

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

APPLICATION FOR OSHPD PREAPPROVAL OF	OFFICE USE ONLY APPLICATION #: OPM-0520		
MANUFACTURER'S CERTIFICATION (OPM)			
OSHPD Preapproval of Manufacturer's Certification (OPM)			
Type: X New Renewal/Update			
Manufacturer Information			
Manufacturer: Belimed AG			
Manufacturer's Technical Representative: Heike Hütterer			
Mailing Address: Grienbachstrasse 11, Neustadt, 6302			
Telephone: (71) 644-8665 Email: heike.huetterer@belin	med.com		
EOR CODE CON			
Product Information OSHPD			
Product Name: ELD / WTD (14) External	Z		
Product Type: Steam Generator / Steam Exchanger	CH		
Product Model Number: ELD / WTD 30, ELD / WTD 45, ELD / WTD 60, ELD / W	VTD <mark>90</mark>		
General Description: ELD / WTD: The purpose of this pressure device is to general Description:	erate pure steam for general use for e.g.		
DATE: 00/30/2021	000		
Applicant Information	<b>&gt;</b>		
Applicant Company Name: ISAT			
Out of Breeze Marie and Annual Control of the Contr			

Contact Person: William Joerger

Mailing Address: 1020 Crews Rd, Suite Q, Matthews, NC 28105

Telephone: (510) 714-0216 Email: wvjoerger@isatsb.com

Title: Principal Structural Engineer

"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 Professonal Preparing Engineering Recommendations						
Company Name: ISAT SEISMIC BRACING						
Name: WILLIAM JOERGER California License Number: S4545						
Mailing Address: 14848 Northam Street, , La Mirada, CA 90638						
Telephone: (877) 999-4728 Email: wvjoerger@isatsb.com						
OSHPD Special Seismic Certification Preapproval (OSP)						
Special Seismic Certification is preapproved under OSP OSP Number:						
OR CODE						
Certification Method						
Testing in accordance with:						
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.						
X Analysis BY: Haeseong Lim						
Experience Data  DATE: 06/30/2021						
Combination of Testing, Analysis, and/or Experience Data (Please Specify):						
CODE CODE						
OSHPD Approval  BUILDING						
Date: 6/30/2021						
Name: Haeseong Lim Title: Senior Structural Engineer						
Condition of Approval (if applicable):						

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









Innovation • Engineering • BIM • Fabrication

A Division of Tomarco Contractor Specialties

**Submittal Documents** 

OSHPD OPM-0520

ATTACHMENT OPM DRAWINGS
ELD/WTD EXTERNAL
STEAM GENERATOR / STEAM EXCHANGER

## BELIMED

ISAT 1020 Crews Road Suite Q Matthews, N.C. 28105 704-841-4080

"Empowered by Experience"



REV 4

OSHPD OPM-0520 DWG - i

FILE NO.: CLT-0818-222



## OSHPD OPM-0520

### **DRAWING INDEX**

DRAWING INDEX  Cover Page	OSHPD OPM-0520-19	
BIAWWO INDEX		
Cover Page	OPM-0520-19	рi
Index Page	BY: Haeseong Lim	p ii
Drawings for OPM-0520	DATE: 06/30/2021	
General Notes Attachment Notes Dimensions and Anchor Belimed ELD / WTD 30 Belimed ELD / WTD 30 Belimed ELD / WTD 30 Belimed ELD / WTD 45 Belimed ELD / WTD 60	rage Forces Layout Plan Elevation Connections Welds Layout Plan Elevation Connections Welds Layout Plan Elevation Connections Connections Connections Connections	p 1 p 2 p 3 p 4 p 5 p 6 p 7 p 8 p 9 p 10 p 11 p 12 p 13 p 14 p 15

FILE NO.: CLT-0118-222 "Empowered by Experience" Index Rev 4

## **DRAWING INDEX (CONTINUED)**

Belimed ELD / WTD 90 Layout Plan Belimed ELD / WTD 90 Elevation Belimed ELD / WTD 90 Connections	p 16 p 17 p 18
Belimed ELD / WTD 90 Welds	p 19
Equipment Anchorage at Grade Equipment Anchorage at Elevated Slabs	p 20 p 21
S2 Switch Bracket	p 22
S1 Switch Bracket Corner Bracket	p 23 p 24
Corner Bracket Weld	p 24 p 25
Middle Bracket	p 26
Middle Bracket Weld SG1 Bracket	p 27 p 28
SG2 Bracket HSS  OSHPD	p 29
HSS USHPU	p 30
Belimed Part Numbers  OPM-0520-19	p 31
Middle Bracket Weld SG1 Bracket SG2 Bracket HSS Belimed Part Numbers  OPM-0520-19	
BY: Haeseong Lim	
DATE: 06/30/2021	
The state of the s	
PATA BUT CODE	
DATE: 06/30/2021	

FILE NO.: CLT-0118-222 "Empowered by Experience"

Index Rev 4

#### OSHPD OPM-0520

MANUFACTURE: BELIMED

**EQUIPMENT TYPE: STEAM GENERATOR/STEAM EXCHANGER** 

#### **GENERAL NOTES**

- 1. THIS OSHPD PREAPPROVAL OF MANUFACTURER'S CERTIFICATION (OPM) IS BASED ON THE CBC 2019. THE DEMAND (DESIGN FORCES) FOR USE WITH THIS OPM SHALL BE BASED ON THE CBC 2019.
- 2. SEISMIC CRITERIA USED:  $S_{DS} = 2.50 \, l_P = 1.5 \, a_P = 1.0 \, R_P = 1.5$  (OTHER MECHANICAL COMPONENT) z/h = 0.0 WITH  $F_{DH} = 1.13$  AT GRADE OR z/h <= 1.0 WITH  $F_{DH} = 3.00$  FOR ELEVATED FLOORS.  $F_{DV} = 0.50$ .
- 3. SUPPORT AND ATTACHMENT FORCES ARE DETERMINED USING ASCE 7-16 CHAPTER 13 "SEISMIC DESIGN REQUIREMENTS FOR NONSTRUCTURAL COMPONENTS". AN OVERSTRENGTH FACTOR  $\Omega_0$  = 2.0 IS USED FOR CONCRETE ANCHORAGE FORCES PER ASCE 7-16 TABLE 13.6-1. LOADS SHOWN ARE STRENGTH DESIGN LOADS PER ASCE 7-16 SECTION 12.4.3.2.
- 4. THIS PREAPPROVAL COVERS ONLY THE SUPPORTS AND ATTACHMENTS OF THE EQUIPMENT TO THE STRUCTURE.
- 5. THIS PREAPPROVAL IS FOR CONCRETE SLAB AT GRADE OR ELEVATED SLABS FOR THE DEMAND LOADS SHOWN WHERE Sps <= 2.5.
- 6. STEEL MATERIALS: THROUGH BOLTS AISI 304 STAINLESS STEEL (MIN TENSILE STRENGTH OF 73 KSI) WITH MATCHING WASHERS AND NUTS. BRACKETS BY BELIMED EURONORM 1.4301 STAINLESS STEEL WITH A TENSILE STRENGTH OF 73KSI (500 Mpa) AND MINIMUM YIELD STRENGTH OF 28 KSI (195 Mpa, EQUIVALENT TO 304 SS). FRAME MEMBERS ARE FABRICATED FROM EURONORM 1.4301 STAINLESS STEEL EQUIVALENT TO 304 SS.

  BOLTS FOR FRAME MATERIALS: 1.4301 (304) WITH TENSILE STRENGTH 102 KSI (700 N/mm²).
- 7. CONCRETE SLABS:
  - a. FOR SLAB ON GRADE OR ELEVATED SOLID CONCRETE SLABS: 6" MINIMUM THICKNESS OF NORMAL WEIGHT CONCRETE WITH 4000 PSI MINIMUM STRENGTH. 0 5 2 0 1 9
  - b. METAL DECK: 3" DEEP COMPOSITE STEEL DECK, 20 GAGE MINIMUM WITH FLUTE SPACING OF 12", 4.5 INCH MINIMUM BOTTOM FLUTE WIDTH WITH 3.25" SAND LIGHT WEIGHT OR NORMAL WEIGHT CONCRETE COVER AT 4000 PSI MINIMUM STRENGTH. BY: Haeseong Lim
- 8. POST-INSTALLED CONCRETE ANCHORS FOR SOLID CONCRETE: HILTI KWIK BOLTS TZ (ESR-1917) STAINLESS STEEL 0.625" DIAMETER x 3.75" MIN HOLE DEPTH (3.125" EFFECTIVE EMBEDMENT), 4" MIN EDGE DISTANCE AND 3.62" MIN SPACING FOR SLAB ON GRADE. HILTI KWIK BOLTS TZ (ESR-1917) STAINLESS STEEL 0.625" DIAMETER x 4.75" MIN HOLE DEPTH (4" EFFECTIVE EMBEDMENT), 16" MIN EDGE DISTANCE AND 3.62" MIN SPACING FOR ELEVATED SOLID SLAB. TORQUE TO 60 FT-LBS. FOR ANCHORS INTO THE SOFFIT OF THE METAL DECK USE HILTI KWIK BOLTS TZ (ESR-1917) CARBON STEEL 0.50" DIAMETER x 2.75" MIN HOLE DEPTH (2" EFFECTIVE EMBEDMENT), 6" MIN EDGE DISTANCE AND 8" MIN SPACING FOR ELEVATED SLABS. TORQUE TO 40 FT-LBS.

