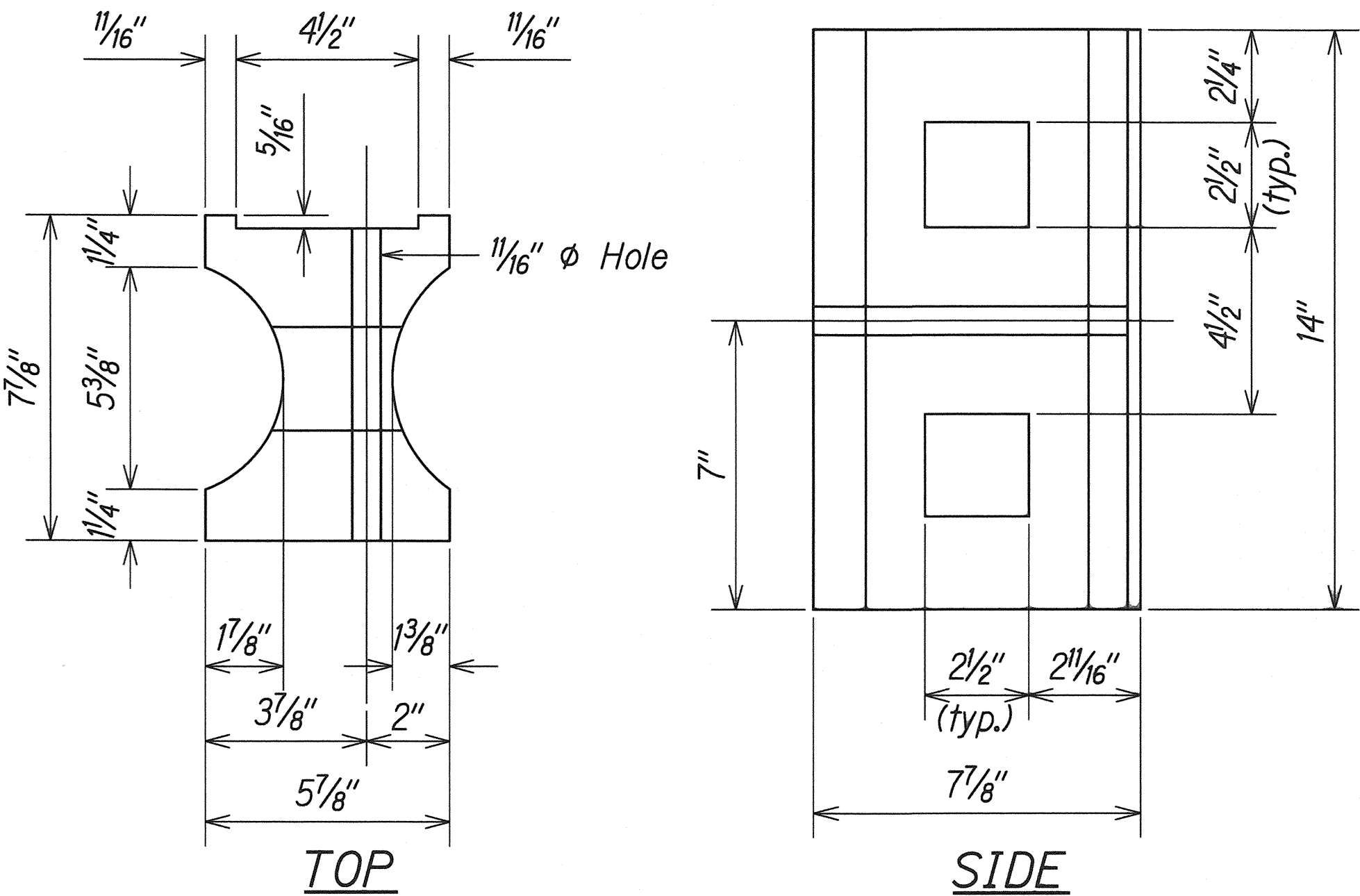


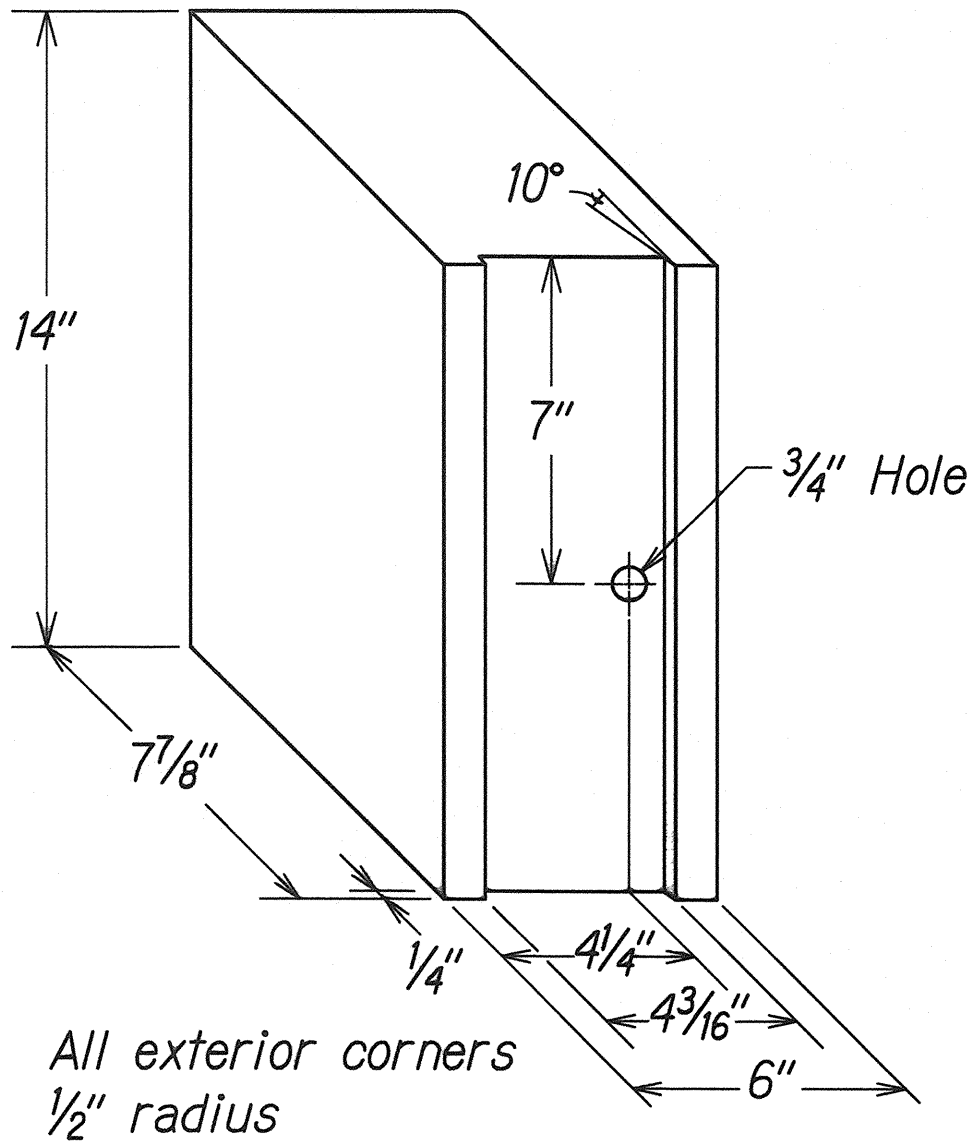
GENERAL NOTES

- All hardware, posts and fasteners shall be hot-dip zinc coated galvanized after fabrication. No punching, drilling or cutting will be permitted after galvanizing.
- Where conditions require, special post lengths in increments of 6 inches may be specified.
- All fasteners, posts, and rail elements (i.e. FBB03, PWE01, RWM02b, etc.) shall conform to the latest edition and amendments of "A Guide to Standardized Highway Barrier Rail Hardware", a report prepared and approved by the AASHTO-AGC-ARTBA Joint Cooperative Committee, Subcommittee On New Highway Materials, Task Force 13 Report. Dimensions of fasteners, posts and rail elements have been converted from metric units into their present form.
- The Recycled Plastic Block or Offset Block shall be approved by the State.
- All new guardrail systems (system consists of total length of guardrail including both end treatments) shall include the Additional Paved Area.
- After the guardrail posts are installed in the paved area, the Contractor shall fill/seal around each guardrail post and all cracks in the paved area caused during the guardrail post installation. If required by the inspector/engineer, the Contractor shall tamper the paved area around the guardrail post prior to filling/sealing. All costs associated with this work shall not be paid for separately, but shall be considered incidental to the various guardrail items.
- When standards for the fill slope area cannot be met, a site specific, engineer approved design may be used.
- New A.C. pavement at guardrails shall extend 6 feet longitudinally beyond terminal ends.
- Reflector Markers (RM-5) mounted on guardrails shall be spaced every 25 feet. RM-5's shall not be installed on Terminal Sections. Furnishing and installing of each RM-5 shall be considered incidental to the adjacent guardrail system.

