DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
FACILITIES DEVELOPMENT DIVISION

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

OFFICE USE ONLY

APPLICATION #: OPM-0510

HCAI Preapproval of Manufacturer's Certification (OPM)

Type: [X] New [ ] Renewal/Update

Manufacturer Information

Manufacturer: Getinge USA

Manufacturer's Technical Representative: Paul Fraser

Mailing Address: 1777 E. Henrietta Road, Rochester, NY 14623

Telephone: (201) 574-3596 Email: paul.fraser@getinge.com

Product Information

Product Name: Modutec Boom Arms (Tandem Mount)

Product Type: Cantilever

Product Model Number: Moduevo-MA, Energy, CargoLift, PLG-II, Mpower and MScreen

General Description: Overhead boom arms supplying med gas and electrical in surgery rooms

Applicant Information

Applicant Company Name: EASE LLC.

Contact Person: Tiffany Tonn

Mailing Address: 1515 FAIRVIEW AVE, STE 205, MISSOULA, MT 59801

Telephone: (406) 541-3273 Email: tiffany@easeco.com

Title:

Registered Design Professonal Preparing Engineering Recommendations

Company Name: EASE

Name: Jonathan Roberson California License Number: S4197

Mailing Address: 5877 Pine Ave., Suite 210, , Chino Hills, CA 91709

Telephone: () - Email: jon@EASECo.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: 9/29/2023

Name: William Staehlin Title: Senior Structural Engineer

Condition of Approval (if applicable):

EASE
EQUIPMENT ANCHORAGE & SEISMIC ENGINEERING

5877 Pine Ave, Ste. 210
Chino Hills, CA. 91709
Phn: (909) 606-7622

The Department of Health Care Access and Information

PREAPPROVAL OF MANUFACTURER'S CERTIFICATION

OPM-0510

THIS PREAPPROVAL CONFORMS TO THE 2022 CALIFORNIA BUILDING CODE

MANUFACTURER: **MAQUET MEDICAL SYSTEM, USA**

EQUIPMENT NAME: **MODUEVO TANDEM MOUNT**

Date: 8/29/23

GENERAL NOTES

1. THIS HCAI PREAPPROVAL OF MANUFACTURER'S CERTIFICATION (OPM) IS BASED ON THE 2022 CBC. THE DEMANDS (DESIGN FORCES) FOR USE WITH THIS OPM SHALL BE BASED ON THE 2022 CBC
2. THIS DOCUMENT MAY ONLY BE USED WITH THE EXPRESS WRITTEN CONSENT OF THE MANUFACTURER LISTED ABOVE FOR THE SPECIFIC PROJECT SITE AND INSTALLATION LOCATION. THIS DOCUMENT IS INVALID WITHOUT SUCH CONSENT.
3. THIS PREAPPROVAL CONFORMS TO THE 2022 CALIFORNIA BUILDING CODE WHERE S_{DS} IS NOT GREATER THAN 2.20.
4. FORCES PER ASCE 7-16 SECTION 13.3.1, EQUATIONS 13.3-1, 13.3-2 & 13.3-3,
   WHERE S_{DS} = 2.20, a_p = 2.5, I_p = 1.5, R_p = 2.5, z/h $\leq$ 1 AT CONCRETE SLAB ON METAL DECK. SEE FOLLOWING SHEETS FOR Ω_0
5. THIS PREAPPROVAL COVERS ONLY THE SUPPORTS AND ATTACHMENTS OF THE EQUIPMENT TO THE STRUCTURE.
6. ALL DESIGN FORCES SHOWN ON THE DRAWINGS ARE FACTORED LOADS THAT SHALL BE USED FOR STRENGTH DESIGN.
7. CONCRETE SLAB ON METAL DECK DETAIL VALID FOR DEMANDS SHOWN AT ANY ELEVATION IN THE BUILDING. (i.e. z/h $\leq$ 1)
8. **RESPONSIBILITIES OF THE STRUCTURAL ENGINEER OF RECORD OF THE BUILDING**
   A. PROVIDE SUPPORTING STRUCTURE TO SUPPORT WEIGHTS AND FORCES SHOWN IN ADDITION TO ALL OTHER LOADS.
   B. VERIFY THAT THE INSTALLATION IS IN CONFORMANCE WITH THE 2022 CBC AND WITH THE DETAILS, MATERIAL AND GAGE OF THE UNIT WHERE ATTACHMENTS ARE MADE AGREE WITH THE INFORMATION SHOWN ON THE PREAPPROVAL DOCUMENTS.
   C. VERIFY THAT PROJECT SPECIFIC VALUES OF S_{DS} & z/h RESULT IN SEISMIC FORCES (E_h, E_v) THAT DO NOT EXCEED THE VALUES ON THE DETAILS.
   D. VERIFY THAT THE CONCRETE SLAB TO WHICH THE EQUIPMENT IS ANCHORED MEETS THE REQUIREMENTS OF THE APPLICABLE ICC ESR.
   E. VERIFY THAT THE ANCHORS ARE AN ADEQUATE DISTANCE FROM ANY SLAB EDGES OR OPENINGS (SEE TYPICAL DETAIL ON SHEET 2).
   F. VERIFY THAT ALL NEW OR EXISTING ANCHORS ARE AN ADEQUATE DISTANCE FROM THE UNIT ATTACHMENTS AND CHECK FOR INTERACTION WHERE OTHER ANCHORS ARE WITHIN 18" OR 6hef FROM THIS UNIT'S ANCHORS.

REGISTERED PROFESSIONAL ENGINEER
JONATHAN ROBERSON
No. 4197
EXP. 6-30-2024
8/29/23
STRUCTURAL
STATE OF CALIFORNIA

MAQUET MEDICAL SYSTEM, USA

MODUEVO TANDEM MOUNT

DES. J. ROBERSON
JOB NO. 36-1403
DATE 8/29/23
SHEET 2 OF 13 SHEETS

9. **EXPANSION ANCHORS:**

A. ATTACHMENT IS TO BE MADE WITH THE 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.	Min. Embed.	Min. Spacing	Min. Edge Dist.	Min. Conc. Over Flutes	Torque Test	Direct Tension Test
5/8"	Sand Light Weight	3000	Hilti Kwik Bolt TZ2 (CARBON STEEL)	ESR-4266	4"	12"	24"	3.25"	40 FT-LB	N/A

B. THIS PREAPPROVAL ALLOWS FOR UP TO A MAXIMUM OF 2 ADJACENT CONCRETE SLAB EDGES, 24" AWAY MINIMUM (i.e. - CORNER). SEE ADJACENT DETAIL FOR ADDITIONAL MINIMUM ALLOWABLE CONCRETE EDGE DISTANCES.

C. TESTING AND SPECIAL INSPECTION OF EXPANSION ANCHORS SHALL BE PERFORMED BY AN APPROVED INDEPENDENT AGENCY EMPLOYED BY THE FACILITY OWNER PER CBC 1704A & 1910A.5 AND CAC 7-149. ALL REPORTS SHALL BE SENT TO THE INSPECTOR OF RECORD, OWNER AND THE ARCHITECT OR ENGINEER IN RESPONSIBLE CHARGE.

