

WEIL-MCLAIN

SVF 2500-3000 S2 BOILER

DES. J. ROBERSON

JOB NO. 11-2315

DATE 7/5/23

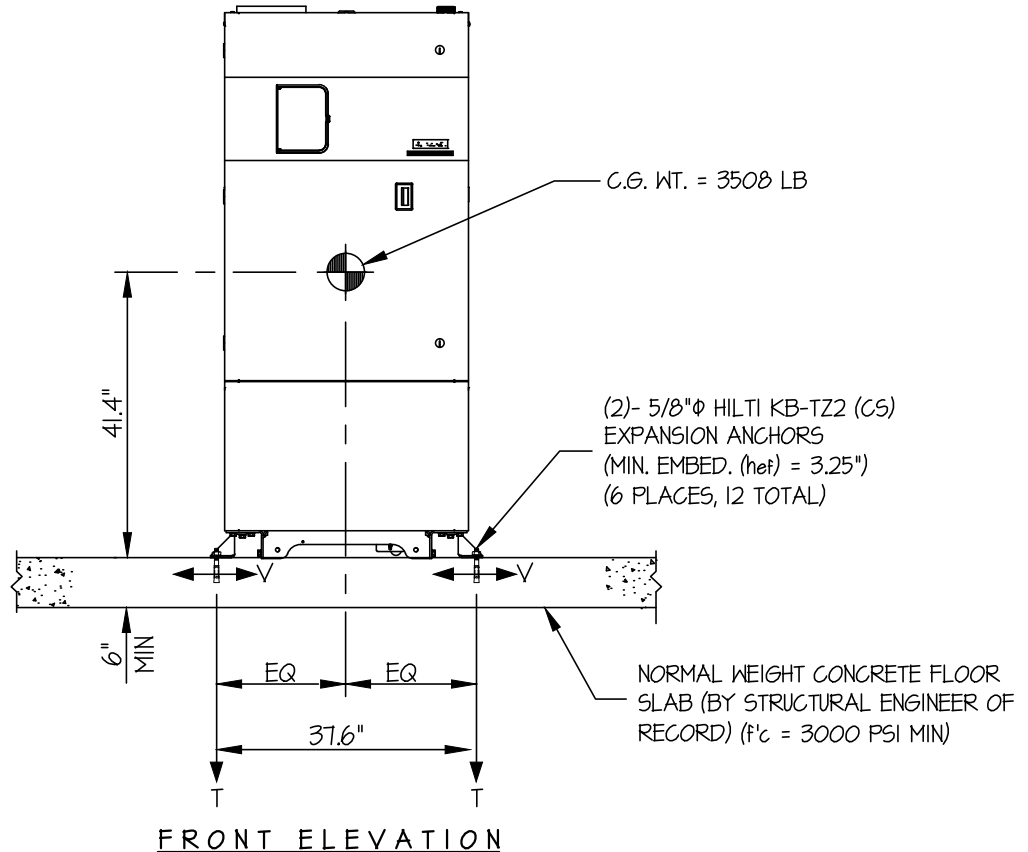
SHEET

1

OF 2 SHEETS

SEISMIC ANCHORAGE

SLAB ON GRADE



T_u = 1889 LB/BOLT (MAX)
 V_u = 749 LB/BOLT (MAX)

NOTES:

