DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
FACILITIES DEVELOPMENT DIVISION

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

OFFICE USE ONLY

APPLICATION #: OPM-0433

HCAI Preapproval of Manufacturer's Certification (OPM)

Type: ☐ New ☒ Renewal/Update

Manufacturer Information

Manufacturer: SenCorp White

Manufacturer's Technical Representative: Scott Crossman

Mailing Address: 400 Kidds Hill Road, Hyannis, MA 02601

Telephone: (508) 771-9400 Email: scott.crossman-7288@sencorpwhite.com

Product Information

Product Name: VERTICAL CAROUSELS 22121XX SERIES

Product Type: Other electrical and mechanical components

Product Model Number: 2212128, 2212148, 2212168, 221288

General Description: Automated Storage of Solid Medications

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: Office Manager

Registered Design Professonal Preparing Engineering Recommendations

Company Name: EASE LLC

Name: Jonathan Roberson California License Number: S4197

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

Telephone: (951) 295-1892 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, 2022 (CBSC 2022) 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 2022 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: 8/24/2023

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-0433

THIS PREAPPROVAL CONFORMS TO THE 2022 CALIFORNIA BUILDING CODE

MANUFACTURER: **SenCorpWhite**

EQUIPMENT NAME: **VERTICAL CAROUSELS (22121XX SERIES)**

Date: 7/5/23

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 1.45, 160, 1.75 & 2.20. SEE DETAIL FOR APPLICABILITY
4. FORCES PER ASCE 7-16 SECTION 13.3.1, EQUATIONS 13.3-1, 13.3-2 & 13.3-3,
   WHERE S_{DS} = 1.45, a_p = 1.0, I_p = 1.5, R_p = 1.5, z/h = 0 AT CONCRETE SLAB. SEE FOLLOWING SHEETS FOR Ω_o
   WHERE S_{DS} = 1.60, a_p = 1.0, I_p = 1.5, R_p = 1.0, z/h = 0 AT CONCRETE SLAB. SEE FOLLOWING SHEETS FOR Ω_o
   WHERE S_{DS} = 1.75, a_p = 1.0, I_p = 1.5, R_p = 1.0, z/h = 0 AT CONCRETE SLAB. SEE FOLLOWING SHEETS FOR Ω_o
   WHERE S_{DS} = 2.20, a_p = 1.0, I_p = 1.5, R_p = 1.0, z/h = 0 AT CONCRETE SLAB & z/h $\leq$ 1 AT CONCRETE SLAB ON METAL DECK. SEE FOLLOWING SHEETS FOR Ω_o
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. CONCRETE SLAB DETAIL VALID FOR DEMANDS SHOWN AT OR BELOW GRADE. (i.e. z/h = 0)
9. **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 REPORT. AND THIS OPM.

   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. 6-30-2018
STRUCTURAL
STATE OF CALIFORNIA
7/5/23

SenCorpWhite

VERTICAL CAROUSELS (22121XX SERIES)

DES. J. ROBERSON | JOB NO. 11-2316 | DATE 7/5/23 | SHEET 2 OF 15 SHEETS

10. **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. Thickness	Torque Test	Direct Tension Test
5/8"	Sand Light Weight	3000	Hilti Kwik Bolt TZ2 (CARBON STEEL)	ESR-4266	4"	12"	48"	3.25 Above Flute	40 FT-LB	N/A
5/8"	Normal Weight	4000	Hilti Kwik Bolt TZ2 (CARBON STEEL)	ESR-4266	4"	7"	66"	6"	40 FT-LB	3494 lb

B. THIS PREAPPROVAL ALLOWS FOR UP TO A MAXIMUM OF 2 ADJACENT CONCRETE SLAB EDGES, 66" 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.

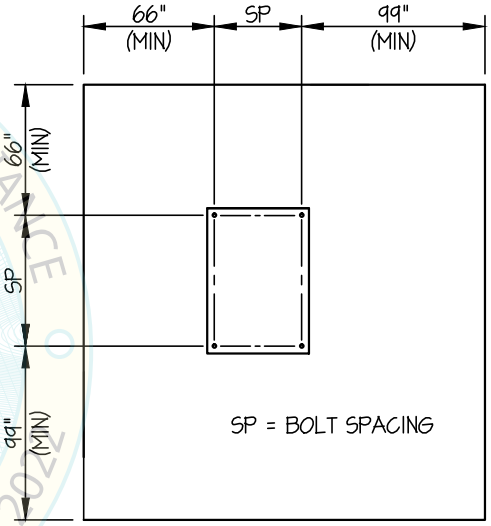
(ii) ACCEPTANCE CRITERIA:

- 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.



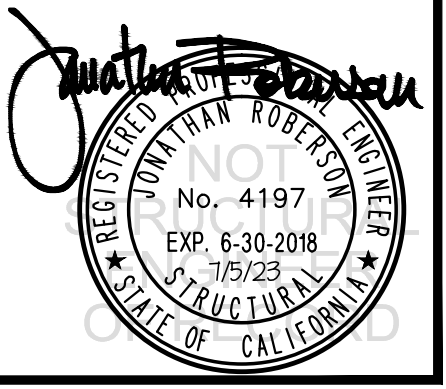
TYPICAL CONCRETE EDGE DETAIL
(SLAB ON GRADE ONLY)

11. BOLTS THROUGH CONCRETE ON METAL DECK

A. BOLTS SHALL BE TORQUED BY 3/4 TURN OF THE NUTS AFTER THE SNUG TIGHT (THE SNUG-TIGHT CONDITION IS DEFINED AS THE TIGHTNESS REQUIRED TO BRING THE CONNECTED PLIES INTO FIRM CONTACT) CONDITION IS ACHIEVED, UNLESS OTHERWISE NOTED.

B. THROUGH BOLT HOLES SHALL BE 1/16" LARGER THAN BOLT SIZE (HOLE SIZE = BOLT SIZE + 1/16) FOR CONCRETE.

C. THROUGH-BOLTS IN CONCRETE SHALL RECEIVE SPECIAL INSPECTION AND TESTING (THROUGH BOLTS WITH STEEL TO STEEL CONNECTION IN TENSION DO NOT REQUIRE TENSION TESTING) IN ACCORDANCE WITH REQUIREMENTS FOR POST-INSTALLED ANCHORS.



SenCorpWhite

VERTICAL CAROUSELS (22121XX SERIES)

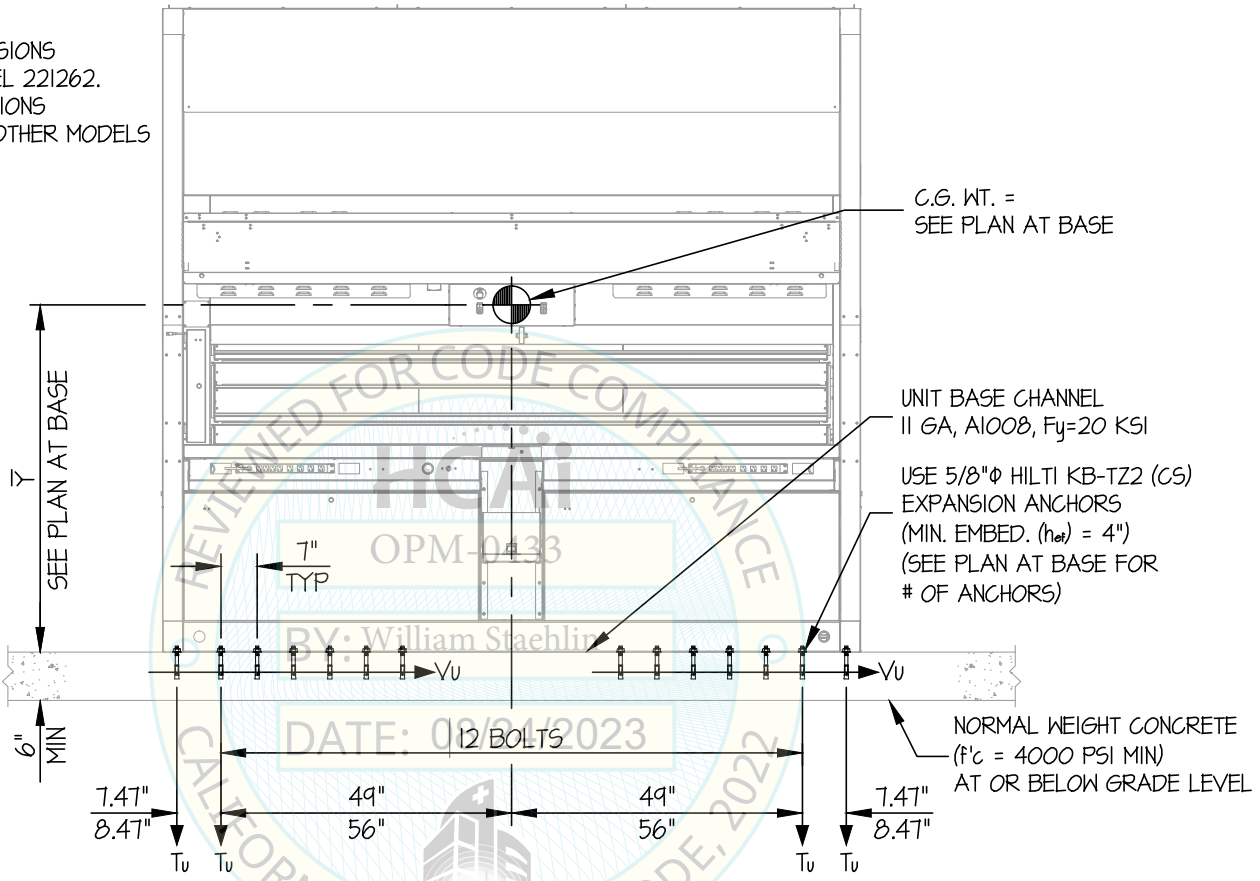
DES.	J. ROBERSON
JOB NO.	11-2316
DATE	7/5/23

