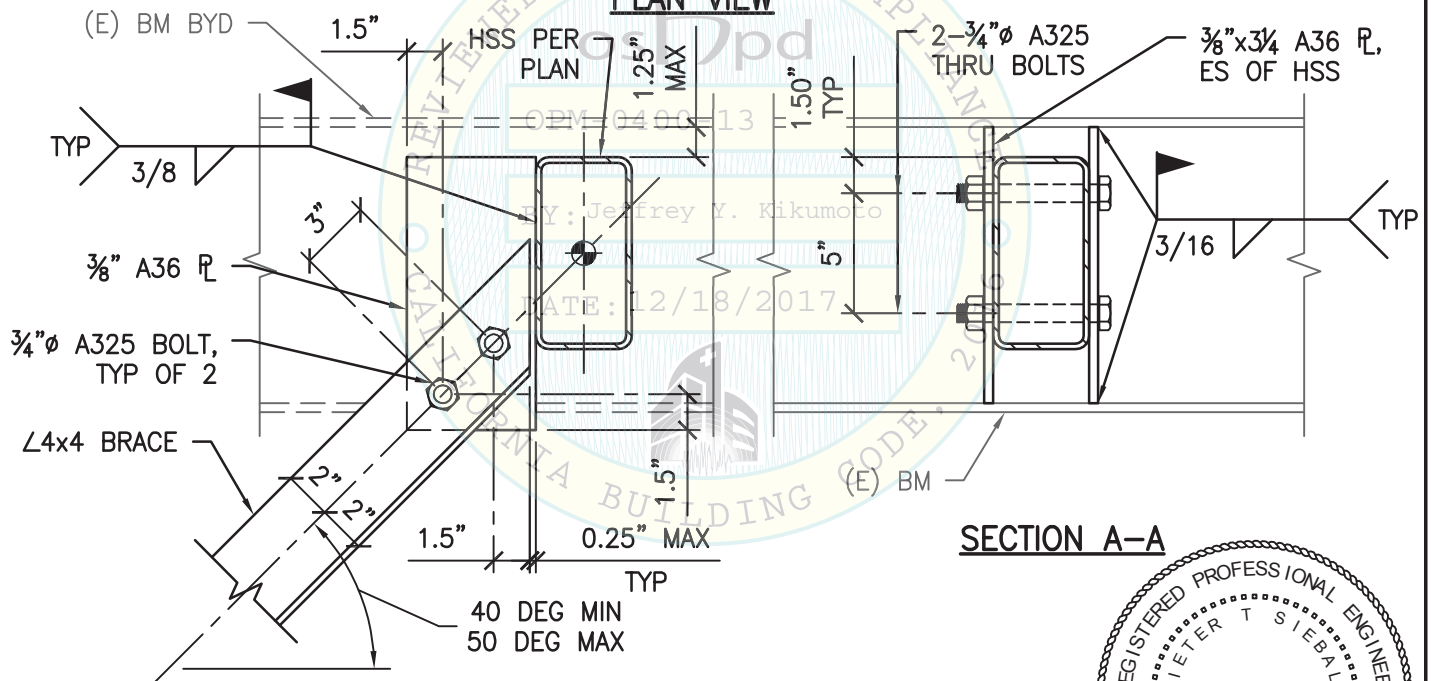
TEL (916) 920-2020  
www.cyseng.com

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Date:	12-7-2017
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**PLAN VIEW**