- FORCES ARE DETERMINED PER 2022 CALIFORNIA BUILDING CODE AND ASCE 7-16. STRENGTH DESIGN IS USED. (EXAMPLE: $S_{ds} = 2.20$, $a_p = 1.0$, $l_p = 1.5$, $R_p = 2.5$, $\Omega_0 = 2.0$, $z/h = 0$)
 - HORIZONTAL FORCE (E_h) = $0.99 W_p$
 - HORIZONTAL FORCE (E_{mh}) = $1.98 W_p$ (FOR CONCRETE ANCHORAGE)
 - VERTICAL FORCE (E_v) = $0.44 W_p$
- THIS CALCULATION ENCOMPASSES WEIGHTS AND VERTICAL C.G. POSITIONS NOT EXCEEDING VALUES SHOWN.
- THIS CALCULATION WAS PREPARED WITHOUT KNOWLEDGE OF ANY SITE CONDITION. COMPATIBILITY FOR USE WITH A SITE SHALL BE EVALUATED BY THE STRUCTURAL ENGINEER OF RECORD OF THE INSTALLATION (SEOR). USE REQUIRES APPROVAL BY THE SEOR.
- STRUCTURAL ENGINEER OF RECORD FOR THE INSTALLATION SHALL VERIFY ALL CONDITIONS, EVALUATE INTERACTION WITH ADJACENT EQUIPMENT AND ANCHORS, AND PROVIDE SUPPORT STRUCTURE DESIGNED TO SUPPORT WEIGHTS AND FORCES SHOWN IN COMBINATION WITH ALL OTHER LOADS THAT MAY BE PRESENT.

Jonathan Roberson

REGISTERED PROFESSIONAL ENGINEER
 JONATHAN ROBERSON
 No. 4197
 EXP. 6-30-2024
 7/5/23
 STRUCTURAL
 STATE OF CALIFORNIA

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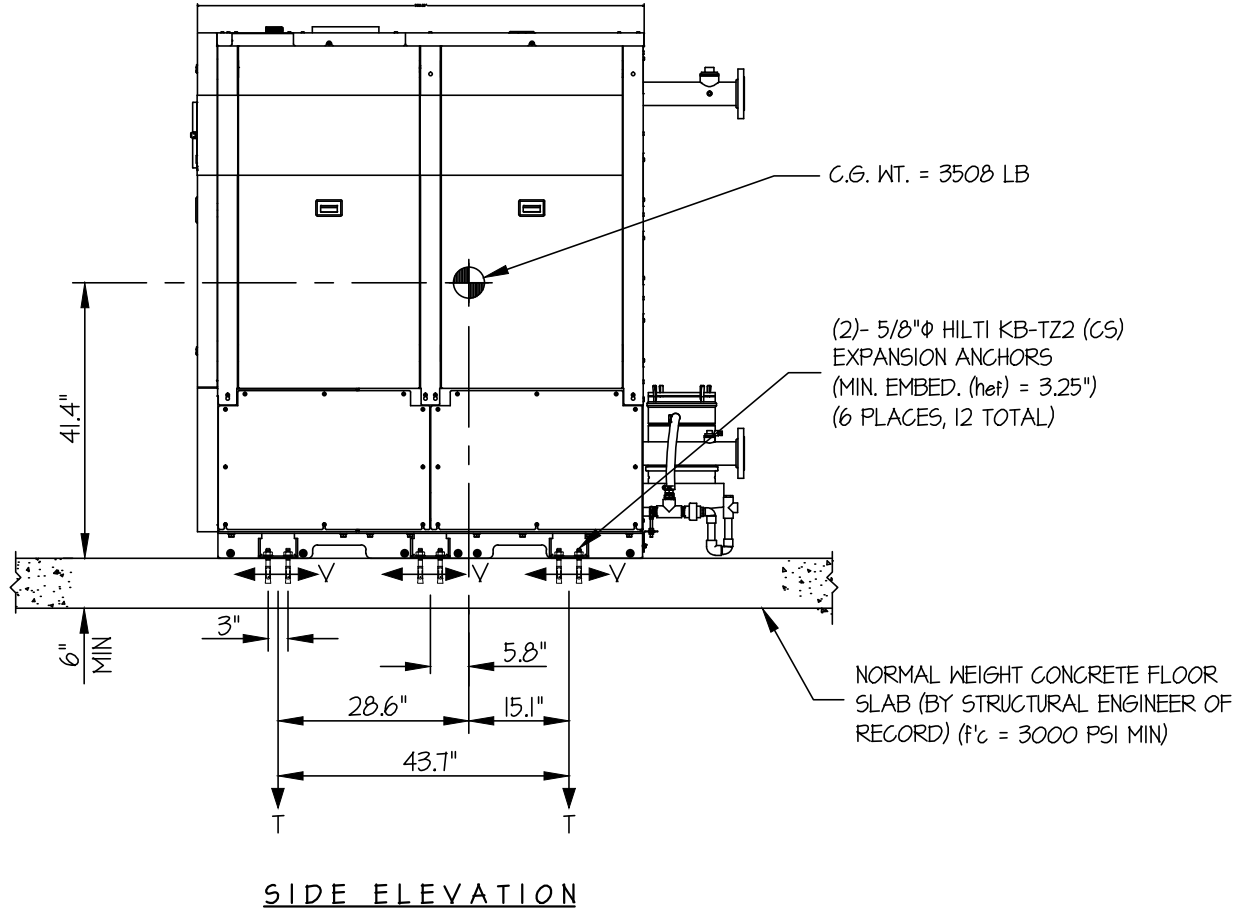
SHEET

