



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

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

OFFICE USE ONLY

APPLICATION #: OPM-0600

OSHPD Preapproval of Manufacturer's Certification (OPM)

Type: New Renewal/Update

Manufacturer Information

Manufacturer: THERMO FISHER SCIENTIFIC

Manufacturer's Technical Representative: Matti Peltonen

Mailing Address: Ratastie 2, VANTAA, fi 01620

Telephone: (1135810) 329-2175

Email: matti.peltonen@thermofisher.com

Product Information

Product Name: CASCADION ANALYZER & ACCESSORY CABINET

Product Type: CLINICAL ANALYZER

Product Model Number: CASCADION NC 1000 & Accessory Cabinet NC 16557

General Description: MASS SPECTROMETER FOR IN VITRO DIAGNOSTICS

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 Project Manager

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

STATE OF CALIFORNIA – HEALTH AND HUMAN SERVICES AGENCY





OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT 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

OSHPD 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 OSHPD prior to testing.

Analysis

Experience Data

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

OSHPD Approval

Date: 3/30/2021

Name: William Staehlin

Title: Senior Structural Engineer

Condition of Approval (if applicable): _____

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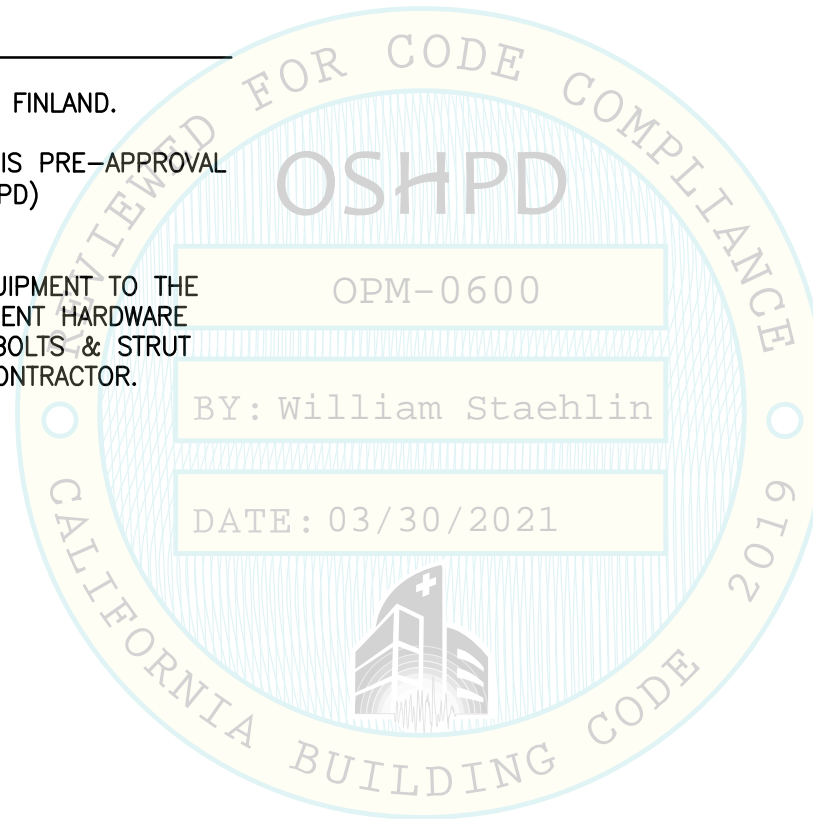
OSHPD

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OPM-0600

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NOTES:

1. THESE DRAWINGS ARE PREPARED FOR THERMO FISHER SCIENTIFIC, VANTAA, FINLAND.
2. THE CONTRACTOR & INSPECTOR OF RECORD SHALL OBTAIN A COPY OF THIS PRE-APPROVAL FROM THE OFFICE OF STATEWIDE HEALTH PLANNING & DEVELOPMENT (OSHDP) PRE-APPROVAL PROGRAMS WEBSITE.
3. THIS PRE-APPROVAL COVERS THE SUPPORTS & ATTACHMENTS OF THE EQUIPMENT TO THE SUPPORTING STRUCTURE. THE EQUIPMENT, SUPPORT BRACKETS & ATTACHMENT HARDWARE ARE SUPPLIED BY THE MANUFACTURER. THE EXPANSION ANCHORS, THRU-BOLTS & STRUT PLATES SHOWN IN THIS OPM SHALL BE SUPPLIED & INSTALLED BY THE CONTRACTOR.



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CASCADION NC10000 & NC16557
ACCESSORY CABINET



CYS STRUCTURAL ENGINEERS, INC.

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Rev	Description	Date	Job No: 20060
			Date: 03/19/2021
			By: DTS
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GENERAL NOTES:

- THIS OSHPD PRE-APPROVAL OF MANUFACTURER'S CERTIFICATION (OPM) IS BASED ON THE CBC 2019. THE DEMAND (DESIGN FORCES) FOR USE W/ THIS OPM SHALL BE BASED ON THE CBC 2019.
- IT IS THE RESPONSIBILITY OF THE SEOR FOR A SITE SPECIFIC PROJECT TO VERIFY:
 - 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.
 - THAT THE FLR ANCHORS ARE LOCATED AT AN ADEQUATE DISTANCE FROM ANY SLAB EDGES OR OPGs.
 - THAT THE FLR ANCHORS ARE LOCATED AT AN ADEQUATE DISTANCE FROM ANY NEW OR EXISTING ANCHORS. THE SPCG SHOWN IN THE TEST TORQUE TABLE ON PG 2 IS THE REQ MIN SPCG OF THE GIVEN DIA ANCHORS. THE REQ SPCG FROM ANCHORS OF OTHER DIAMETERS & EMBEDMENTS MAY VARY & SHALL BE EVALUATED BY THE SEOR.
 - THAT THE INSTALLATION IS IN CONFORMANCE W/ THE CBC 2019 & W/ THE DETAILS SHOWN IN THIS PRE-APPROVAL.
 - THAT THE ACTUAL EQUIP'S WT, CENTER OF GRAVITY (CG) LOCATION, ANCHOR LOCATIONS, ANCHOR DETAILS, & THE MATERIAL & GAGE OF THE EQUIP WHERE ATTACHMENTS ARE MADE, AGREE W/ THE INFO SHOWN ON THE PRE-APPROVAL DOCUMENTS.
 - THAT THE PROJECT SPECIFIC VALUES OF S_{DS} & z/h RESULT IN SEISMIC FORCES THAT DO NOT EXCEED THE VALUES IN THE DESIGN CRITERIA AND THE CONC SLAB TO WHICH THE EQUIP IS ANCHORED SHALL MEET THE REQUIREMENTS OF THE APPLICABLE ICC REPORT.
- EXPANSION ANCHORS INSTALLED IN NWC OR SLWC SHALL BE CARBON STL HILTI KB-TZ EXPANSION ANCHORS AS NOTED COMPLYING W/ ESR-1917 REVISED JANUARY 2020.
 - 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 2.
 - JOB TESTING: FOR VERIFYING SATISFACTORY INSTALLATION WORKMANSHIP, PERFORM JOBSITE TESTING IN ACCORDANCE W/ THE TEST LOAD TABLE PROVIDED IN THIS DOCUMENT. TORQUE TEST 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 NUT SHALL BE RETORQUED TO INSTALLATION TORQUE AFTER EQUIP INSTALL. ALSO REFER TO 2019 CBC 1910.5 "TESTS FOR POST-INSTALLED ANCHORS IN CONCRETE".
 - 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.
 - AVOID DAMAGING (E) STL REINF IN CONC SLAB WHEN INSTALLING CONC EXPANSION ANCHORS.
 - PROVIDE FOR FULL THRD ENGAGEMENT OF NUT & WASHER.
 - TEST VALUES: APPLY TEST LOADS TO ANCHORS WITHOUT REMOVING THE NUT IF POSSIBLE, SEE TABLE BLW.

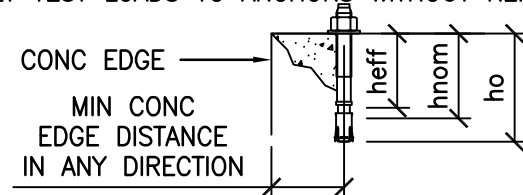


TABLE 1

CONDITION OF ANCHORAGE	ANCHOR DIA & TYPE (INCH)	INSTALLATION EMBED (INCH) hnom	EFFECTIVE EMBED (INCH) hef	HOLE DEPTH (INCH) ho	MIN CONC THK (INCH) h	MIN CONC EDGE DISTANCE (INCH)	MIN ANCHOR SPCG (INCH)	TEST TORQUE (FT-LBS)
CASE 2	1/2 KB-TZ	2 3/8	2	2 5/8	3/4	10	3	40
CASE 3	1/2 KB-TZ	2 3/8	2	2 5/8	4	10	3	40

- BOLTS THROUGH CONC ON MTL DECK:
 - BOLTS SHALL BE TORQUED BY $\frac{3}{4}$ TURN OF THE NUT AFTER SNUG TIGHT CONDITION IS ACHIEVED, UNO. THE SNUG TIGHT CONDITION IS DEFINED AS THE TIGHTNESS REQUIRED TO BRING THE CONNECTED PLIES INTO FIRM CONTACT.
 - THRU-BOLT HOLES SHALL BE $\frac{1}{16}$ " LARGER THAN BOLT SIZE (HOLE SIZE = BOLT SIZE + $\frac{1}{16}$ ")
 - THRU-BOLTS IN CONC SHALL RECEIVE SPECIAL INSPECTION & TESTING IN ACCORDANCE W/ REQUIREMENTS FOR POST-INSTALLED ANCHORS. THRU-BOLTS W/ STL TO STL CONNECTION IN TENSION DO NOT REQUIRE TESTING.
- SCREW ANCHORS TO BOTT OF CONC FILL OVER MTL DECK:
 - HILTI KH-EZ (ICC ESR-3027) TENSION TEST LOAD FOR CASE 1.

TABLE 2

ANCHOR DIA (INCH) da	INSTALLATION EMBED (INCH) hnom	EFFECTIVE EMBED (INCH) hef	HOLE DEPTH (INCH) ho	MIN CONC THICKNESS (INCH) h _{min}	MIN CONC EDGE DISTANCE (INCH)	MIN AB SPCG (INCH)	MAX INSTALLATION TORQUE (FT-LBS)	TENSION TEST (LBS)
1/4	1 5/8	1.18	2	3/4	1 1/4*	10*	18	350

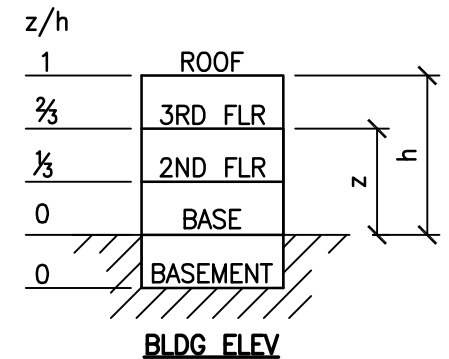
* SEE FOOTNOTE 2, TABLE 2 IN ESR-3027

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

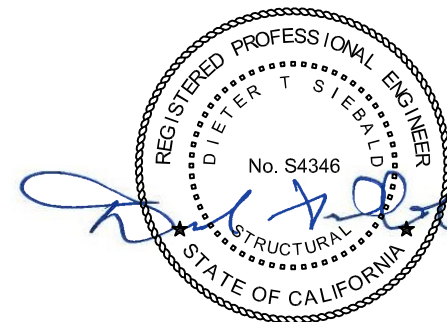
CASE 1: ATTACHMENT DETAILS LOCATED AT UPPER FLRS ABV THE BASE OF A BLDG ($z/h \leq 0.8$). THE FLRS ARE ASSUMED TO BE BUILT OF A MIN 3/4" SLWC TOPPING OVER 3" DEEP MIN 20 GA MTL DECK ($f'c = 3000$ PSI, MIN). ANCHORS SHALL BE ASTM A36 STL THRD ROD THRU CONC FILL & MTL DECK. $S_{DS} \leq 2.0g$

CASE 2: ATTACHMENT DETAILS LOCATED AT UPPER FLRS ABV THE BASE OF A BLDG ($z/h \leq 0.8$). THE FLRS 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). ANCHORS SHALL BE CARBON STL & INTO CONC FILL. $S_{DS} \leq 1.5g$

CASE 3: ATTACHMENT DETAILS LOCATED AT OR BLW THE BASE OF A BLDG ($z/h = 0$). THE FLRS ARE ASSUMED TO BE BUILT OF A MIN 4" NWC SLAB ($f'c = 3000$ PSI, MIN). ANCHORS SHALL BE CARBON STL. $S_{DS} \leq 2.5g$



BLDG ELEV



SHEET TITLE: GENERAL NOTES



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ABBREVIATIONS:

⊙	AT
AB	ANCHOR BOLT
ABV	ABOVE
ADJ	ADJACENT
AISC	AMERICAN INSTITUTE FOR STEEL CONSTRUCTION
ALT	ALTERNATE
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASTM	AMERICAN SOCIETY FOR TESTING & MATERIALS
BLDG	BUILDING
BLW	BELOW
BOTT	BOTTOM
BYD	BEYOND
CBC	CALIFORNIA BUILDING CODE
CG	CENTER OF GRAVITY
Ⓞ	CENTERLINE
CONC	CONCRETE
CONN	CONNECTION
COORD	COORDINATE
DBL	DOUBLE
DIM	DIMENSION
DTL	DETAIL
DIA (∅)	DIAMETER
(E)	EXISTING CONDITION
EA	EACH
EE	EACH END
ELEV	ELEVATION
EQ	EQUAL
EQUIP	EQUIPMENT
ES	EACH SIDE
EXTR	EXTERIOR
f'c	MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF CONCRETE
FLR	FLOOR
FT (')	FOOT/FEET
Fp	HORIZONTAL SEISMIC FORCE PER ASCE 7-10 SEISMIC FORCE REQUIREMENTS
Fv	VERTICAL SEISMIC FORCE PER ASCE 7-10 SEISMIC FORCE REQUIREMENTS
Fy	SPECIFIED YIELD STRENGTH OF REINFORCING, PS OF STEEL, KSI
GA	GAUGE
HSS	HOLLOW STRUCTURAL SECTION
ICC	INTERNATIONAL CODE COUNCIL
IN (")	INCH
INFO	INFORMATION
KG	KILOGRAM
KSI	KIPS PER SQUARE INCH
LBS	POUNDS
LRFD	LOAD AND RESISTANCE FACTOR DESIGN