SHEET 3 OF 15 SHEETS

SEISMIC SUPPORTS & ATTACHMENTS

CONCRETE SLAB

NOTE: SMALLER DIMENSIONS APPLY TO MODEL 221262. LARGER DIMENSIONS APPLY TO ALL OTHER MODELS



FRONT ELEVATION
(MODEL 2212168 SHOWN)

NOTES:

1. FORCES ARE DETERMINED PER 2022 CALIFORNIA BUILDING CODE AND ASCE 7-16. STRENGTH DESIGN IS USED. (EXAMPLE: a_p = 1.0, I_p = 1.5, R_p = 1.5, Ω_o = 2.0, z/h = 0)
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.
4. SEE GENERAL NOTES: SHEETS 1 AND 2

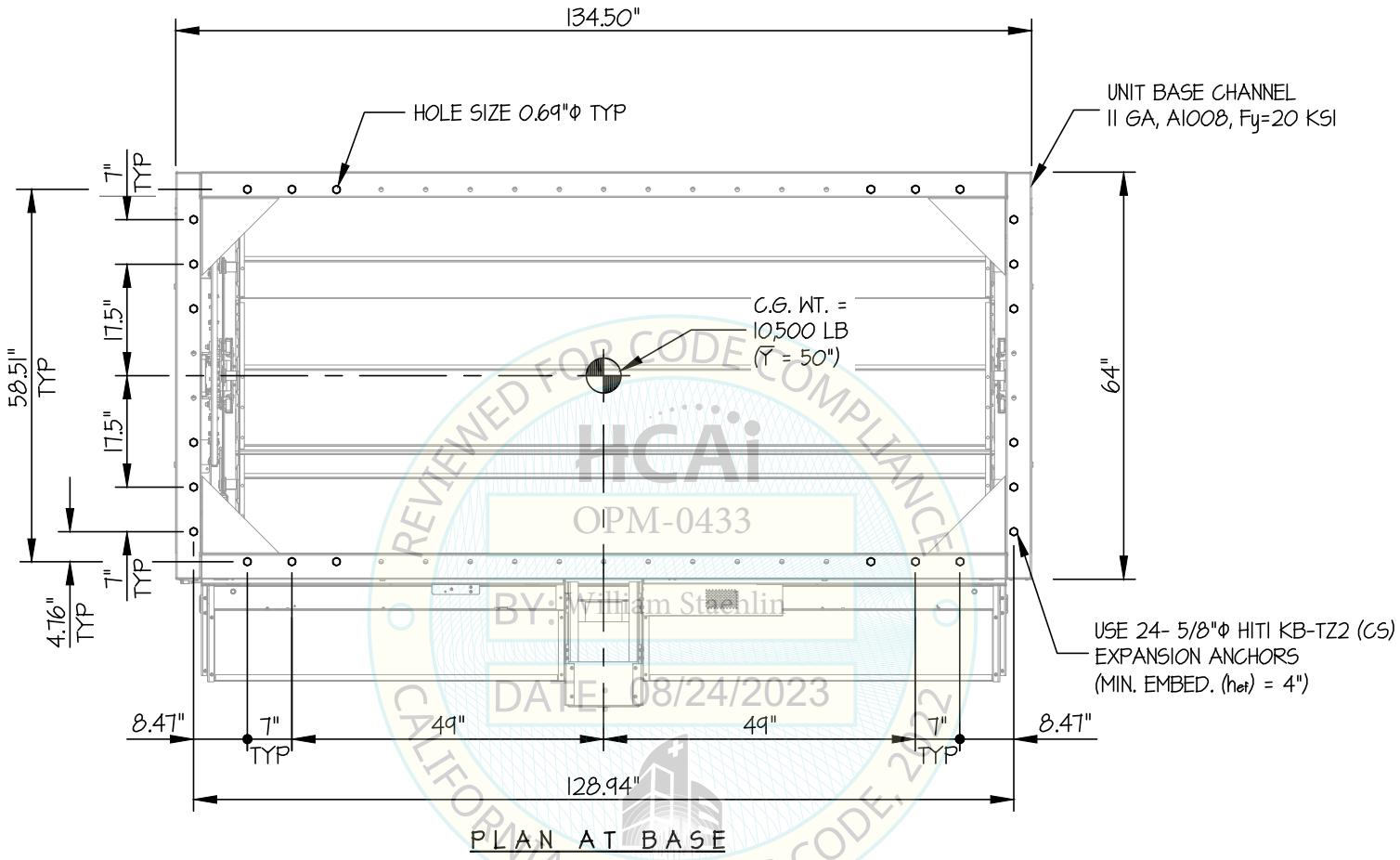
REGISTERED PROFESSIONAL ENGINEER
JONATHAN ROBERSON
No. 4197
EXP. 6-30-2018
7/5/23
STRUCTURAL
STATE OF CALIFORNIA

SenCorpWhite

VERTICAL CAROUSELS (2212128 SERIES)

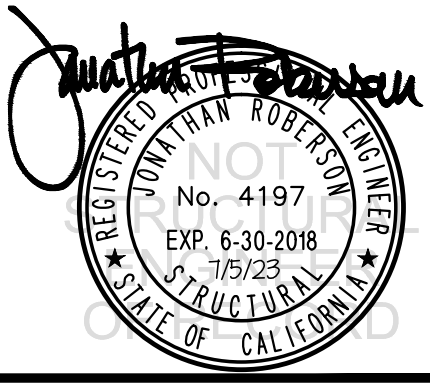
DES.	J. ROBERSON
JOB NO.	11-2316
DATE	7/5/23
SHEET	4
OF	15 SHEETS

SEISMIC SUPPORTS & ATTACHMENTS — MAX $S_{DS} \leq 1.15$ — CONCRETE SLAB



PLAN AT BASE

T_u = 1088 LB/BOLT (MAX)
V_u = 722 LB/BOLT (MAX)
(VALUES INCLUDE Ω_o)