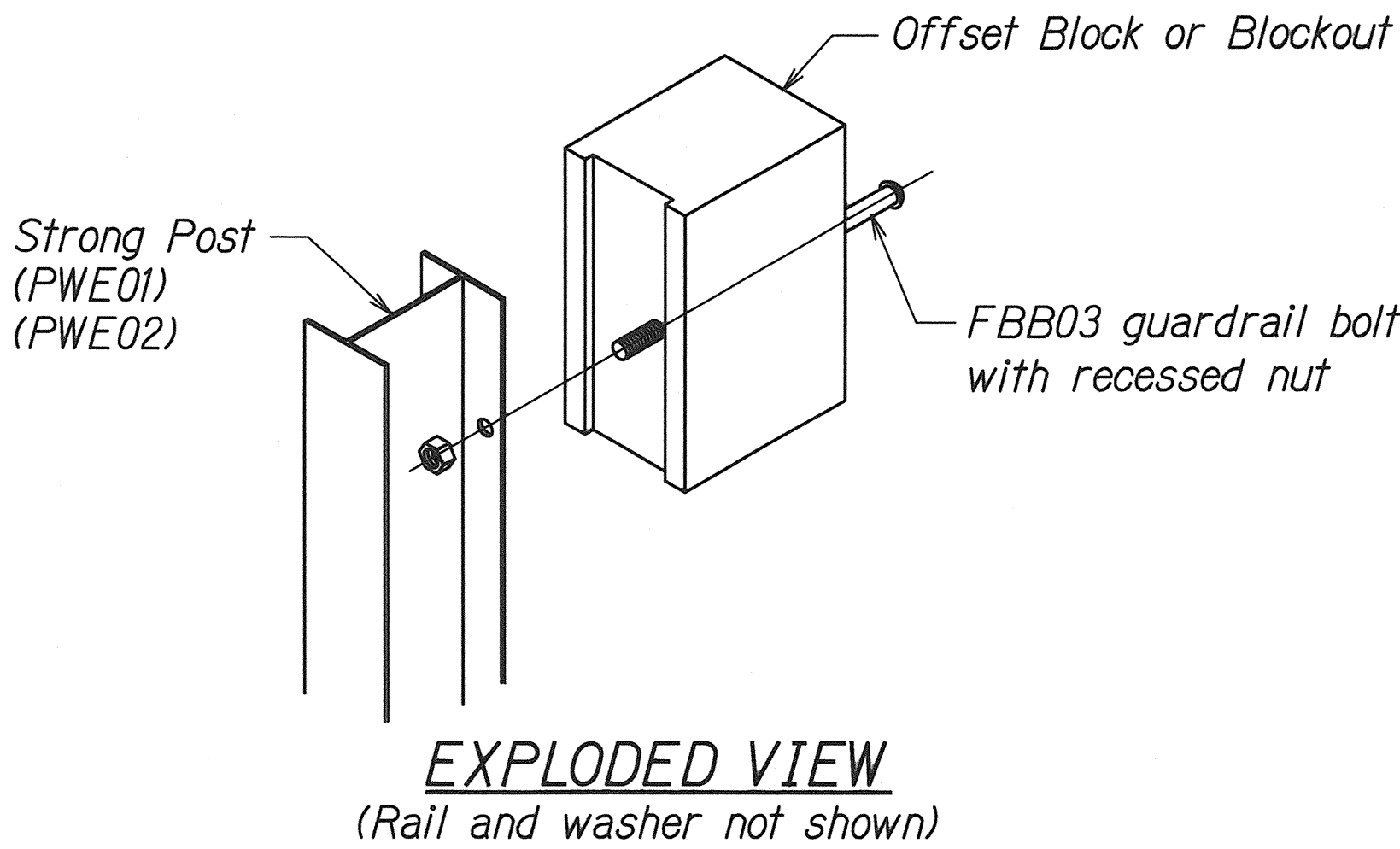
| GUARDRAIL TYPE | DIMENSION | |
|---------------------------------|------------------------------------|-------|
| | H | A |
| Strong Post W-Beam | 1'-9 ⁵ / ₈ " | 1'-6" |
| Strong Post Rubrail (W-Beam) | 2'-0" | 1'-6" |
| Strong Post Thrie Beam | 1'-9 ⁵ / ₈ " | 1'-6" |
| Strong Post Modified Thrie Beam | 2'-0" | 2'-0" |



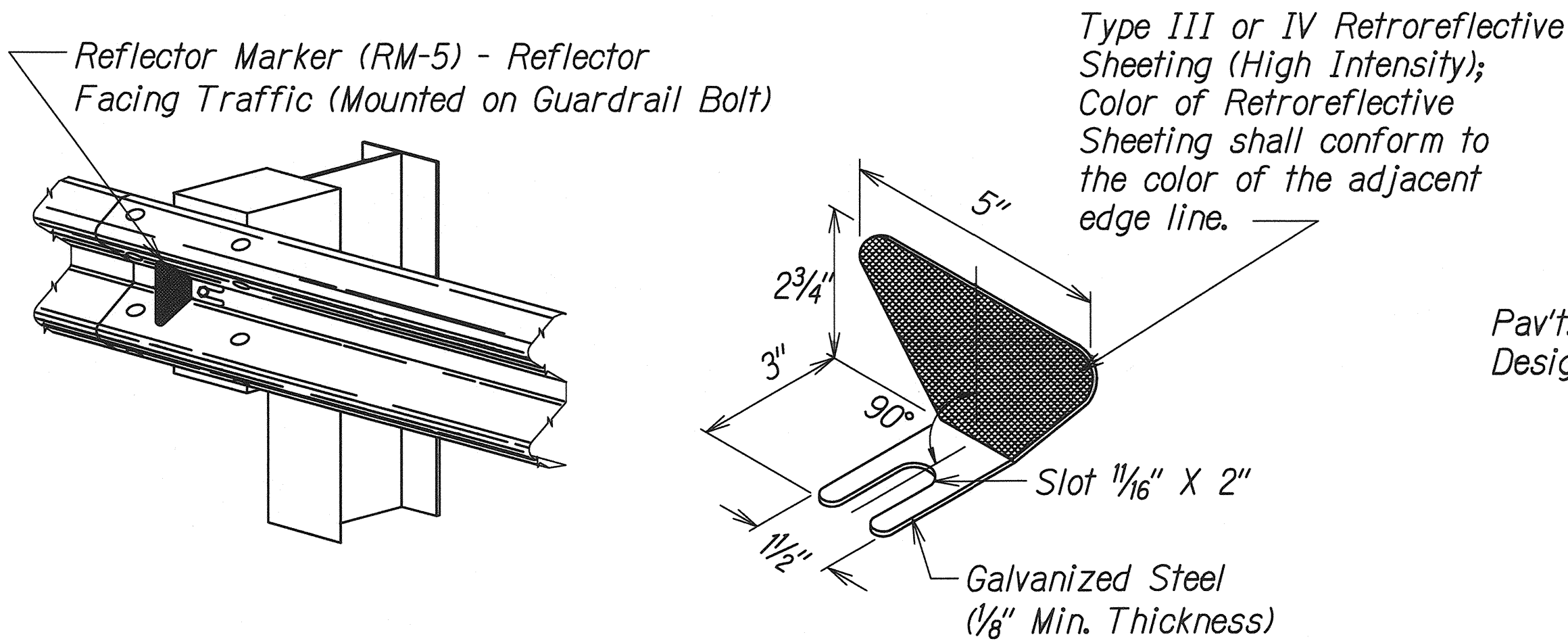
RECYCLED PLASTIC BLOCKOUT (TYPE I)