(i) AFTER AT LEAST 24 HOURS HAVE ELAPSED SINCE INSTALLATION, DIRECT PULL TENSION TEST OR TORQUE TEST AT LEAST 50% OF THE ANCHORS.

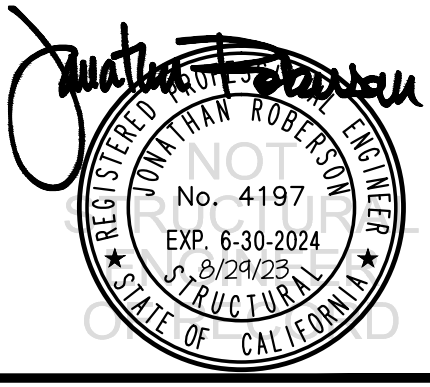
(ii) ACCEPTANCE CRITERIA:

- DIRECT TENSION TEST: THE ANCHOR SHOULD HAVE NO OBSERVABLE MOVEMENT AT THE TEST LOAD. A PRACTICAL WAY TO DETERMINE OBSERVABLE MOVEMENT IS THAT THE WASHER BECOMES LOOSE.
- TORQUE TEST: THE APPLICABLE TORQUE MUST BE ACHIEVED WITHIN THE FOLLOWING LIMITS: WEDGE TYPE : 1/2 TURN OF THE NUT

(iii) IF ANY ANCHOR FAILS, TEST ALL ANCHORS.

D. AVOID DAMAGING EXISTING STEEL REINFORCING IN CONCRETE SLAB WHEN INSTALLING CONCRETE EXPANSION ANCHORS.

E. PROVIDE FOR FULL THREAD ENGAGEMENT OF NUT & WASHER.



MAQUET MEDICAL SYSTEM, USA

MODUEVO TANDEM MOUNT

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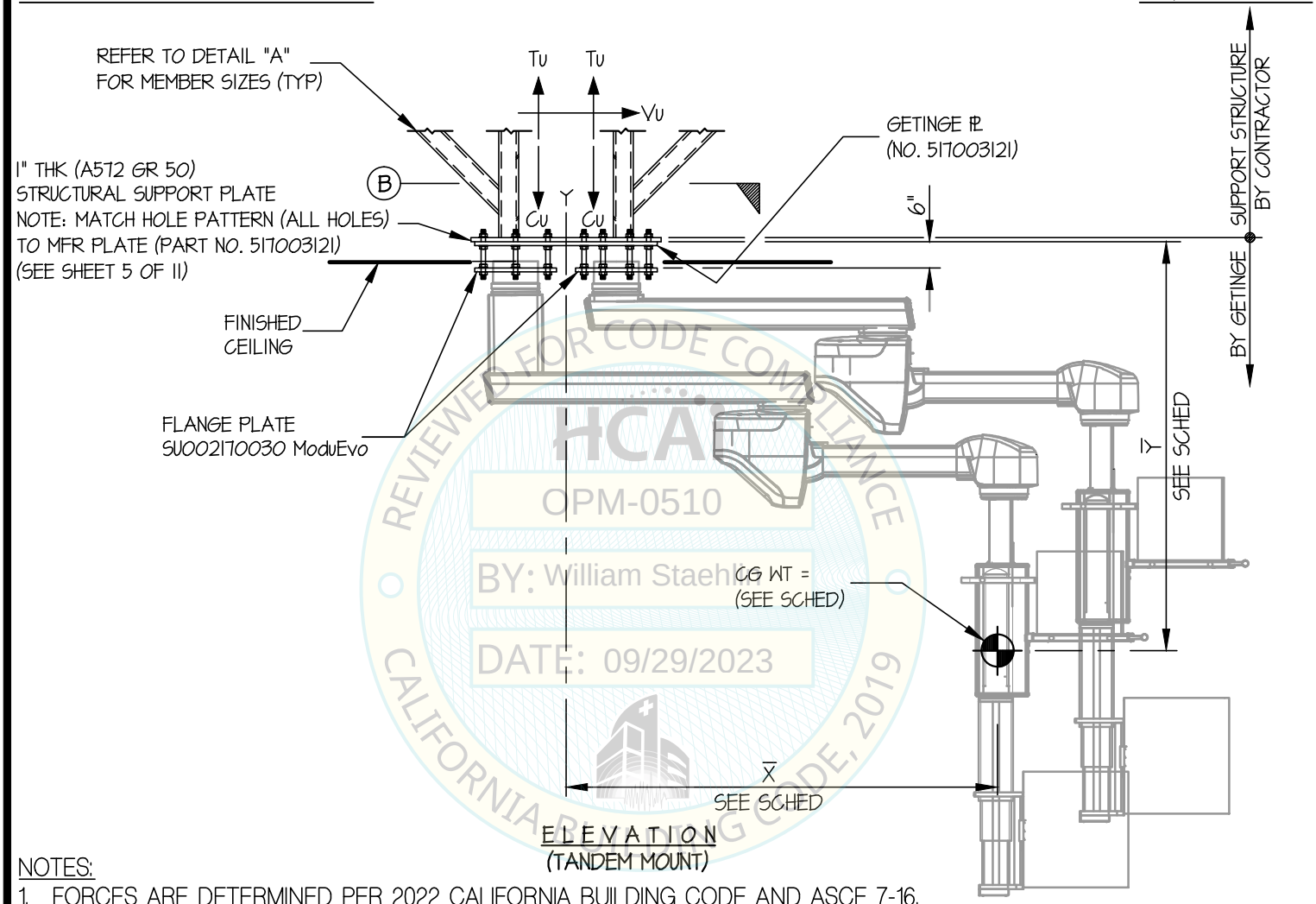
DATE	8/29/23

SHEET 3 OF 13 SHEETS

SEISMIC SUPPORTS & ATTACHMENTS

CEILING MOUNTED



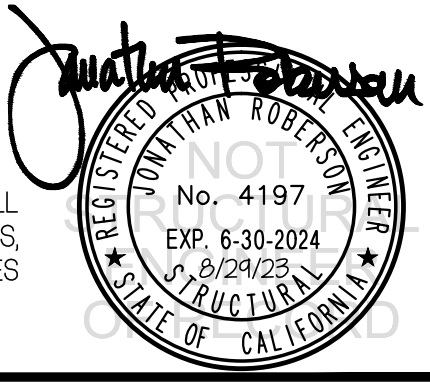
ELEVATION
(TANDEM MOUNT)

NOTES:

1. FORCES ARE DETERMINED PER 2022 CALIFORNIA BUILDING CODE AND ASCE 7-16. STRENGTH DESIGN IS USED. (EXAMPLE: S_{DS} = 2.20, a_p = 2.5, I_p = 1.5, R_p = 2.5, Ω_o = 2.0, z/h ≤ 1)

   HORIZONTAL FORCE (E_h) = 3.96 W_p
   HORIZONTAL FORCE (E_{mh}) = 7.92 W_p (FOR CONCRETE ANCHORAGE)
   VERTICAL FORCE (E_v) = 0.44 W_p

2. THIS CALCULATION ENCOMPASSES WEIGHTS AND VERTICAL C.G. POSITIONS NOT EXCEEDING VALUES SHOWN.
3. THIS CALCULATION WAS PREPARED WITHOUT KNOWLEDGE OF ANY SITE CONDITION. COMPATIBILITY FOR USE WITH A SITE SHALL BE EVALUATED BY THE STRUCTURAL ENGINEER OF RECORD OF THE INSTALLATION (SEOR). USE REQUIRES APPROVAL BY THE SEOR.
4. STRUCTURAL ENGINEER OF RECORD FOR THE INSTALLATION SHALL VERIFY ALL CONDITIONS, EVALUATE INTERACTION WITH ADJACENT EQUIPMENT AND ANCHORS, AND PROVIDE SUPPORT STRUCTURE DESIGNED TO SUPPORT WEIGHTS AND FORCES SHOWN IN COMBINATION WITH ALL OTHER LOADS THAT MAY BE PRESENT.
5. SEE GENERAL NOTES: SHEETS 1 AND 2.