2

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SEISMIC ANCHORAGE

SLAB ON GRADE



LOADS:

WEIGHT (Wp) = 3508 LB
 HORIZONTAL FORCE (Emh) = 1.98 Wp = 6946 LB
 VERTICAL FORCE (Ev) = 0.44 Wp = 1544 LB

ANCHOR SPEC: 5/8"φ HILTI KB-TZ2 (CS); (hef = 3.25")
 SPACING = 3" MIN
 EDGE DISTANCE = 32" MIN;
 $\phi T = 0.75 \phi N_n = 2148$ LB/ANCHOR (TENSION)
 $\phi V = \phi V_n = 6169$ LB/ANCHOR (SHEAR)

ANCHOR FORCES:

TENSION (T)

$$T_u \text{ MAXIMUM} = \left[\frac{6946\#(41.4'')(28.6'')}{4 \text{ BOLTS } (37.6'')(43.7'')} \times (0.3) \right] + \frac{6946\#(41.4'')}{4 \text{ BOLTS } (43.7'')} - \frac{(3508\#(0.9) - 1544\#)(28.6'')}{8 \text{ BOLTS } (43.7'')} = 1889 \text{ LB/BOLT (MAX)}$$

(HORIZ - FRONT TO BACK) (HORIZ - SIDE TO SIDE) (WEIGHT(0.9) - Ev)

SHEAR (V)

$$V_u \text{ MAXIMUM} = \left[\frac{6946\#(28.6'')}{8 \text{ BOLTS } (43.7'')} \times (0.3) \right] + \frac{6946\#}{12 \text{ BOLTS}} = 749 \text{ LB/BOLT (MAX)}$$

INTERACTION:

$$\left(\frac{T_u}{\phi T} \right) + \left(\frac{V_u}{\phi V} \right) \leq 1.2 \left(\frac{1889}{2148} \right) + \left(\frac{749}{6169} \right) = 1.00 \leq 1.2 \therefore \text{O.K.}$$