OPM-0520 BELIMED ELD AND WTD STEAM GENERATOR/EXCHANGER

**GENERAL NOTES** 



A Division of Tomarco Contractor Specialties International Seismic Application Technology 1020 Crews Road, Suite Q, Matthews, NC 28105 704-841-4080 www.isatsb.com



DRAWN BY: WVJ DATE: 12/26/18

**REVISED BY:** KJC **DATE:** 01/01/2021 **REV NO:** 3

**SCALE** N.T.S.

PAGE GEN NOTES

#### OSHPD OPM-0520

MANUFACTURE: BELIMED

**EQUIPMENT TYPE: STEAM GENERATOR/STEAM EXCHANGER** 

#### ATTACHMENT NOTES:

- REFER TO OPM-0520 DETAILS FOR THE MATERIALS OF CONSTRUCTION AND FASTENER DIMENSIONS.
- 2. THROUGH BOLT INSTALLATION AND INSPECTION (DETAILS OF THE SUPPLEMENTAL STEEL AND CONNECTIONS TO STRUCTURE ARE SHOWN ON PAGE "ELEVATED".)
  - a. THROUGH BOLTS ARE TO BE TORQUED BY 3/4 TURN OF THE NUT AFTER SNUG TIGHT CONDITION IS ACHIEVED. SNUG TIGHT CONDITION IS DEFINED AS THE TIGHTNESS REQUIRED TO BRING THE CONNECTED PLIES INTO FIRM CONTACT.
  - b. THROUGH BOLT HOLES SHALL BE 1/16" LARGER THAN THE BOLT SIZE (HOLE SIZE = BOLT SIZE + 1/16") FOR BOTH THE STEEL AND CONCRETE.
  - c. THROUGH BOLTS WITH STEEL-TO-STEEL CONNECTION IN TENSION DO NOT REQUIRE TESTING.
- 3. FOR POST INSTALLED CONCRETE ANCHORS PERIODIC SPECIAL INSPECTION SHALL BE IN ACCORDANCE WITH CBC 2019
  SECTION 1705A AND TABLE 1705A.3 INCLUDING VERIFICATION OF ANCHOR TYPE, ANCHOR DIMENSIONS, CONCRETE TYPE,
  CONCRETE COMPRESSIVE STRENGTH, ANCHOR SPACING, EDGE DISTANCES, CONCRETE MEMBER THICKNESS, TIGHTENING
  TORQUE, HOLE DIMENSIONS, ANCHOR EMBEDMENT AND ADHERENCE TO THE MANUFACTURER'S PRINTED INSTALLATION
  INSTRUCTIONS. IN ADDITION, FOLLOW THE PROVISIONS OF THE 2019 CALIFONIA BUILDING CODE SECTION 1910A.5 BY
  CONFIRMING THE INSTALLATION TORQUE OF 60 FT-LBS FOR 5/8" BOLTS AND 40 FT-LBS FO 1/2" BOLTS. TEST 50% OF THE
  ANCHORS FOR EACH PIECE OF EQUIPMENT. IF ANY FAILS TEST ALL ANCHORS. TESTING AND SPECIAL INSPECTION OF
  EXPANSION ANCHORS SHALL BE PERFORMED BY AN APPROVED AGENCY EMPLOYED BY THE FACILITY OWNER PER CBC 1704A
  AND 1910A.5 AND CAC 7-249. A REPORT OF TEST RESULTS IS TO BE SUBMITTED TO THE INSPECTOR OF RECORD, OWNER AND
  ARCHITECT OR ENGINEER IN RESPONSIBLE CHARGE.
- 4. EXERCISE DUE CARE WHEN DRILLING POST-INSTALLED ANCHORS TO AVOID DAMAGING CONCRETE REINFORCEMENT OR TENDONS.
- 5. PROVIDE FOR FULL THREAD ENGAGEMENT OF NUT AND WASHER.

#### RESPONSIBILITIES OF THE STRUCTURAL ENGINEER OF RECORD

- 1. CONFIRM THE MINIMUM REQUIREMENTS SPECIFIED IN THIS OPM FOR THE CONCRETE SLAB ARE MET, INCLUDING MATERIAL PROPERTIES AND THICKNESS OF CONCRETE SLAB.
- 2. PROVIDE A PLAN FOR INSPECTION OF SUPPORTS AND ATTACHMENTS AND VERIFY ITS IMPLEMENTATION.
- 3. VERIFY THAT THE EXISITING STRUCTURE IS ADEQUATE FOR THE IMPOSED DEAD, LATERAL AND TENSION FORCES SHOWN IN ADDITION TO ALL OTHER LOADS.

  DATE: 06/30/2021
- 4. VERIFY THAT THE INSTALLATION IS IN CONFORMANCE WITH CBC 2019 AND WITH THE OPM-0520 DETAILS.
- 5. VERIFY THAT THE PROJECT SPECIFIC S<sub>DS</sub> AND z/h VALUES RESULT IN SEISMIC FORCES (Eh AND EV) DO NOT EXCEED THE VALUES SHOWN IN THESE DETAILS.

# OPM-0520 BELIMED ELD AND WTD STEAM GENERATOR/EXCHANGER ATTACHMENT NOTES



A Division of Tomarco Contractor Specialties International Seismic Application Technology 1020 Crews Road, Suite Q, Matthews, NC 28105 704-841-4080 www.isatsb.com



**DRAWN BY:** WVJ **DATE:** 12/26/18

**REVISED BY:** KJC **DATE:** 01/01/2021 **REV NO:** 3

SCALE N.T.S. PAGE ATTACHMENT

BELIMED ELD/WTD STEAM GENERATOR/STEAM EXCHANGER DIMENSIONS AND WEIGHTS									
Steam Generator/									
Steam Exchanger		ELD 30	ELD 45	ELD 60	ELD 90	WTD 30	WTD 45	WTD 60	WTD 90
Operating Wt	lb	538	666	756	869	560	672	750	827
CG X	in	14.4	14.8	14.3	15.1	14.0	14.7	14.1	14.4
Ecc X	in	-2.4	-1.9	-2.1	-1.3	-2.4	-1.8	-2.1	-1.8
CG Y	in	16.0	27.0	28.9	28.3	16.0	26.1	28.9	30.0
Ecc Y	in	-1.2	-0.2	-5.3	-4.2	-1.3	-0.8	-5.2	-4.2
CG Z	in	22.2	22.2	21.6	21.9	22.7	22.4	21.2	21.0

CENTER OF GRAVITY (CG) IN THE X AND Y DIMENSIONS IS MEASURED FROM THE LOWER RIGHT CORNER OF THE EQUIPMENT LEG; SEE EQUIPMENT PLAN SHEETS. CG Z IS MEASURED FROM THE FLOOR TO THE VERTICAL CENTER OF GRAVITY.

	Attachment at Gr	ade		Attachment at Elevated Slab			
Model	Anchor Type	Forces at Grade		Anchor Type	Forces at Elevated Slab		
Model	See Page "GEN NOTES" - Note 8	Vug lbf	Tu - Ibf	Note 2	Vu - Ibf	Tu - [bf	
ELD 30	HILTI KB ZT SS 0.625" x 3.125"	421	602	HILTI KB ZT \$\$ 0.625" x 4" / 0.625" SS ROD	1146	1684	
ELD 45	HILTI KB ZT SS 0.625" x 3.125"	515	577	HILTI KB ZT SS 0.625" x 4" / 0.625" SS ROD	1396	161 <del>9</del>	
ELD 60	HILTI KB ZT SS 0.625" x 3.125"	624	639	HILTI KB ZT SS 0.625" x 4" / 0.625" SS ROD	1560	1755	
ELD 90	HILTI KB ZT SS 0.625" x 3.125"	667	499	HILTI KB ZT SS 0.625" x 4" / 0.625" SS ROD	1762	1938	
WTD 30	HILTI KB ZT SS 0.625" x 3.125"	421	$PM_{602}5$	HILTHKB ZT SS 0.625" x 4" / 0.625" SS ROD	1146	1684	
WTD 45	HILTI KB ZT SS 0.625" x 3.125"	515	577	HILTI KB ZT SS 0.625" x 4" / 0.625" SS ROD	1396	1619	
WTD 60	HILTI KB ZT SS 0.625" x 3.125"	624	639	HILTI KB ZT SS 0.625" x 4" / 0.625" SS ROD	1560	1755	
WTD 90	HILTI KB ZT SS 0.625" x 3.125"	667 G	499	HILTI KB ZT SS 0.625" x 4" / 0.625" SS ROD	1762	1938	

- 1. Tu AND Vu VALUES INCLUDE AN OVERSTRENGTH FACTOR OF 2.0 IN ACCORDANCE WITH ASCE 7-16
- 2. SEE NOTE 6 OR 8 ON PAGE "GEN NOTES". FOR ANCHORS AT ELEVATED SLAB ON METAL DECK, USE 0.625" SS ROD

OPM-0520 BELIMED ELD AND WTD STEAM GENERATOR/EXCHANGER
DIMENSIONS AND ANCHORAGE FORCES



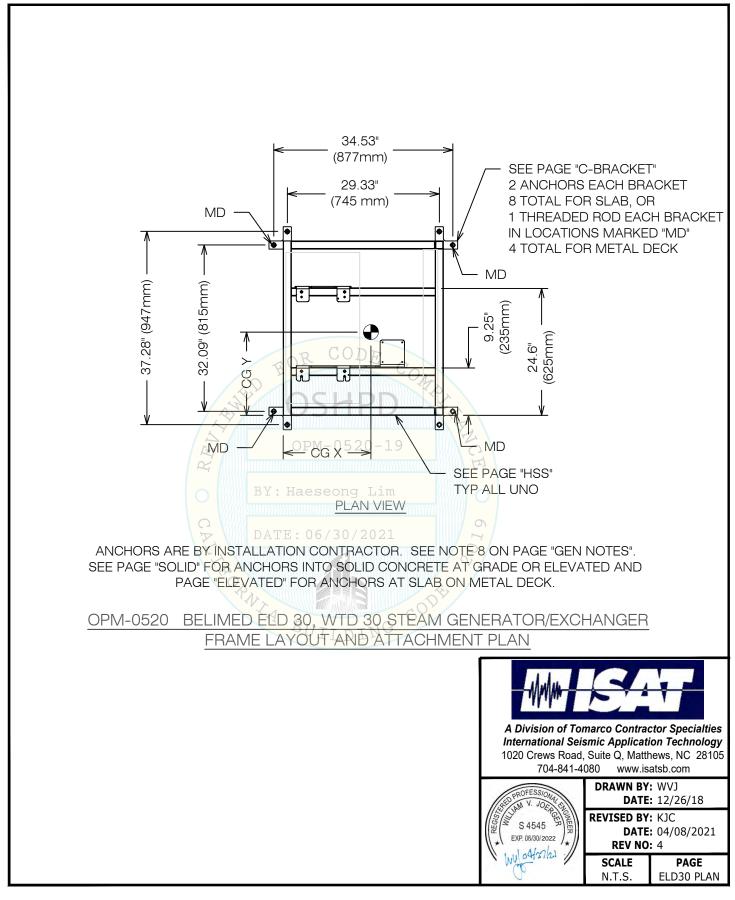
A Division of Tomarco Contractor Specialties International Seismic Application Technology 1020 Crews Road, Suite Q, Matthews, NC 28105 704-841-4080 www.isatsb.com