MAQUET MEDICAL SYSTEM, USA

MODUEVO TANDEM MOUNT

DES. J. ROBERSON
JOB NO. 36-1403
DATE 8/29/23

SEISMIC SUPPORTS & ATTACHMENTS — CEILING MOUNTED

MODUEVO MODELS		LENGTH (mm) UPPER BEAM	LENGTH (mm) LOWER BEAM	TOTAL WEIGHT (lb.)	$\overline{X}$ (in.)	$\overline{Y}$ (in.)	Tu (lb.)	Cu (lb.)	Vu (lb.)	MOMENT (Mxx) (IN-LB)	MOMENT (MYY) (IN-LB)
MODUEVO-MA	Light arm	600	0	855	22.2	83.2	13,210	12,986	423	312,840	0
		900	0	868	33.2	82.3	13,933	13,705	430	330,129	0
		1200	0	771	43.5	80.2	12,651	12,449	382	299,843	0
		1500	0	651	53.3	77.3	10,807	10,636	322	256,161	0
		600	600	801	42.4	84.2	13,613	13,402	397	322,762	0
		900	600	688	52.1	80.9	11,773	11,593	341	279,172	0
		900	900	616	60.5	77.3	10,528	10,367	305	249,652	0
		1200	600	609	60.9	78.9	10,589	10,429	302	251,134	0
		1200	900	556	69.2	73.9	9525	9379	275	225,852	0
		1200	1200	516	67.8	71.1	8549	8413	255	202,630	0
		1500	1200	481	83.4	65.9	8072	7946	238	191,359	0
		1500	1500	456	89.7	62.6	7601	7481	226	180,169	0
	Heavy arm	1200	0	885	43.4	79.2	14,372	14,139	438	340,569	0
		1500	0	899	43.8	79.2	14,624	14,388	445	346,548	0
		600	600	925	42.5	85.8	15,971	15,728	458	378,758	0
		900	600	939	52.9	84.6	16,692	16,442	465	395,998	0
		900	900	953	62.4	82.7	17,263	17,012	472	409,616	0
		1200	900	853	71.3	79.3	15,491	15,267	422	367,596	0
		1200	1200	781	80.2	77.7	14,455	14,250	387	343,078	0
		1500	1200	720	87.8	73.6	13,211	13,022	356	313,525	0
		1500	1500	676	94.8	70.4	12,368	12,191	335	293,518	0
ENERGY	Light arm	600	1000	604	44.2	63.8	8307	8149	299	196,403	0
		900	1001	617	54.2	62.5	8772	8611	305	207,505	0
		1200	1002	586	62.5	68.5	9248	9094	290	219,064	0
	Medium arm	0	1003	692	32.8	84.5	11,339	11,158	343	268,738	0
		600	1004	760	47.9	73	11,798	11,598	376	279,413	0
		900	1005	774	57.9	71.8	12,392	12,188	383	293,588	0
		1200	1006	788	67.8	70.6	12,991	12,784	390	307,910	0
		1500	1007	736	76.3	67.2	12,151	11,958	364	287,997	0
CARGOLIFT	Light arm	600	0	854	22.2	82.9	13,153	12,929	423	311,466	0
		900	0	868	33.1	81.9	13,870	13,642	430	328,611	0
		1200	0	722	43.2	79.3	11,727	11,537	357	277,885	0
		600	600	743	41.7	75.2	11,488	11,293	368	272,054	0
	Heavy arm	900	0	871	32.7	81.3	13,808	13,579	431	327,106	0
		1200	0	885	43.1	79.9	14,456	14,224	438	342,588	0
		1500	0	885	53.5	78.7	14,909	14,677	438	353,472	0
		600	600	925	42.1	78.4	14,817	14,574	458	351,045	[illegible]
		900	600	939	52.4	77.2	15,514	15,267	465	367,715	0
		900	900	865	61.6	75.3	14,565	14,338	428	345,313	0
		1200	900	802	70.9	72.8	13,684	13,474	397	324,475	0
		1200	1200	751	79.4	70.9	13,013	12,816	372	308,614	0

REGISTERED PROFESSIONAL ENGINEER
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MAQUET MEDICAL SYSTEM, USA

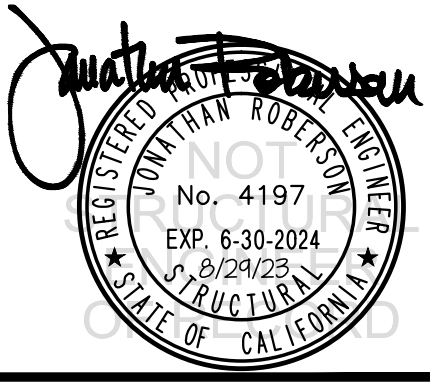
MODUEVO TANDEM MOUNT

DES. J. ROBERSON
JOB NO. 36-1403
DATE 8/29/23
SHEET 5 OF 13 SHEETS

SEISMIC SUPPORTS & ATTACHMENTS — CEILING MOUNTED

MODUEVO MODELS	TYPE	TOTAL LOAD (LB.)	$\bar{X}$ (in.)	$\bar{Y}$ (in.)	Tu (lb.)	Cu (lb.)	Vu (lb.)	** MOMENT (Mxx) (IN-LB)	** MOMENT (Myy) (IN-LB)
PLG-II	0-14	198	14.5	26.2	1093	1041	98	22,817	0
	Light beam 6-14	283	21.5	23.1	1553	1479	140	35,884	0
	Light beam 9-14	292	27.3	23.1	1717	1640	145	39,764	0
	Light beam 12-14	306	33.1	23.1	1922	1842	152	44,620	0
	Light beam 15-14	320	39	23.1	2138	2054	158	49,743	0
PLG-II SKY	0-14	218	20.6	23.1	1181	1124	108	27,266	0
	Light beam 6-14	256	32.9	24.2	1652	1585	127	38,395	0
	Light beam 9-14	265	40.8	23.4	1816	1746	131	42,272	0
	Light beam 12-14	273	48.5	22.6	1979	1908	135	46,163	0
	Light beam 15-14	304	55.9	21.9	2327	2247	151	54,353	0