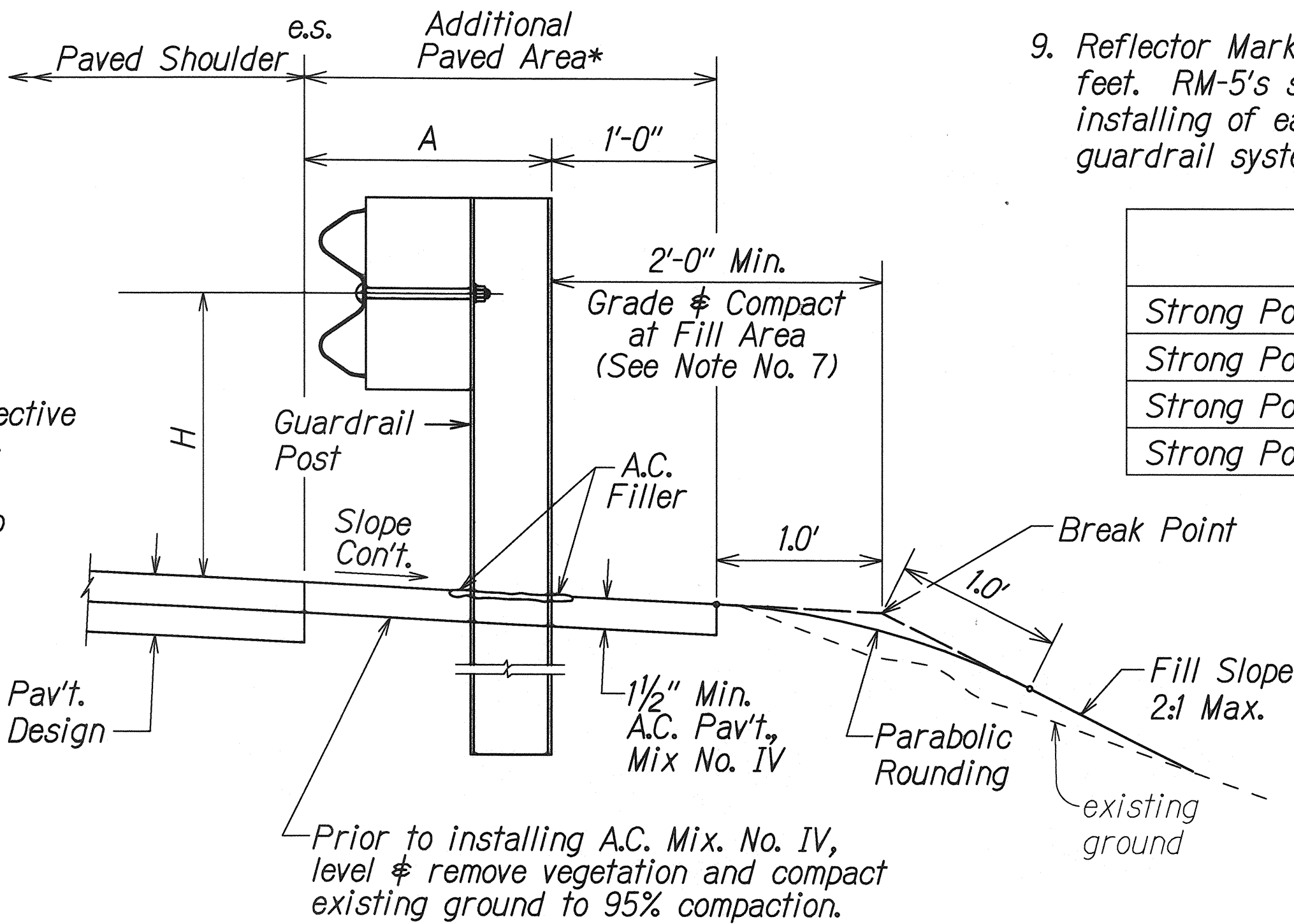
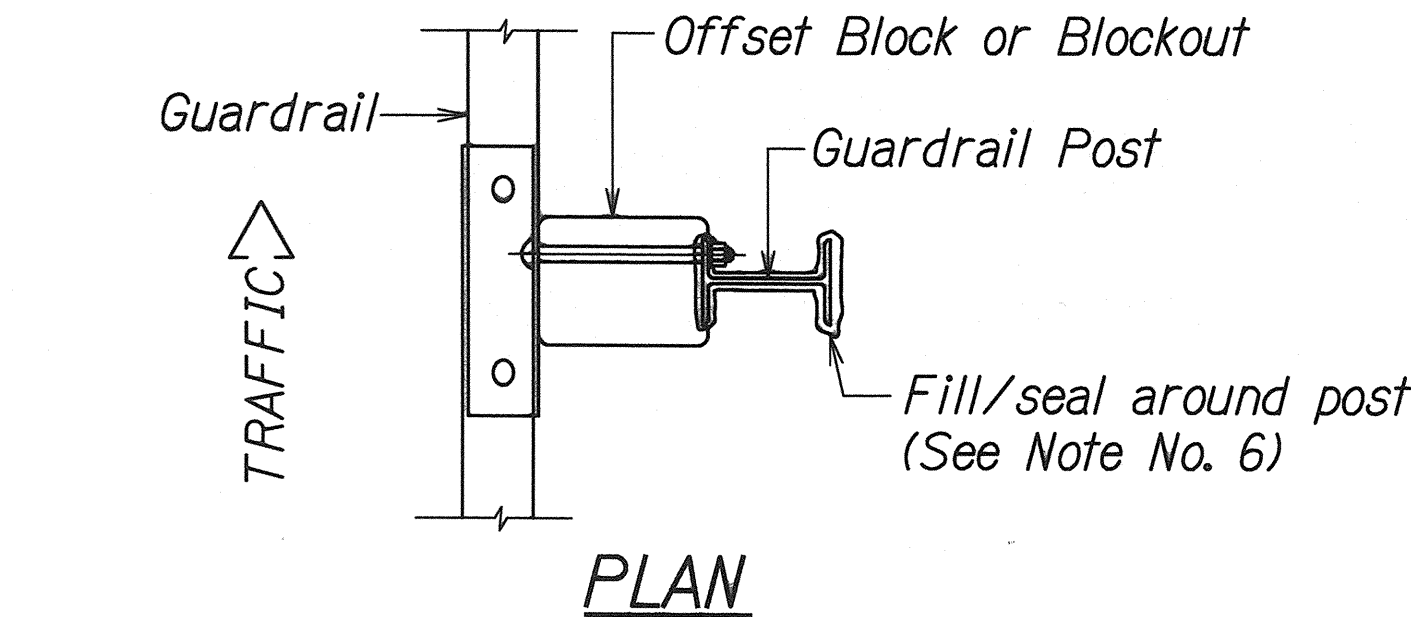
RECYCLED POLYETHYLENE OFFSET BLOCK (TYPE II)