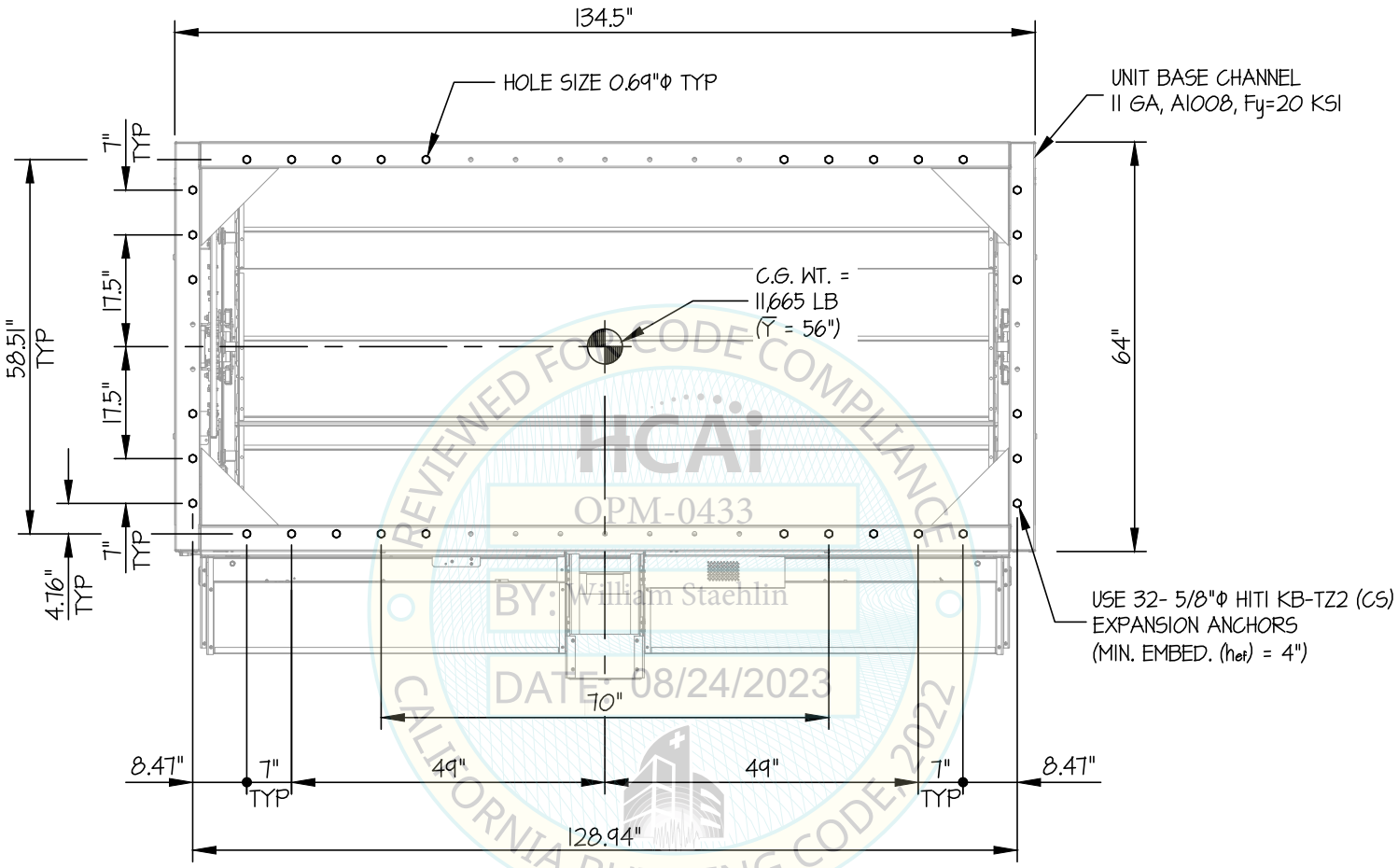


SenCorpWhite

VERTICAL CAROUSELS (2212148 SERIES)

DES.	J. ROBERSON
JOB NO.	11-2316
DATE	7/5/23
SHEET	5
OF	15 SHEETS

SEISMIC SUPPORTS & ATTACHMENTS — MAX $S_{DS} \leq 1.15$ — CONCRETE SLAB



PLAN AT BASE

T_u = 1009 LB/BOLT (MAX)
V_u = 601 LB/BOLT (MAX)
(VALUES INCLUDE Ω_o)

JONATHAN ROBERSON
REGISTERED PROFESSIONAL ENGINEER
No. 4197
EXP. 6-30-2018
STRUCTURAL
STATE OF CALIFORNIA
7/5/23

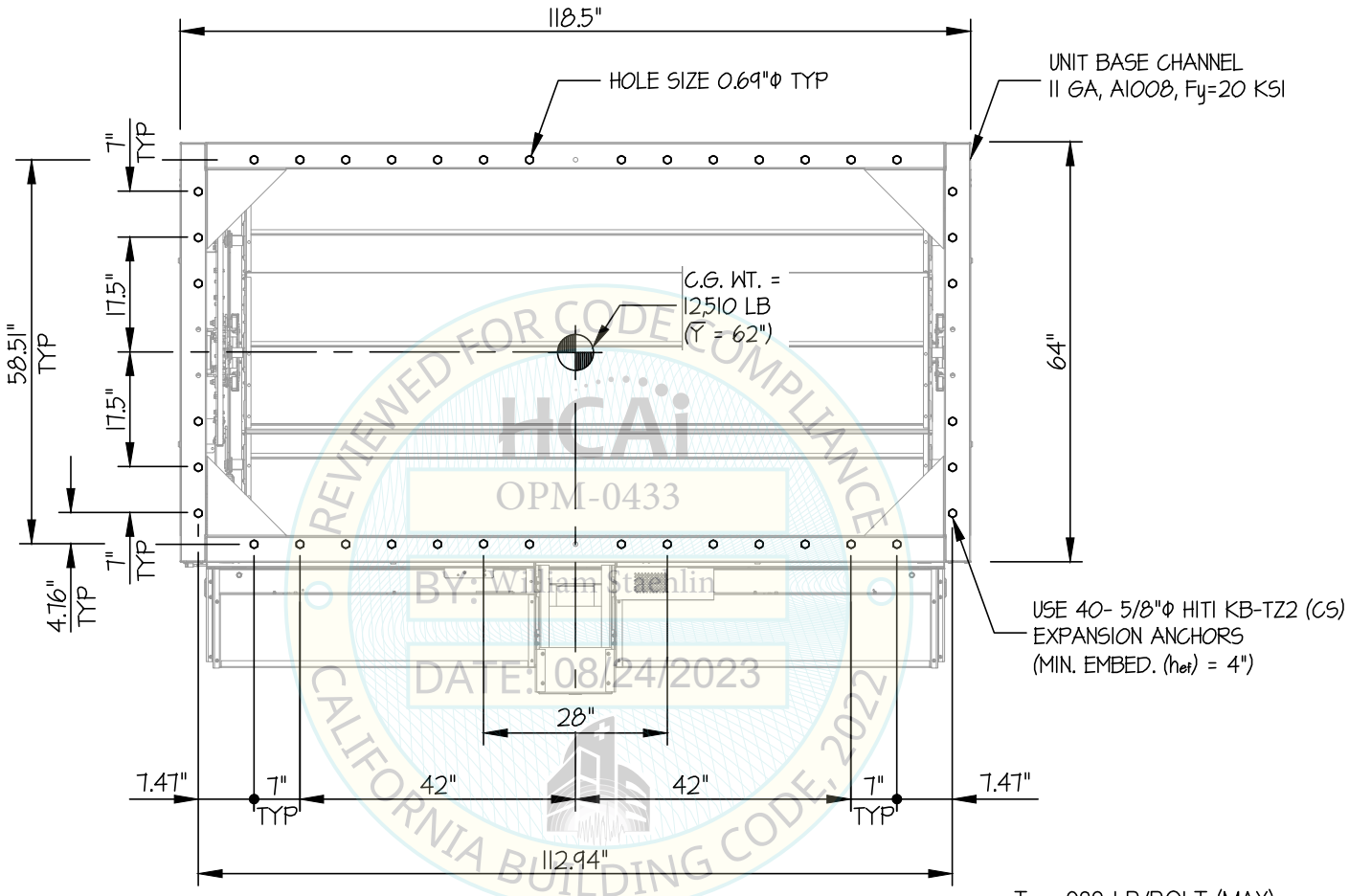
SenCorpWhite

VERTICAL CAROUSELS (2212162 SERIES)

DES. J. ROBERSON
JOB NO. 11-2316
DATE 7/5/23

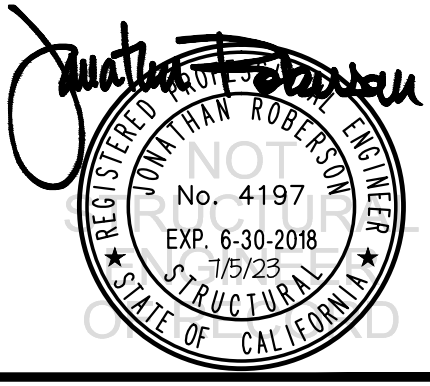
SHEET 6 OF 15 SHEETS

SEISMIC SUPPORTS & ATTACHMENTS — MAX $S_{DS} \leq 1.15$ — CONCRETE SLAB



PLAN AT BASE

T_u = 982 LB/BOLT (MAX)
V_u = 530 LB/BOLT (MAX)
(VALUES INCLUDE Ω_o)