** MOMENT AT THREADED BOLT CONNECTION TO STRUCTURAL PLATE



MAQUET MEDICAL SYSTEM, USA

MODUEVO TANDEM MOUNT

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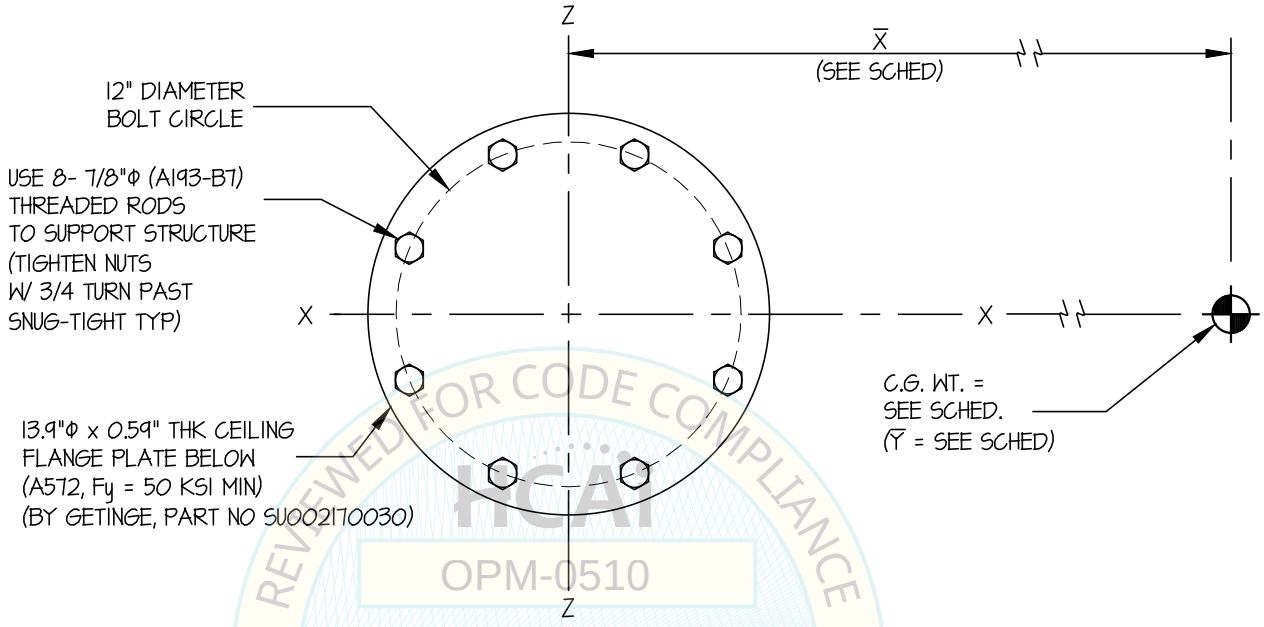
SHEET 6 OF 13 SHEETS

SEISMIC SUPPORTS & ATTACHMENTS — CEILING MOUNTED



PLAN AT MODUEVO FLANGE PLATE

MAQUET MEDICAL SYSTEM, USA

MODUEVO TANDEM MOUNT

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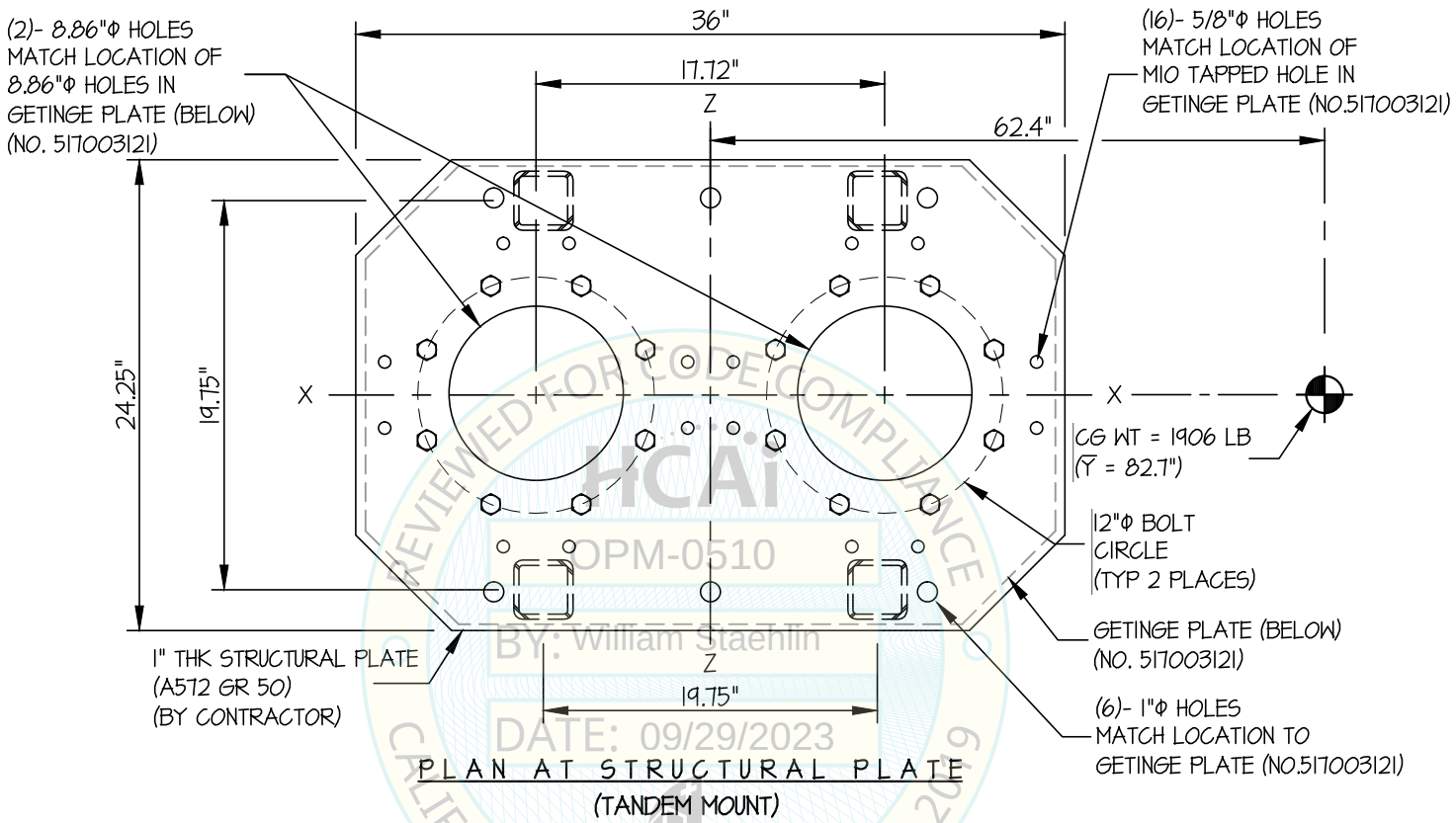
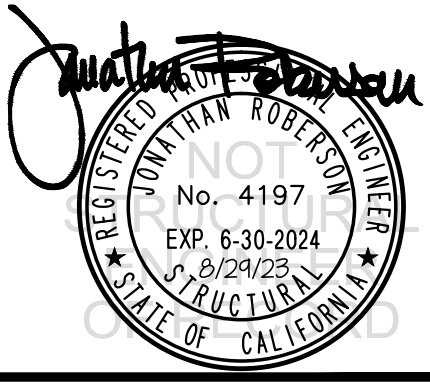
SHEET 7 OF 13 SHEETS