STEEL POST AND BLOCK DETAIL



REFLECTOR MARKER (RM-5) DETAIL AND TYPICAL INSTALLATION



**ELEVATION
TYPICAL GUARDRAIL
INSTALLATION**

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GUARDRAIL DETAILS & NOTES

GUARDRAIL AND SHOULDER IMPROVEMENTS

At Various Locations, Oahu

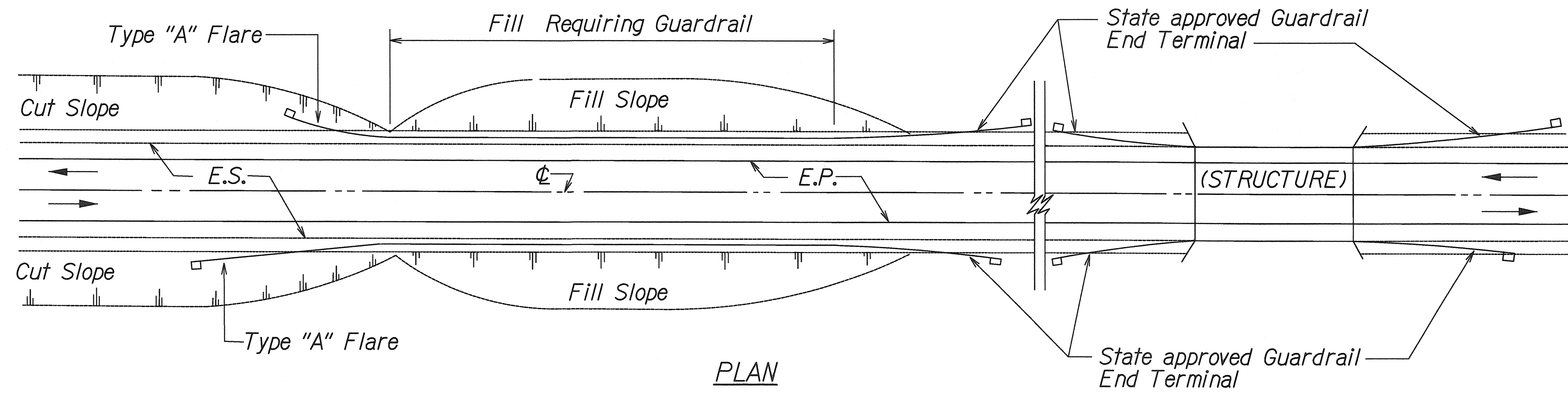
Federal Aid Project No. HSIP-0300(121)

