

PATTERSON KELLEY

STORM MODELS 5000/6000
CONDENSING BOILERS

DES. J. ROBERSON

JOB NO. 11-2304

DATE 2/15/23

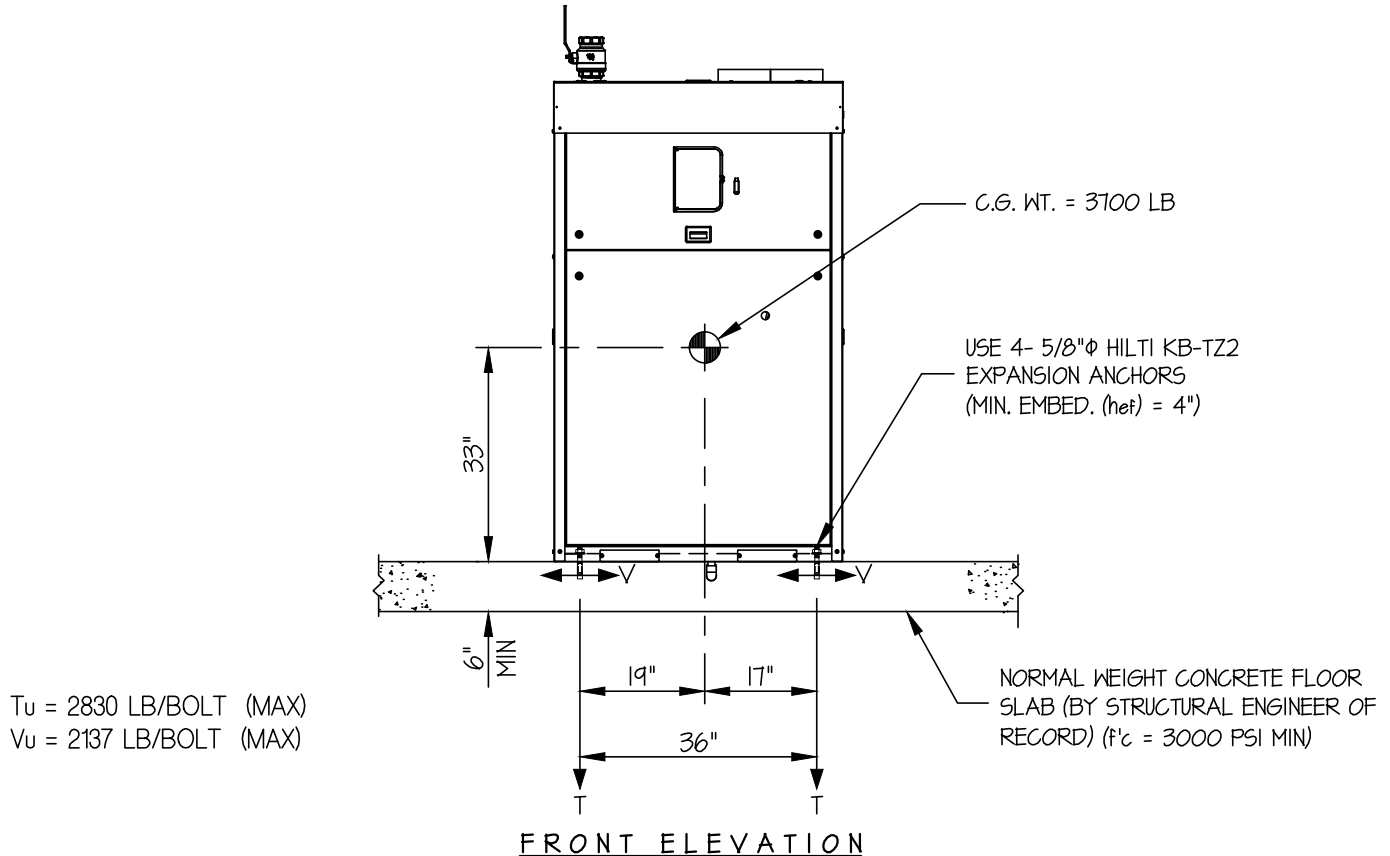
SHEET

1

OF 2 SHEETS

SEISMIC ANCHORAGE

SLAB ON GRADE



NOTES:

- FORCES ARE DETERMINED PER 2022 CALIFORNIA BUILDING CODE AND ASCE 7-16.
STRENGTH DESIGN IS USED. (EXAMPLE: $S_{ds} = 1.80$, $a_p = 1.0$, $I_p = 1.5$, $R_p = 2.5$, $\Omega_o = 2.0$, $z/h = 0$)

 HORIZONTAL FORCE (E_h) = $0.81 W_p$
 HORIZONTAL FORCE (E_{mh}) = $1.62 W_p$ (FOR CONCRETE ANCHORAGE)
 VERTICAL FORCE (E_v) = $0.36 W_p$
- 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.



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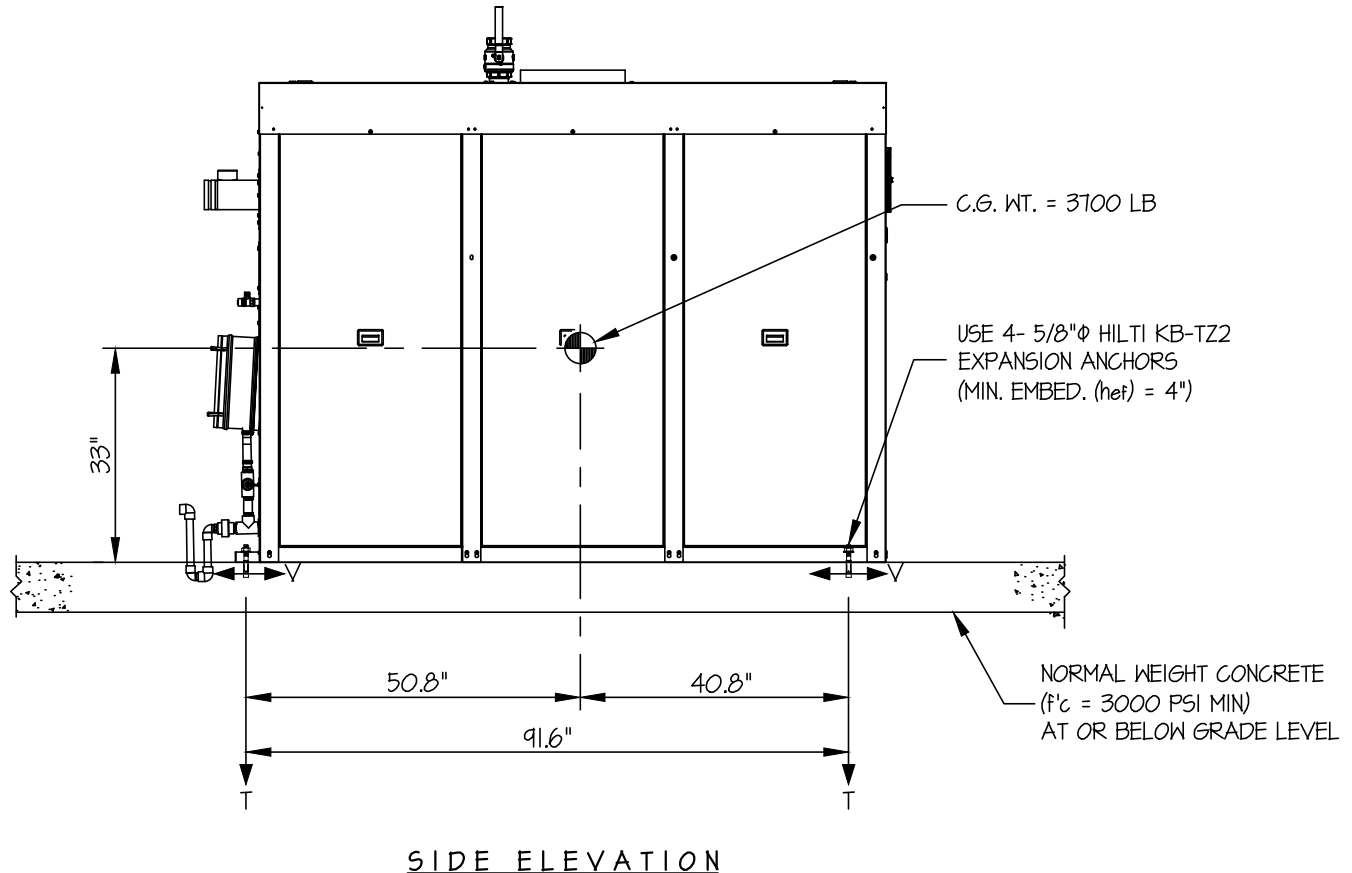
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LOADS:

WEIGHT (W_p) = 3700 LB
HORIZONTAL FORCE (E_{mh}) = 1.62 W_p = 5994 LB
VERTICAL FORCE (E_v) = 0.36 W_p = 1332 LB

ANCHOR SPEC: 3/8" ϕ HILTI KB-TZ2: (hef = 4")

SPACING = 14" MIN

EDGE DISTANCE = 26" MIN:

$\phi T = 0.75 \phi N_n$ = 3632 LB/ANCHOR (TENSION)

$\phi V = \phi V_n$ = 6668 LB/ANCHOR (SHEAR)

ANCHOR FORCES:

TENSION (T)

$$T_U \text{ MAXIMUM} = \left[\frac{5994\#(33'')(17'')}{1 \text{ BOLT } (91.6'')(36'')} \times (0.3) \right] + \frac{5994\#(33'')(50.8'')}{1 \text{ BOLT } (36'')(91.6'')} - \frac{(3700\#(0.9) - 1332\#)(17'')(50.8'')}{1 \text{ BOLT } (36'')(91.6'')} = 2830 \text{ LB/BOLT (MAX)}$$

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

SHEAR (V)

$$V_U \text{ MAXIMUM} = \left[\frac{5994\#(19'')}{2 \text{ BOLTS } (36'')} \times (0.3) \right] + \frac{5994\#(50.8'')}{2 \text{ BOLTS } (91.6'')} = 2137 \text{ LB/BOLT (MAX)}$$

UNITY CHECK:

$$\left(\frac{T_u}{\phi T} \right) + \left(\frac{V_u}{\phi V} \right) \leq 1.2 \quad \left(\frac{2830}{3632} \right) + \left(\frac{2137}{6668} \right) = 1.10 \leq 1.2 \therefore \text{O.K.}$$