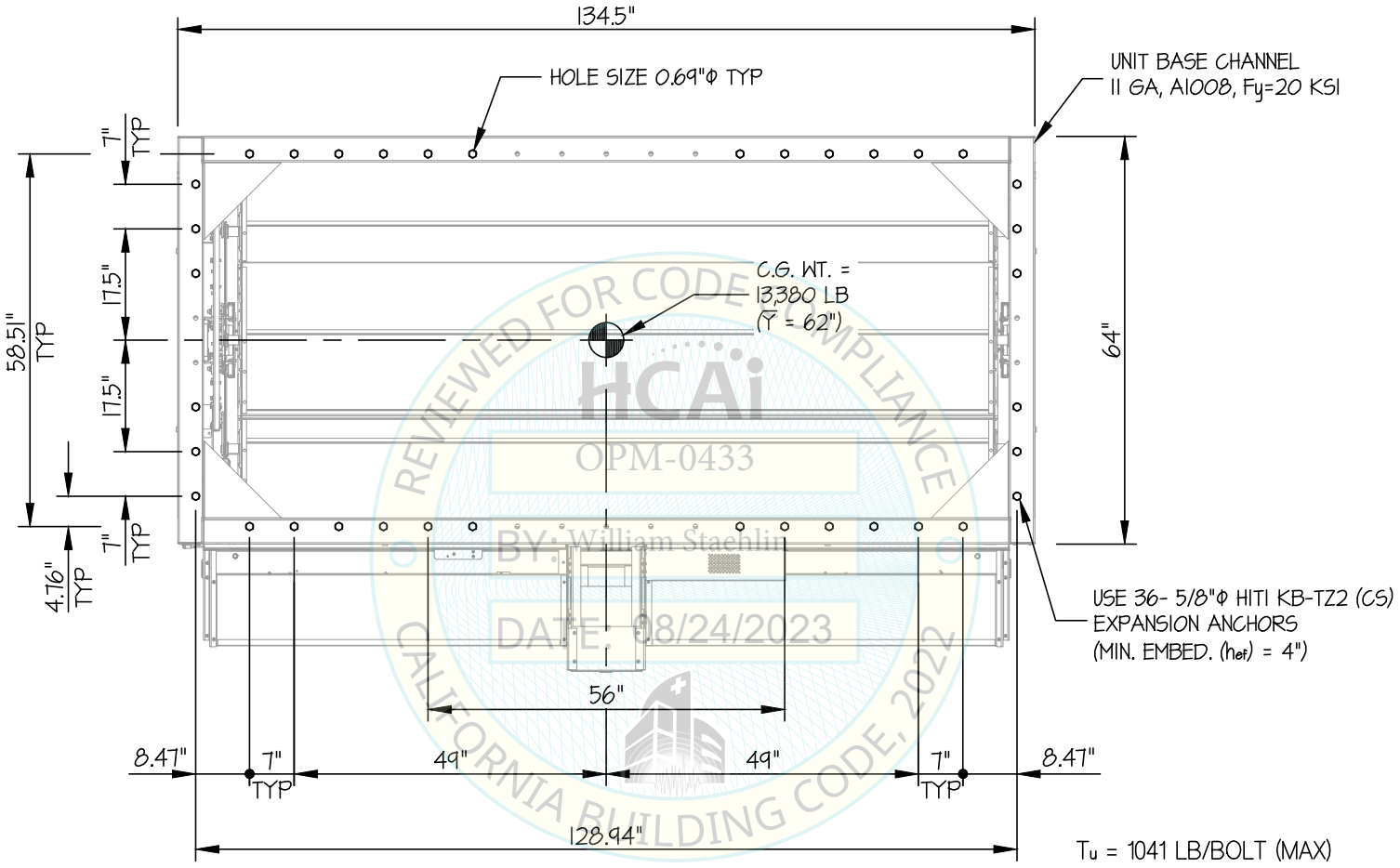


SenCorpWhite

VERTICAL CAROUSELS (2212168 SERIES)

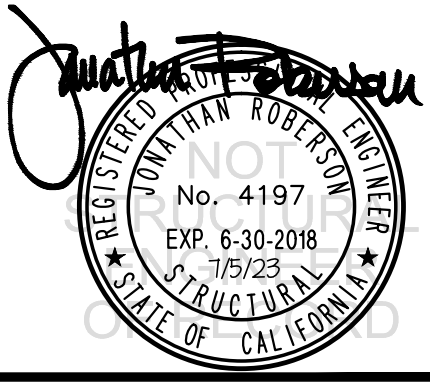
DES.	J. ROBERSON
JOB NO.	11-2316
DATE	7/5/23
SHEET	7
OF	15 SHEETS

SEISMIC SUPPORTS & ATTACHMENTS — MAX $S_{DS} \leq 1.60$ — CONCRETE SLAB



PLAN AT BASE

T_u = 1041 LB/BOLT (MAX)
V_u = 571 LB/BOLT (MAX)
(VALUES INCLUDE Ω_o)

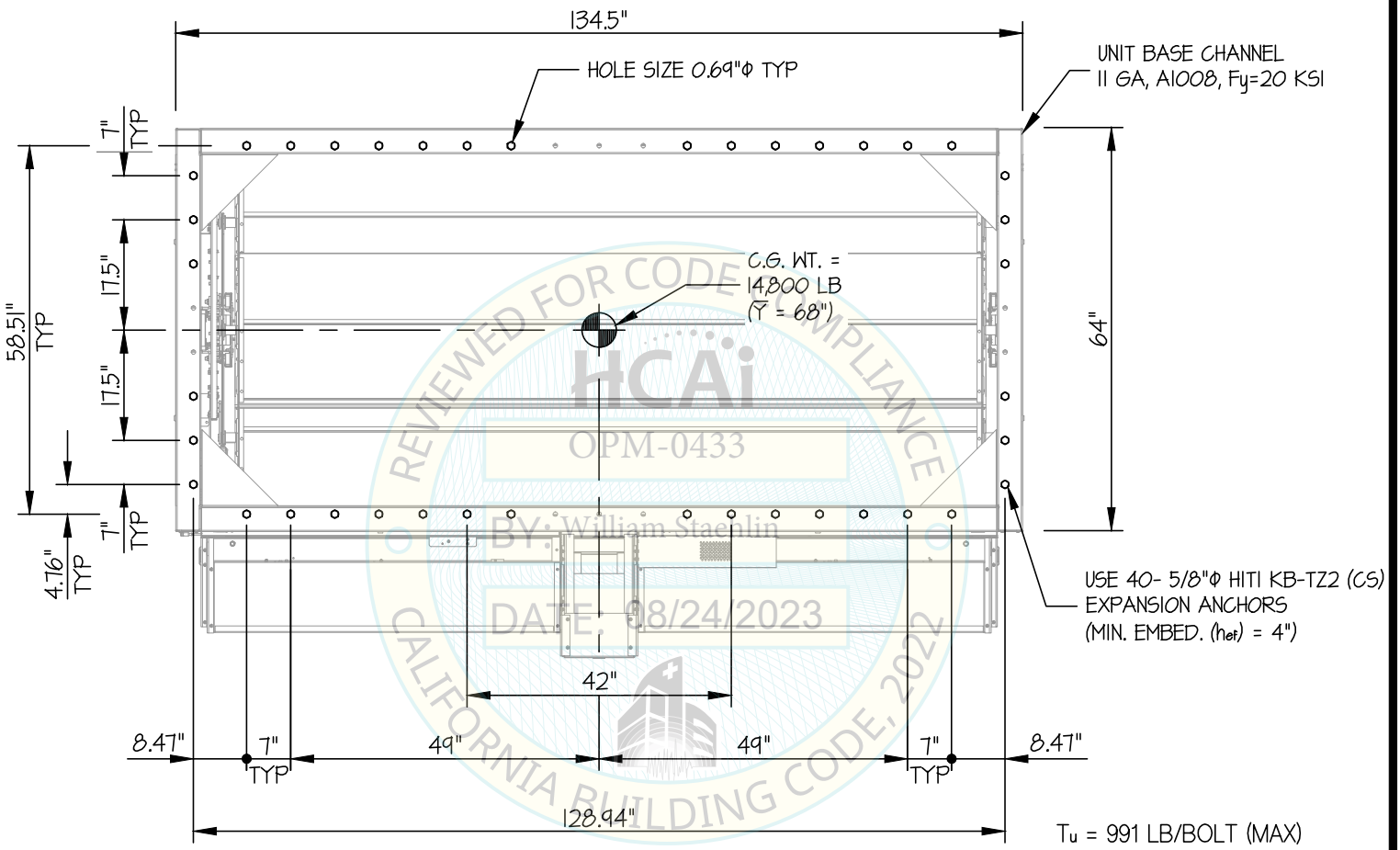


SenCorpWhite

VERTICAL CAROUSELS (2212188 SERIES)

