

CONSTRUCTION GUIDELINE

**NETWORK TRANSFORMER ANCHOR BEAM FOR SEISMIC LOADING
 (EARTHQUAKE ANCHORS)**

1. Anchor Beam, Normal Profile – Fabrication Details

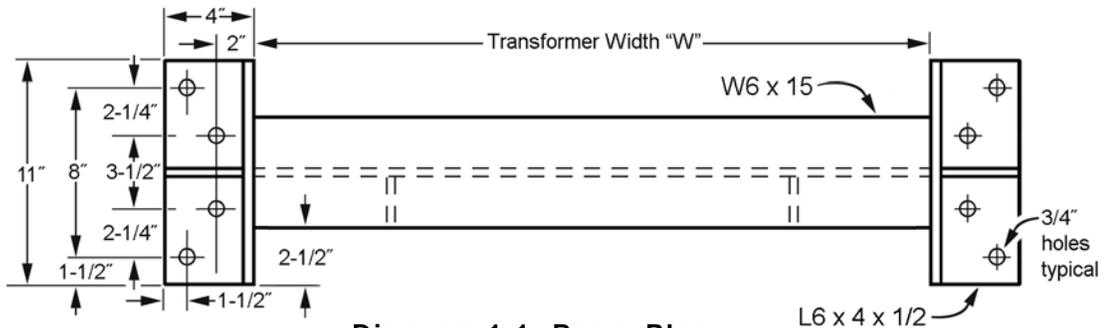


Diagram 1.1, Beam Plan

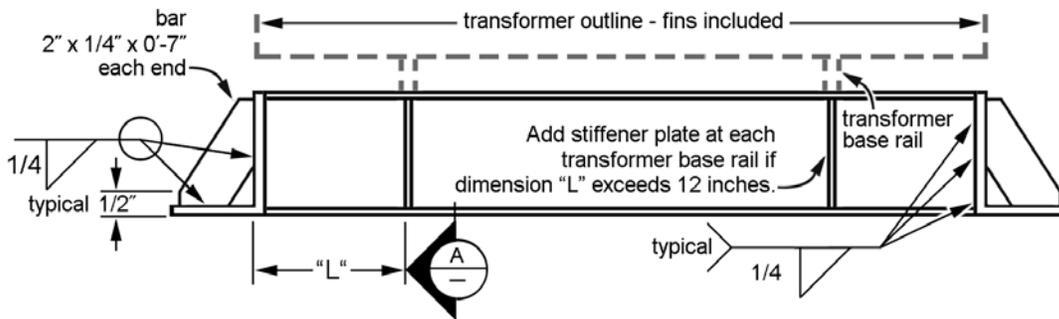


Diagram 1.2, Beam Elevation

Notes

- 1.1 Structural steel to be ASTM A-36.
- 1.2 Paint with one coat of Devco Coatings Bar-Rust 235.
- 1.3 Dimensions W & L will be specified or field measured.
- 1.4 Two anchor beams are required per transformer.
- 1.5 Design data: f'c = 3000 PSI minimum.

Allowable anchor load = 0.25 ultimate load.
 33% allowable increase for seismic load.

Seismic design factors: Fh = 0.48Wt, Fv = (1 + 0.32) Wt,
 Wt = Transformer weight.

Shear - tension interaction:

$$\frac{T}{T_A} + \frac{S}{S_A} < 1.0$$

T = applied tension, TA = allowable anchor tension.

S = applied shear, SA = allowable anchor shear.

- 1.6 See page 2 for installation details.

- 1.7 See section 7 for weld specifications.

