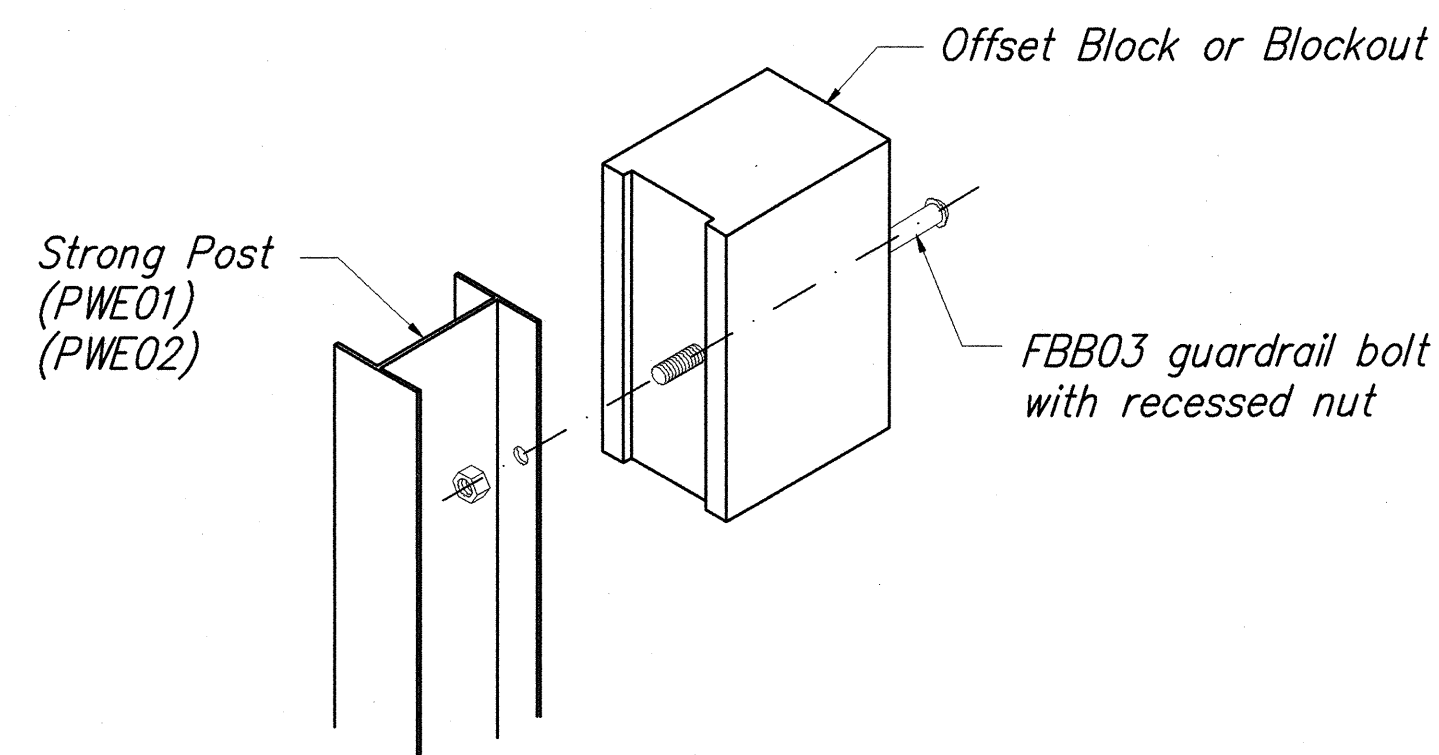
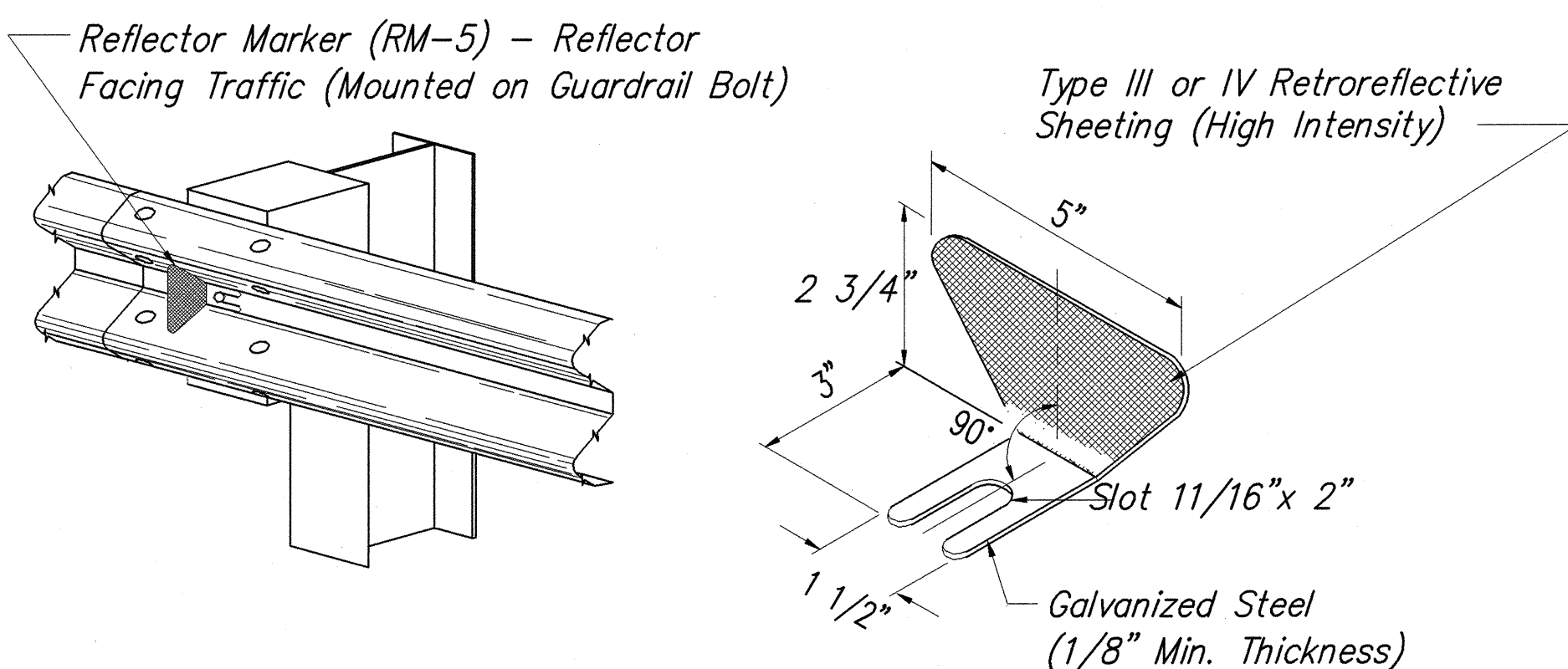


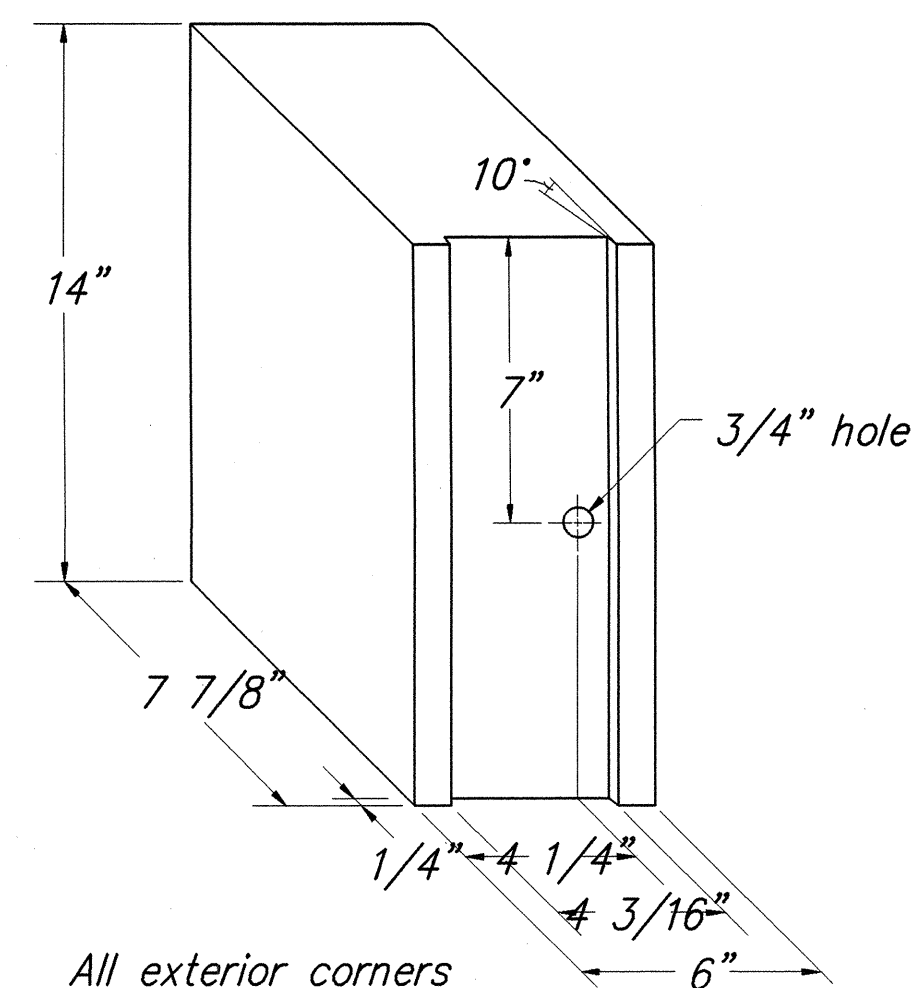
RECYCLED PLASTIC BLOCKOUT (TYPE I)
N.T.S.



STEEL POST AND BLOCK DETAIL
N.T.S.

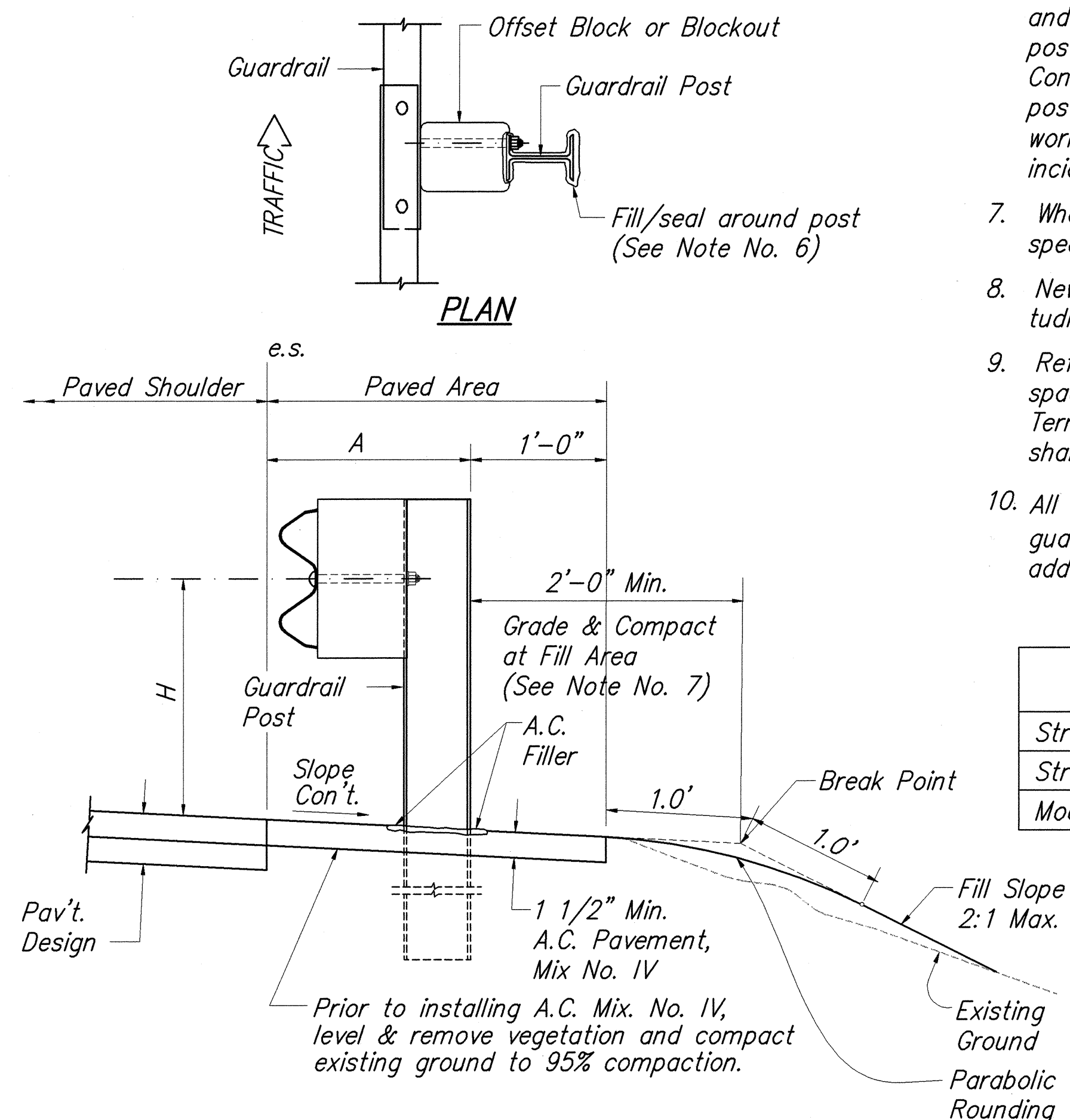


REFLECTOR MARKER (RM-5) DETAIL AND TYPICAL INSTALLATION
N.T.S.



All exterior corners 1/2" radius

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

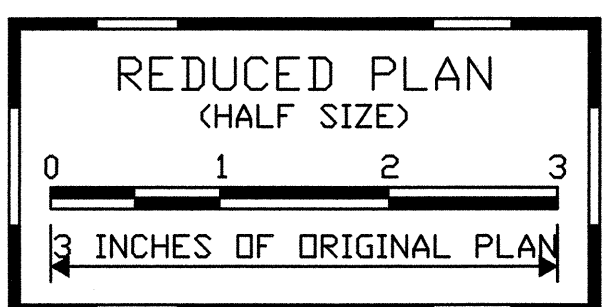


TYPICAL GUARDRAIL INSTALLATION
N.T.S.

GENERAL NOTES

1. All hardware, posts and fasteners shall be hot-dip zinc coated galvanized after fabrication. No punching, drilling or cutting will be permitted after galvanizing.
2. Where conditions require, special post lengths in increments of 6 inches may be specified.
3. 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.
4. The Recycled Plastic Block or Offset Block shall be approved by the State.
5. All new guardrail systems (system consists of total length of guardrail including both end treatments) shall include the Additional Paved Area.
6. 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.
7. When standards for the fill slope area cannot be met, a site specific, engineer approved design may be used.
8. New A.C. pavement at guardrails shall extend 6 feet longitudinally beyond terminal ends.
9. 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.
10. All new guardrail systems (system consist of total length of guardrail including both end treatments) shall include the additional paved area.

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"



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GUARDRAIL DETAILS & NOTES

INTERSTATE ROUTE H-1 REHABILITATION
Vicinity Of Makakilo Interchange
Project No. H1A-01-02M

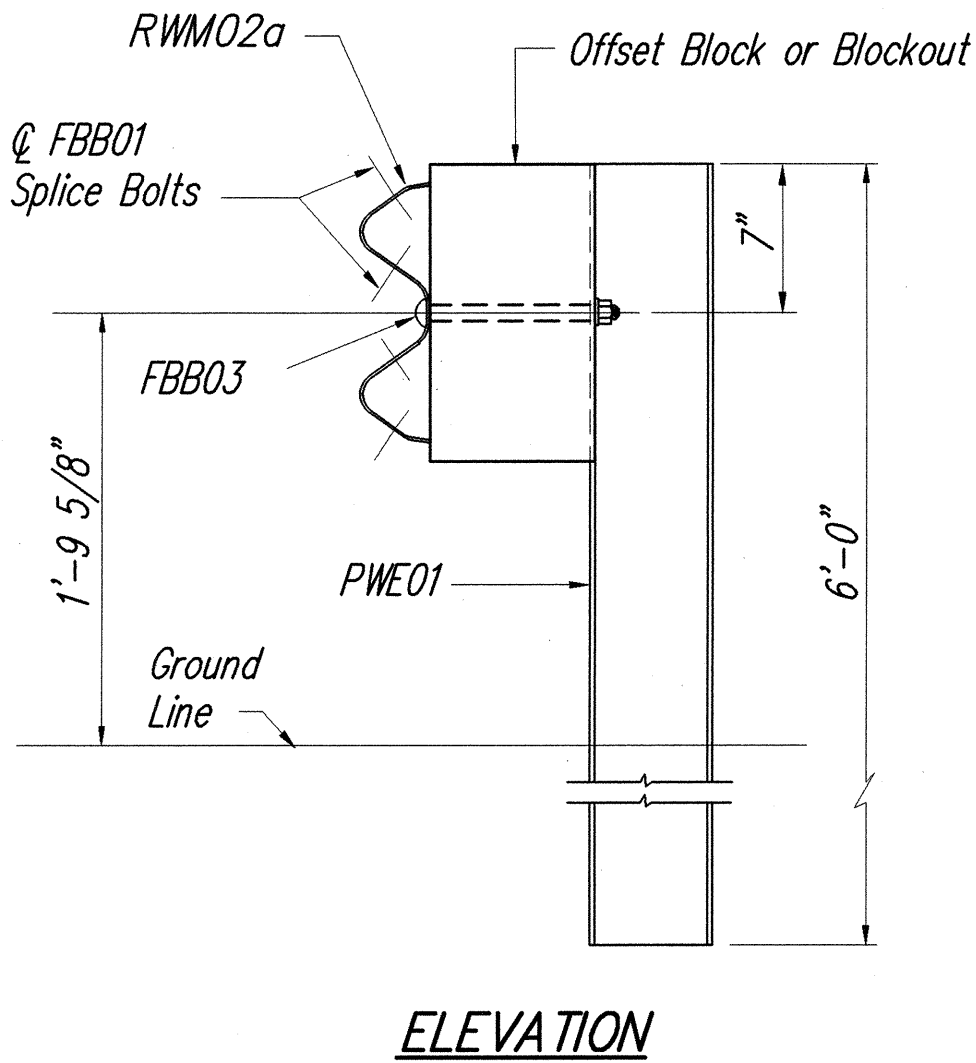
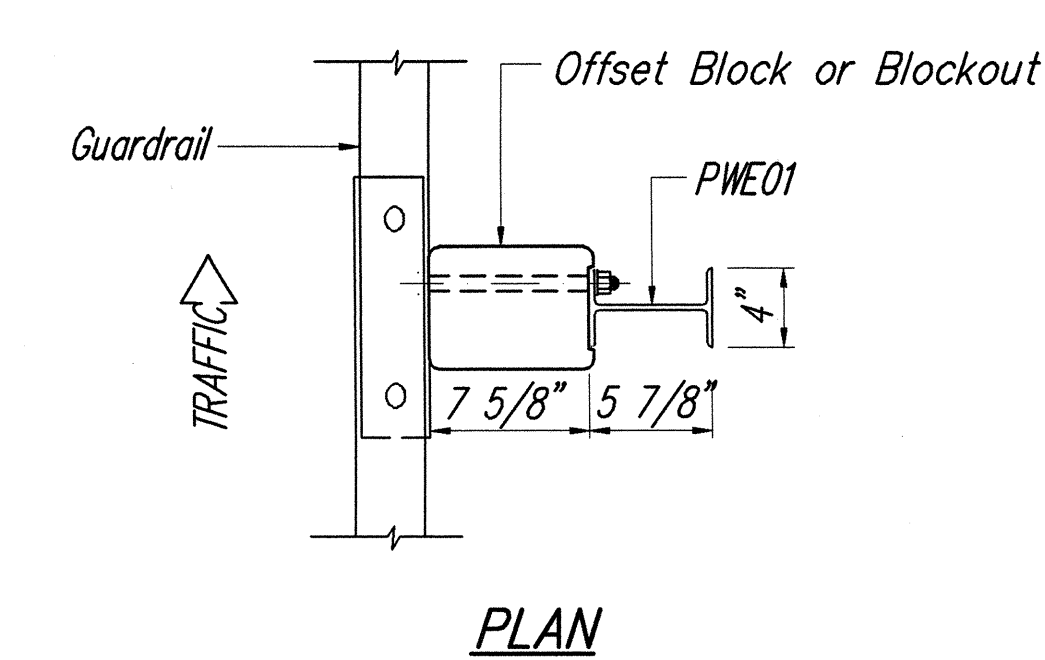
Scale: As Noted Date: April 2003

SHEET No. C-23 OF 42 SHEETS

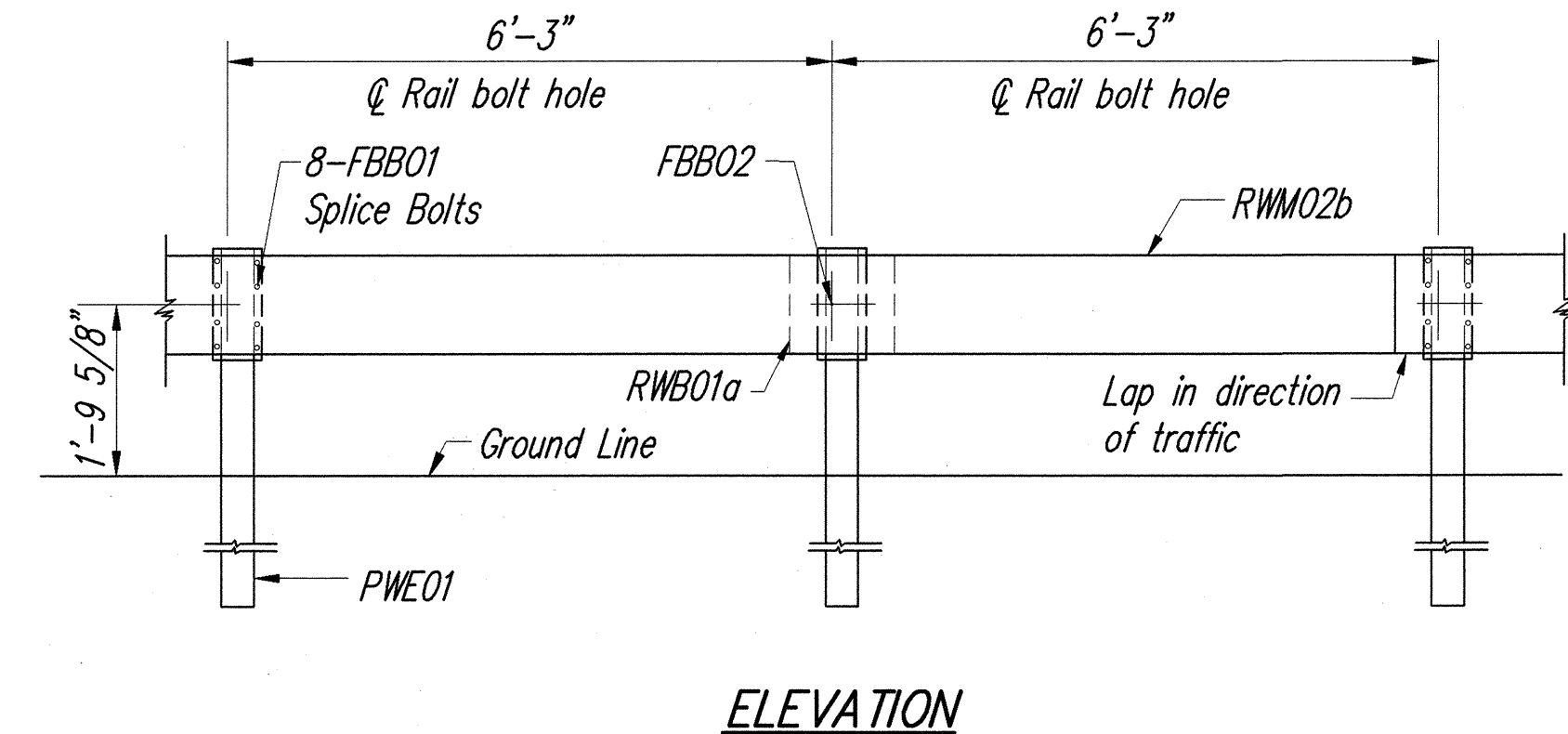
SURVEY PLOTTED BY	DATE
DRAWN BY	6/02
DESIGNED BY	6/02
CHECKED BY	6/02

ORIGINAL PLAN	No.
NOTE BOOK	No.

