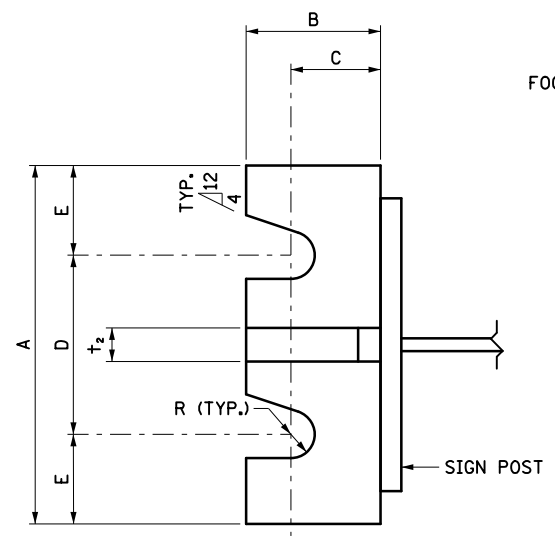
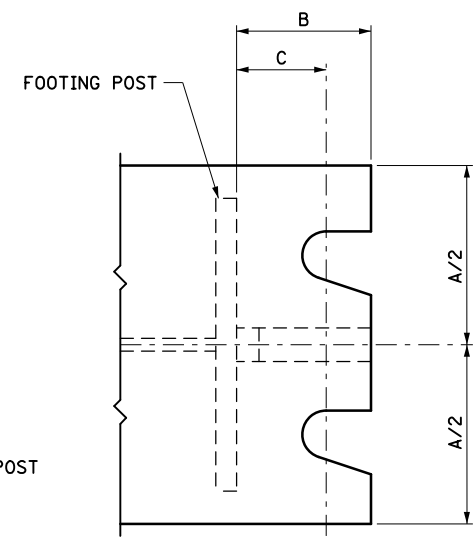


