



DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
FACILITIES DEVELOPMENT DIVISION

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

OFFICE USE ONLY

APPLICATION #: OPM-0663

HCAI Preapproval of Manufacturer's Certification (OPM)

Type: New Renewal/Update

Manufacturer Information

Manufacturer: Avidicare AB

Manufacturer's Technical Representative: Peter Hojerback

Mailing Address: Medicon Village - Scheelevagen 2, Lund, Sc 22381

Telephone: () -

Email: Peter.Hojerback@avidicare.com

Product Information

Product Name: Opragon 8

OPM-0663

Product Type: Ceiling Diffuser for Operating Rooms

Product Model Number: Opragon 8

BY: William Staehlin

General Description: Part of an overhead integrated ventilation system for temperature controlled airflow (TcAF).

DATE: 09/02/2022

Applicant Information

Applicant Company Name: CYS Structural Engineers, Inc.

Contact Person: Dieter Siebald

Mailing Address: 2495 Natomas Park Drive, Suite 650, Sacramento, CA 95833

Telephone: (916) 920-2020

Email: dieters@cyseng.com

Title: Structural Engineer/Project Manager

"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: CYS STRUCTURAL ENGINEERS, INC.

Name: Dieter Siebald California License Number: S4346

Mailing Address: 2495 Natomas Park Drive, Suite 650, Sacramento, CA 95833

Telephone: (916) 920-2020 Email: dieters@cyseng.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

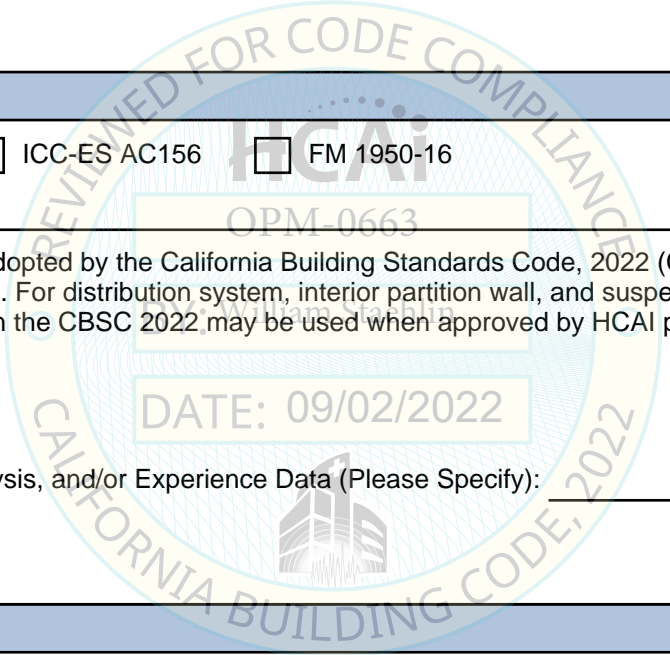
Combination of Testing, Analysis, and/or Experience Data (Please Specify): _____

HCAI Approval

Date: 9/2/2022

Name: William Staehlin Title: Senior Structural Engineer

Condition of Approval (if applicable): _____



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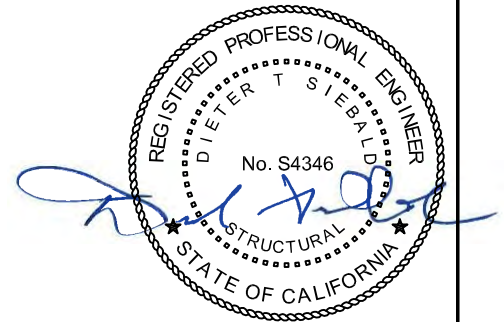


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NOTES:

1. THESE DRAWINGS ARE PREPARED FOR AVIDICARE, LUND, SWEDEN.
2. THE CONTRACTOR & INSPECTOR OF RECORD SHALL OBTAIN A COPY OF THIS PRE-APPROVAL FROM THE CALIFORNIA DEPARTMENT OF HEALTHCARE ACCESS & INFORMATION (HCAI) PREAPPROVAL PROGRAMS WEBSITE.
3. THIS PRE-APPROVAL COVERS THE SUPPORTS AND ATTACHMENTS OF THE EQUIPMENT TO THE SUPPORTING STRUCTURE. THE EQUIPMENT IS SUPPLIED BY THE MANUFACTURER. THE SUPPORTS, ATTACHMENT HARDWARE & EXPANSION ANCHORS SHOWN IN THIS OPM SHALL BE SUPPLIED & INSTALLED BY THE CONTRACTOR.
4. THE OPRAGON 8 IS PART OF A MECHANICAL DUCT SYSTEM. THIS OPM IS ONLY FOR THE OPRAGON 8 COMPONENT & ITS SUPPORT & ATTACHMENT TO STRUCTURE. ALL OTHER COMPONENTS OF THE MECHANICAL DUCT SYSTEM & CEILING SYSTEM MUST MEET THE HCAI STRUCTURAL SUPPORT & ATTACHMENT TO STRUCTURE REQUIREMENTS FOR HOSPITALS AS PROVIDED IN THE CALIFORNIA BUILDING CODE.



SHEET TITLE: TABLE OF CONTENTS



CYS STRUCTURAL ENGINEERS, INC.

