



DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION  
FACILITIES DEVELOPMENT DIVISION

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

OFFICE USE ONLY

APPLICATION #: OPM-0344

HCAI Preapproval of Manufacturer's Certification (OPM)

Type:  New  Renewal/Update

Manufacturer Information

Manufacturer: BD Integrated Solutions

Manufacturer's Technical Representative: Matthew Mellarkey

Mailing Address: 7 Loveton Circle, Sparks, MD 21152

Telephone: (410) 316-4810

Email: Matthew.Mellarkey@bd.com

Product Information

Product Name: BD PHOENIX M50

Product Type: Bacterial Testing Device

Product Model Number: BDDS443624

General Description: Grows & identifies bacteria & conducts antibiotic susceptibility testing

Applicant Information

Applicant Company Name: CYS Structural Engineers, Inc.

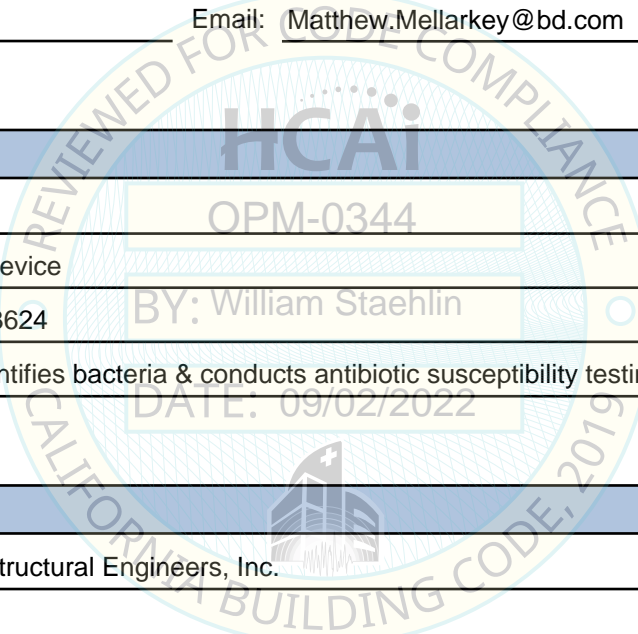
Contact Person: Dieter Siebald

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

Telephone: (916) 920-2020

Email: dieters@cyseng.com

Title: Structural Engineer



"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, 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: 9/2/2022
Name: William Staehlin Title: Senior Structural Engineer
Condition of Approval (if applicable):

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

STATE OF CALIFORNIA - HEALTH AND HUMAN SERVICES AGENCY

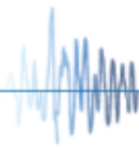


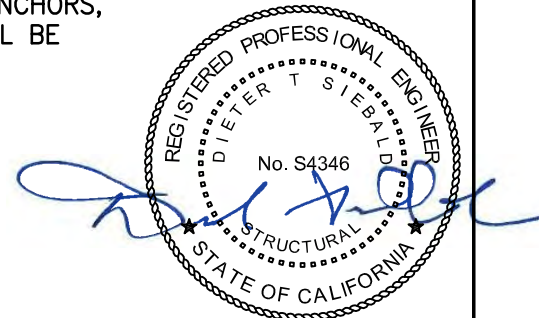


TABLE OF CONTENTS  
OPM-0344

	PAGE
GENERAL NOTES .....	2
ABBREVIATIONS .....	5
SYSTEM OVERVIEW & DESIGN CRITERIA .....	6
PHOENIX M50 CONFIGURATIONS ELEVATIONS & PLANS .....	7
STAND ISOMETRIC VIEW .....	9
STAND ASSEMBLY PLAN & ELEVATIONS .....	10
STAND FLOOR SEISMIC BRACKET DETAILS .....	11
PHOENIX M50 REAR SEISMIC BRACKET DETAIL .....	12
PHOENIX M50 FRONT FOOT BRACKET DETAILS .....	13
PHOENIX M50 STACKING BRACKET DETAIL .....	14
PHOENIX M50 & STAND LEVELING LEG DETAILS .....	15
ATTACHMENT DETAILS	
STAND TO CONCRETE FILL OVER METAL DECK (CASE 1) .....	16
STAND TO 6" SLAB ON GRADE (CASE 2) .....	18
STAND TO 4" SLAB ON GRADE (CASE 3) .....	19

- NOTES:**
1. THESE DRAWINGS ARE PREPARED FOR BD INTEGRATED DIAGNOSTIC SOLUTIONS, SPARKS, MARYLAND.
  2. THE CONTRACTOR & INSPECTOR OF RECORD SHALL OBTAIN A COPY OF THIS PRE-APPROVAL FROM THE CALIFORNIA DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION (HCAI) PRE-APPROVAL PROGRAMS WEBSITE.
  3. THIS PRE-APPROVAL COVERS THE SUPPORTS & ATTACHMENTS OF THE EQUIPMENT TO THE SUPPORTING STRUCTURE. THE EQUIPMENT, STAND & ATTACHMENT HARDWARE ARE SUPPLIED BY THE MANUFACTURER. THE EXPANSION ANCHORS, THRU-BOLTS & STRUT PLATES SHOWN IN THIS OPM SHALL BE SUPPLIED AND INSTALLED BY THE CONTRACTOR.

DATE: 09/02/2022



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

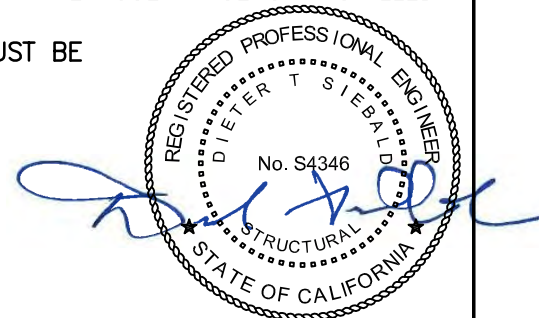
Job No:	22018.04
Date:	04-29-2022
Page:	1 of 19

L:\Jobs22\22018 BD - Five OPM KBTZ2 Amendments\22018.04 OPM-0344-13\ACAD\STRU\S1\_TASK 04.dwg Time:Apr29,2022-02:18pm Login:camachom Dimstyle:1 LTScale:6



**GENERAL NOTES:**

1. THIS HCAI 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.
2. IT IS THE RESPONSIBILITY OF THE SEOR FOR 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 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 EXISTING ANCHORS. THE SPCG SHOWN IN THE TEST TORQUE TABLE BLW 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.
  - D. THAT THE INSTALLATION IS IN CONFORMANCE W/ THE CBC 2019 & W/ THE DETAILS SHOWN IN THIS PRE-APPROVAL.
  - E. THAT THE ACTUAL EQUIP'S WT, CENTER OF GRAVITY (CG) LOCATION, ANCHOR LOCATIONS, ANCHOR DETAILS, & THE MATERIAL & GAUGE OF THE EQUIP WHERE ATTACHMENTS ARE MADE, AGREE W/ THE INFO SHOWN ON THE PRE-APPROVAL DOCUMENTS.
  - F. THAT THE PROJECT SPECIFIC VALUES OF  $S_{DS}$  &  $z/h$  RESULT IN SEISMIC FORCES THAT DO NOT EXCEED THE VALUES IN THE DESIGN CRITERIA.
3. EXPANSION ANCHORS INSTALLED IN NWC OR SLWC SHALL BE CARBON STL HILTI KB-TZ OR HILTI KB-TZ2 EXPANSION ANCHORS AS NOTED COMPLYING W/ ESR-1917 REISSUED MAY 2021 OR ESR-4266 REVISED DECEMBER 17, 2021 RESPECTIVELY.
  - 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 BLW.
  - B. 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 HCAI. 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 CBC 1910A.5 "TESTS FOR POST-INSTALLED ANCHORS IN CONCRETE". REPORT OF TEST RESULTS SHALL BE SUBMITTED TO HCAI. TESTING SHALL BE PERFORMED BY AN APPROVED TESTING AGENCY EMPLOYED BY THE FACILITY OWNER. TEST REPORTS SHALL BE SUBMITTED TO THE IOR, OWNER & THE ARCHITECT OR ENGINEER IN RESPONSIBLE CHARGE. (CAC 7-149)
  - 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 (1/2) TURN OF THE NUT.
  - D. AVOID DAMAGING (E) STL REINF IN CONC SLAB WHEN INSTALLING CONC EXPANSION ANCHORS.
  - E. PROVIDE FOR FULL THRD ENGAGEMENT OF NUT & WASHER.



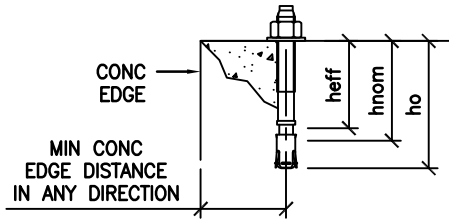
SHEET TITLE: GENERAL NOTES

<p><b>CYS STRUCTURAL ENGINEERS, INC.</b> 2495 NATOMAS PARK DRIVE, SUITE 650 SACRAMENTO, CA 95833</p>	TEL (916) 920-2020 www.cyseng.com	Job No: 22018.04 Date: 04-29-2022 Page: 2 of 19
--	--------------------------------------	---

L:\Jobs22\22018 BD - Five OPM KBTZ2 Amendments\22018.04 OPM-0344-13\ACAD\STRU\SI\_TASK 04.dwg Time:Apr29,2022-02:18pm Login:camcohom DimScale:1 LScale:6

**GENERAL NOTES CONTINUED:**

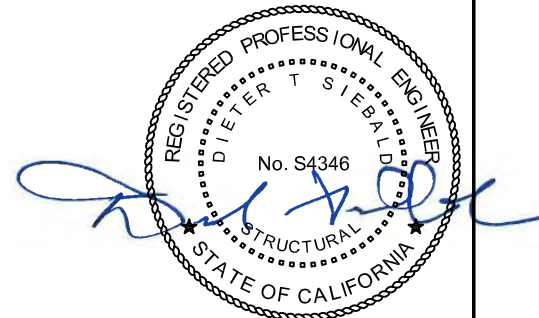
3F. EXPANSION ANCHOR TABLE FOR HILTI KB-TZ & KB-TZ2 ANCHORS:



CONDITION OF ANCHORAGE	ANCHOR DIA (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 1 STRUT P'S	3/8	1 13/16" (1 7/8")	1 1/2	2	3/4	12	5	25 (30)
CASE 2	1/2	3 5/8 (3 3/4)	3 1/4	4 (4 1/4)	6	12	4 1/4	40 (50)
CASE 3	1/2	2 3/8" (2 1/2")	2	2 5/8 (2 3/4)	4	12	4 1/4	40 (50)

**NOTES:**

1. VALUES IN PARENTHESES ARE FOR HILTI KB-TZ2.
2. VALUES ARE THE SAME FOR BOTH ANCHORS WHERE ONLY ONE NUMBER IS REPORTED.
4. BOLTS THROUGH CONC ON MTL DECK:
  - A. BOLTS SHALL BE TORQUED BY 3/4 TURN OF THE NUTS AFTER SNUG TIGHT (THE SNUG TIGHT CONDITION IS DEFINED AS THE TIGHTNESS REQ TO BRING THE CONNECTED PLIES INTO FIRM CONTACT) CONDITION IS ACHIEVED, UNO.
  - B. THROUGH BOLT HOLES SHALL BE 1/16" LARGER THAN BOLT SIZE (HOLE SIZE = BOLT SIZE + 1/16")
  - C. THROUGH BOLTS IN CONC SHALL RECEIVE SPECIAL INSPECTION & TESTING (THROUGH BOLTS W/ STL TO STL CONN IN TENSION DO NOT REQUIRE TESTING) IN ACCORDANCE W/ REQUIREMENTS FOR POST-INSTALLED ANCHORS.



SHEET TITLE: GENERAL NOTES (CONTINUED)

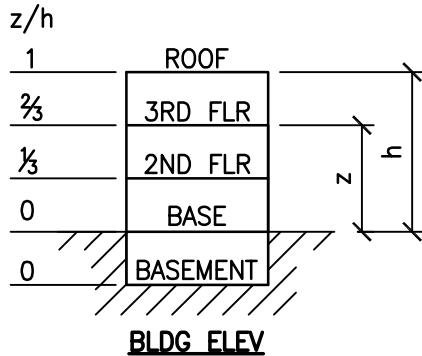
 <p><b>CYS STRUCTURAL ENGINEERS, INC.</b> 2495 NATOMAS PARK DRIVE, SUITE 650 SACRAMENTO, CA 95833</p>	<p>TEL (916) 920-2020 www.cyseng.com</p>	<p>Job No: 22018.04 Date: 04-29-2022 Page: 3 of 19</p>
--	--	--

L:\Jobs22\22018 BD - Five OPM KBTZ2 Amendments\22018.04 OPM-0344-13\ACAD\STRU\SI\_TASK 04.dwg Time: Apr 29, 2022 - 02:18pm Login: camcochom DimScale: 1 LScale: 6



**GENERAL NOTES CONTINUED:**

5. 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. 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).