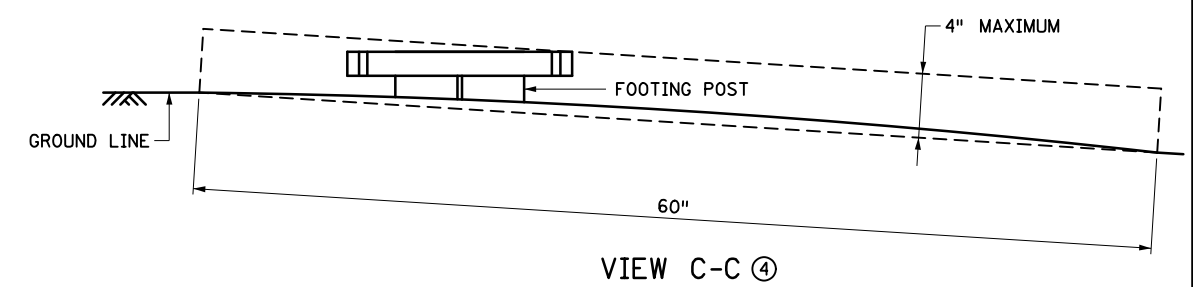
SIGN POST AND FOOTING POST ELEVATION



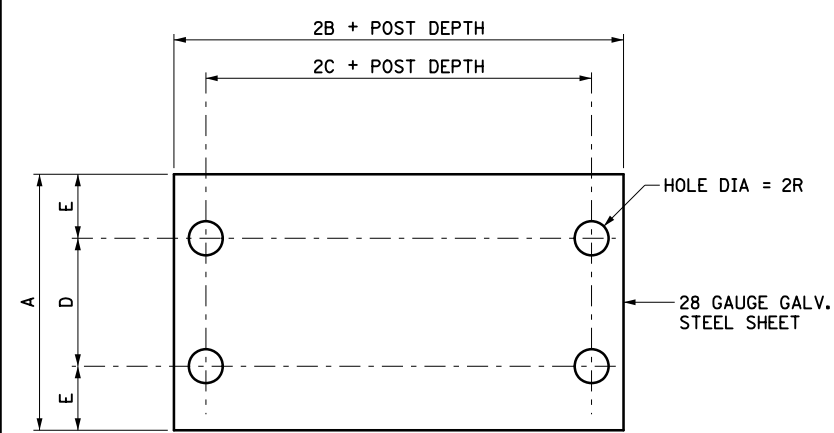
SECTION A-A ③



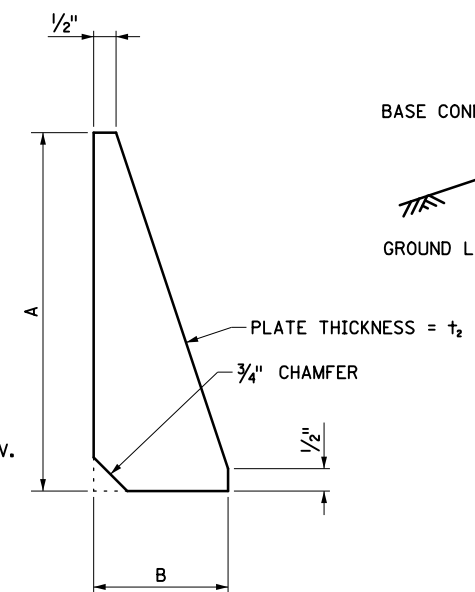
SECTION B-B ③



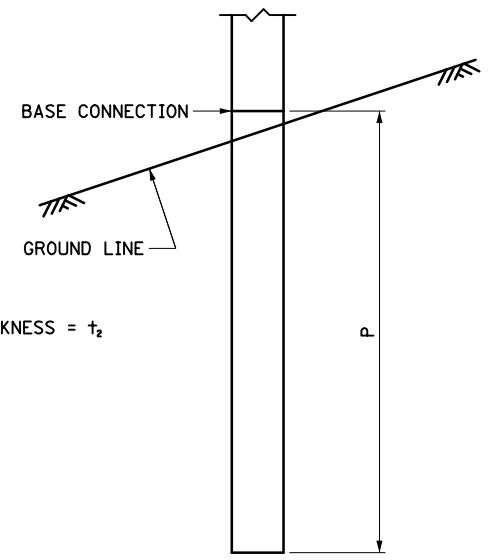
VIEW C-C ④



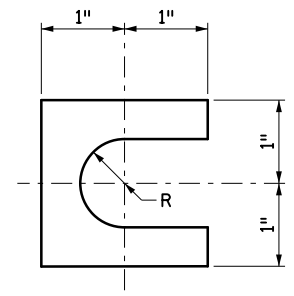
KEEPER PLATE



STIFFENER PLATE DETAIL
SEE TABLE FOR DIMENSIONS



FOOTING POST DETAIL ⑥



SHIM DETAIL ⑤

SOIL PARAMETERS

THE FOUNDATIONS SHOWN ON THIS SHEET HAVE BEEN DESIGNED WITH THE FOLLOWING ASSUMED SOIL PROPERTIES:

| COHESIVE SOILS: | | GRANULAR SOILS: | |
|--|--|---|--|
| SHEAR STRENGTH: C = 1.0 ksf | | ANGLE OF FRICTION: $\phi = 30^\circ$ | |
| UNIT WEIGHT OF SOIL: $\gamma = 125 \pm 10$ pcf | | UNIT WEIGHT OF SOIL: $\gamma = 125$ pcf | |
| | | AT-REST COEFFICIENT: $k = 0.50$ | |
| | | COEFFICIENT OF FRICTION: $\mu = 0.70$ | |

BOLTING PROCEDURE - BASE CONNECTION

1. ASSEMBLE SIGN POST TO H-PILE FOOTING POST WITH BOLTS AND WITH ONE OF THE FLAT WASHERS ON EACH BOLT BETWEEN PLATES.
2. SHIM AS REQUIRED TO PLUMB POST.
3. TIGHTEN ALL BOLTS THE MAXIMUM POSSIBLE WITH 12" OR 15" WRENCH TO BED WASHERS AND SHIMS AND TO CLEAN BOLT THREADS, THEN LOOSEN EACH BOLT IN TURN AND RETIGHTEN TO THE PRESCRIBED TORQUE (SEE TABLE).
4. BURR THREADS AT JUNCTION WITH NUT USING A CENTER PUNCH TO PREVENT NUT FROM LOOSENING.

NOTES:

PROVIDE STRUCTURAL STEEL IN ACCORDANCE WITH SPEC 3308. GALVANIZE STRUCTURAL STEEL ACCORDING TO SPEC. 3394 AND HARDWARE ACCORDING TO SPEC. 3392. FURNISH HIGH-STRENGTH BOLTS AND DIRECT TENSION INDICATORS IN ACCORDANCE WITH SPEC. 3391. UNLESS NOTED OTHERWISE, PLACE HIGH-STRENGTH BOLTS ACCORDING TO SPEC. 2402.

