

## PATTERSON-KELLEY CO.

DES. **J. ROBERSON**

SHEET

**1**

JOB NO. **11-1520**

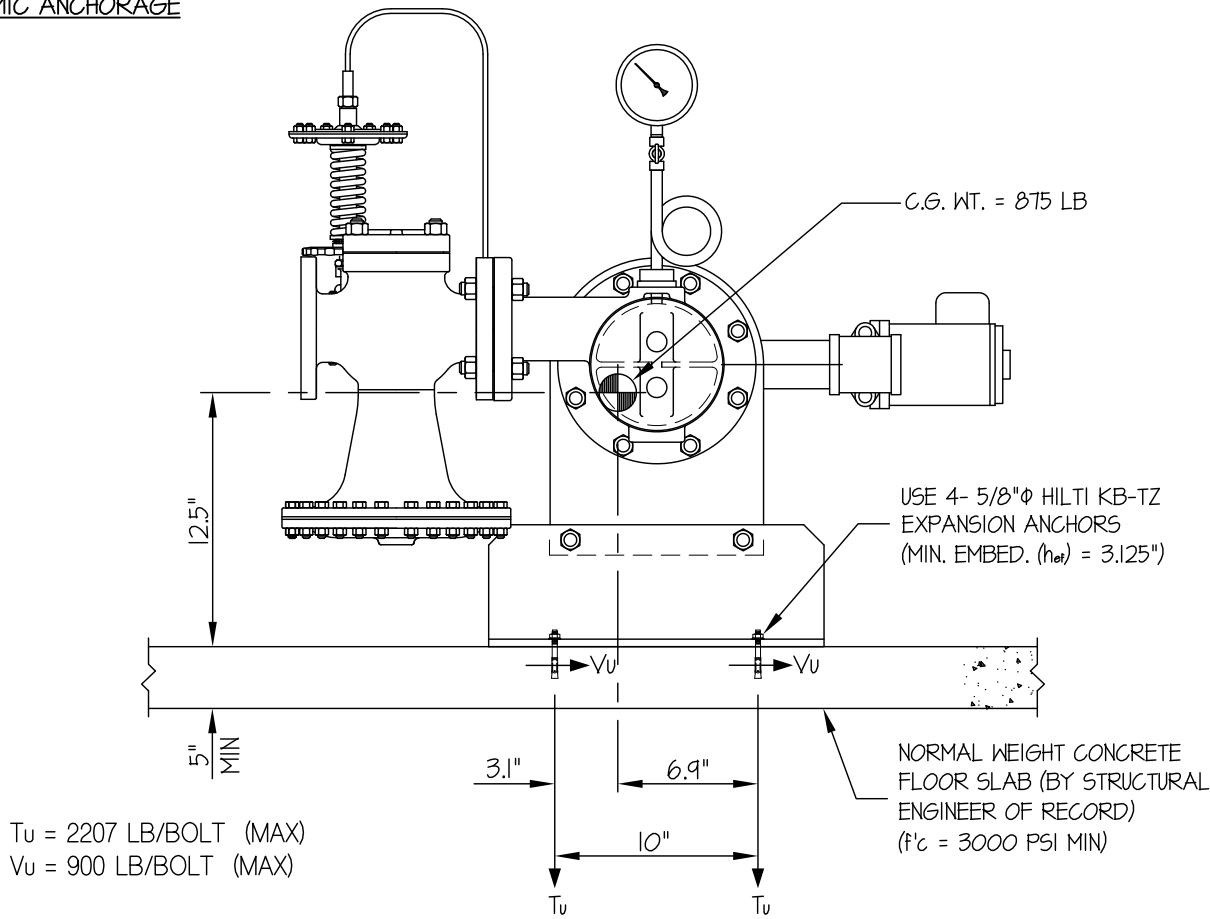
## P-K COMPACT WATER HEATER (PK06DH)

DATE **7/7/15**

OF **2** SHEETS

SEISMIC ANCHORAGE

SLAB ON GRADE



**FRONT ELEVATION**

**NOTES:**

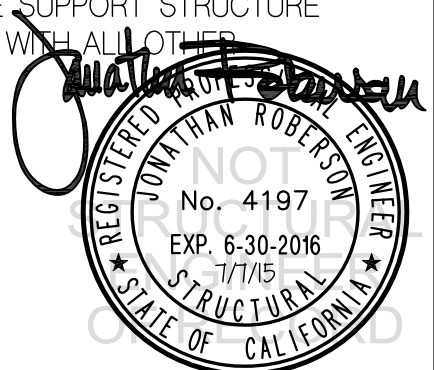
- FORCES ARE DETERMINED PER 2013 CALIFORNIA BUILDING CODE AND ASCE 7-10**  
STRENGTH DESIGN IS USED. ( $S_Ds = 2.20$ ,  $a_p = 1.0$ ,  $I_p = 1.5$ ,  $R_p = 2.5$ ,  $\Omega_o = 2.5$ ,  $z/h = 0$ )