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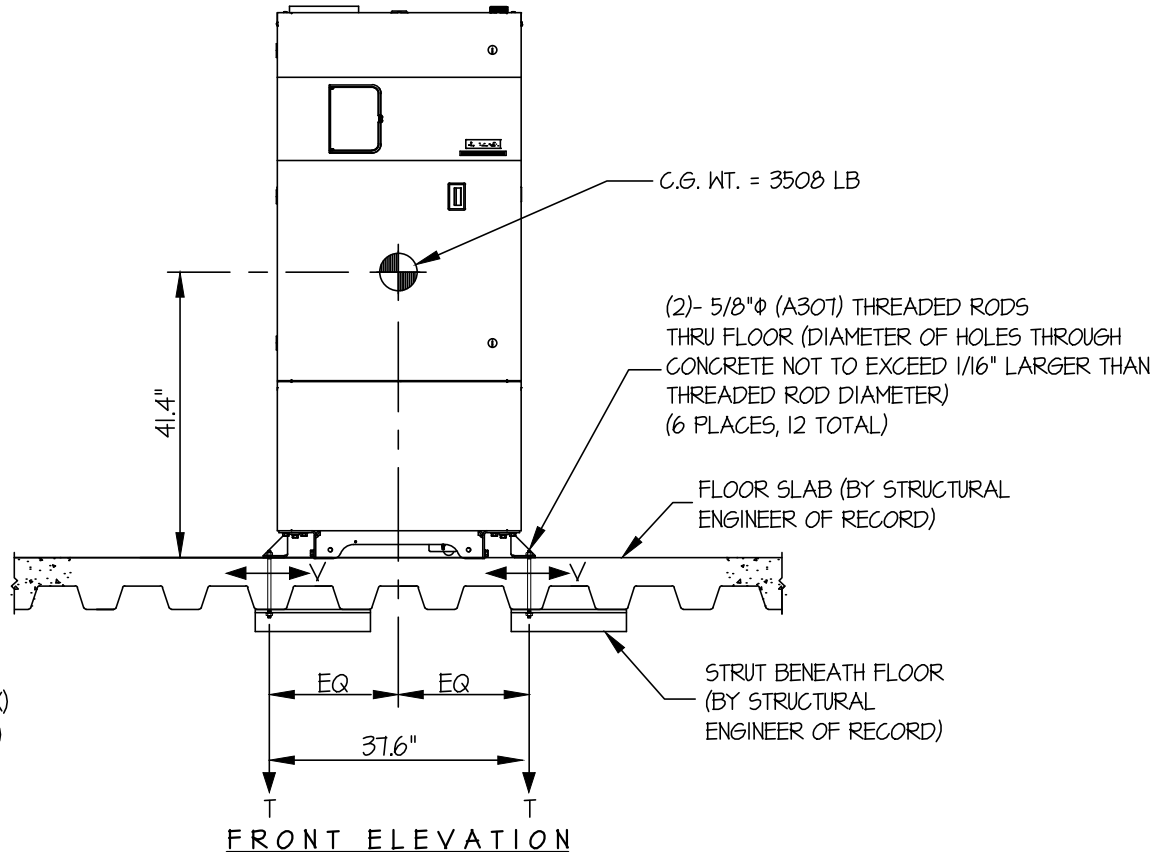
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OF 2 SHEETS

SEISMIC ANCHORAGE

UPPER FLOOR



$T_u = 1568 \text{ LB/BOLT (MAX)}$
 $V_u = 628 \text{ LB/BOLT (MAX)}$

NOTES:

1. FORCES ARE DETERMINED PER 2022 CALIFORNIA BUILDING CODE AND ASCE 7-16. STRENGTH DESIGN IS USED. (EXAMPLE: $S_{ds} = 2.30$, $a_p = 1.0$, $I_p = 1.5$, $R_p = 2.5$, $z/h \leq 1$)

HORIZONTAL FORCE (E_h) = $1.66 W_p$

VERTICAL FORCE (E_v) = $0.46 W_p$

2. THIS CALCULATION ENCOMPASSES WEIGHTS AND VERTICAL C.G. POSITIONS NOT EXCEEDING VALUES SHOWN.

3. THIS CALCULATION WAS PREPARED WITHOUT KNOWLEDGE OF ANY SITE CONDITION. COMPATIBILITY FOR USE WITH A SITE SHALL BE EVALUATED BY THE STRUCTURAL ENGINEER OF RECORD OF THE INSTALLATION (SEOR). USE REQUIRES APPROVAL BY THE SEOR.

4. STRUCTURAL ENGINEER OF RECORD FOR THE INSTALLATION SHALL VERIFY ALL CONDITIONS, EVALUATE INTERACTION WITH ADJACENT EQUIPMENT AND ANCHORS, AND PROVIDE SUPPORT STRUCTURE DESIGNED TO SUPPORT WEIGHTS AND FORCES SHOWN IN COMBINATION WITH ALL OTHER LOADS THAT MAY BE PRESENT.