MFR	MANUFACTURER
MAX	MAXIMUM
MIN	MINIMUM
mm	MILLIMETER
MTL	METAL
NO. (#)	NUMBER OR POUNDS
NWC	NORMAL WEIGHT CONCRETE
OP	OPERATING
OPG	OPENING
OPM	OSHPD PRE-APPROVAL OF MANUFACTURER'S CERTIFICATION
OSHPD	OFFICE OF STATEWIDE HEALTH PLANNING & DEVELOPMENT
PERP	PERPENDICULAR
PG	PAGE
PL	PLATE
PSI	POUNDS PER SQUARE INCH
REINF	REINFORCING/REINFORCEMENT
REQ	REQUIRED
SEOR	STRUCTURAL ENGINEER OF RECORD
SIM	SIMILAR
SLWC	SAND-LIGHTWEIGHT CONCRETE
SPCG	SPACING
SS	STAINLESS STEEL
STL	STEEL
THK	THICK/THICKNESS
Tu	ANCHORAGE TENSION REACTION DUE TO SEISMIC FORCE AT LRFD
THRD	THREAD OR THREADED
T&B	TOP & BOTTOM
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
Vu	ANCHORAGE SHEAR REACTION DUE TO SEISMIC FORCE AT LRFD
W/	WITH
Wp	COMPONENT OPERATING WEIGHT
WT	WEIGHT

DESIGN CRITERIA:

1. SUPPORT & ATTACHMENT DESIGN IS PER 2019 CBC AT LRFD LEVEL FORCES.

OTHER MECHANICAL OR ELECTRICAL COMPONENTS PER TABLE 13.6-1 OF ASCE 7-16 SUPPLEMENT #1:

$a_p = 1.0$ $R_p = 1.5$ $I_p = 1.5$ $\Omega_0 = 1.5$ (FOR CONC ANCHORS ONLY)

W_p AS NOTED ON DRAWINGS

UPPER FLRS ABV THE BASE OF BLDG

CASE 1: $S_{Ds} \leq 2.0$ $F_p = 2.08 W_p$ $z/h \leq 0.80$

CASE 2: $S_{Ds} < 1.5$ $F_p = 1.56 W_p$ $z/h \leq 0.80$

FLRS AT OR BLW THE BASE OF BLDG

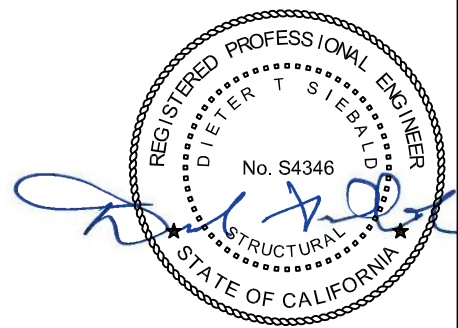
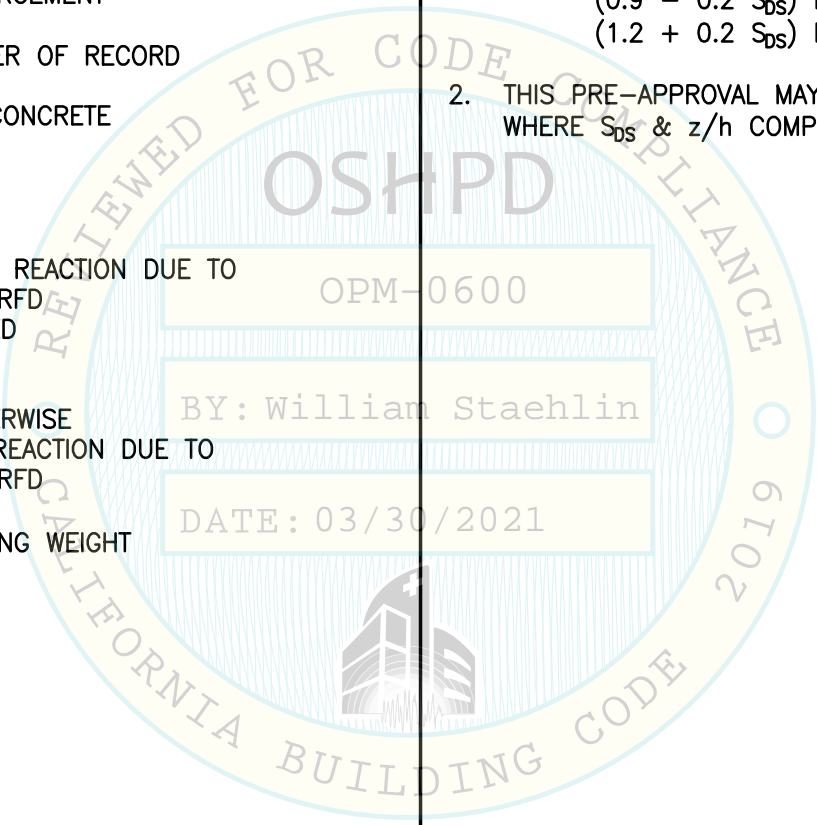
CASE 3: $S_{Ds} \leq 2.5$ $F_p = 1.125 W_p$ $z/h = 0$

LOAD COMBINATIONS

($0.9 - 0.2 S_{Ds}$) D - $\Omega_0 F_p$ (FOR MAX TENSION)

($1.2 + 0.2 S_{Ds}$) D + $\Omega_0 F_p$ (FOR MAX COMPRESSION)

2. THIS PRE-APPROVAL MAY BE USED ONLY AT GEOGRAPHICAL LOCATIONS IN THE STATE OF CALIFORNIA WHERE S_{Ds} & z/h COMPLY W/ VALUES SHOWN ABOVE.



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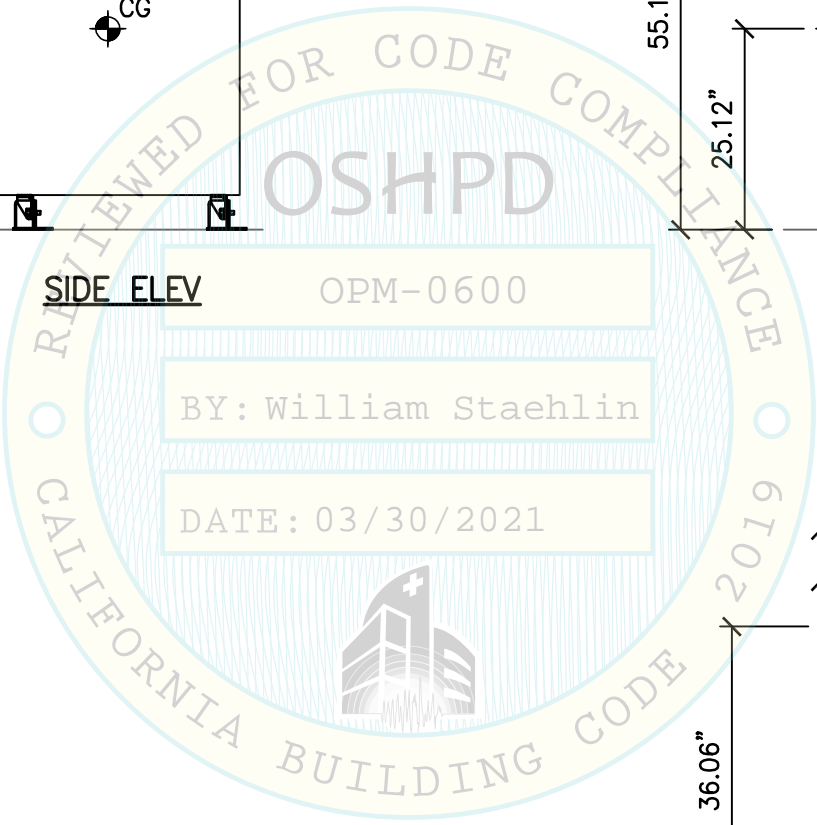
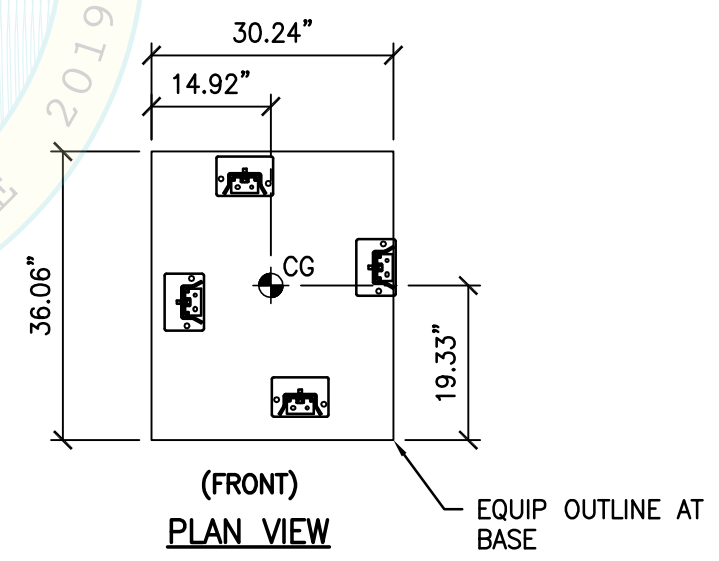
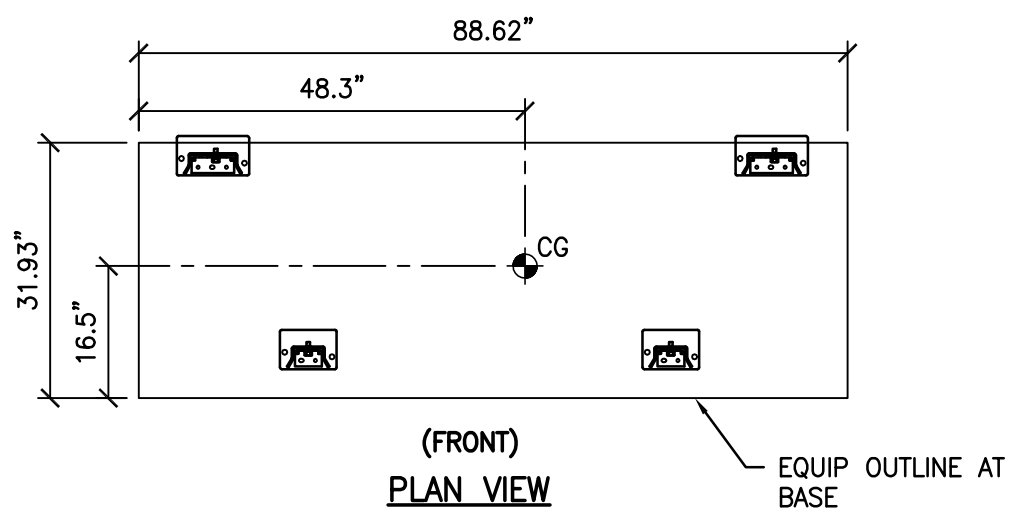
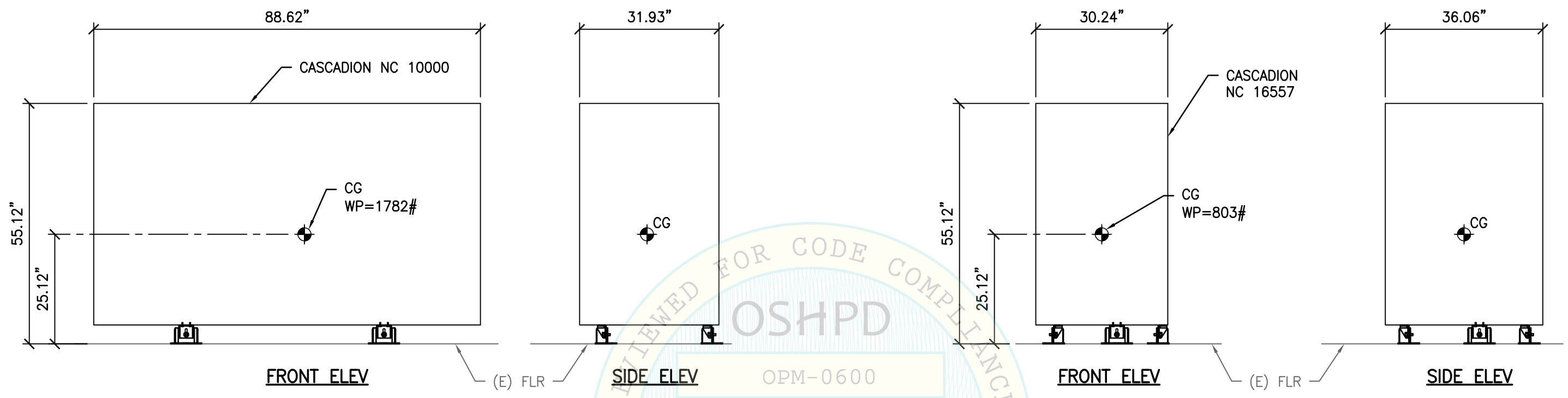