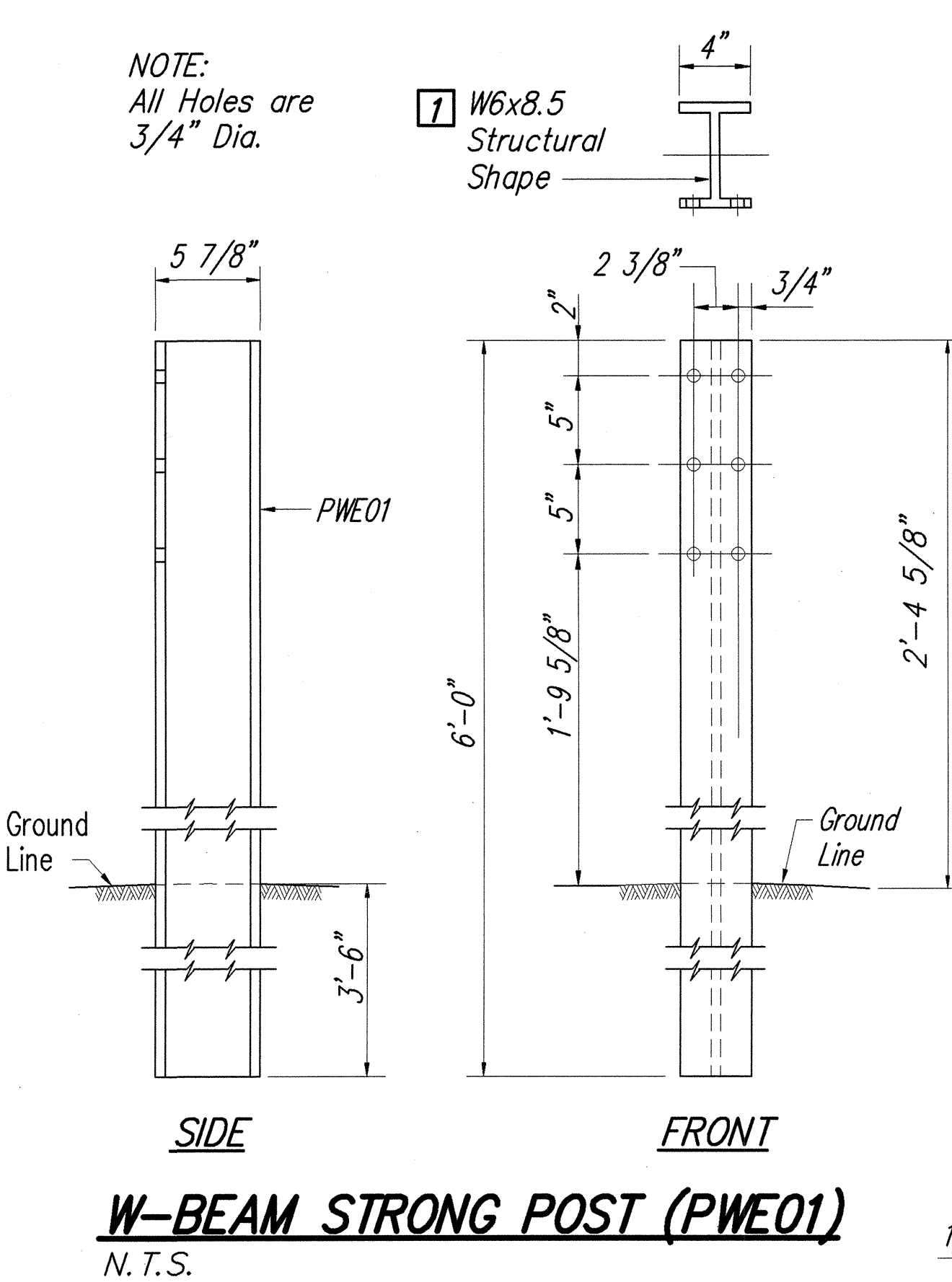
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	H1A-01-02M	2003	26	88



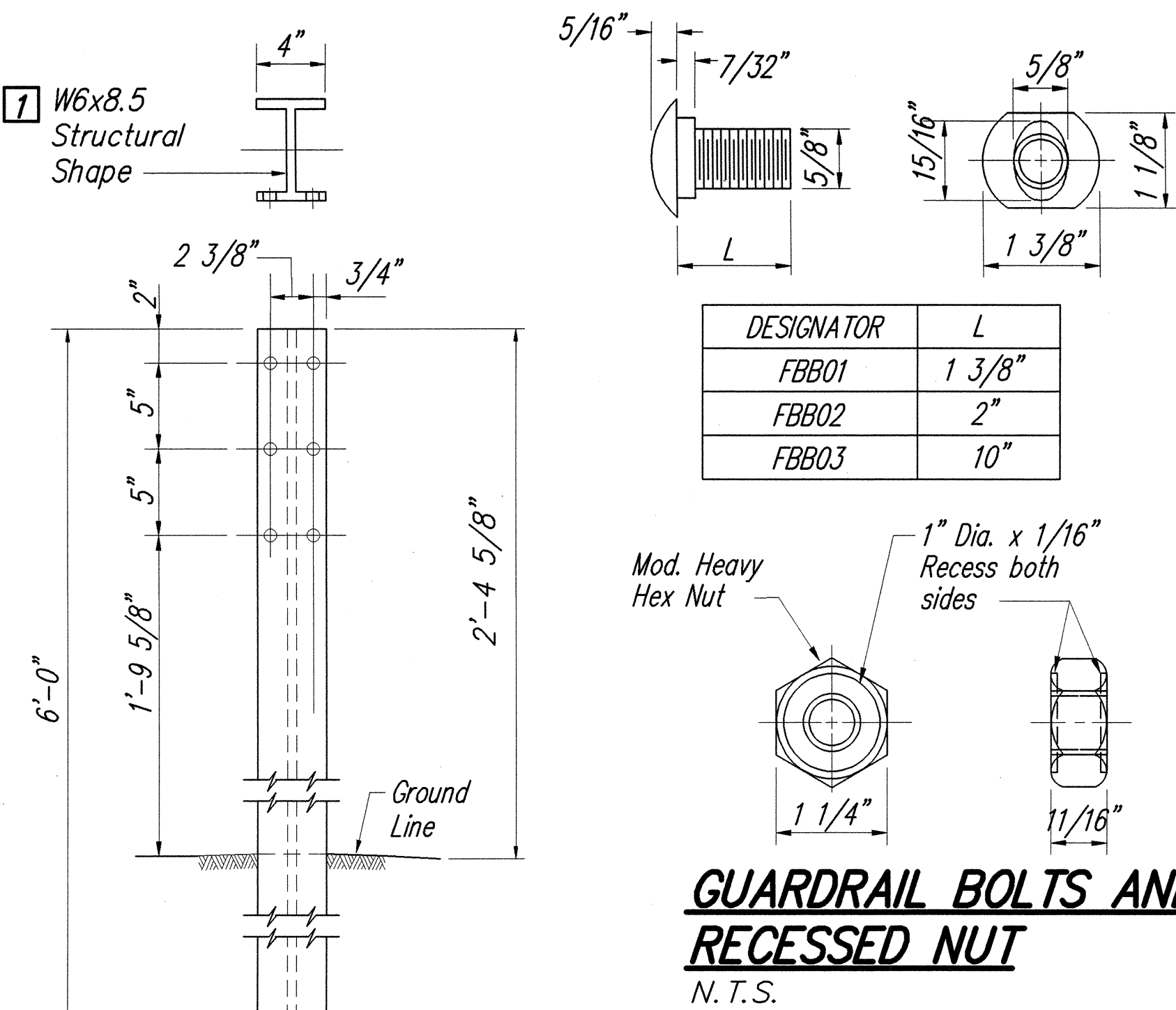
STRONG POST W-BEAM GUARDRAIL (SGR04a)
N.T.S.



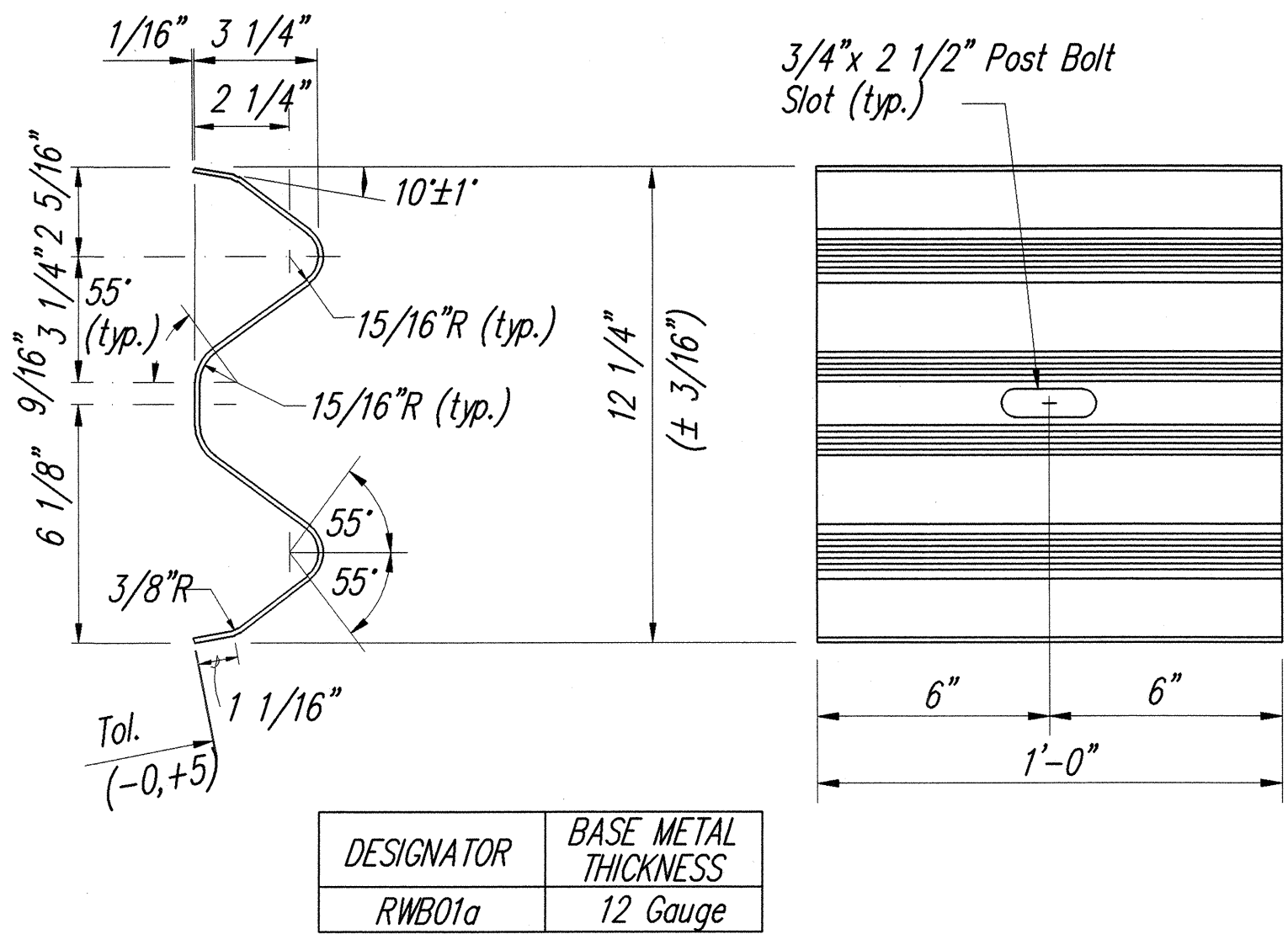
STRONG POST W-BEAM GUARDRAIL WITH RECYCLED OFFSET BLOCK OR PLASTIC BLOCKOUT
N.T.S.



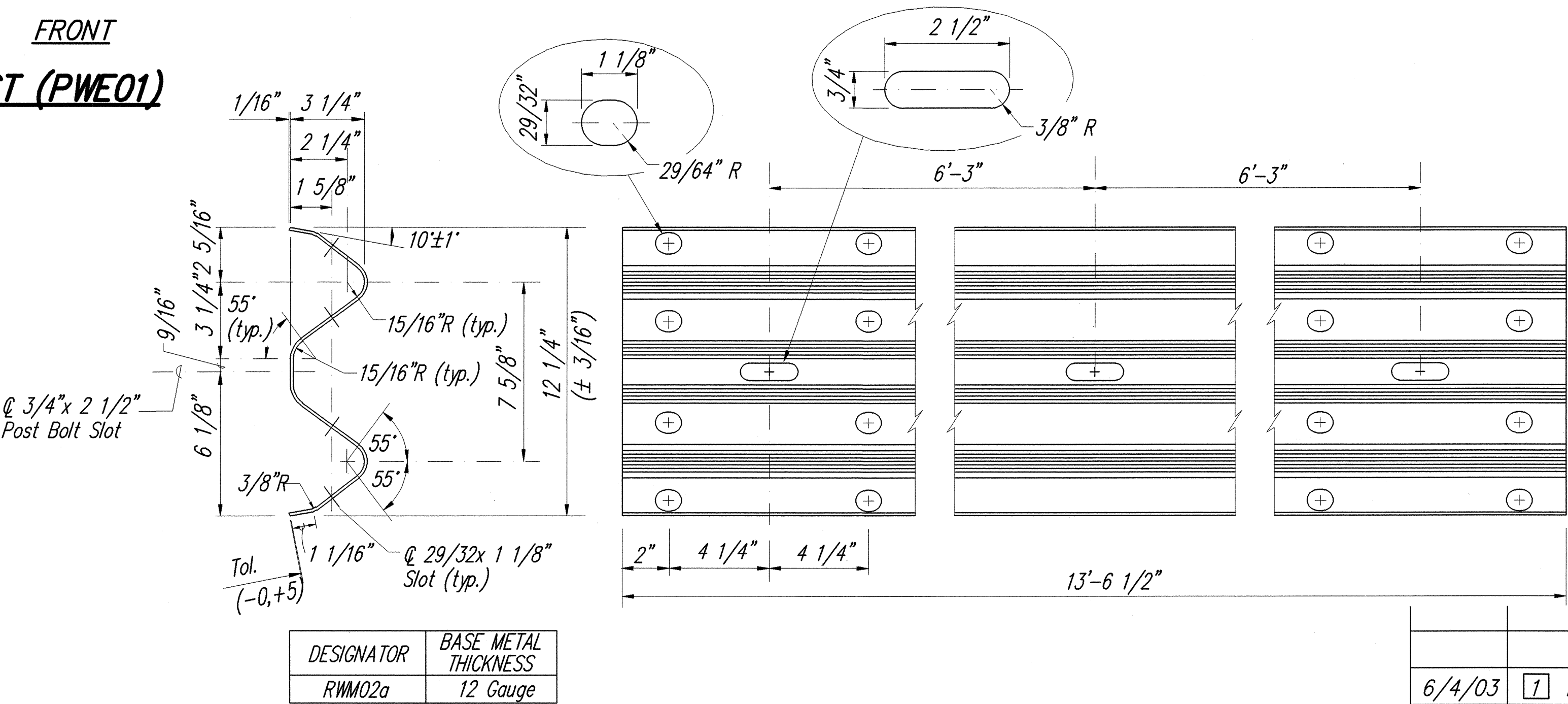
W-BEAM STRONG POST (PWE01)
N.T.S.



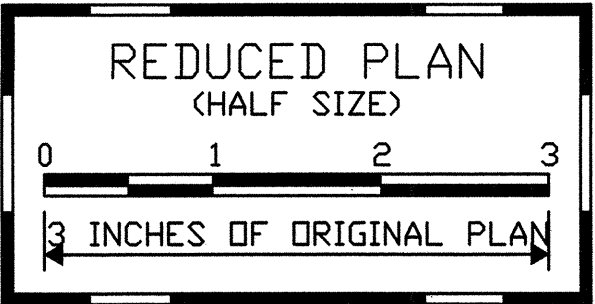
GUARDRAIL BOLTS AND RECESSED NUT
N.T.S.



W-BEAM BACK-UP-PLATE (RWB01a)
N.T.S.



2 SPACE W-BEAM GUARDRAIL (RWM02a)
N.T.S.

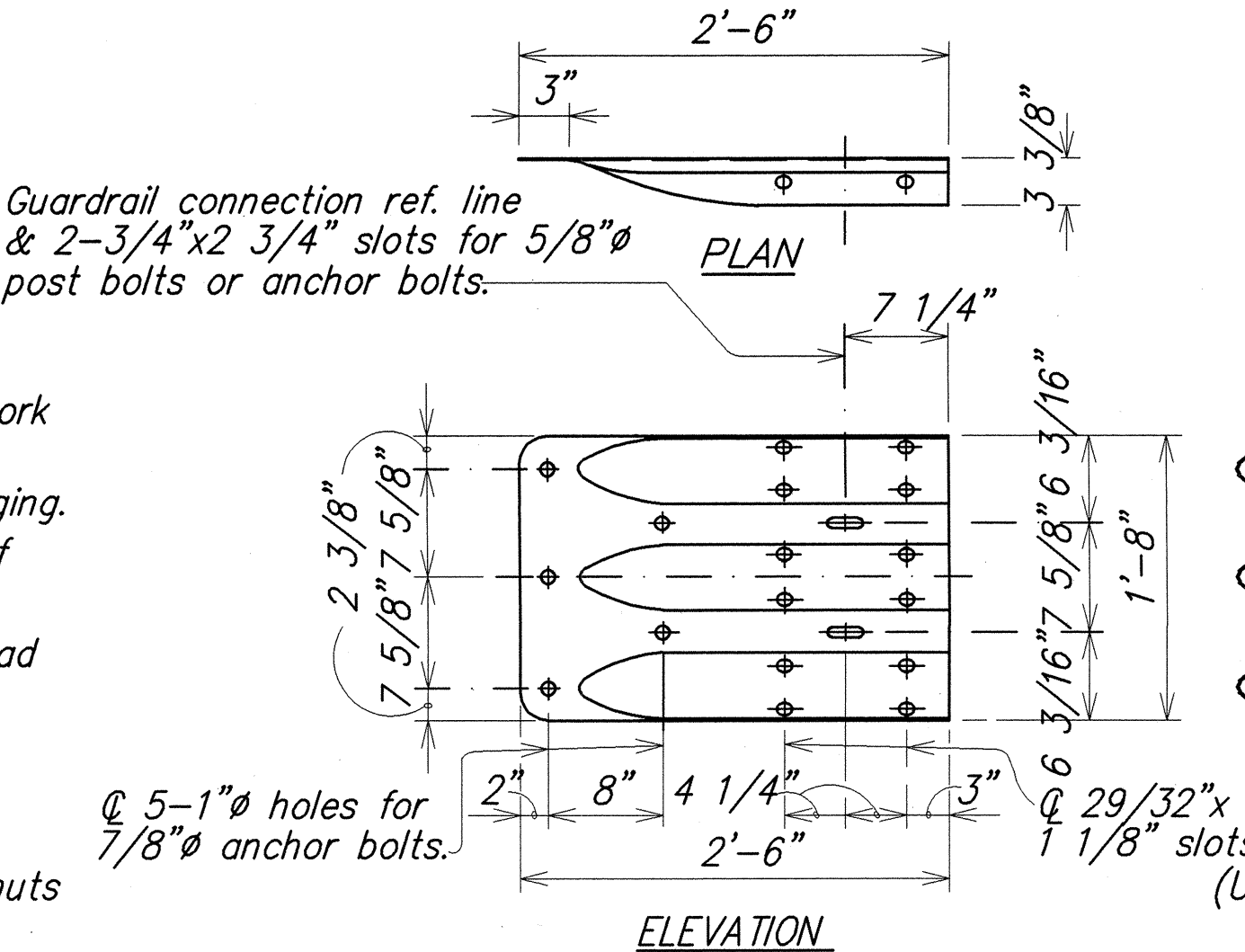


6/4/03	1 Notes Revised
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
<u>STRONG POST W-BEAM GUARDRAIL</u>	
<u>INTERSTATE ROUTE H-1 REHABILITATION</u>	
<u>Vicinity Of Makakilo Interchange</u>	
<u>Project No. H1A-01-02M</u>	
Scale: As Noted	Date: April 2003
SHEET No. C-24 OF 42 SHEETS	

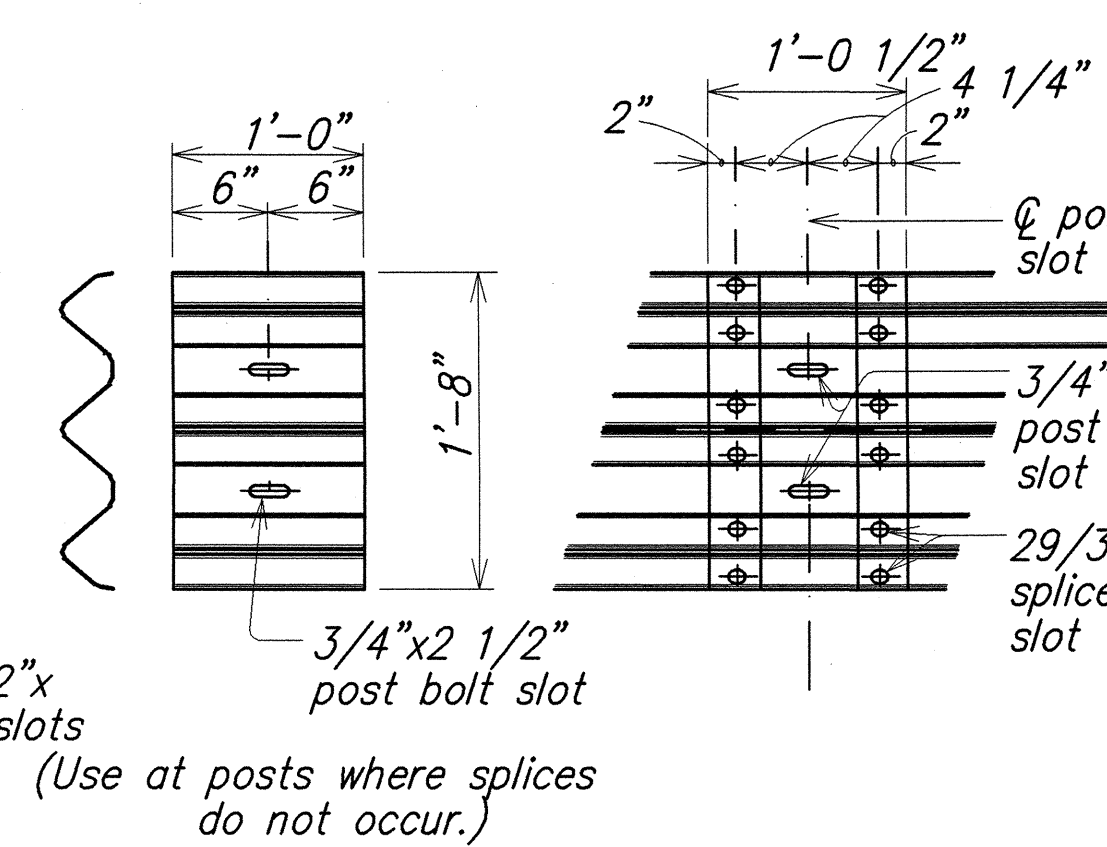
SURVEY PLOTTED BY	DATE
DRAWN BY	6/02
TRACED BY	
CHECKED BY	6/02
NOTE BOOK	
QUANTITIES BY	6/02
CHECKED BY	6/02
ORIGINAL PLAN	
No.	