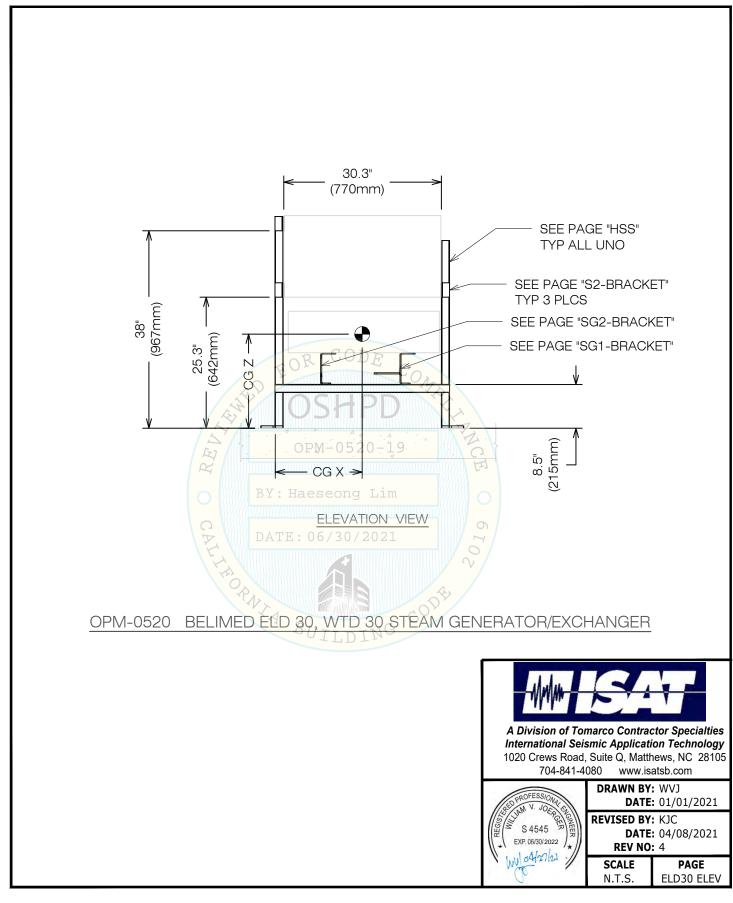
PROFESSIONAL PROFE

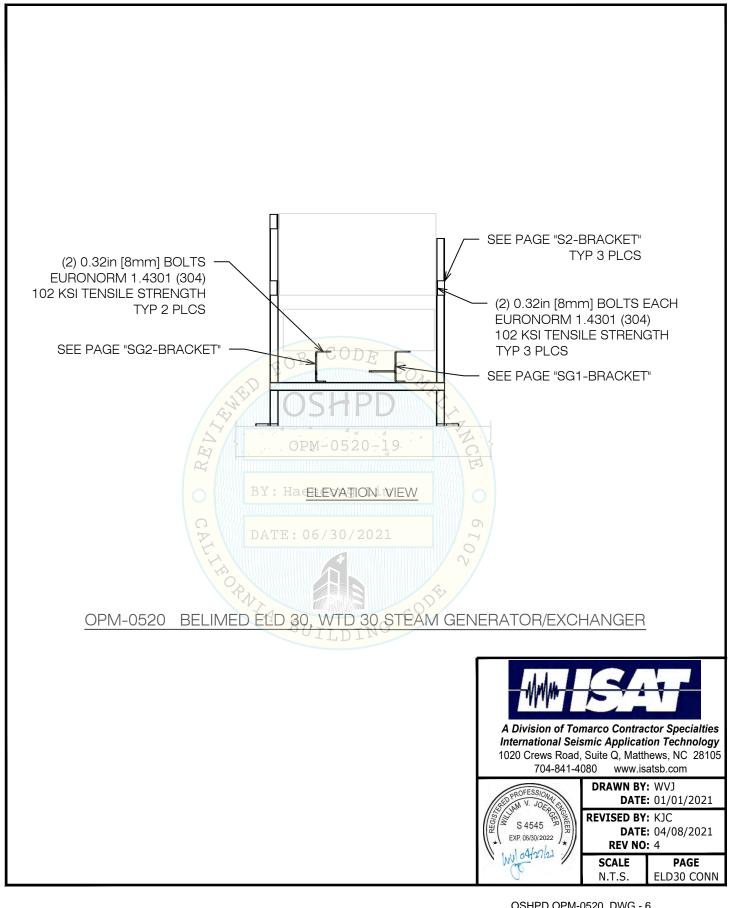
DRAWN BY: WVJ DATE: 12/26/18

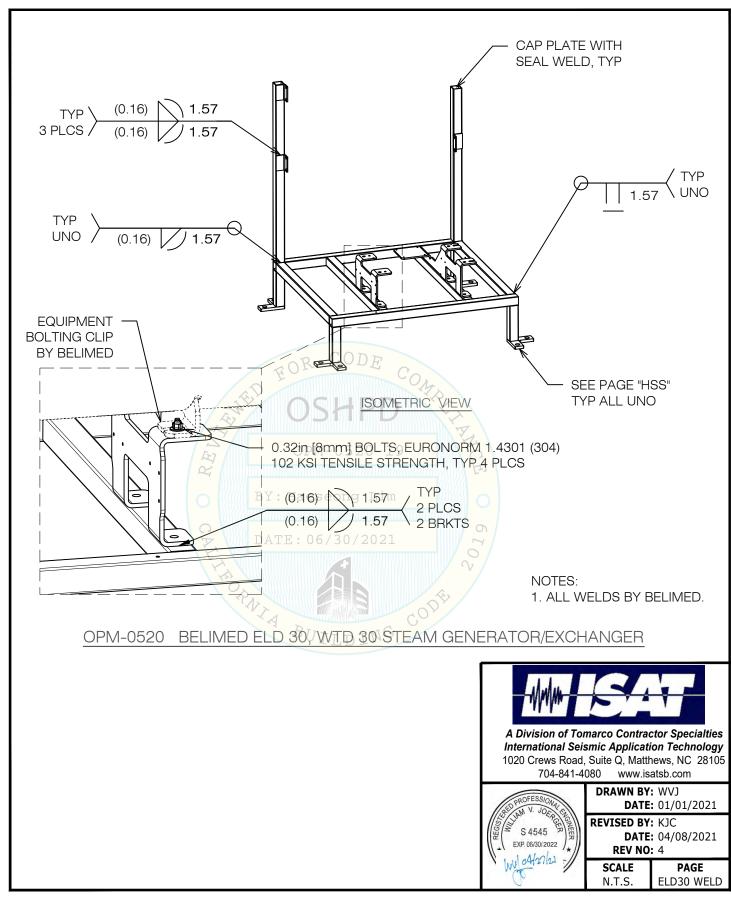
REVISED BY: KJC DATE: 04/08/2021 REV NO: 4