2495 NATOMAS PARK DRIVE, SUITE 650
SACRAMENTO, CA 95833

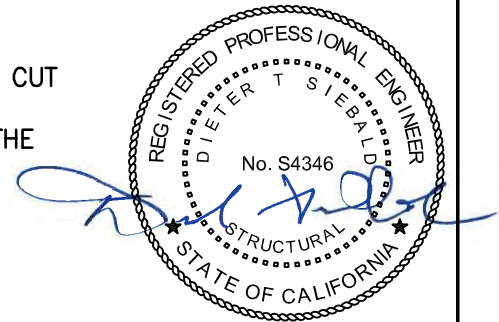
TEL (916) 920-2020
www.cyseng.com

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GENERAL NOTES:

1. THIS HCAI PRE-APPROVAL OF MANUFACTURER'S CERTIFICATION (OPM) IS BASED ON THE 2022 CBC. THE DEMAND (DESIGN FORCES) FOR USE W/ THIS OPM SHALL BE BASED ON THE 2022 CBC.
2. IT IS THE RESPONSIBILITY OF THE STRUCTURAL ENGINEER OF RECORD FOR A SITE SPECIFIC PROJECT TO VERIFY:
 - A. THE ADEQUACY OF THE NEW OR (E) 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 FLR ANCHORS ARE LOCATED AT AN ADEQUATE DISTANCE FROM ANY SLAB EDGES OR OPGS.
 - C. THAT THE FLR ANCHORS ARE LOCATED AT AN ADEQUATE DISTANCE FROM ANY NEW OR (E) ANCHORS. THE SPCG SHOWN IN THE TEST LOADS IN TABLE 1 ON PG 3 IS THE REQ MIN SPCG OF THE GIVEN DIA ANCHORS. THE REQ SPCG FROM ANCHORS OF OTHER DIA & EMBEDMENTS MAY VARY & SHALL BE EVALUATED BY THE SEOR.
 - D. THAT THE INSTALLATION IS IN CONFORMANCE W/ THE 2022 CBC & W/ THE DTLs SHOWN IN THIS PRE-APPROVAL.
 - E. THAT THE ACTUAL EQUIP'S WT, CENTER OF GRAVITY (CG) LOCATION, ANCHOR LOCATIONS, ANCHOR DTLs, & THE MATERIAL & GA OF THE EQUIP WHERE ATTACHMENTS ARE MADE, AGREE W/ THE INFO SHOWN ON THE PRE-APPROVAL DOCUMENTS.
 - F. THAT THE CONC SLAB TO WHICH THE EQUIP IS ANCHORED SHALL MEET THE REQUIREMENTS OF THE APPLICABLE ICC REPORT & THIS OPM.
3. EXPANSION ANCHORS INSTALLED IN NWC OR SLWC SHALL BE CARBON STL HILTI KB-TZ2 EXPANSION ANCHORS COMPLYING W/ ESR-4266 REISSUED DECEMBER 2021, REVISED DECEMBER 17, 2021.
 - 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. PROVIDE FULL THRD ENGAGEMENT FOR NUT & WASHER.
 - B. JOB TESTING: FOR VERIFYING SATISFACTORY INSTALLATION WORKMANSHIP, PERFORM JOB SITE TESTING IN ACCORDANCE W/ THE TEST LOAD TABLE PROVIDED IN THIS DOCUMENT. TORQUE 50% OF THE INSTALLED ANCHORS. ALL TESTS SHALL BE CONDUCTED IN THE PRESENCE OF THE SPECIAL INSPECTOR & REPORT OF TEST RESULTS SHALL BE SUBMITTED TO THE INSPECTOR OF RECORD, OWNER & ARCHITECT OR ENGINEER IN RESPONSIBLE CHARGE. 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, HOWEVER, THE NUT SHALL BE RETORQUED TO INSTALLATION TORQUE AFTER EQUIP INSTALL. ALSO, REFER TO 2022 CBC 1910A.5 "TESTS FOR POST-INSTALLED ANCHORS IN CONCRETE".
 - C. FAILURE/ACCEPTANCE CRITERIA: THE FOLLOWING CRITERIA APPLIES FOR THE ACCEPTANCE OF INSTALLED ANCHORS:
 - TORQUE WRENCH METHOD: THE APPLICABLE TEST TORQUE MUST BE REACHED WITHIN THE FOLLOWING LIMITS: WEDGE TYPE:
ONE-HALF (½) TURN OF THE NUT.
 - D. (E) STL REINF IN CONC SLABS OR BMS MUST NOT BE DAMAGED OR CUT WHEN INSTALLING CONC EXPANSION ANCHORS.
 - E. TEST VALUES: APPLY TEST LOADS TO ANCHORS WITHOUT REMOVING THE NUT IF POSSIBLE. SEE TABLE ON PG 3.



SHEET TITLE: GENERAL NOTES (CONTINUED)

<p>CYS STRUCTURAL ENGINEERS, INC. 2495 NATOMAS PARK DRIVE, SUITE 650 SACRAMENTO, CA 95833</p>	TEL (916) 920-2020 www.cyseng.com	Job No: 22047 Date: 08/30/2022 Page: 2 of 12
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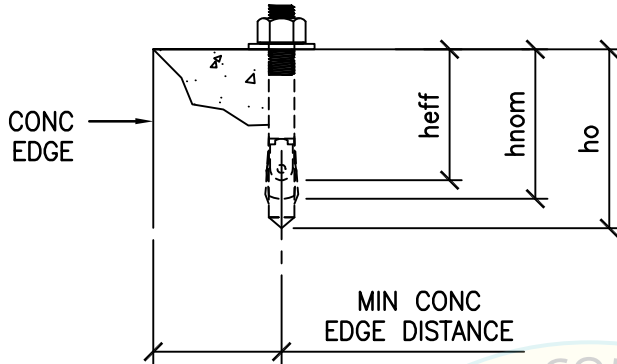
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OPRAGON 8



GENERAL NOTES (CONTINUED):

4. EXPANSION ANCHORS TO BOTT OF CONC FILL OVER MTL DECK & CONC SLABS OR BMS:
 A. HILTI KB-TZ2 (ICC ESR-4266) TENSION TEST LOAD FOR CASE 1 & CASE 2, SEE TABLE BLW & GENERAL NOTE 5.