FOR CASE 1:  $z/h \leq 1$  &  $S_{ps} \leq 2.50$

**CASE 2:** ATTACHMENT DETAILS LOCATED AT OR BLW THE BASE OF A BLDG. THE FLRS ARE ASSUMED TO BE BUILT OF A MIN 6" NWC SLAB ( $f'c = 3000$  PSI, MIN).

FOR CASE 2A (SINGLE UNIT ON STAND):

$z/h = 0$  &  $S_{ps} \leq 2.50$

FOR CASE 2B (STACKED UNITS ON STAND):

$z/h = 0$  &  $S_{ps} \leq 2.20$

**CASE 3:** ATTACHMENT DETAILS LOCATED AT OR BLW THE BASE OF A BLDG. THE FLRS ARE ASSUMED TO BE BUILT OF A MIN 4" NWC SLAB ( $f'c = 3000$  PSI, MIN).

FOR CASE 3A (SINGLE UNIT ON STAND):

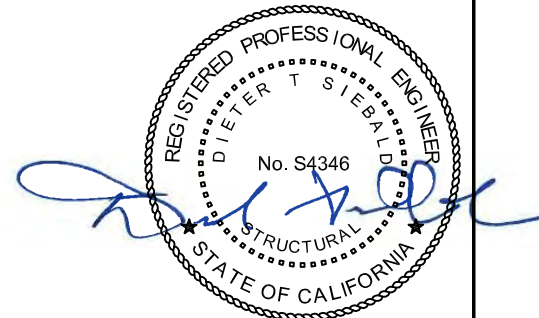
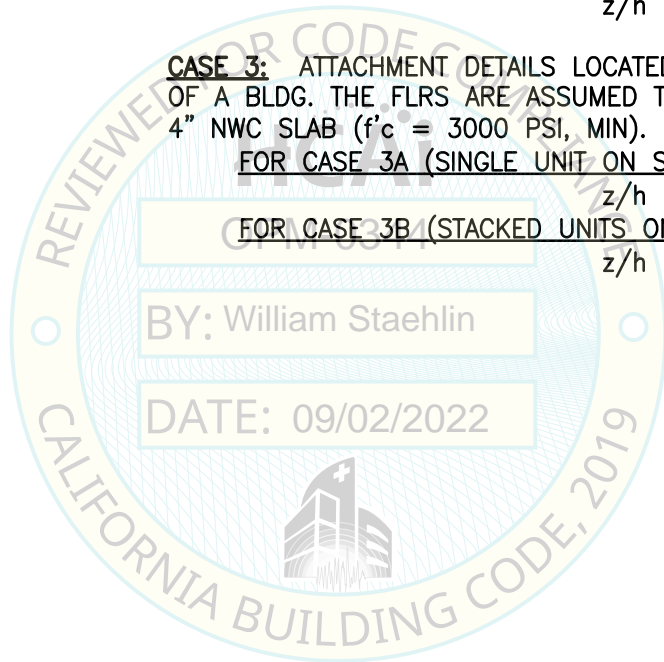
$z/h = 0$  &  $S_{ps} \leq 2.0$

FOR CASE 3B (STACKED UNITS ON STAND):

$z/h = 0$  &  $S_{ps} \leq 1.4$

BY: William Staehlin

DATE: 09/02/2022



SHEET TITLE: GENERAL NOTES (CONTINUED)



**CYS STRUCTURAL ENGINEERS, INC.**

2495 NATOMAS PARK DRIVE, SUITE 650  
SACRAMENTO, CA 95833

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

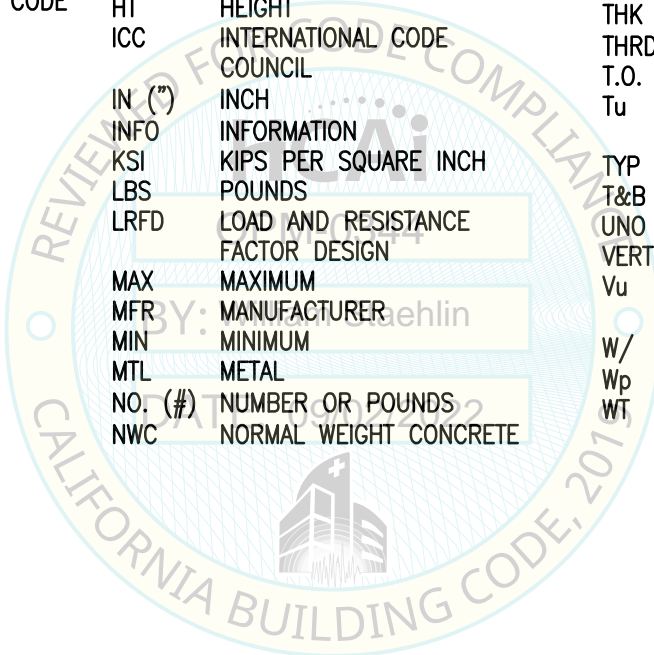
Job No:	22018.04
Date:	04-29-2022
Page:	4 of 19

L:\Jobs22\22018 BD - Five OPM KBTZ2 Amendments\22018.04 OPM-0344-13\ACAD\STRU\S1\_TASK 04.dwg Time:Apr29,2022-02:18pm Login:camcochom Dimstyle:1 LTScale:6



**ABBREVIATIONS:**

@	AT	f'c	MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF CONCRETE	OPG	OPENING
∠	ANGLE			OPM	HCAI PRE-APPROVAL OF MANUFACTURER'S CERTIFICATION
AB	ANCHOR BOLT	FLG	FLANGE		
ABV	ABOVE	FLR	FLOOR	PERP	PERPENDICULAR
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS	FT (')	FOOT/FEET	PG(S)	PAGE(S)
ADJ	ADJACENT	F <sub>p</sub>	HORIZONTAL SEISMIC FORCE PER ASCE 7-16 SEISMIC FORCE REQUIREMENTS	PL	PLATE
AISI	AMERICAN IRON & STEEL INSTITUTE	F <sub>y</sub>	SPECIFIED MINIMUM YIELD STRESS OF STEEL	PSI	POUNDS PER SQUARE INCH
ALUM	ALUMINUM			REQ	REQUIRED
ASTM	AMERICAN SOCIETY FOR TESTING & MATERIALS	GA	GAUGE	SEOR	STRUCTURAL ENGINEER OF RECORD
BLDG	BUILDING	GR	GRADE	SLWC	SAND-LIGHTWEIGHT CONCRETE
BLW	BELOW	HCAI	CALIFORNIA DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION	SPCG	SPACING
BOTT	BOTTOM			SPEC	SPECIFICATION
CBC	CALIFORNIA BUILDING CODE	HT	HEIGHT	SS	STAINLESS STEEL
CG	CENTER OF GRAVITY	ICC	INTERNATIONAL CODE COUNCIL	STL	STEEL
CL	CENTERLINE			THK	THICK/THICKNESS
CONC	CONCRETE	IN (")	INCH	THRD	THREAD OR THREADED
COORD	COORDINATE	INFO	INFORMATION	T.O.	TOP OF
CRS	COLD-ROLLED STEEL	KSI	KIPS PER SQUARE INCH	Tu	ANCHORAGE TENSION REACTION DUE TO SEISMIC FORCE
DEG	DEGREE	LBS	POUNDS	TYP	TYPICAL
DIA (∅)	DIAMETER	LRFD	LOAD AND RESISTANCE FACTOR DESIGN	T&B	TOP & BOTTOM
(E)	EXISTING CONDITION	MAX	MAXIMUM	UNO	UNLESS NOTED OTHERWISE
EA	EACH	MFR	MANUFACTURER	VERT	VERTICAL
EE	EACH END	MIN	MINIMUM	Vu	ANCHORAGE SHEAR REACTION DUE TO SEISMIC FORCE
ELEV	ELEVATION	MTL	METAL	W/	WITH
EQ	EQUAL	NO. (#)	NUMBER OR POUNDS	Wp	OPERATING WEIGHT
EQUIP	EQUIPMENT	NWC	NORMAL WEIGHT CONCRETE	WT	WEIGHT
ES	EACH SIDE				



SHEET TITLE: ABBREVIATIONS

	<b>CYS STRUCTURAL ENGINEERS, INC.</b> 2495 NATOMAS PARK DRIVE, SUITE 650 SACRAMENTO, CA 95833	TEL (916) 920-2020 www.cyseng.com	Job No: 22018.04 Date: 04-29-2022 Page: 5 of 19
--	---	--------------------------------------	---

L:\Jobs22\22018 BD - Five OPM KBTZ2 Amendments\22018.04 OPM-0344-13\ACAD\STRU\S1\_TASK 04.dwg Time:Apr29,2022-02:18pm Login:camcohom Dimscale:1 LScale:6



**SYSTEM OVERVIEW & DESIGN CRITERIA:**

1. TWO (2) INSTALLATION CONFIGURATIONS OF THE BD PHOENIX M50 UNIT ARE COVERED BY THIS OPM, THE STAND CONFIGURATION "A" W/ SINGLE UNIT ON STAND & CONFIGURATION "B" STACKED UNITS ON STAND. THE STACKED UNIT ON STAND, CONFIGURATION "B", IS SHOWN ON PG 7 & 8. THE SINGLE UNIT ON STAND, CONFIGURATION "A", IS NOT SHOWN BUT ALLOWABLE MAX  $S_{DS}$  VALUES ARE GIVEN BLW. PLEASE NOTE, THE MAX  $S_{DS}$  IS DIFFERENT FOR EA CONFIGURATION DUE TO THE DIFFERENCE IN TOTAL EQUIP WT & HT OF CG.

2. 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:

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

$W_p$  AS NOTED ON DRAWINGS ON PG 7

UPPER FLRS ABV THE BASE OF BLDG,  $z/h \leq 1$

CASE 1:       $S_{DS} = 2.50$        $F_p = 3.00 W_p$

FLRS AT OR BLW THE BASE OF BLDG,  $z/h = 0$

CASE 2A:       $S_{DS} = 2.50$        $F_p = 1.13 W_p$

CASE 2B:       $S_{DS} = 2.20$        $F_p = 0.99 W_p$

CASE 3A:       $S_{DS} = 2.0$        $F_p = 0.90 W_p$

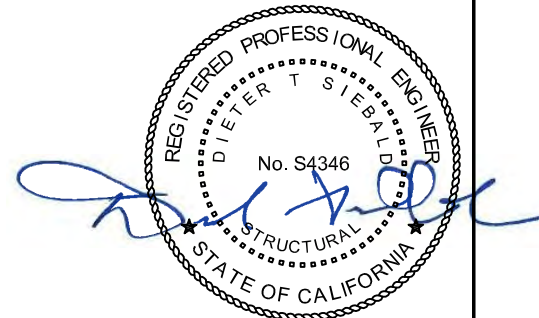
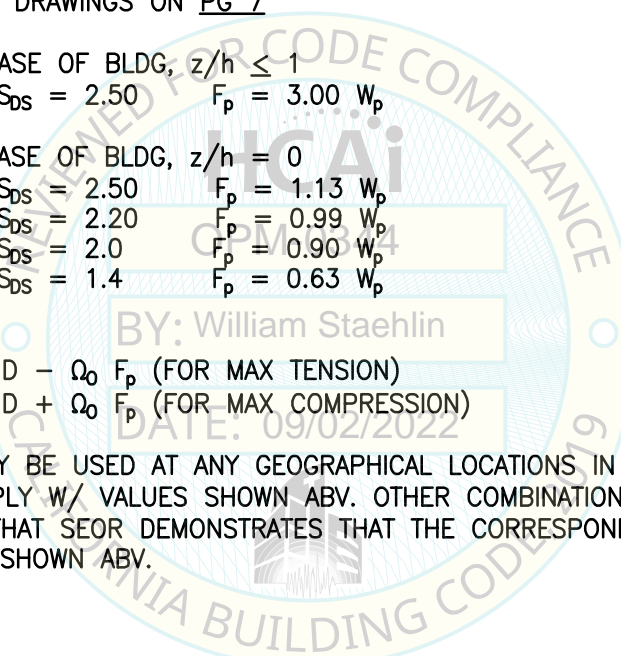
CASE 3B:       $S_{DS} = 1.4$        $F_p = 0.63 W_p$

**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)

3. THIS PRE-APPROVAL MAY BE USED AT ANY GEOGRAPHICAL LOCATIONS IN THE STATE OF CALIFORNIA WHERE  $S_{DS}$  &  $z/h$  COMPLY W/ VALUES SHOWN ABV. OTHER COMBINATIONS OF  $S_{DS}$  &  $z/h$  ARE ACCEPTABLE PROVIDED THAT SEOR DEMONSTRATES THAT THE CORRESPONDING  $F_p$  VALUE IS LESS THAN OR EQ TO VALUE SHOWN ABV.