NOTES:

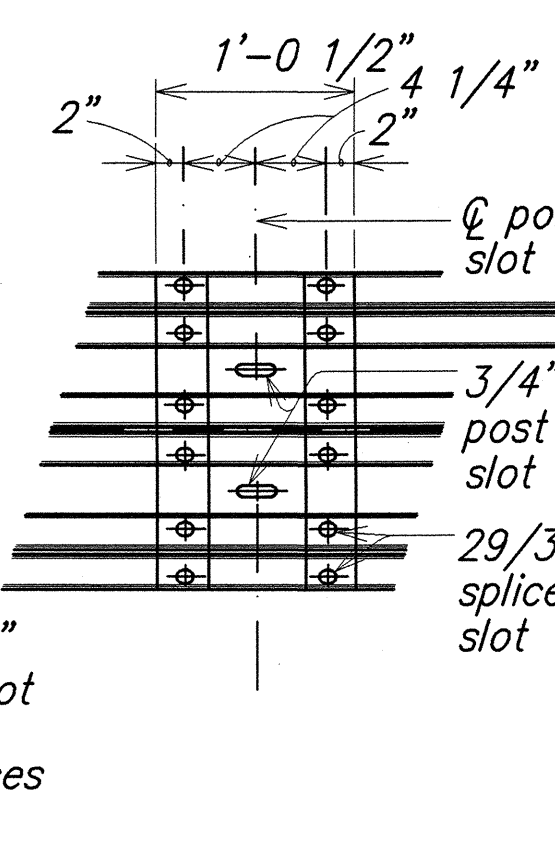
- The work necessary to connect guardrail to concrete end post shall include all labor, materials, tools, equipment and incidentals necessary to complete the work and will not be paid for separately.
- Lap terminal connector and rail element in direction of traffic to prevent snagging.
- All anchor bolts shall be high strength bolts conforming to the requirements of ASTM 325 and Standard Specification, Section 713.04.
- Anchor bolt length shall be such that a snug fit of the elements and full thread engagement plus 1/4" (max) is attained.
- "Terminal Connector", "Transition Section" and thrie beam shall be fabricated from 10gauge steel conforming to the requirements of AASHTO M 180, Type II, Class B.
- "Terminal Connector" and standard spacer, including all anchor bolts, cap PL, nuts and washers, shall be hot-dip galvanized after fabrication.
- Cap PL shall be fabricated from ASTM A 36.
- First 25'-0" of guardrail adjoining "Terminal Connector" shall be galvanized steel and supports spaced as shown on the detail drawings. This section of rail shall be placed on tangent to end post or parallel to roadway, unless conditions at site renders it impossible to do so. Flare point to be determined in field.
- Double (nest 1st panel) thrie beam elements at all end post connections, except on highways with one-way traffic pattern, use single thrie beam elements at end post on trailing end only.
- Where double (nested) beam occur, 12" "Back-up Plate" not required.
- Heads of through anchor bolts shall be placed on the traffic side of the rail.
- All steel shapes, rails and plates shall conform to ASTM A 36 specifications.



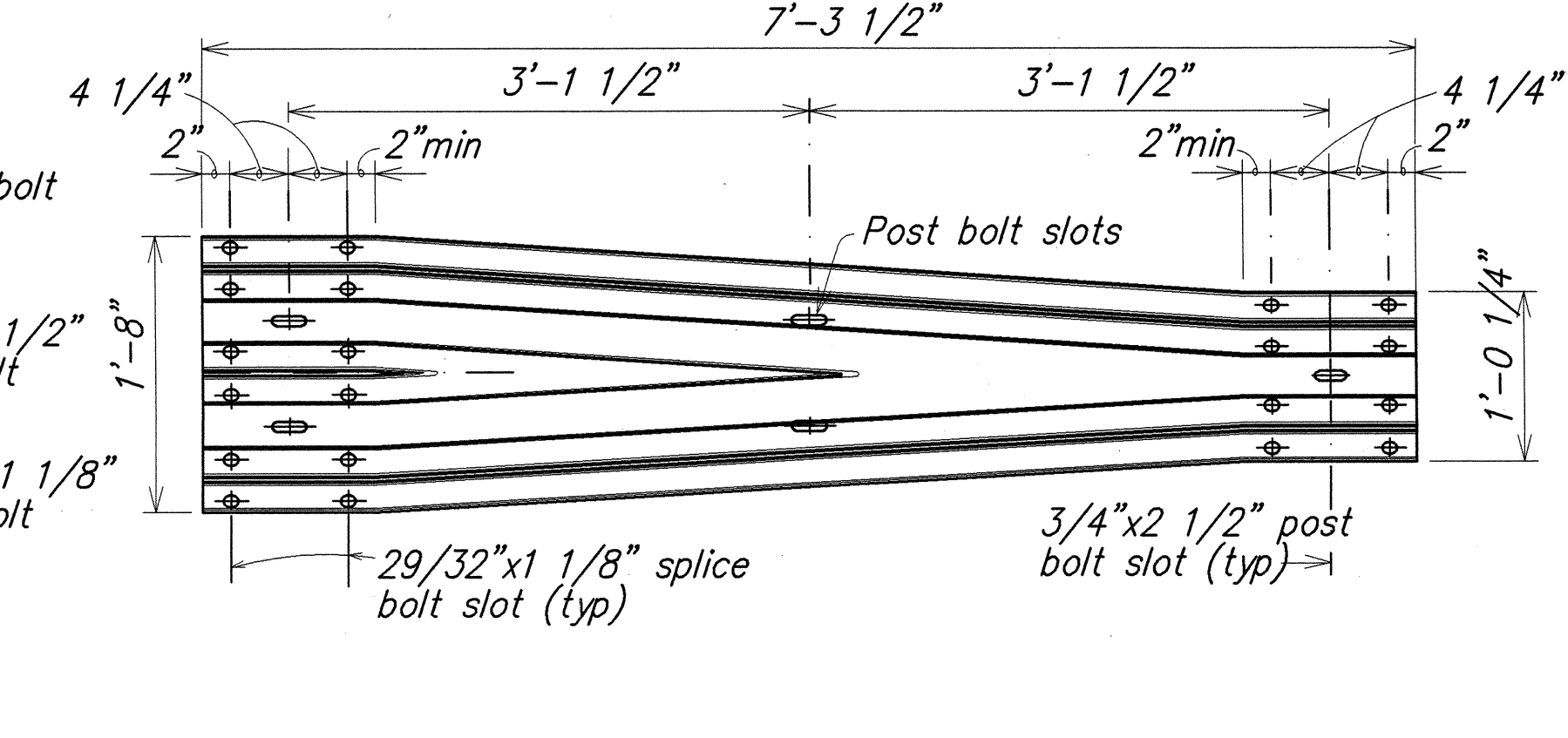
TERMINAL CONNECTOR



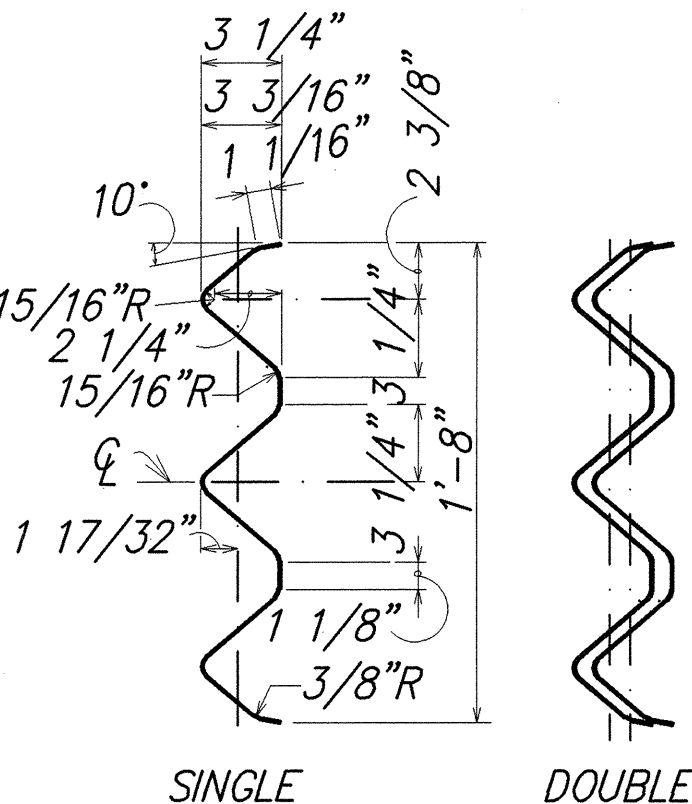
BACKUP PLATE



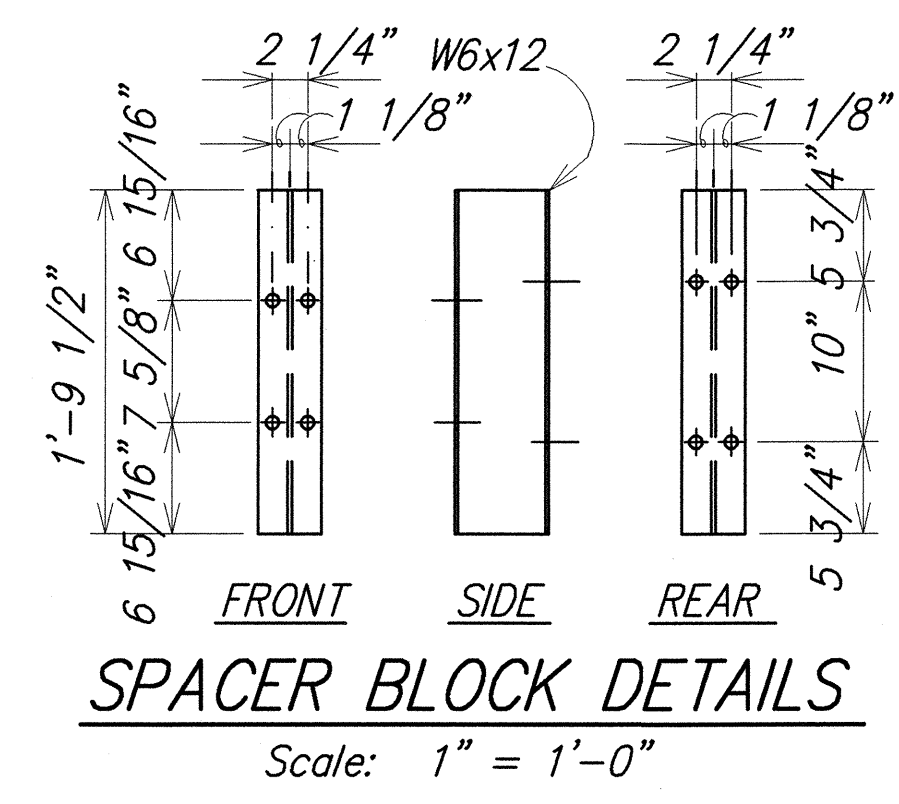
RAIL SPLICE



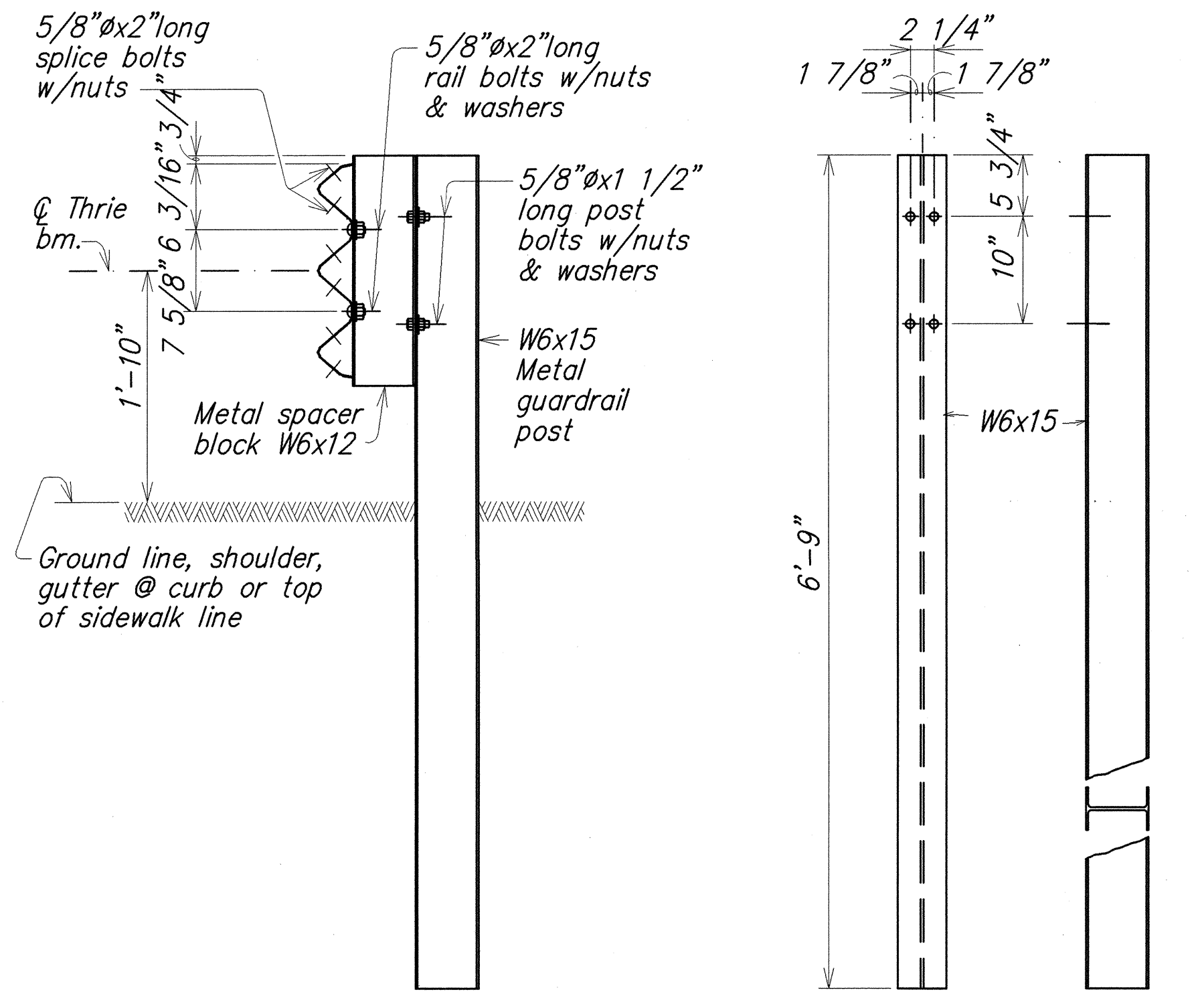
TRANSITION SECTION



SECTION THRU RAIL ELEMENT

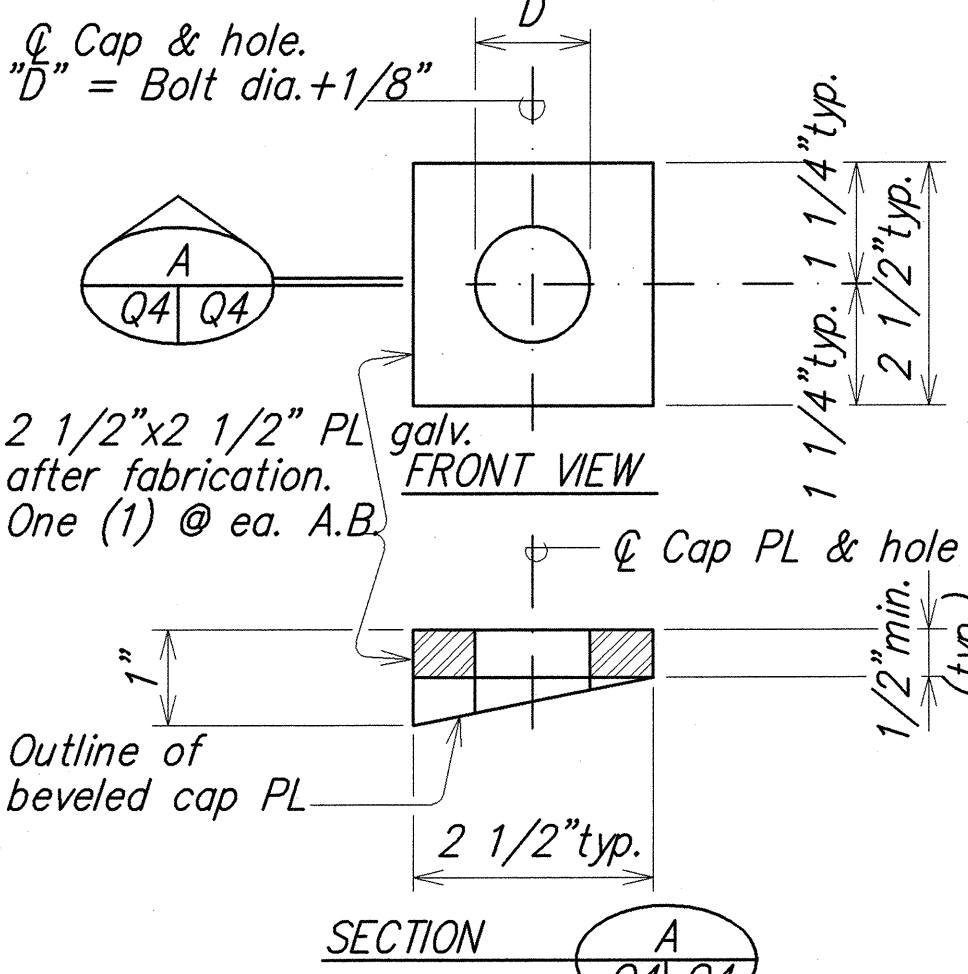


SPACER BLOCK DETAILS

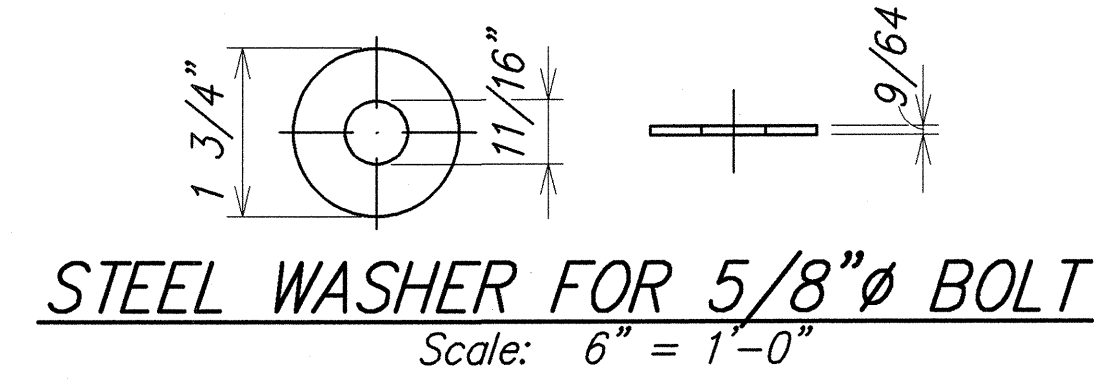


TYPICAL SECTION METAL GUARDRAIL ON METAL POST WITH METAL SPACER BLOCK

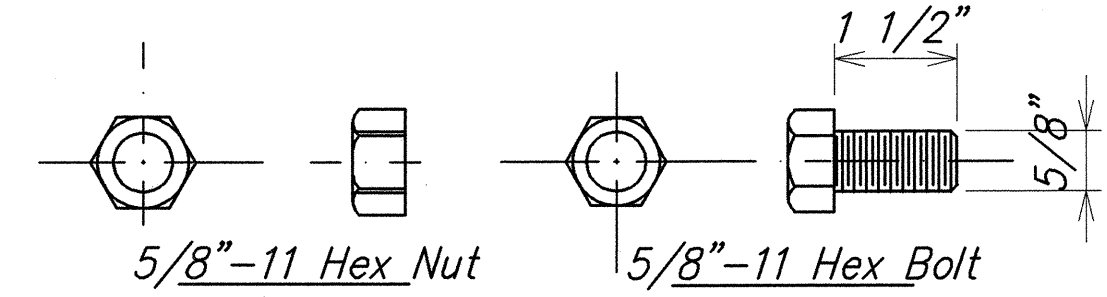
POST DETAILS



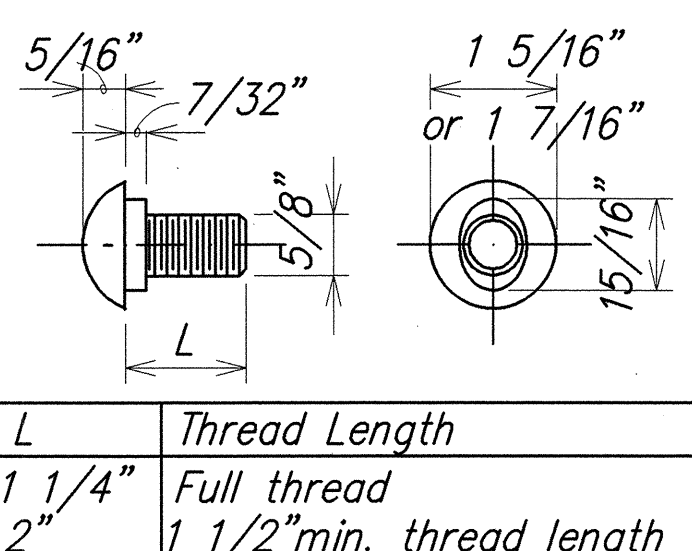
CAP (BEARING) PLATE DETAIL



STEEL WASHER FOR 5/8"Ø BOLT



5/8"Ø HEX BOLT & NUT



5/8"Ø BUTTON HEAD BOLT & RECESS NUT

METAL GUARDRAIL TYPE 3 THRIE BEAM AND APPURTENANCES DETAILS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

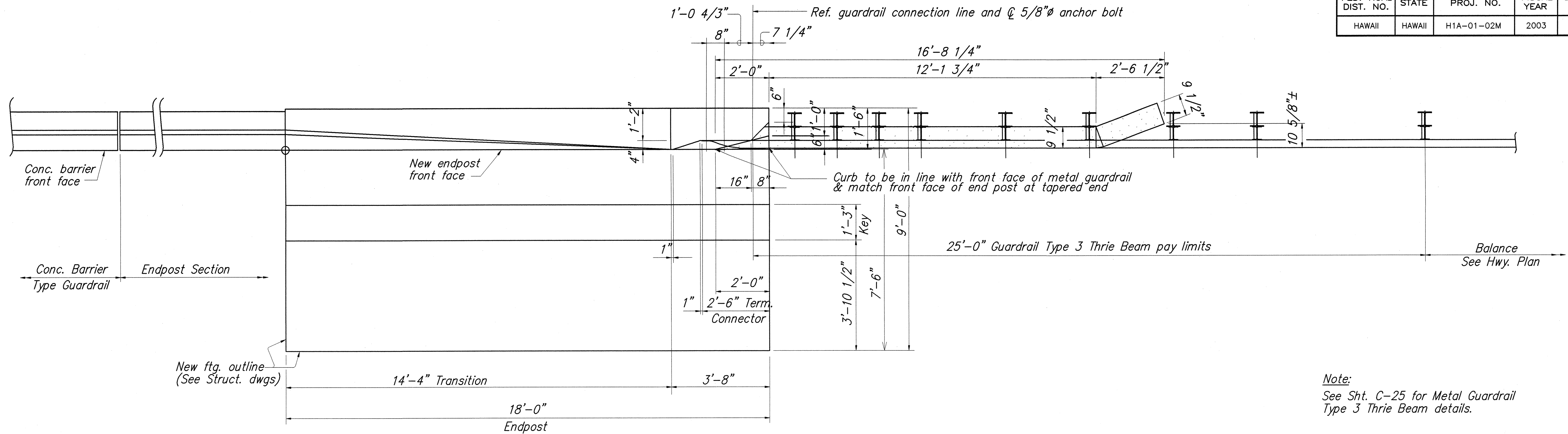
METAL GUARDRAIL TYPE 3 THRIE BEAM

INTERSTATE ROUTE H-1 REHABILITATION
Vicinity Of Makakilo Interchange
Project No. H1A-01-02M