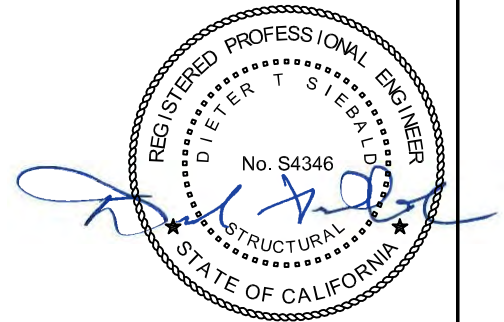


TABLE

CONDITION OF ANCHORAGE	ANCHOR DIA (INCH) d_a	INSTALLATION EMBED (INCH) h_{nom}	EFFECTIVE EMBED (INCH) h_{ef}	HOLE DEPTH (INCH) h_o	MIN THK (INCH) h_{min}	MIN CONC EDGE DISTANCE (INCH)	MIN AB SPCG (INCH)	TEST LOAD TORQUE (FT-LBS)
CASE 1	1/2	3	2 1/2	3 1/4	3 1/4	1*	5 1/2	50
CASE 2	1/2	2 1/2	2	2 3/4	4	12	5 1/2	50

*SEE PG 9 IN THIS OPM & FIGURE 5A IN ESR-4266

DATE: 09/02/2022



SHEET TITLE: GENERAL NOTES (CONTINUED)



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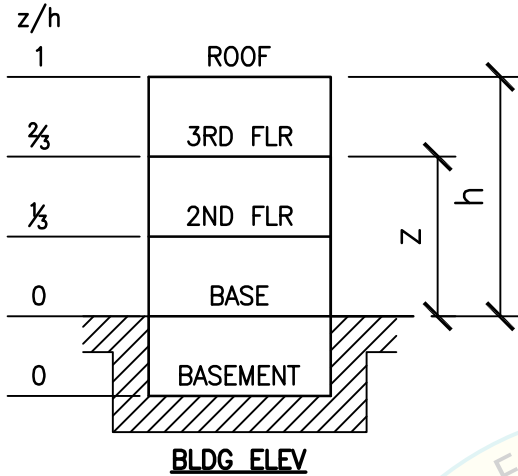
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GENERAL NOTES (CONTINUED):

5. THREE (3) CASES OF ATTACHMENT ARE SPECIFIED & PRESENTED IN THIS PRE-APPROVAL:

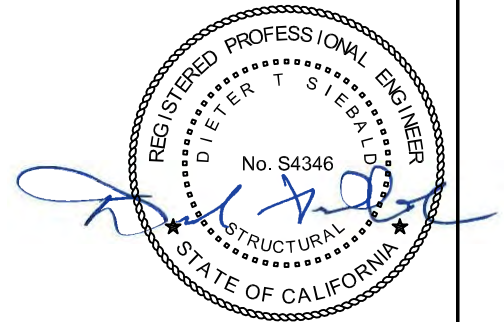


CASE 1: CONC FILL OVER MTL DECK: THE FLRS OR ROOFS CONSIST OF A MIN 3¼" SLWC TOPPING OVER 3" DEEP MAX 20 GA MTL DECK (f'c = 3000 PSI, MIN).

CASE 2: SUSPENDED CONC SLAB OR BM: THE FLRS OR ROOFS ARE ASSUMED TO BE BUILT OF A MIN 4" THICK NWC SLAB &/OR 6" MIN WIDE NWC BM (f'c = 3000 PSI, MIN).

CASE 3: STL FRAMING: STEEL BEAM TYPES ARE ASSUMED TO BE I-BEAMS OR OPEN WEB STL JOISTS.

6. THIS PRE-APPROVAL MAY BE USED AT ANY GEOGRAPHICAL LOCATION IN THE STATE OF CALIFORNIA WHERE $S_{DS} \leq 2.5$ & $z/h \leq 1.0$.



SHEET TITLE: GENERAL NOTES (CONTINUED)



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DESIGN CRITERIA:

DESIGN OF SUPPORTS & ATTACHMENTS FOR ALL EQUIP COMPONENTS IS PER 2022 CBC,

ASCE 7-16 TABLE 13.6-1

DISTRIBUTION SYSTEMS – DUCTWORK INCLUDING IN-LINE COMPONENTS, CONSTRUCTED OF HIGH OR LIMITED DEFORMABILITY MATERIALS W/ JOINTS MADE BY MEANS OTHER THAN WELDING OR BRAZING.

$$S_{DS} = 2.5$$

$$I_p = 1.5$$

$$\alpha_p = 2.5$$

$$R_p = 6.0$$

$$\Omega_b = 2.0 \text{ (FOR CONC AB ONLY)}$$

$$W_p = 276\#$$

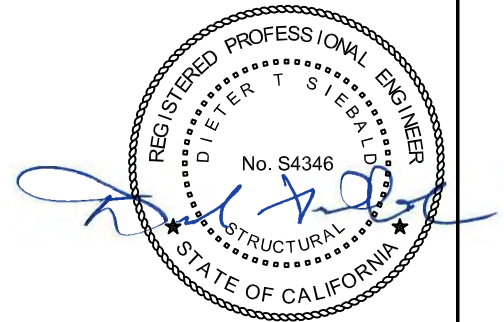
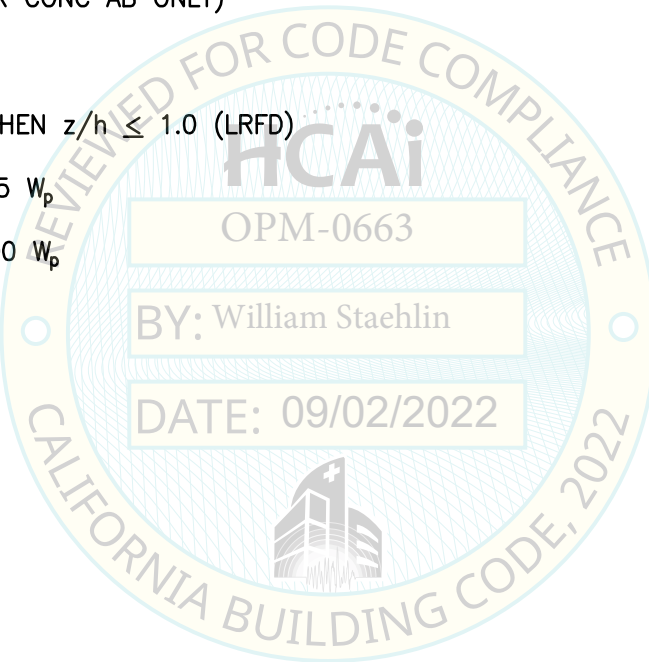
MAX SEISMIC LOADS WHEN $z/h \leq 1.0$ (LRFD)