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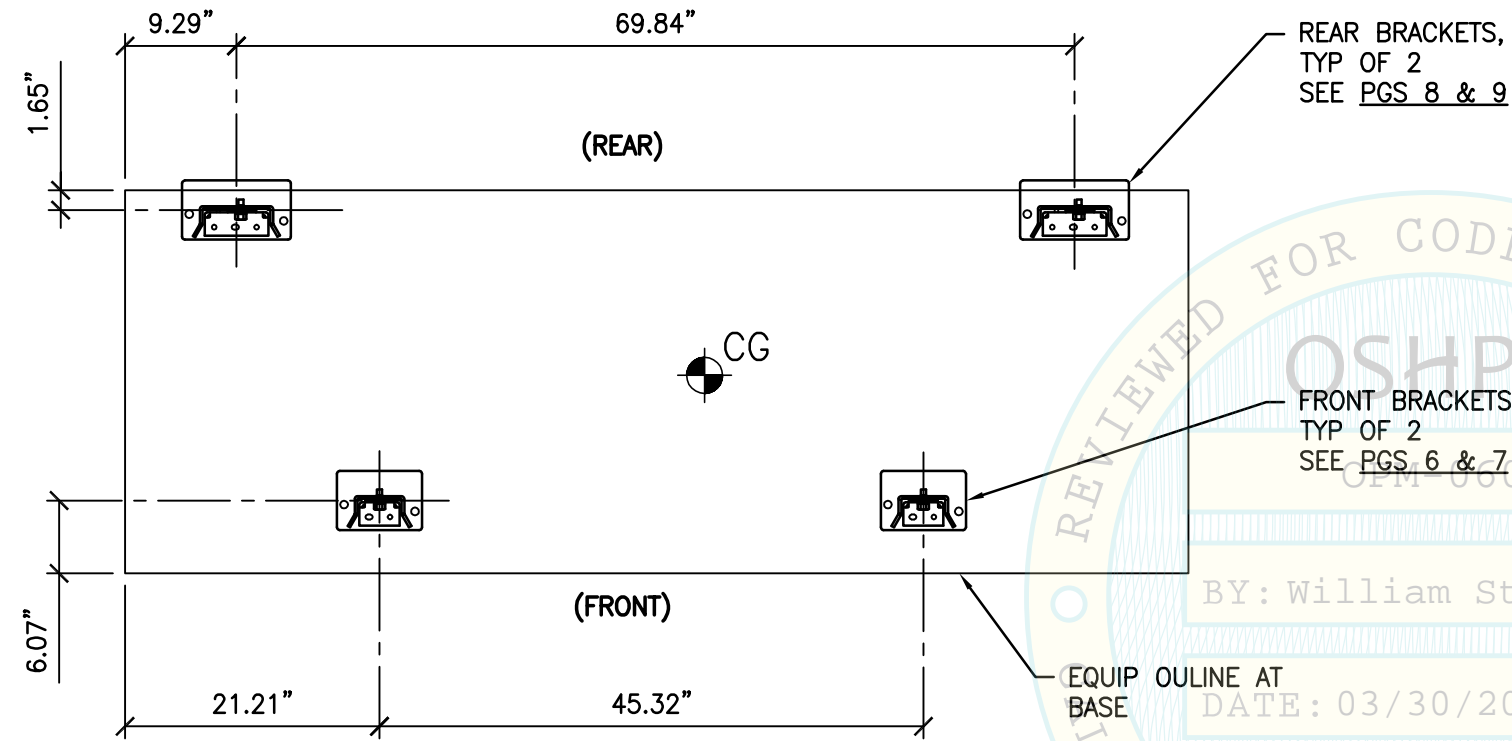
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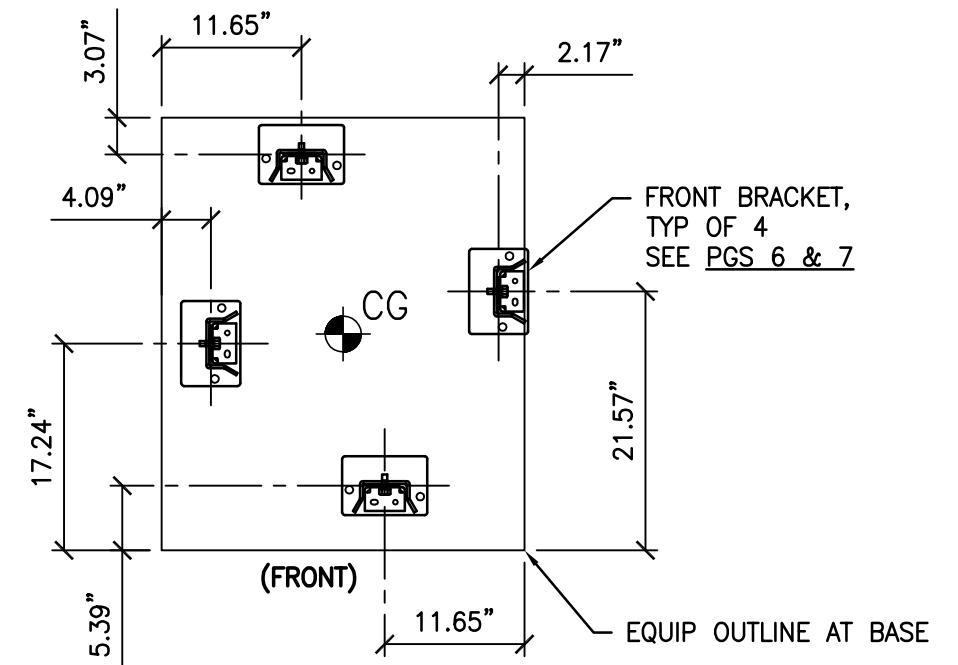
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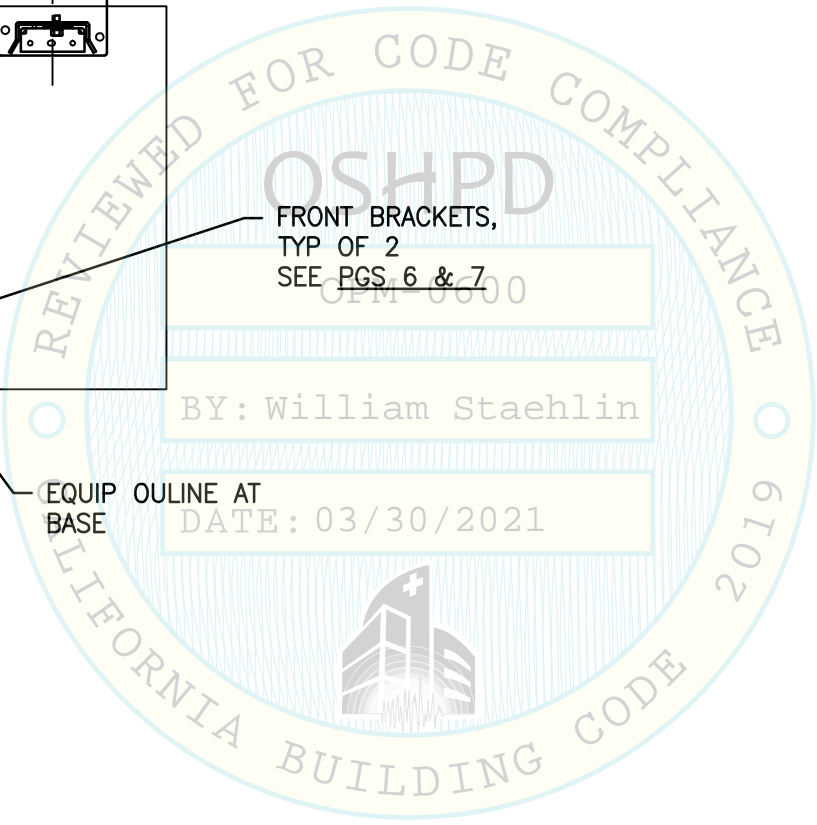
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**CASCADION NC 10000
PLAN VIEW**