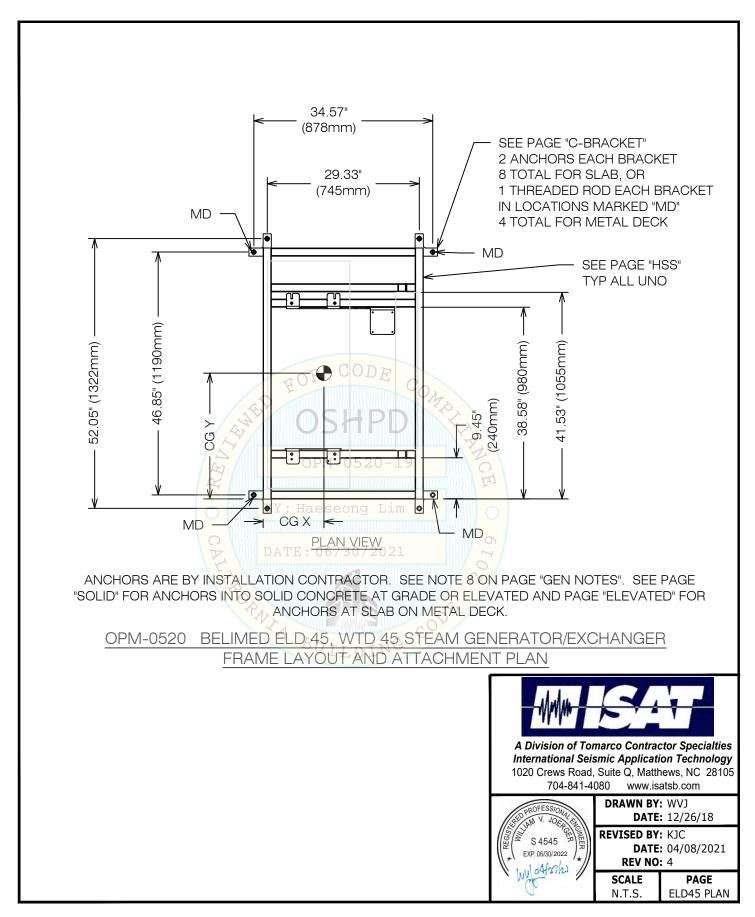
**SCALE** N.T.S. PAGE DIMENSIONS

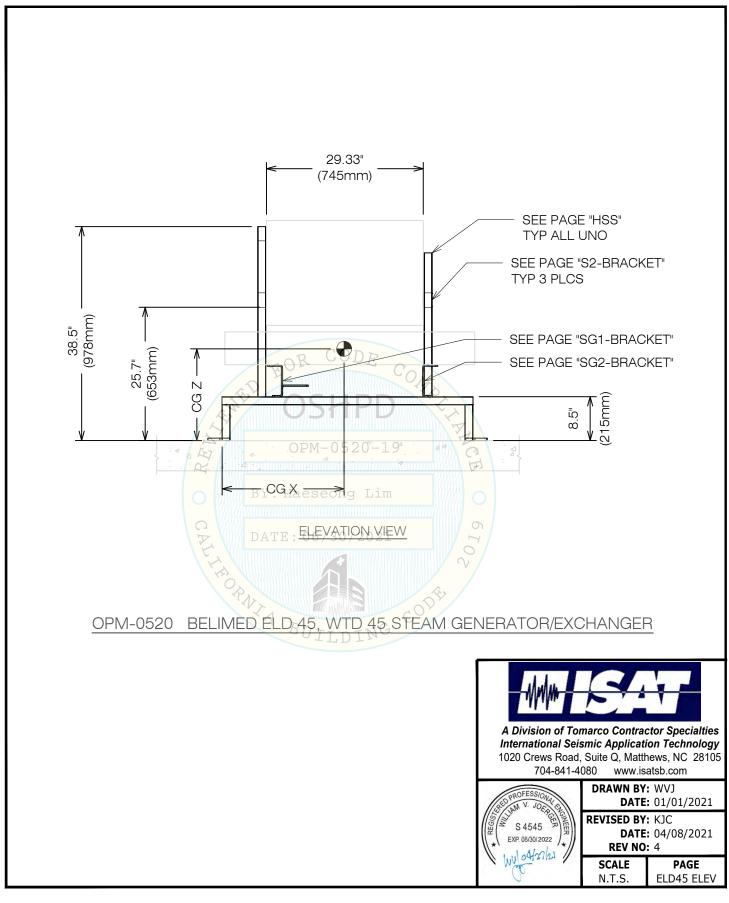




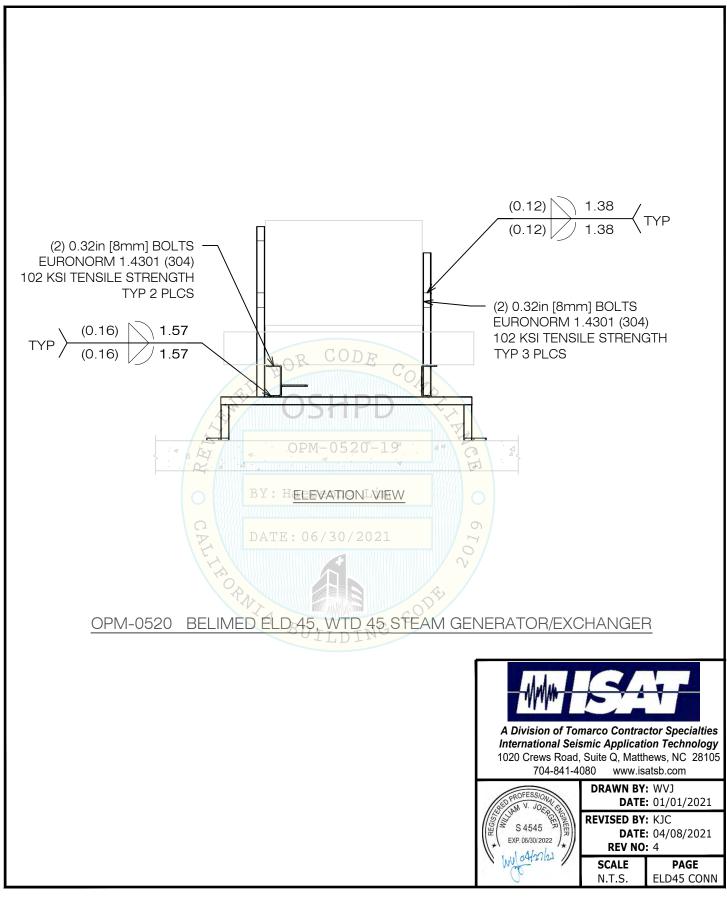


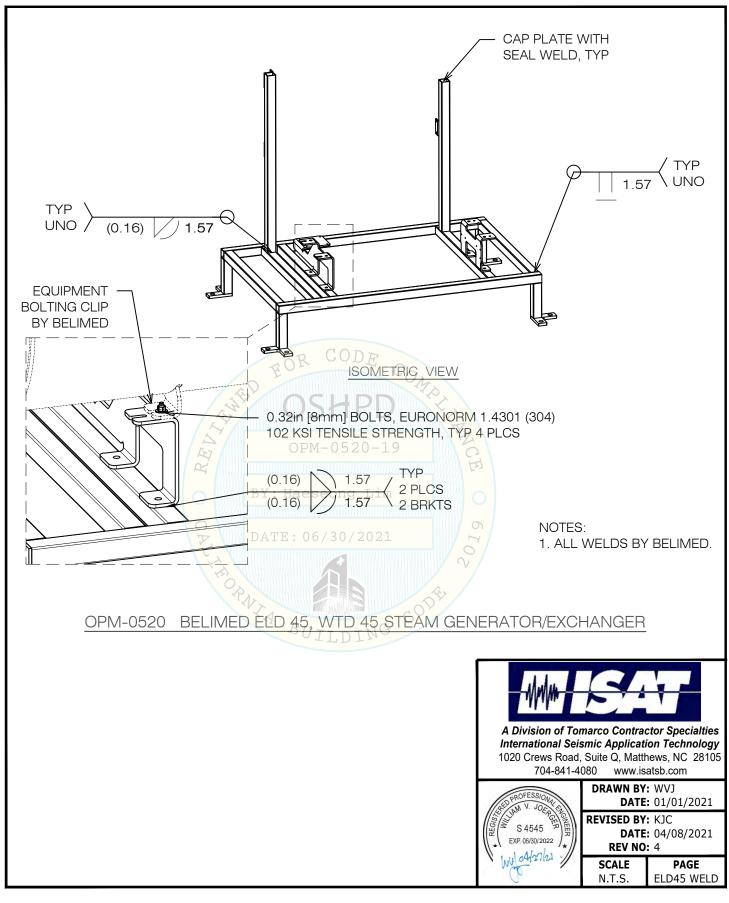


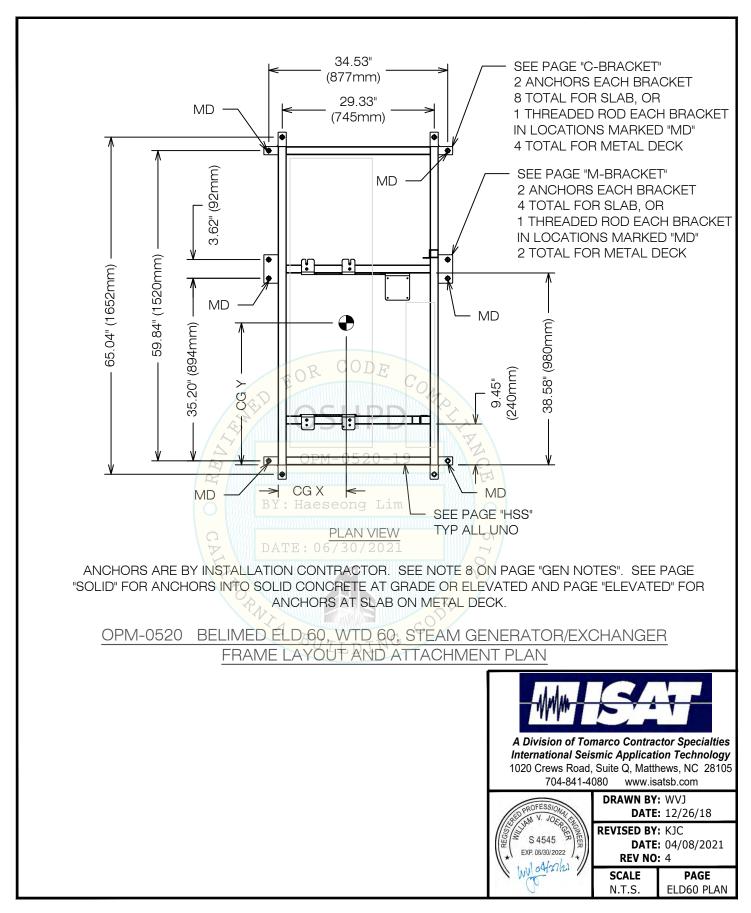


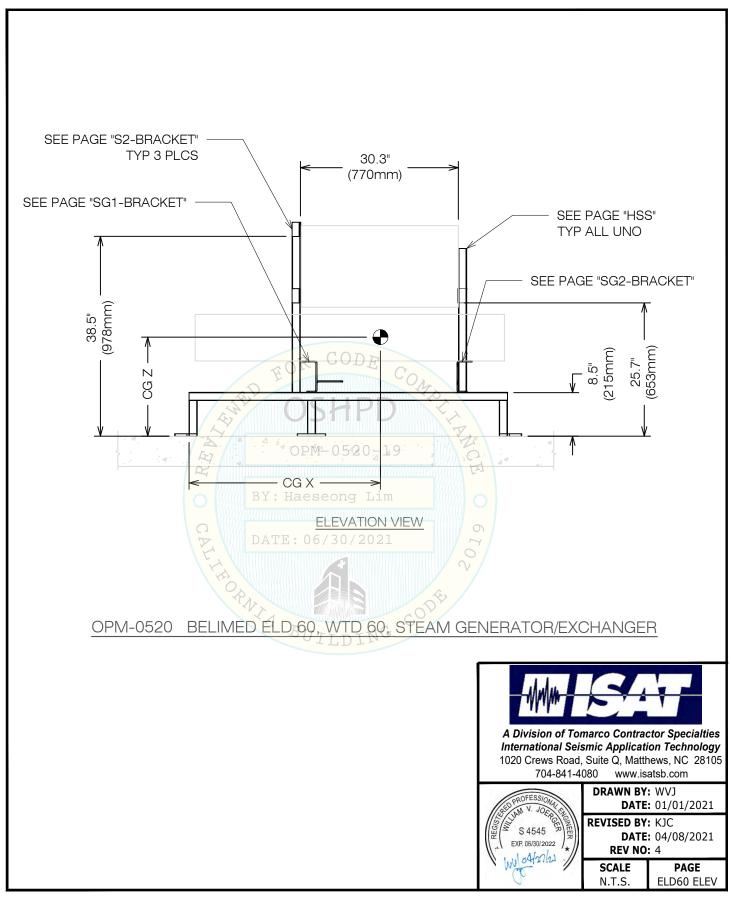


OSHPD OPM-0520 DWG - 9

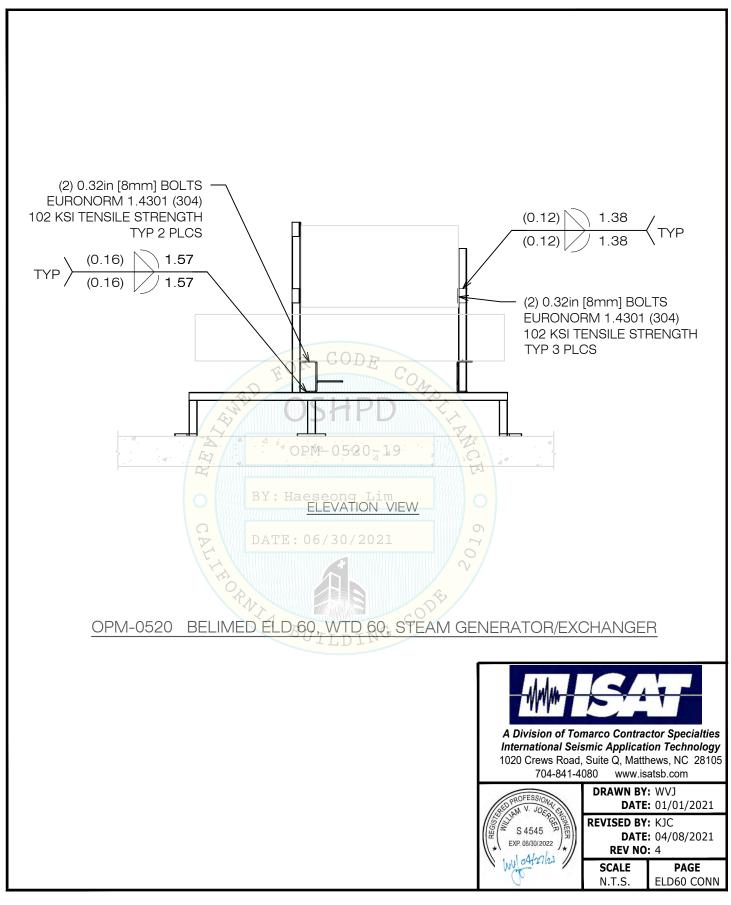


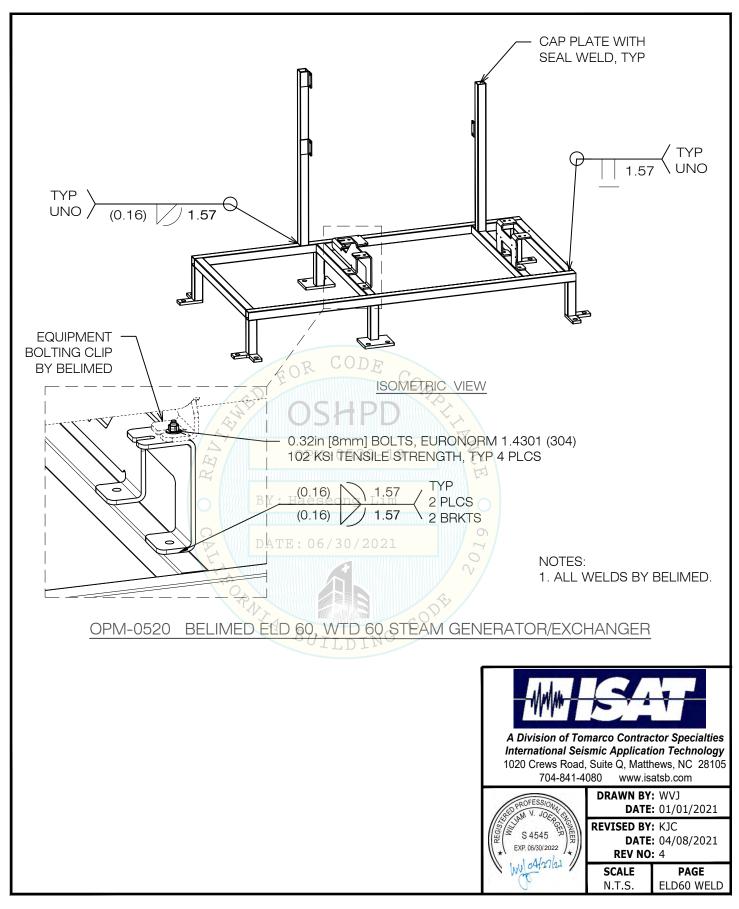


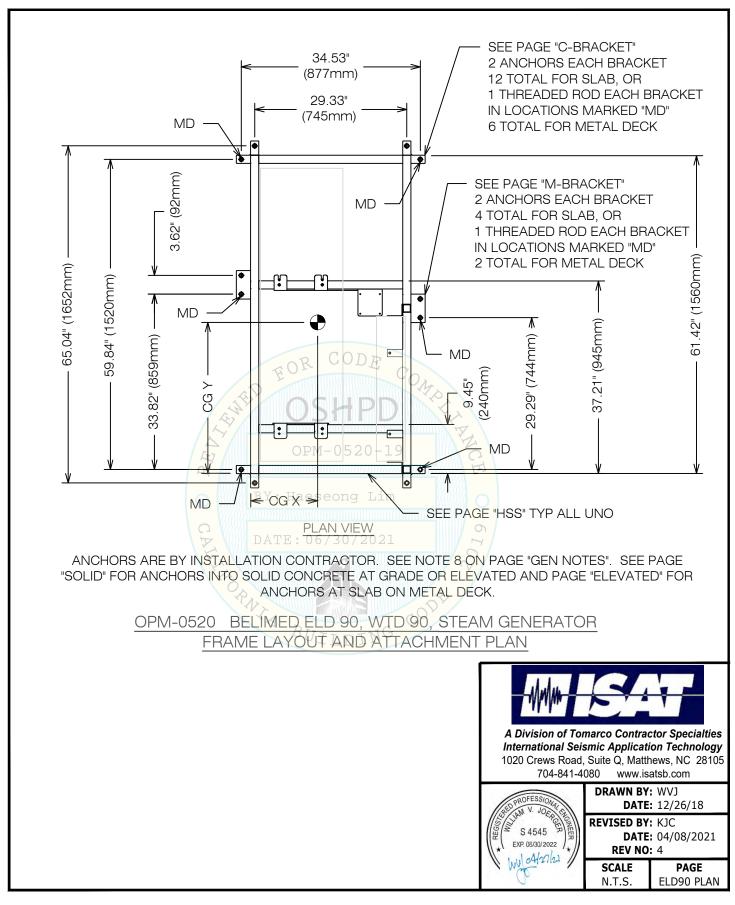