- ① MEASURED FROM TOP OF BASE PLATE.
- ② FLANGE THICKNESS - 1/16" (TYP).
- ③ SECTIONS SHOWN ARE FOR PLACEMENTS ON RIGHT SHOULDER AND IN GORE. PLATE SLOT BEVELS ARE OPPOSITE FROM THAT SHOWN FOR PLACEMENT ON LEFT SHOULDER.
- ④ PLACE FOOTING POSTS SO THAT IF THEY ARE RUN OVER BY A VEHICLE WITH A 60" WHEELBASE AND 4" GROUND CLEARANCE, THE VEHICLE WILL NOT STRIKE THE FOOTING POST. MAXIMUM PROJECTION OF THE FOOTING POST SHALL NOT EXTEND BEYOND A LINE 4" PARALLEL TO ANY CHORD, WHICH IS PERPENDICULAR TO (OR ALIGNED RADIALLY TO) THE CENTERLINE OF THE HIGHWAY AND HAS THE CHORD'S END POINTS ON THE GROUND SURFACE ON THE OPPOSITE SIDES OF THE FOOTING POST.
- ⑤ FURNISH TWO 0.012" ± THICK AND TWO 0.032" ± THICK SHIMS PER POST. FABRICATE SHIMS FROM BRASS SHIM STOCK OR STRIP CONFORMING TO ASTM B36.
- ⑥ FOOTING POST SHALL BE THE SAME SIZE AS THE SIGN POST. A SPECIAL FOUNDATION DESIGN IS REQUIRED IN CASES WHERE THE SOIL PARAMETER VALUES LISTED ABOVE ARE NOT MET.

