SEISMIC ANCHORAGE

TU = 7367 LB/BOLT (MAX)
VU = 1694 LB/BOLT (MAX)

NOTES:

1. FORCES ARE DETERMINED PER 2019 CALIFORNIA BUILDING CODE AND ASCE 7-16.
   STRENGTH DESIGN IS USED. (Sds = 2.30, \( \alpha_p = 10 \), \( I_p = 15 \), \( R_p = 15 \), \( \Omega_v = 2.0 \), \( z/h = 0 \))

   HORIZONTAL FORCE (\( E_h \)) = 1035 Wp
   HORIZONTAL FORCE (\( E_{mh} \)) = 2.07 Wp (FOR CONCRETE ANCHORAGE)
   VERTICAL FORCE (\( E_v \)) = 0.46 Wp

2. CENTER OF GRAVITY (C.G.) AND WEIGHT ARE THE GOVERNING PARAMETERS FOR DESIGN.
   THESE CALCULATIONS ENCOMPASS ALL WEIGHTS UP TO THE MAXIMUM WEIGHT SHOWN.

3. STRUCTURAL ENGINEER OF RECORD FOR THE BUILDING 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.
SEISMIC ANCHORAGE

WEIL-MCLAIN

SVF1000 BOILER

LEVEL LEGS NOT USED IN CALCULATION (6 LOCATIONS)

C.G. WT. = 2150 LB
(γ = 40°)

BOTTOM VIEW

LOADS: PER 2019 CALIFORNIA BUILDING CODE AND ASCE 7-16
STRENGTH DESIGN IS USED (Sos = 2.30, Ap = 1.0, Ip = 15, Rp = 15, Ω = 2.0, z/f = 0)

WEIGHT = 2150 LB
HORIZONTAL FORCE (Emh) = 2.07 Wp = 4451 LB
VERTICAL FORCE (Ev) = 0.46 Wp = 989 LB

BOLT FORCES:

TENSION (T)

\[ T_u \text{ MAXIMUM} = \left( \frac{4451 \times \text{(#40" x 8.14")}}{1 \text{ bolt} (49.5" x 15.03")} \times 0.3 \right) + \left( \frac{4451 \times \text{(#40" x 29.63")}}{1 \text{ bolt} (15.03") (49.5")} - \frac{(2150 \times 0.9) - 989 \times \text{(#29.63" x 8.14")}}{1 \text{ bolt} (49.5" x 15.03")} \right) = 7367 \text{ LB/BOOLT (MAX)}

( HORIZ. - SIDE TO SIDE )
( HORIZ. - FRONT TO BACK )
( WGT 889 - EV )

SHEAR (V)

\[ V_u \text{ MAXIMUM} = \left( \frac{4451 \times \text{(#8.14")}}{2 \text{ bolts} (15.03")} \times 0.3 \right) + \left( \frac{4451 \times 29.63"}{2 \text{ bolts} (49.5")} \right) = 1694 \text{ LB/BOOLT (MAX)}

UNITY CHECK:

\[ \left( \frac{T_u}{\Phi T} \right) + \left( \frac{V_u}{\Phi V} \right) \leq 12 \left( \frac{7367}{9354} \right) + \left( \frac{1694}{5696} \right) = 10.8 \leq 12 \therefore \text{OK} \]
SEISMIC ANCHORAGE

C.G. WT. = 2150 LB
BRACKET BY CONTRACTOR
W/ (2)- 5/8"-11 SCREWS W/ NUTS
TO ATTACH FROM SIDE OF BRACKET TO UNIT
AND (4)- 3/8"-16 SCREWS
FROM FRONT OF BRACKET THROUGH
0.315" THREADED HOLES TO UNIT
(EA BRACKET 2 PLACES, 12 TOTAL)

(2)- 5/8"x19 (ASTM F5936) THREADED RODS
THRU FLOOR (HOLE DIAMETER IN
CONCRETE NOT MORE THAN 1/16"
LARGER THAN BOLT DIAMETER MAX.)
(EA BRACKET 2 PLACES, 4 TOTAL)

FLOOR SLAB (BY STRUCTURAL
ENGINEER OF RECORD)

STRUT BENEATH FLOOR
(BY STRUCTURAL
ENGINEER OF RECORD)

T_u = 9926 LB/BOLT (MAX)
V_u = 2258 LB/BOLT (MAX)

FRONT ELEVATION

NOTES:
1. FORCES ARE DETERMINED PER 2019 CALIFORNIA BUILDING CODE AND ASCE 7-16.
   STRENGTH DESIGN IS USED. (Sds = 2.30, a_p = 10, I_p = 15, R_p = 15, z/h < 1)
   HORIZONTAL FORCE (E_h) = 2.76 W_p
   VERTICAL FORCE (E_v) = 0.46 W_p

2. CENTER OF GRAVITY (C.G.) AND WEIGHT ARE THE GOVERNING PARAMETERS FOR DESIGN.
   THESE CALCULATIONS ENCOMPASS ALL WEIGHTS UP TO THE MAXIMUM WEIGHT SHOWN.

3. STRUCTURAL ENGINEER OF RECORD FOR THE BUILDING 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.

[Signature]
STATE OF CALIFORNIA
RE: STRUCTURAL ENGINEER
NO. 4197
EXP. 6-30-2022
5/27/22
LOADS: PER 2019 CALIFORNIA BUILDING CODE AND ASCE 7-16.
STRENGTH DESIGN IS USED (Sos = 2.30, Sp = 1.0, Ip = 15, Rp = 15, z/f ≤ 1)
WEIGHT = 2150 LB
HORIZONTAL FORCE (Eh) = 2.76 Wp = 5934 LB
VERTICAL FORCE (Ev) = 0.46 Wp = 989 LB

BOLT FORCES:

TENSION (T)

\[
T_{\text{MAX}} = \left[ \frac{5934 \times 40}{1 \times 15.03} \times 0.3 \right] + \frac{5934 \times 29.63}{1 \times 49.5} - \frac{(2150 \times 0.9) - 989 \times 29.63 \times 8.14}{1 \times 49.5 \times 15.03} = 9926 \text{ LB/BOOLT (MAX)}
\]

SHEAR (V)

\[
V_{\text{MAX}} = \left[ \frac{5934 \times 8.14}{2 \times 15.03} \times 0.3 \right] + \frac{5934 \times 29.63}{2 \times 49.5} = 2258 \text{ LB/BOOLT (MAX)}
\]