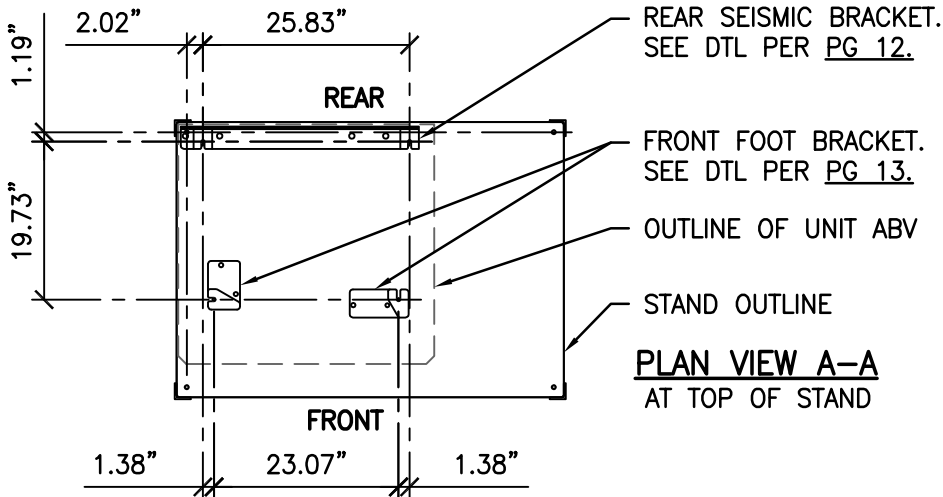


SHEET TITLE: SYSTEM OVERVIEW & DESIGN CRITERIA

<p><b>CYS STRUCTURAL ENGINEERS, INC.</b> 2495 NATOMAS PARK DRIVE, SUITE 650 SACRAMENTO, CA 95833</p>	TEL (916) 920-2020 www.cyseng.com	Job No: 22018.04 Date: 04-29-2022 Page: 6 of 19
--	--------------------------------------	---

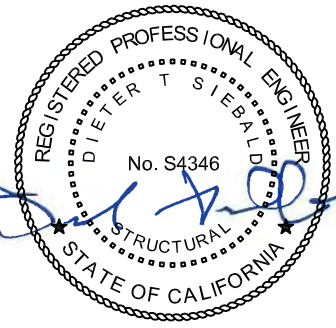
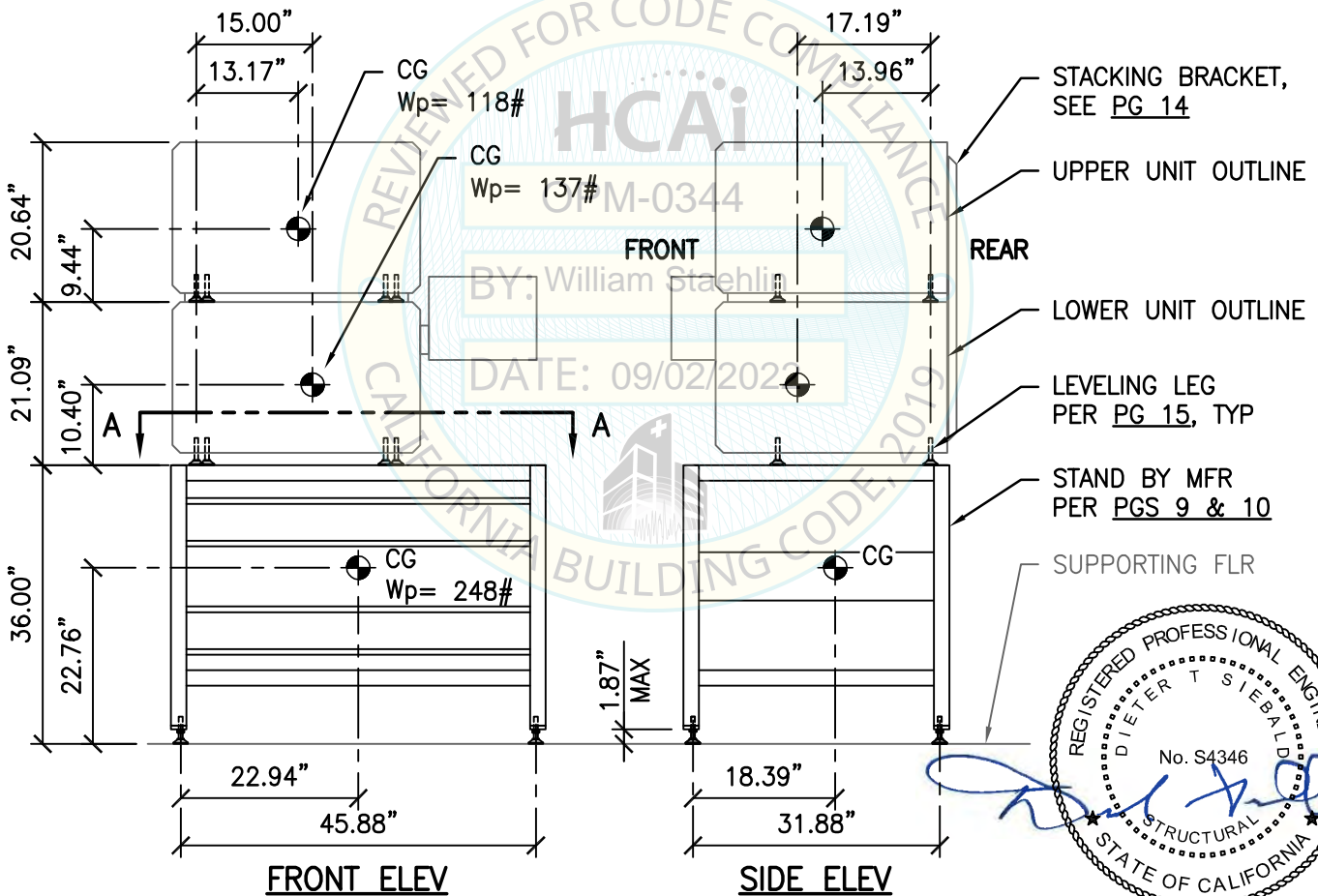
L:\Jobs22\22018 BD - Five OPM KBTZ2 Amendments\22018.04 OPM-0344-13\ACAD\STRU\S1\_TASK 04.dwg Time:Apr29,2022-02:18pm Login:camcochom Dimscale:1 LScale:6





**NOTES:**

- SEE PG 9 FOR ISOMETRIC VIEW OF STAND.
- THERE MAY BE EITHER A SINGLE UNIT OR TWO STACKED UNITS ON THE STAND. REFER TO PG 6.



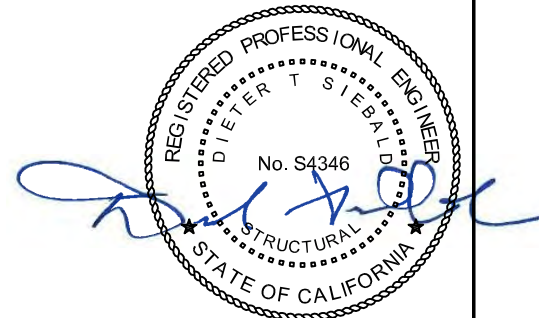
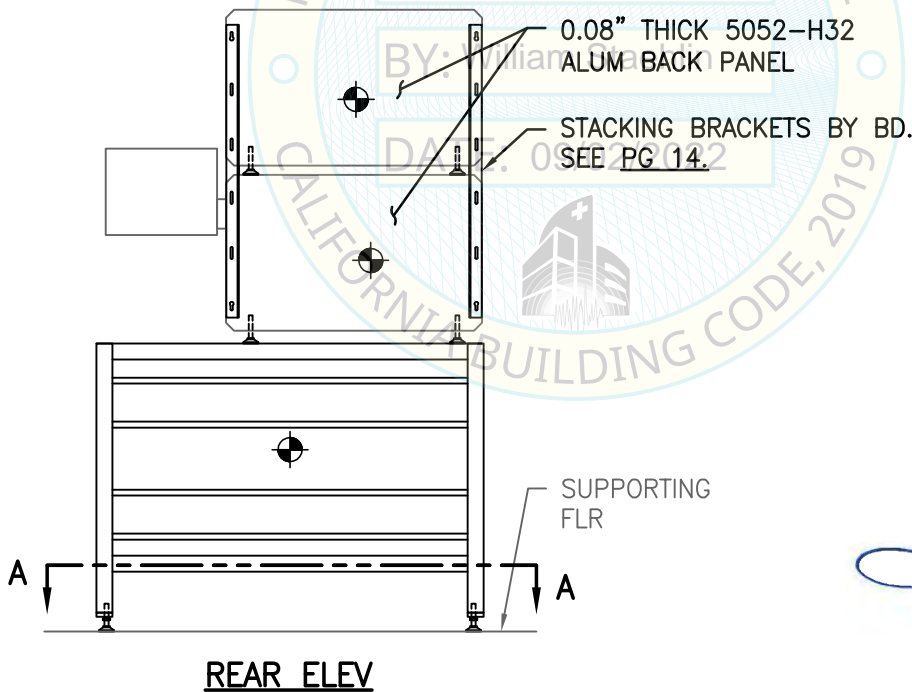
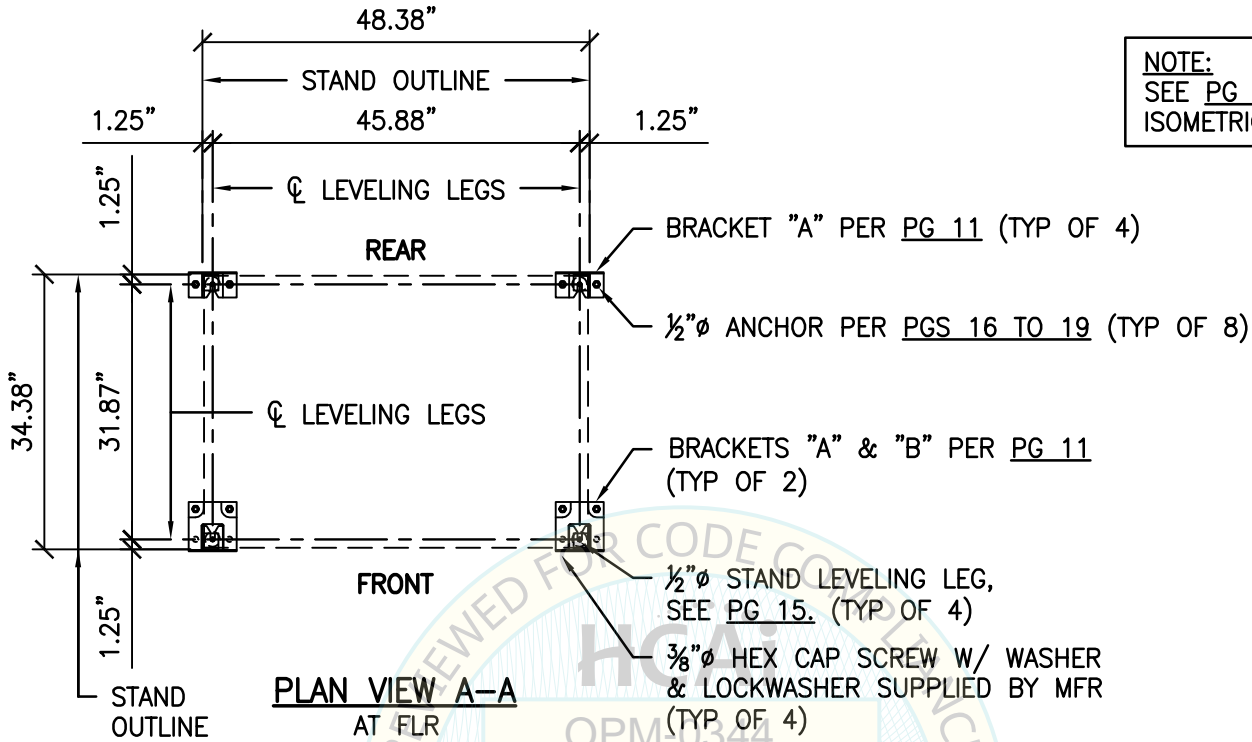
SHEET TITLE: PHOENIX M50 CONFIGURATIONS  
ELEVATIONS & PLANS