Scale: As Noted Date: April 2003

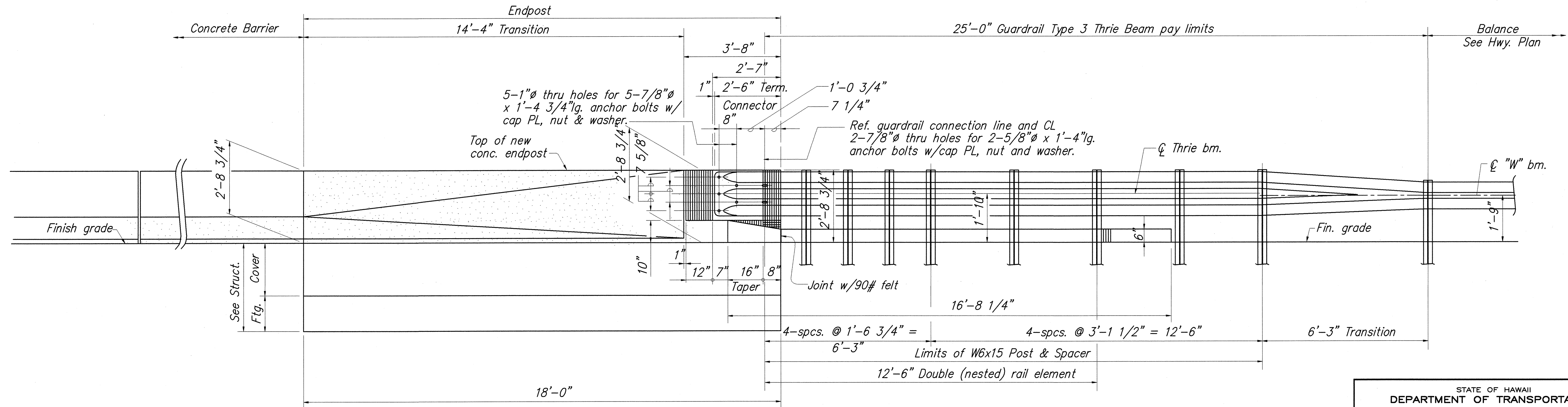
SHEET No. C-25 OF 42 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	H1A-01-02M	2003	28	88



PLAN
Scale: 1/2" = 1'-0"

Note:
See Sht. C-25 for Metal Guardrail Type 3 Thrie Beam details.



ELEVATION
Scale: 1/2" = 1'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	4/03
	DESIGNED BY	4/03
	CHECKED BY	4/03
	APPROVED BY	4/03

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

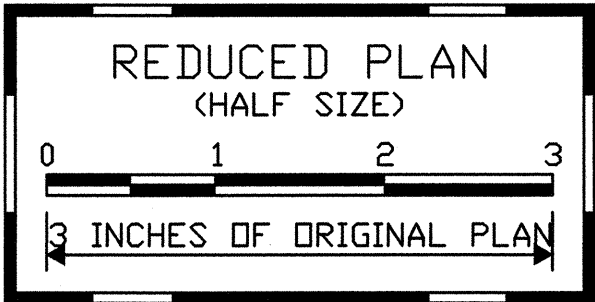
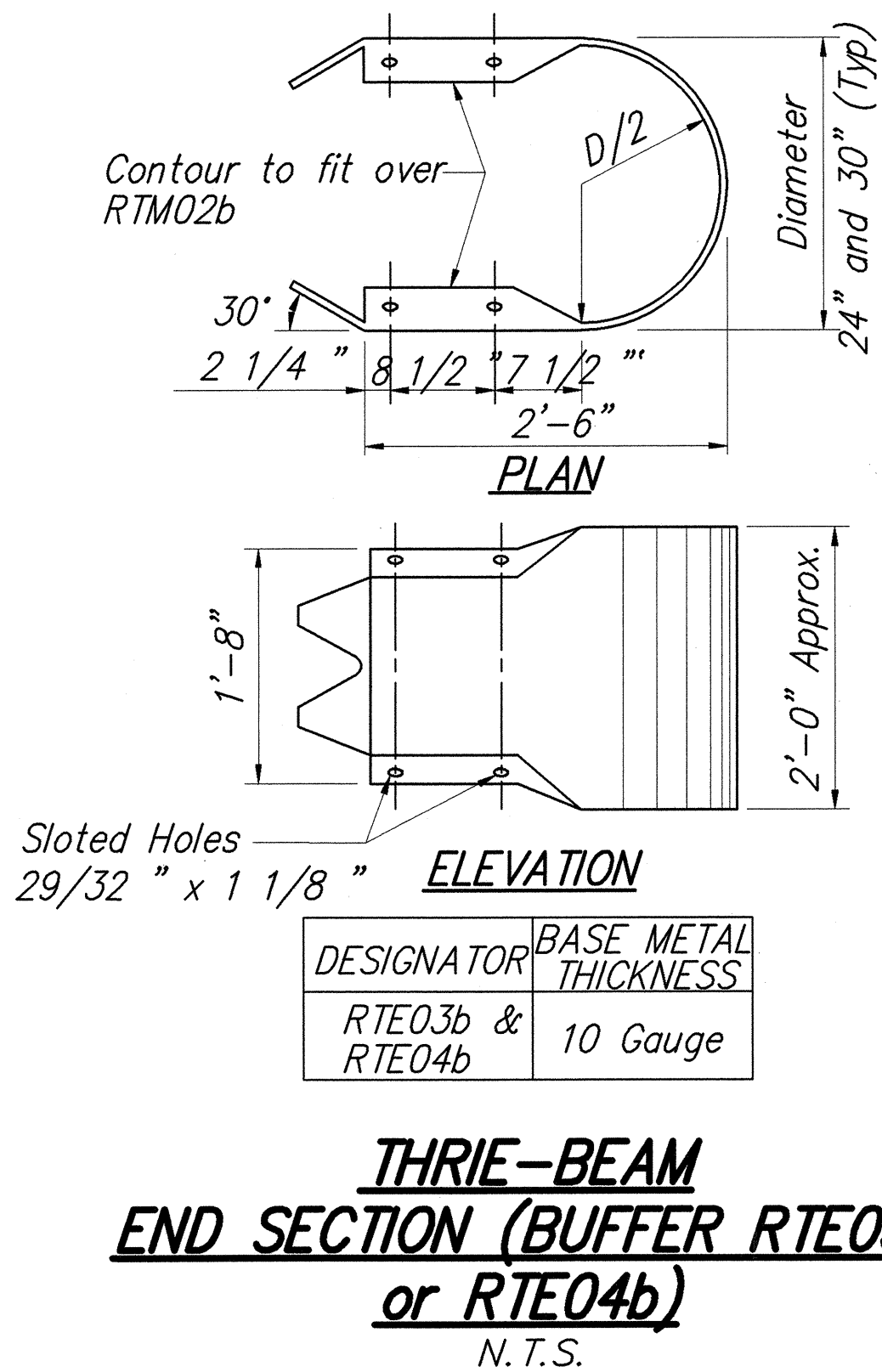
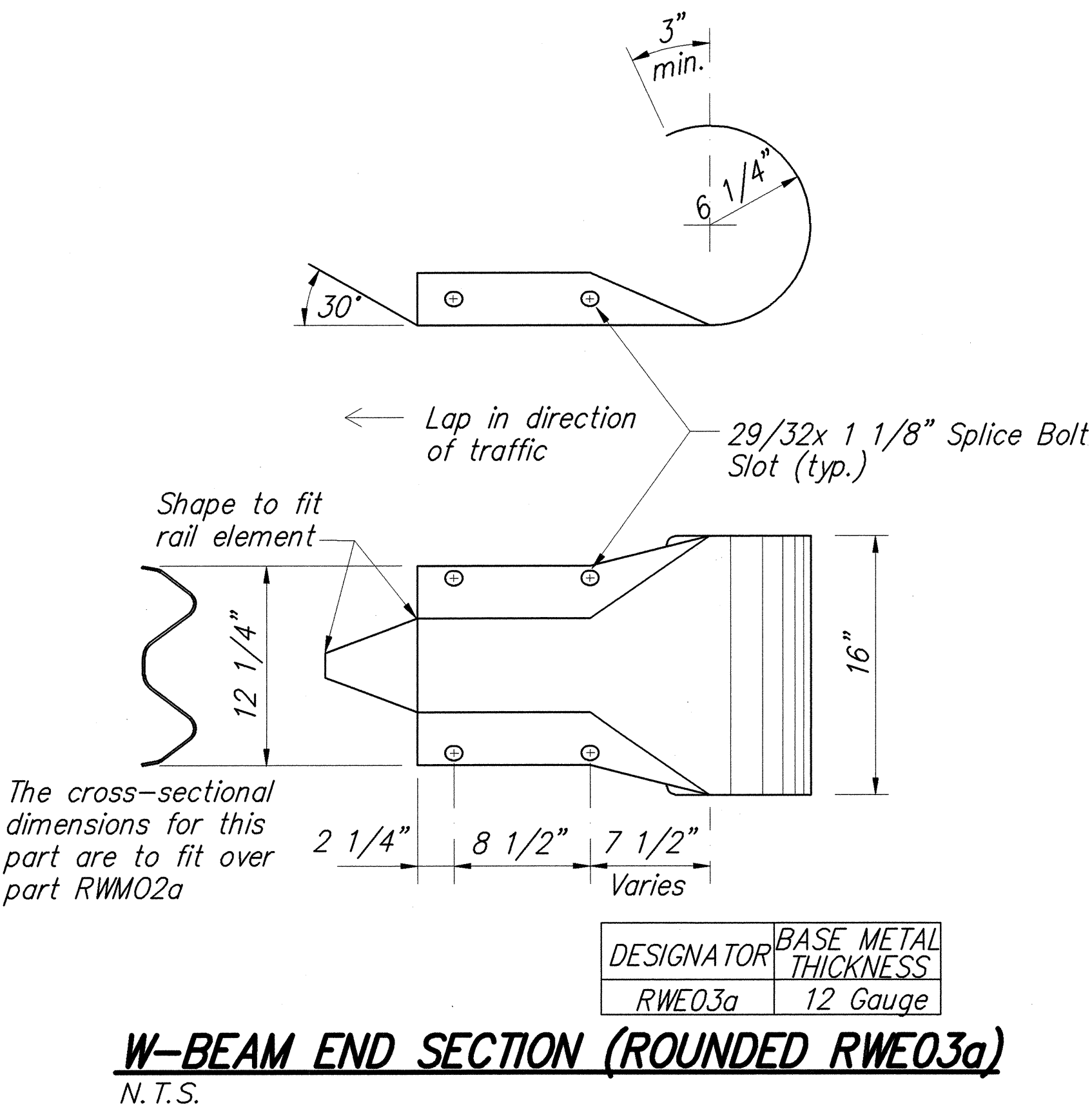
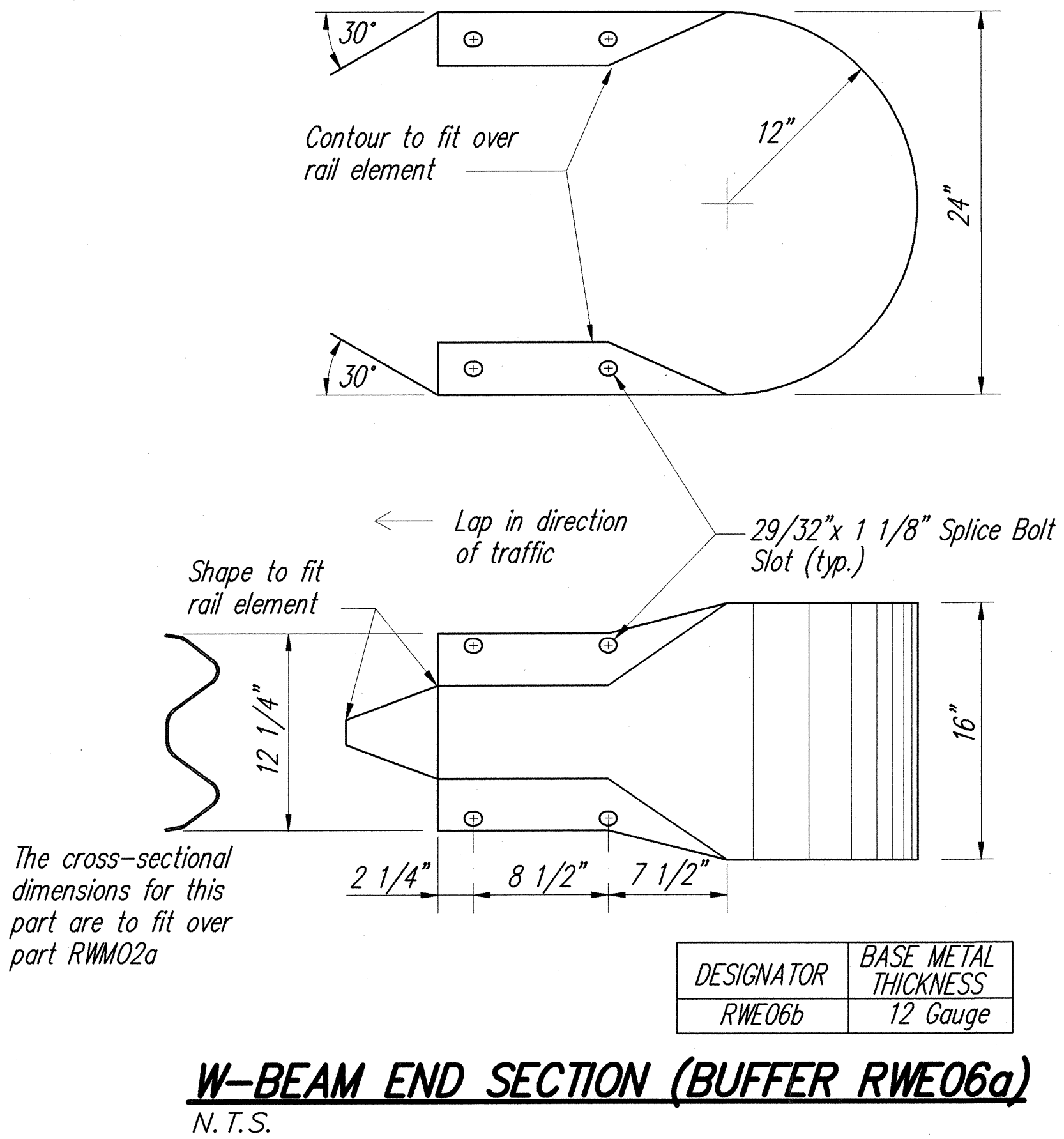
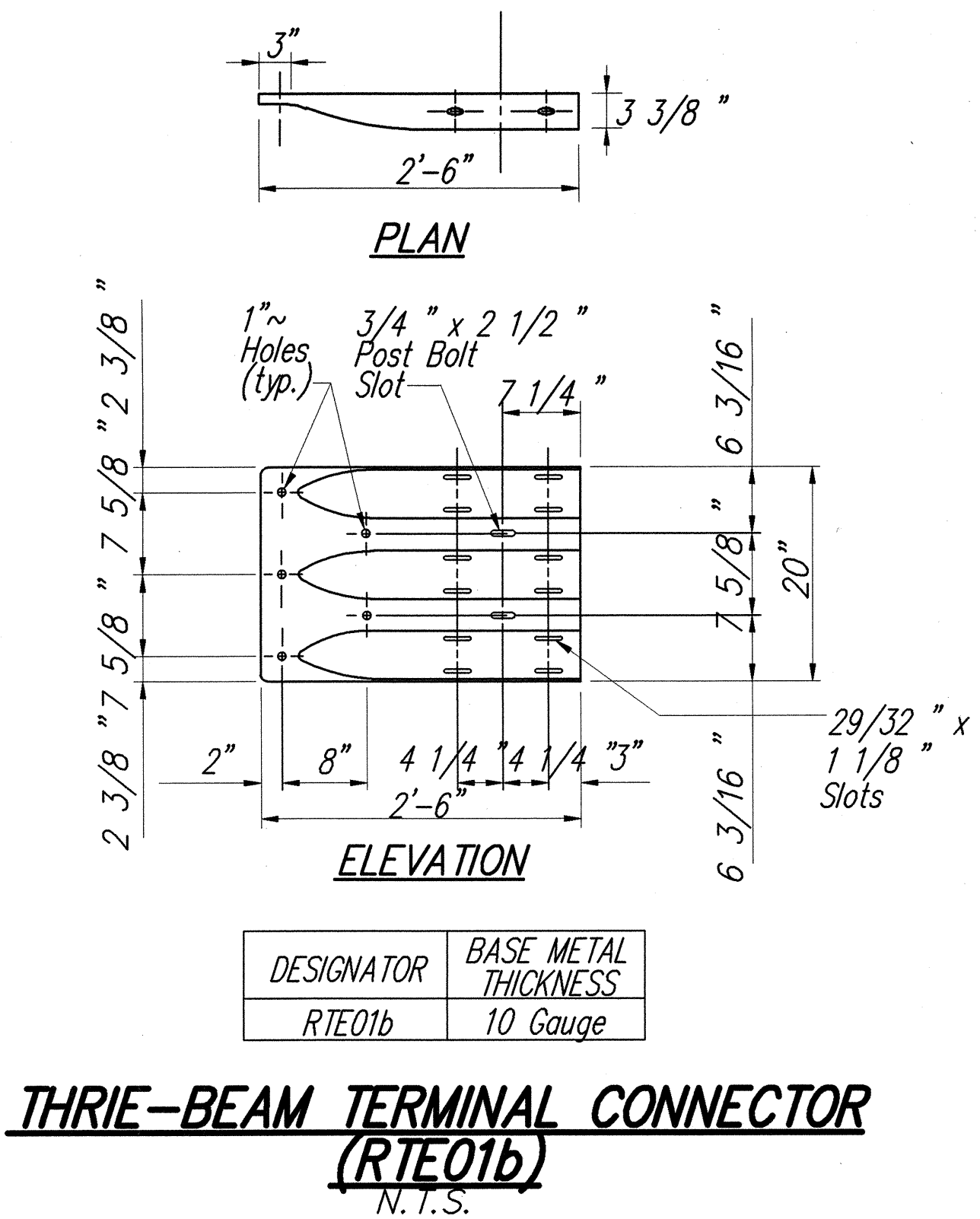
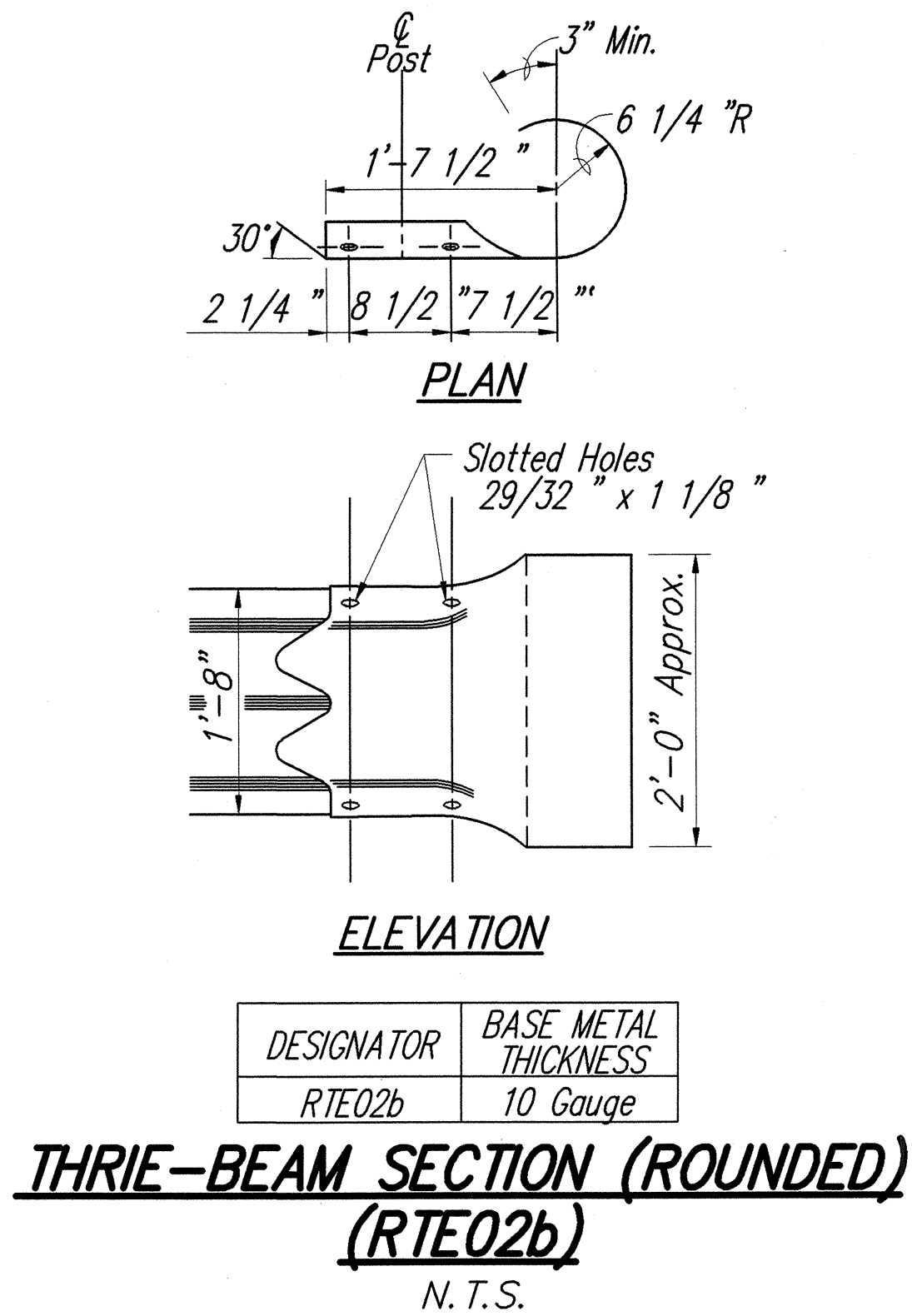
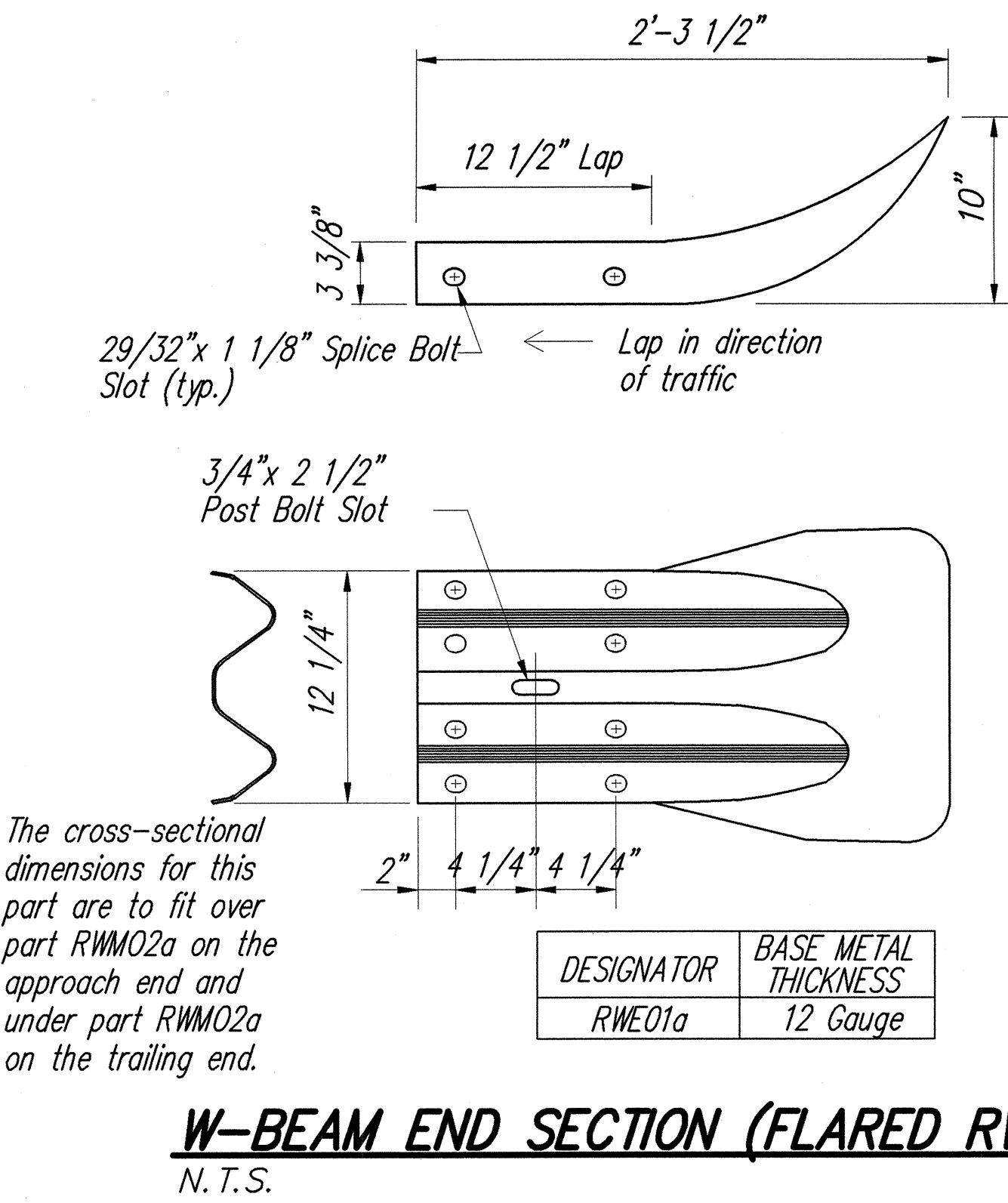
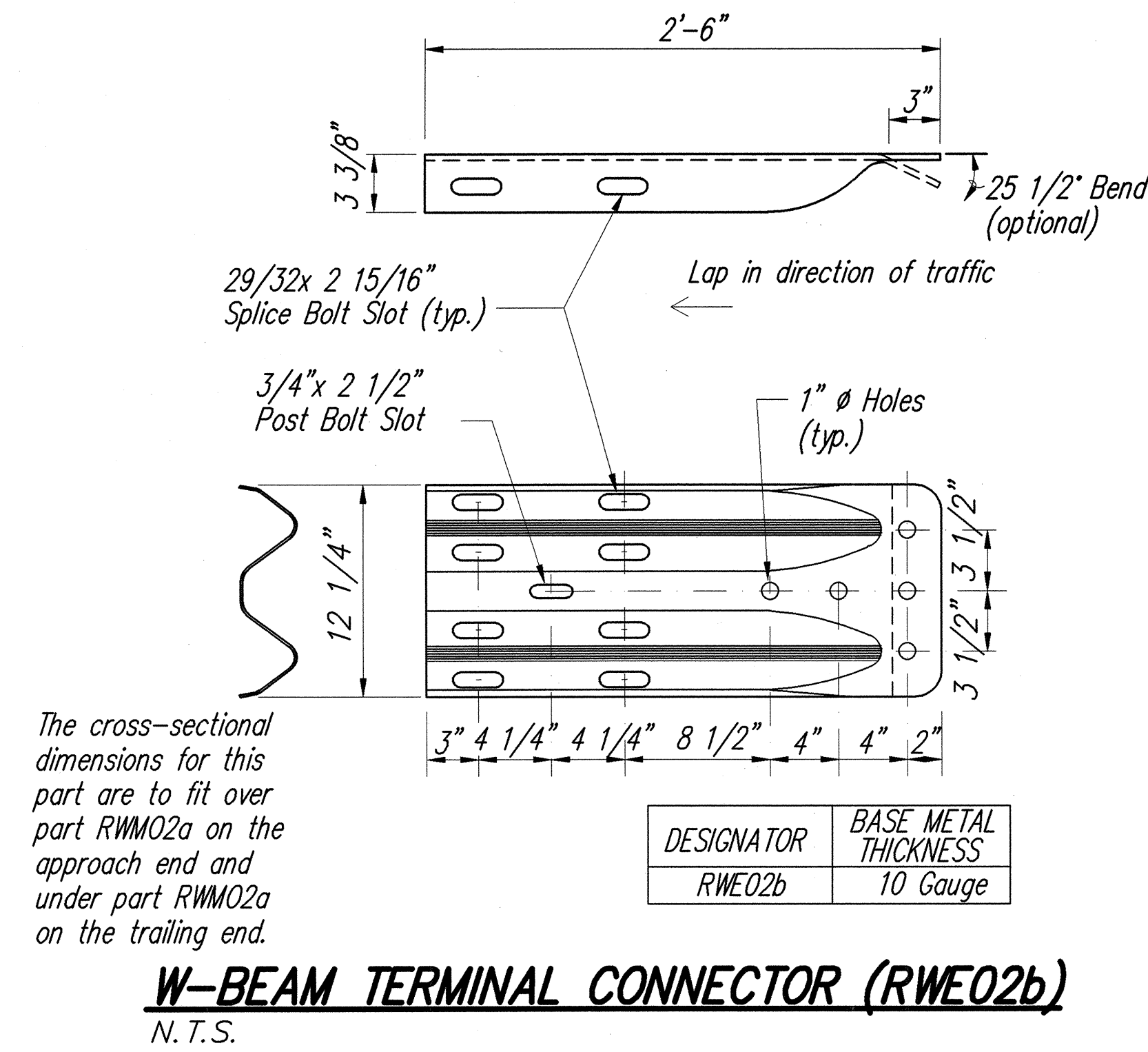
THRIE BEAM AND APPURTENANCES