$$F_p \text{ (MIN)} = 1.125 W_p$$

$$F_p \text{ (MAX)} = 6.000 W_p$$

$$F_p = 1.875 W_p$$

$$F_v = 0.50 W_p$$



SHEET TITLE: DESIGN CRITERIA



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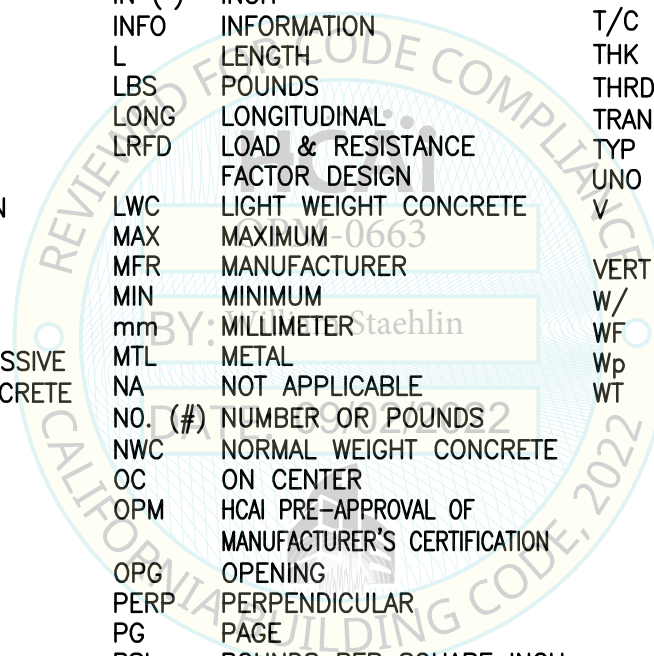
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OPRAGON 8



ABBREVIATIONS:

⊙	AT	Fp	HORIZONTAL SEISMIC FORCE PER ASCE/SEI 7-16 SEISMIC FORCE REQUIREMENTS	SCHED	SCHEDULE
AB	ANCHOR BOLT			STSDS	SELF-TAPPING & SELF-DRILLING SCREW
ACI®	AMERICAN CONCRETE INSTITUTE				
AISC®	AMERICAN INSTITUTE OF STEEL CONSTRUCTION	Fvnet	VERTICAL FORCE RESULTANT FROM Fpw	SEOR	STRUCTURAL ENGINEER OF RECORD
ASCE®	AMERICAN SOCIETY OF CIVIL ENGINEERS	Fpv	VERTICAL SEISMIC FORCE PER ASCE 7-16 SEISMIC FORCE REQUIREMENTS	SIM	SIMILAR
ASD	ALLOWABLE STRENGTH DESIGN			SLWC	SAND LIGHTWEIGHT CONCRETE
ASTM®	AMERICAN SOCIETY FOR TESTING & MATERIALS	Fy	SPECIFIED MINIMUM YIELD STRESS OF STEEL, KSI	SMS	SHEET METAL SCREWS
BM	BEAM	GA	GAUGE	SPCG	SPACING
BLDG	BUILDING	HCAI	CALIFORNIA DEPARTMENT OF HEALTH CARE ACCESS & INFORMATION	STD	STANDARD
BLW	BELOW			STL	STEEL
CBC	CALIFORNIA BUILDING CODE			STRUC	STRUCTURAL
CG	CENTER OF GRAVITY			T	ANCHORAGE TENSION REACTION DUE TO SEISMIC FORCE
⊕	CENTERLINE	IN (")	INCH	T&B	TOP & BOTTOM
CONC	CONCRETE	INFO	INFORMATION	T/C	TENSION OR COMPRESSION
DEG	DEGREE	L	LENGTH	THK	THICK/THICKNESS
DIM	DIMENSION	LBS	POUNDS	THRD	THREAD/THREADED
DTL	DETAIL	LONG	LONGITUDINAL	TRAN	TRANSVERSE
DIA (φ)	DIAMETER	LRFD	LOAD & RESISTANCE FACTOR DESIGN	TYP	TYPICAL
(E)	EXISTING CONDITION	LWC	LIGHT WEIGHT CONCRETE	UNO	UNLESS NOTED OTHERWISE
EA	EACH	MAX	MAXIMUM	V	ANCHORAGE SHEAR REACTION DUE TO SEISMIC FORCE
EE	EACH END	MFR	MANUFACTURER	VERT	VERTICAL
ELEV	ELEVATION	MIN	MINIMUM	W/	WITH
EQUIP	EQUIPMENT	mm	MILLIMETER	WF	WIDE FLANGE
f'c	SPECIFIED COMPRESSIVE STRENGTH OF CONCRETE	MTL	METAL	Wp	WEIGHT OF COMPONENT
FLR	FLOOR	NA	NOT APPLICABLE	WT	WEIGHT
		NO. (#)	NUMBER OR POUNDS		
		NWC	NORMAL WEIGHT CONCRETE		
		OC	ON CENTER		
		OPM	HCAI PRE-APPROVAL OF MANUFACTURER'S CERTIFICATION		
		OPG	OPENING		
		PERP	PERPENDICULAR		
		PG	PAGE		
		PSI	POUNDS PER SQUARE INCH		
		R	RADIUS OF GYRATION		
		REINF	REINFORCING/REINFORCEMENT		
		REQ	REQUIRED		