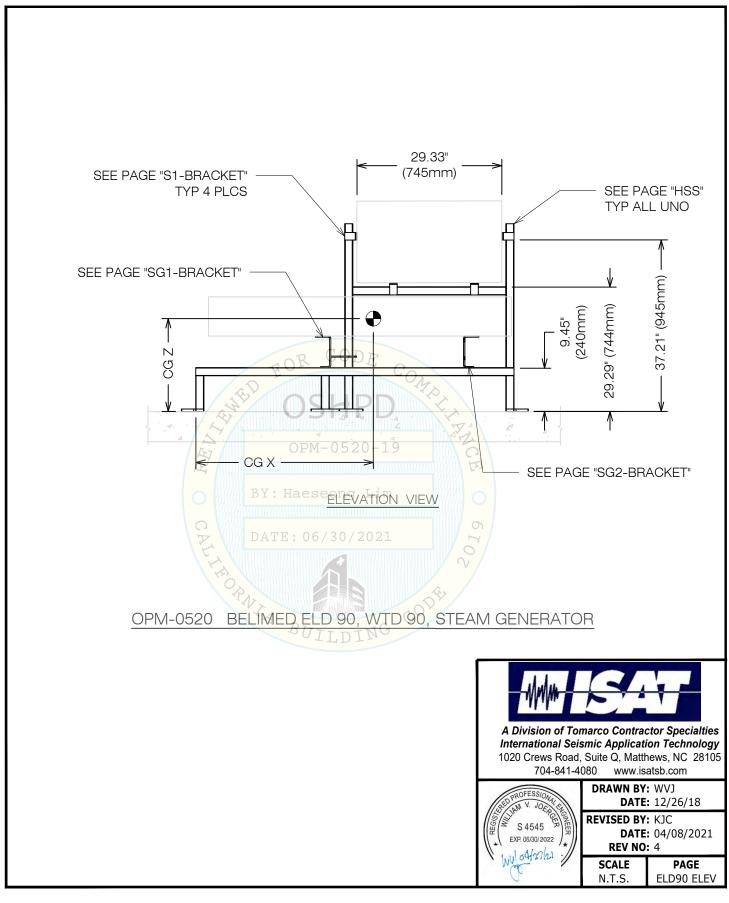


OSHPD OPM-0520 DWG - 13

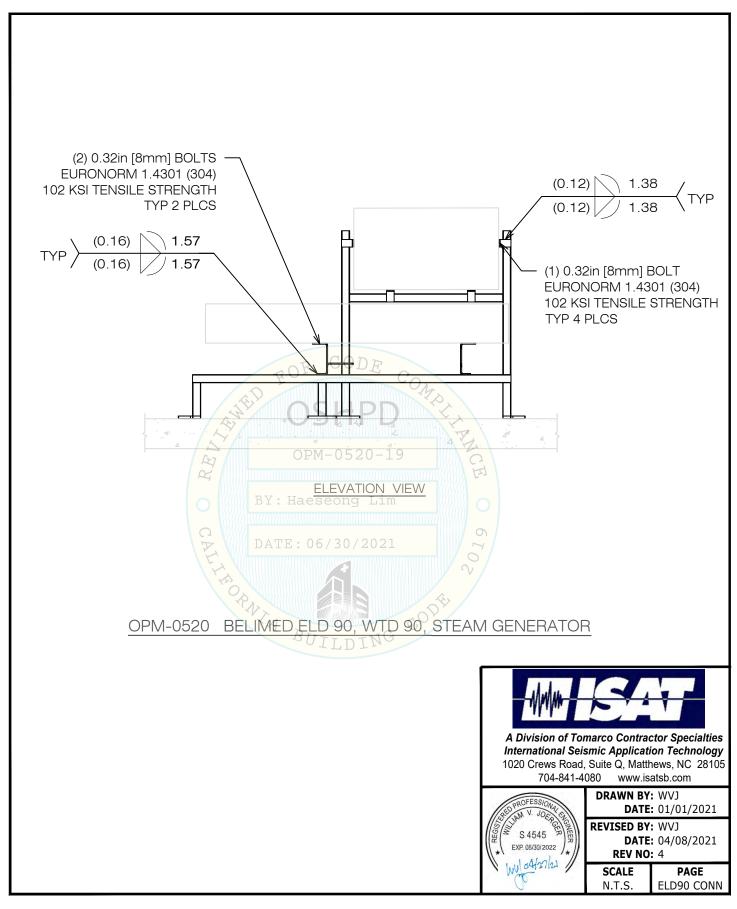


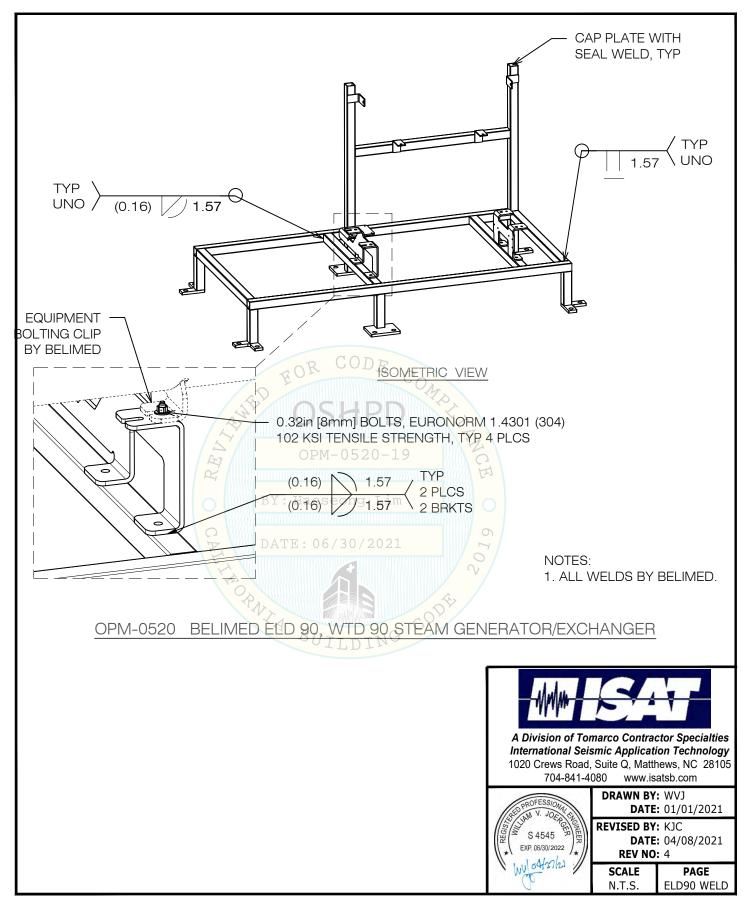


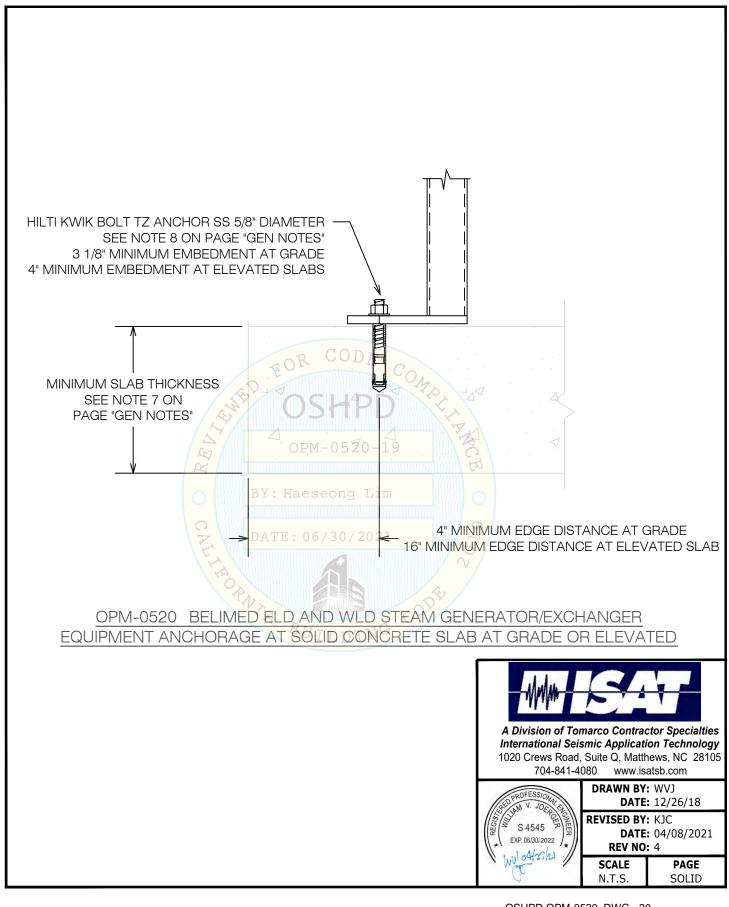


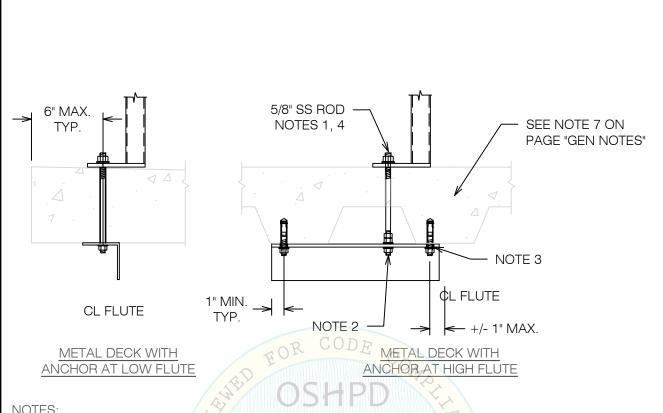


OSHPD OPM-0520 DWG - 17









#### NOTES:

- 1. DRILL 11/16" HOLE IN THE CONCRETE SLAB TO RECEIVE THE 5/8" ASTM F593 CW1 304 (FV = 31.2 KSI) STAINLESS STEEL RODS WITH MATCHING WASHERS AND NUTS.
- 2. SUPPLEMENTAL ANGLE SHALL BE L3x3x1/4 ASTM A36 (Fy = 36 KSI). DRILL 11/16" HOLES IN ANGLE FOR EQUIPMENT THRU BOLT. HEX NUT TOP AND BOTTOM OF FLANGE (TYP). WHERE NUT CANNOT BE INSTALLED ON TOP OF LEG, PROVIDE TAPPED HOLE THROUGH LEG WITH NUT ON BOTTOM.
- 3. DRILL 9/16" HOLE IN ANGLE FOR 2 ANCHORS, ANCHOR INTO BOTTOM OF SLAB SHALL BE HILTI KWIK BOLT TZ 1/2". SEE NOTE 8 ON PAGE "GEN NOTES".
- 4. INSTALL ONLY 1 ANCHOR ROD IN EITHER OF THE AVAILABLE 2 HOLES IN BASEPLATE.