INTERSTATE ROUTE H-1 REHABILITATION
Vicinity Of Makakilo Interchange
Project No. H1A-01-02M

Scale: As Noted Date: April 2003

SHEET No. C-26 OF 42 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	H1A-01-02M	2003	29	88



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

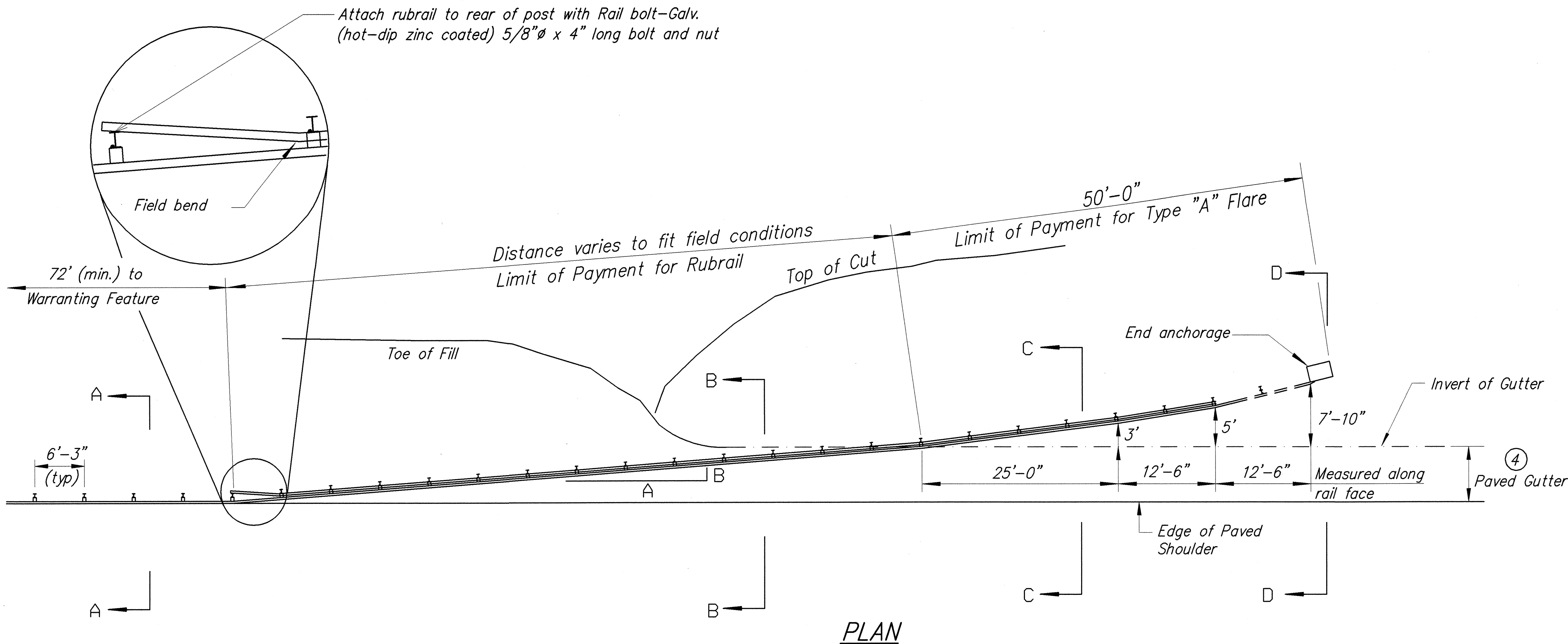
GUARDRAIL TERMINAL CONNECTIONS AND END SECTIONS
INTERSTATE ROUTE H-1 REHABILITATION
Vicinity Of Makakilo Interchange
Project No. H1A-01-02M
Scale: As Noted Date: April 2003
SHEET No. **C-27** OF **42** SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	4/02
	DESIGNED BY	4/02
	CHECKED BY	4/02
	NO.	

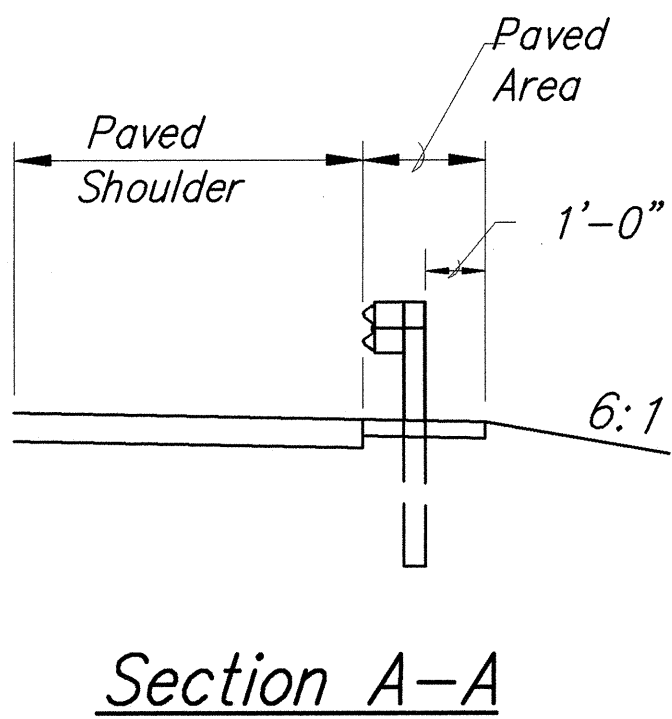
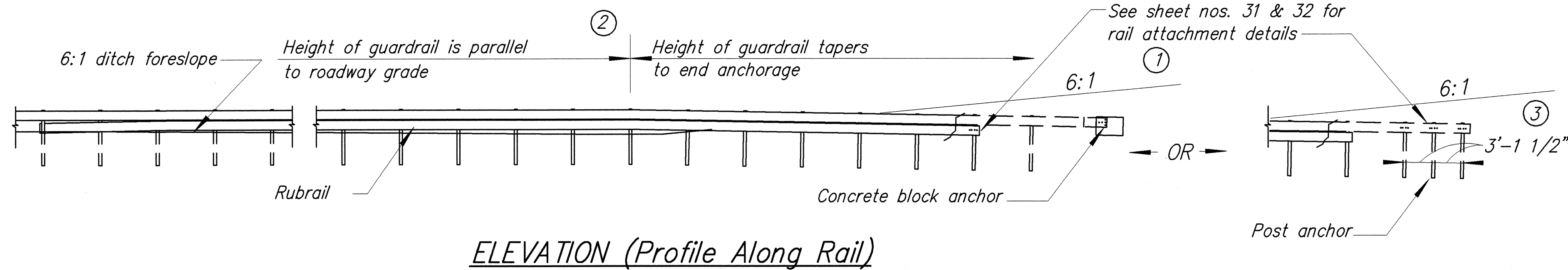
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	H1A-01-02M	2003	30	88

GENERAL NOTES

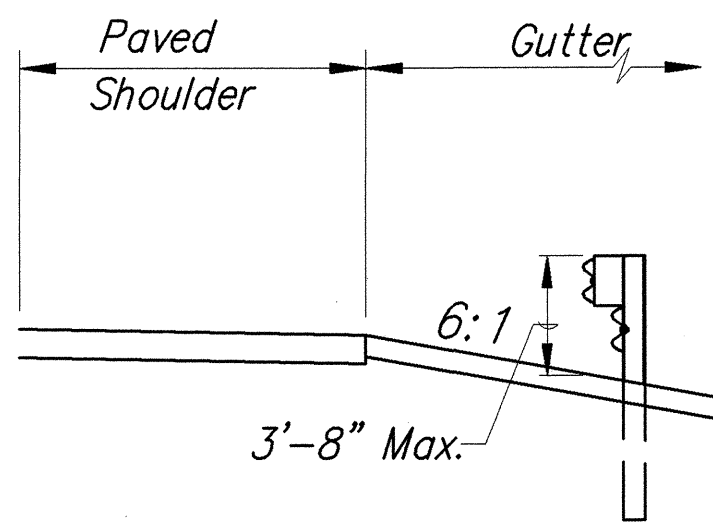
1. A 6:1 or flatter slope is desirable. However, a steeper or flatter existing slope may be used.
2. Height of guardrail may be tapered down in elevation to maintain 3'-8" maximum height.
3. All posts are 8'-0" in length from where the guardrail flares away from the shoulder back to the post anchor. Posts for the post anchor are 6'-0" long.
4. Variable Paved Gutter offsets may be used to fit field conditions.
5. The Guardrail Posts shall be located away from the gutter/swale invert.
6. All fasteners, posts, blocks and rail elements 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-AGCARTBA Joint Cooperative Committee.



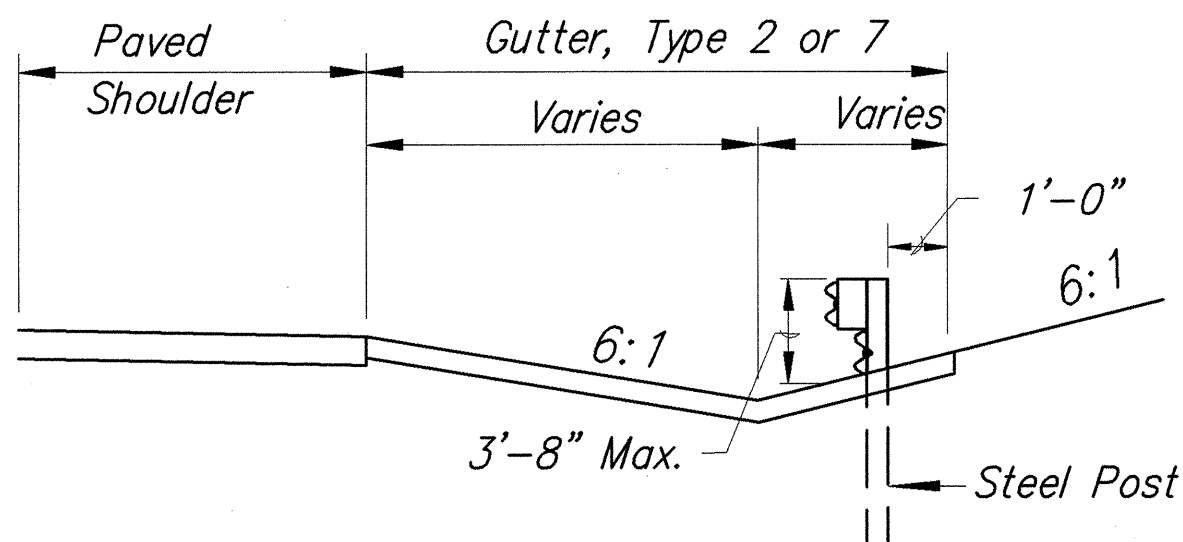
Design speed mph	a:b
68	15:1
62	13:1
56	12:1
50	11:1
43	10:1
37	9:1
31	7:1



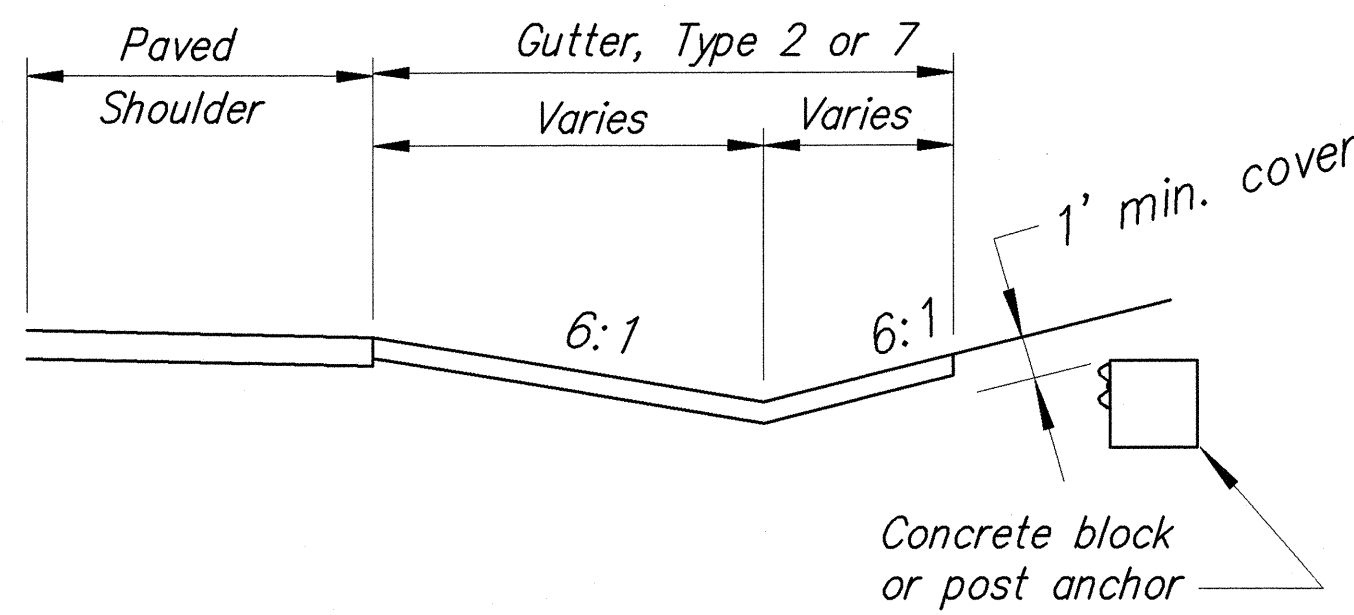
Section A-A



Section B-B
(With Rubrail)



Section C-C
(With Rubrail)



Concrete block
or post anchor



BACKSLOPE ANCHOR TERMINAL (WITH 6:1 PAVED GUTTER AND
TYPE "A" FLARE)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

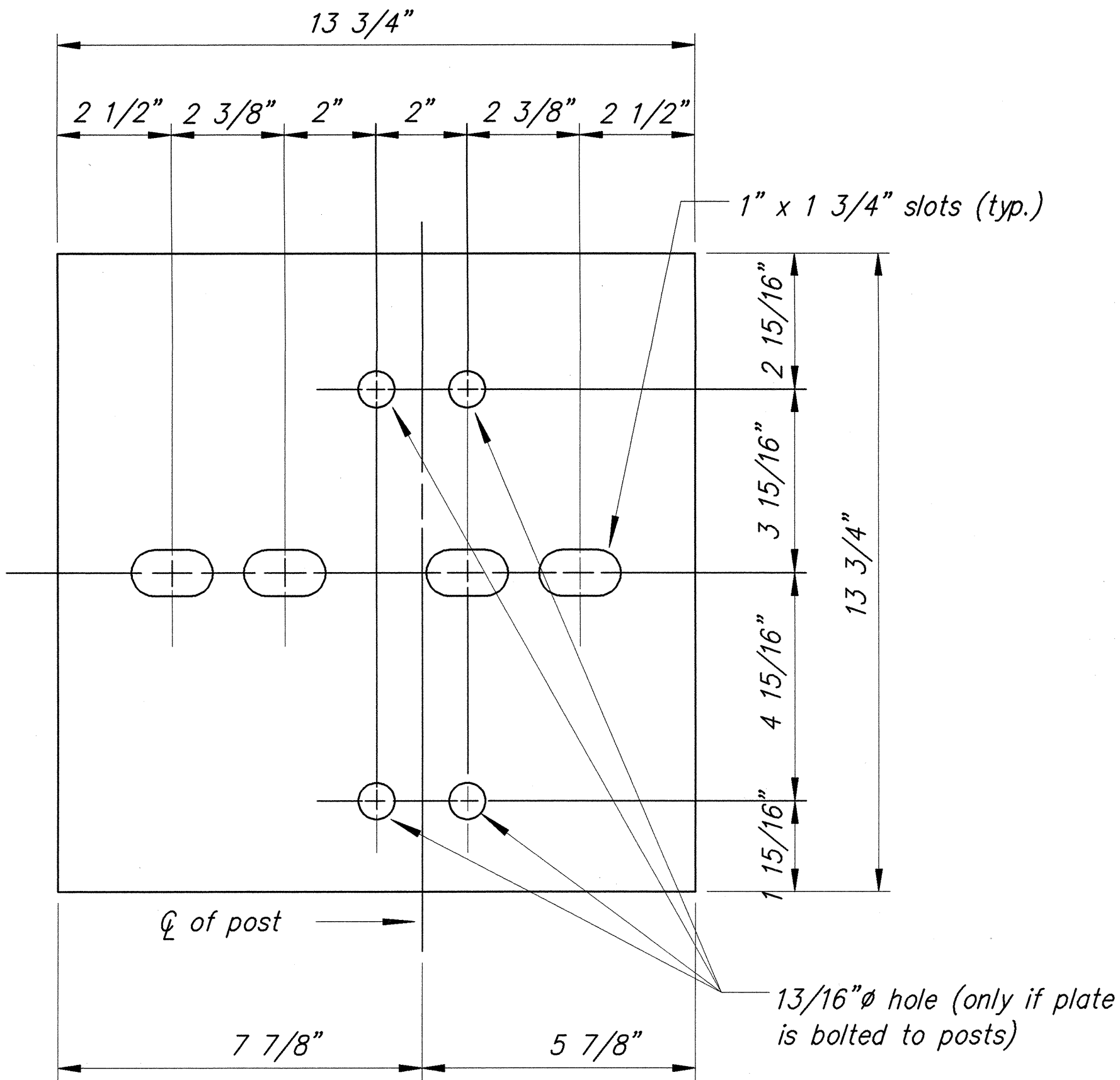
TYPE "A" FLARE - 1

INTERSTATE ROUTE H-1 REHABILITATION
Vicinity Of Makakilo Interchange
Project No. H1A-01-02M

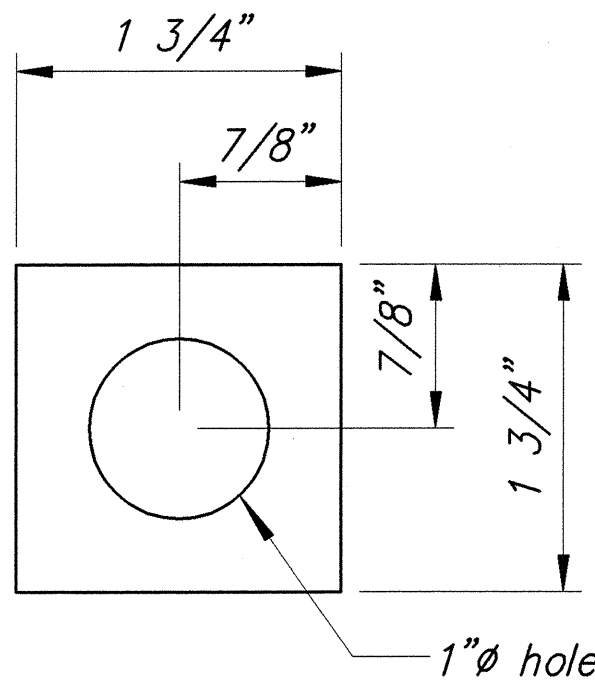
Scale: As Noted Date: April 2003
SHEET No. C-28 OF 42 SHEETS

ORIGINAL PLAN	DATE
SURVEY PLOTTED BY	DATE
DRAWN BY	DATE
DESIGNED BY	DATE
CHECKED BY	DATE
NO.	