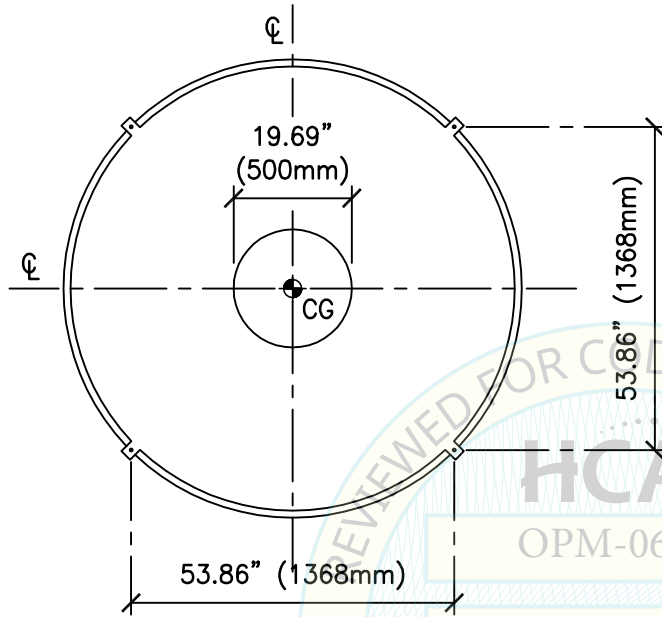
SHEET TITLE: ABBREVIATIONS

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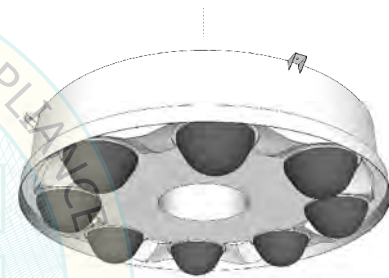
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OPRAGON 8

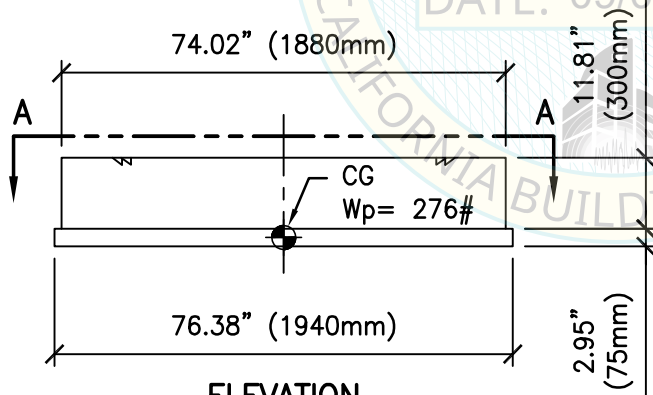
AVIDICARE



PLAN VIEW A-A



ISOMETRIC VIEW

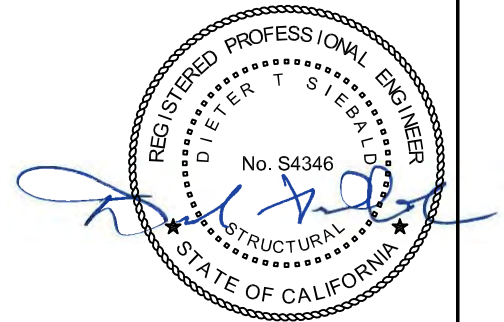


ELEVATION

OPM-0663

BY: William Staehlin

DATE: 09/02/2022



SHEET TITLE: PLAN & ELEVATION



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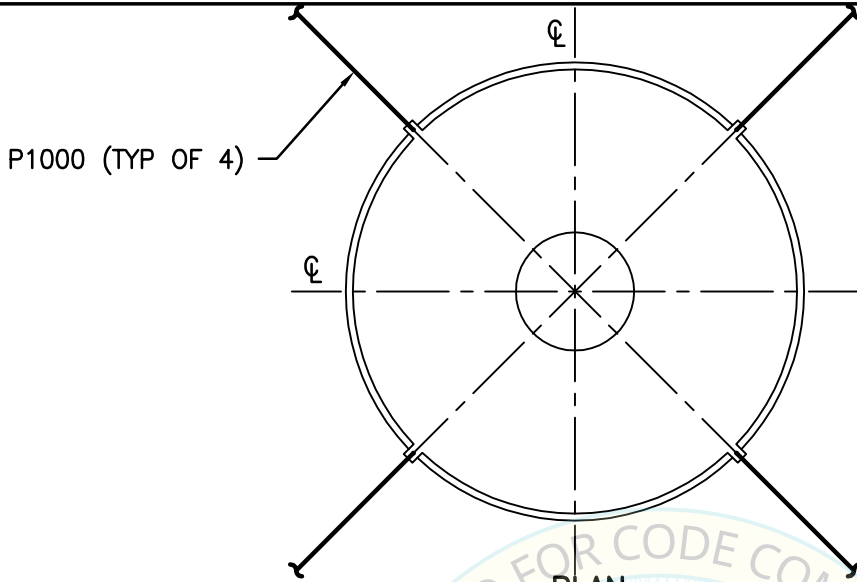
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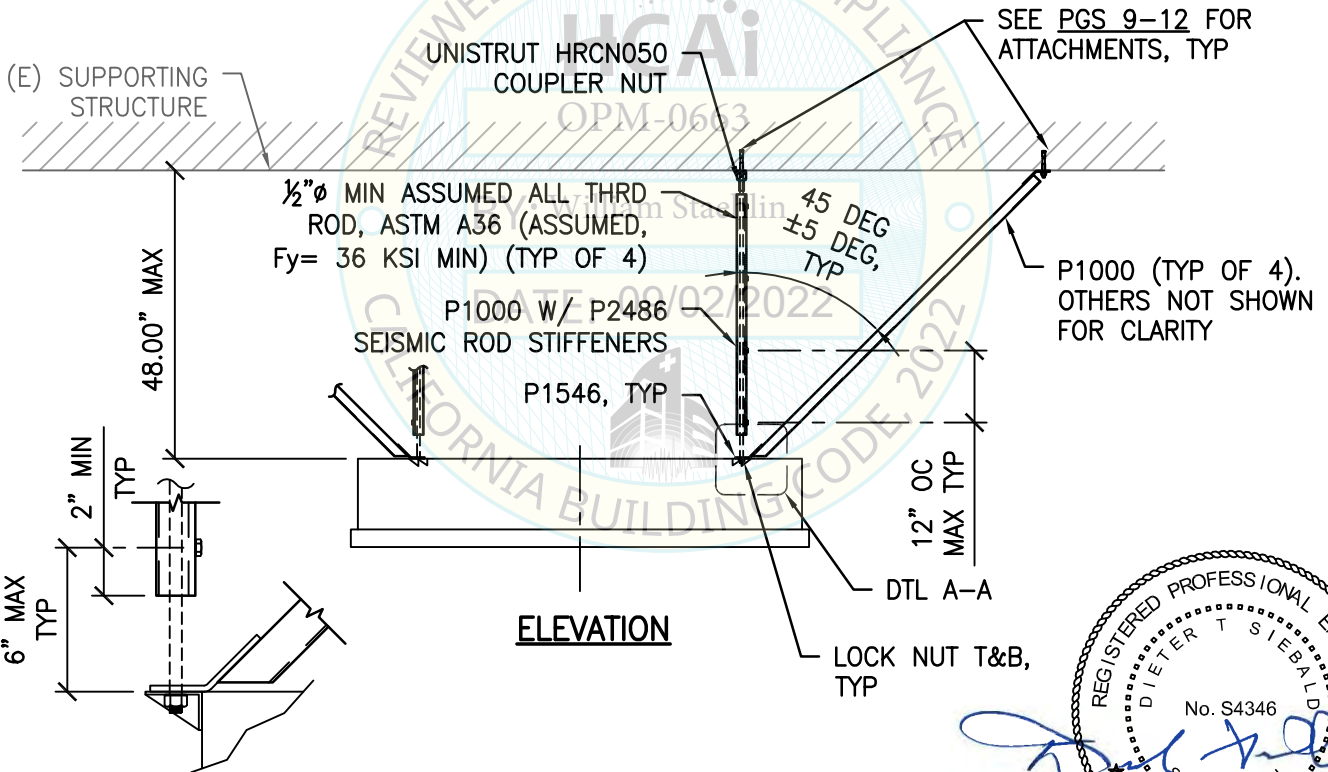
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AVIDICARE