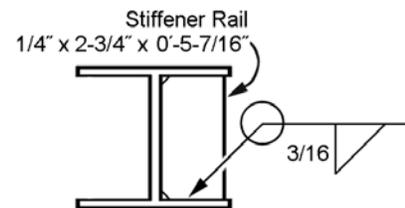
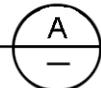


Diagram 1.3, Stiffener Detail



STANDARDS COORDINATOR

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STANDARDS SUPERVISOR

Goldshield

UNIT DIRECTOR

Daniel Cole

2. Anchor Beam, Normal Profile – Installation Details

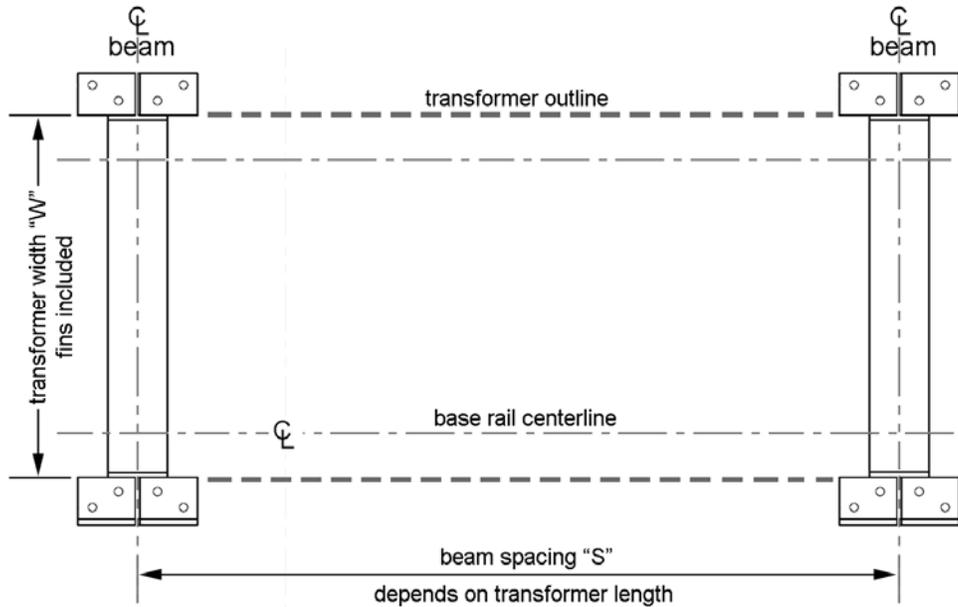


Diagram 2.1, Plan View

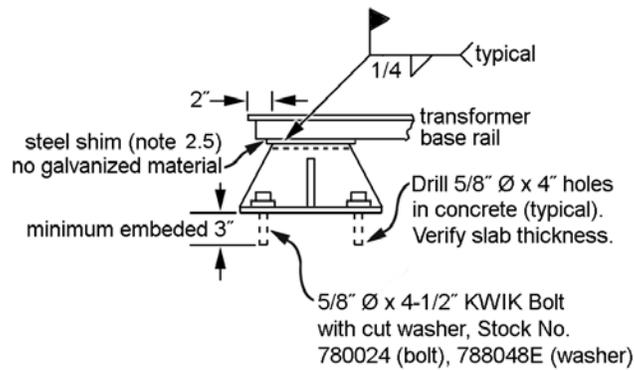


Diagram 2.2, Attachment

Notes

- 2.1 Locate transformer as shown on vault drawing.
- 2.2 Locate anchor beams so that the transformer base rails extend 2 inches beyond anchor beam flange on each end.
- 2.3 Drill four 5/8" Ø x 4" holes in the floor for each anchor beam.
- 2.4 Install four 5/8" Ø x 4-1/2" KWIK bolts for each anchor beam. Beams to be flat on floor. Set KWIK bolt.
- 2.5 Use 2" x 6" steel shims as required to set transformer rails level end to end and side to side (+ 1/16"). Do not use galvanized material.
- 2.6 Weld transformer rails to anchor beam on outside edges. Where shims are used, weld rail, shim and beam on outside edge.
- 2.7 See page 1 for fabrication details.
- 2.8 Reference drawing, B-3272
- 2.9 See section 7 for weld specification references.