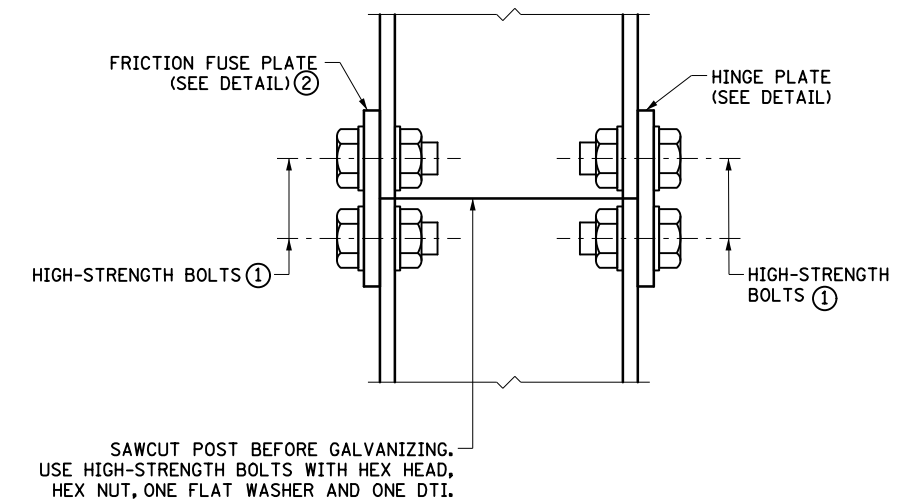
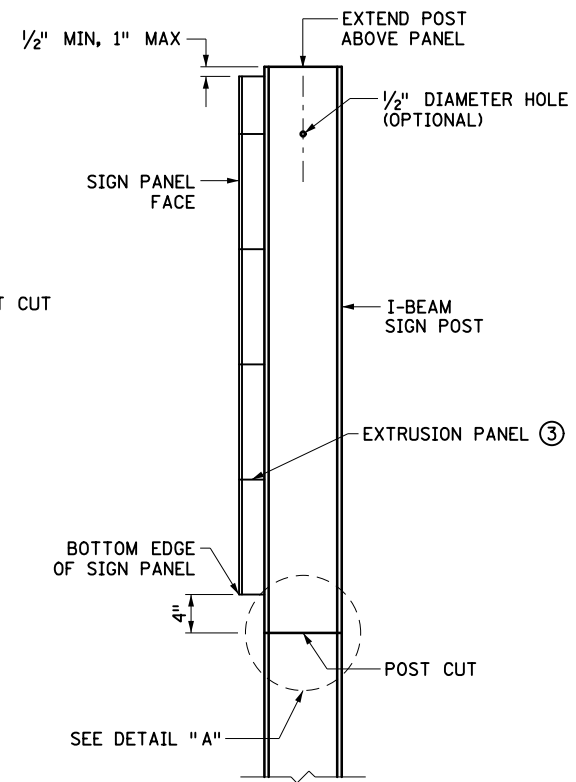
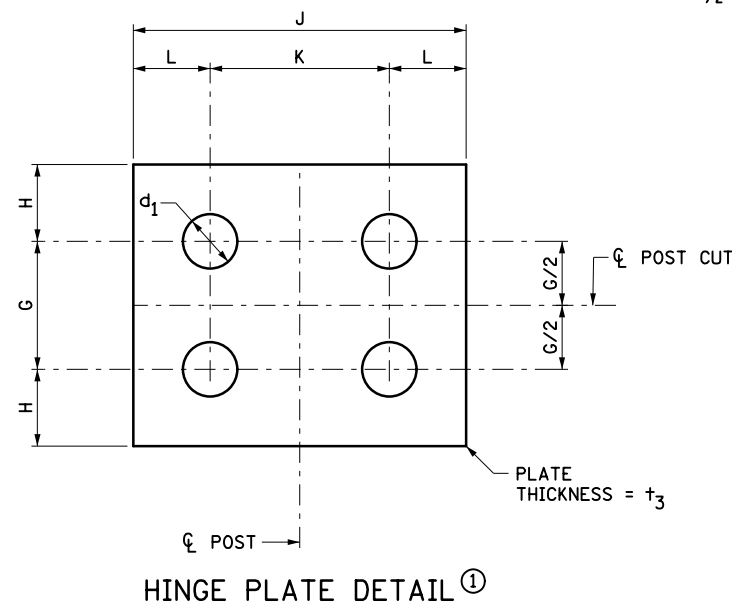
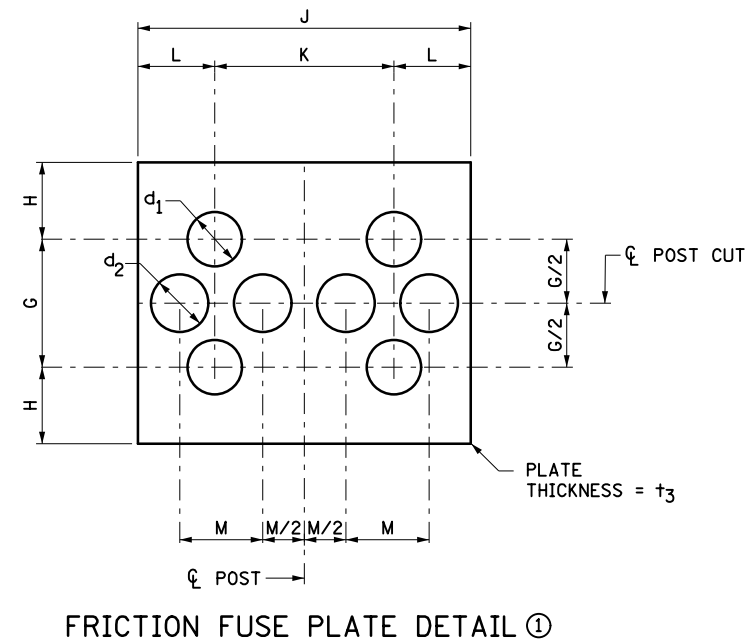
| DIMENSION POST SIZE | BASE CONNECTION DATA | FUSE AND HINGE PLATE DATA | | | | | | | | | | | | | | | FOOTING POST, P (MIN. LENGTH) ① | | | | | |
|------------------------|--|---------------------------|--------|--------|--------|--------|--------|----------------|----------------|--------|--------|--------|--------|--------|--------|--------|------------------------------------|--------|----------------|----------------|----------------|-----------|
| | | BOLT SIZE AND TORQUE | A | B | C | D | E | t ₁ | t ₂ | W | R | G | H | J | K | L | | M | d ₁ | d ₂ | t ₃ | BOLT DIA. |
| W4X13 | 3/4" DIA. x 4 1/2" TORQUE = 50 FT-LBS | 6" | 3 1/4" | 2 1/4" | 3 1/2" | 1 1/4" | 1 1/2" | 1/2" | 1/4" | 13/32" | 2" | 1 1/4" | 4" | 2 1/4" | 7/8" | 1" | 1 1/16" | 3/4" | 3/8" | 5/8" | 2" | 14' 0" |
| W6X20 | 7/8" DIA. x 4 3/4" TORQUE = 67 FT-LBS | 8" | 3 3/4" | 2 1/2" | 4" | 2" | 1 1/2" | 1/2" | 1/4" | 15/32" | 2 1/2" | 1 1/4" | 6" | 3 1/2" | 1 1/4" | 1 3/8" | 1 3/16" | 1 1/8" | 3/8" | 3/4" | 2" | 14' 0" |
| W8X24 | 1" DIA. x 5" TORQUE = 83 FT-LBS | 8" | 3 3/4" | 2 1/2" | 4" | 2" | 1 1/2" | 1/2" | 1/4" | 17/32" | 2 1/2" | 1 1/2" | 6 1/2" | 3 1/2" | 1 1/2" | 1 1/2" | 1 5/16" | 1 1/4" | 1/2" | 7/8" | 2 1/2" | 14' 0" |
| W8X31 | 1 1/8" DIA. x 6" TORQUE = 100 FT-LBS | 9" | 4 1/4" | 2 3/4" | 5" | 2" | 2" | 3/4" | 5/16" | 19/32" | 3" | 1 3/4" | 8" | 5 1/2" | 1 1/4" | 2" | 1 1/16" | 1 1/2" | 1/2" | 1" | 2 1/2" | 14' 0" |
| W10X39 | 1 1/8" DIA. x 6" TORQUE = 100 FT-LBS | 9" | 4 1/4" | 2 3/4" | 5" | 2" | 2" | 3/4" | 5/16" | 19/32" | 3" | 1 3/4" | 8" | 5 1/2" | 1 1/4" | 1 7/8" | 1 3/16" | 1 3/8" | 1/2" | 1 1/8" | 2 3/4" | 14' 0" |