**SECTION A-A**

**SECTION B-B**

**BRACE ATTACHMENT PARALLEL TO (E) WF BMS**



SHEET TITLE: TYPICAL SUPPORT & ATTACHMENT DETAILS  
BRACE ATTACHMENT DETAILS



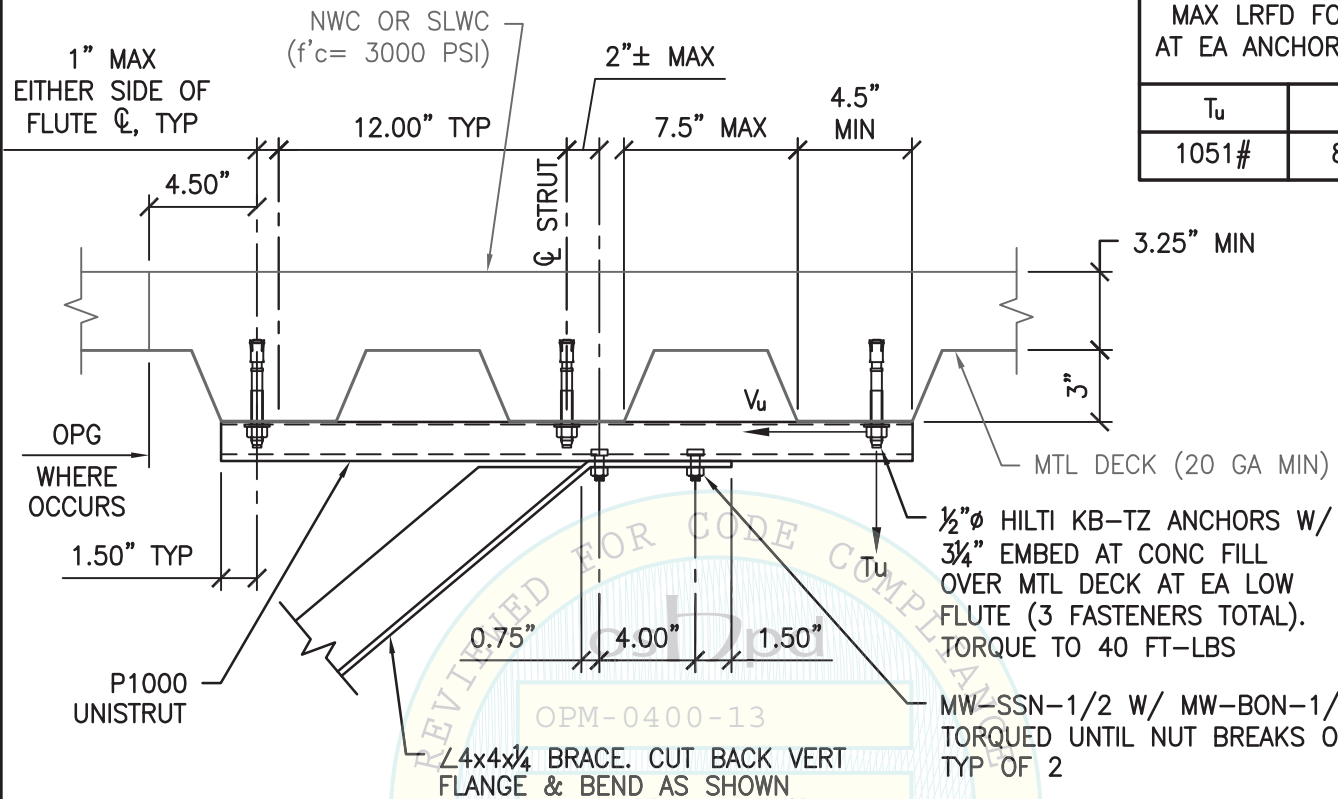
**CYS STRUCTURAL ENGINEERS, INC.**

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SACRAMENTO, CA 95833

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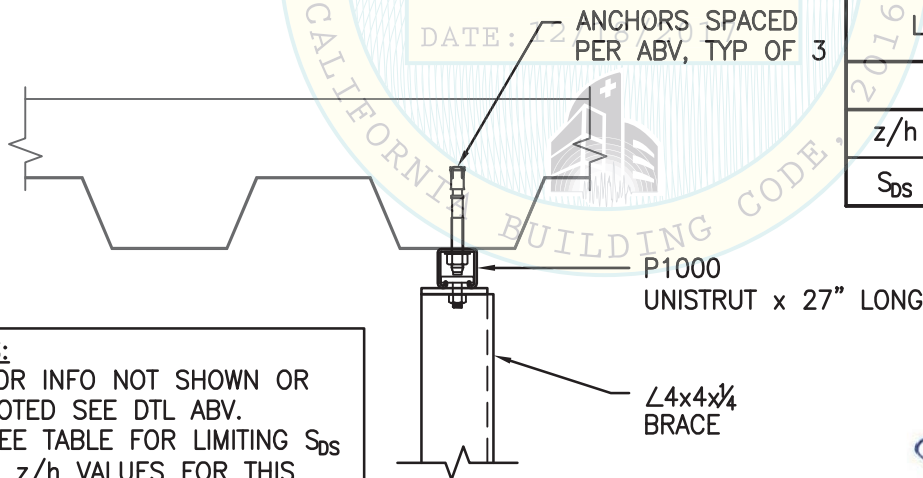
TRUMPF MEDICAL SYSTEMS  
OVERHEAD BOOM MOUNTING SYSTEMS SOLO & TANDEM



MAX LRFD FORCES  
AT EA ANCHOR (LBS)

$T_u$	$\Omega_o V_u$
1051#	882#

**BRACE ATTACHMENT PERP TO MTL DECK FLUTES**



**LIMITING  $S_{DS}$  &  $z/h$  VALUES**

	SOLO BOOM		TANDEM BOOM	
$z/h$	1.00	0.50	1.00	0.50
$S_{DS}$	1.20	1.80	0.90	1.30

**NOTES:**

- FOR INFO NOT SHOWN OR NOTED SEE DTL ABV.
- SEE TABLE FOR LIMITING  $S_{DS}$  &  $z/h$  VALUES FOR THIS BRACE ATTACHMENT OPTION.

**BRACE ATTACHMENT PARALLEL TO MTL DECK FLUTES**



SHEET TITLE: TYPICAL SUPPORT & ATTACHMENT DETAILS  
BRACE ATTACHMENT DETAILS (OPTIONAL)

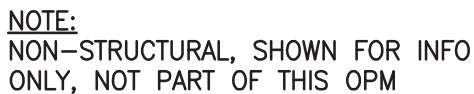


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