



## Superior Panel Base Anchor PBA-S Design Summary for Uplift, In-Plane and Out-of-Plane Seismic Capacities

PBA-S without the shear anchor attachment:

1. Design uplift (tension) capacity,  $N_n = 11.4 \text{ kips}$ ;  $N_u = 8.5 \text{ kips}$
2. Uses a 0.5-inch diameter galvanized F1554 Grade 55 threaded rod epoxied into the footing and a 0.25-inch x 4-inch x 4-inch galvanized plate washer with a galvanized heavy hex nut.
3. Required threaded rod embedment depth into the footing is calculated using a concrete-governed nominal strength of 14.0 kips.
4. Required minimum rod stretch length of 4.0 inches.

PBA-S with the shear anchor attachment to resist in-plane shear:

1. In-plane nominal shear capacity,  $V_n = 5.1 \text{ kips}$  and a factored shear capacity of  $V_u = 4.6 \text{ kips}$
2. The full in-plane shear capacity stated can be developed in combination with a reduced nominal uplift (tension) capacity,  $N_n = 10.0 \text{ kips}$  and a factored uplift (tension) capacity,  $N_u = 8.5 \text{ kips}$  when using the 0.5-inch diameter galvanized F1554 Grade 55 threaded rod.
3. Design both anchor bolts connecting the shear anchor attachment to the footing for:
  - a. Bolt design shear,  $V_n = 3.8 \text{ kips/bolt}$  in combination with
  - b. Bolt design tension,  $N_n = 2.3 \text{ kips/bolt}$

PBA-S with the shear anchor attachment to resist out-of-plane shear:

1. Out-of-plane nominal shear capacity,  $V_n = 7.8 \text{ kips}$  and a factored shear capacity,  $V_u = 7.0 \text{ kips}$ .
2. Design both anchor bolts connecting the shear anchor attachment to the footing for:
  - a. Bolt design shear,  $V_n = 5.3 \text{ kips/bolt}$  normal to the footing free edge in combination with
  - b. Bolt design tension,  $N_n = 6.9 \text{ kips/bolt}$

The capacities shown for the PBA-S and the Shear Anchor attachment are calculated to satisfy the relevant provisions of ACI 318-19, Chapter 17, Section 17.10 – Earthquake-resistant anchor design requirements and Chapter 18, Section 18.5 – Intermediate precast structural walls and Section 18.11 – Special structural walls constructed using precast concrete. These values are intended to be used to design the anchorage of precast concrete wall panels to the foundation to resist seismic design shear forces for structures assigned to Seismic Design Category (SDC) C, D, E or F.

All final design decisions and determinations shall be the responsibility of the Engineer of Record (EOR) or another qualified design professional. For additional technical information or questions, please contact Dayton Superior.

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