**CASCADION NC 16557
PLAN VIEW**



SHEET TITLE: ANCHORAGE BRACKET LOCATIONS



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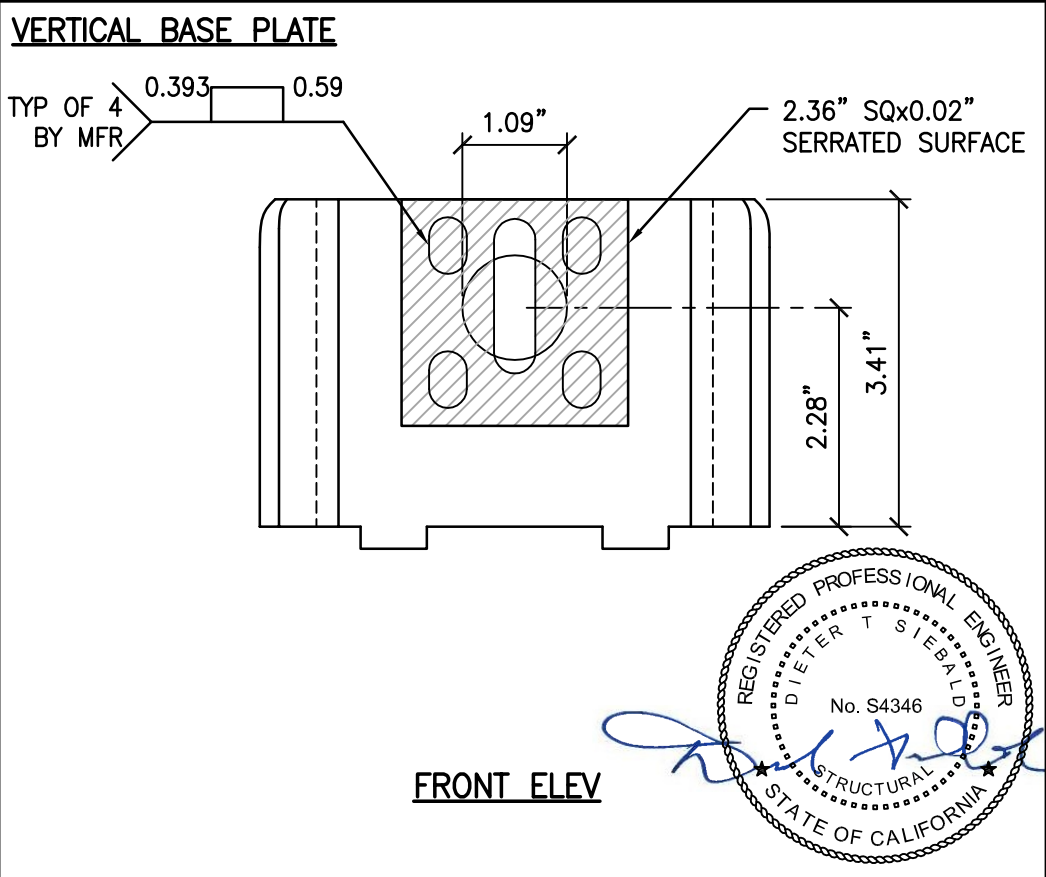
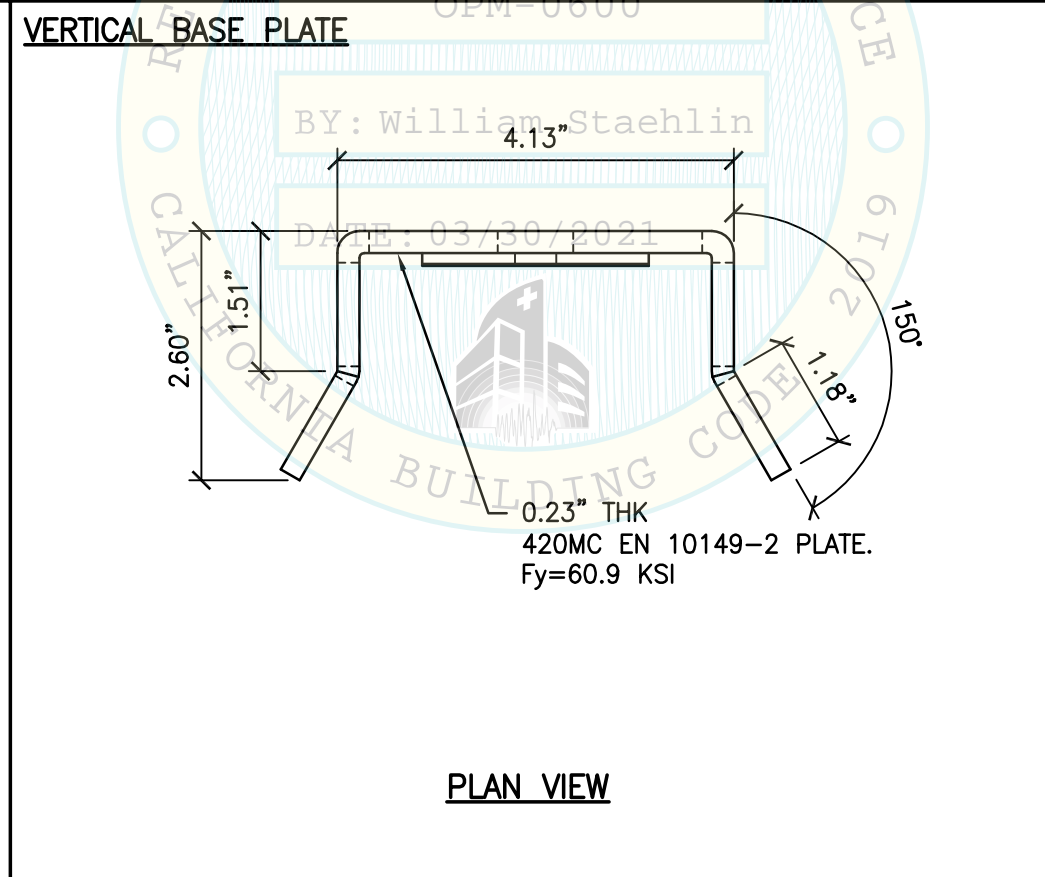
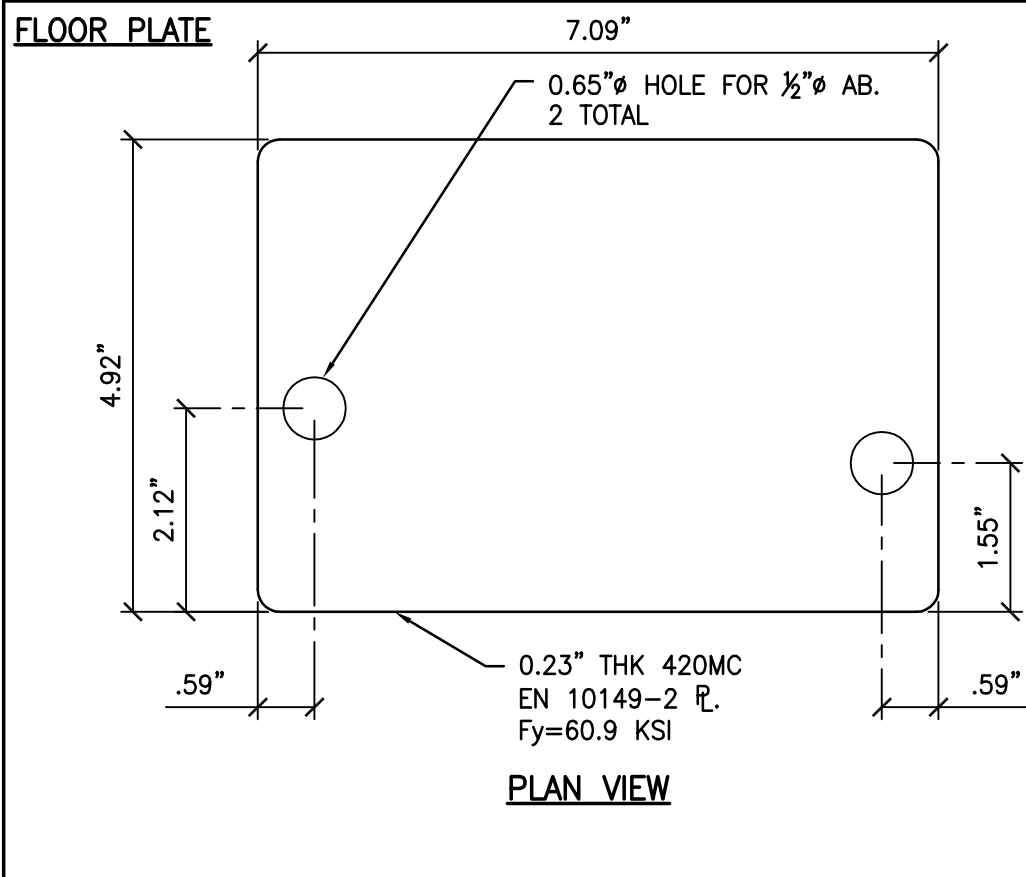
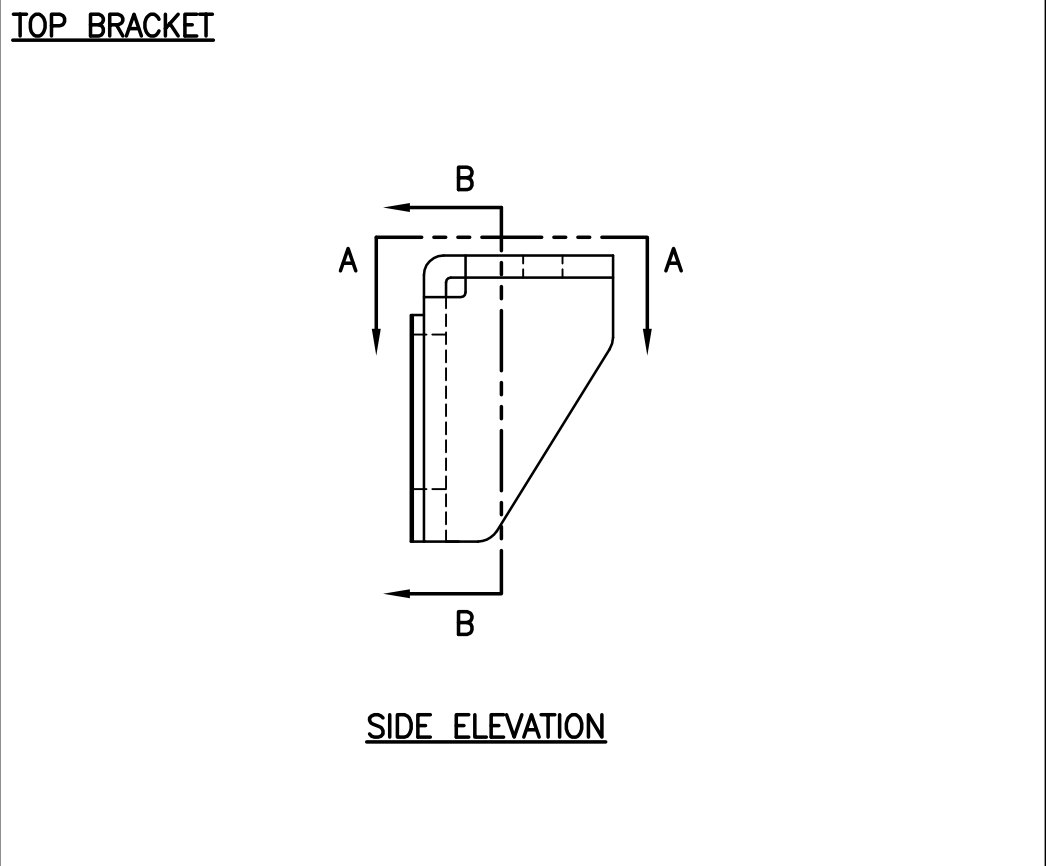
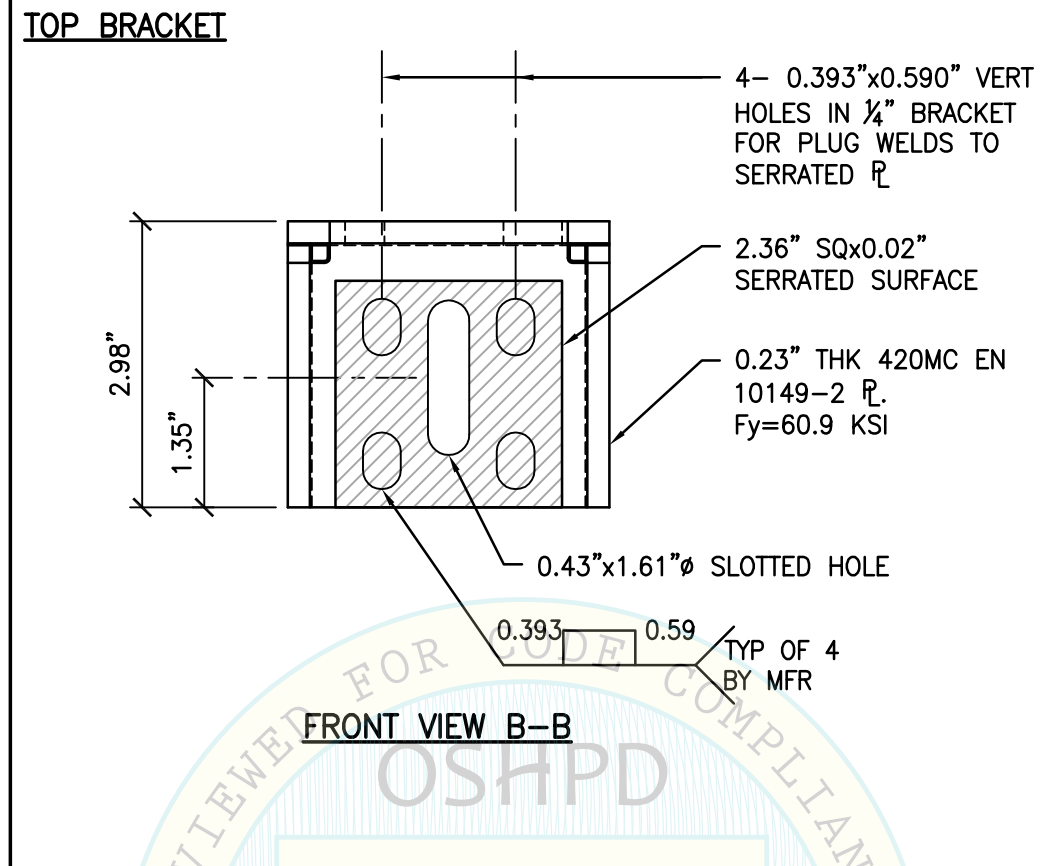
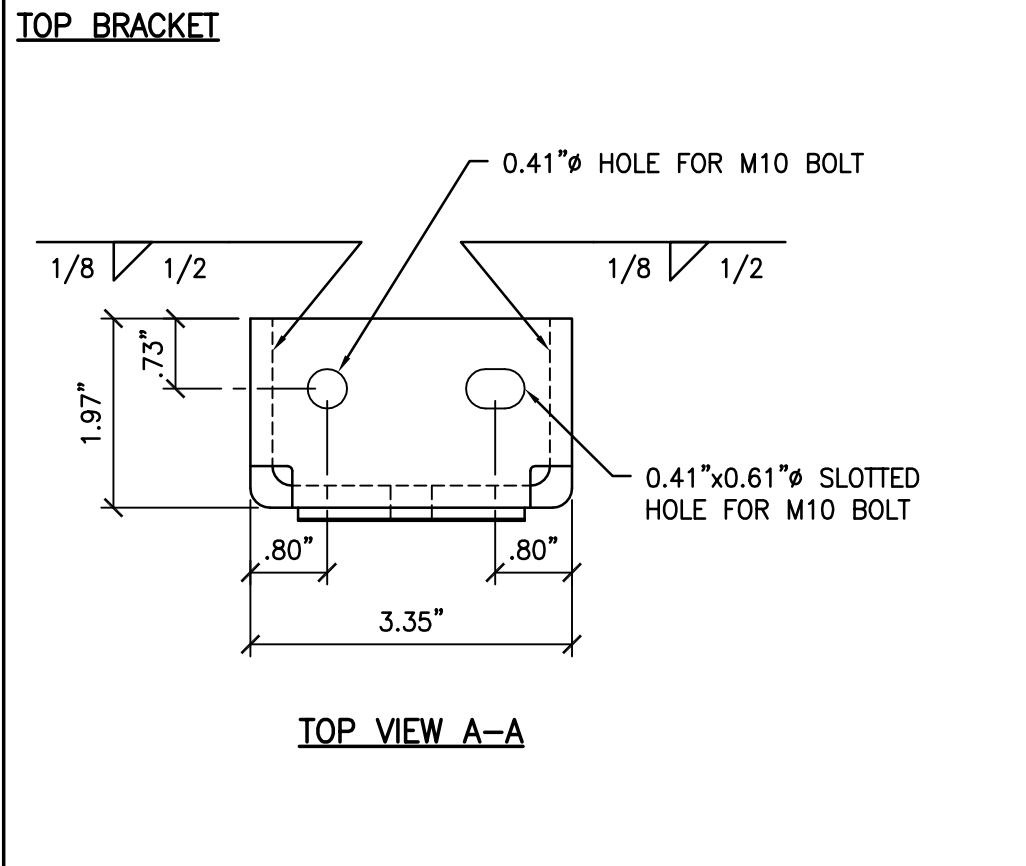
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SHEET TITLE: FRONT BRACKET DETAILS