<p><b>CYS STRUCTURAL ENGINEERS, INC.</b> 2495 NATOMAS PARK DRIVE, SUITE 650 SACRAMENTO, CA 95833</p>	TEL (916) 920-2020 www.cyseng.com	Job No: 22018.04 Date: 04-29-2022 Page: 7 of 19
--	--------------------------------------	---

L:\Jobs22\22018 BD - Five OPM KBTZ2 Amendments\22018.04 OPM-0344-13\ACAD\STRU\S1\_TASK 04.dwg Time:Apr29,2022-02:18pm Login:camcochom DimScale:1 LScale:6



**NOTE:**  
SEE PG 9 FOR  
ISOMETRIC VIEW.

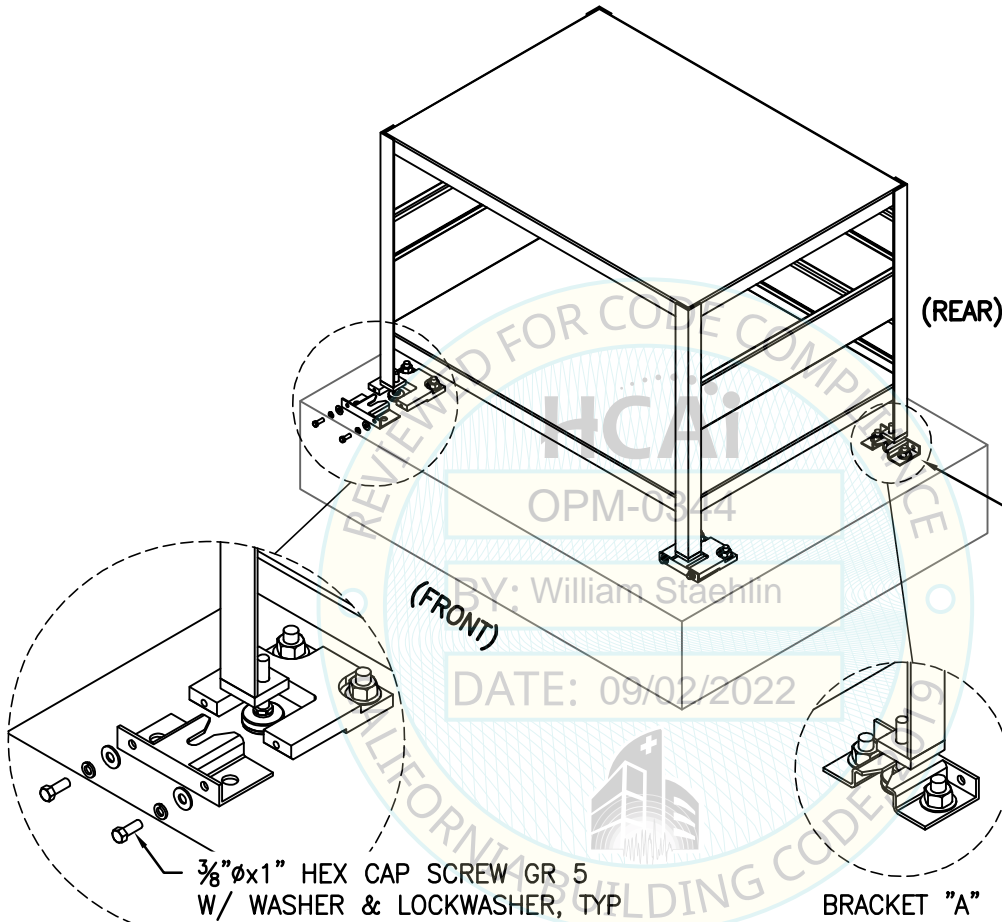


SHEET TITLE: PHOENIX M50 CONFIGURATIONS  
ELEVATIONS & PLANS

<p><b>CYS STRUCTURAL ENGINEERS, INC.</b> 2495 NATOMAS PARK DRIVE, SUITE 650 SACRAMENTO, CA 95833</p>	TEL (916) 920-2020 www.cyseng.com	Job No: 22018.04 Date: 04-29-2022 Page: 8 of 19
--	--------------------------------------	---

L:\Jobs22\22018 BD - Five OPM KBTZ2 Amendments\22018.04 OPM-0344-13\ACAD\STRU\S1\_TASK 04.dwg Time: Apr 29, 2022 - 02:18pm Login: camachom DimScale: 1 LScale: 6

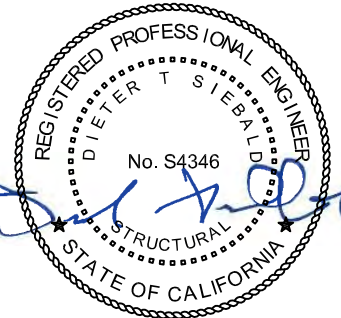
**NOTES:**  
1. UNITS NOT SHOWN FOR CLARITY.  
2. SEE NOTE 3 ON PG 1.



FOR BRACKETS "A" & "B"  
SEE PG 11

TYP AT STAND  
FRONT LEGS

TYP AT STAND  
REAR LEGS



SHEET TITLE: STAND ISOMETRIC VIEW



**CYS STRUCTURAL ENGINEERS, INC.**

2495 NATOMAS PARK DRIVE, SUITE 650  
SACRAMENTO, CA 95833

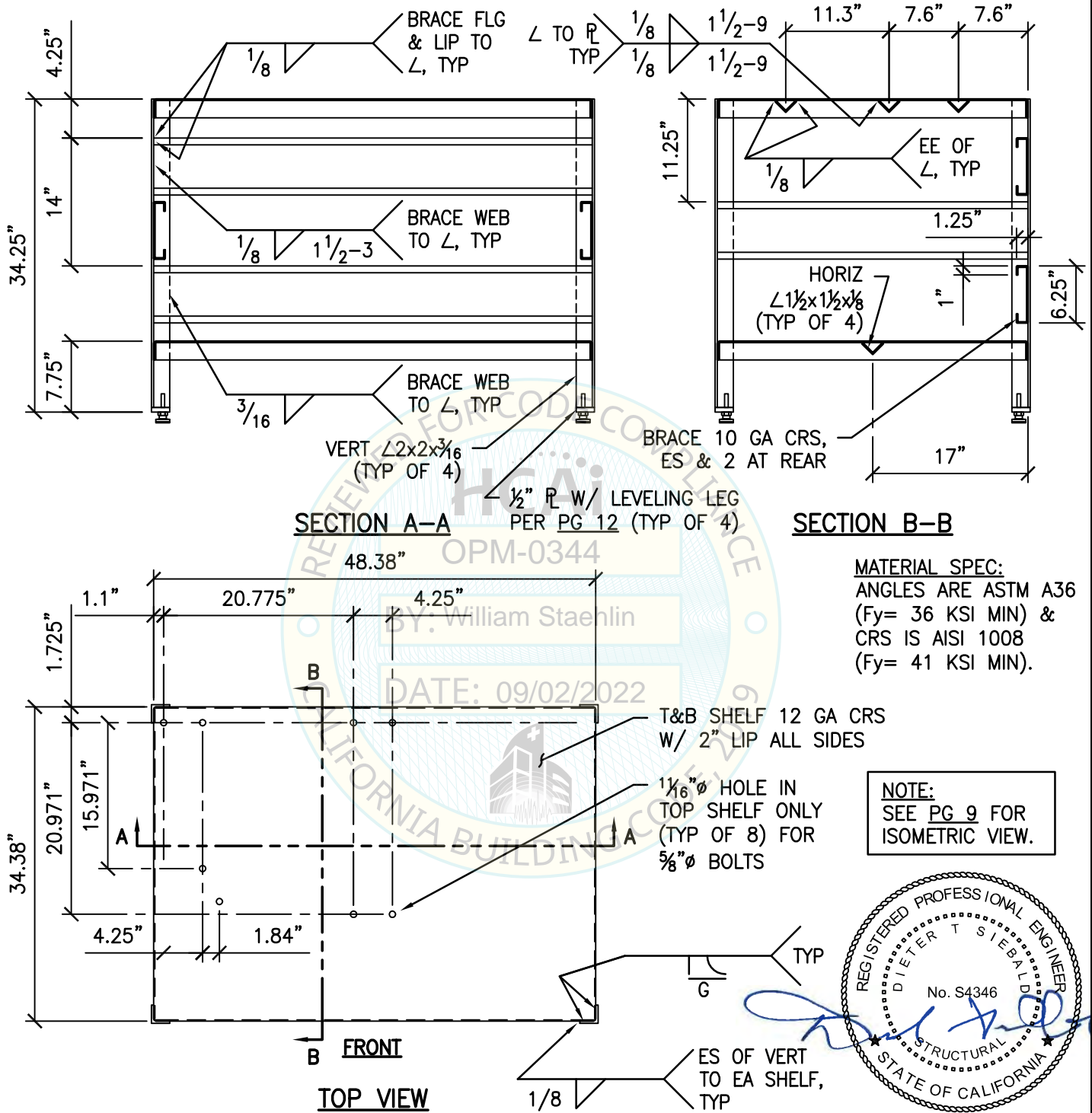
TEL (916) 920-2020  
www.cyseng.com

Job No:	22018.04
Date:	04-29-2022
Page:	9 of 19

L:\Jobs22\22018 BD - Five OPM KBTZ2 Amendments\22018.04 OPM-0344-13\ACAD\STRU\S1\_TASK 04.dwg Time:Apr29,2022-02:18pm Login:camachom Dimscale:1 LTScale:6



L:\Jobs22\22018 BD - Five OPM KBTZ2 Amendments\22018.04 OPM-0344-13\ACAD\STRU\S1\_TASK 04.dwg Time:Apr29,2022-02:18pm Login:camachom DimScale:1 LTScale:6