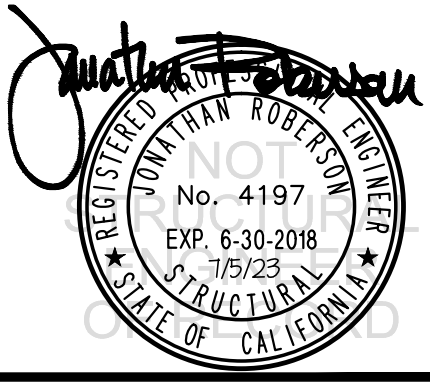
DES.	J. ROBERSON
JOB NO.	11-2316
DATE	7/5/23
SHEET	8
OF	15 SHEETS

SEISMIC SUPPORTS & ATTACHMENTS — MAX $S_{DS} \leq 1.45$ — CONCRETE SLAB



PLAN AT BASE

T_u = 991 LB/BOLT (MAX)
V_u = 506 LB/BOLT (MAX)
(VALUES INCLUDE Ω_o)



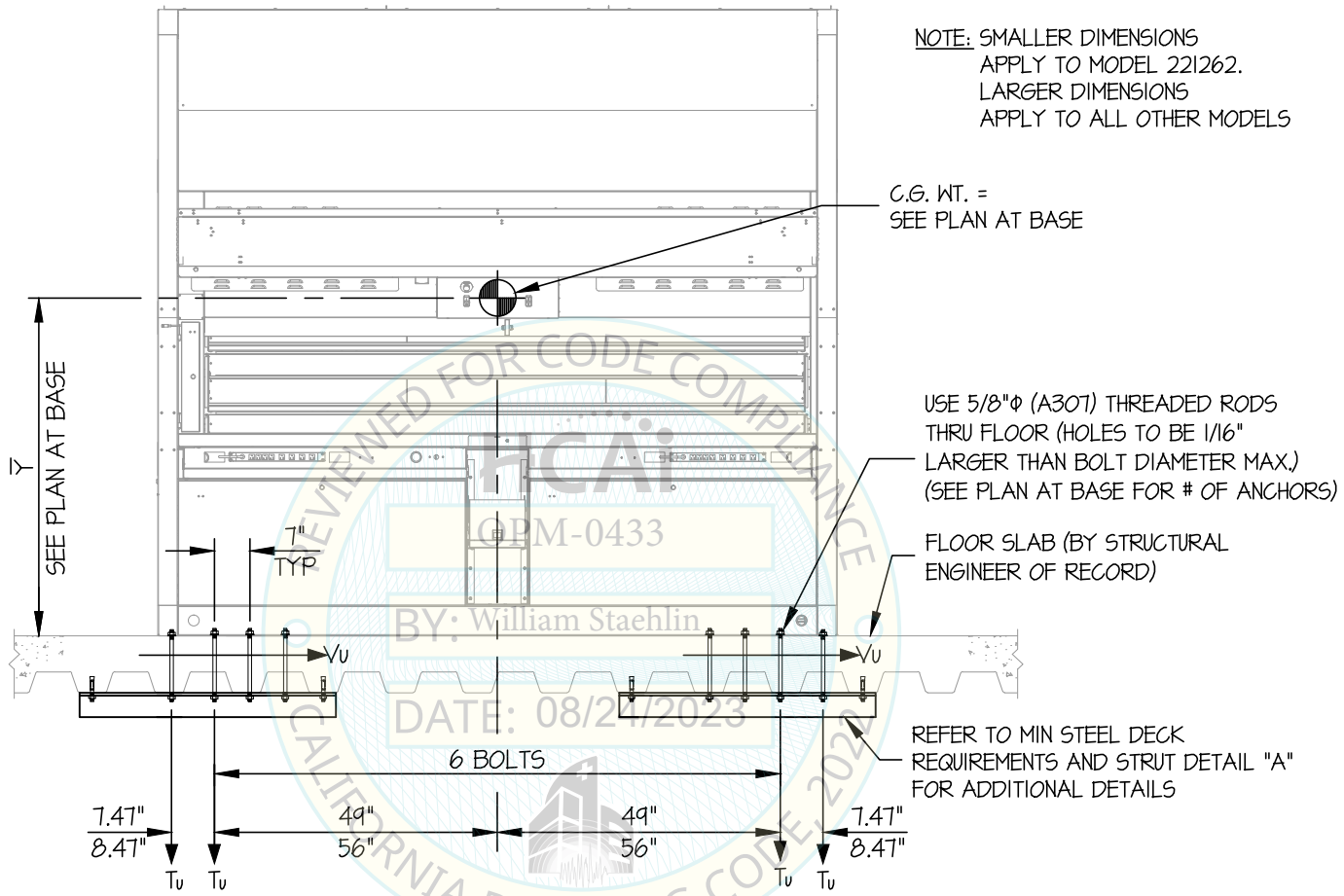
SenCorpWhite

VERTICAL CAROUSELS (22121XX SERIES)

DES. J. ROBERSON
JOB NO. 11-2316
DATE 7/5/23
SHEET 9 OF 15 SHEETS

SEISMIC SUPPORTS & ATTACHMENTS

CONCRETE SLAB ON METAL DECK



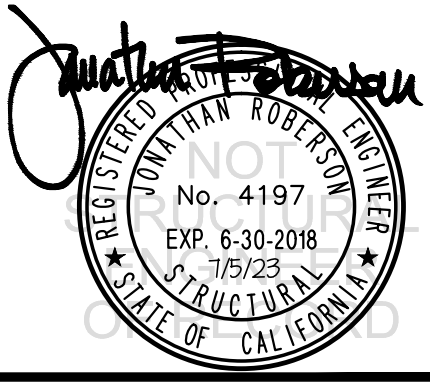
FRONT ELEVATION
(MODEL 2212168 SHOWN)

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 = 1.0, I_p = 1.5, R_p = 1.5, Ω_o = 2.0, z/h ≤ 1)

   HORIZONTAL FORCE (Eh) = 2.64 Wp
   HORIZONTAL FORCE (Emh) = 5.28 Wp (FOR CONCRETE ANCHORAGE)
   VERTICAL FORCE (Ev) = 0.44 Wp

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.
4. SEE GENERAL NOTES: SHEETS 1 AND 2