SEISMIC SUPPORTS & ATTACHMENTS — CEILING MOUNTED



PLAN AT STRUCTURAL PLATE
(TANDEM MOUNT)



MAQUET MEDICAL SYSTEM, USA

MODUEVO TANDEM MOUNT

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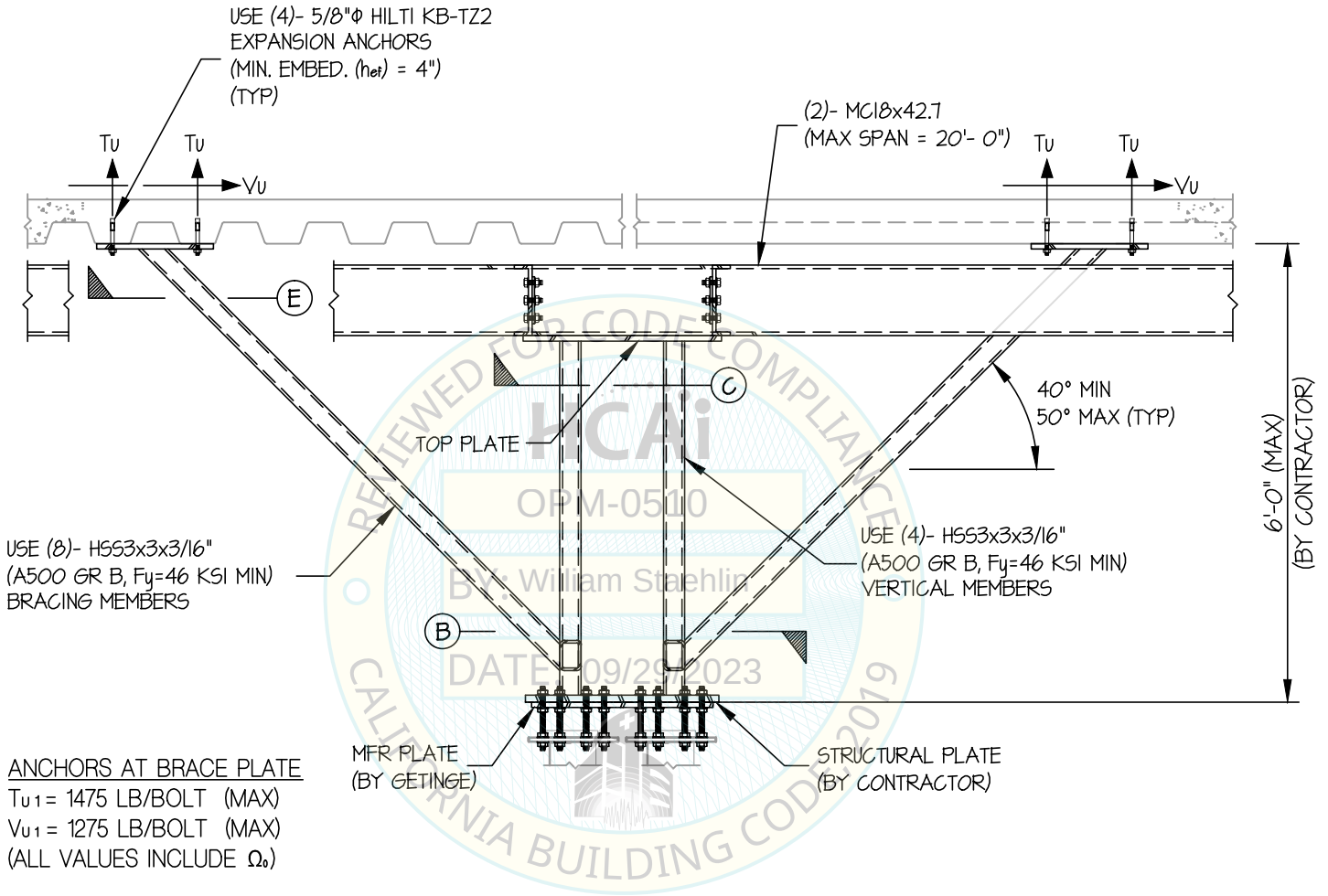
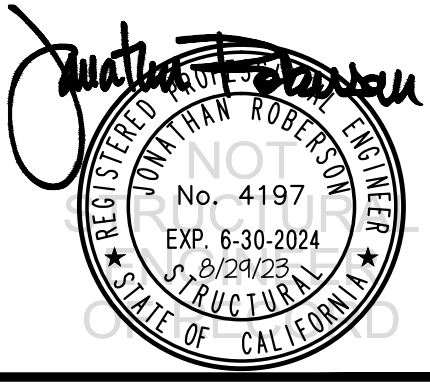
SHEET 8 OF 13 SHEETS

SEISMIC SUPPORTS & ATTACHMENTS — CEILING MOUNTED



ANCHORS AT BRACE PLATE
T_{u1} = 1475 LB/BOLT (MAX)
V_{u1} = 1275 LB/BOLT (MAX)
(ALL VALUES INCLUDE Ω_0)

STRUCTURAL SUPPORT ELEVATION (A)