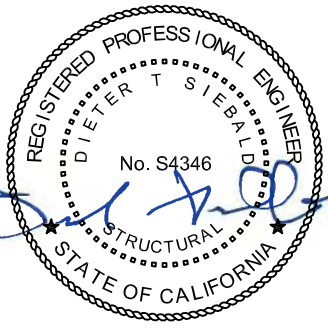
**SECTION A-A**

**SECTION B-B**

**TOP VIEW**

**MATERIAL SPEC:**  
ANGLES ARE ASTM A36  
(Fy = 36 KSI MIN) &  
CRS IS AISI 1008  
(Fy = 41 KSI MIN).

**NOTE:**  
SEE PG 9 FOR  
ISOMETRIC VIEW.

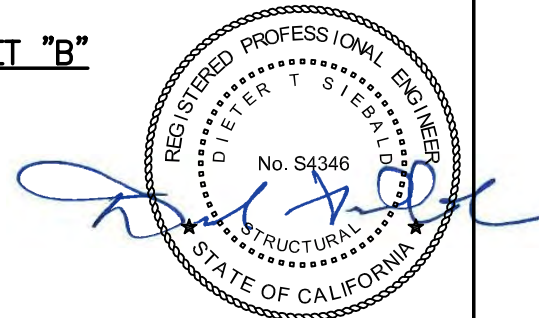
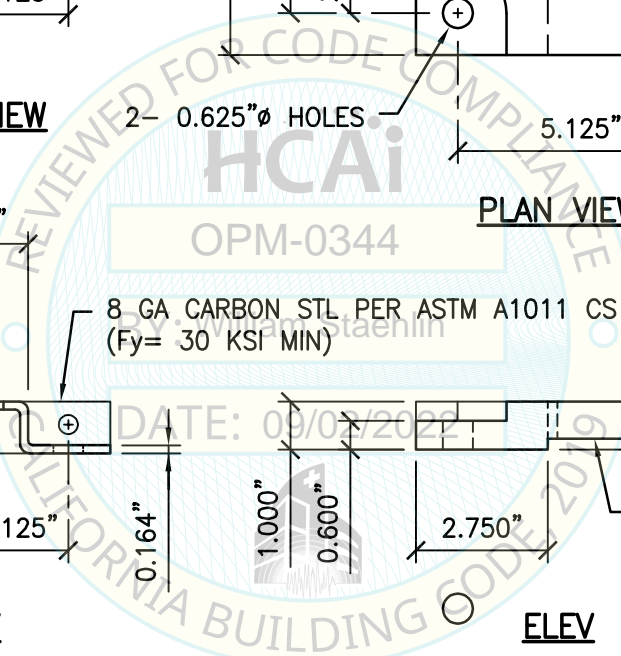
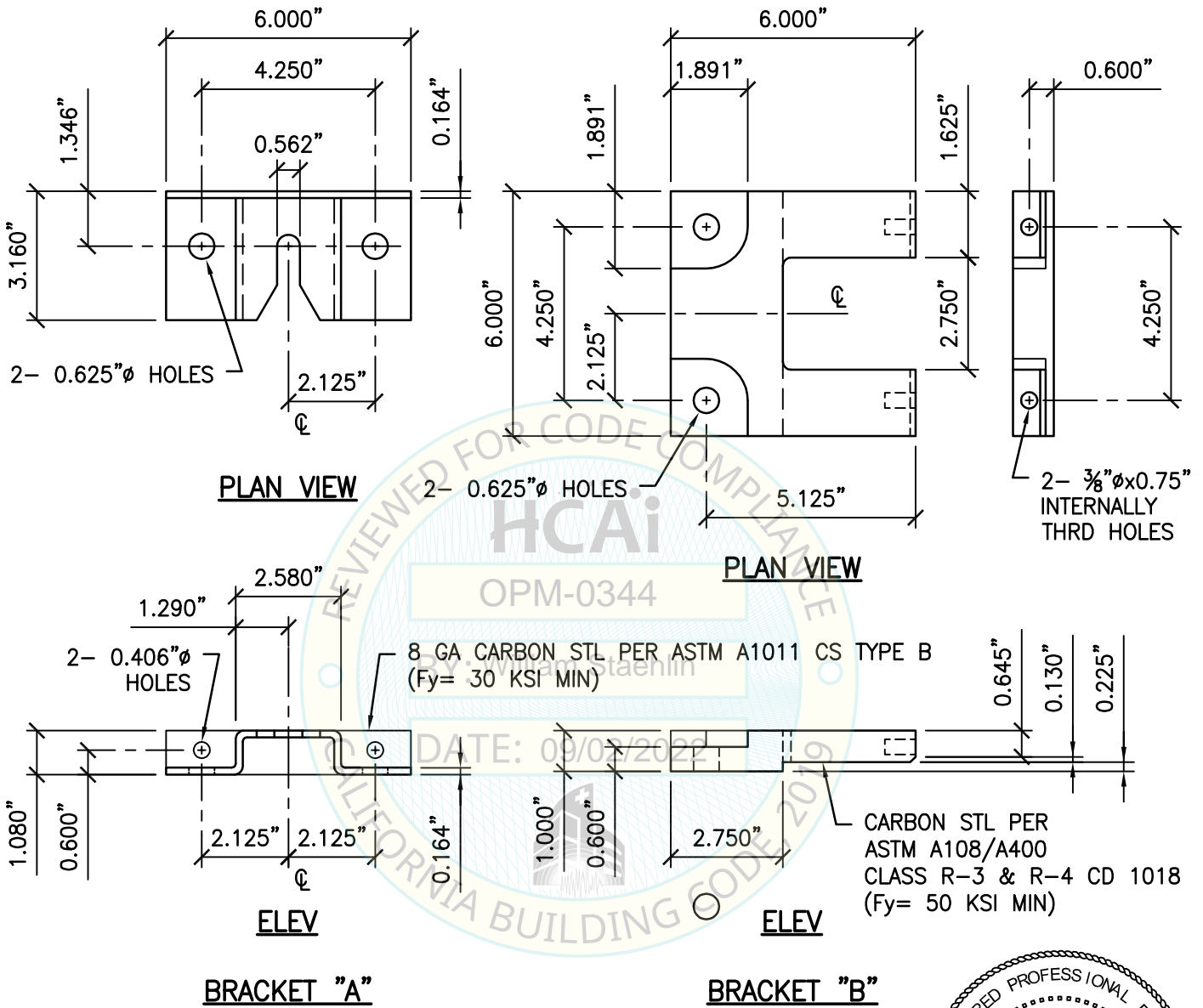


SHEET TITLE: STAND ASSEMBLY  
PLAN & ELEVATIONS

<p><b>CYS STRUCTURAL ENGINEERS, INC.</b> 2495 NATOMAS PARK DRIVE, SUITE 650 SACRAMENTO, CA 95833</p>	TEL (916) 920-2020 www.cyseng.com	Job No: 22018.04 Date: 04-29-2022 Page: 10 of 19
--	--------------------------------------	--



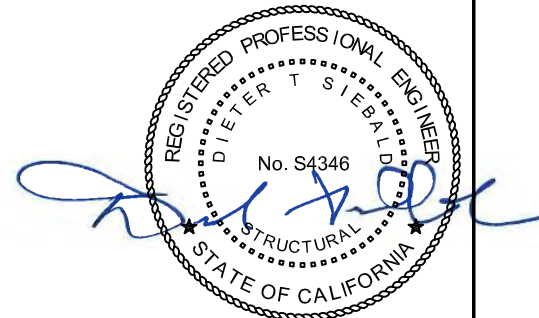
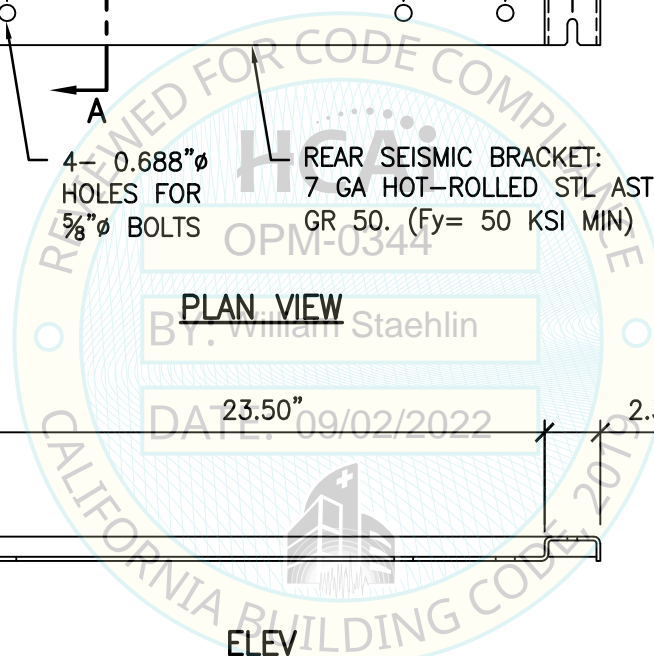
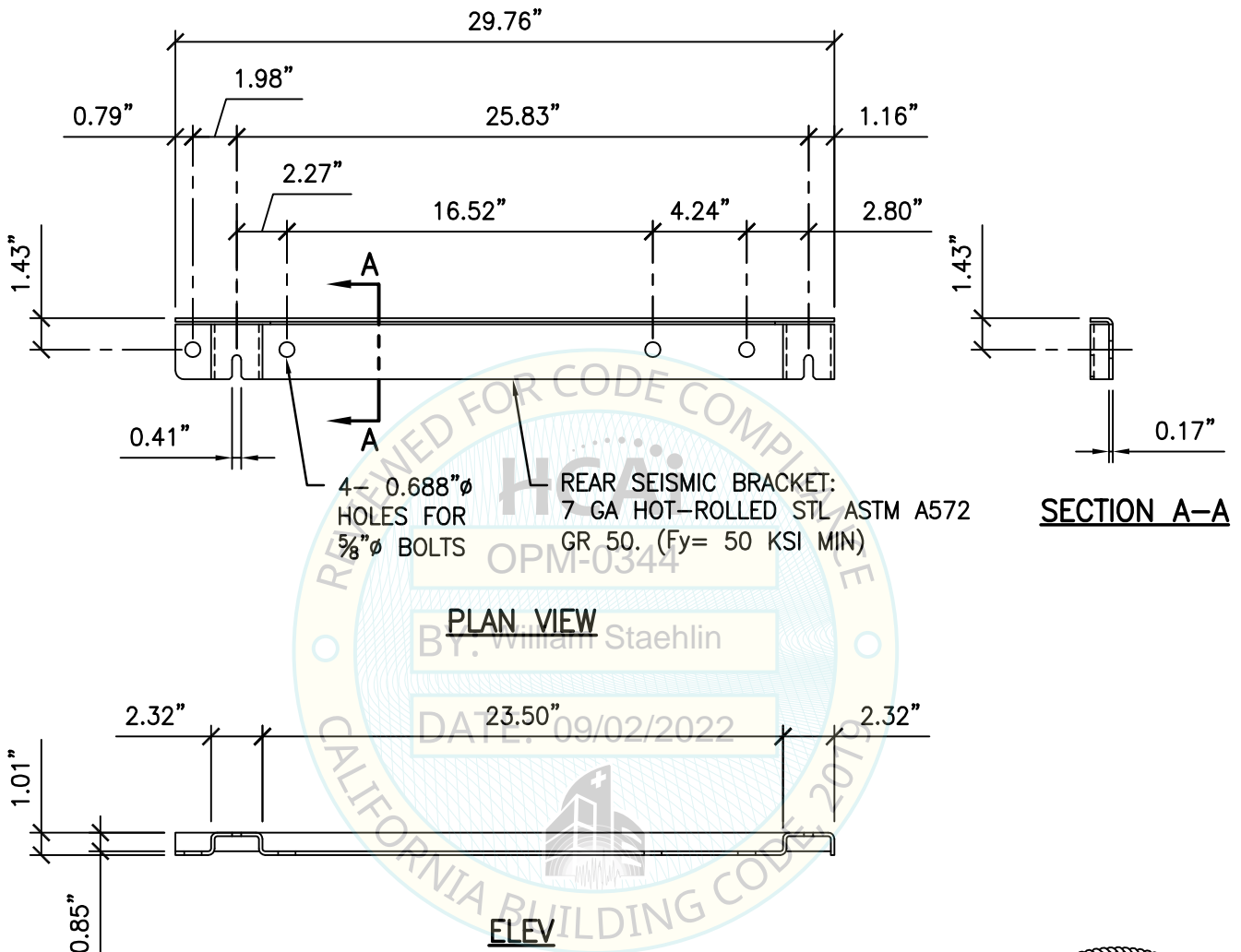
L:\Jobs22\22018 BD - Five OPM KBTZ2 Amendments\22018.04 OPM-0344-13\ACAD\STRU\S1\_TASK 04.dwg Time:Apr29,2022-02:18pm Login:camcochom DimScale:1 LScale:6



SHEET TITLE: STAND FLOOR SEISMIC BRACKET DETAILS

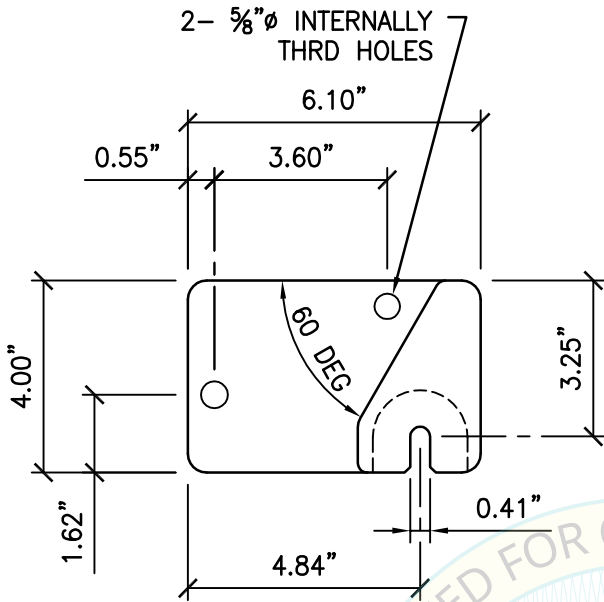
<p><b>CYS STRUCTURAL ENGINEERS, INC.</b> 2495 NATOMAS PARK DRIVE, SUITE 650 SACRAMENTO, CA 95833</p>	TEL (916) 920-2020 www.cyseng.com	Job No: 22018.04 Date: 04-29-2022 Page: 11 of 19
--	--------------------------------------	--

L:\Jobs22\22018 BD - Five OPM KBTZ2 Amendments\22018.04 OPM-0344-13\ACAD\STRU\S1\_TASK 04.dwg Time:Apr29,2022-02:18pm Login:camcochom Dimscale:1 LScale:6