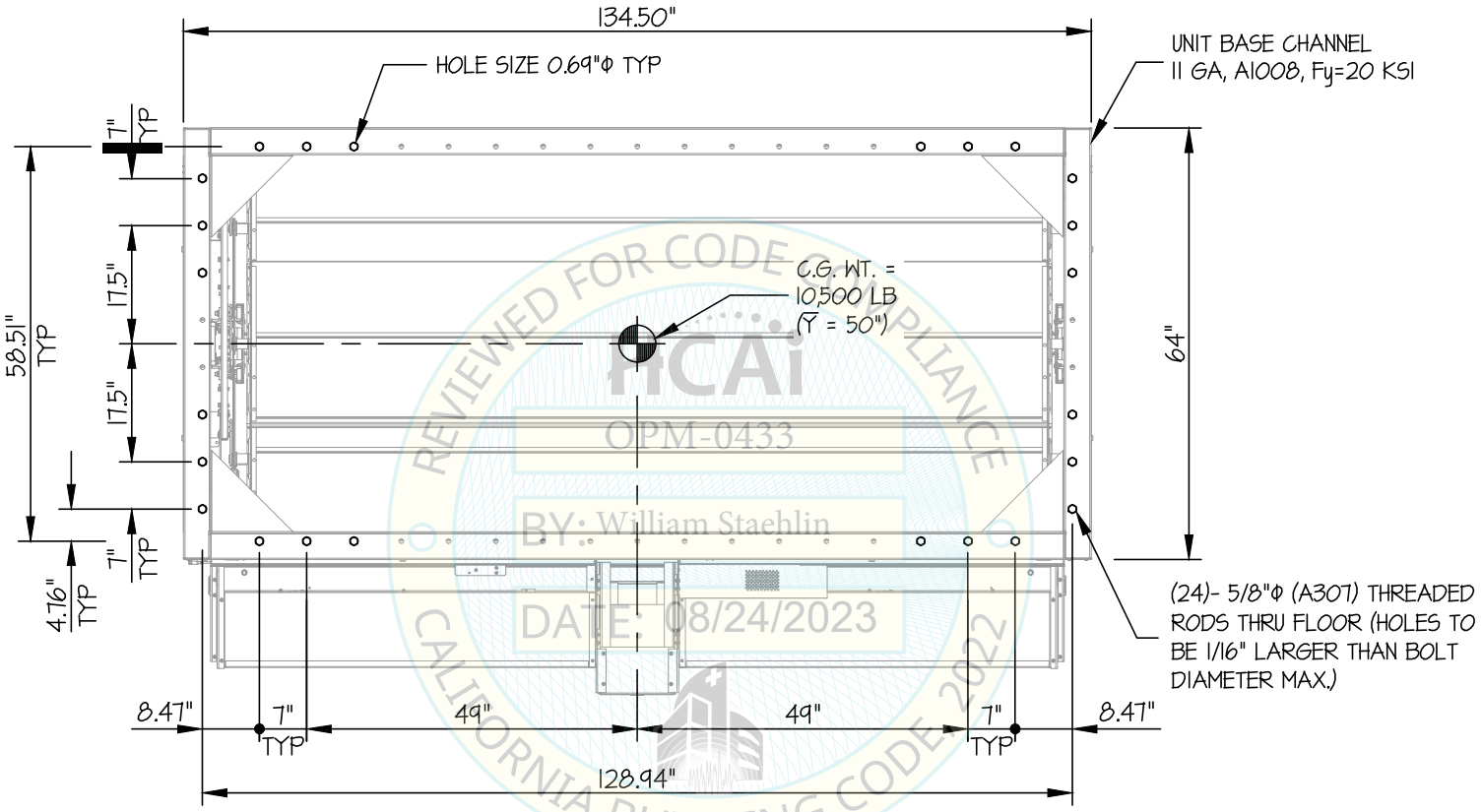
SenCorpWhite

VERTICAL CAROUSELS (2212128 SERIES)

DES.	J. ROBERSON
JOB NO.	11-2316
DATE	7/5/23
SHEET	10
OF	15 SHEETS

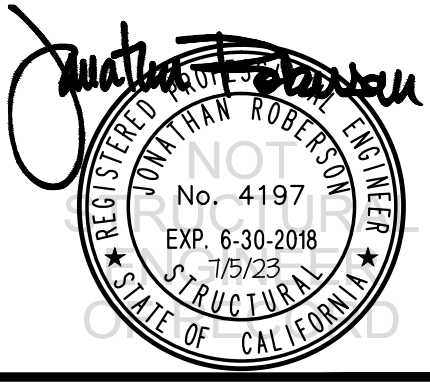
SEISMIC SUPPORTS & ATTACHMENTS

CONCRETE SLAB ON METAL DECK



PLAN AT BASE

Tu = 3320 LB/BOLT (MAX)
Vu = 1210 LB/BOLT (MAX)
(VALUES DO NOT INCLUDE Ωo)



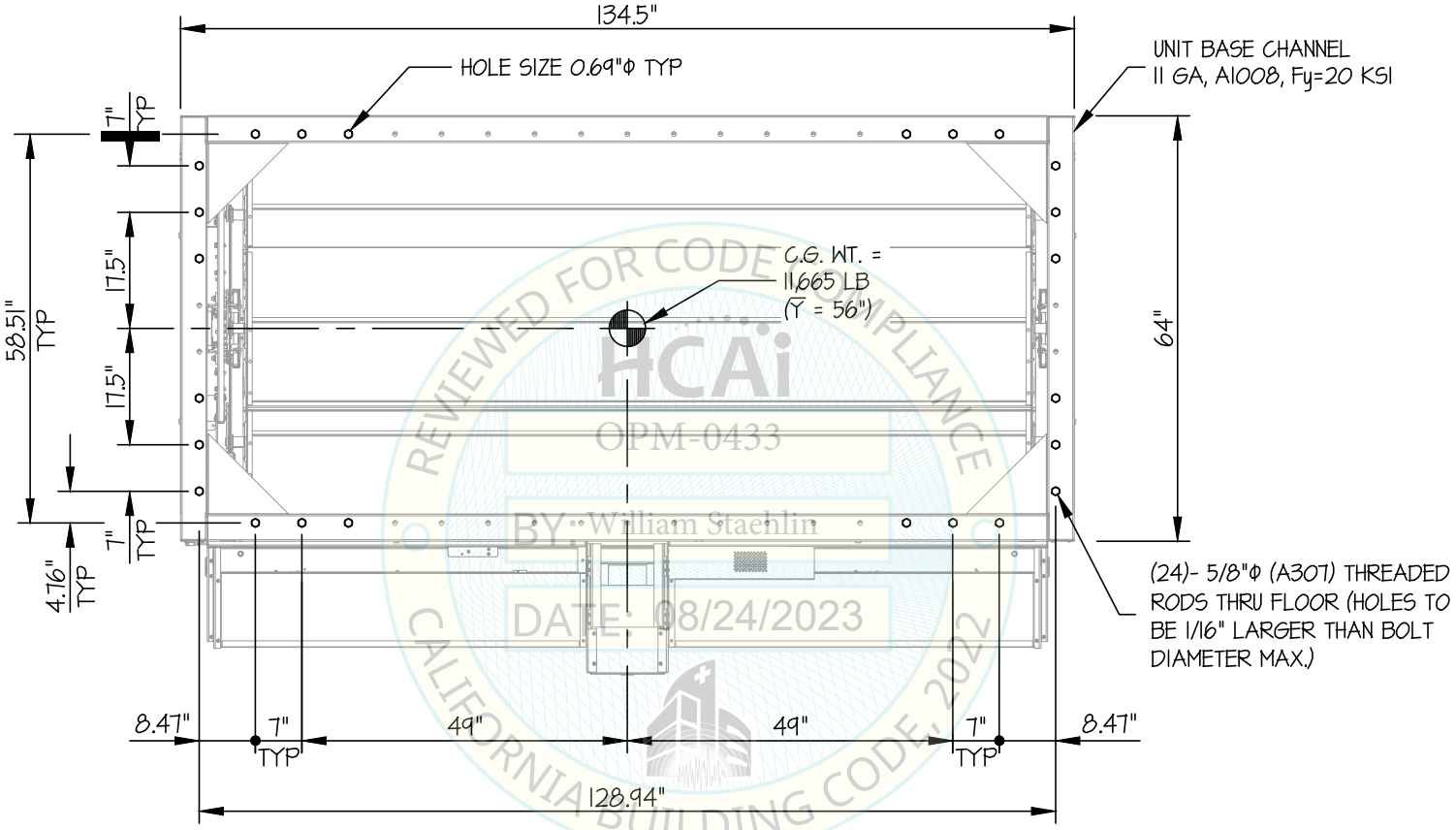
SenCorpWhite

VERTICAL CAROUSELS (2212148 SERIES)

DES.	J. ROBERSON
JOB NO.	11-2316
DATE	7/5/23
SHEET	11
OF	15 SHEETS

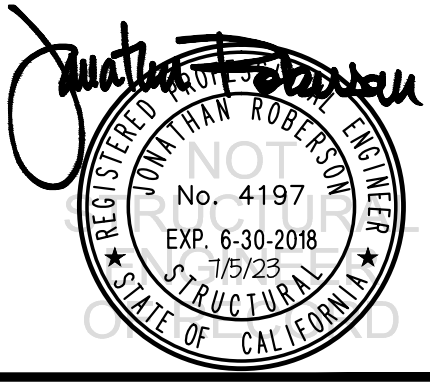
SEISMIC SUPPORTS & ATTACHMENTS

CONCRETE SLAB ON METAL DECK



PLAN AT BASE

Tu = 4110 LB/BOLT (MAX)
Vu = 1340 LB/BOLT (MAX)
(VALUES DO NOT INCLUDE Ω_0)



