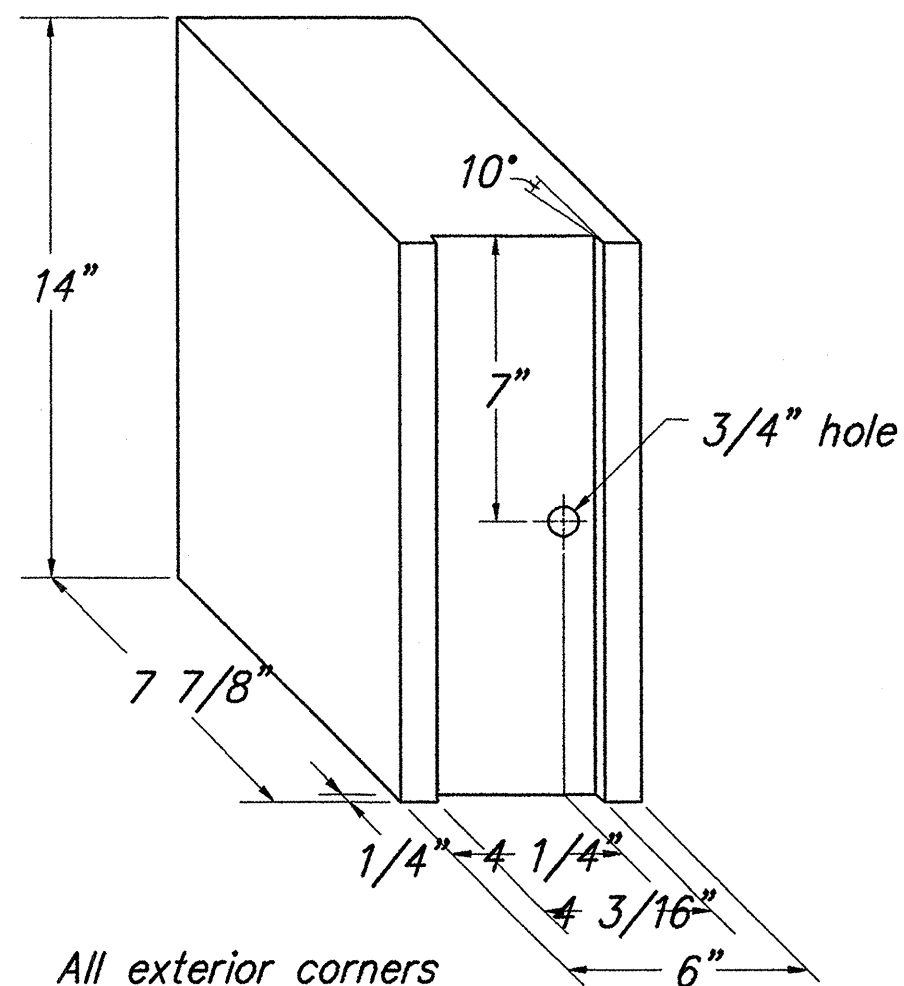


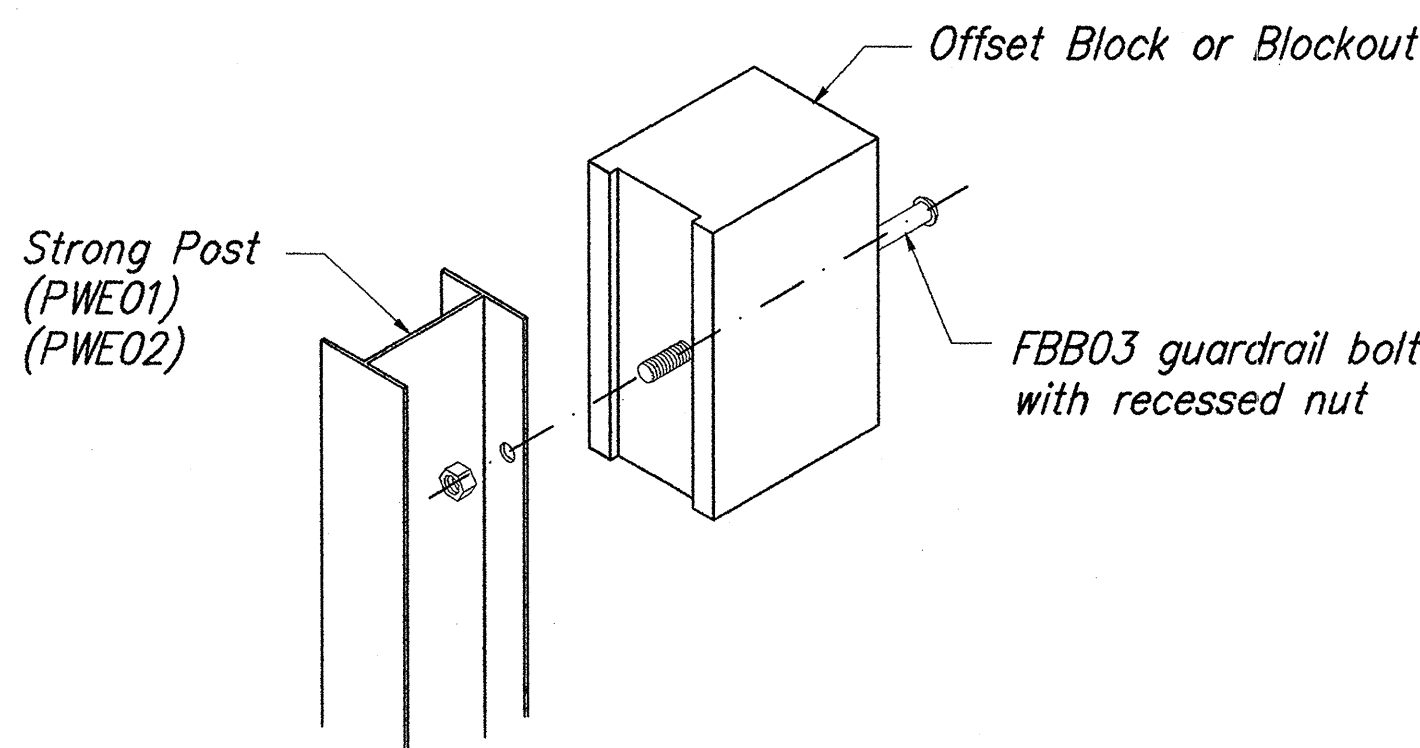
TOP
RECYCLED PLASTIC BLOCKOUT (TYPE I)
N.T.S.