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MODUEVO TANDEM MOUNT

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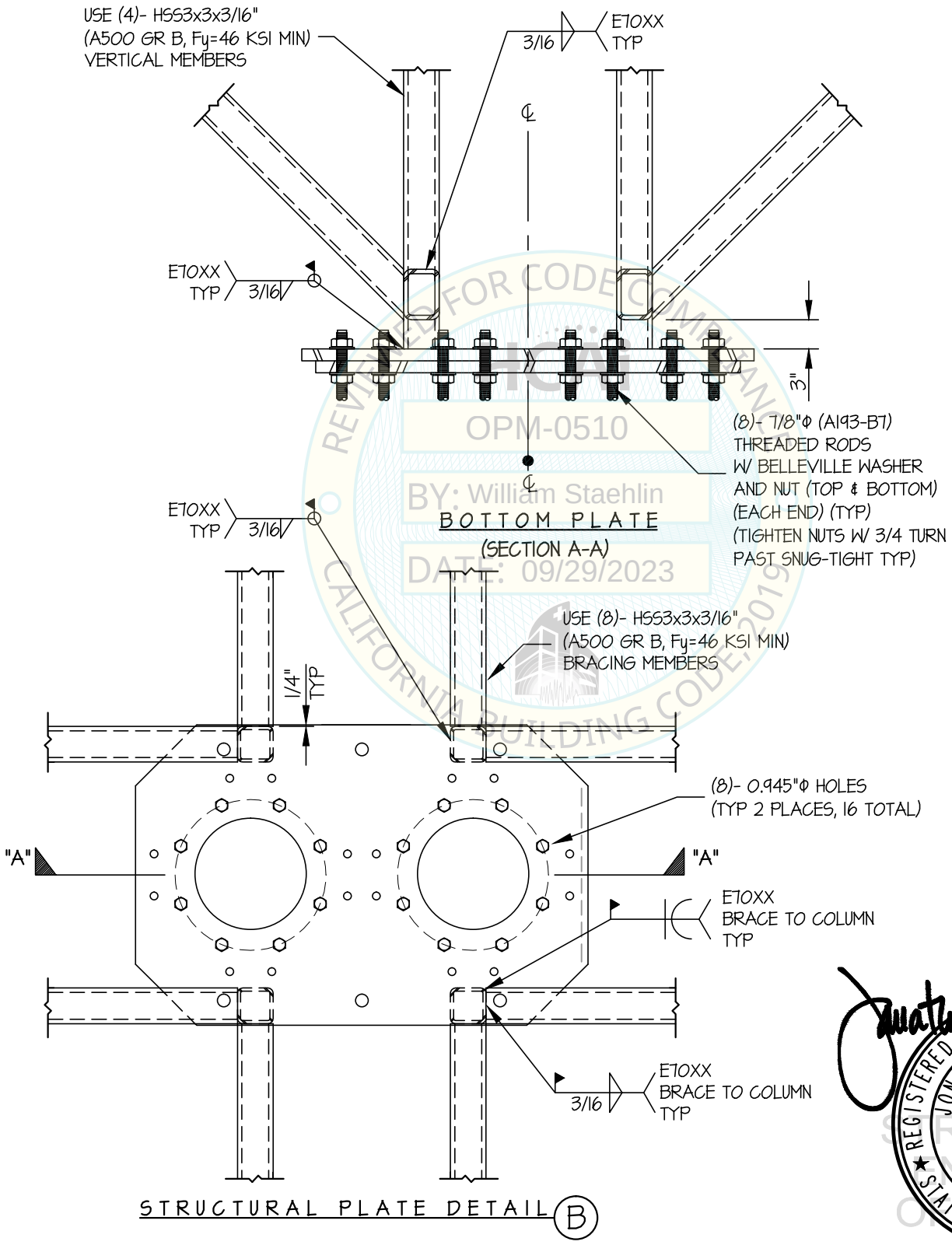
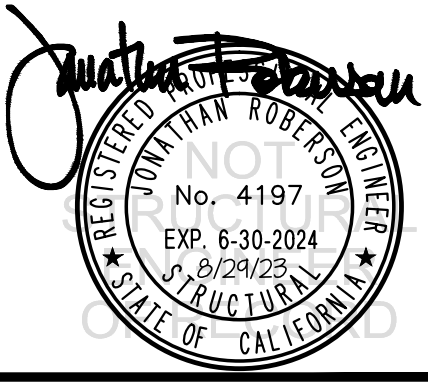
SHEET 9 OF 13 SHEETS

SEISMIC SUPPORTS & ATTACHMENTS

CEILING MOUNTED



STRUCTURAL PLATE DETAIL (B)



MAQUET MEDICAL SYSTEM, USA

MODUEVO TANDEM MOUNT

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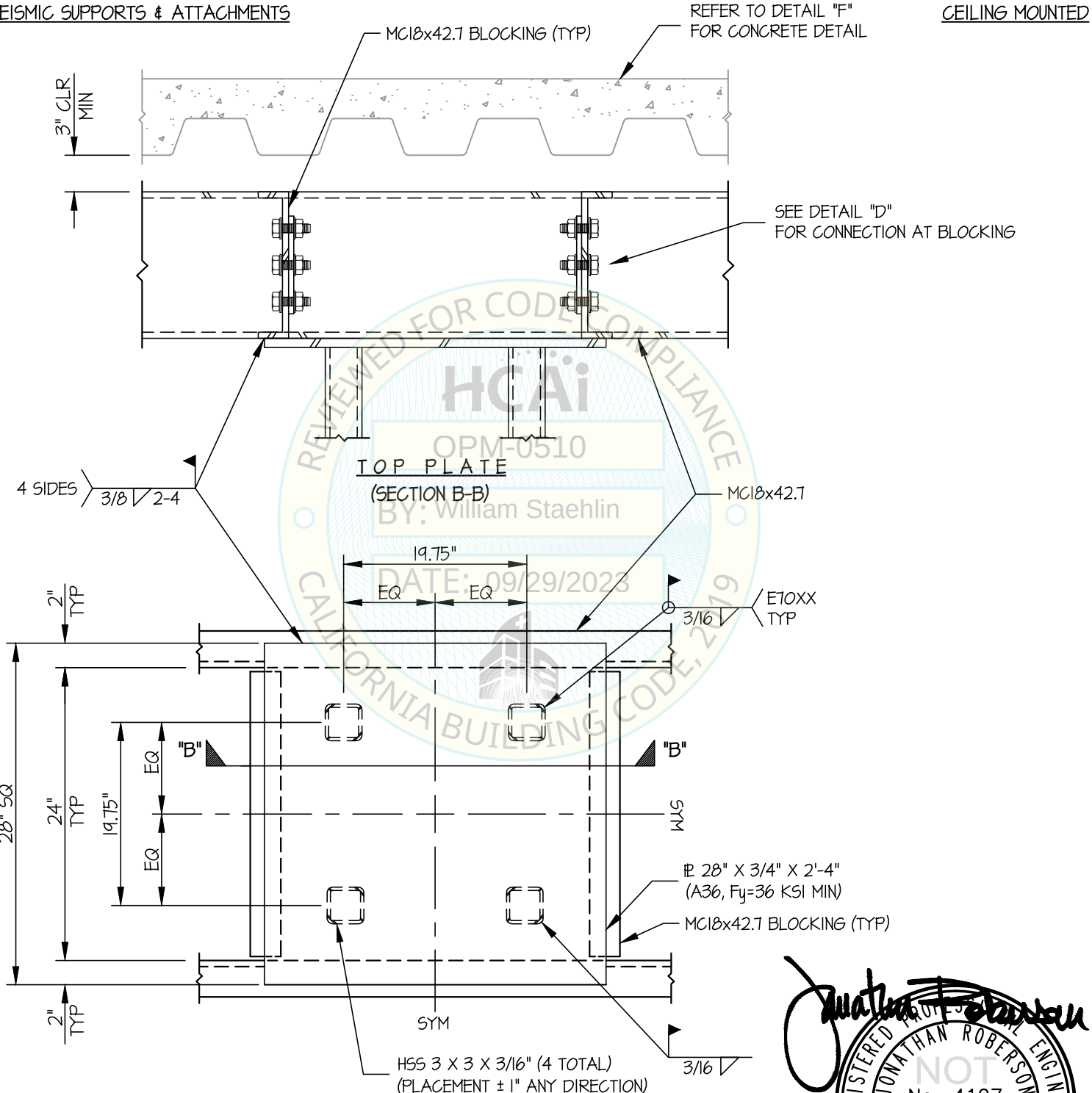
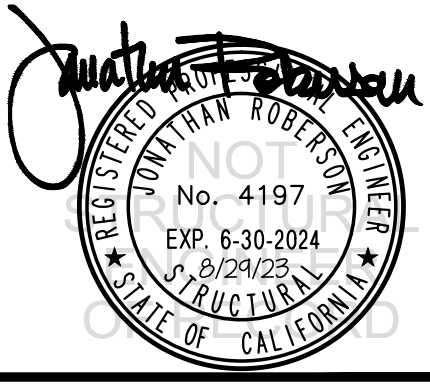
DATE	8/29/23