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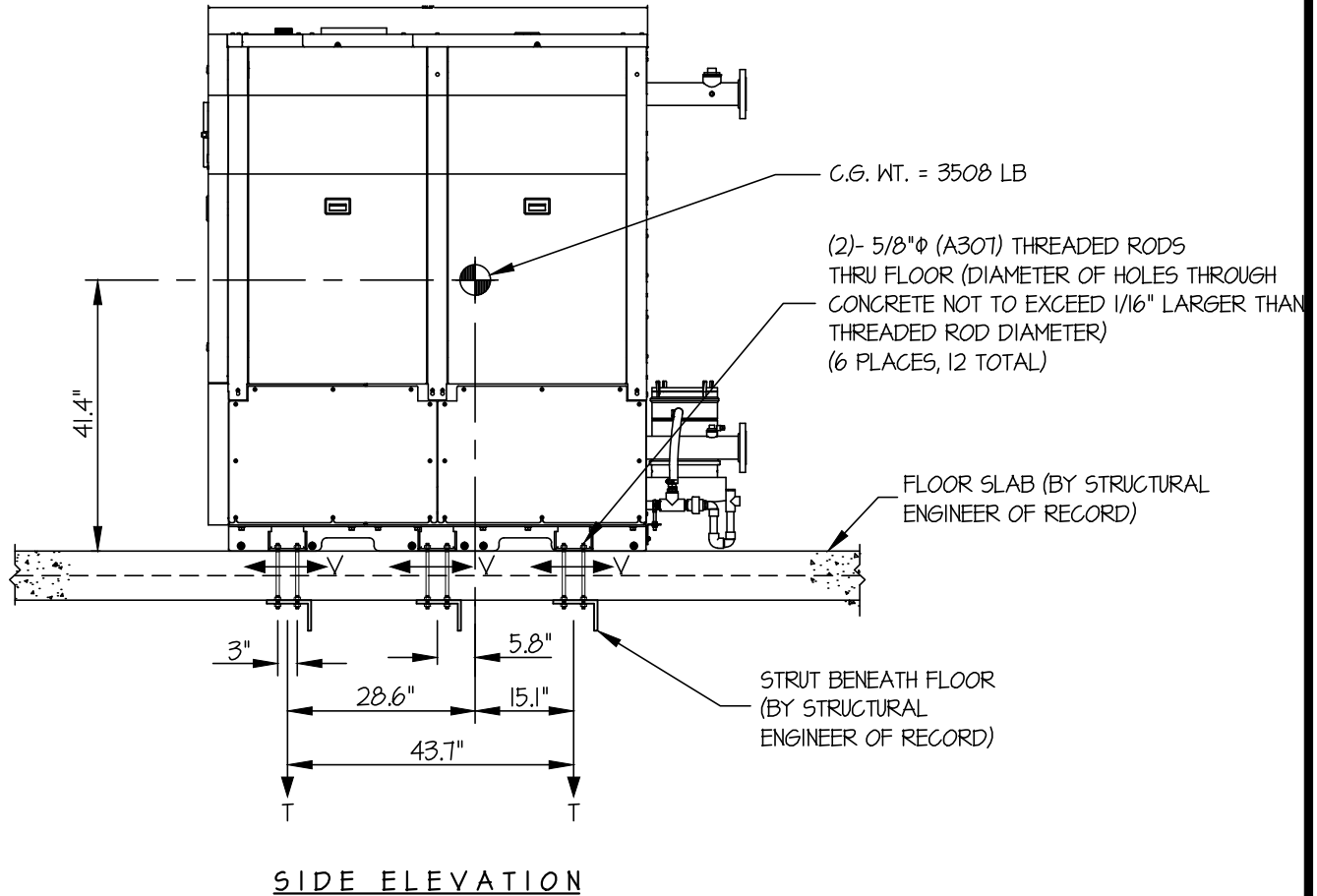
SHEET

2

OF 2 SHEETS

SEISMIC ANCHORAGE

UPPER FLOOR



LOADS:

WEIGHT (W_p) = 3508 LB
 HORIZONTAL FORCE (E_h) = 1.66 W_p = 5823 LB
 VERTICAL FORCE (E_v) = 0.46 W_p = 1614 LB

ANCHOR SPECS: 5/8"φ (A307) THREADED ROD

ϕT = 9870 LB/BOLT (TENSION)
 ϕV = 5890 LB/BOLT (SHEAR)