HORIZONTAL FORCE ( $E_h$ ) =  $0.99 W_p$

HORIZONTAL FORCE ( $E_{mh}$ ) =  $2.48 W_p$  (FOR CONCRETE ANCHORAGE)

VERTICAL FORCE ( $E_v$ ) =  $0.44 W_p$

- CENTER OF GRAVITY (C.G.) AND WEIGHT ARE THE GOVERNING PARAMETERS FOR DESIGN. THESE CALCULATIONS ENCOMPASS ALL WEIGHTS UP TO THE MAXIMUM WEIGHT SHOWN.
- STRUCTURAL ENGINEER OF RECORD FOR THE BUILDING SHALL PROVIDE SUPPORT STRUCTURE DESIGNED TO SUPPORT WEIGHTS AND FORCES SHOWN IN COMBINATION WITH ALL OTHER LOADS THAT MAY BE PRESENT.



## PATTERSON-KELLEY CO.

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SHEET

**2**

JOB NO. **11-1520**

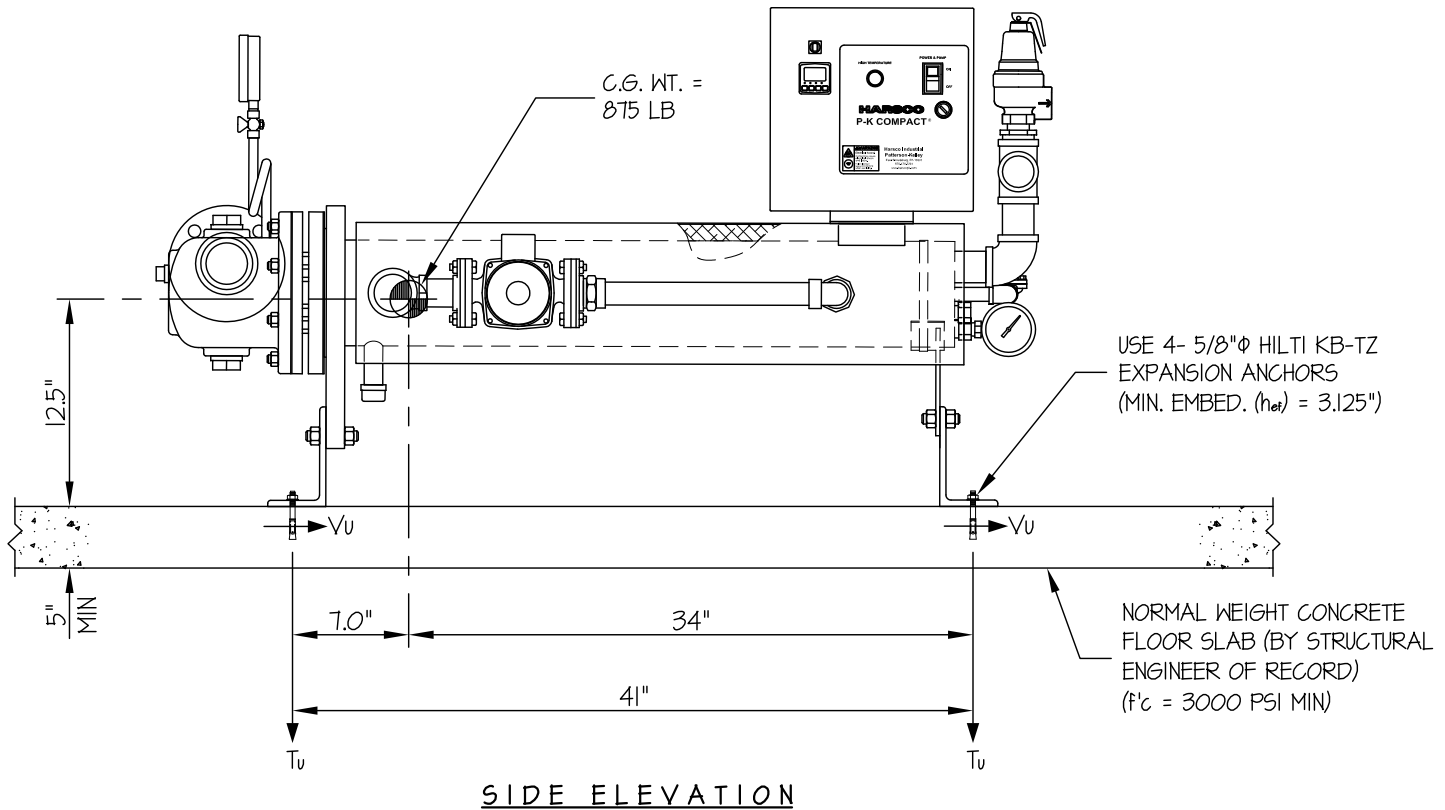
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DATE **7/7/15**