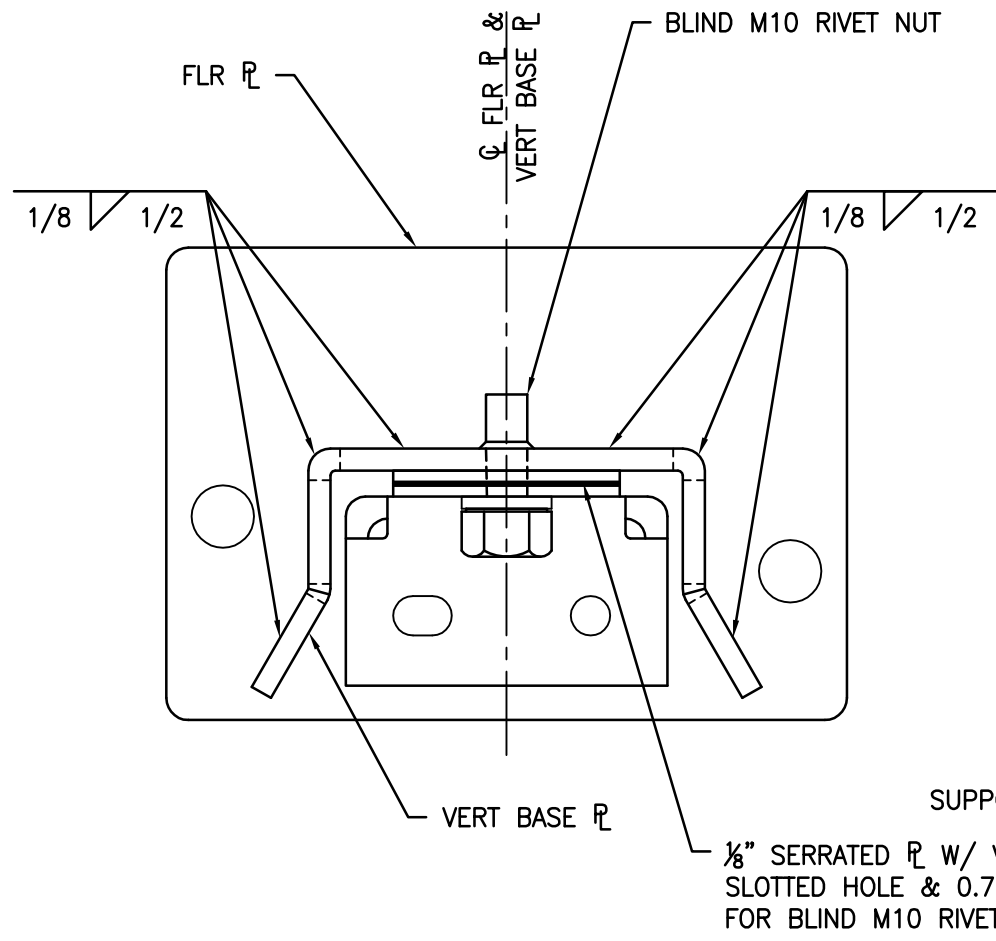
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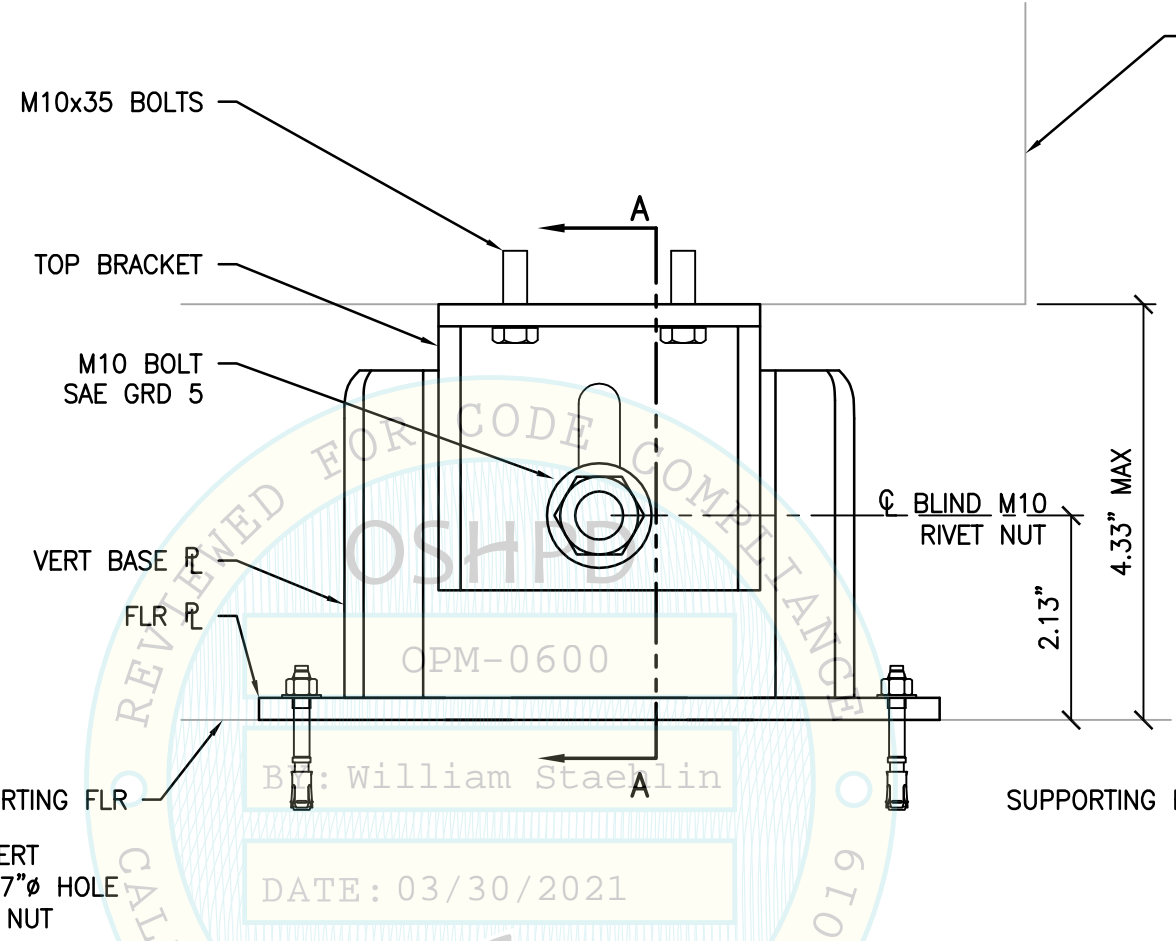
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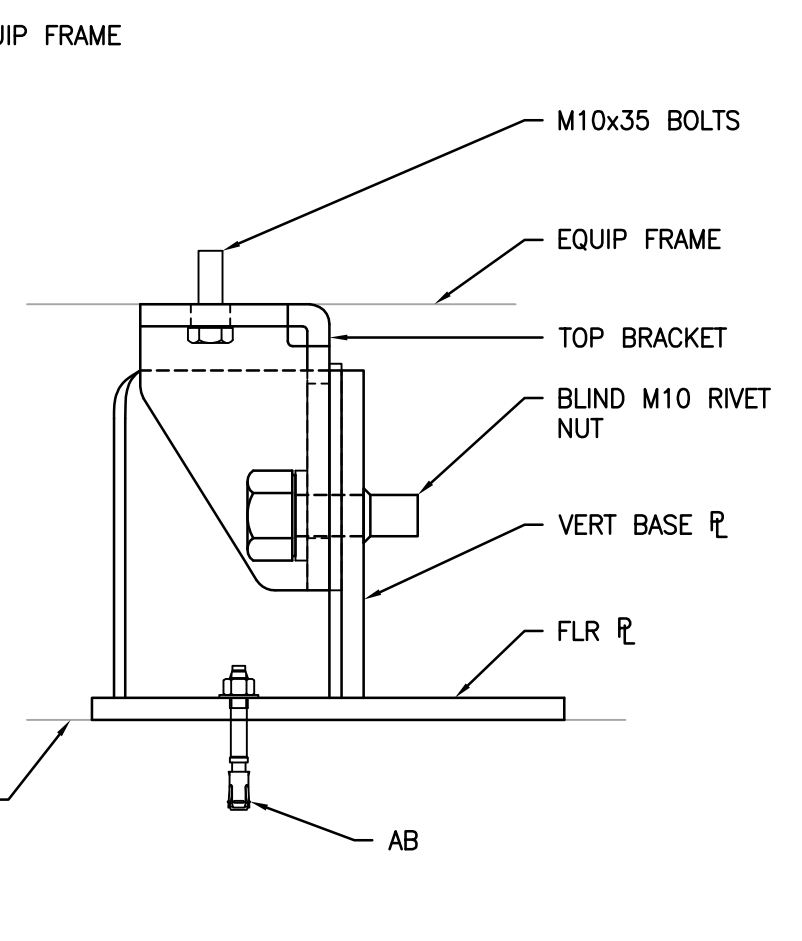
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**BOTTOM BRACKET
PLAN VIEW**