PLAN



ELEVATION

DTL A-A

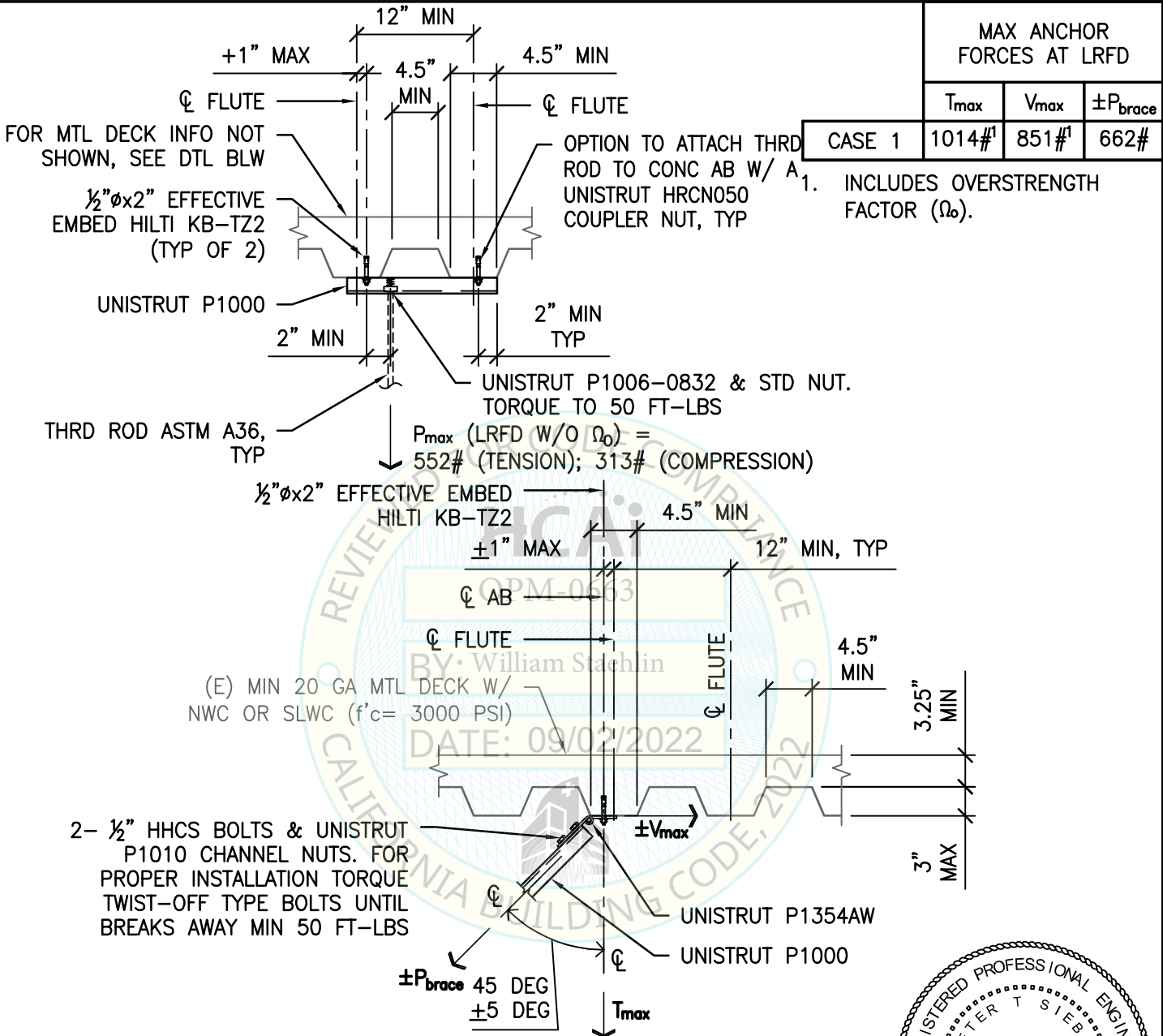


SHEET TITLE: SUPPORT & ATTACHMENT DETAILS

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OPRAGON 8



NOTE:
 1. WHEN ATTACHING TO CONC FILL OVER MTL DECK, ANCHORS MUST BE INSTALLED IN LOWER FLUTE OF DECK.