ANCHOR FORCES:

TENSION (T)

$$T_U \text{ MAXIMUM} = \left[\frac{5823\#(41.4'')(28.6'')}{4 \text{ BOLTS } (37.6'')(43.7'')} \times (0.3) \right] + \frac{5823\#(41.4'')}{4 \text{ BOLTS } (43.7'')} - \frac{(3508\#(0.9) - 1614\#)(28.6'')}{8 \text{ BOLTS } (43.7'')} = 1568 \text{ LB/BOLT (MAX)}$$

(HORIZ - FRONT TO BACK) (HORIZ - SIDE TO SIDE) (WEIGHT(0.9) - E_v)

SHEAR (V)

$$V_U \text{ MAXIMUM} = \left[\frac{5823\#(28.6'')}{8 \text{ BOLTS } (43.7'')} \times (0.3) \right] + \frac{5823\#}{12 \text{ BOLTS}} = 628 \text{ LB/BOLT (MAX)}$$

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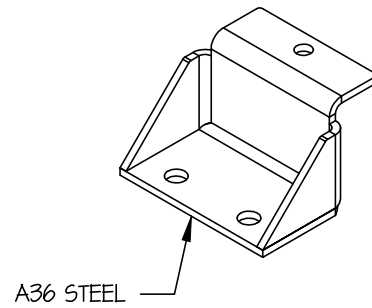
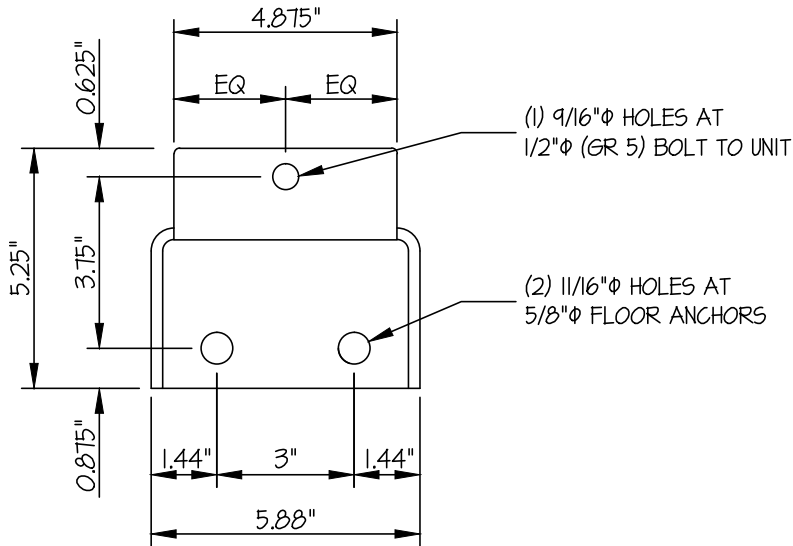
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OF 1 SHEETS

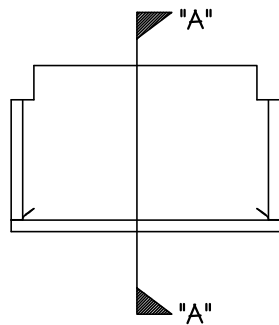
SEISMIC ANCHORAGE

BRACKET DETAILS

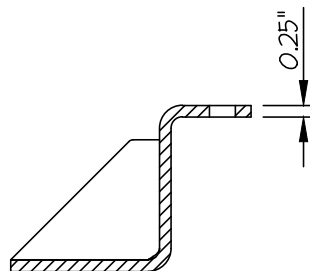


TOP

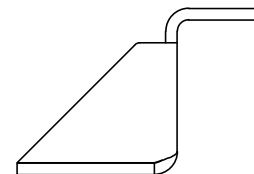
ISOMETRIC



FRONT



SECTION "A"- "A"



FLOOR ANCHOR BRACKET