3. Anchor Beam, Insert Placement

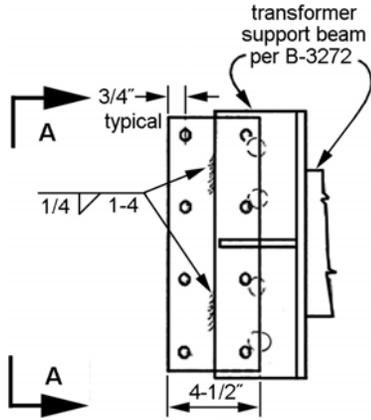


Diagram 3.1, Plan of Welded Anchorage Insert

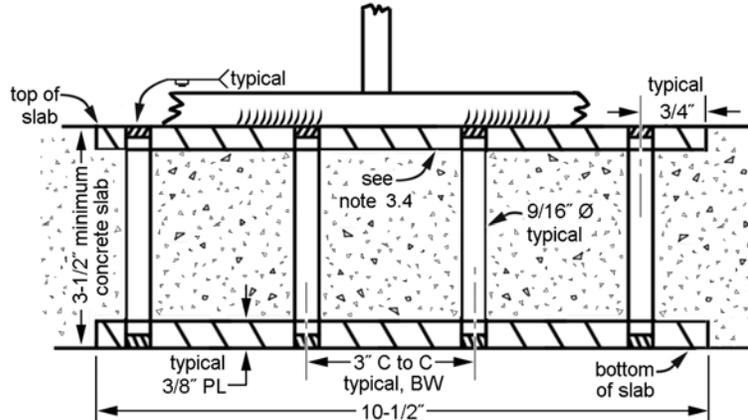


Diagram 3.2, Elevation A-A

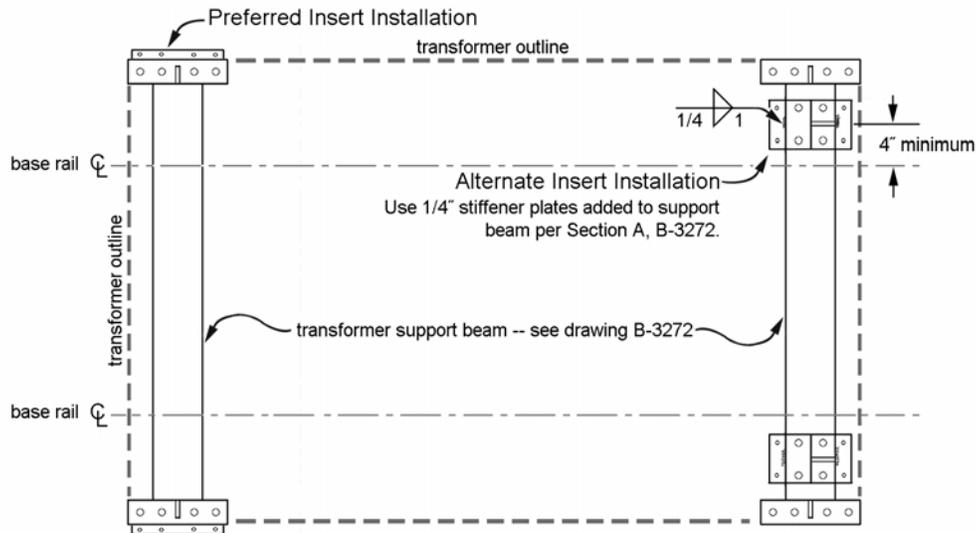


Diagram 3.3, Insert Placement

Notes

- 3.1 Verify type of slab construction, anchorage and conditions with engineer before installing inserts. Check insert and transformer support beam placement before slab pour.
- 3.2 Structural steel shall be ASTM A-36.
- 3.3 Welded insert to receive one shop coat of ATCO "Gilsonite asphalt paint, if conditions dictate. Touch up affected surfaces after welding.
- 3.4 Float concrete beneath insert plate.
- 3.5 Insert may be made from this drawing.
- 3.6 See section 7 for weld specification references.