REVISION:
APPROVED: 05-03-2021
Kevin Western
KEVIN WESTERN
STATE BRIDGE ENGINEER

MINNESOTA DEPARTMENT OF TRANSPORTATION
STANDARD PLAN 5-297.711
1 OF 2
APPROVED: 05-03-2021
REVISED:
Tom Styrbicki
THOMAS STYRBICKI
STATE DESIGN ENGINEER

I-BEAM SUPPORTED SIGN STRUCTURAL DETAILS
FOOTINGS AND BASE CONNECTION

STATE PROJ. NO. (TH) SHEET NO. OF SHEETS



I-BEAM SUPPORTED SIGN SIDE VIEW

DETAIL 'A' FRICTION FUSE

DESIGN CRITERIA

THE DETAILS SHOWN ON THESE STANDARD PLANS ARE BASED ON THE AASHTO "LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES, AND TRAFFIC SIGNALS," FIRST EDITION, 2015 AND THE 2017 AND 2018 INTERIM REVISIONS.

STRENGTH LIMIT WIND LOADING OF 120 MPH
SERVICE LIMIT WIND LOADING OF 76 MPH

NOTES:

PROVIDE STRUCTURAL STEEL IN ACCORDANCE WITH SPEC 3308. GALVANIZE STRUCTURAL STEEL ACCORDING TO SPEC. 3394 AND HARDWARE ACCORDING TO SPEC. 3392. FURNISH HIGH-STRENGTH BOLTS AND DIRECT TENSION INDICATORS IN ACCORDANCE WITH SPEC. 3391. PLACE HIGH-STRENGTH BOLTS ACCORDING TO SPEC. 2402.

SAWCUT ALL POST CUTS. PLATES MAY BE SHEARED OR FLAME-CUT USING A MECHANICALLY GUIDED CUTTING TORCH. PREPARE EDGES IN ACCORDANCE WITH SPEC 2471.3.C.4 AND SPEC 2471.3.D.4.

- ① SEE TABLE ON STANDARD PLAN 5-297.711 FOR DIMENSIONS.
- ② PLACE FRICTION FUSE PLATE ON SIDE OF POST FACING TRAFFIC.
- ③ SEE STANDARD PLAN 5-297.710 FOR EXTRUDED PANEL MOUNTING DETAIL.

| I-BEAM SIGN POST QUANTITIES | | |
|-----------------------------|--------------|---------------|
| POST SIZE | FLANGE WIDTH | QUANTITY |
| W4X13 | 4" | 61+13 LBS/FT |
| W6X20 | 6" | 107+20 LBS/FT |
| W8X24 | 6.5" | 123+24 LBS/FT |
| W8X31 | 8" | 178+31 LBS/FT |
| W10X39 | 8" | 202+39 LBS/FT |

REVISION:
APPROVED: 05-03-2021
Kevin Western
KEVIN WESTERN
STATE BRIDGE ENGINEER

m
MINNESOTA
DEPARTMENT
OF
TRANSPORTATION

STANDARD PLAN 5-297.711 2 OF 2
Tom Styrbicki
THOMAS STYRBICKI
STATE DESIGN ENGINEER
APPROVED: 05-03-2021
REVISED:

I-BEAM SUPPORTED SIGN STRUCTURAL DETAILS
POST AND FRICTION FUSE

STATE PROJ. NO. (TH) SHEET NO. OF SHEETS