**FRONT BRACKET
FRONT ELEV**



**FRONT BRACKET
SECTION A-A**



SHEET TITLE: FRONT BRACKET CONNECTION TO EQUIPMENT



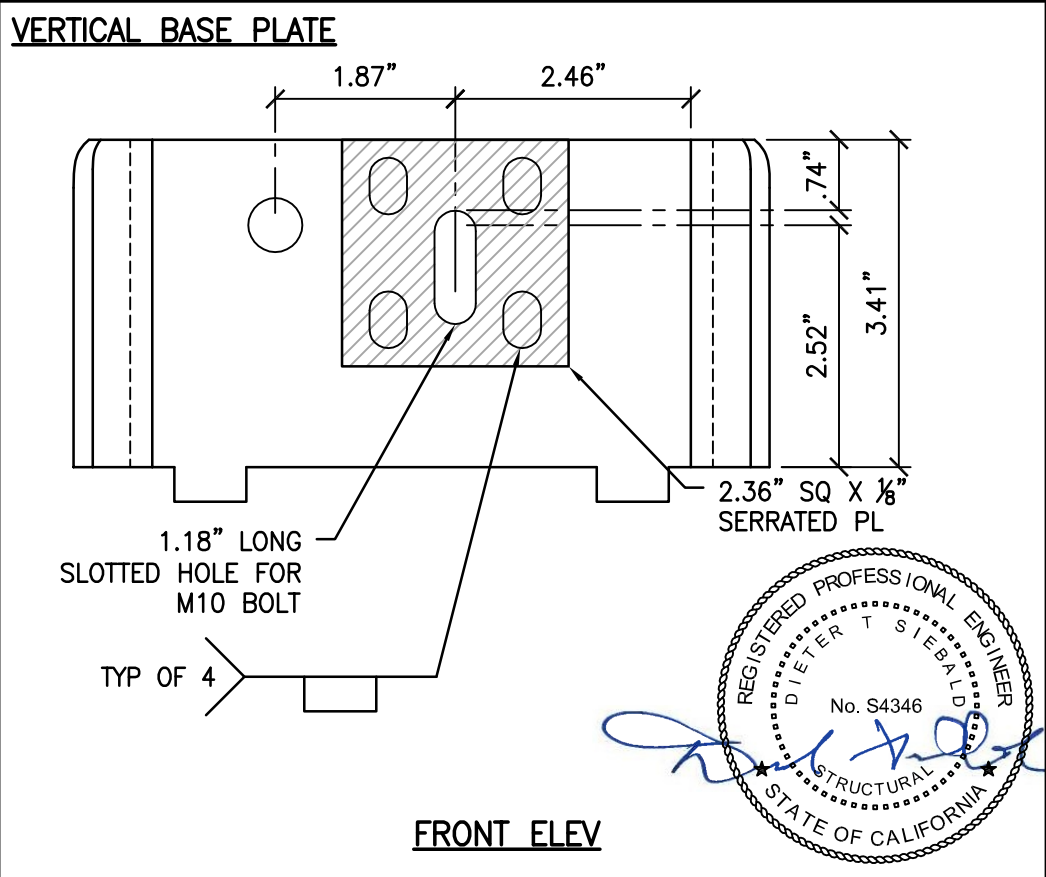
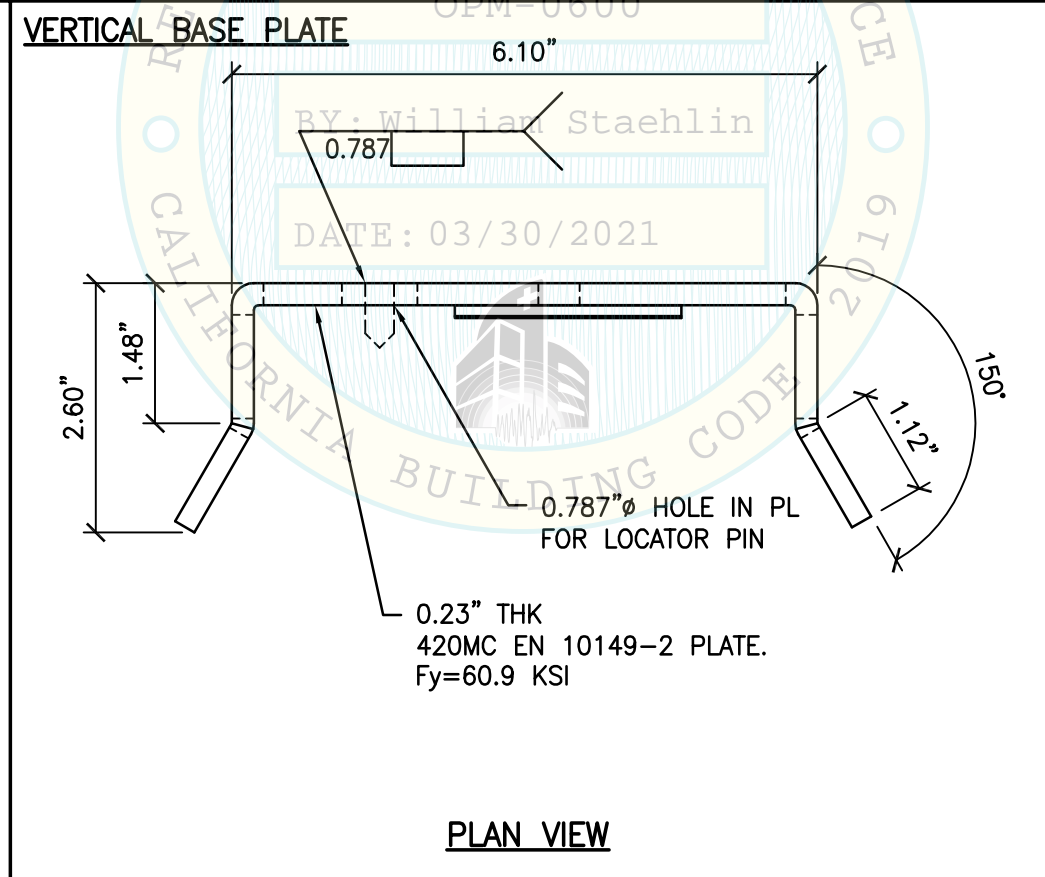
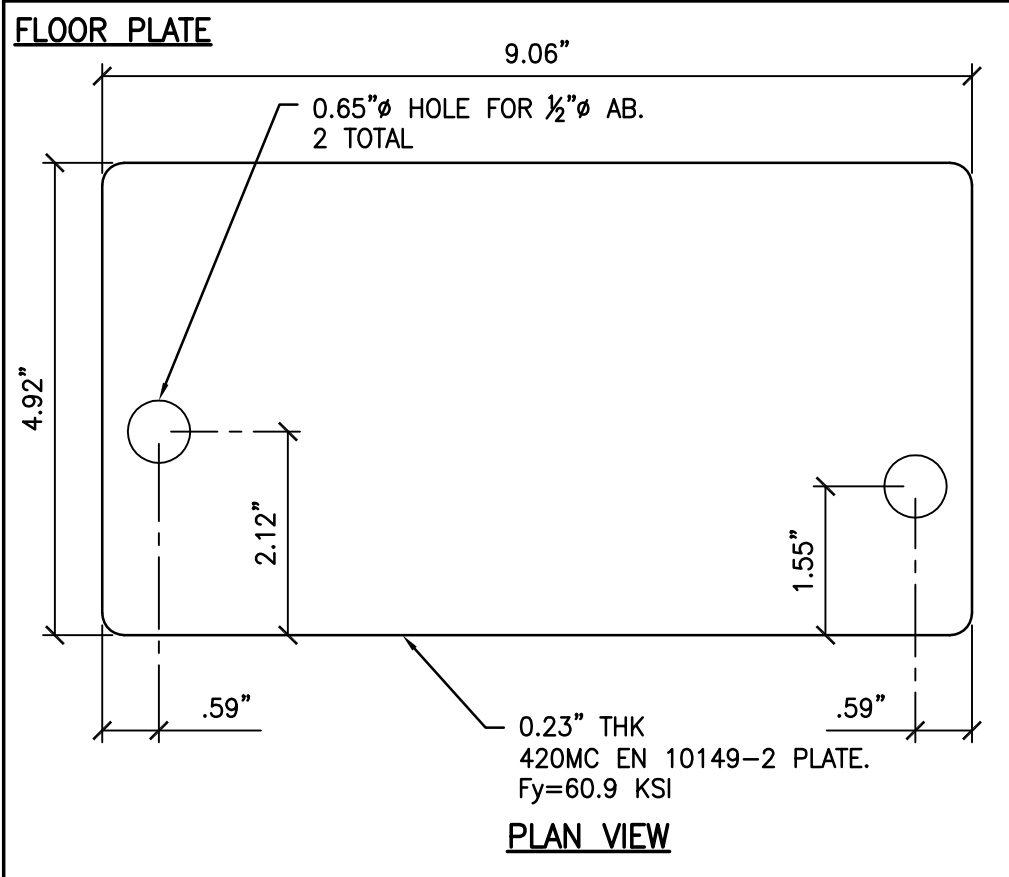
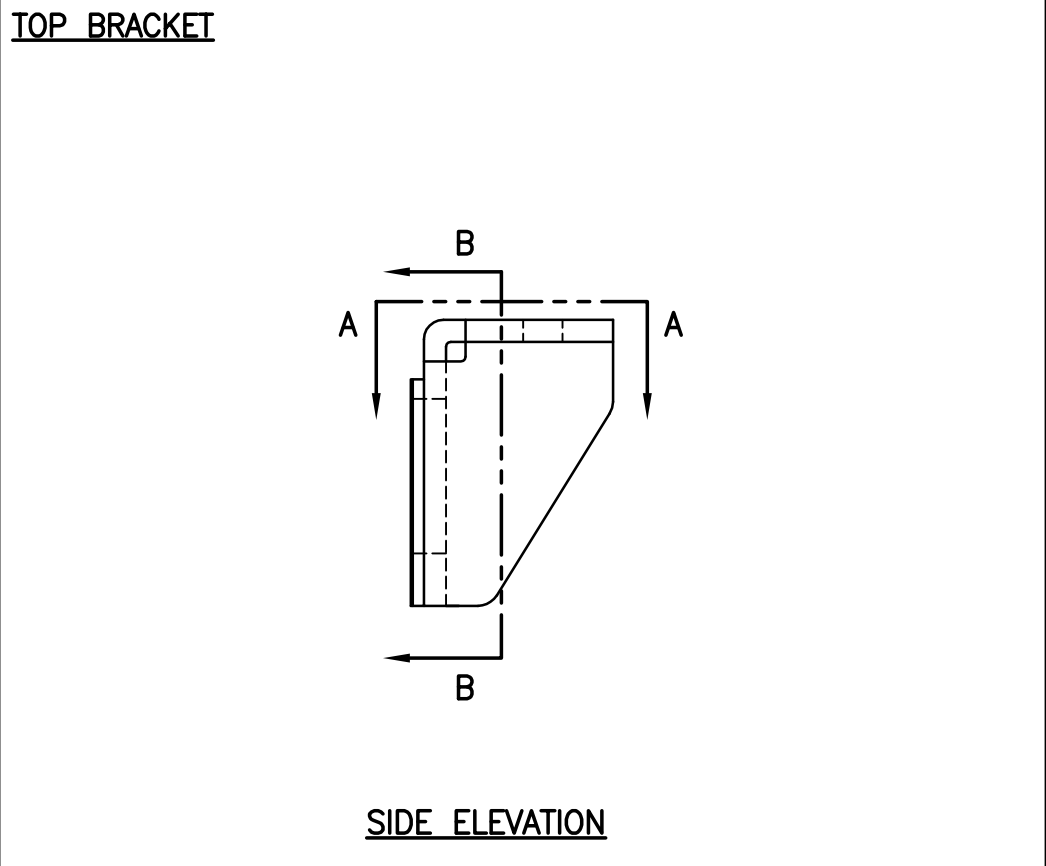
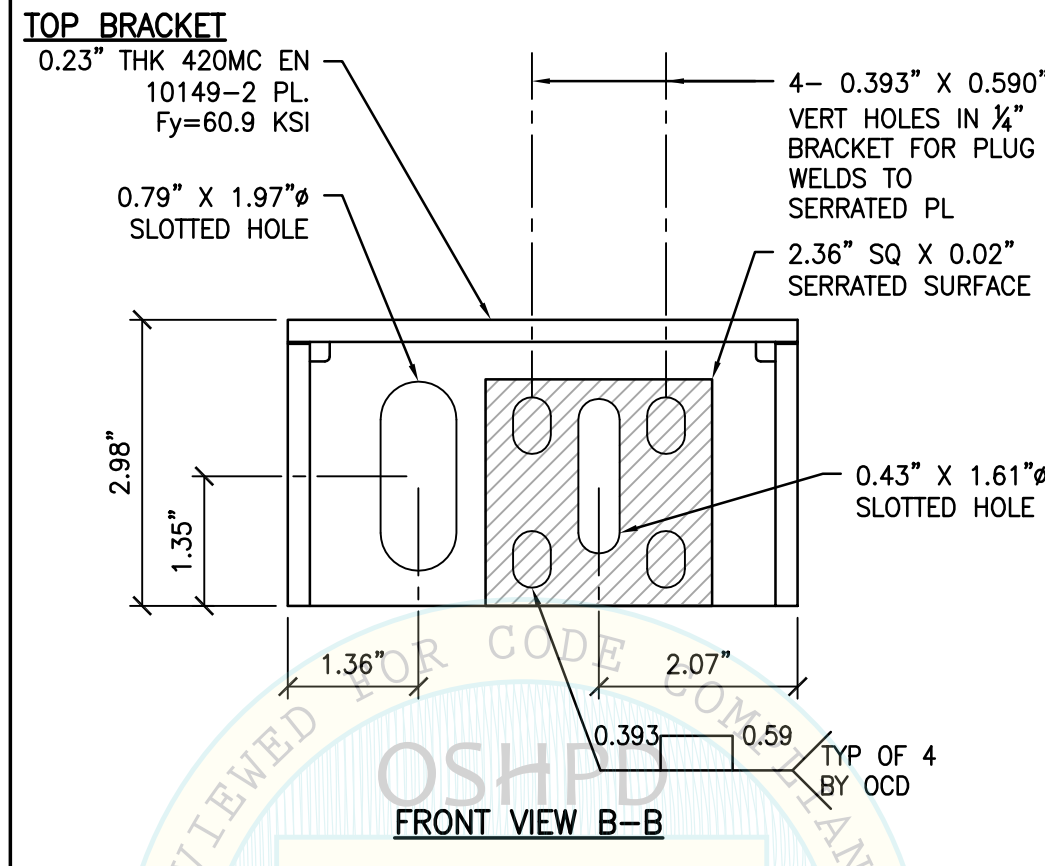
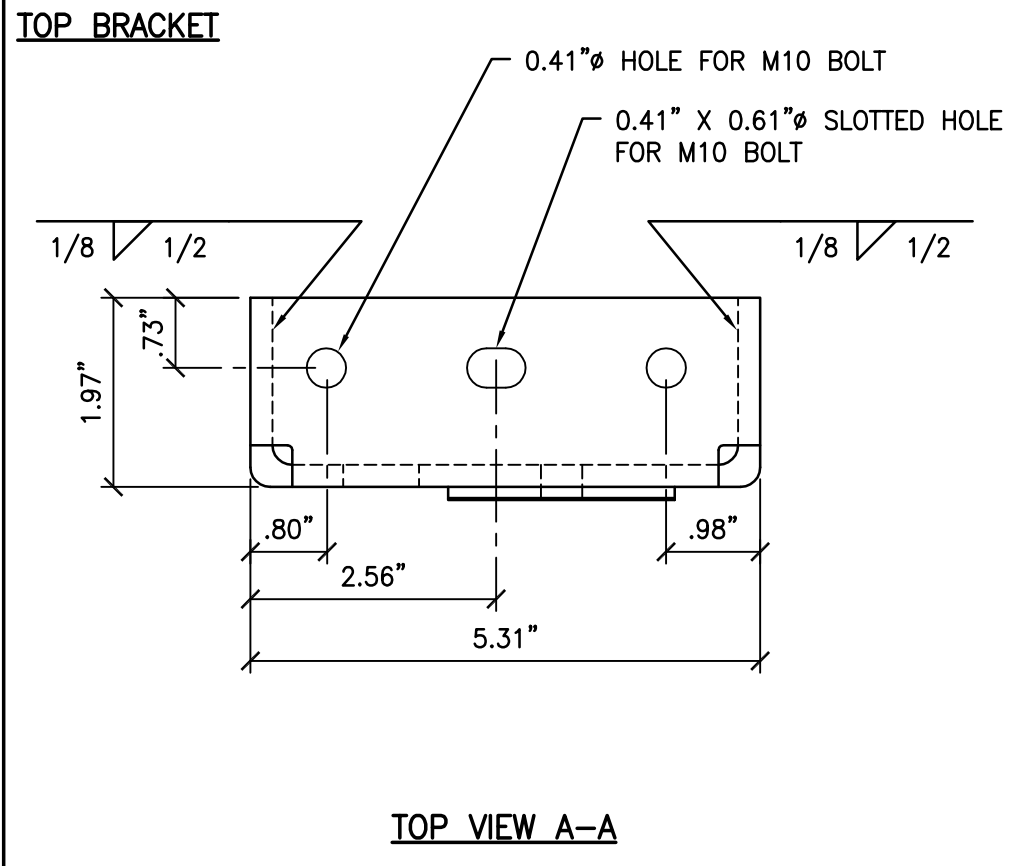
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SHEET TITLE: REAR BRACKET DETAILS



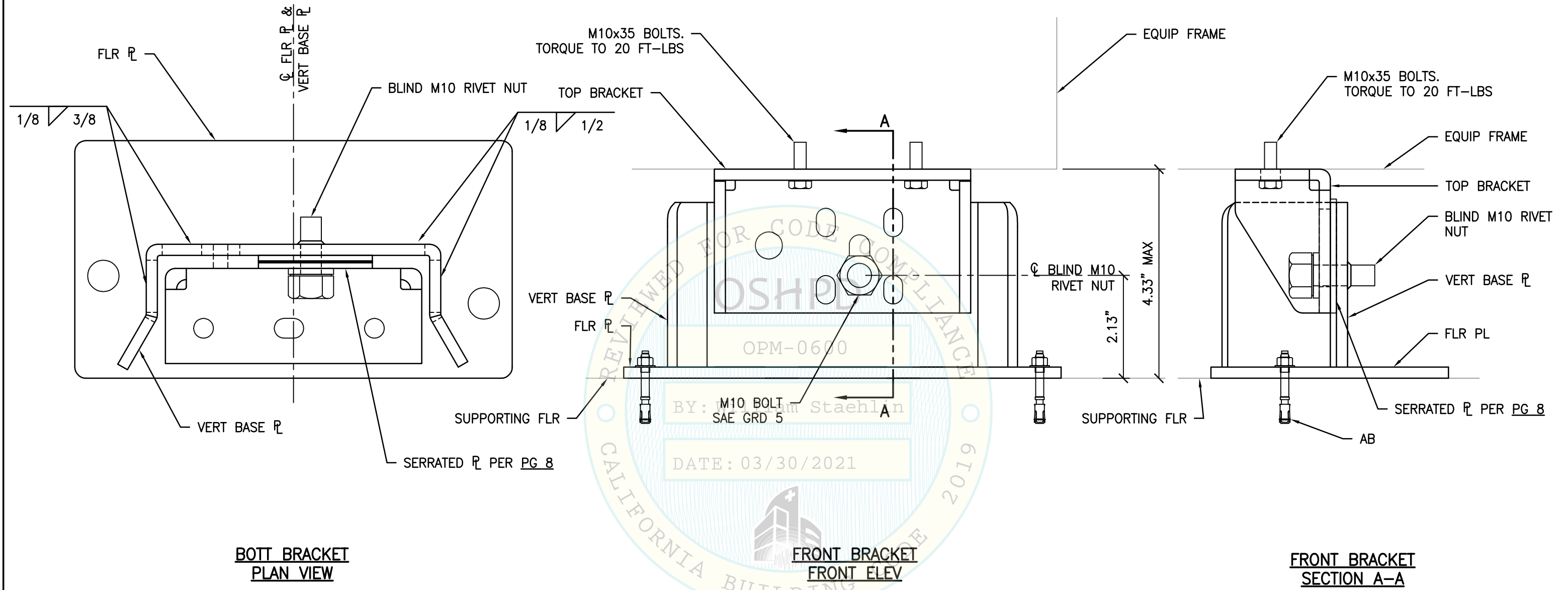
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SHEET TITLE: REAR BRACKET CONNECTION TO EQUIPMENT