SIDE

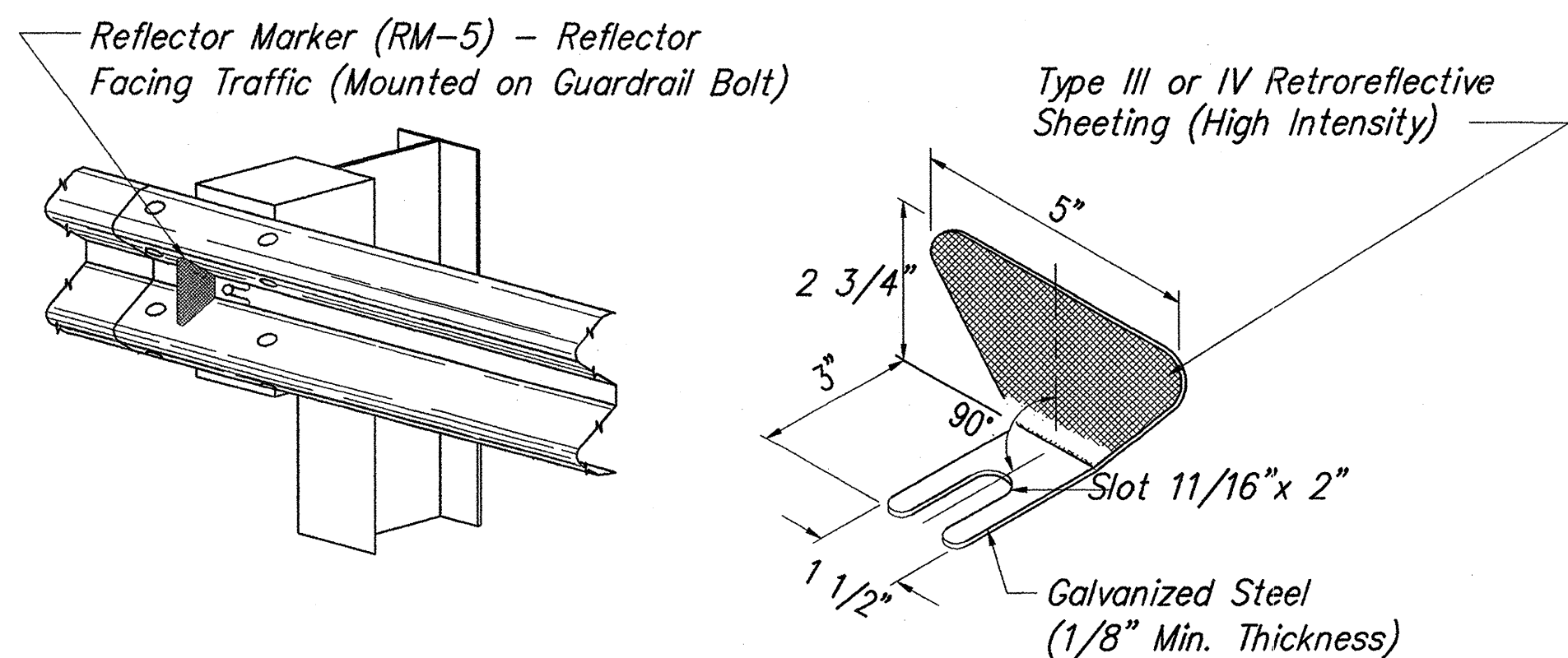


All exterior corners
1/2" radius

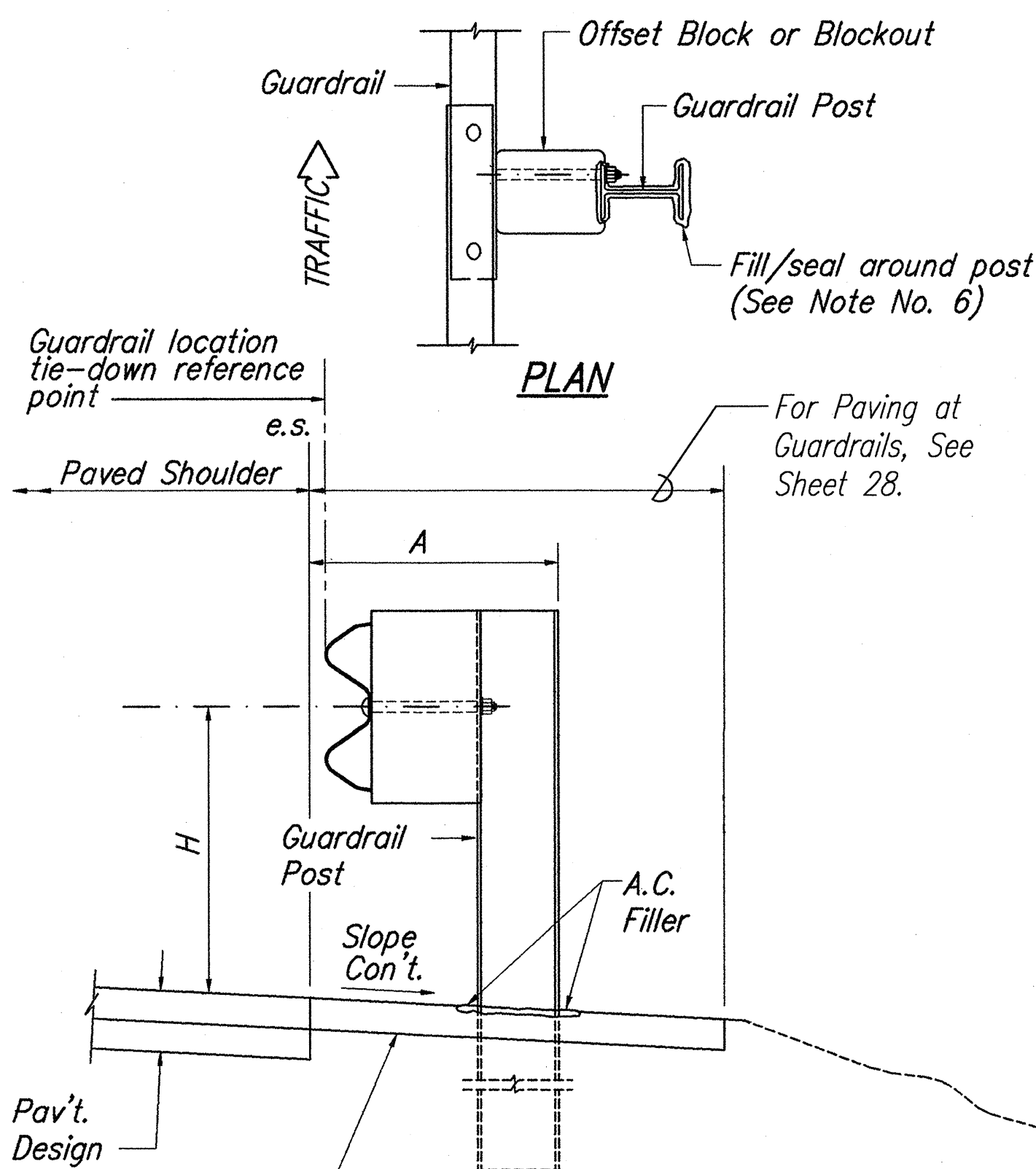
**RECYCLED POLYETHYLENE
OFFSET BLOCK (TYPE II)**
N.T.S.



Exploded View
(Rail and washer not shown)
STEEL POST AND BLOCK DETAIL
N.T.S.



REFLECTOR MARKER (RM-5)
DETAIL AND TYPICAL INSTALLATION
N.T.S.

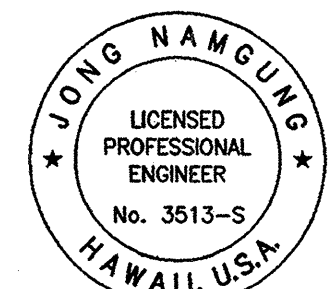


ELEVATION
TYPICAL GUARDRAIL INSTALLATION
N.T.S.

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 fastners, 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.
- 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"
Modified or Strong Post Thrie Beam	2'-0"	2'-0"



THIS WORK WAS PREPARED BY ME
OR UNDER MY SUPERVISION.

Jong Namgung
Mitsunaga & Associates, Inc.