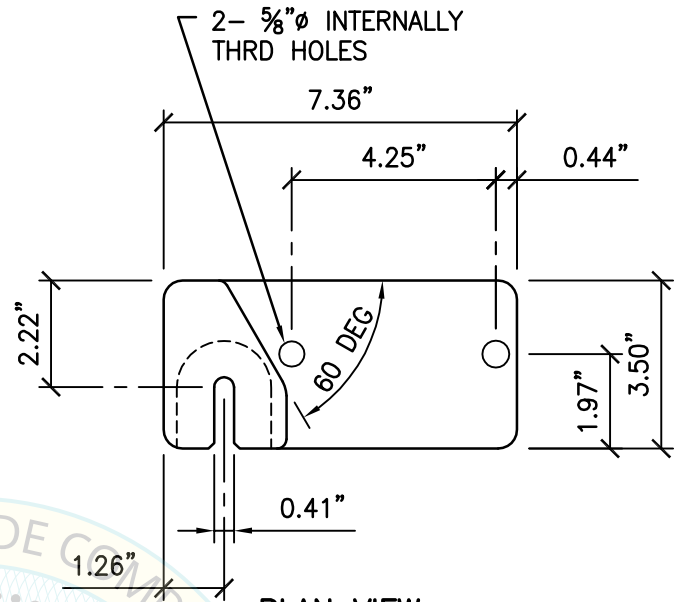


SHEET TITLE: PHOENIX M50 REAR SEISMIC BRACKET DETAIL

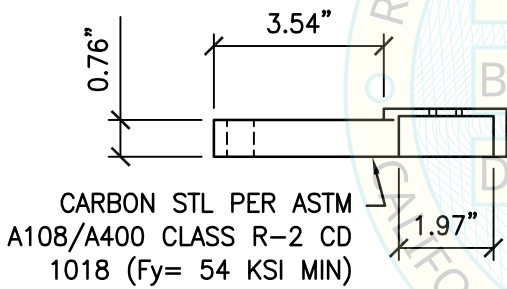
<p><b>CYS STRUCTURAL ENGINEERS, INC.</b> 2495 NATOMAS PARK DRIVE, SUITE 650 SACRAMENTO, CA 95833</p>	TEL (916) 920-2020 www.cyseng.com	Job No: 22018.04 Date: 04-29-2022 Page: 12 of 19
--	--------------------------------------	--



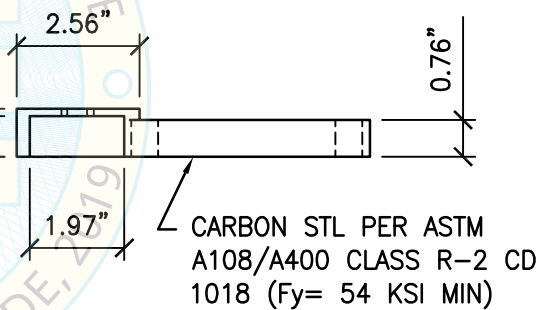
**PLAN VIEW**  
FRONT LEFT FOOT BRACKET



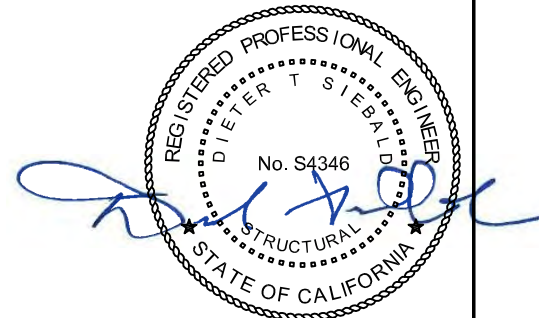
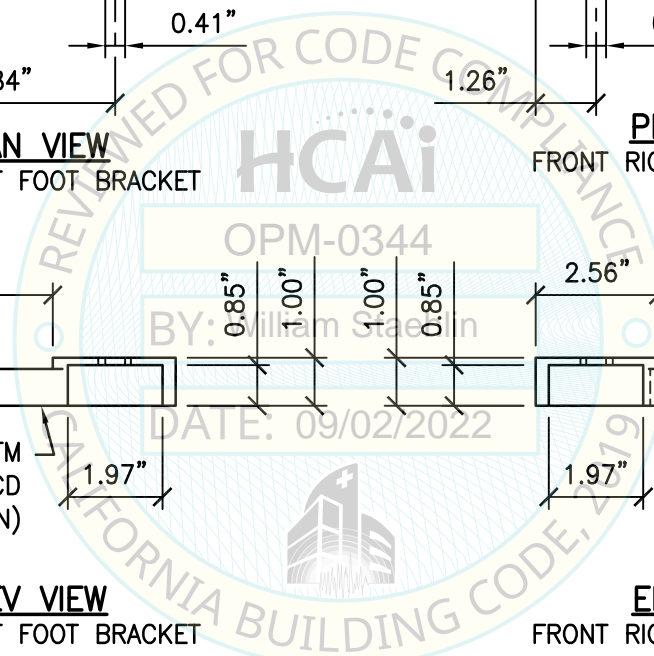
**PLAN VIEW**  
FRONT RIGHT FOOT BRACKET



**ELEV VIEW**  
FRONT LEFT FOOT BRACKET



**ELEV VIEW**  
FRONT RIGHT FOOT BRACKET



SHEET TITLE: PHOENIX M50 FRONT FOOT BRACKET DETAILS



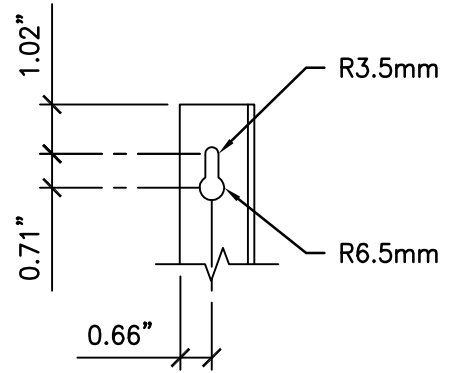
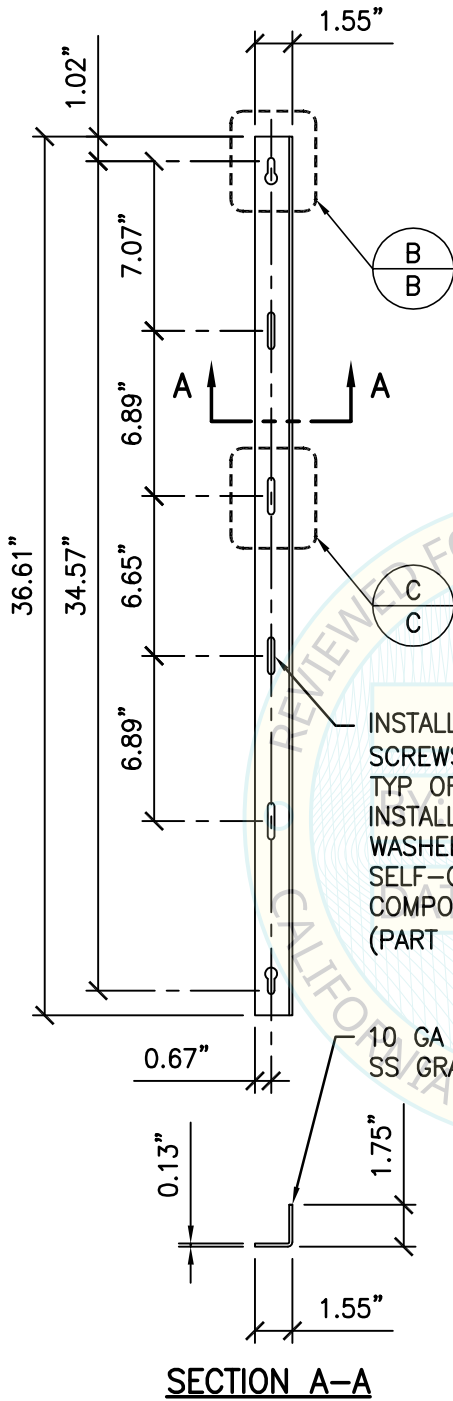
**CYS STRUCTURAL ENGINEERS, INC.**

2495 NATOMAS PARK DRIVE, SUITE 650  
SACRAMENTO, CA 95833

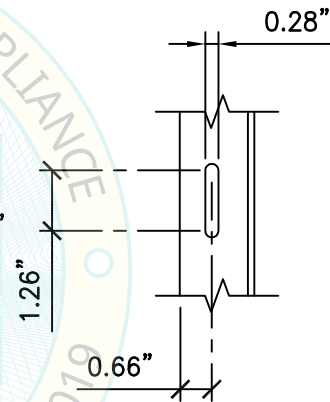
TEL (916) 920-2020  
www.cyseng.com

Job No:	22018.04
Date:	04-29-2022
Page:	13 of 19

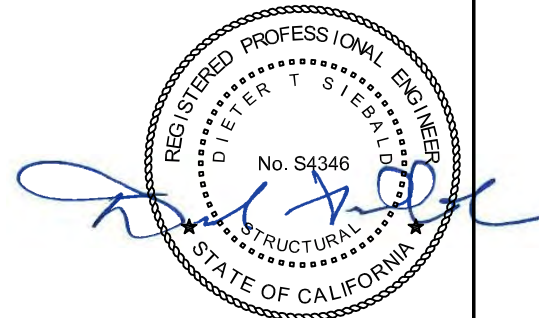
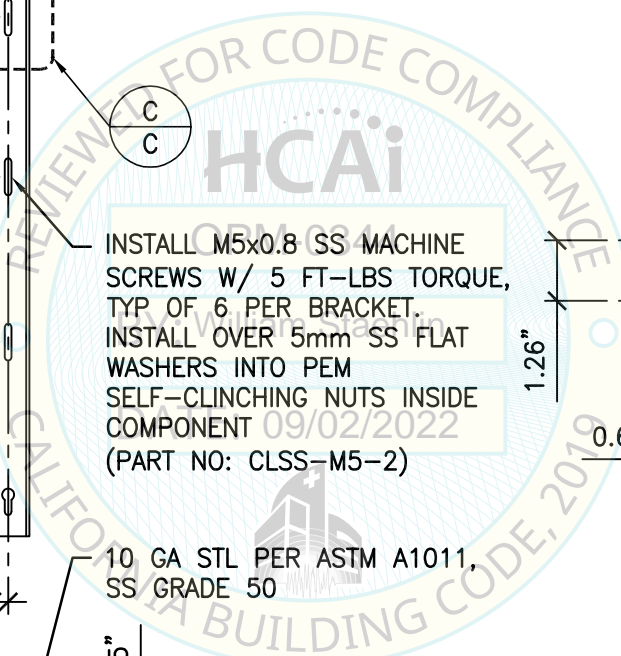
L:\Jobs22\22018 BD - Five OPM KBTZ2 Amendments\22018.04 OPM-0344-13\ACAD\STRU\S1\_TASK 04.dwg Time:Apr29,2022-02:18pm Login:camcochom Dimscale:1 LTScale:6



**DETAIL B-B**



**DETAIL C-C**

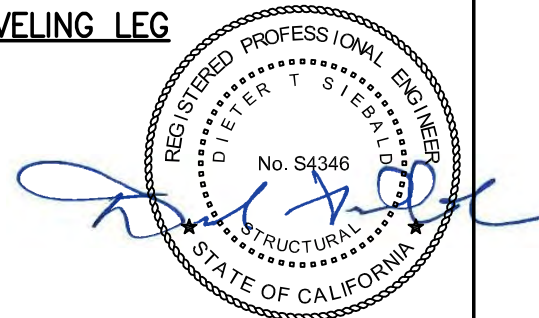
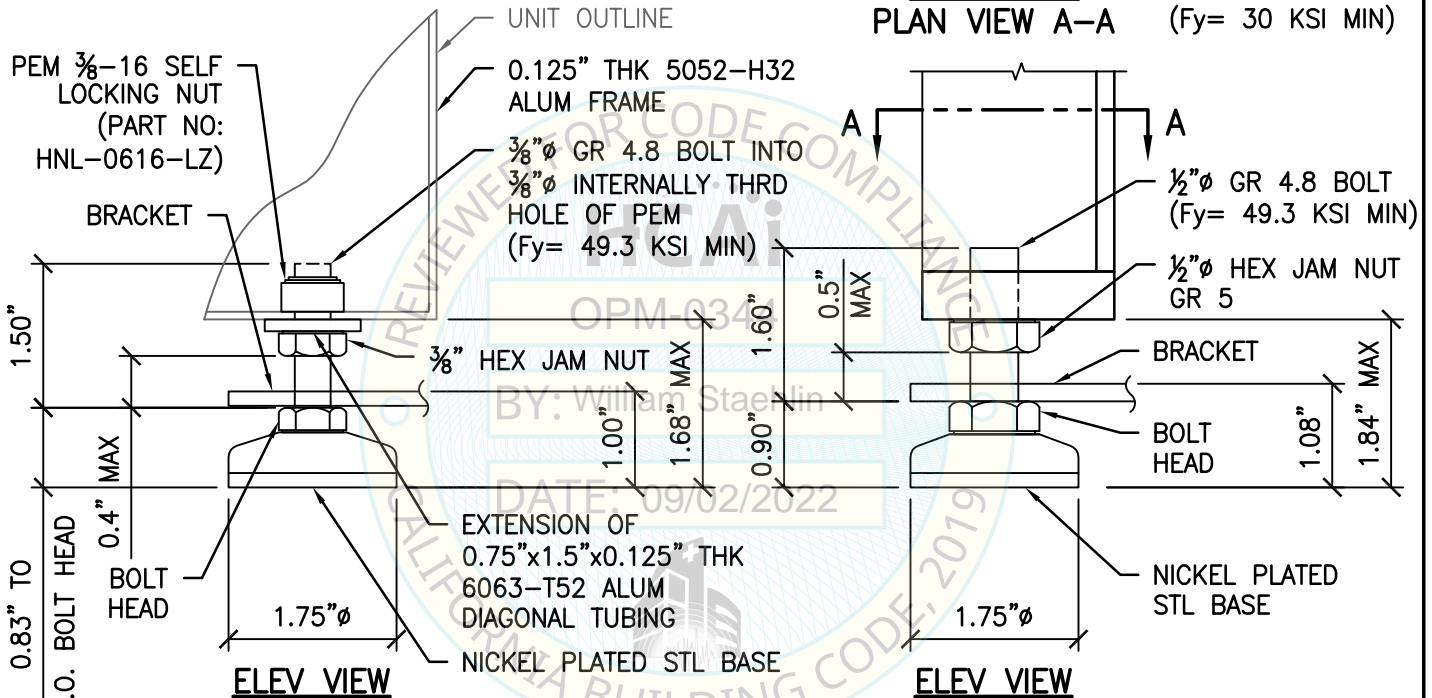
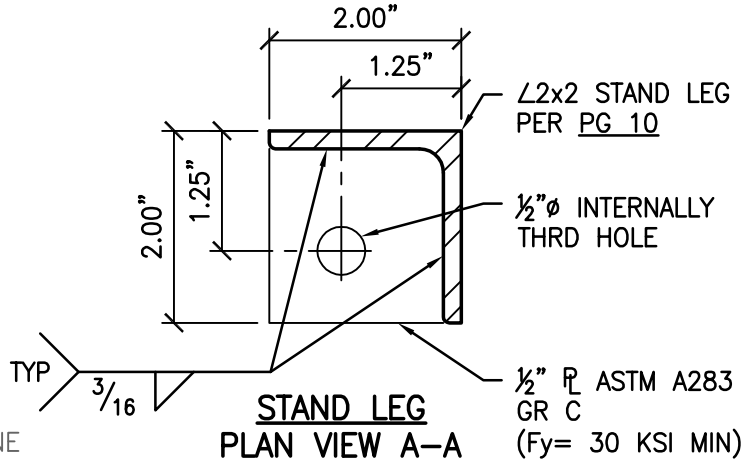