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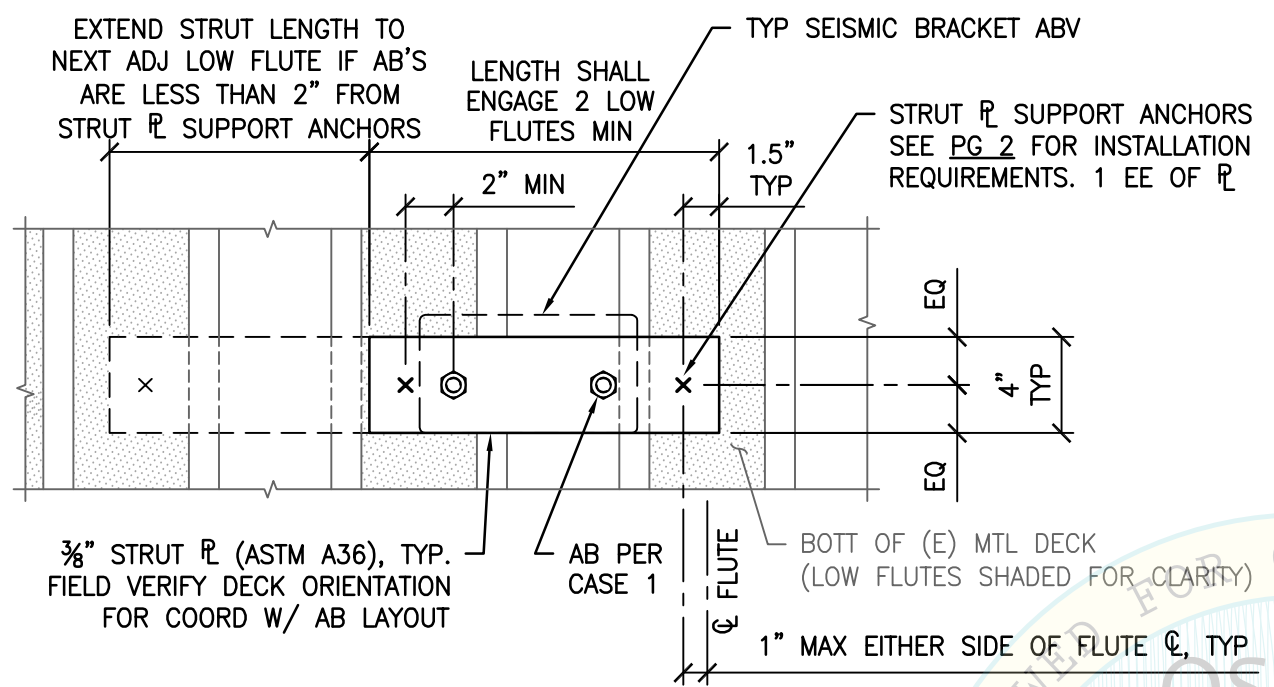


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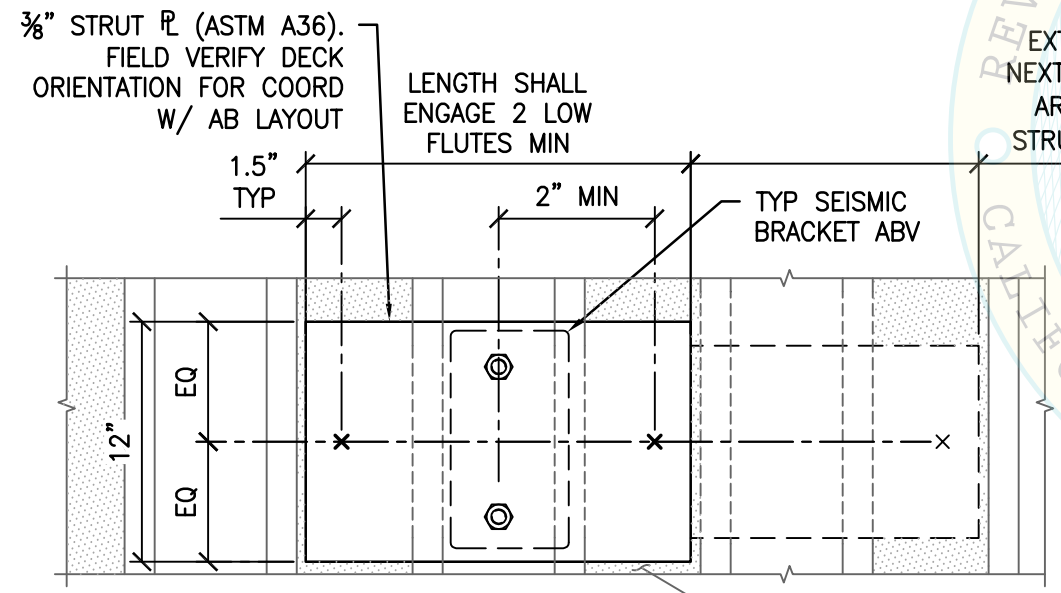
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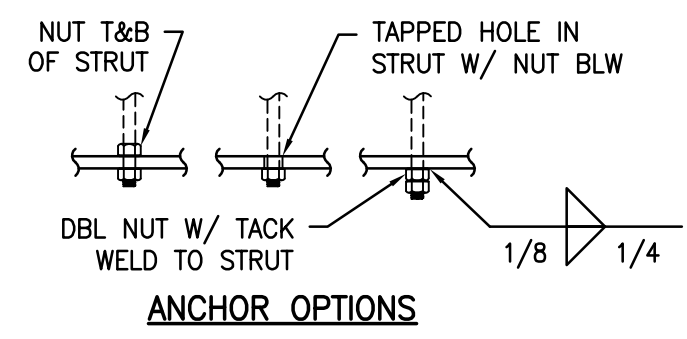


PLAN VIEW
ANCHORS PERP TO FLUTES



PLAN VIEW
ANCHORS PARALLEL TO FLUTES

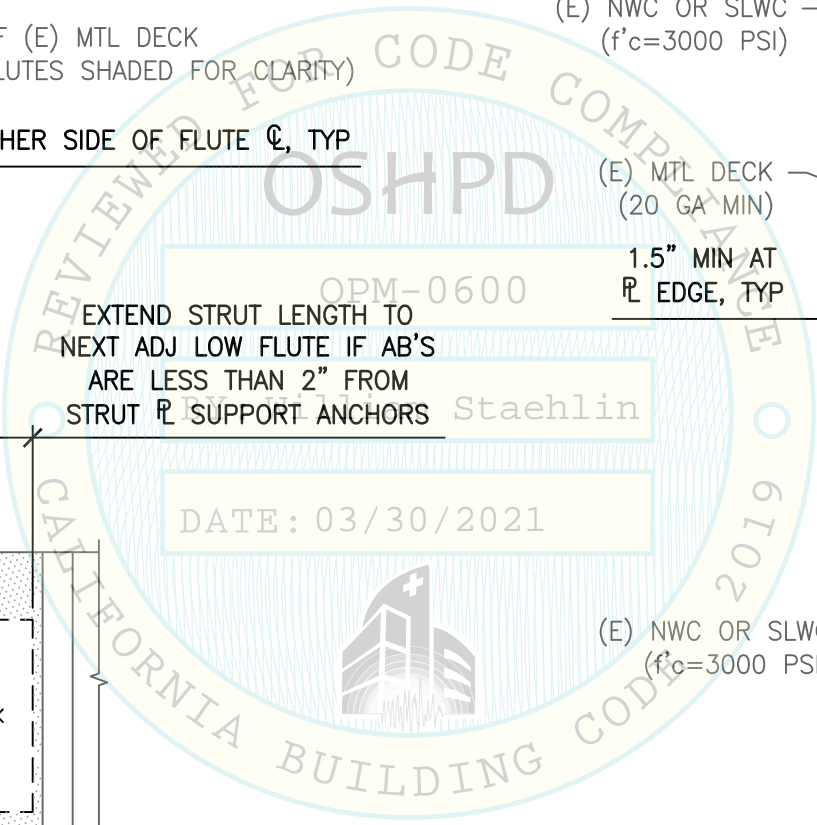
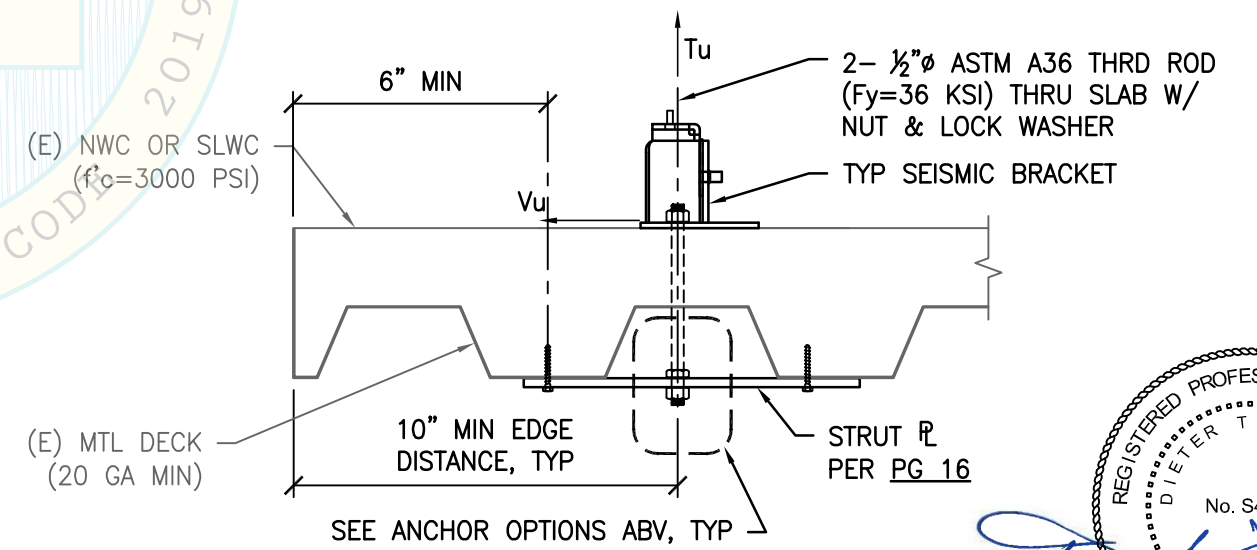
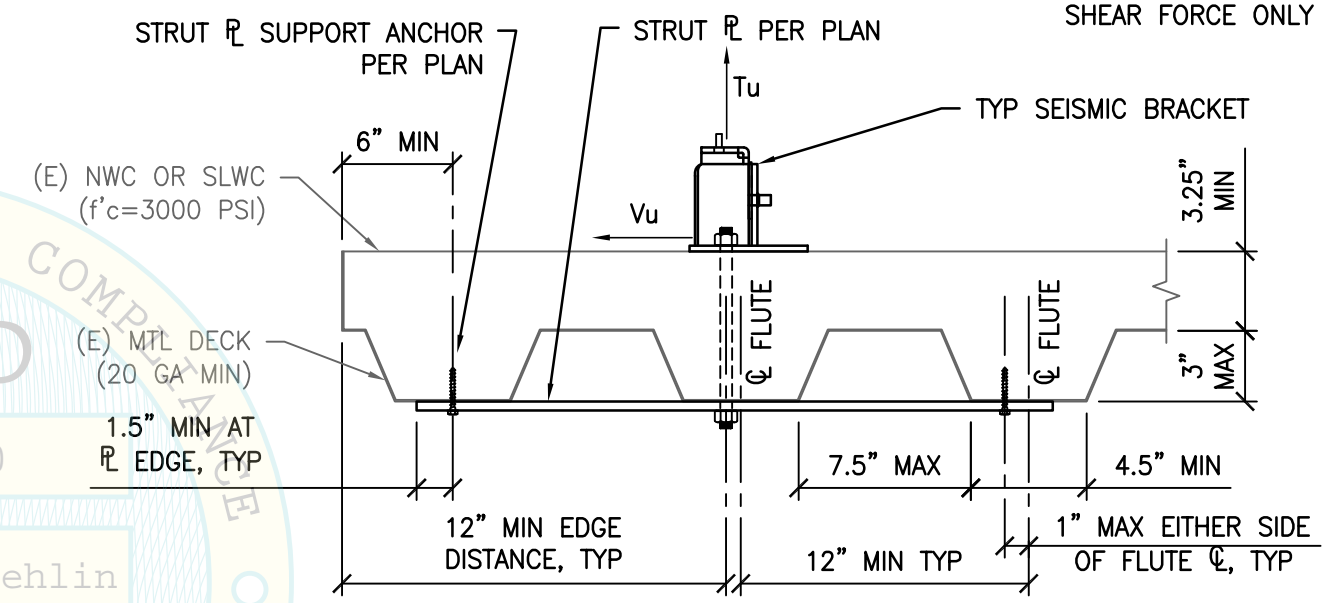
NOTES:
1. FOR INFO NOT SHOWN OR NOTED, SEE PLAN VIEW ABV.
2. PROVIDE 2-4" WIDE PLATES, ONE FOR EA BRACKET AB IN LIEU OF 12" WIDE PLATE SPECIFIED FOR THE TYP BRACKET.