Scale: NTS

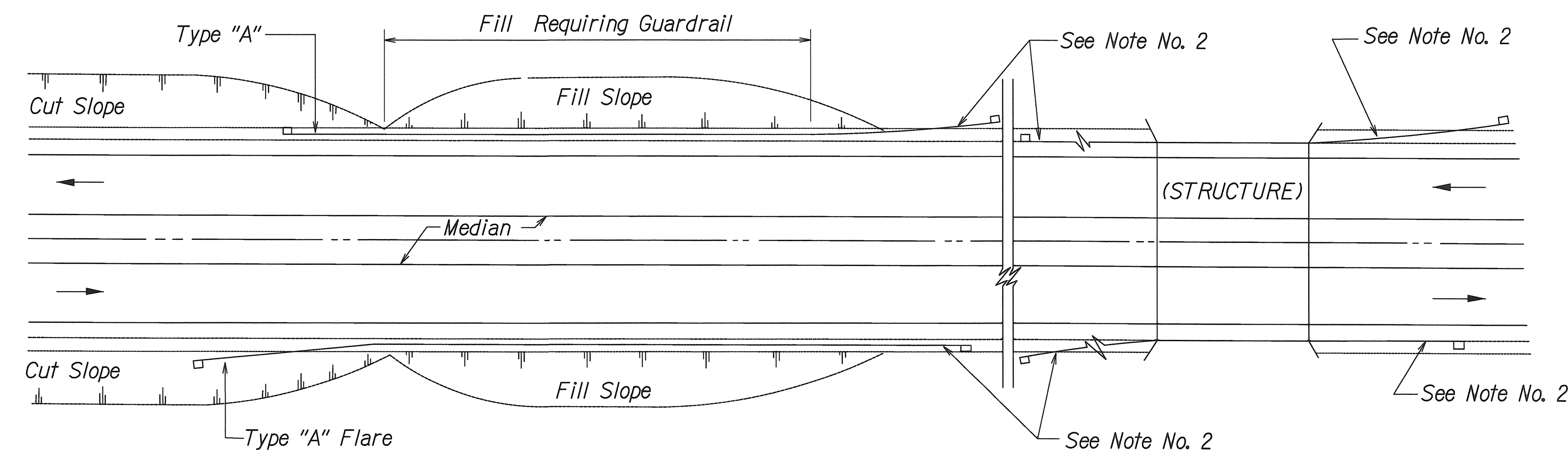
Date: March, 2016

SHEET No. 1 OF 2 SHEETS

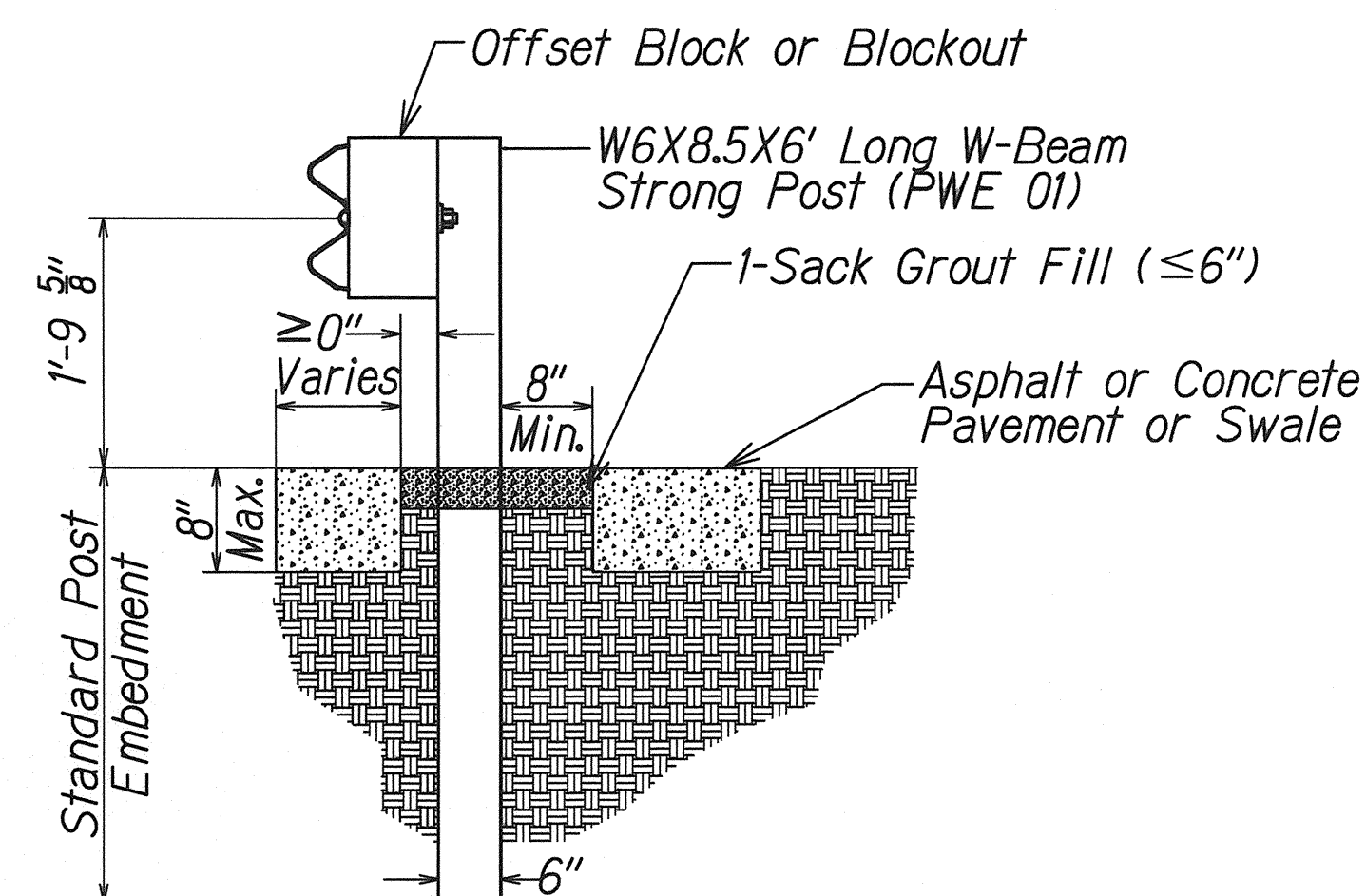
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII | HAW. | HSIP-0300(121) | 2016 | 59 | 81 |