SHEET TITLE: PHOENIX M50 STACKING BRACKET DETAIL

<p><b>CYS STRUCTURAL ENGINEERS, INC.</b> 2495 NATOMAS PARK DRIVE, SUITE 650 SACRAMENTO, CA 95833</p>	Job No: 22018.04
	Date: 04-29-2022
	Page: 14 of 19

L:\Jobs22\22018 BD - Five OPM KBTZ2 Amendments\22018.04 OPM-0344-13\ACAD\STRU\S1\_TASK 04.dwg Time:Apr29,2022-02:18pm Login:camachom Dimscale:1 LTScale:6





SHEET TITLE: PHOENIX M50 & STAND LEVELING LEG DETAILS

<p><b>CYS STRUCTURAL ENGINEERS, INC.</b> 2495 NATOMAS PARK DRIVE, SUITE 650 SACRAMENTO, CA 95833</p>	Job No: 22018.04
	Date: 04-29-2022
	Page: 15 of 19

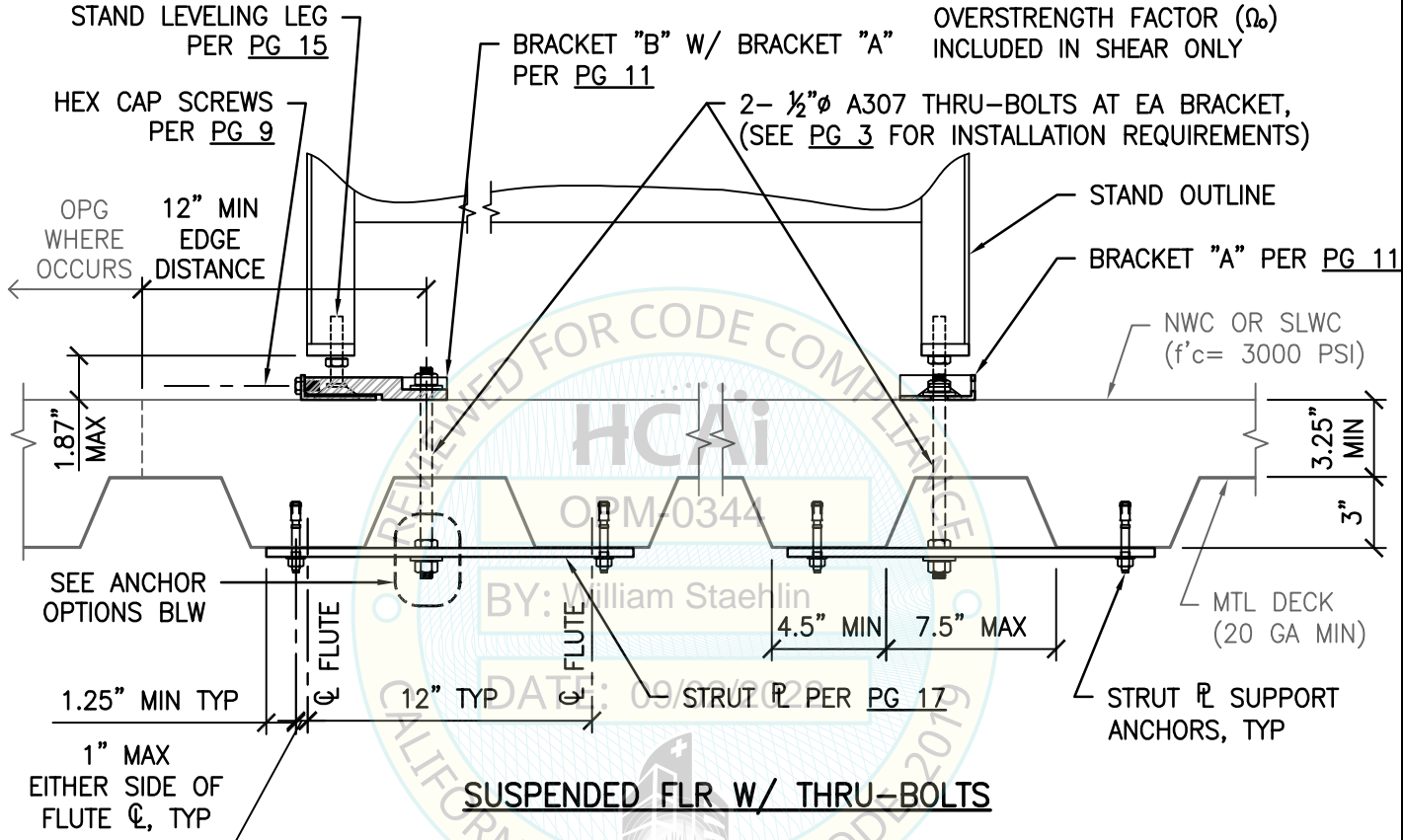
L:\Jobs22\22018 BD - Five OPM KBTZ2 Amendments\22018.04 OPM-0344-13\ACAD\STRU\SI\_TASK 04.dwg Time: Apr 29, 2022 - 02:18pm Login: camcochom DimScale: 1 LScale: 6



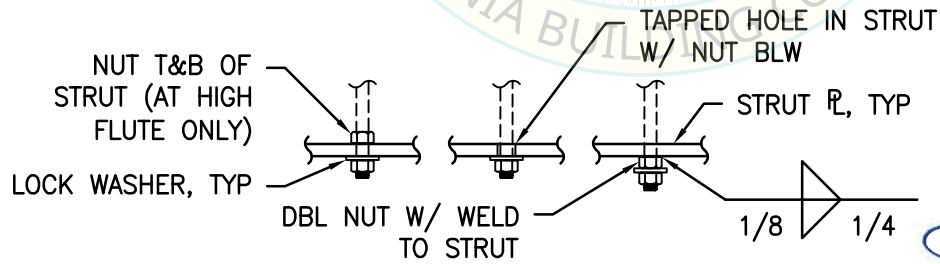
MAX ANCHOR FORCES  
AT LRFD AT EA AB

	Tu	$\Omega_0 V_u$
CASE 1 z/h = 0	4046#	517#

OVERSTRENGTH FACTOR ( $\Omega_0$ )  
INCLUDED IN SHEAR ONLY



**SUSPENDED FLR W/ THRU-BOLTS**



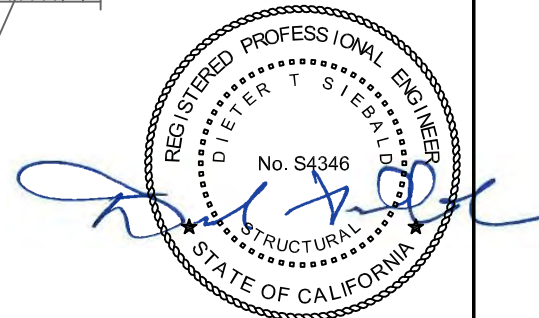
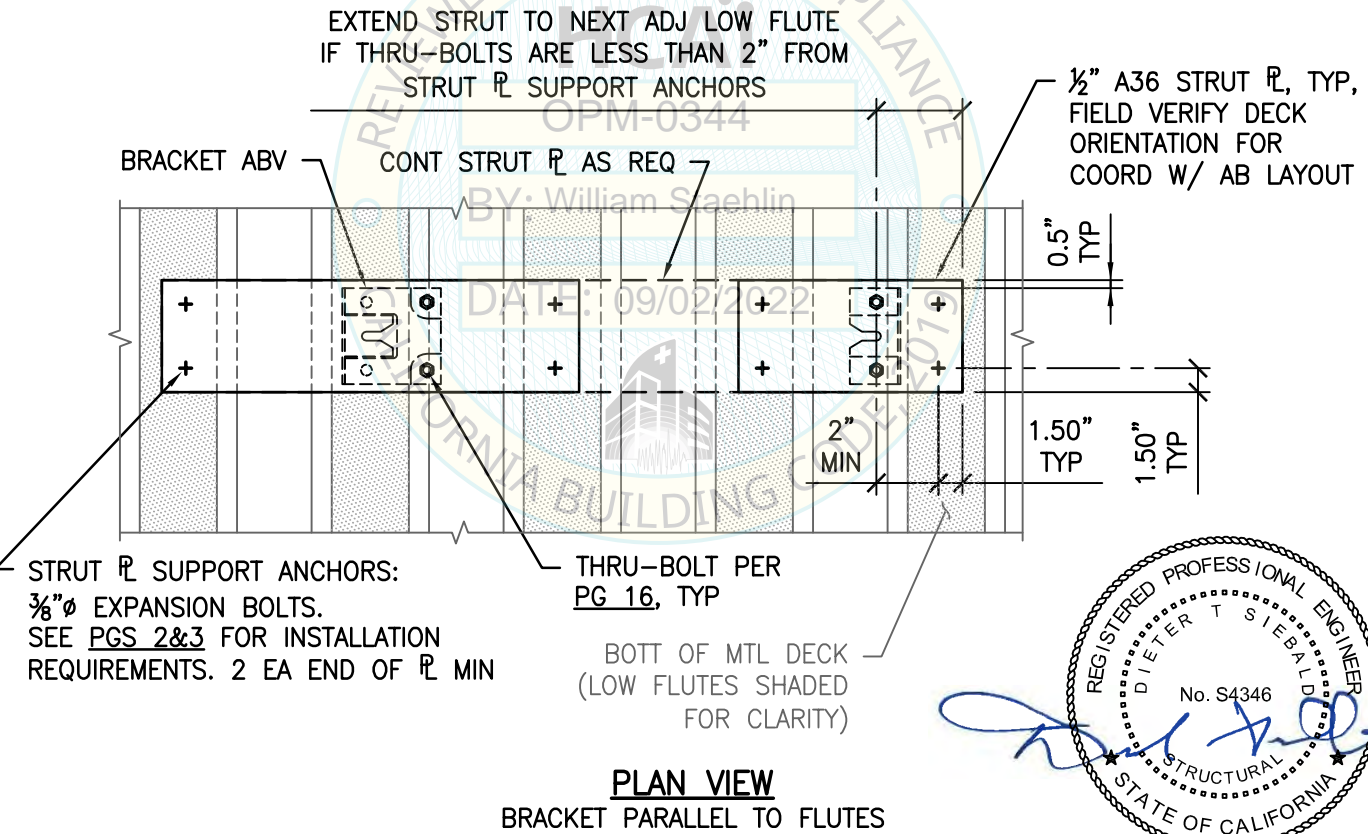
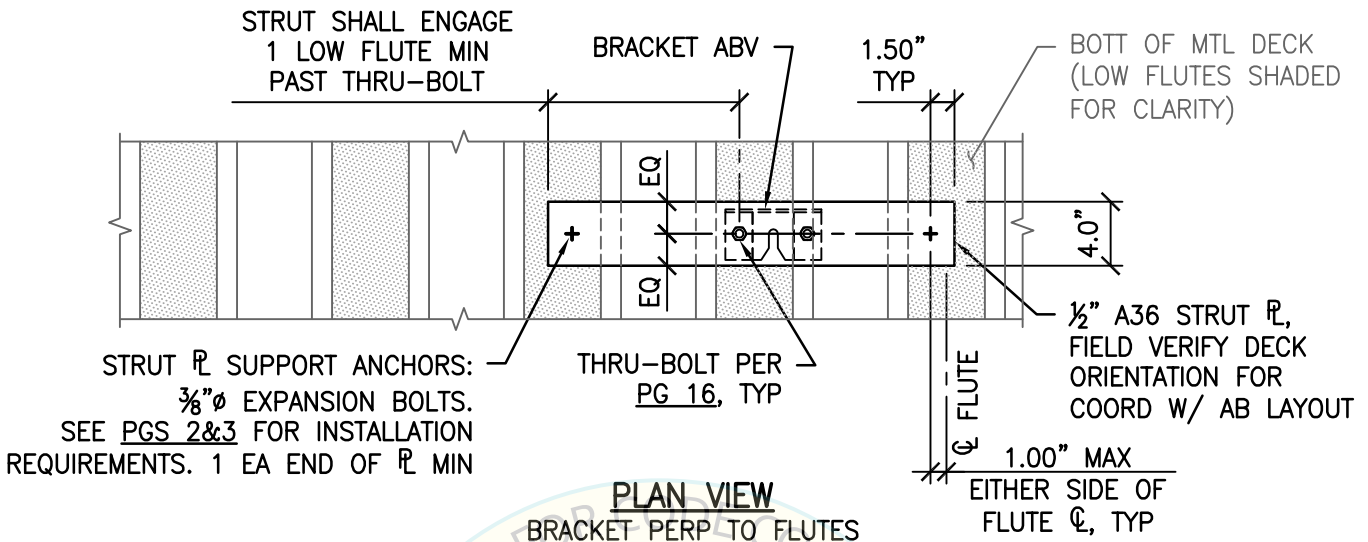
**ANCHOR OPTIONS**