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SEISMIC ANCHORAGE

SLAB ON GRADE



LOADS: PER 2013 CALIFORNIA BUILDING CODE AND ASCE 7-10.

STRENGTH DESIGN IS USED ( $S_{ds} = 2.20$ ,  $a_p = 10$ ,  $I_p = 15$ ,  $R_p = 2.5$ ,  $\Omega_o = 2.5$ ,  $z/h = 0$ )

WEIGHT = 875 LB

HORIZONTAL FORCE ( $E_{mh}$ ) =  $2.48W_p = 2170$  LB

VERTICAL FORCE ( $E_v$ ) =  $0.44W_p = 385$  LB

BOLT FORCES:

BOLT SPECS: 5/8"  $\phi$  HILTI KB-TZ ( $h_{ef} = 3.125"$ )

$\phi T = 0.75 \phi N_n = 2508$  LB/BOLT (TENSION)

$\phi V = \phi V_n = 4940$  LB/BOLT (SHEAR)

TENSION (T)

$$T_{u \text{ MAXIMUM}} = \left[ \frac{2170 \# (12.5") (3.1")}{1 \text{ BOLT } (4") (10")} \times (0.3) \right] + \frac{2170 \# (12.5") (34")}{1 \text{ BOLT } (10") (4")} - \frac{(875 \# (0.9) - 385 \#) (3.1") (34")}{1 \text{ BOLT } (10") (4")} = 2207 \text{ LB/BOLT (MAX)}$$

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

SHEAR (V)

$$V_{u \text{ MAXIMUM}} = \frac{2170 \# (34")}{2 \text{ BOLTS } (4")} = 900 \text{ LB/BOLT (MAX)}$$

UNITY CHECK:

$$\left( \frac{T_u}{\phi T} \right) + \left( \frac{V_u}{\phi V} \right) \leq 1.2 \quad \left( \frac{2207}{2508} \right) + \left( \frac{900}{4940} \right) = 1.06 \leq 1.2 \therefore \text{OK}$$