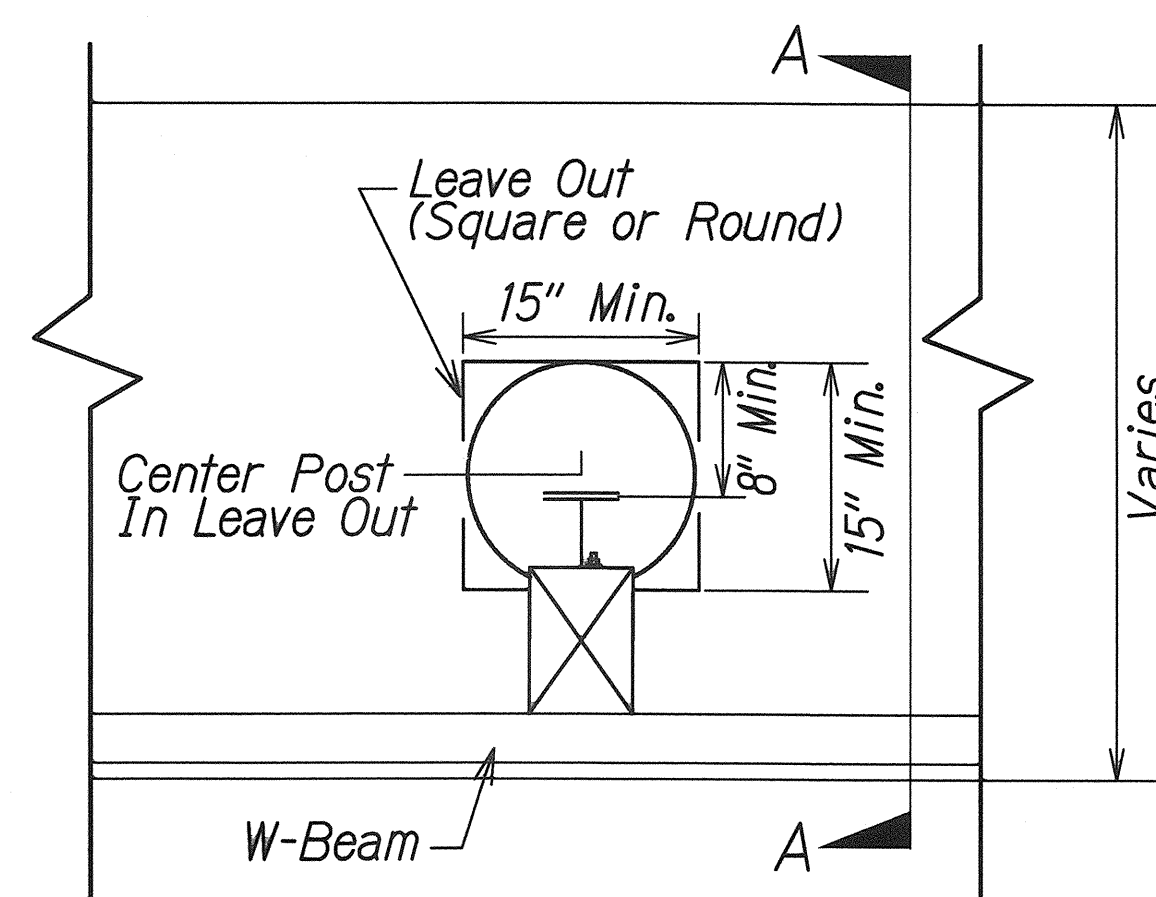
PLAN
TWO WAY ROADWAY



PLAN
ONE WAY ROADWAY (DIVIDED HIGHWAY)