ANCHOR OPTIONS

CASE 1 z/h ≤ 0.80	MAX ANCHOR FORCES AT LRFD AT EA AB (LBS)	
	Tu	Vu
CASCADION NC 10000	2047#	1334#
CASCADION NC 16557	1839#	561#

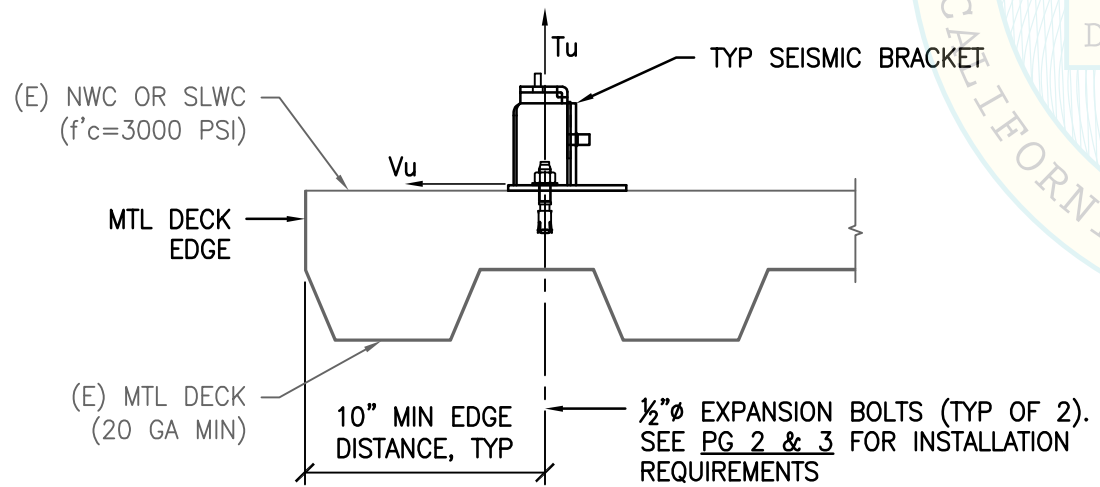
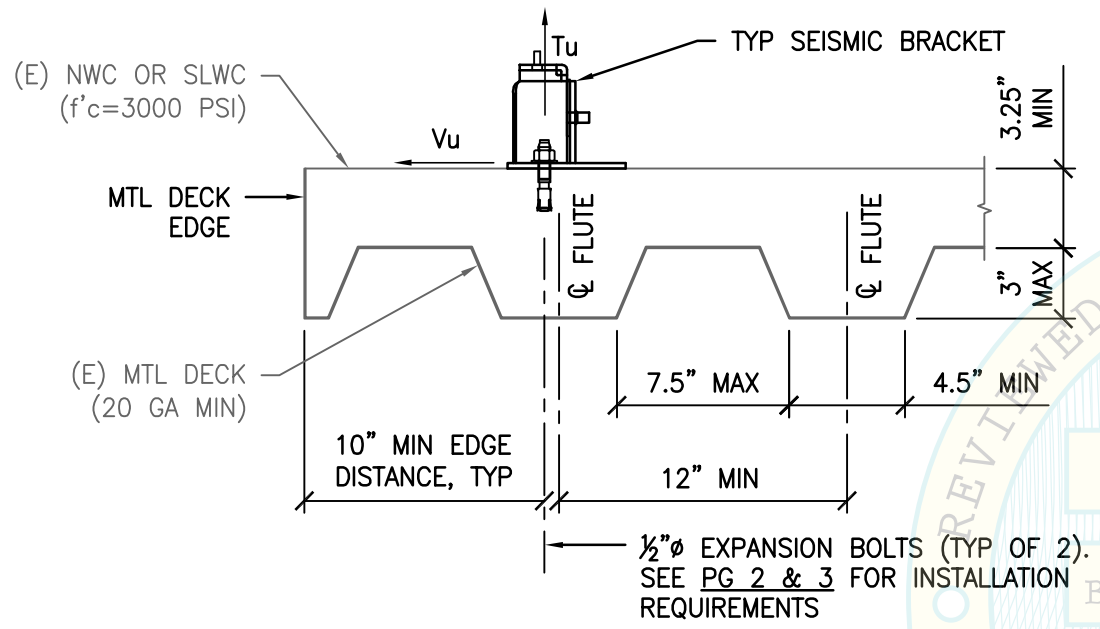
($\Omega_o = 1.5$) OVERSTRENGTH FACTOR IS APPLIED TO SHEAR FORCE ONLY



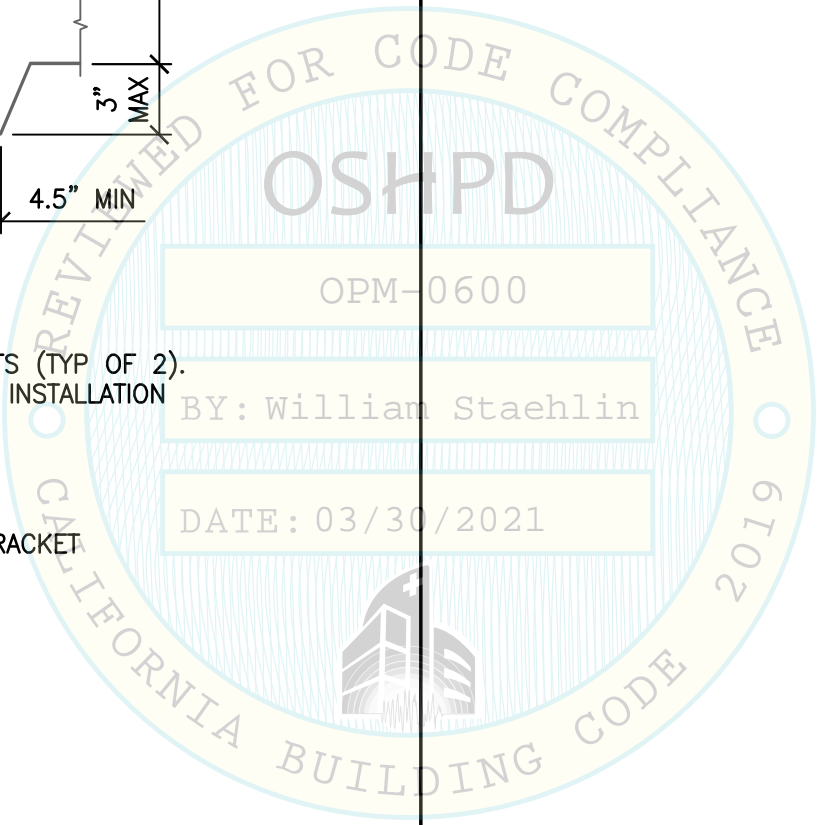
SHEET TITLE: ATTACHMENT DETAILS THROUGH CONCRETE FILL OVER METAL DECK (CASE 1)		Rev	Description	Date	Job No: 20060
		CYS STRUCTURAL ENGINEERS, INC. 2495 NATOMAS PARK DRIVE, SUITE 650 SACRAMENTO, CA 95833 TEL (916) 920-2020 www.cyseng.com		Date: 03/19/2021	Date: 03/19/2021
				CASCADION NC10000 & NC16557 ACCESSORY CABINET	
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MAX ANCHOR FORCES AT LRFD AT EA AB (LBS)		
CASE 2 z/h ≤ 0.80	T _u	V _u
CASCADION NC 10000	2120#	1400#
CASCADION NC 16557	1913#	587#

INCLUDES OVERSTRENGTH FACTOR ($\Omega_0=1.5$)



CONC FILL OVER MTL DECK



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SHEET TITLE: ATTACHMENT DETAILS TO CONCRETE FILL OVER METAL DECK (CASE 2)



CASCADION NC10000 & NC16557
ACCESSORY CABINET



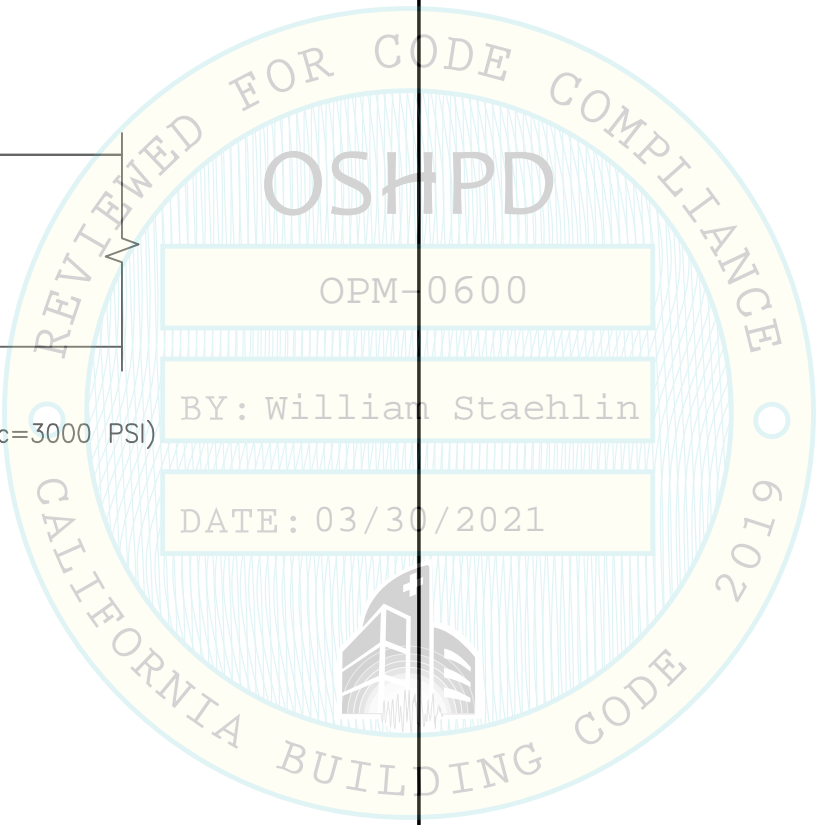
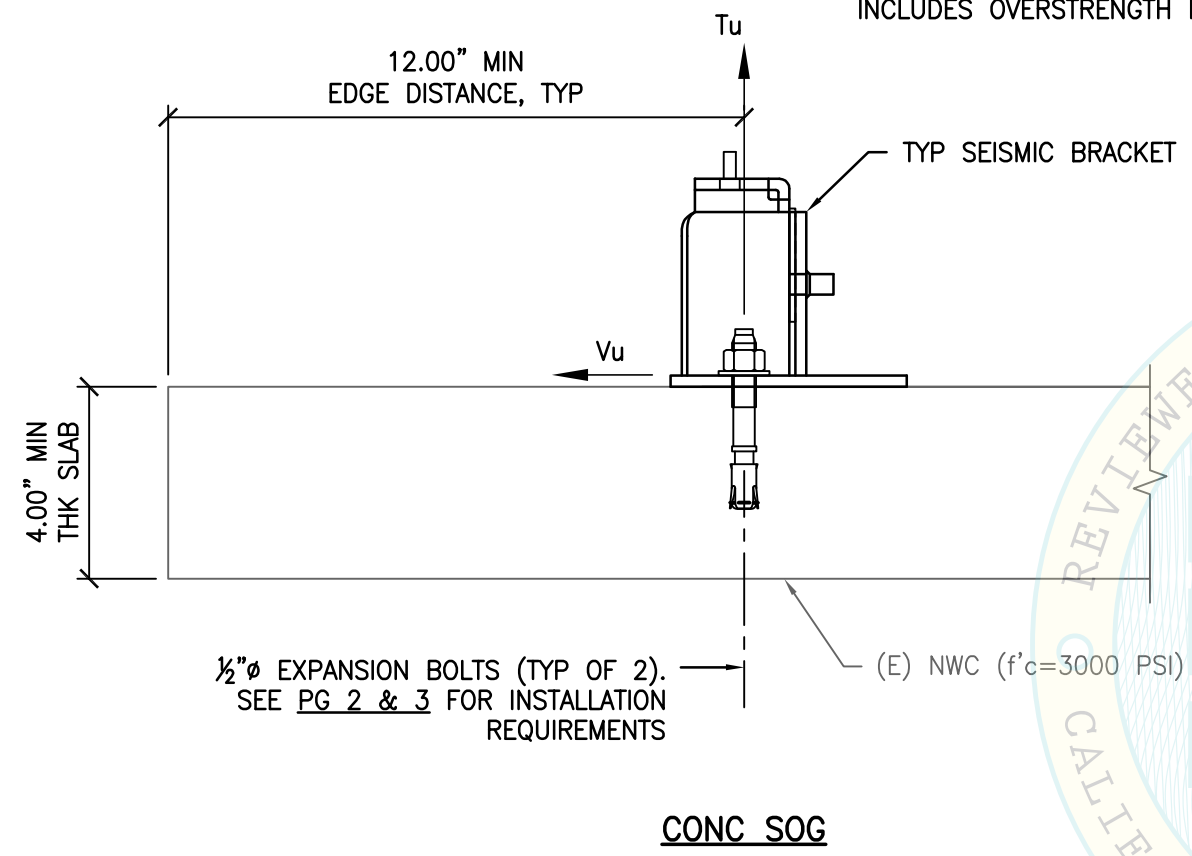
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MAX ANCHOR FORCES AT LRFD AT EA AB (LBS)		
CASE 3 z/h ≤ 0.00	Tu	Vu
CASCADION NC 10000	1119#	411#
CASCADION NC 16557	1000#	300#

INCLUDES OVERSTRENGTH FACTOR ($\Omega_0=1.5$)



SHEET TITLE: ATTACHMENT DETAILS TO
CONCRETE FILL SLAB ON GRADE (CASE 3)

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CASCADION NC10000 & NC16557
ACCESSORY CABINET



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