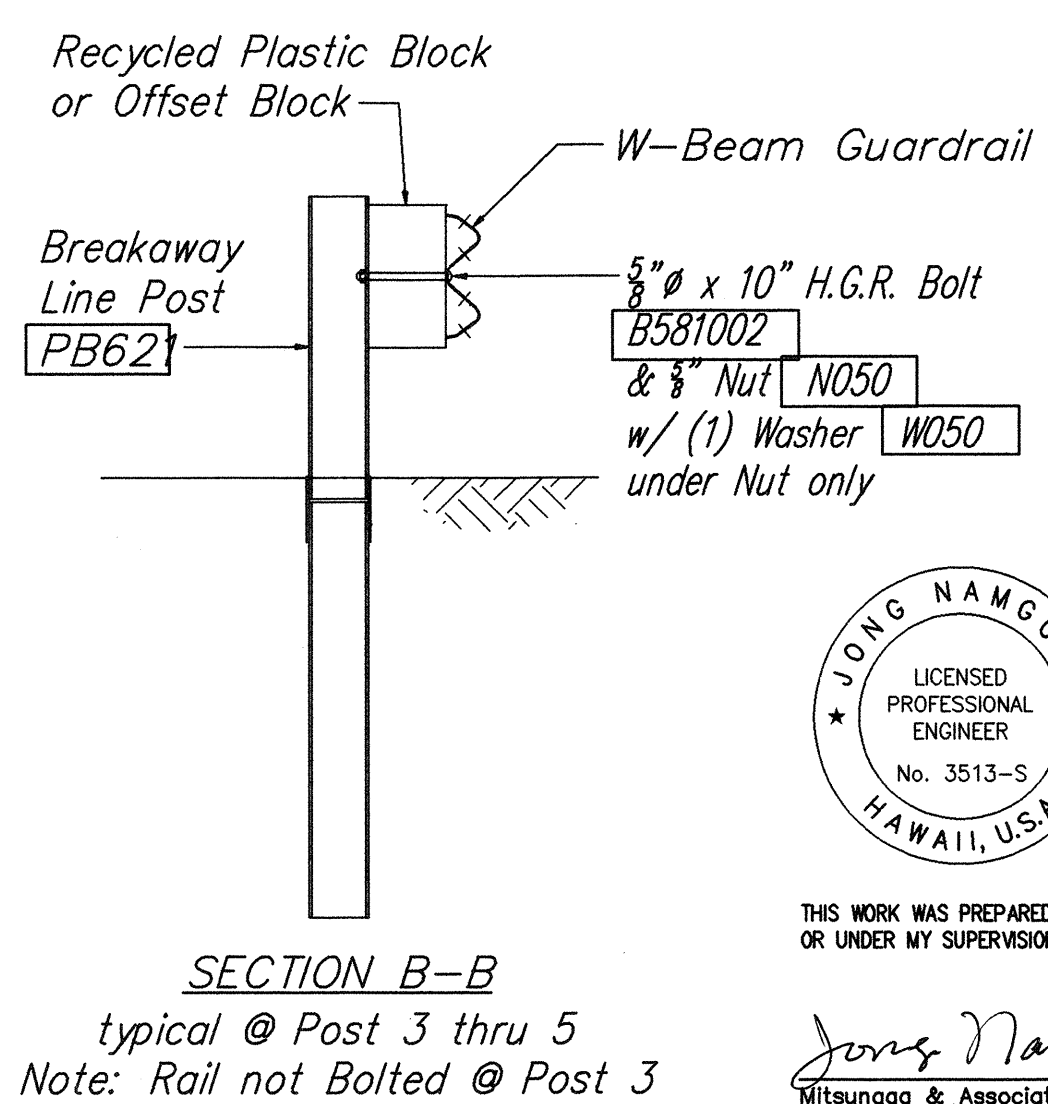
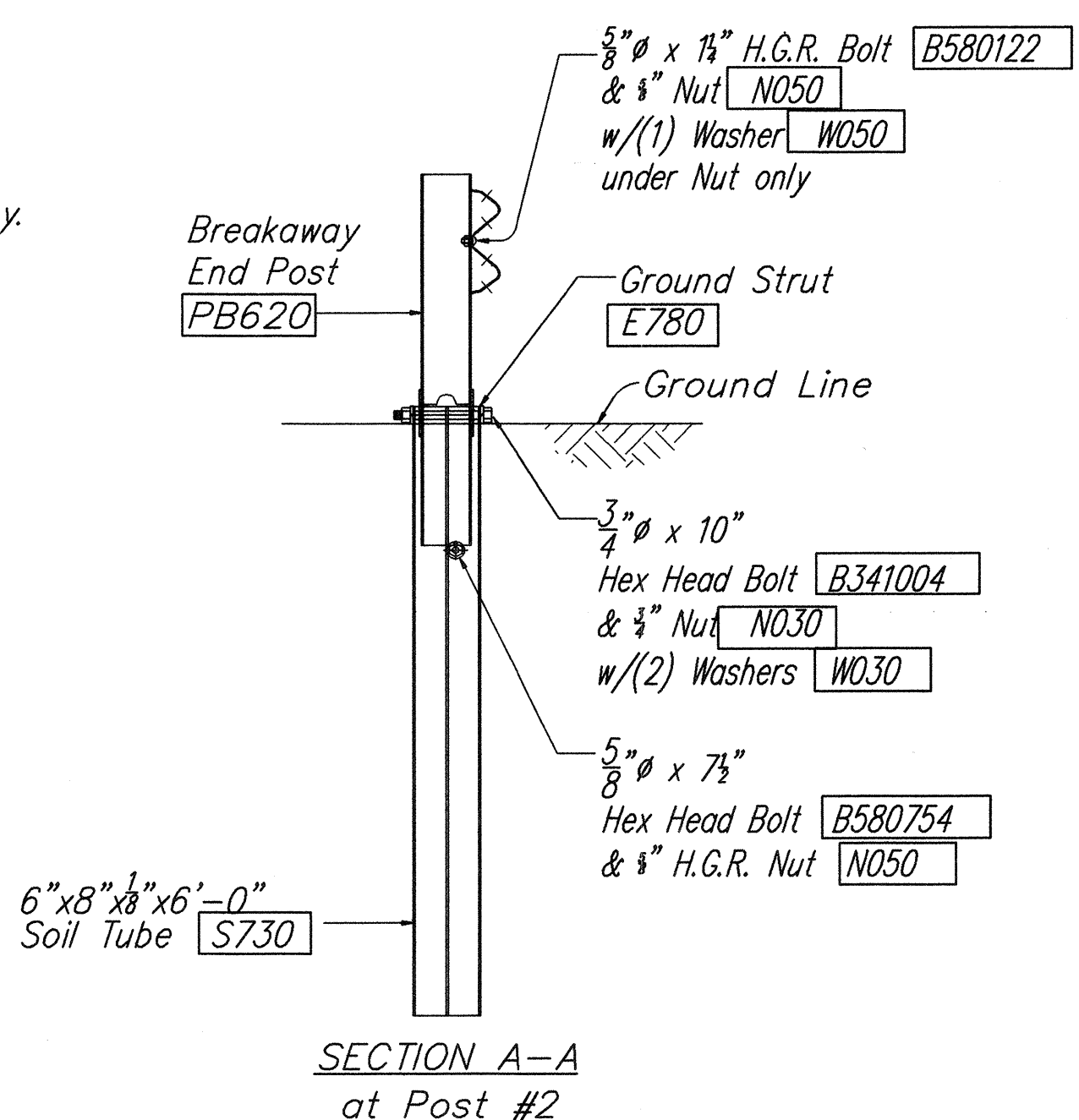