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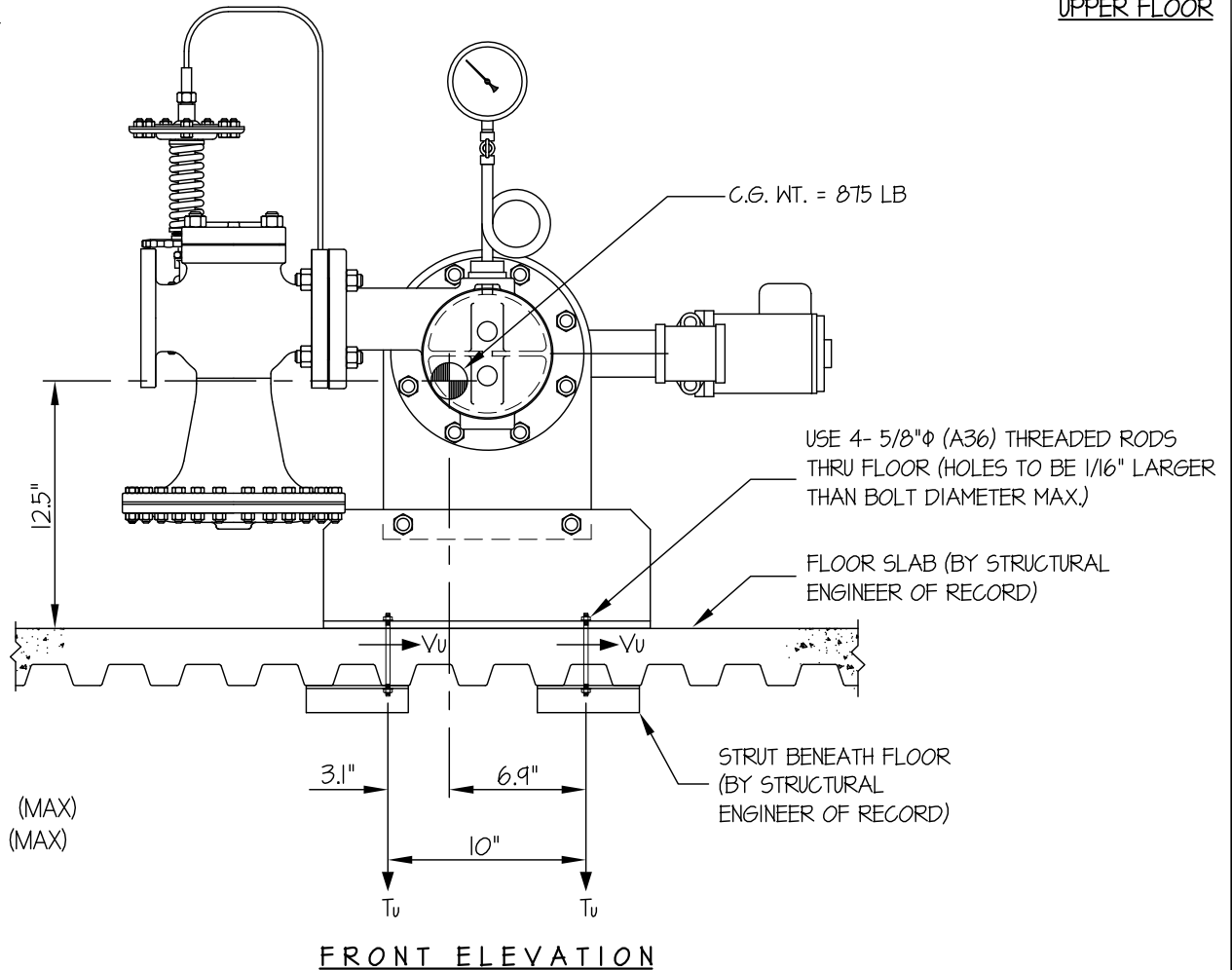
## P-K COMPACT WATER HEATER (PK06DH)

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OF **2** SHEETS

SEISMIC ANCHORAGE

UPPER FLOOR



$T_u = 1369$  LB/BOLT (MAX)  
 $V_u = 573$  LB/BOLT (MAX)

NOTES:

- FORCES ARE DETERMINED PER 2013 CALIFORNIA BUILDING CODE AND ASCE 7-10.

STRENGTH DESIGN IS USED. ( $S_d s = 2.20$ ,  $a_p = 1.0$ ,  $l_p = 1.5$ ,  $R_p = 2.5$ ,  $z/h \leq 1$ )

HORIZONTAL FORCE ( $E_h$ ) =  $1.58 W_p$

VERTICAL FORCE ( $E_v$ ) =  $0.44 W_p$

- CENTER OF GRAVITY (C.G.) AND WEIGHT ARE THE GOVERNING PARAMETERS FOR DESIGN. THESE CALCULATIONS ENCOMPASS ALL WEIGHTS UP TO THE MAXIMUM WEIGHT SHOWN.
- STRUCTURAL ENGINEER OF RECORD FOR THE BUILDING SHALL PROVIDE SUPPORT STRUCTURE DESIGNED TO SUPPORT WEIGHTS AND FORCES SHOWN IN COMBINATION WITH ALL OTHER LOADS THAT MAY BE PRESENT.