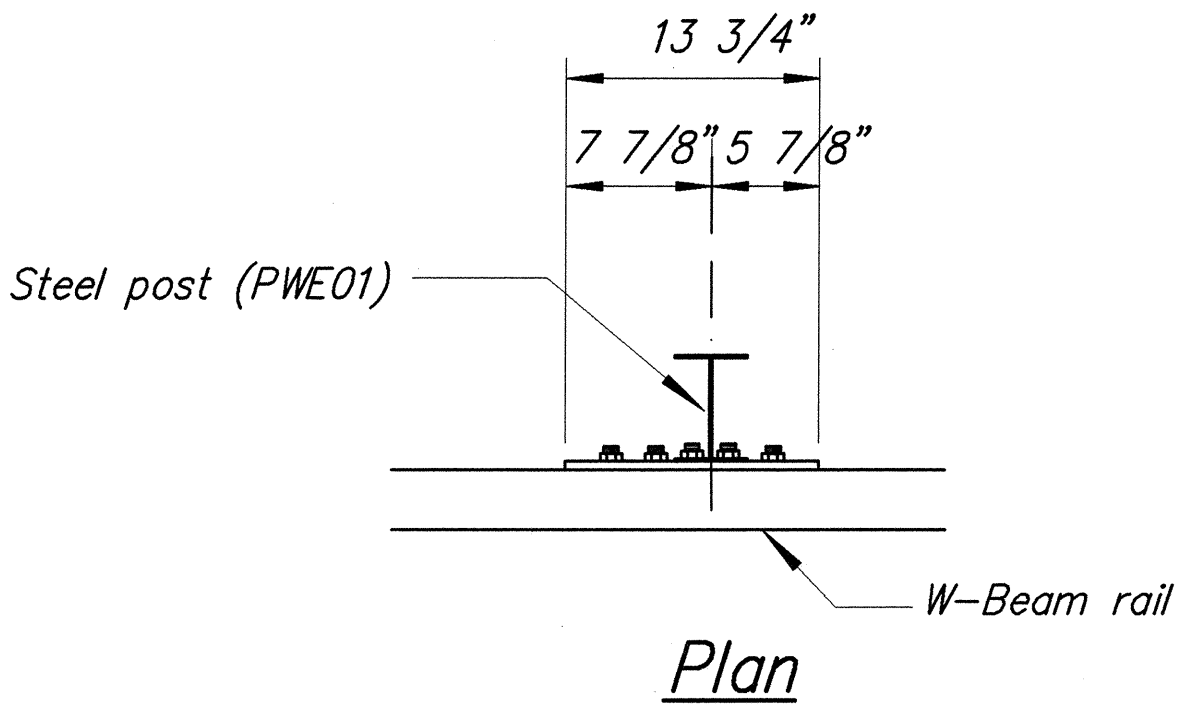
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	H1A-01-02M	2003	31	88



Steel Plate – 1/2"
(Hot-dip Zinc Coated Galvanized
Welded or Bolted to Post)

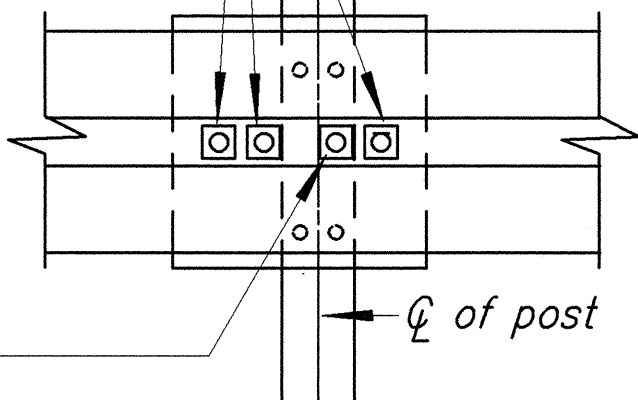


Square Washer
(3/16" Thick – Hot-dip
Zinc Coated Galvanized)

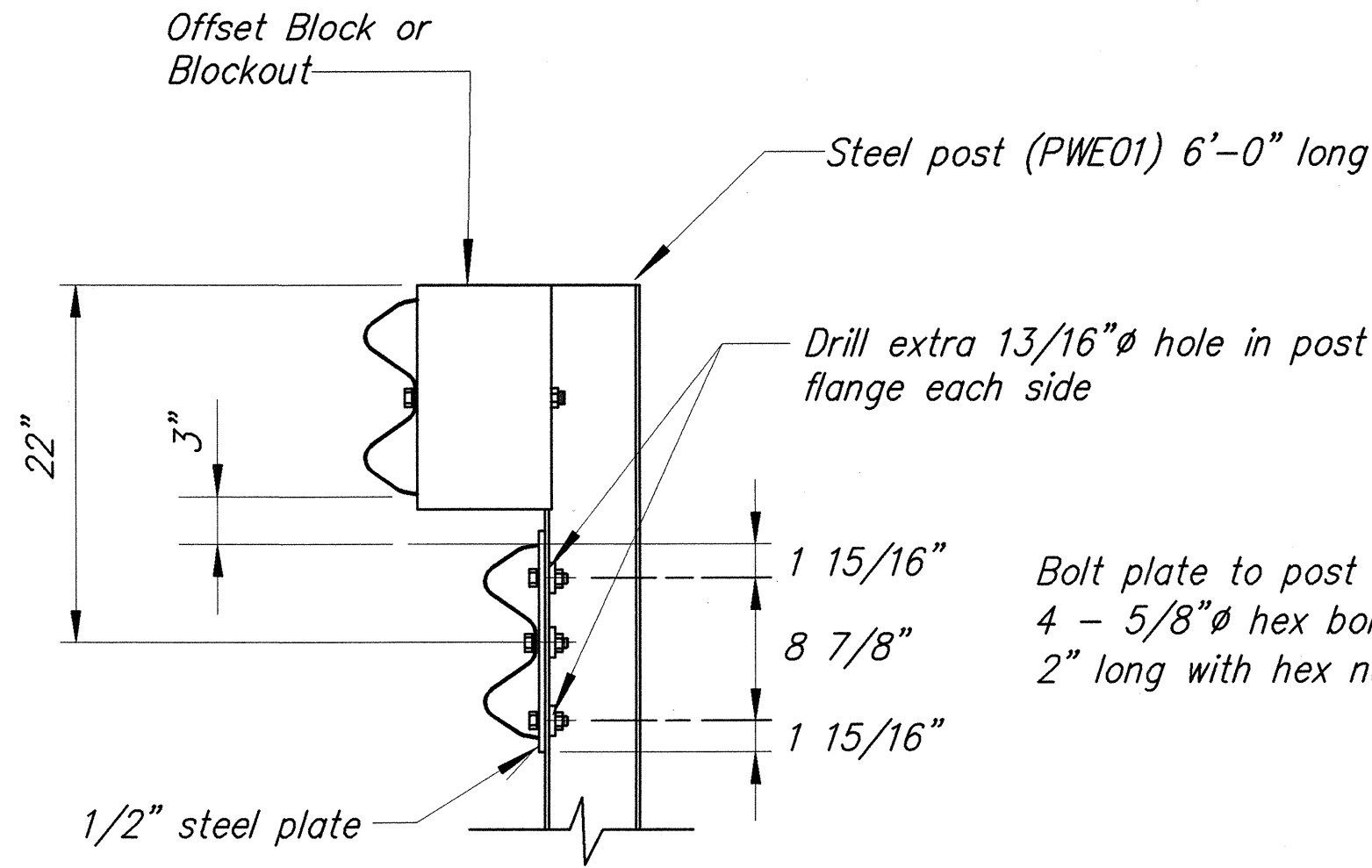


3 – 7/8 ϕ holes to be field drilled in rail
and attached to steel plate with 7/8 ϕ hex
bolts 1 15/16" long with square washer

1" ϕ holes to be field drilled in rail
and through post flange. Attach to
steel plate with 7/8 ϕ hex bolts
2" long with square washer



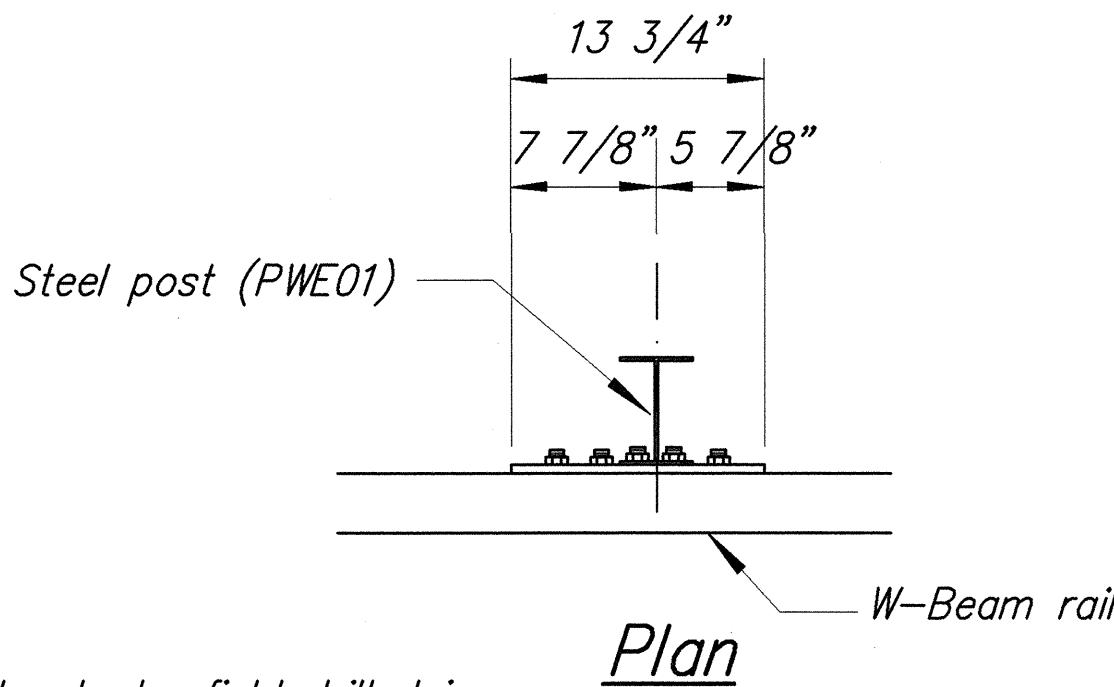
Front View



Bolt plate to post with
4 – 5/8" ϕ hex bolts
2" long with hex nuts

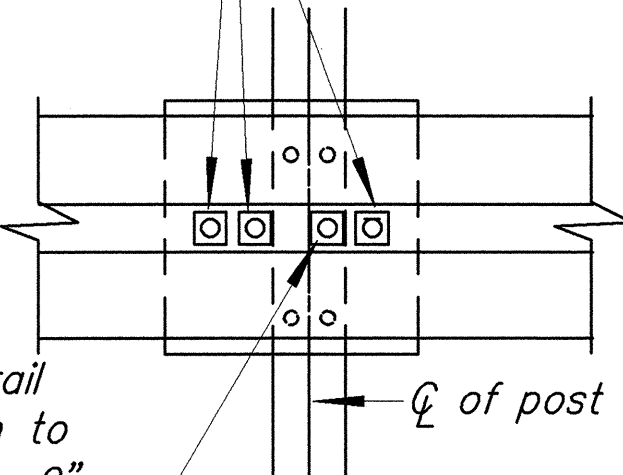
Elevation

RUBRAIL ANCHOR DETAILS

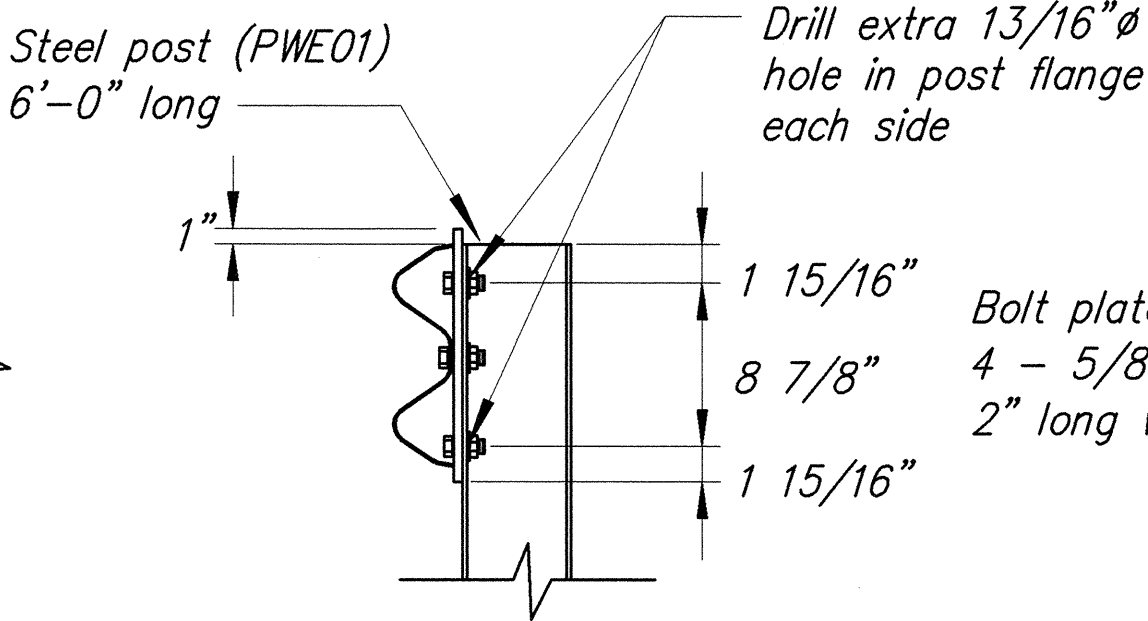


3 – 7/8 ϕ holes to be field drilled in
rail and attached to steel plate with
7/8 ϕ hex bolts 1 15/16" long with
square washer

1" ϕ holes to be field drilled in rail
and through post flange. Attach to
steel plate with 7/8 ϕ hex bolts 2"
long with square washer



Front View



Bolt plate to post with
4 – 5/8" ϕ hex bolts
2" long with hex nuts

Elevation

POST ANCHOR DETAILS

BACKSLOPE ANCHOR TERMINAL END ANCHORAGE DETAILS
TYPE "A" FLARE)



Note
All fasteners, posts, blocks and rail
elements 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-AGCARTBA
Joint Cooperative Committee.

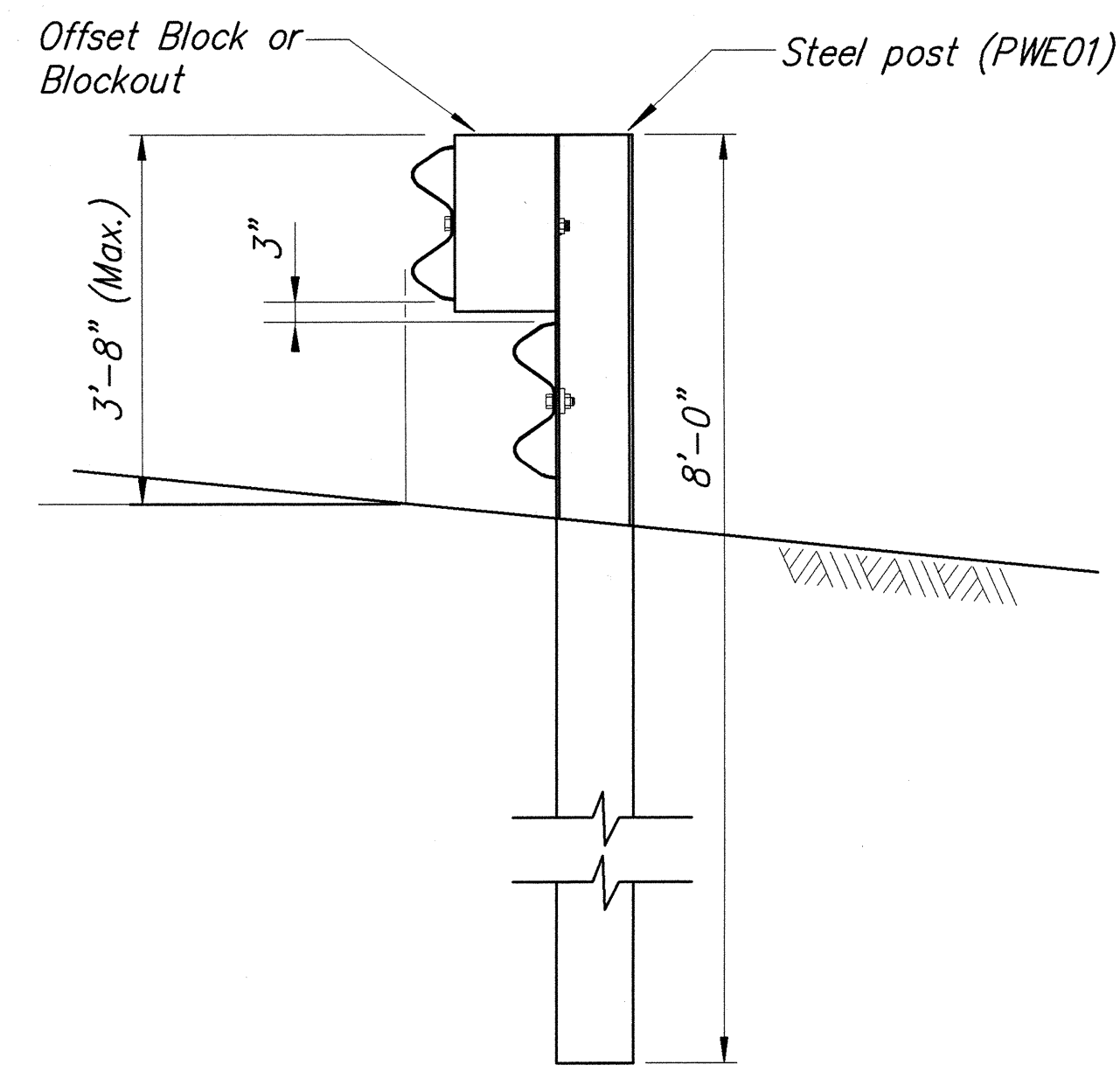
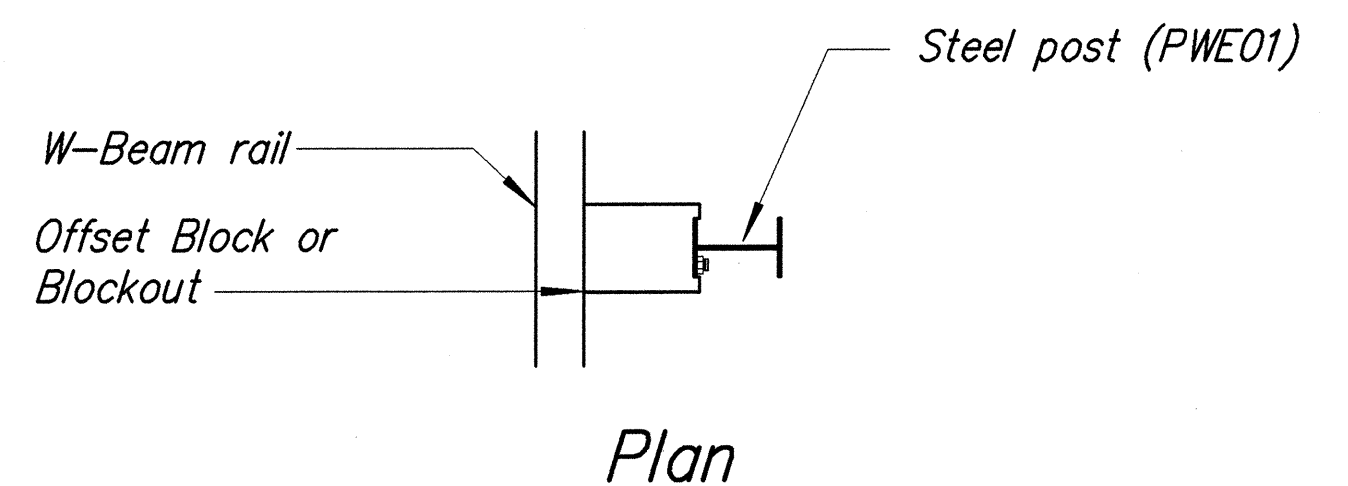
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPE "A" FLARE – 2
INTERSTATE ROUTE H-1 REHABILITATION
Vicinity Of Makakilo Interchange
Project No. H1A-01-02M