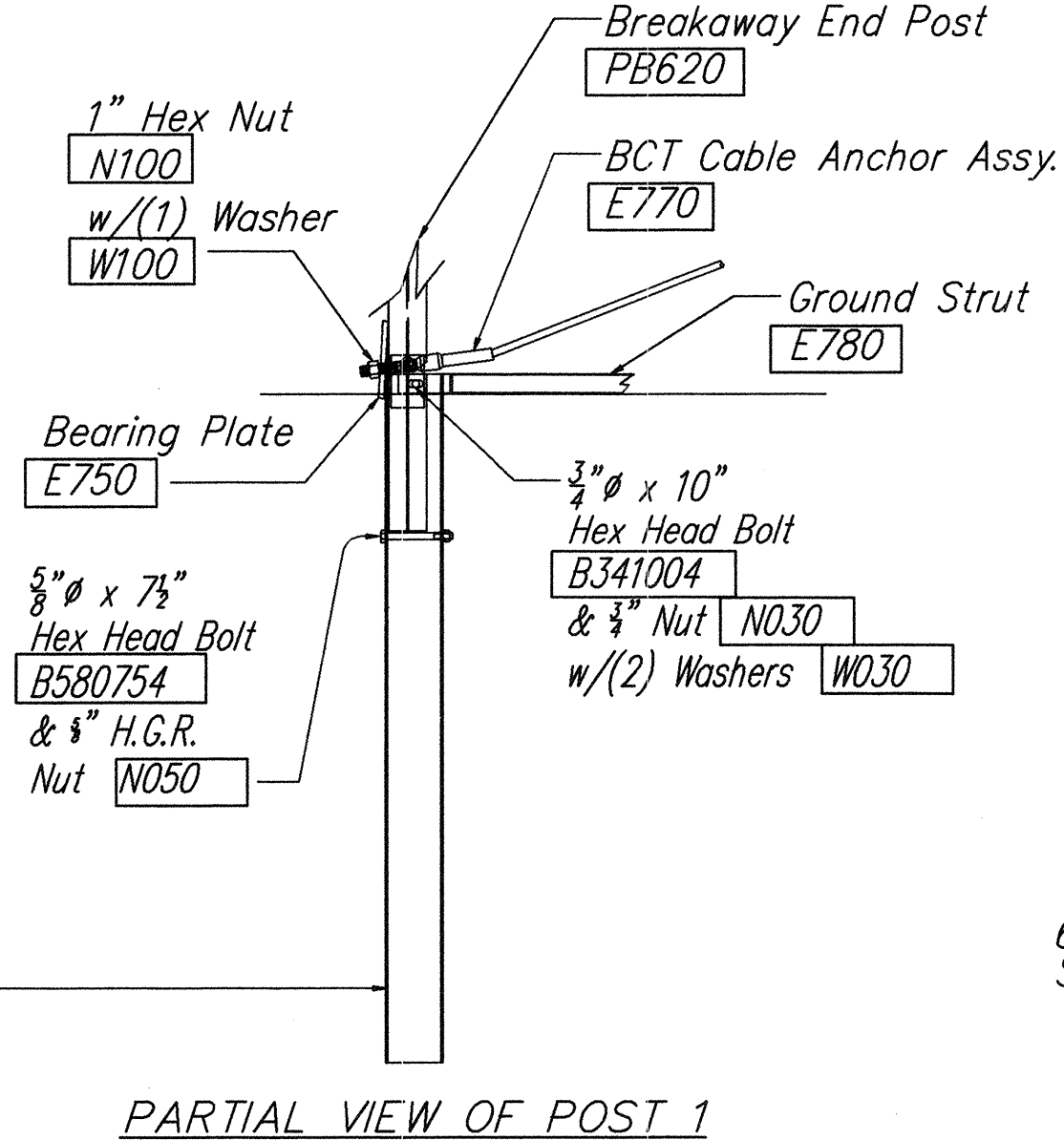
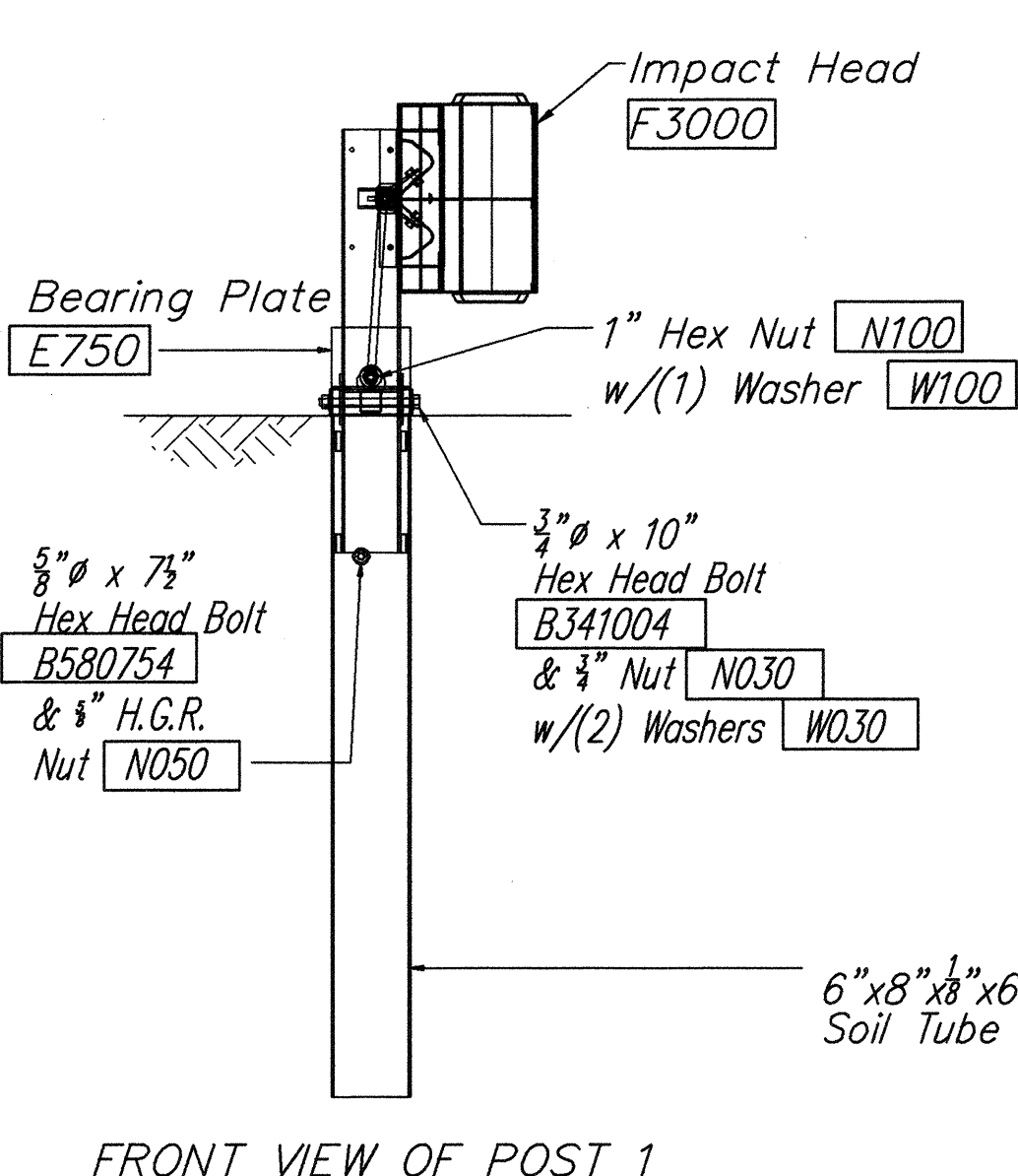
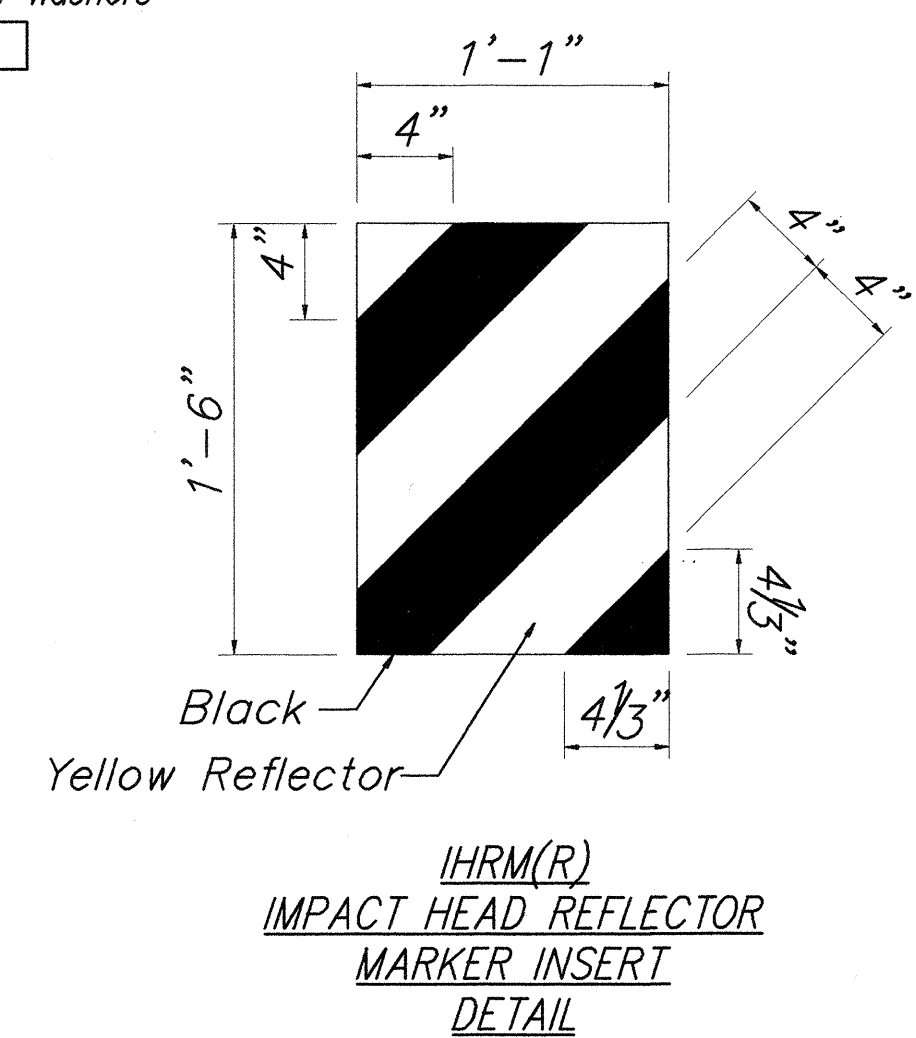