SHEET TITLE: SUPPORT & ATTACHMENT DETAILS
 CASE 1: PERPENDICULAR TO METAL DECK

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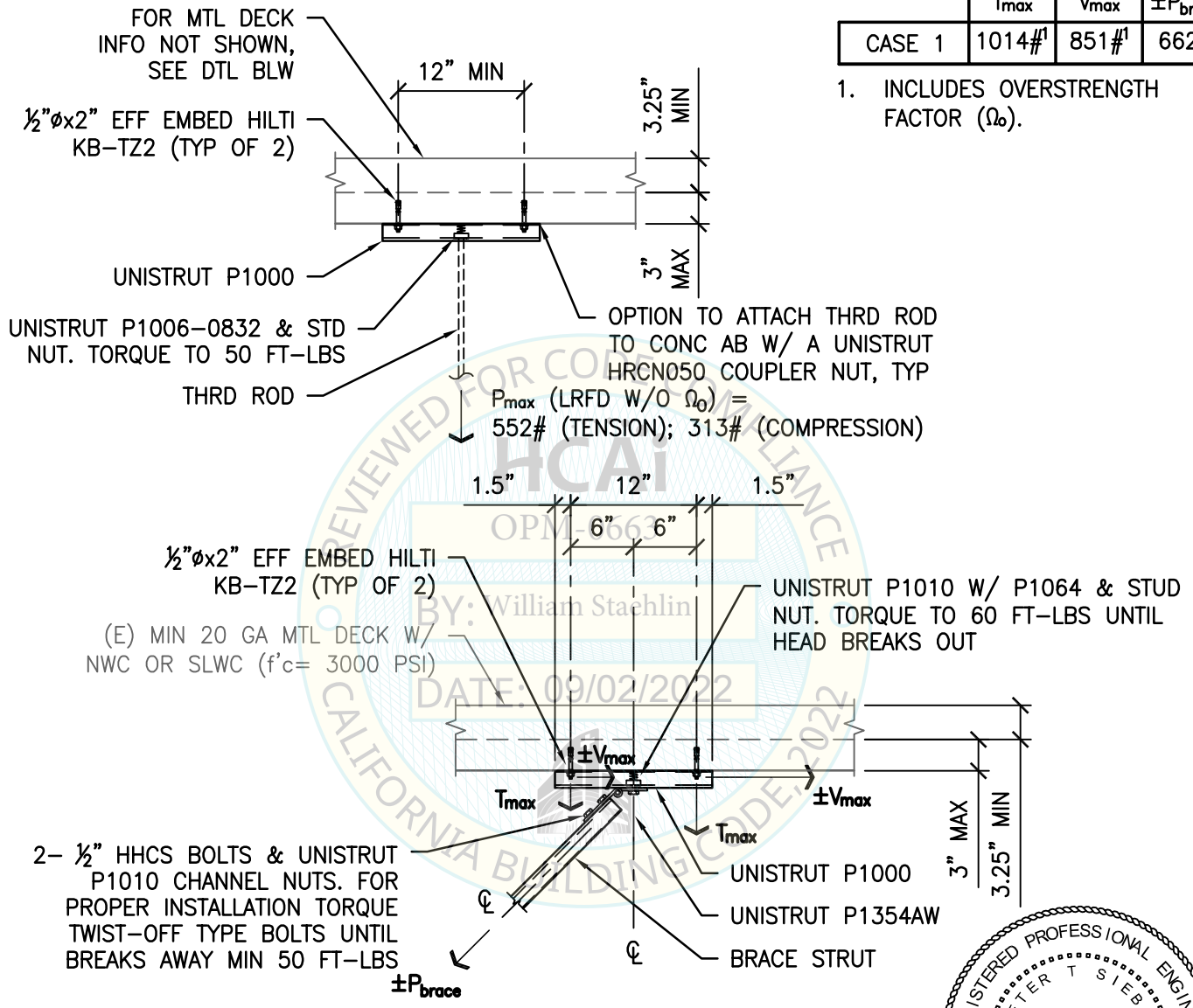
OPRAGON 8

AVIDICARE

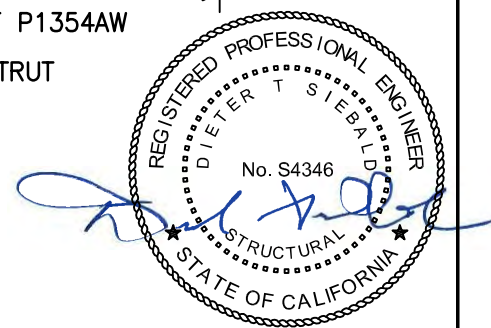
MAX ANCHOR FORCES AT LRFD

	T _{max}	V _{max}	±P _{brace}
CASE 1	1014# ¹	851# ¹	662#

1. INCLUDES OVERSTRENGTH FACTOR (Ω_0).



NOTE:
1. WHEN ATTACHING TO CONC FILL OVER MTL DECK, ANCHORS MUST BE INSTALLED IN LOWER FLUTE OF DECK.



SHEET TITLE: SUPPORT & ATTACHMENT DETAILS
CASE 1: PARALLEL TO METAL DECK

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OPRAGON 8

AVIDICARE

(E) 6" MIN NWC REINF
CONC BM ($f'_c = 3000$ PSI)
BY OTHERS

$\angle 6 \times 3 \times \frac{1}{4} \times 0' - 3"$ LLV

MAX ANCHOR
FORCES AT LRFD

	T _{max}	V _{max}	$\pm P_{brace}$
CASE 2	1014# ¹	851# ¹	662#

1. INCLUDES OVERSTRENGTH
FACTOR (Ω_0).

FOR CONC SLAB
INFO NOT SHOWN,
SEE DTL BLW

$\frac{1}{2}" \phi$ HILTI KB-TZ2
(TYP OF 2)

UNISTRUT P1000

HRCN050
COUPLER NUT

THRD ROD

UNISTRUT P1006-0832
& STD NUT. TORQUE
TO 50 FT-LBS

P_{max} (LRFD W/O Ω_0) =
552# (TENSION);
313# (COMPRESSION)