- 3.7 Design data: $f'c = 3000$ PSI minimum.
 Allowable anchor load = 0.25 ultimate load.
 33% allowable increase for seismic load.
 Seismic design factors:

$$F_h = 0.48W_t, F_v = (1 + 0.32) W_t,$$

W_t = Transformer weight.

Shear - tension interaction:

$$\frac{T}{T_A} + \frac{S}{S_A} < 1.0$$

T = applied tension

T_A = allowable anchor tension.

S = applied shear

S_A = allowable anchor shear.

4. Anchor Beam, Low Profile – Fabrication Details

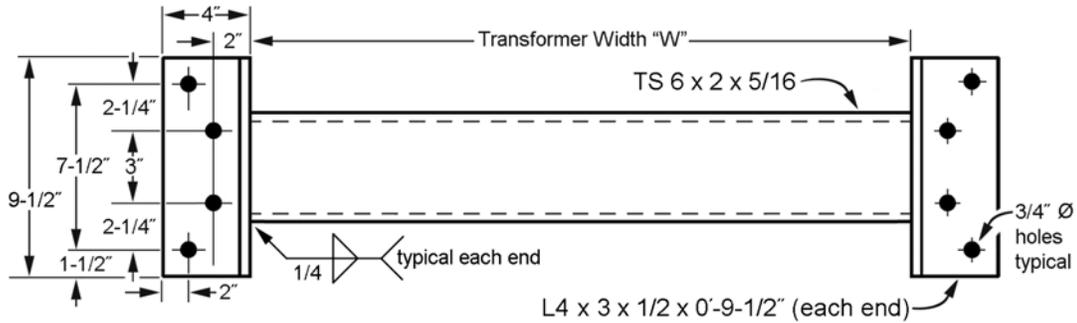


Diagram 4.1, Beam Plan

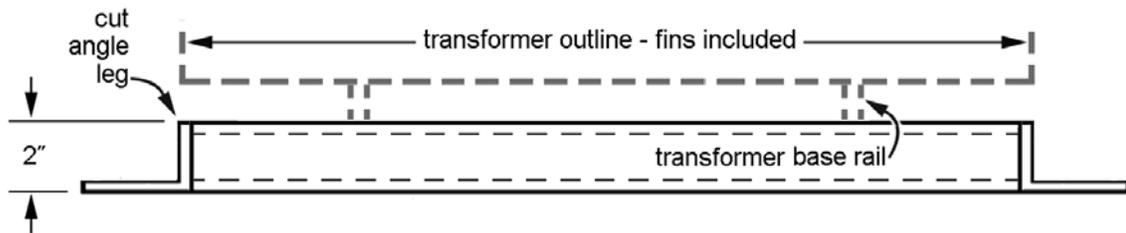


Diagram 4.2, Beam Elevation

Notes

- 4.1 Angles shall be ASTM A-36.
- 4.2 Tube section shall be ASTM A500, GR B.
- 4.3 Paint one coat primer.
- 4.4 Two anchor beams required per transformer.
- 4.5 Design data: $f'c = 3000$ PSI minimum.
 Allowable anchor load = 0.25 ultimate load.
 33% allowable increase for seismic load.
 Seismic design factors: $F_h = 0.48Wt$, $F_v = (1 + 0.32) Wt$,
 $Wt =$ Transformer weight.

Shear - tension interaction:
$$\frac{T}{T_A} + \frac{S}{S_A} < 1.0$$

$T =$ applied tension, $T_A =$ allowable anchor tension.
 $S =$ applied shear, $S_A =$ allowable anchor shear.

- 4.6 See page 5 for installation details.
- 4.7 See section 7 for weld specification references.