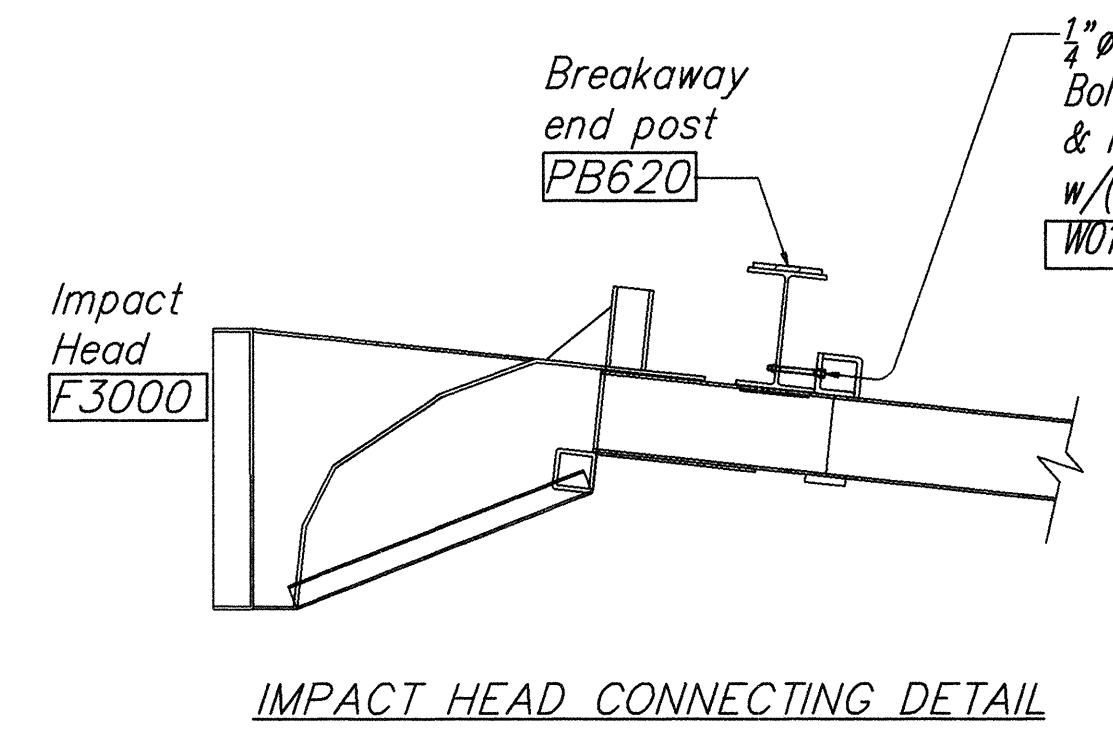
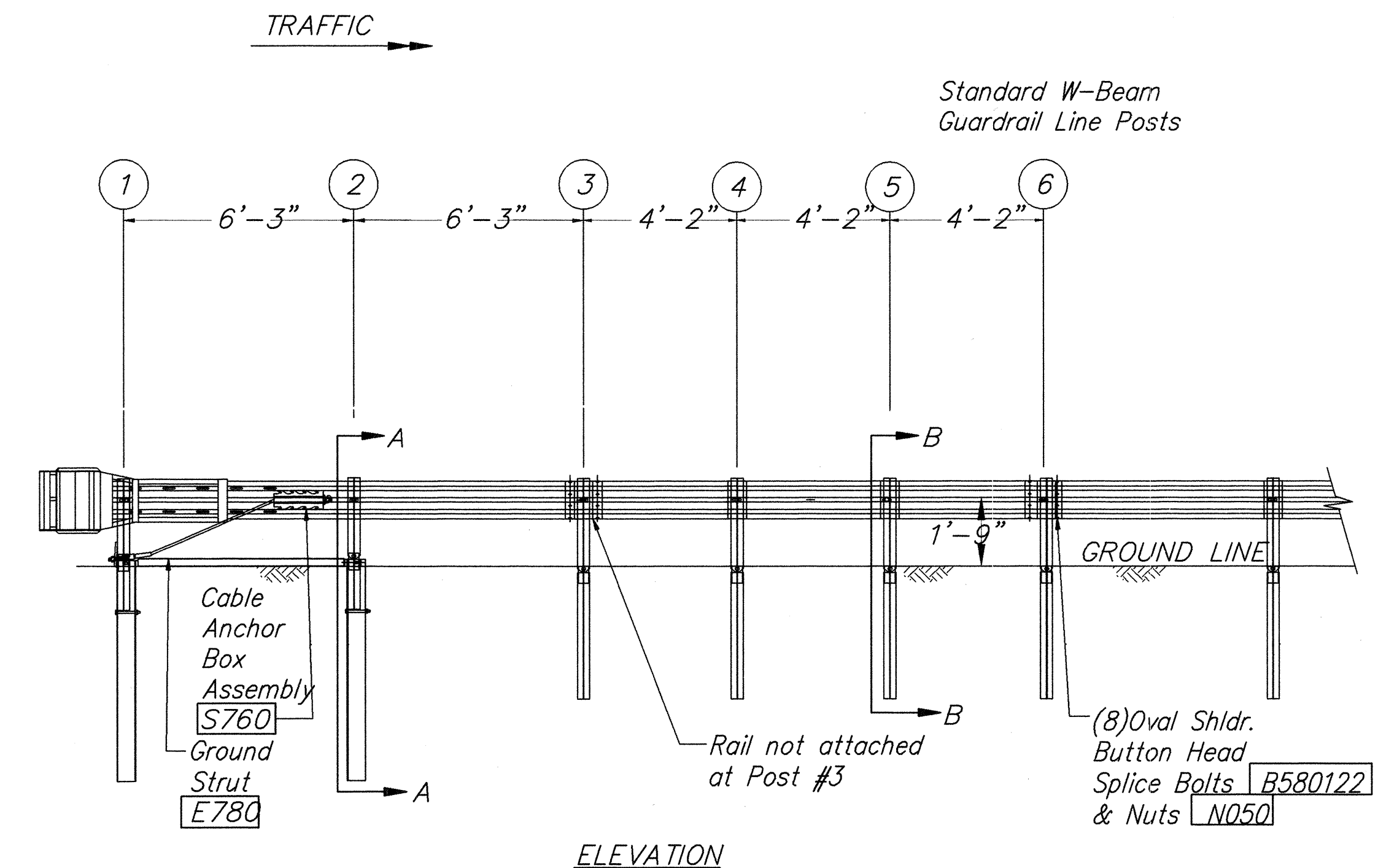