SHEET 10 OF 13 SHEETS

SEISMIC SUPPORTS & ATTACHMENTS — CEILING MOUNTED



REFLECTED CEILING PLAN AT TOP PLATE



MAQUET MEDICAL SYSTEM, USA

MODUEVO TANDEM MOUNT

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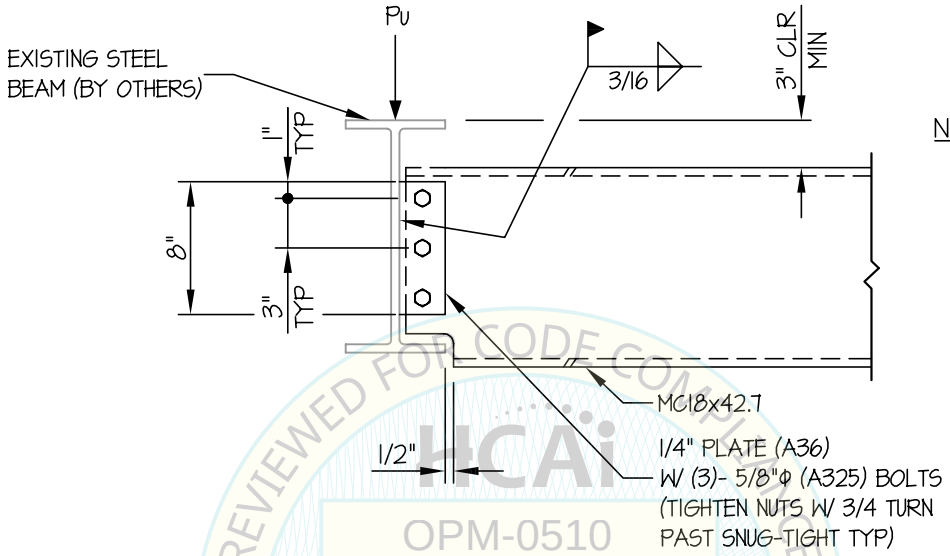
SHEET 11 OF 13 SHEETS

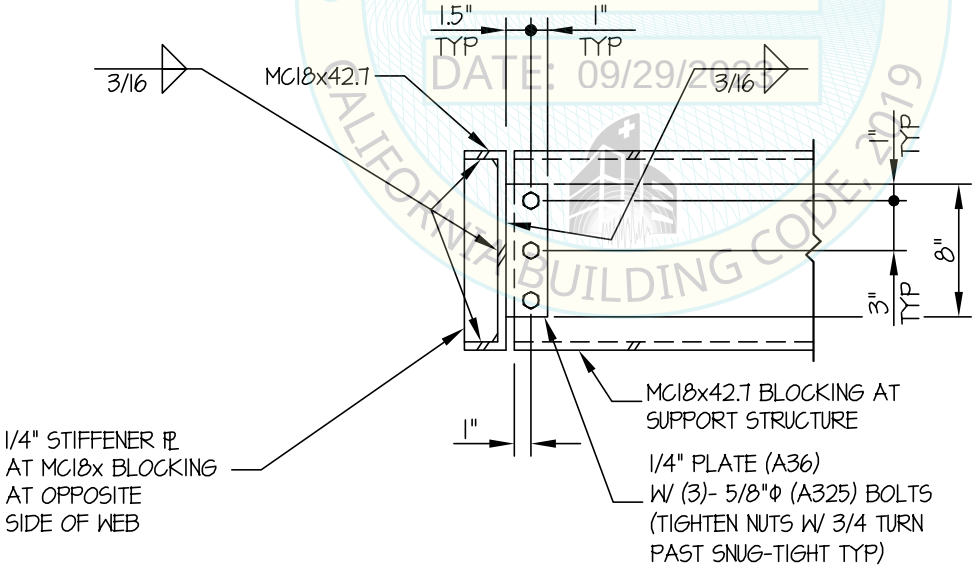
SEISMIC SUPPORTS & ATTACHMENTS

CEILING MOUNTED



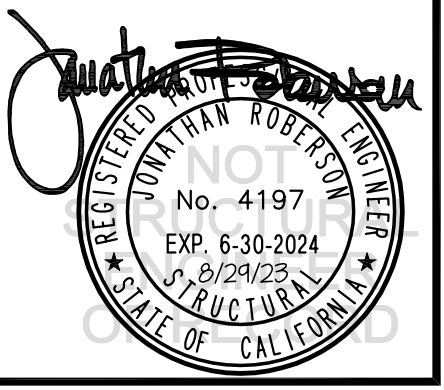
NOTE CHECK (E) BEAM FOR ADDITIONAL LOAD OF Pu = 30.0K LOCATED HALFWAY BETWEEN (N) MC18x BEAMS

CONNECTION AT (E) STEEL BEAM



CONNECTION AT BLOCKING

MC18x CONNECTION DETAILS (D)