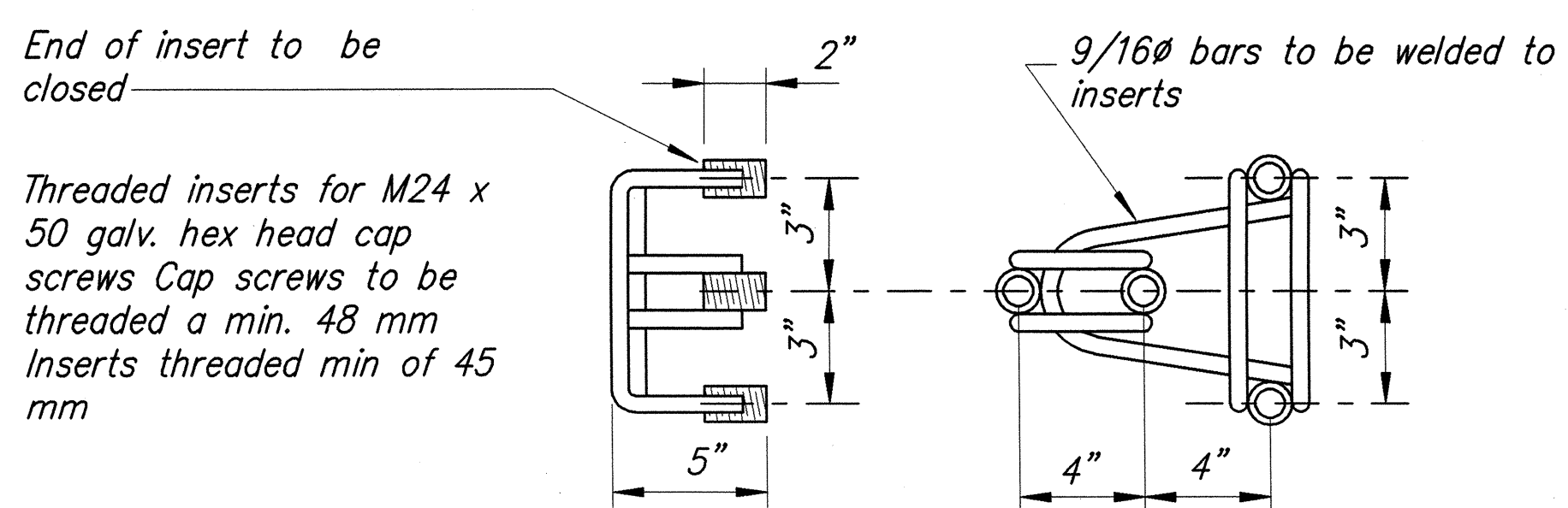
Scale: As Noted Date: April 2003

SHEET No. C-29 OF 42 SHEETS

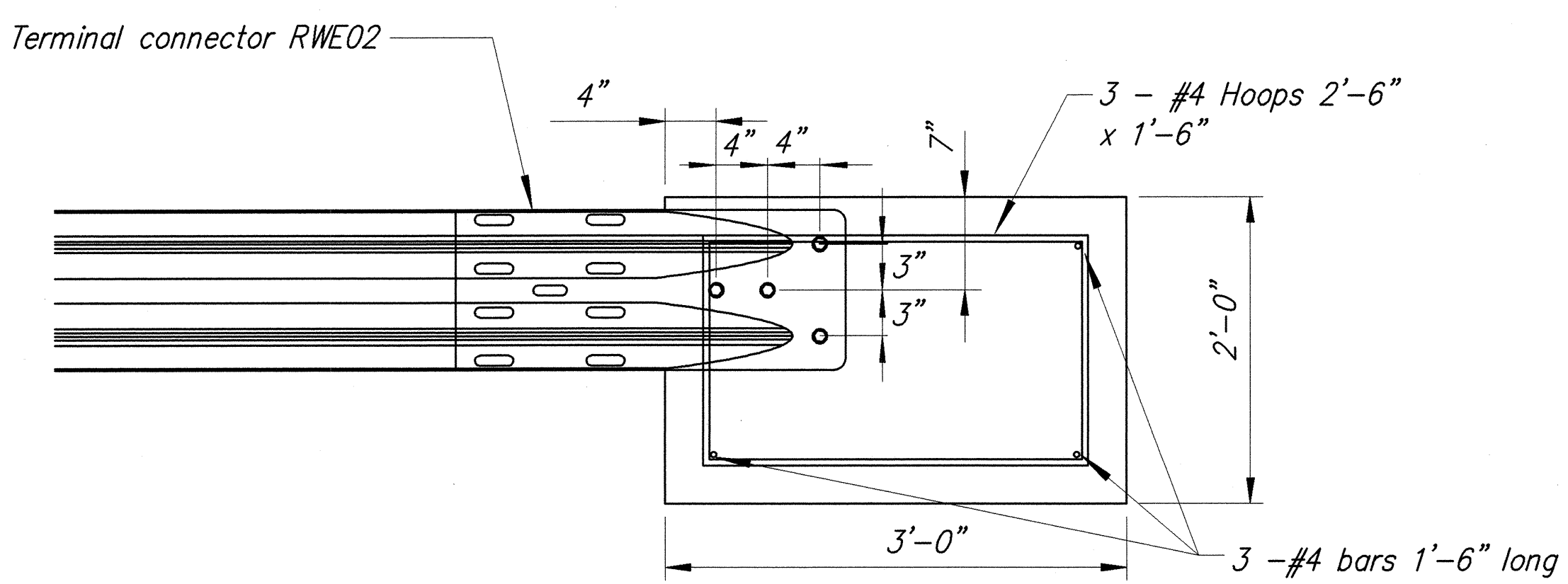
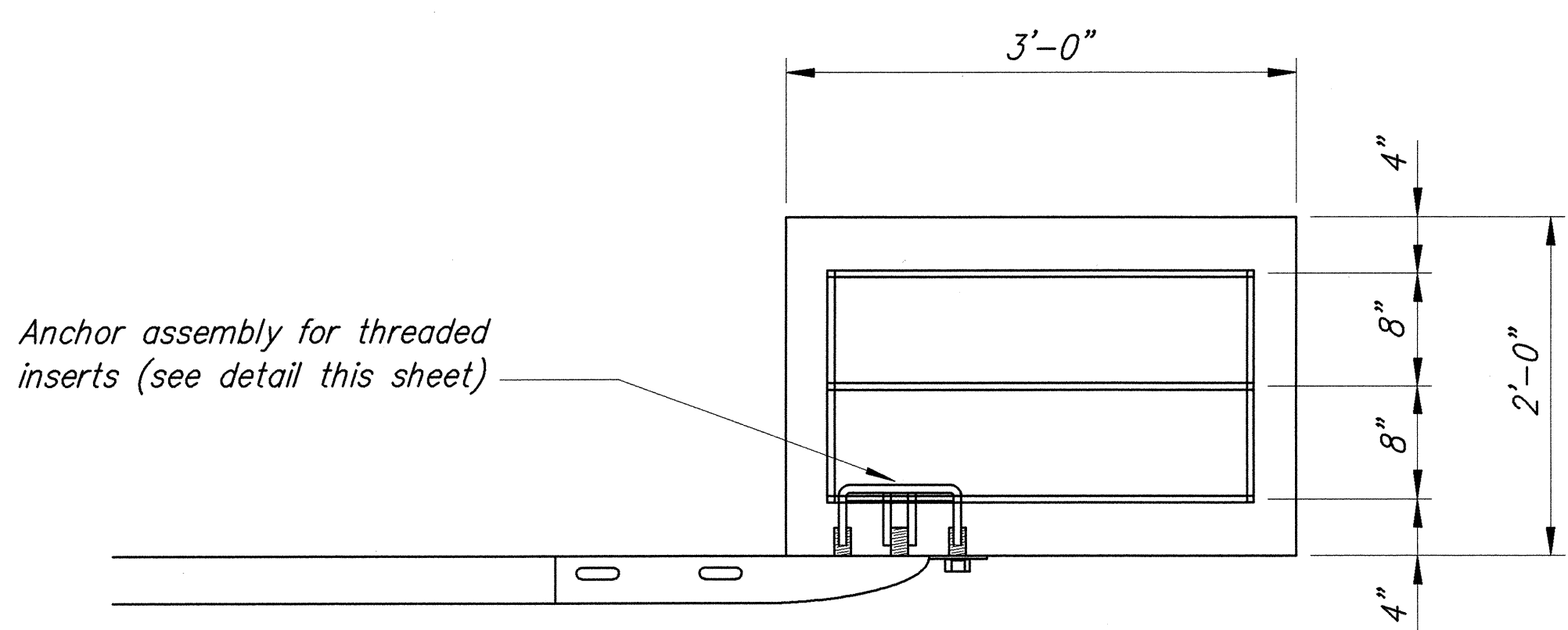
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	H1A-01-02M	2003	32	88



STEEL POST GUARDRAIL
WITH RUBRAIL

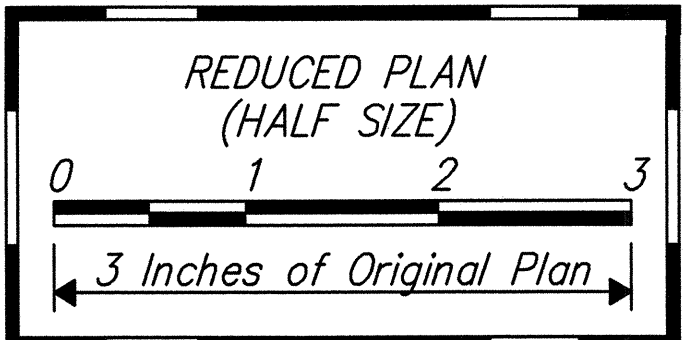


ANCHOR ASSEMBLY
CONCRETE BLOCK ANCHOR



CONCRETE BLOCK ANCHOR
(2' X 2' X 3')

BACKSLOPE ANCHOR TERMINAL END ANCHORAGE DETAILS
TYPE "A" FLARE)



Note:

All fasteners, posts, blocks and rail elements 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-AGCARTBA Joint Cooperative Committee.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	4/03
	DESIGNED BY	4/03
	CHECKED BY	4/03
		4/03

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPE "A" FLARE - 3

INTERSTATE ROUTE H-1 REHABILITATION
Vicinity Of Makakilo Interchange
Project No. H1A-01-02M

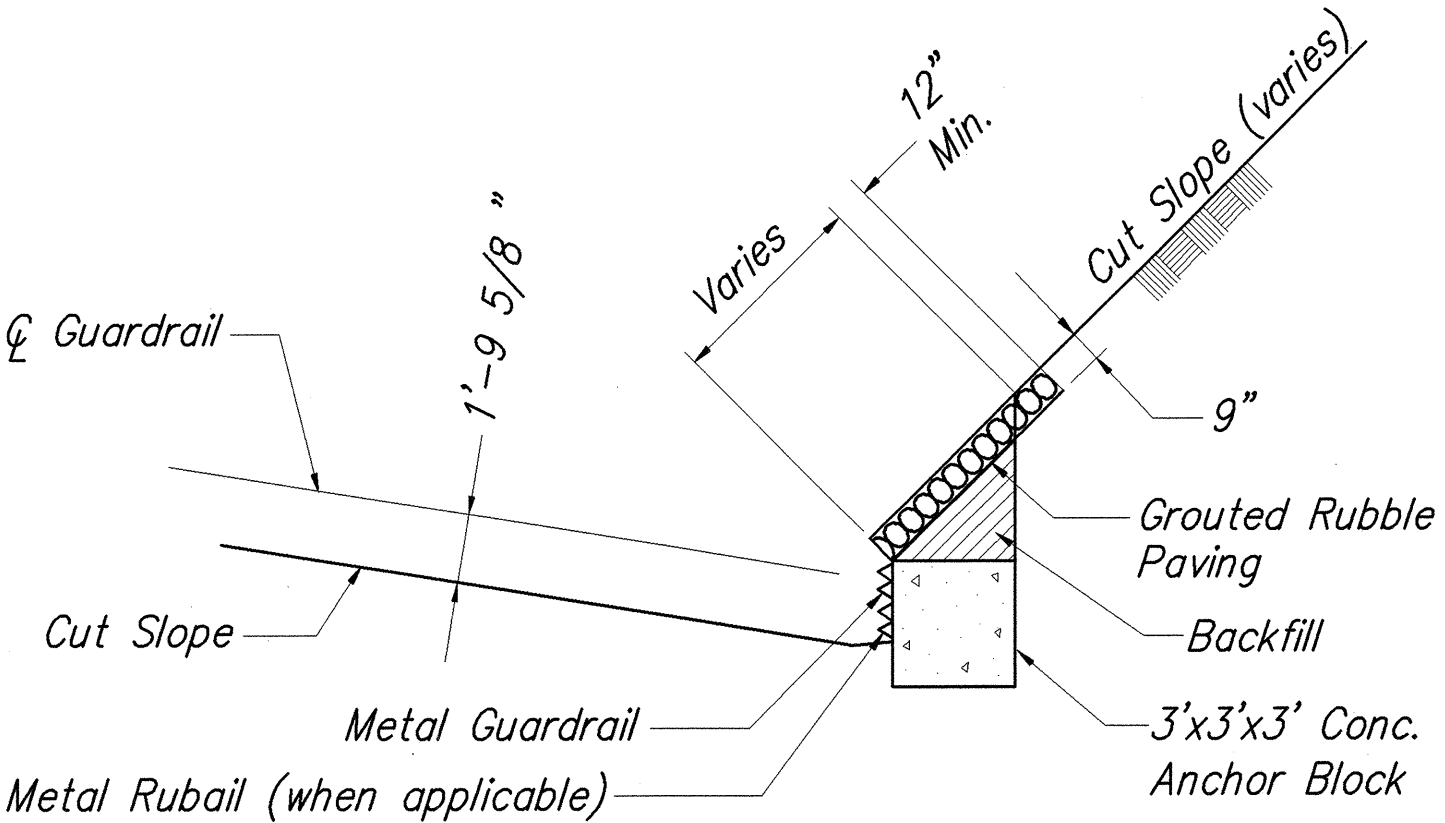
Scale: As Noted
Date: April 2003

SHEET No. C-30 OF 42 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	H1A-01-02M	2003	33	88

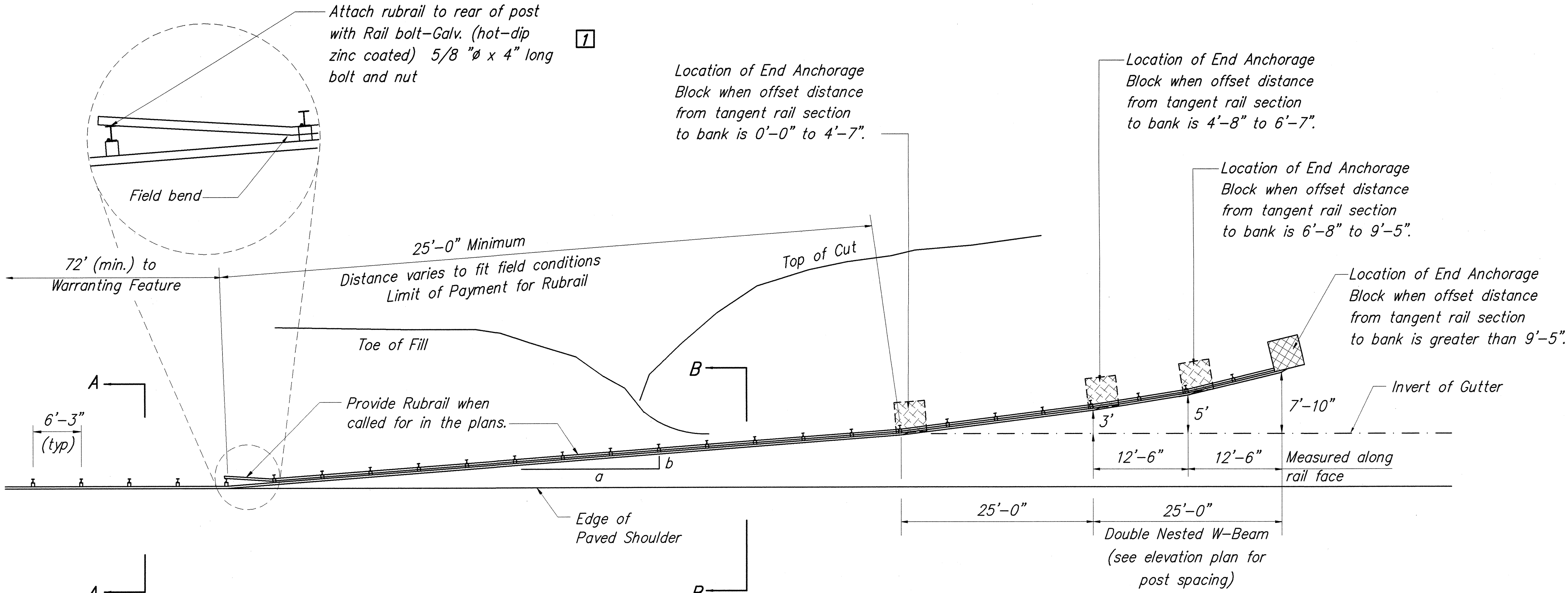
GENERAL NOTES

- All posts are 6'-0" in length within the 50'-0" pay limit for the Modified Type "A-1" Flare without rubrail.
- Whenever swales or a change in grade is encountered within the 50'-0" pay limit for the Modified Type "A-1" Flare, a rubrail shall be installed and all posts shall have a minimum embedment of 4'-0". Post lengths shall be adjusted to provide the minimum embedment.
- All fasteners, posts, blocks and rail elements 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-AGCARTBA Joint Cooperative Committee and HDOT's Statewide Guideline for Permanent Highway Safety Hardware.
- Limit of payment for Modified Type "A-1" Flare shall be 50'-0" from End Shoe including Rubrail (when applicable), Anchor Block and GRP work.
- Excavation, Anchor Block, Backfill and GRP work shall be considered incidental to the Modified Type "A-1" Flare.



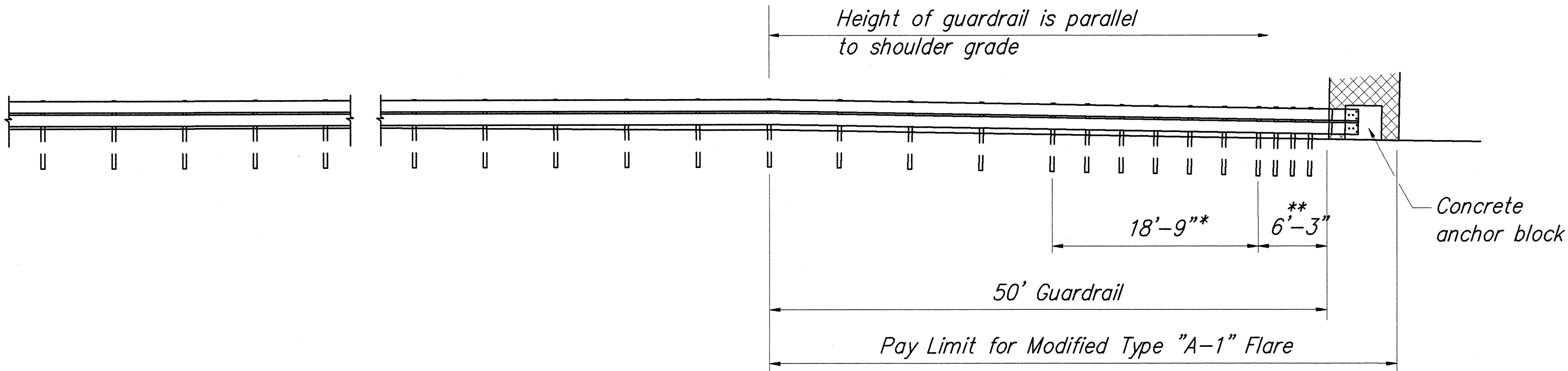
ANCHOR BLOCK IN CUT SECTION

6/4/03	1 Notes Revised
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
<u>MODIFIED TYPE "A-1" FLARE</u>	
<u>INTERSTATE ROUTE H-1 REHABILITATION</u> <u>Vicinity Of Makakilo Interchange</u> <u>Project No. H1A-01-02M</u>	
Scale: As Noted	Date: April 2003

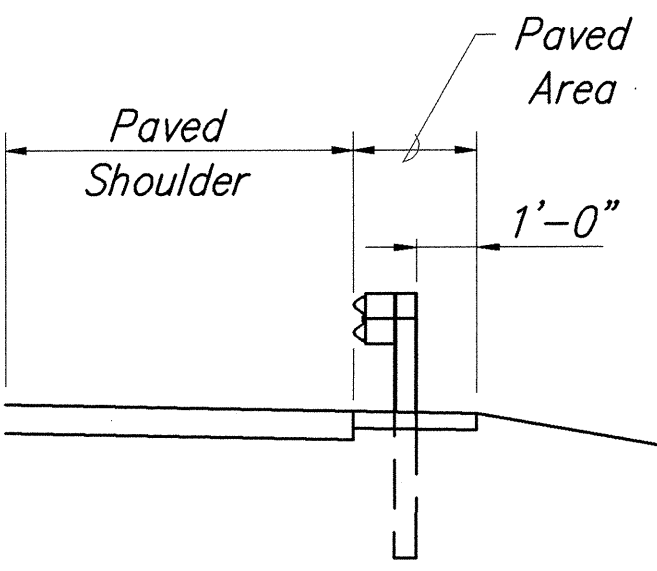


PLAN

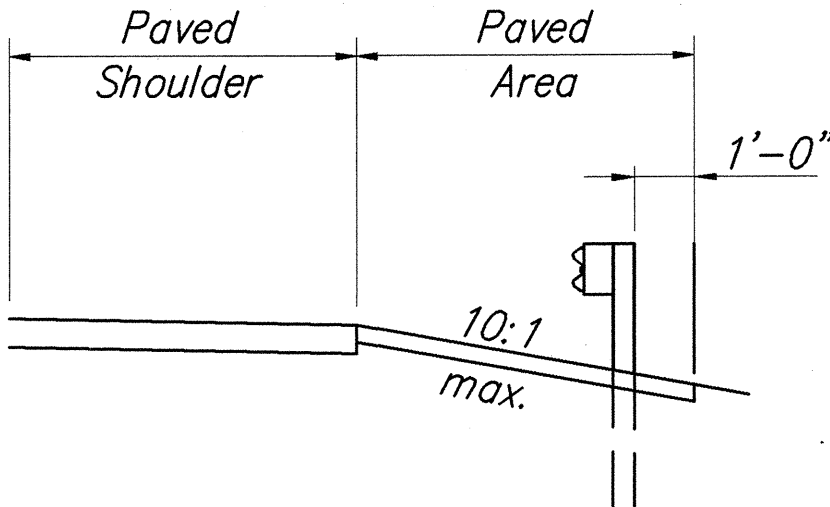
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62	13:1
56	12:1
50	11:1
43	10:1
37	9:1
31	7:1