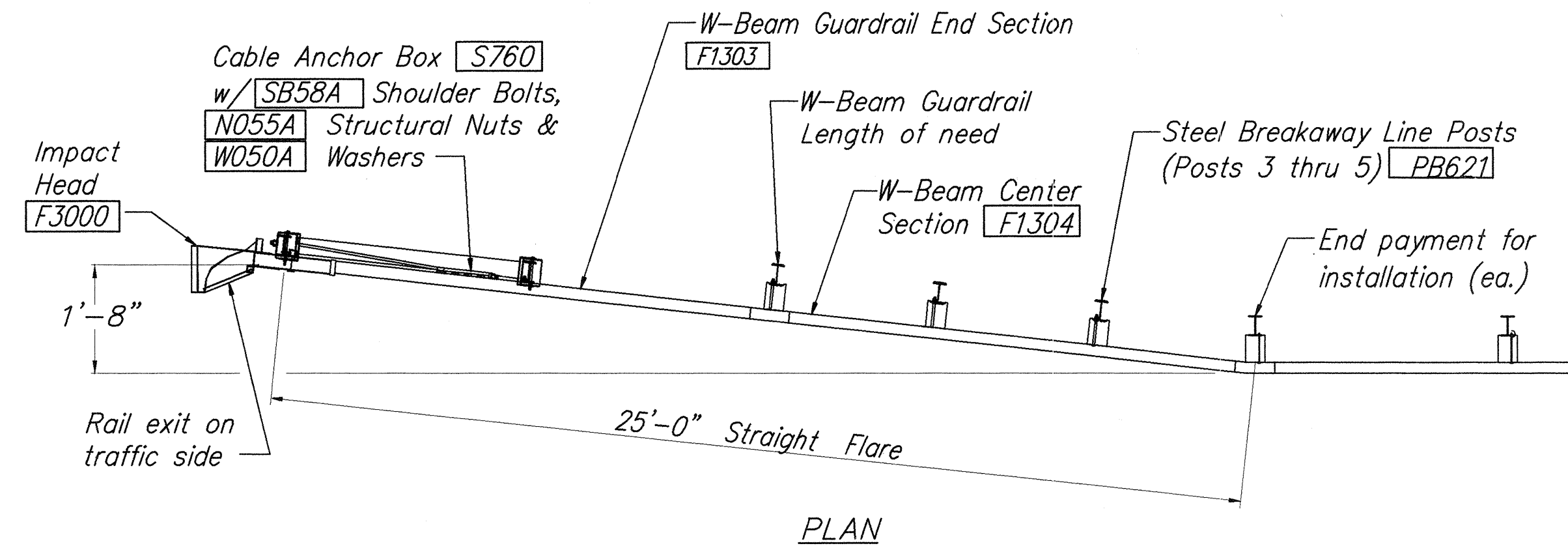
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GUARDRAIL DETAILS & NOTES
HANA HIGHWAY IMPROVEMENTS
Huelo to Hana
Project No. 360AB-02-00
Scale: Date: January, 2003