MAQUET MEDICAL SYSTEM, USA

MODUEVO TANDEM MOUNT

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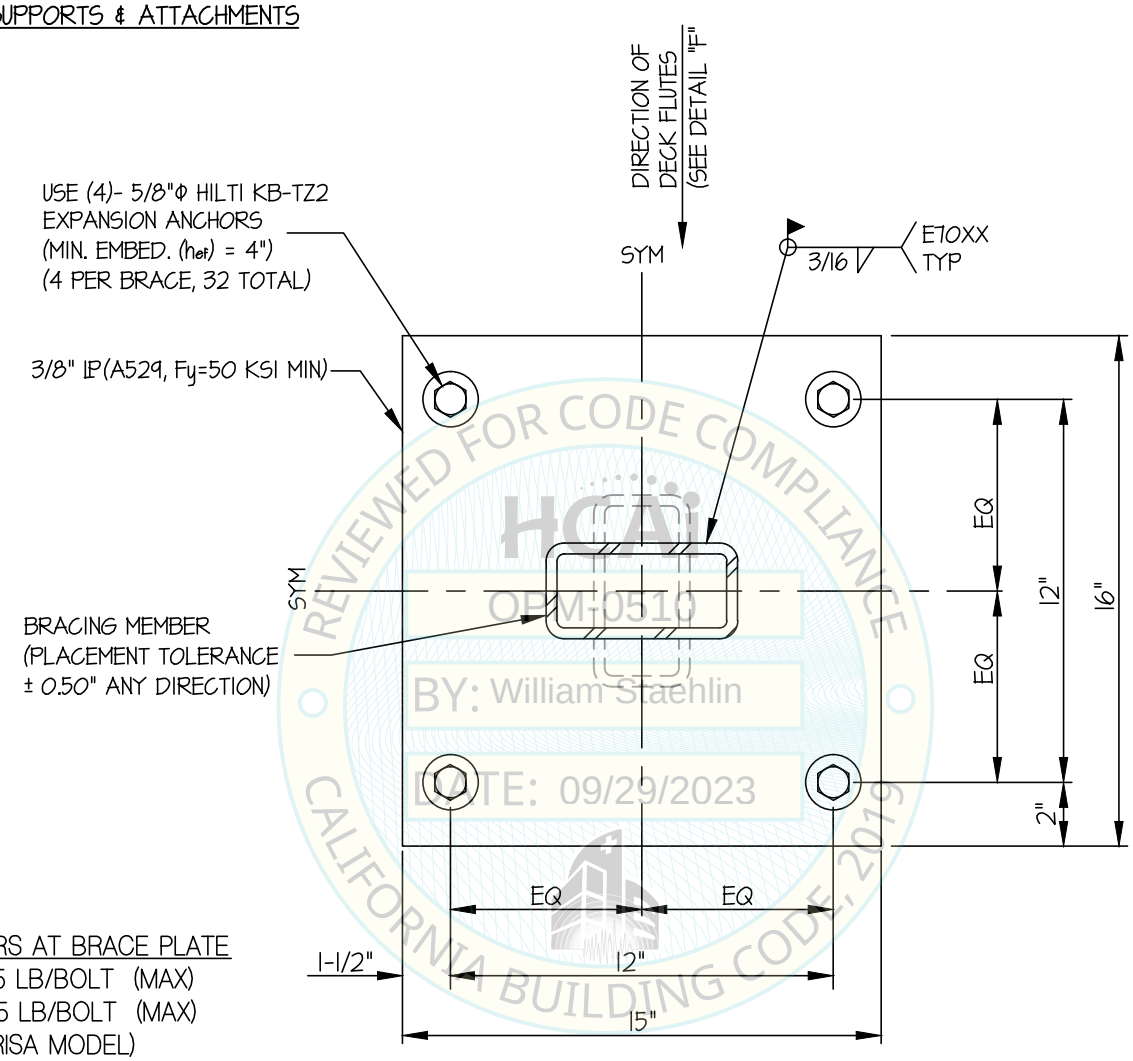
SHEET 12 OF 13 SHEETS

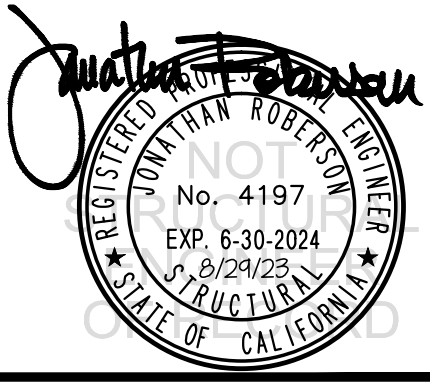
SEISMIC SUPPORTS & ATTACHMENTS

BRACING DETAILS



ANCHORS AT BRACE PLATE
Tu = 1475 LB/BOLT (MAX)
Vu = 1275 LB/BOLT (MAX)
(FROM RISA MODEL)

BRACE PLATE DETAIL (E)



MAQUET MEDICAL SYSTEM, USA

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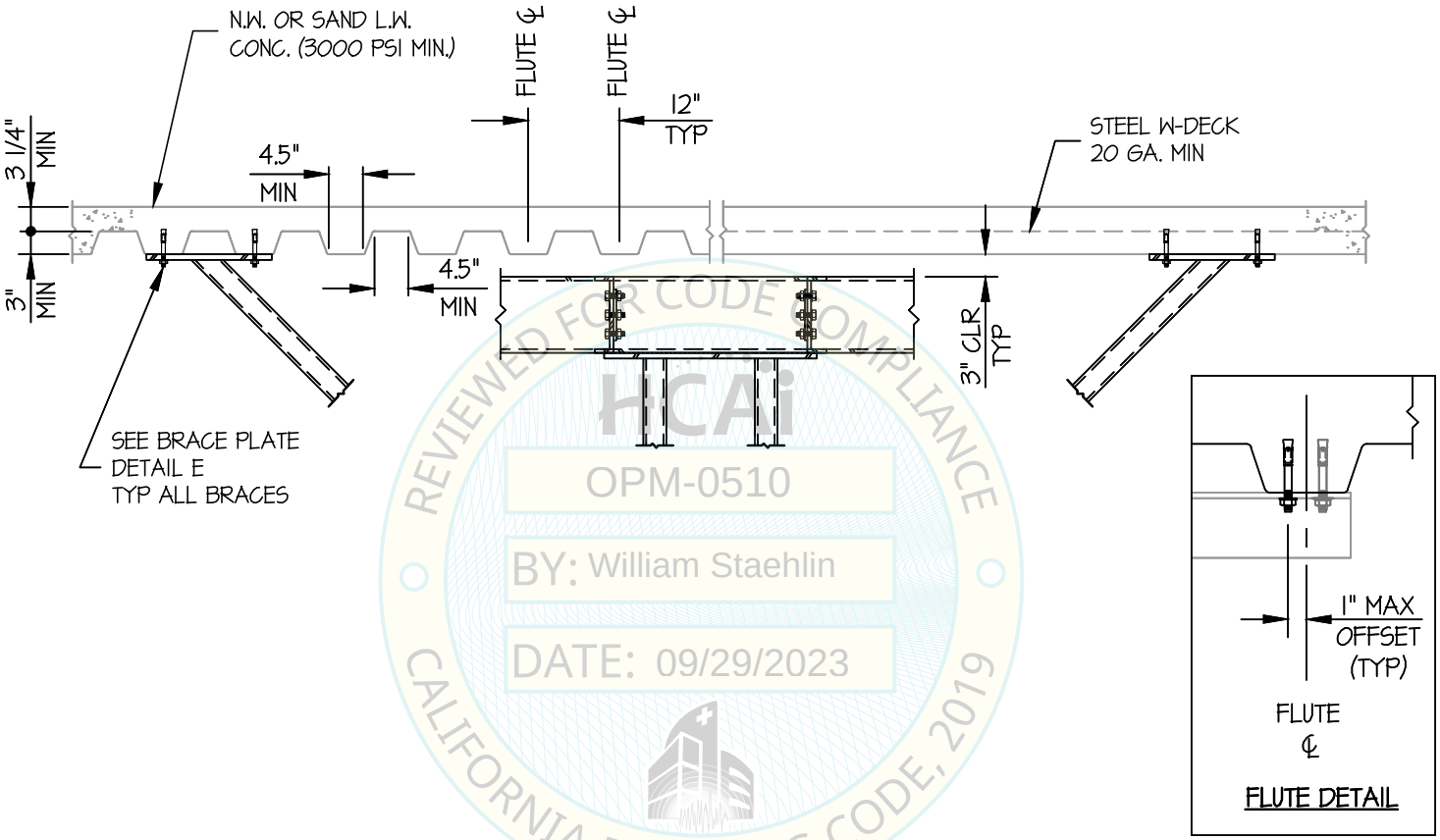
SHEET 13 OF 13 SHEETS

SEISMIC SUPPORTS & ATTACHMENTS

CEILING MOUNTED



MIN STEEL DECK REQUIREMENTS AND STRUT DETAIL (F)