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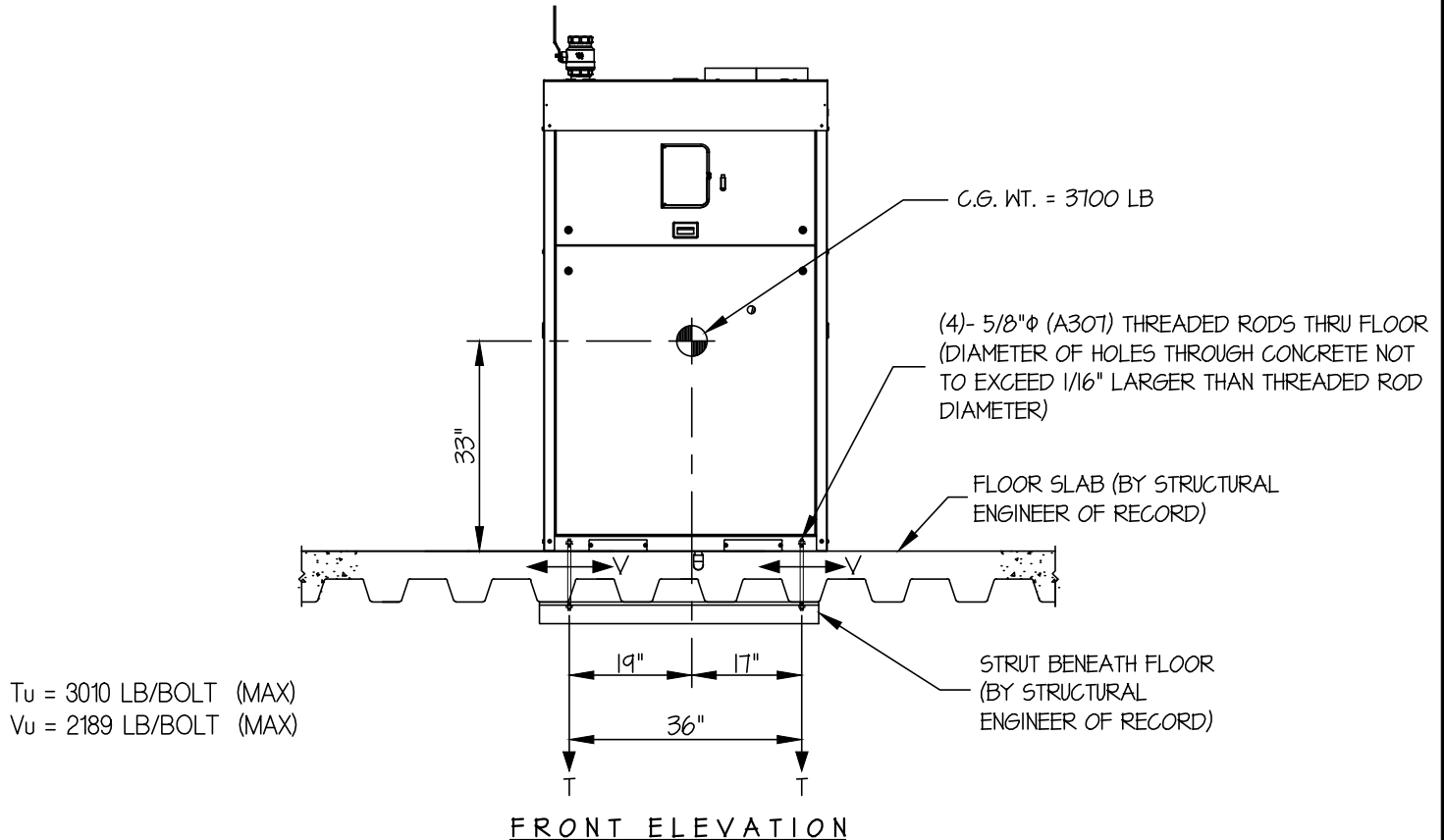
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SEISMIC ANCHORAGE

UPPER FLOOR



NOTES:

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

$$\text{HORIZONTAL FORCE (Eh)} = 1.66 W_p$$

$$\text{VERTICAL FORCE (Ev)} = 0.46 W_p$$

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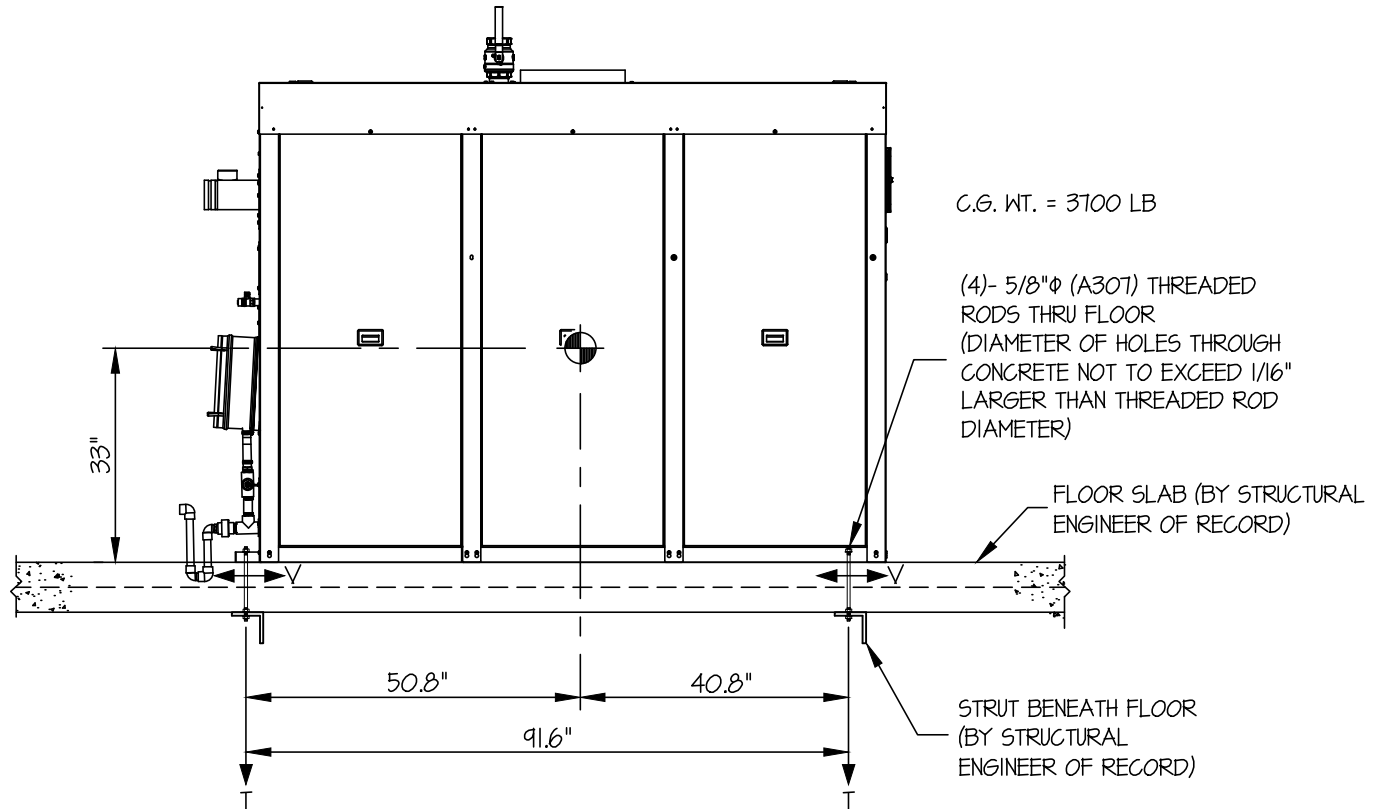
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SEISMIC ANCHORAGE

UPPER FLOOR



SIDE ELEVATION

LOADS:

WEIGHT (W_p) = 3700 LB
 HORIZONTAL FORCE (E_h) = 166 W_p = 6142 LB
 VERTICAL FORCE (E_v) = 0.46 W_p = 1702 LB

ANCHOR SPEC: 5/8"φ (A307) THREADED RODS

ϕT = 9830 LB/ANCHOR (TENSION)

ϕV = 5890 LB/ANCHOR (SHEAR)

ANCHOR FORCES:

TENSION (T)

$$T_{U \text{ MAXIMUM}} = \left[\frac{6142\#(33'')(17'')}{1 \text{ BOLT } (91.6'')(36'')} \times (0.3) \right] + \frac{6142\#(33'')(50.8'')}{1 \text{ BOLT } (36'')(91.6'')} - \frac{(3700\#(0.9) - 1702\#)(17'')(50.8'')}{1 \text{ BOLT } (36'')(91.6'')} = 3010 \text{ LB/BOLT (MAX)}$$

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

SHEAR (V)

$$V_{U \text{ MAXIMUM}} = \left[\frac{6142\#(19'')}{2 \text{ BOLTS } (36'')} \times (0.3) \right] + \frac{6142\#(50.8'')}{2 \text{ BOLTS } (91.6'')} = 2189 \text{ LB/BOLT (MAX)}$$