SHEET TITLE: ATTACHMENT DETAILS  
STAND TO CONCRETE FILL OVER METAL DECK (CASE 1)

<p><b>CYS STRUCTURAL ENGINEERS, INC.</b> 2495 NATOMAS PARK DRIVE, SUITE 650 SACRAMENTO, CA 95833</p>	TEL (916) 920-2020 www.cyseng.com	Job No: 22018.04 Date: 04-29-2022 Page: 16 of 19
--	--------------------------------------	--

L:\Jobs22\22018 BD - Five OPM KBTZ2 Amendments\22018.04 OPM-0344-13\ACAD\STRU\SI\_TASK 04.dwg Time:Apr29,2022-02:18pm Login:camachom DimScale:1 LScale:6



SHEET TITLE: STRUT PLATE DETAILS

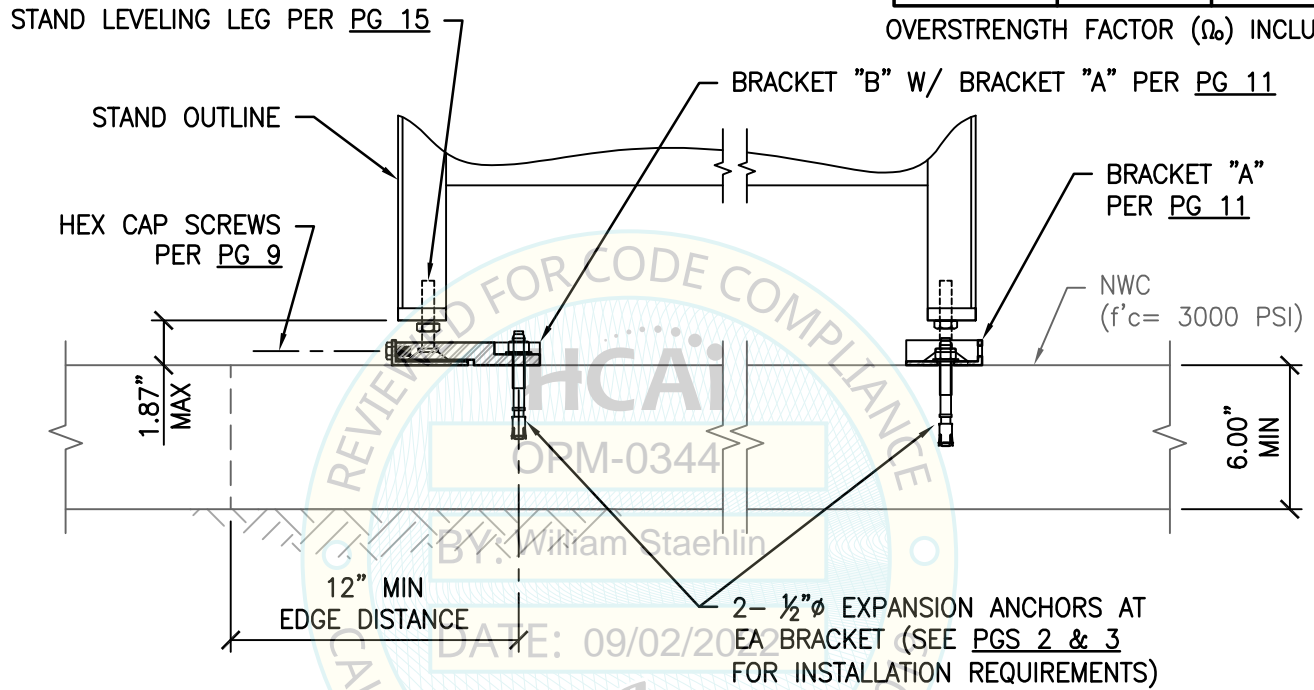
<p><b>CYS STRUCTURAL ENGINEERS, INC.</b> 2495 NATOMAS PARK DRIVE, SUITE 650 SACRAMENTO, CA 95833</p>	Job No: 22018.04
	Date: 04-29-2022
	Page: 17 of 19

L:\Jobs22\22018 BD - Five OPM KBTZ2 Amendments\22018.04 OPM-0344-13\ACAD\STRU\S1\_TASK 04.dwg Time: Apr 29, 2022 - 02:18pm Login: camcohom DimScale: 1 LScale: 6



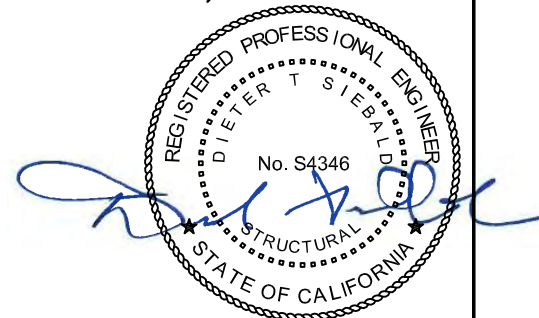
	MAX ANCHOR FORCES AT LRFD AT EA AB	
	$\Omega_o T_u$	$\Omega_o V_u$
CASE 2A z/h = 0	1362#	216#
CASE 2B z/h = 0	1890#	256#

OVERSTRENGTH FACTOR ( $\Omega_o$ ) INCLUDED



**6" SLAB ON GRADE**

CASE 2A MAX  $S_{ps}$  = 2.50 (FOR SINGLE INSTRUMENT ON STAND)  
 CASE 2B MAX  $S_{ps}$  = 2.20 (FOR TWO STACKED INSTRUMENTS ON STAND)



SHEET TITLE: ATTACHMENT DETAILS  
STAND TO 6" SLAB ON GRADE (CASE 2)

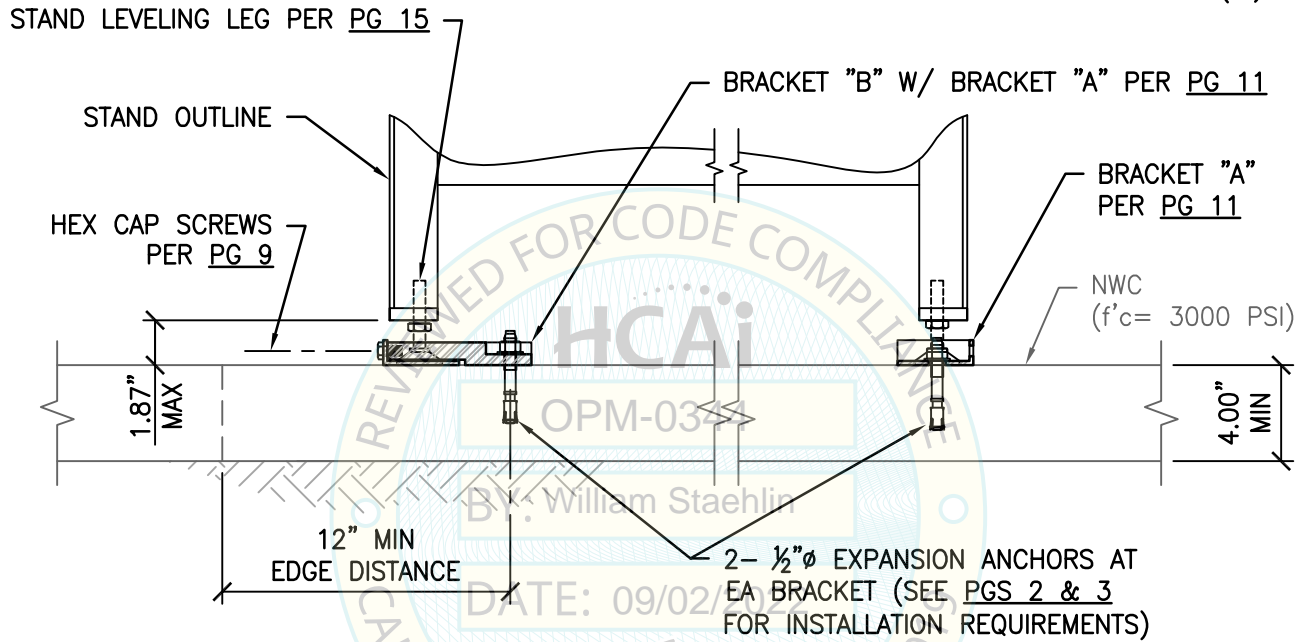
<p><b>CYS STRUCTURAL ENGINEERS, INC.</b> 2495 NATOMAS PARK DRIVE, SUITE 650 SACRAMENTO, CA 95833</p>	Job No: 22018.04
	Date: 04-29-2022
	Page: 18 of 19

L:\Jobs22\22018 BD - Five OPM KBTZ2 Amendments\22018.04 OPM-0344-13\ACAD\STRU\S1\_TASK 04.dwg Time:Apr29,2022-02:18pm Login:camachom DimScale:1 LTScale:6



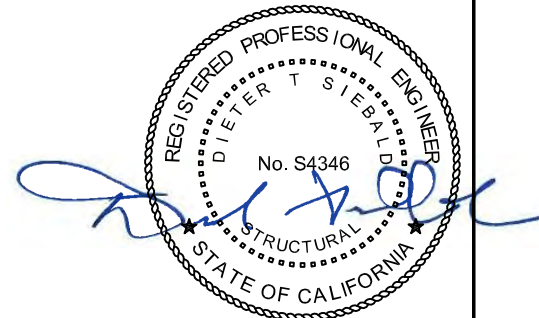
	MAX ANCHOR FORCES AT LRFD AT EA AB	
	$\Omega_o T_u$	$\Omega_o V_u$
CASE 3A $z/h = 0$	1035#	173#
CASE 3B $z/h = 0$	1065#	163#

OVERSTRENGTH FACTOR ( $\Omega_o$ ) INCLUDED



**4" SLAB ON GRADE**

CASE 3A MAX  $S_{DS} = 2.0$  (FOR SINGLE INSTRUMENT ON STAND)  
 CASE 3B MAX  $S_{DS} = 1.4$  (FOR TWO STACKED INSTRUMENTS ON STAND)



SHEET TITLE: ATTACHMENT DETAILS  
STAND TO 4" SLAB ON GRADE (CASE 3)



**CYS STRUCTURAL ENGINEERS, INC.**

2495 NATOMAS PARK DRIVE, SUITE 650  
SACRAMENTO, CA 95833

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

Job No: 22018.04  
Date: 04-29-2022  
Page: 19 of 19

L:\Jobs22\22018 BD - Five OPM KBTZ2 Amendments\22018.04 OPM-0344-13\ACAD\STRU\S1\_TASK 04.dwg Time: Apr 29, 2022 - 02:18pm Login: camachom Dimstyle: 1 LScale: 6