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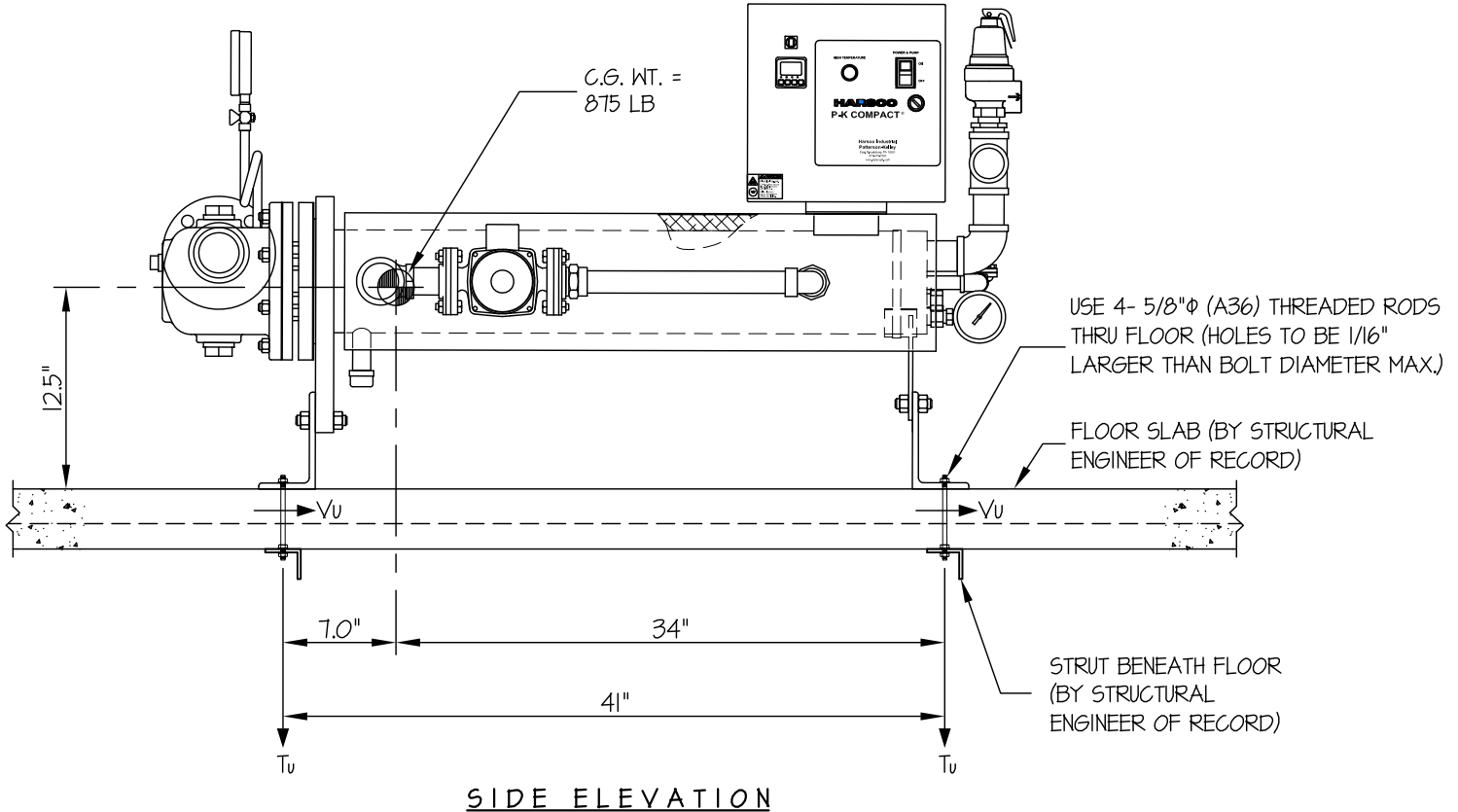
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SEISMIC ANCHORAGE

UPPER FLOOR



LOADS: PER 2013 CALIFORNIA BUILDING CODE AND ASCE 7-10.

STRENGTH DESIGN IS USED ( $S_{ds} = 2.20$ ,  $a_p = 10$ ,  $I_p = 15$ ,  $R_p = 25$ ,  $z/h \leq 1$ )

WEIGHT = 875 LB

HORIZONTAL FORCE ( $E_h$ ) =  $158 W_p = 1383$  LB

VERTICAL FORCE ( $E_v$ ) =  $0.44 W_p = 385$  LB

BOLT FORCES:

BOLT SPECS: 5/8" (A36) THREADED ROD

$\phi T = 10,016$  LB/BOLT (TENSION)

$\phi V = 5342$  LB/BOLT (SHEAR)

TENSION (T)

$$T_{u \text{ MAXIMUM}} = \left[ \frac{1383\#(12.5'')(3.1'')}{1 \text{ BOLT } (41'')(10'')} \times (0.3) \right] + \frac{1383\#(12.5'')(34'')}{1 \text{ BOLT } (10'')(41'')} - \frac{(875\#(0.9) - 385\#(3.1'')(34''))}{1 \text{ BOLT } (10'')(41'')} = 1369 \text{ LB/BOLT (MAX)}$$

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

SHEAR (V)

$$V_{u \text{ MAXIMUM}} = \frac{1383\#(34'')}{2 \text{ BOLTS } (41'')} = 573 \text{ LB/BOLT (MAX)}$$