SHEET No. 1 OF 4 SHEETS

ADD.30

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360AB-02-00	2003	32	33



GENERAL NOTES:

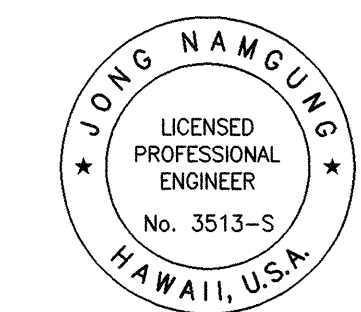
- Breakaway steel posts are required with the FLEAT Terminal.
- All bolts, nuts, cable assemblies, cable anchors and bearing plates shall be galvanized.
- The soil tube shall not protrude more than 4" above ground (measured along a 5' cord). Site grading may be necessary to meet this requirement.
- The soil tubes may be driven with an approved driving head. They shall not be driven with the post in the tube. If the soil tubes are placed in drilled holes, the backfill material must be satisfactorily compacted to prevent settlement.
- When rock is encountered during excavation, a 12" Dia. post hole, 20" deep may be used if approved by the Engineer. Granular material will be placed in the bottom of the hole approx. 2 1/2" deep to provide drainage. The soil tubes will be field cut to length, placed in the hole and backfilled with adequately compacted material excavated from the hole.
- The breakaway cable assembly must be taut. A locking device, (vice grips or channel lock pliers) should be used to prevent the cable from twisting when tightening nuts.
- (R) or (L) indicates right or left Impact Head Reflector Marker (IHRM). Providing and installing of IHRM shall be considered incidental to end treatment.
- The stripes for IHRM shall slope downward at an angle of 45° towards the side of the end treatment that traffic is to pass.

ITEM NO.	QTY.	BILL OF MATERIALS
F3000	1	IMPACT HEAD
F1303	1	W-BEAM GUARDRAIL END SECTION, 12 GA.
F1304	1	W-BEAM GUARDRAIL CENTER SECTION, 12 GA.
S730	2	*FOUNDATION SOIL TUBE, 6" x 8" x 6'-0"
E750	1	BEARING PLATE, 8" x 8" x ?"
S760	1	CABLE ANCHOR BOX
E770	1	BCT CABLE ANCHOR ASSEMBLY
E780	1	GROUND STRUT
PB620	2	BREAKAWAY END POST
PB621	3	BREAKAWAY LINE POST
	3	RECYCLED PLASTIC BLOCKOUT OR OFFSET BLOCK
	1	IMPACT HEAD REFLECTOR MARKER - IHRM(R) OR (L)
HARDWARE		
B580122	17	? Dia. x 1 ?" SPLICE BOLT, POST 2
B580754	2	? Dia. x 7 ?" HEX BOLT
B341004	2	? Dia. x 10" HEX BOLT
B581002	3	? Dia. x 10" H.G.R. BOLT (POSTS 3 THRU 5)
N030	2	? Dia. HEX NUT
N050	22	? Dia. H.G.R. NUT (SPLICE 16, SOIL TUBES 2, POSTS 2, 1; POSTS 3 THRU 5, 3)
W030	4	? I.D. WASHER
W050	4	H.G.R. WASHER
N100	2	1" ANCHOR CABLE HEX NUT
W100	2	1" ANCHOR CABLE WASHER
B140404	2	? x 4" HEX BOLT
N014	2	? HEX NUT
W014	4	? WASHER
SB58A	8	CABLE ANCHOR BOX SHOULDER BOLT
N055A	8	? A325 STRUCTURAL NUT
W050A	16	1 ?" OD X ?" ID A325 STR. WASHER

Foundation Tube Options For Posts 1 & 2
 *6'-0" Split Foundation Tube S730
 *6'-0" Solid Foundation Tube E731
 *5'-0" Foundation Tube S735 W/Soil Plate SP600
 *4'-6" Foundation Tube E735 W/Soil Plate SP600

ORIGINAL SURVEY PLOTTED BY DATE
 PLAN DRAWN BY
 NO. OF BOARDS DESIGNED BY
 QUANTITIES BY
 CHECKED BY

3/28/01
 ts2/ruby/guardrail/11st12us.dgn



THIS WORK WAS PREPARED BY ME
 OR UNDER MY SUPERVISION.
 JONG NAMUNG
 Mitsunaga & Associates, Inc.

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

FLEAT TL-2 STEEL POST ASSEMBLY

HANA HIGHWAY IMPROVEMENTS
 Huelo to Hana
 Project No. 360AB-02-00
 Scale: NTS Date: January, 2003

SHEET No. 3 OF 4 SHEETS