5. Anchor Beam, Low Profile – Installation Details

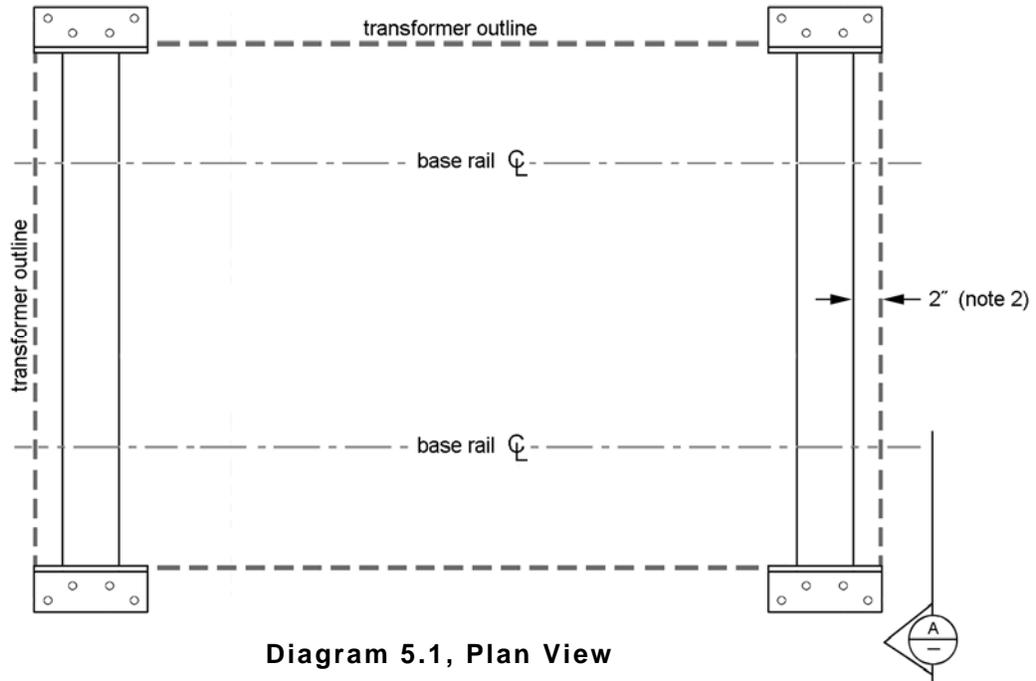


Diagram 5.1, Plan View

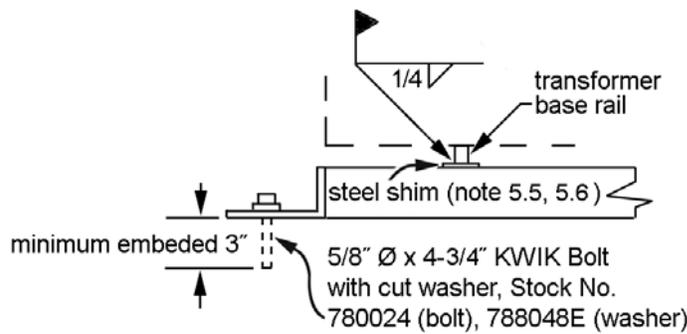


Diagram 5.2, Section A

Notes

- 5.1 Locate transformer as shown on vault drawing.
- 5.2 Locate anchor beam such that the transformer base rails extend 2 inches beyond anchor beam on each end.
- 5.3 Drill four 5/8" Ø x 4" holes in concrete floor slab for each anchor beam.
- 5.4 Install four 5/8" Ø x 4 -1/2" - KWIK bolts for each anchor beam. Bolts shall be spaced a minimum of 3" apart.
- 5.5 Use 2" x 6" steel shims as required to level transformer within ± 1/16".
- 5.6 Weld transformer rails to anchor beam on outside edges. Where shims are used, weld shim to anchor beam (weld all around) prior to setting transformer and weld transformer rail to shim.
- 5.7 Anchor beams are capable of supporting transformers rated to 2000 kVA, max. wt. 24,000 lbs. and maximum dimensions 70" W x 96" H x 145" L.
- 5.8 See page 4 for fabrication details.
- 5.9 See section 7 for weld specification references.