(E) 6" MIN NWC REINF
CONC BM ($f'_c = 3000$ PSI)
BY OTHERS

(E) 4" MIN NWC
REINF CONC SLAB
($f'_c = 3000$ PSI)
BY OTHERS

$\frac{1}{2}" \phi$ HILTI KB-TZ2
UNISTRUT P1354AW

UNISTRUT P1000

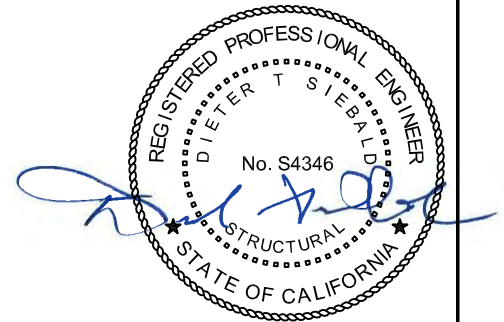
2- $\frac{1}{2}"$ HHCS BOLTS & UNISTRUT
P1010 CHANNEL NUTS. FOR
PROPER INSTALLATION TORQUE
TWIST-OFF TYPE BOLTS UNTIL
BREAKS AWAY MIN 50 FT-LBS

$\pm P_{brace}$
45 DEG
 ± 5 DEG

T_{max}

UNISTRUT P1000

NOTE:
DO NOT DAMAGE OR CUT (E) STL REINF (REBAR)



SHEET TITLE: SUPPORT & ATTACHMENT DETAILS
CASE 2: CONC SLAB OR BEAM



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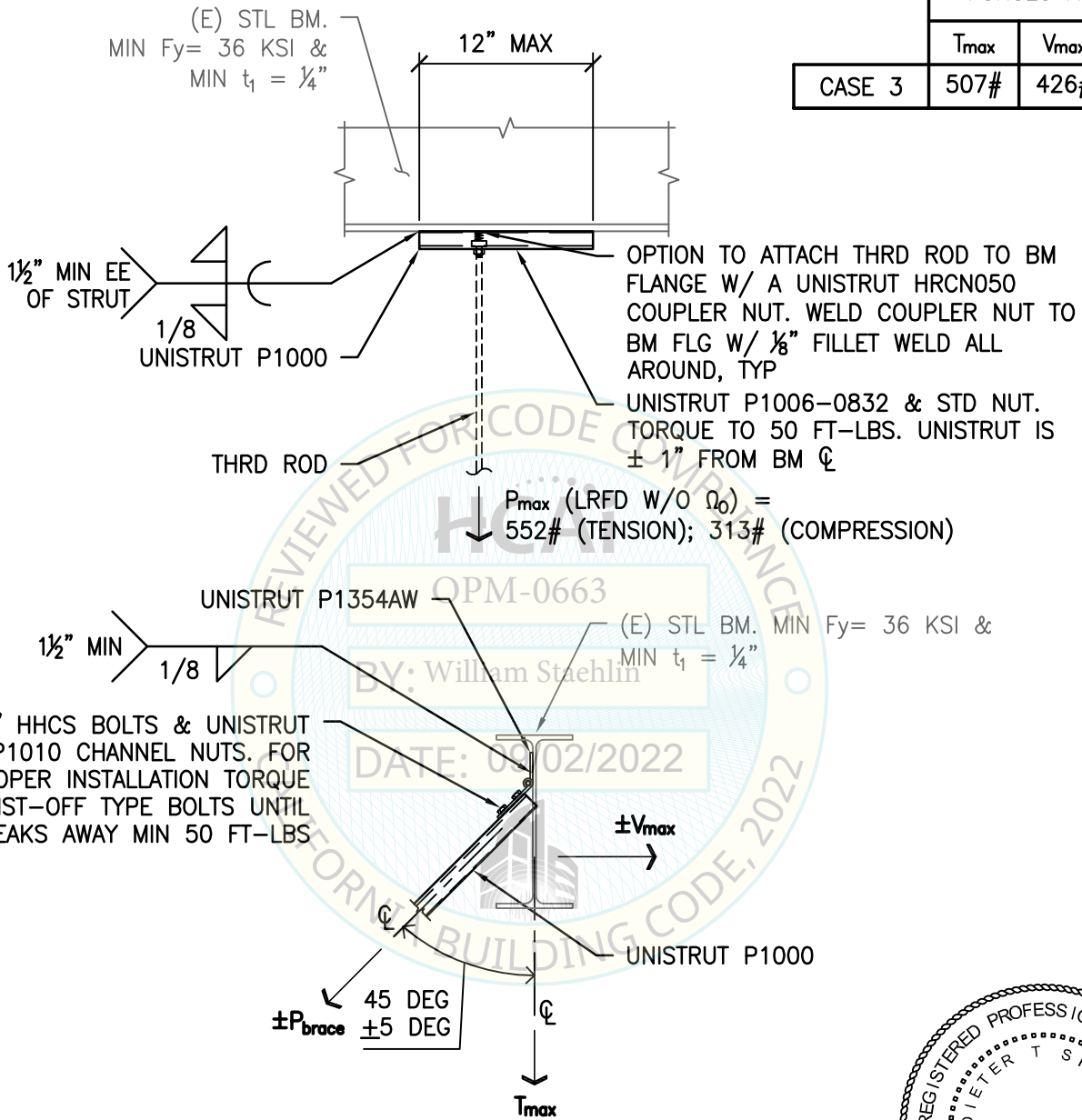
L:\Jobs22\22047 Avidicare - Opragon 8 OPM\ACAD\STRU\S1_Avidicare Opragon 8.dwg Time: Aug 30, 2022 - 03:52pm Login: camachom DimScale: 16 LITScale: 4

OPRAGON 8

AVIDICARE

MAX ANCHOR FORCES AT LRFD

	T _{max}	V _{max}	±P _{brace}
CASE 3	507#	426#	662#



SHEET TITLE: SUPPORT & ATTACHMENT DETAILS
CASE 3: STEEL BEAM

 <p>CYS STRUCTURAL ENGINEERS, INC. 2495 NATOMAS PARK DRIVE, SUITE 650 SACRAMENTO, CA 95833</p>	Job No: 22047
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L:\Jobs22\22047 Avidicare - Opragon 8 OPM\ACAD\STRU\S1_Avidicare Opragon 8.dwg Time: Aug 30, 2022 - 03:52pm Login: camachom DimScale: 16 LScale: 4