SenCorpWhite

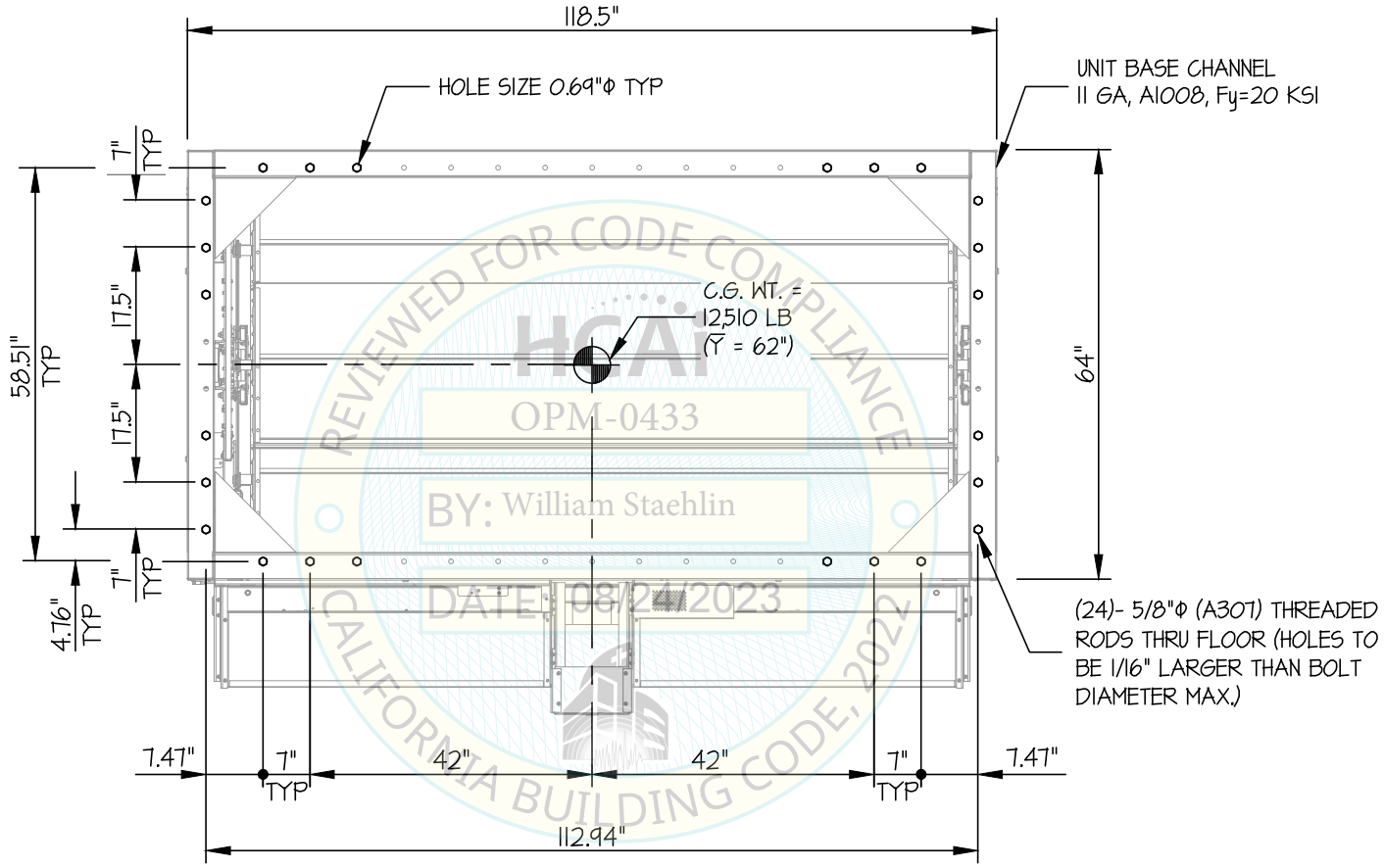
VERTICAL CAROUSELS (2212162 SERIES)

DES. J. ROBERSON
JOB NO. 11-2316
DATE 7/5/23

SHEET 12 OF 15 SHEETS

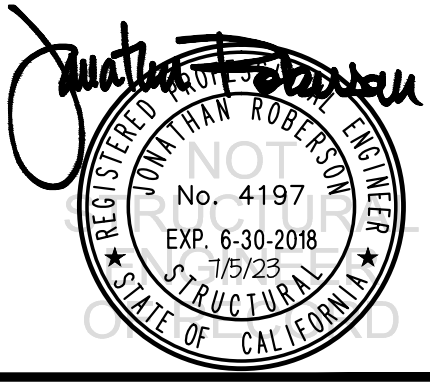
SEISMIC SUPPORTS & ATTACHMENTS

CONCRETE SLAB ON METAL DECK



PLAN AT BASE

Tu = 4920 LB/BOLT (MAX)
Vu = 1440 LB/BOLT (MAX)
(VALUES DO NOT INCLUDE Ω_0)



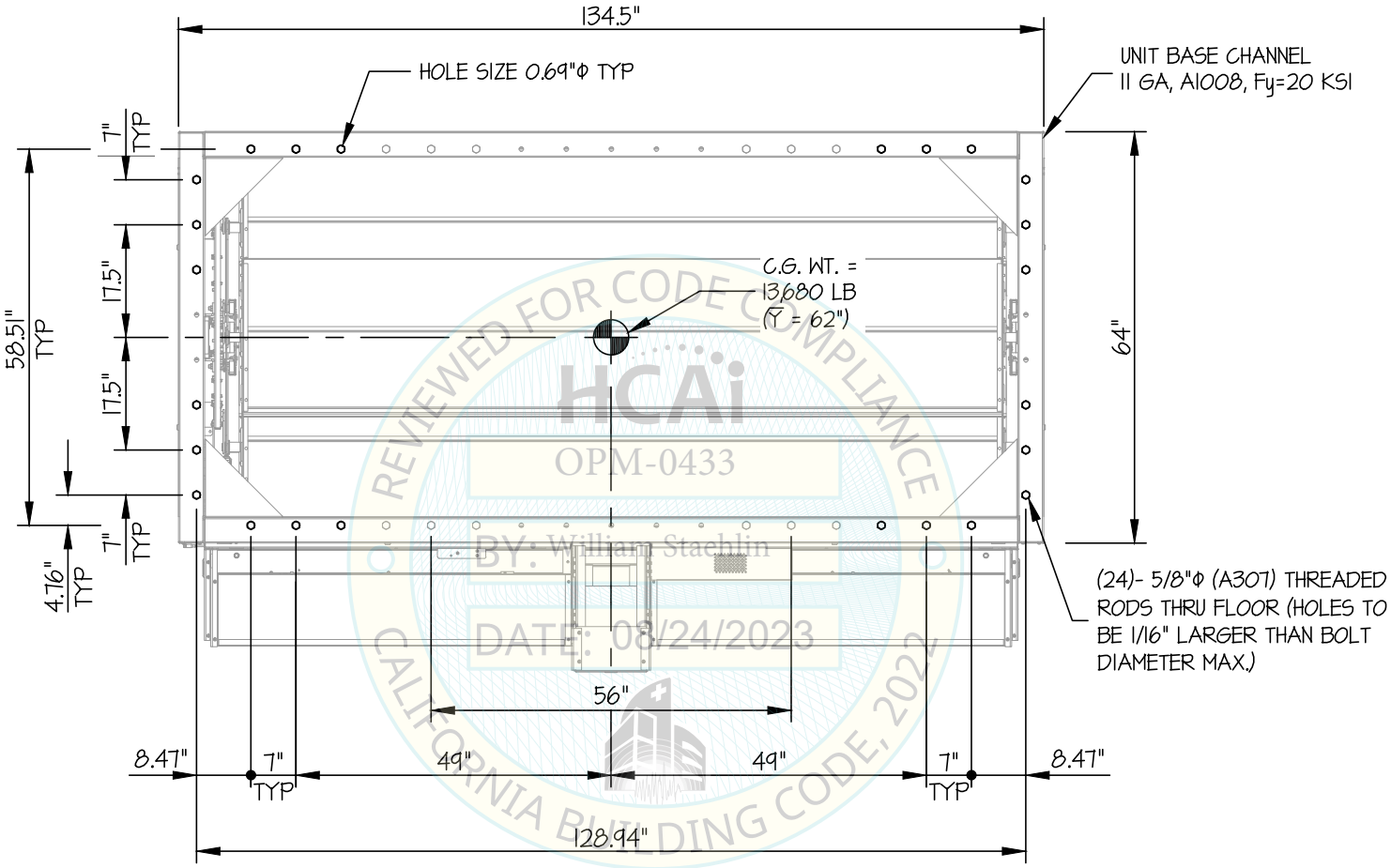
SenCorpWhite

VERTICAL CAROUSELS (2212168 SERIES)

DES.	J. ROBERSON
JOB NO.	11-2316
DATE	7/5/23
SHEET	13
OF	15 SHEETS

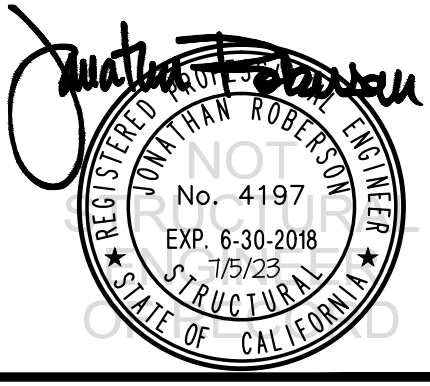
SEISMIC SUPPORTS & ATTACHMENTS

CONCRETE SLAB ON METAL DECK



PLAN AT BASE

Tu = 5560 LB/BOLT (MAX)
Vu = 1570 LB/BOLT (MAX)
(VALUES DO NOT INCLUDE Ω_0)