6. Anchor Beam, Alternate Insert Placement

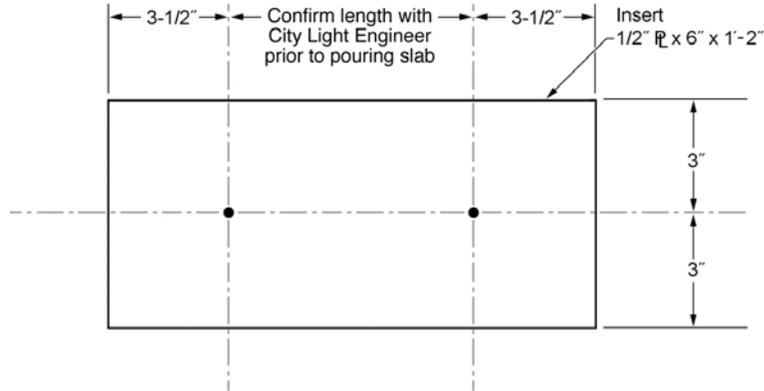


Diagram 6.1, Plan

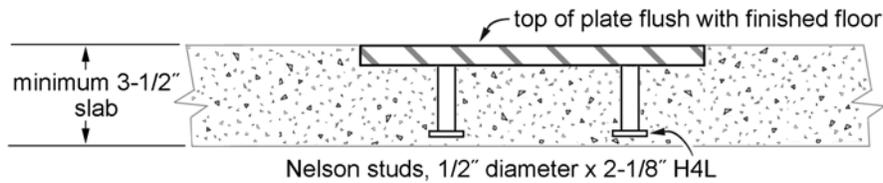


Diagram 6.2, Section

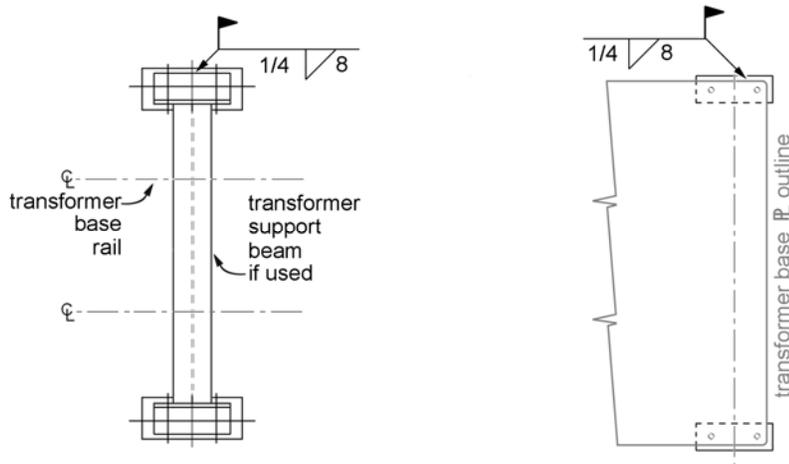


Diagram 6.3, Insert Placement

Notes

- 6.1 Notify engineer if floor slab is less than 3-1/2 inches thick. Verify location of inserts and transformer before slab pour.
- 6.2 Structural steel small conforms to ASTM A-36.
- 6.3 Top surface of insert plate shall receive one shop coat of primer. Touch up where required after welding.
- 6.4 Design Data: $f'_c = 3000$ PSI minimum; allowable anchor load = 0.25 breaking load; 33 percent allowable increase for seismic loads; seismic design factors, $f_H = 0.48g$, $f_V = 0.32g$

7. Weld Procedure Specifications: SCL-WPS009, SCL-WPS034, and SCL-WPS029