OPM-0520 BELIMED ELD AND WTD STEAM GENERATOR/EXCHANGER ATTACHMENT DETAILS ATTELEVATED SLAB ON METAL DECK



704-841-4080 www.isatsb.com

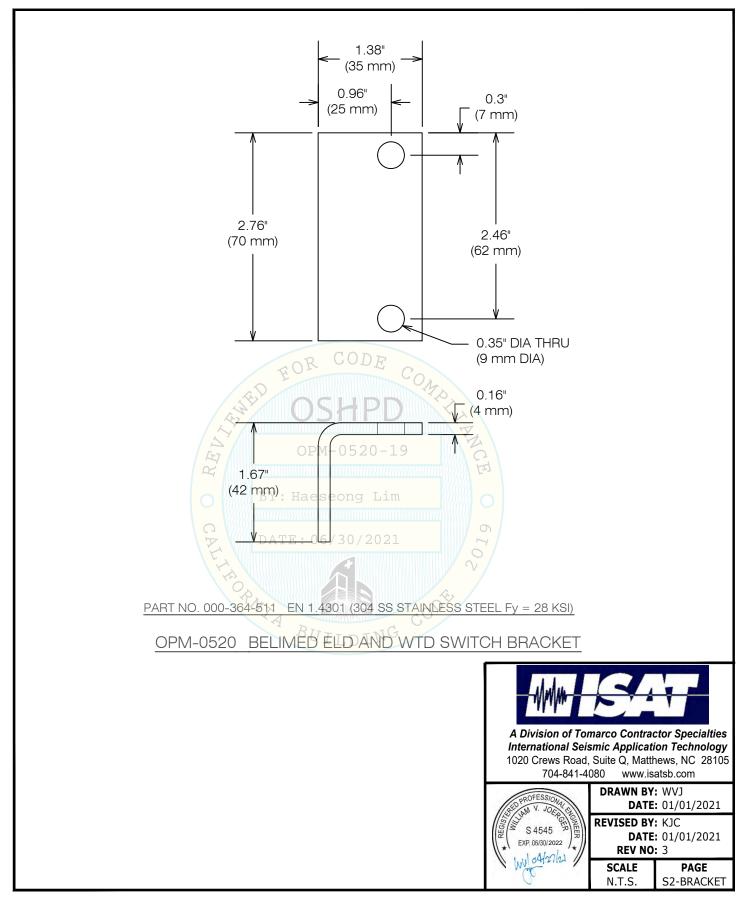


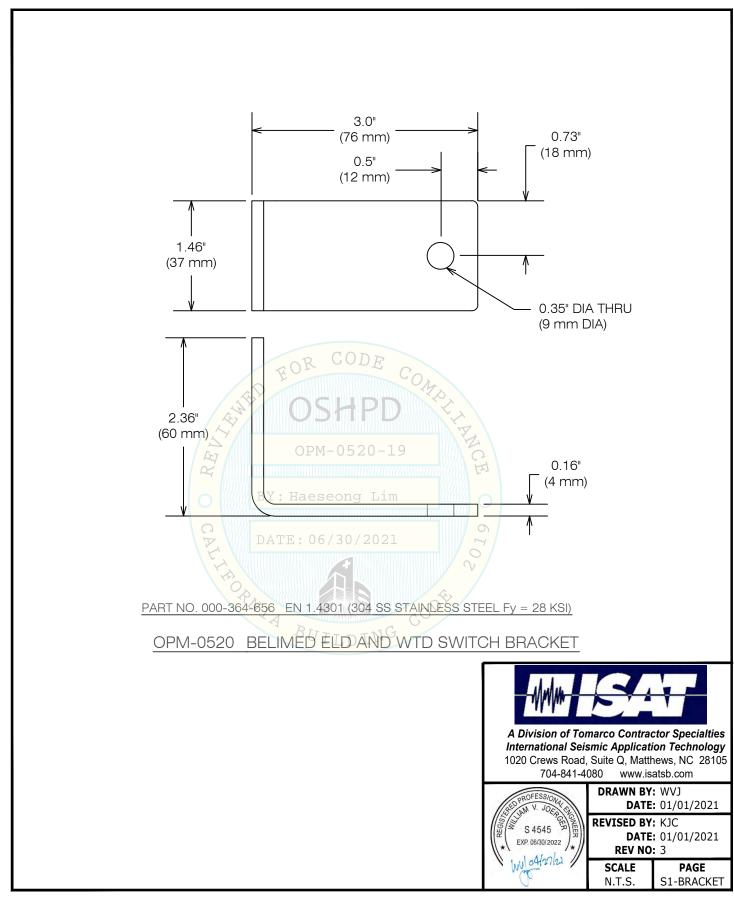
DRAWN BY: WVJ **DATE:** 12/26/18

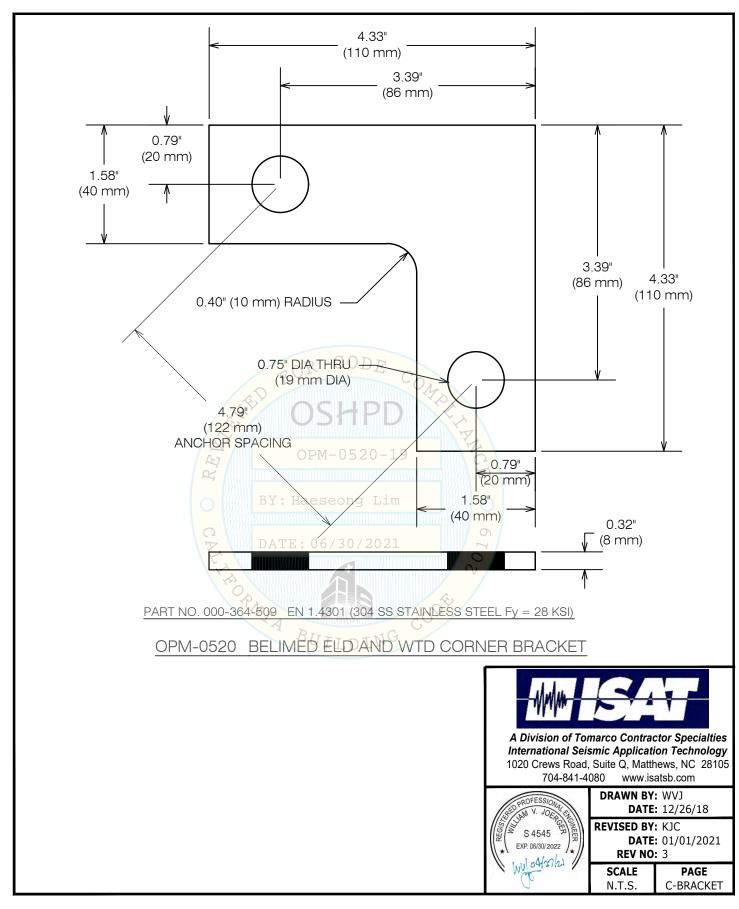
REVISED BY: KJC **DATE:** 01/01/2021 **REV NO:** 3