SECTION A-A



STEEL POST DETAIL

STRONG POST W-BEAM GUARDRAIL
POST IN PAVEMENT OR DRAINAGE SWALE

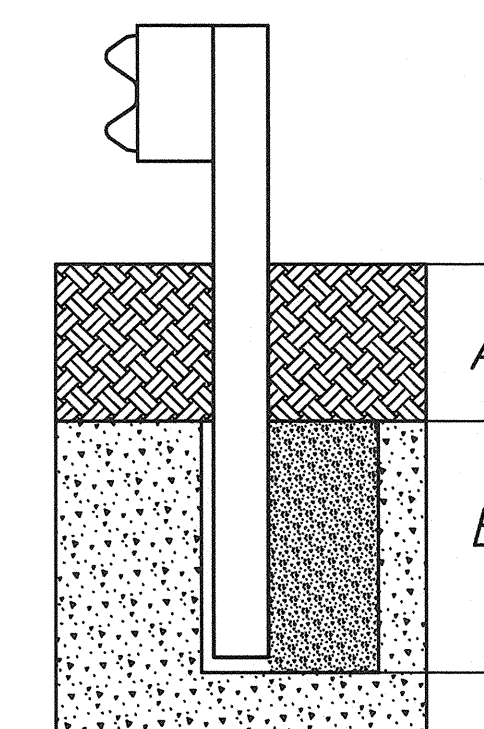
NOTES:

1. Metal Guardrail connection to concrete structures requires End Post Connection. See Structure Plans.
2. Depending on the existing field conditions, the Engineer shall determine which guardrail end terminal should be installed.
3. Refer to State's most current approved Product List for NCHRP 350 approved Guardrail End Terminals.

NOTES (STRONG POST W-BEAM IN ROCK):

1. Backfill of drilled holes shall be with compressible material, ASTM C33 Coarse Aggregate, Size No. 57.
2. Elongated 21-inch long hole can be accomplished by drilling three 8-inch diameter holes at 6 1/2-inches on center.

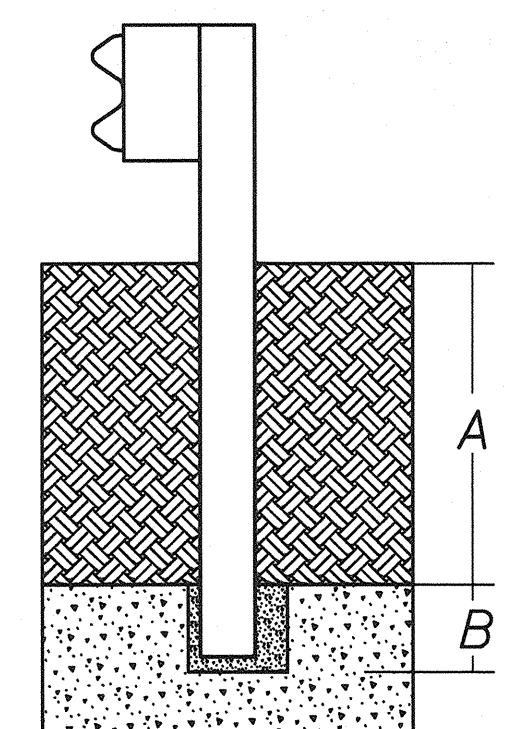
Case 1



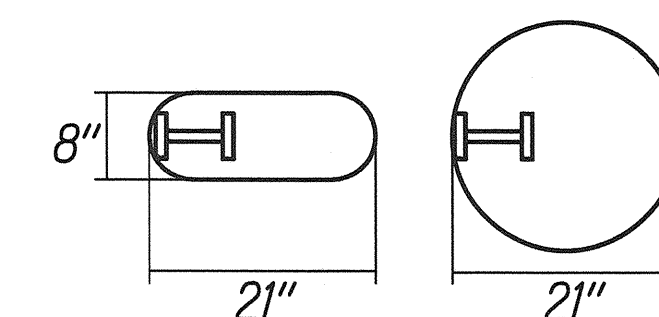
Soil

Rock

Case 2



ASTM C33 Coarse Aggregate, Size No. 57



Plan View Steel Posts
Either hole configuration acceptable

(A) ranging from 0 to 18-inches,
the depth of required drilling
(B) is equal to 24-inches.

(A) ranging from 18-inches to the
embedment depth of the post, depth
of required drilling (B) is equal to
either 12-inches or the desired
embedment depth minus the depth
of soil whichever is less.

Overlying Soil Depths of
0 to 18-inches

Overlying Soil Depths of
18 to 42-inches

STRONG POST W-BEAM GUARDRAIL IN ROCK

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GUARDRAIL DETAILS & NOTES

GUARDRAIL AND SHOULDER IMPROVEMENTS

At Various Locations, Oahu

Federal Aid Project No. HSIP-0300(121)

Scale: NTS

Date: March, 2016

SHEET No. 2 OF 2 SHEETS