SenCorpWhite

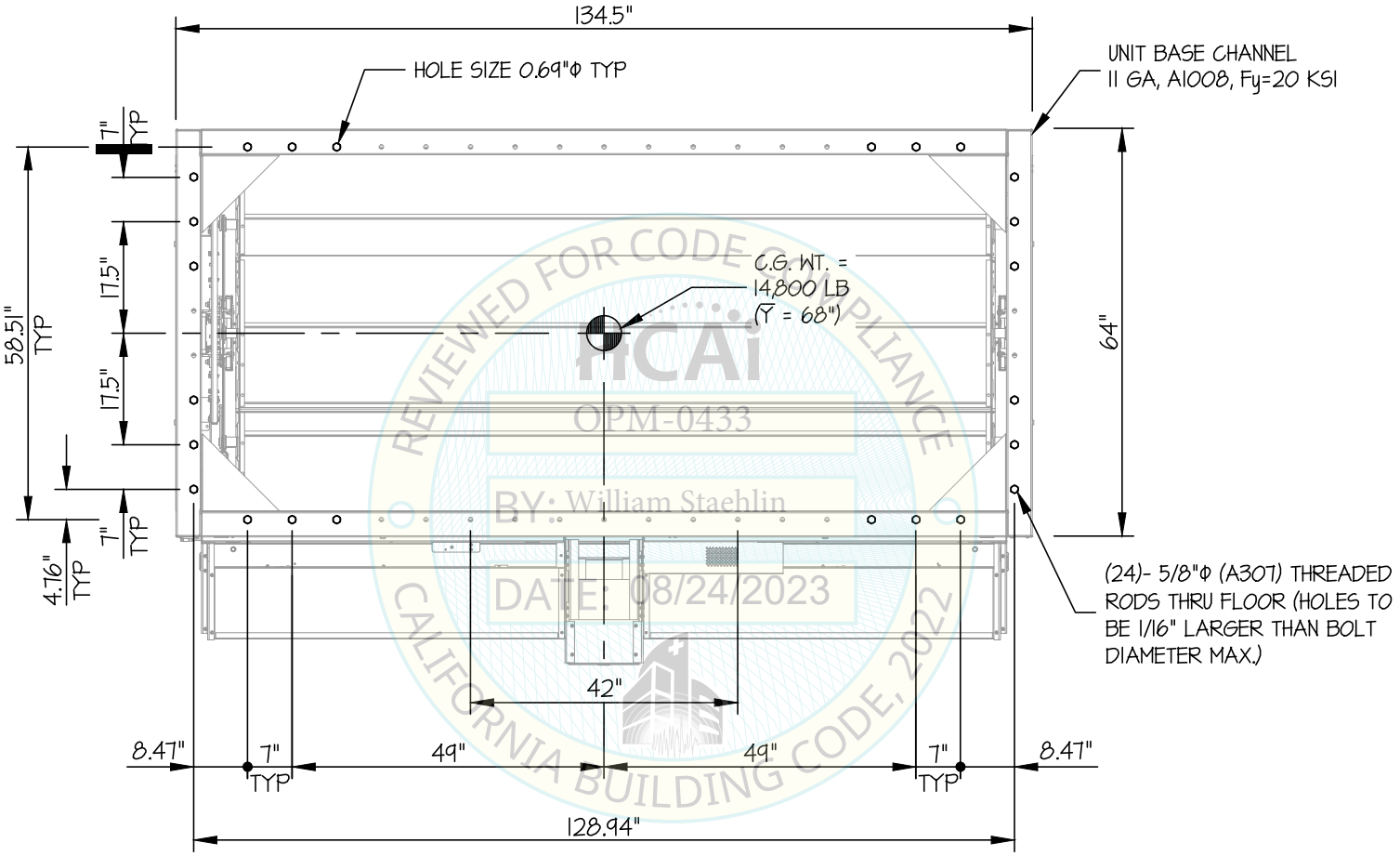
VERTICAL CAROUSELS (2212188 SERIES)

DES.	J. ROBERSON
JOB NO.	11-2316
DATE	7/5/23

SHEET 14 OF 15 SHEETS

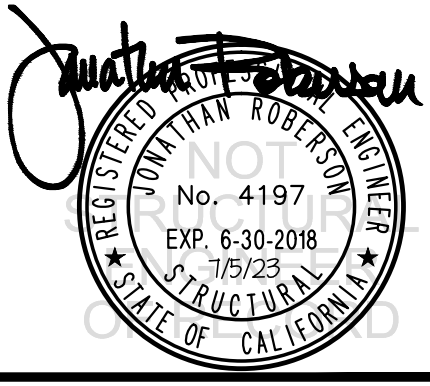
SEISMIC SUPPORTS & ATTACHMENTS

CONCRETE SLAB ON METAL DECK



PLAN AT BASE

Tu = 6270 LB/BOLT (MAX)
Vu = 1700 LB/BOLT (MAX)
(VALUES INCLUDE Ω_0)



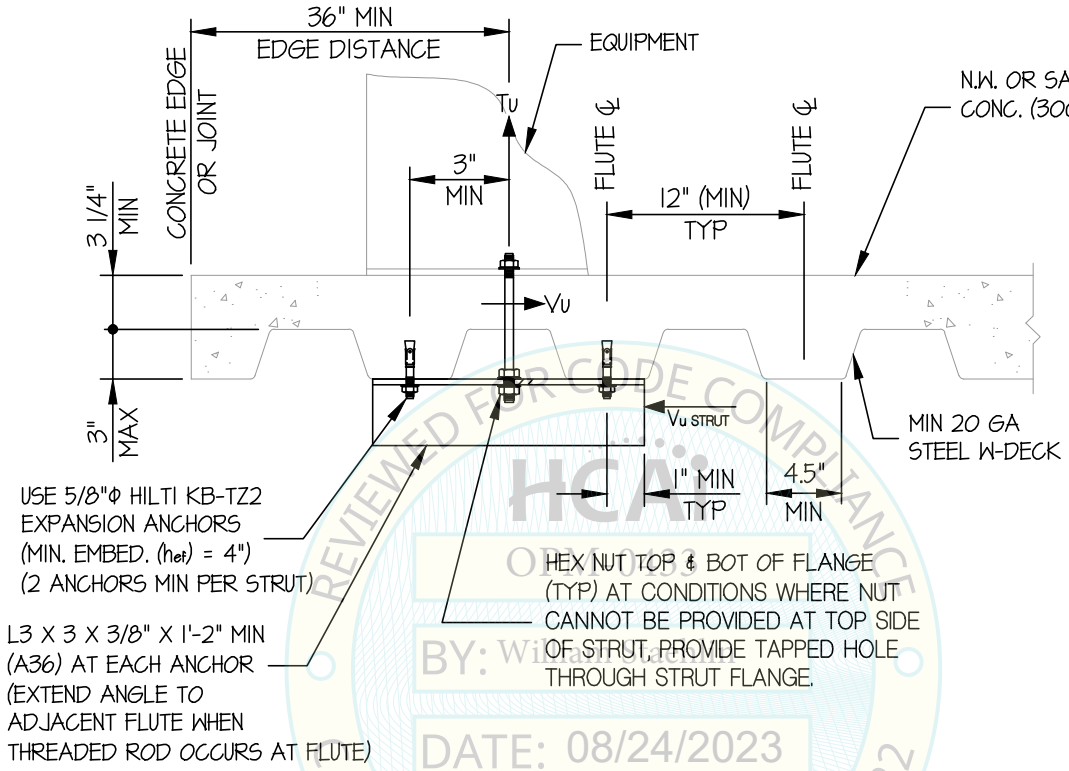
SenCorpWhite

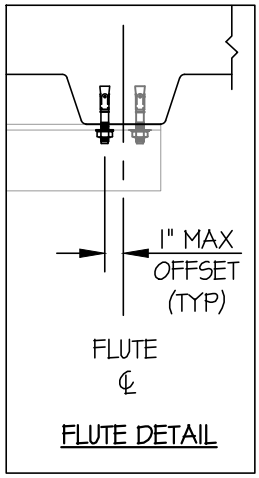
VERTICAL CAROUSELS (22121XX SERIES)

DES.	J. ROBERSON
JOB NO.	11-2316
DATE	7/5/23
SHEET	15
OF	15 SHEETS

SEISMIC SUPPORTS & ATTACHMENTS

CONCRETE DETAIL





MIN STEEL DECK REQUIREMENTS AND STRUT DETAIL (A)