**SCALE** 

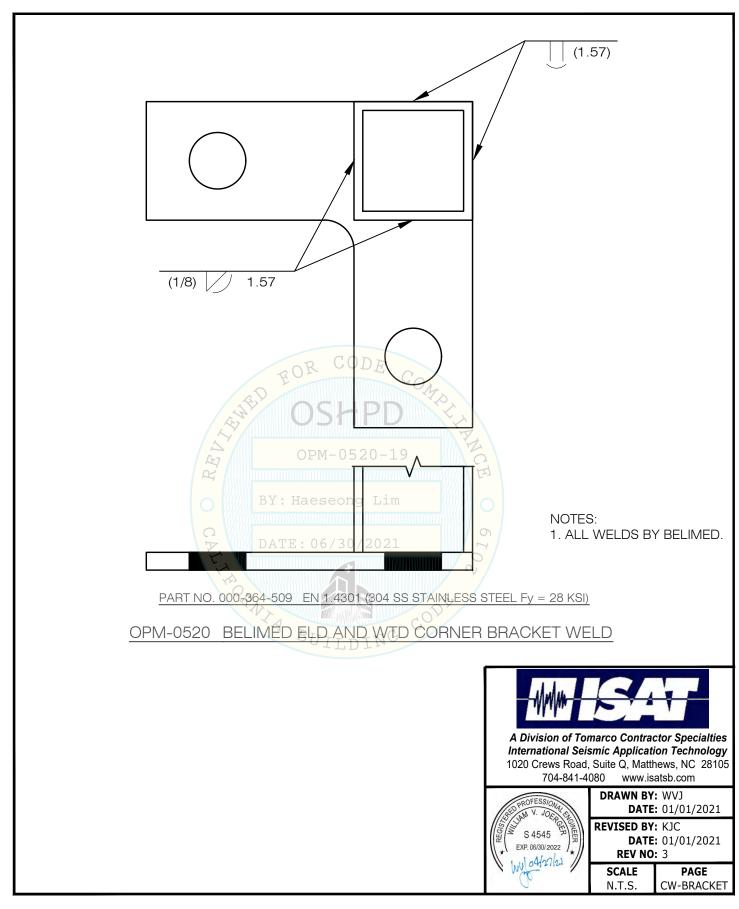
PAGE N.T.S. **ELEVATED** 

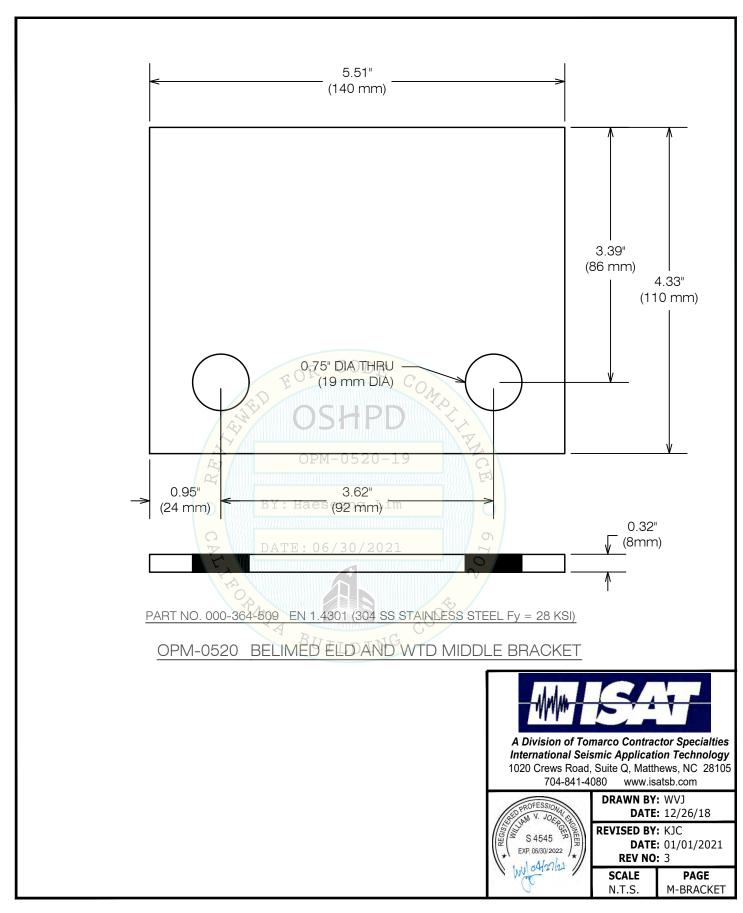




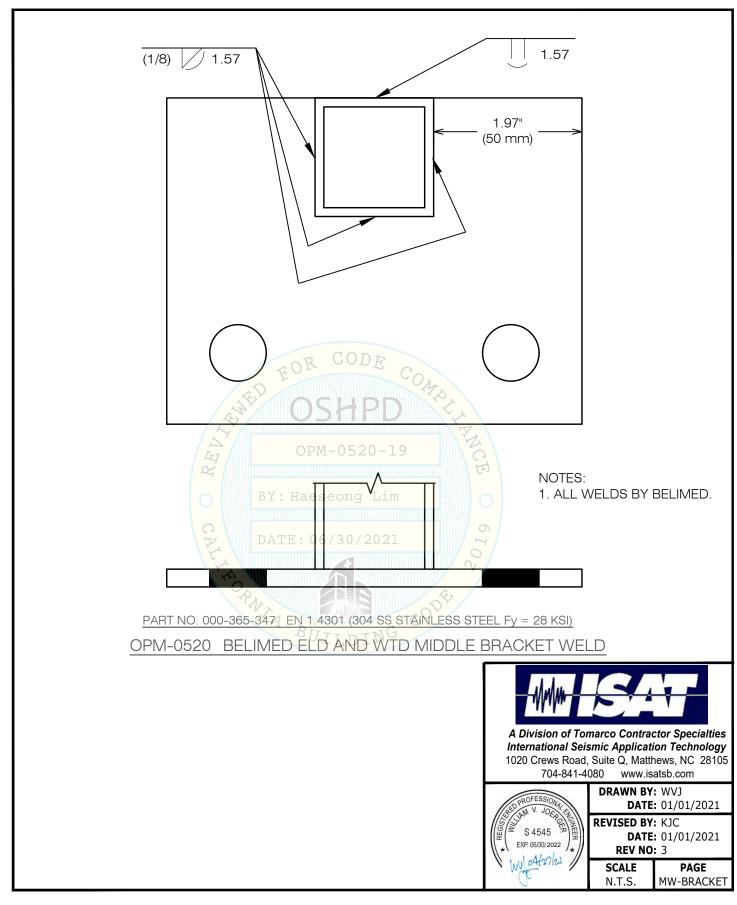


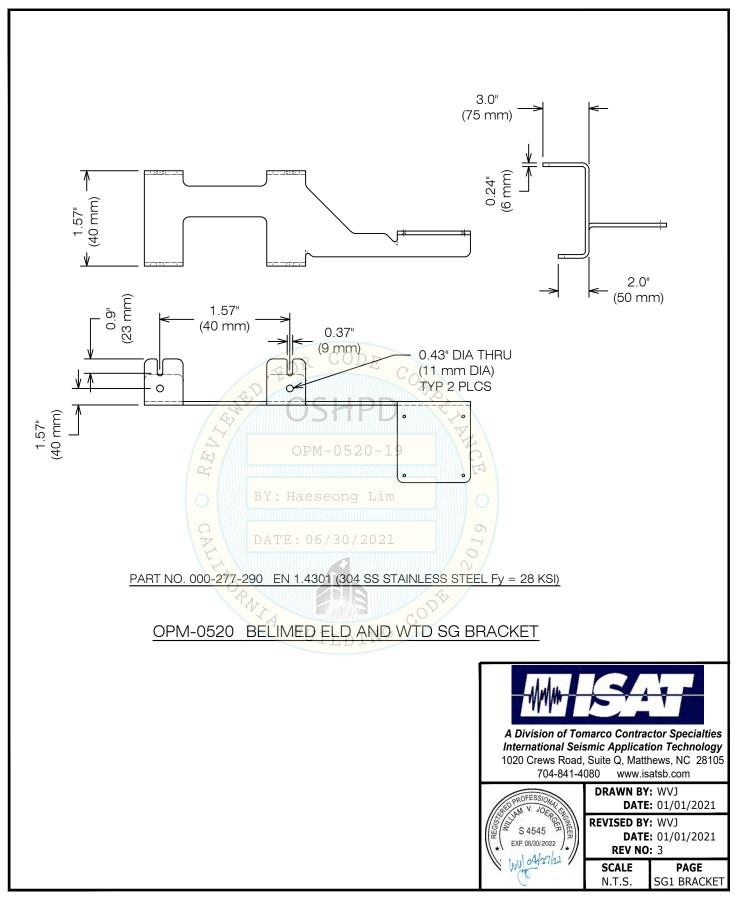
OSHPD OPM-0520 DWG - 24

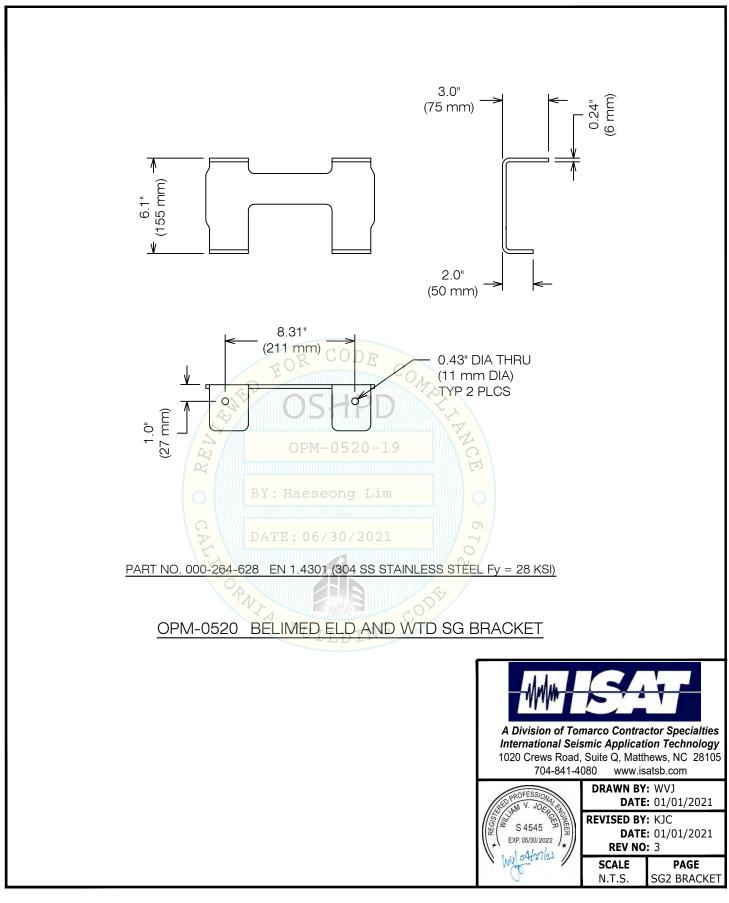




OSHPD OPM-0520 DWG - 26











A Division of Tomarco Contractor Specialties International Seismic Application Technology 1020 Crews Road, Suite Q, Matthews, NC 28105 704-841-4080 www.isatsb.com



DRAWN BY: WVJ **DATE:** 01/01/2021

REVISED BY: KJC

**DATE:** 04/08/2021 **REV NO:** 4

**SCALE** N.T.S.

**PAGE** HSS

BELIMED ELD/WTD STEAM GENERATOR/STEAM EXCHANGER PART NUMBERS							
PART NO	DESCRIPTION	MATERIAL SPECIFICATION	YIELD STRENGTH	THICKNESS			
000-364-511	SWITCH BRACKET, 2 HOLE	EN 1.4301	28 KSI	0.16 in			
000-364-656	SWITCH BRACKET, 1 HOLE	EN 1.4301	28 KSI	0.16 in			
000-364-509	CORNER ANCHOR BRACKET	EN 1.4301	28 KSI	0.32 in			
000-365-347	MIDDLE ANCHOR BRACKET	EN 1.4301	28 KSI	0.32 in			
000-277-290	SG BRACKET 1	EN 1.4301	28 KSI	0.24 in			
000-264-628	SG BRACKET 2	EN 1.4301	28 KSI	0.24 in			
000-364-461	40x40x167	EN 1.4301	28 KSI	0.12 in			
000-364-462	40x40x1230	CODE EN 1.4301	28 KSI	0.12 in			
000-364-460	40x40x705	EN 1.4301	28 KSI	0.12 in			
000-364-622	40x40x855	EN 1.4301	28 KSI	0.12 in			
000-364-641	40x40x1560	EN 1.4301	28 KSI	0.12 in			
000-364-652	40x40x750	EN 1.4301	28 KSI	0.12 in			
000-365-396	40x40x822.5	EN 1.4301	28 KSI	0.12 in			
000-365-411	40x40x833.5	EN 1.4301	28 KSI	0.12 in			

OPM-0520 BELIMED PART NUMBER SUMMARY





A Division of Tomarco Contractor Specialties International Seismic Application Technology 1020 Crews Road, Suite Q, Matthews, NC 28105 704-841-4080 www.isatsb.com



**DRAWN BY:** WVJ **DATE:** 01/01/2021

**REVISED BY:** KJC **DATE:** 04/08/2021 **REV NO:** 4

SCALE SCALE

SCALE PAGE N.T.S. PART NO