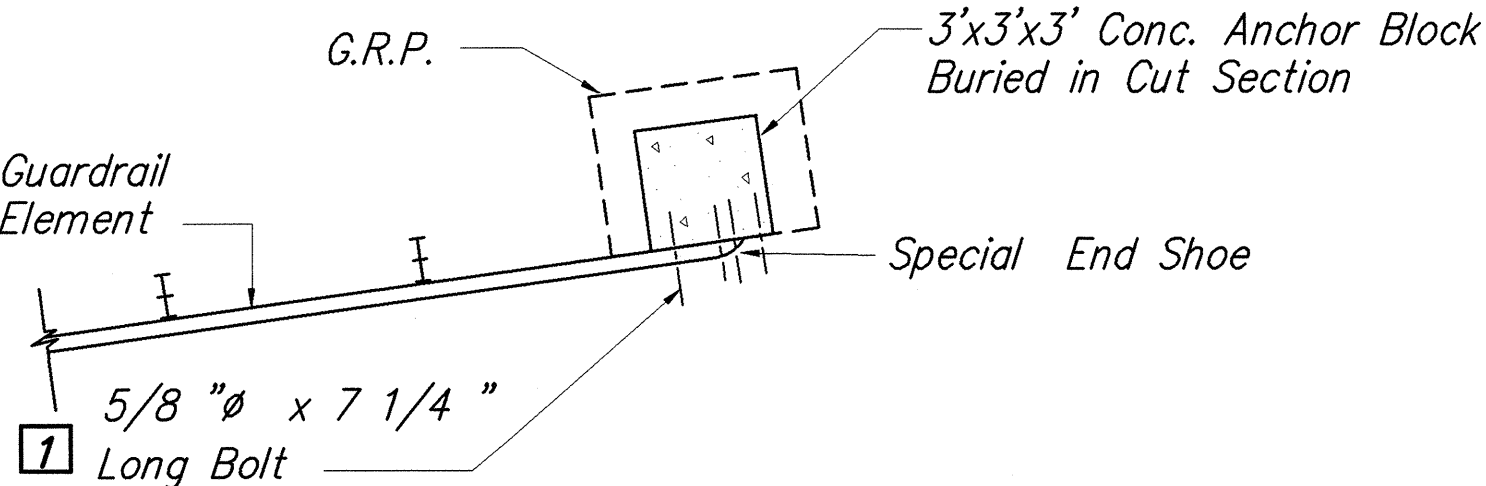
ELEVATION (Profile Along Rail)



Section A-A



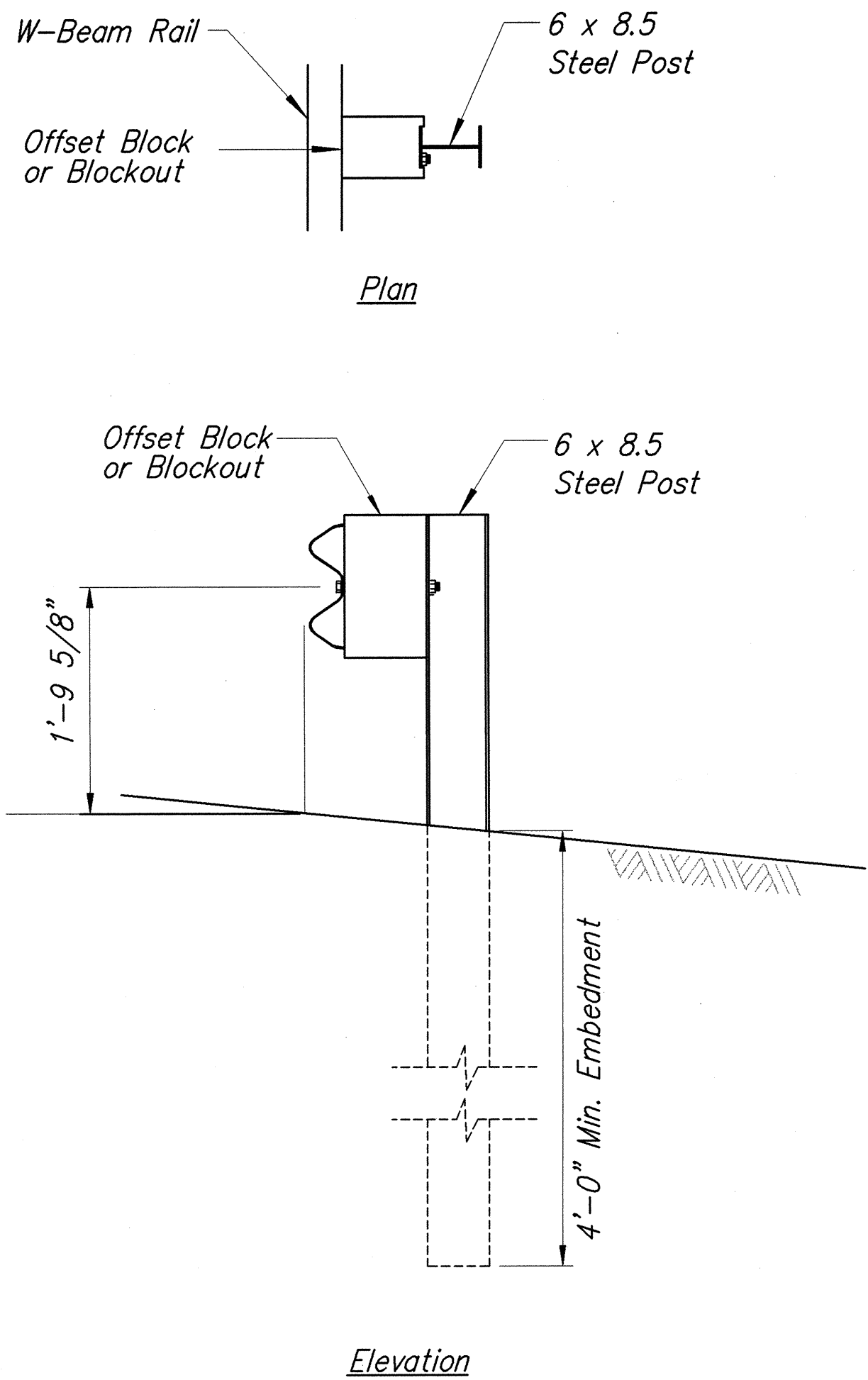
Section B-B



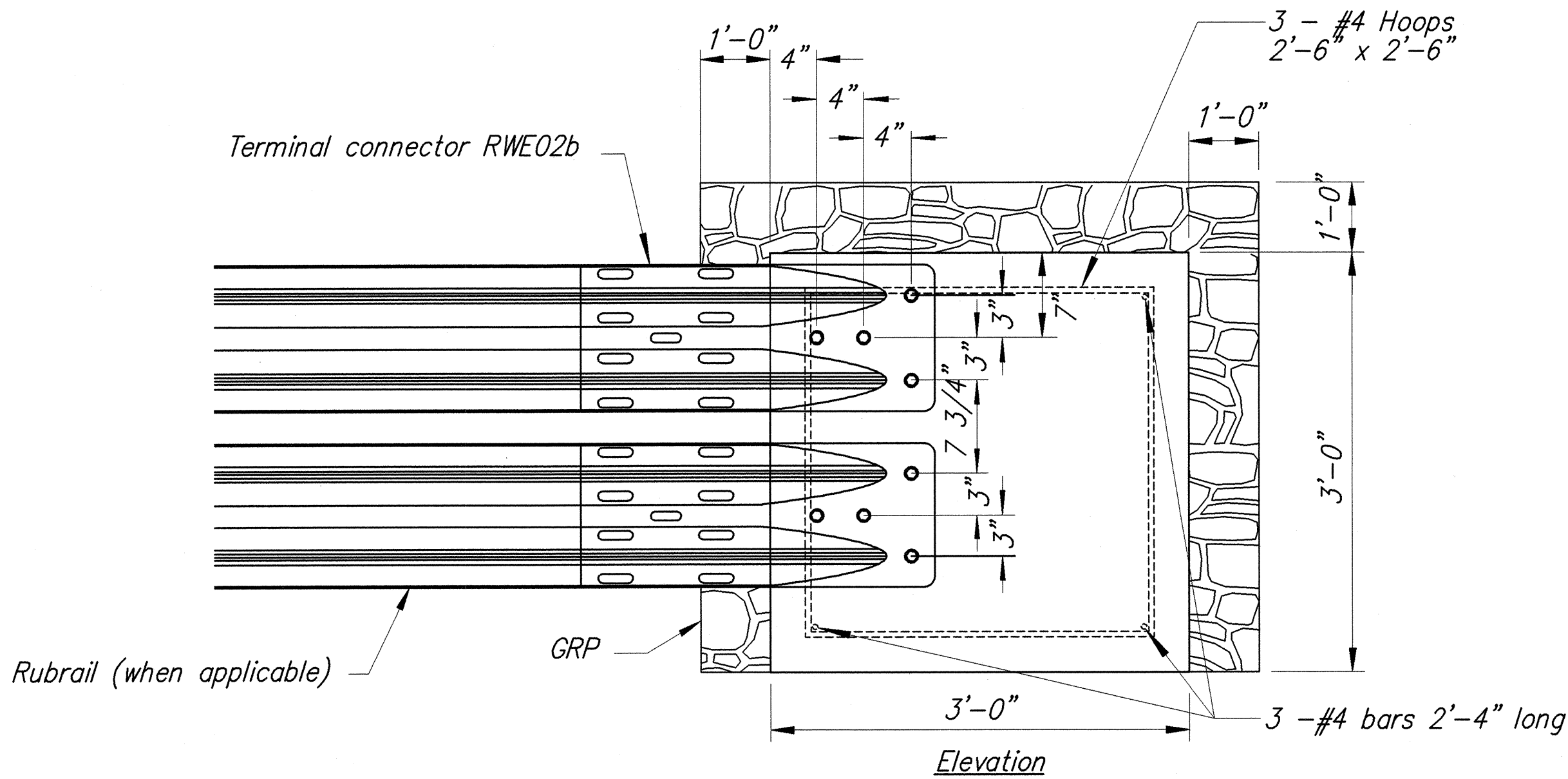
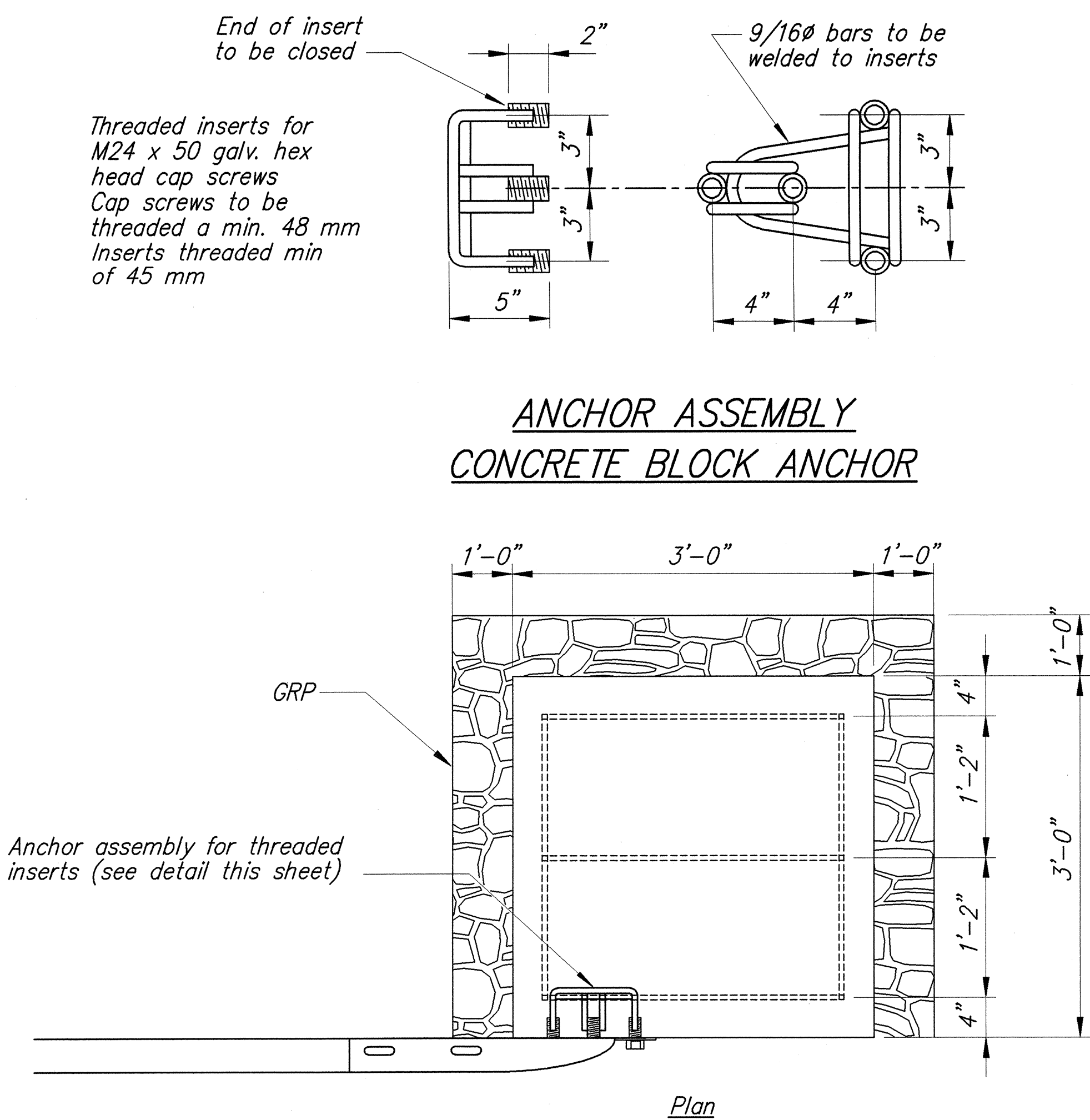
PLAN - ANCHOR BLOCK IN CUT SECTION

SURVEY PLOTTED BY	DATE
DRAWN BY	4/03
DESIGNED BY	4/03
CHECKED BY	4/03
ORIGINAL PLAN	
NOTE BOOK	
No.	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	H1A-01-02M	2003	33	88



STRONG POST W-BEAM GUARDRAIL



CONCRETE BLOCK ANCHOR
(3' X 3' X 3')

BACKSLOPE ANCHOR TERMINAL END ANCHORAGE DETAILS
MODIFIED TYPE "A-1" FLARE

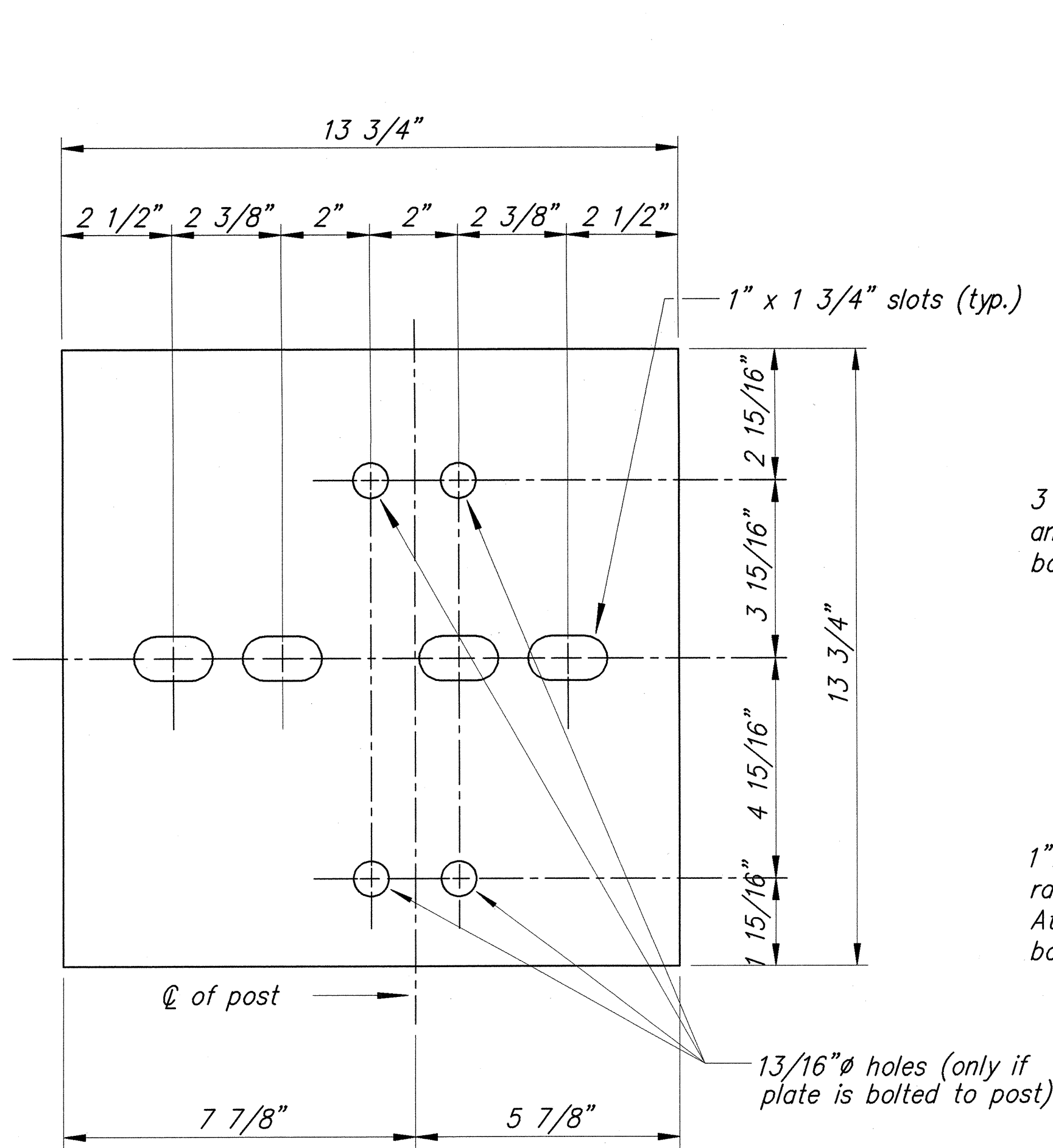
Note:

All fasteners, posts, blocks and rail elements 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-AGCARTBA Joint Cooperative Committee and HDOT's Statewide Guideline for Permanent Highway Safety Hardware.

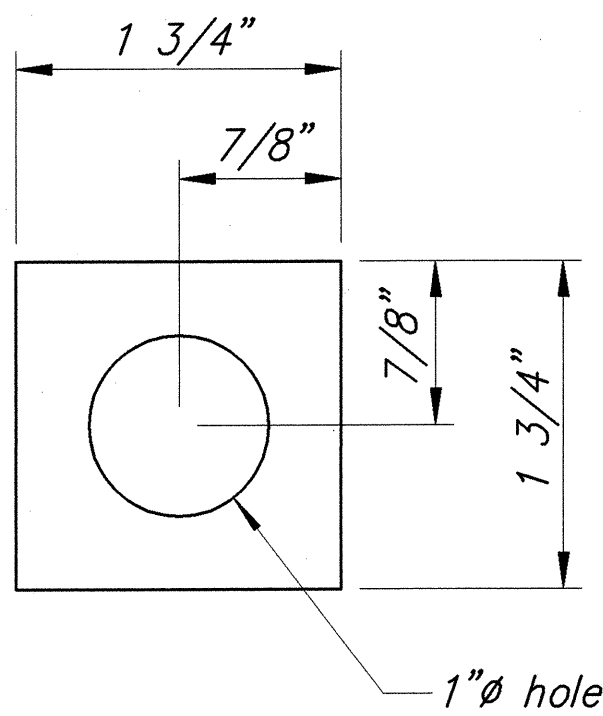
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	1/02
No.	DESIGNED BY	1/02
	CHECKED BY	1/02

6/4/03	Sheet added
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
MODIFIED TYPE "A-1" FLARE DETAILS	
INTERSTATE ROUTE H-1 REHABILITATION	
Vicinity Of Makakilo Interchange	
Project No. H1A-01-02M	
Scale: As Noted	Date: April 2003
SHEET No. C-31A OF 42 SHEETS	

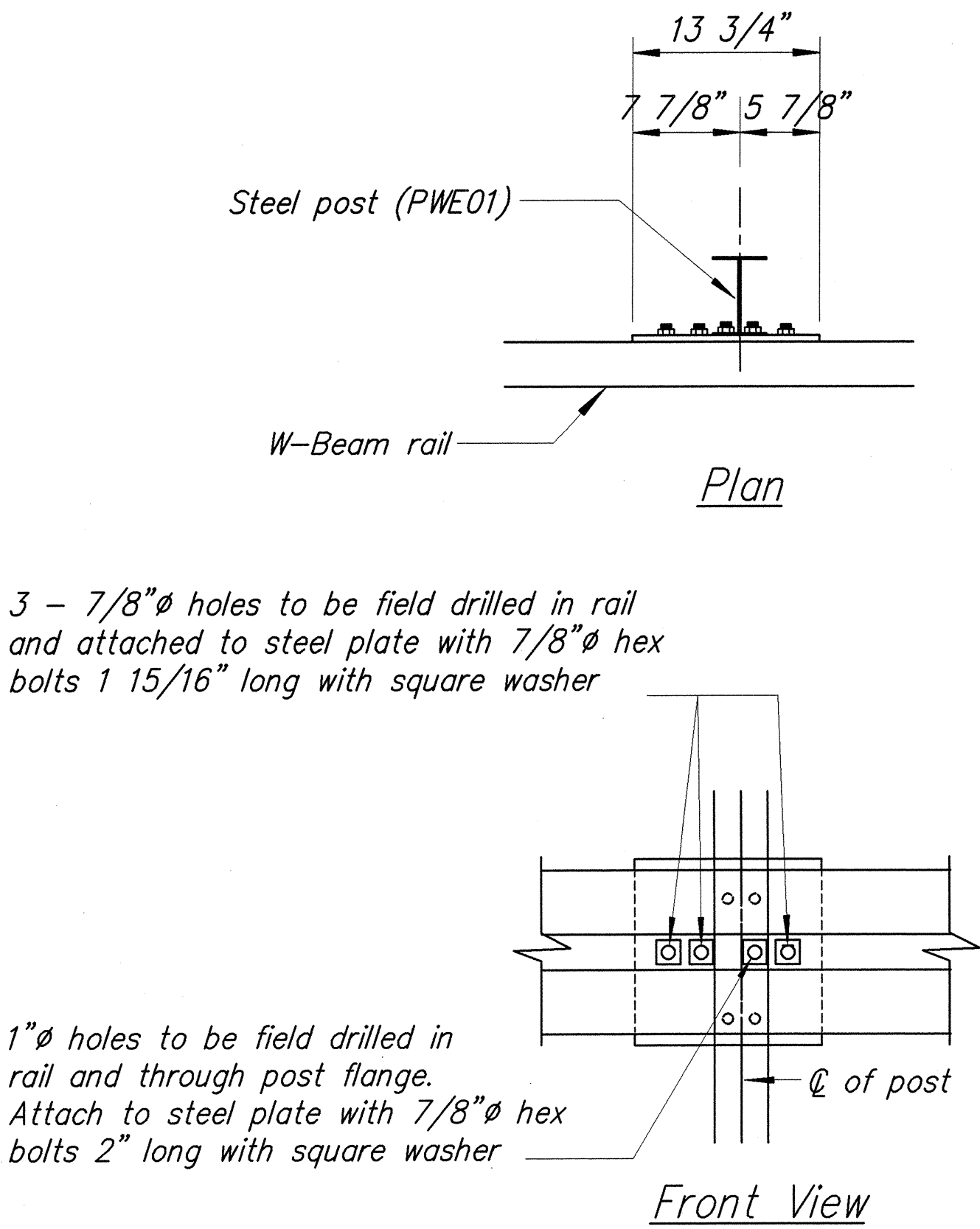
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	H1A-01-02M	2003	33	88



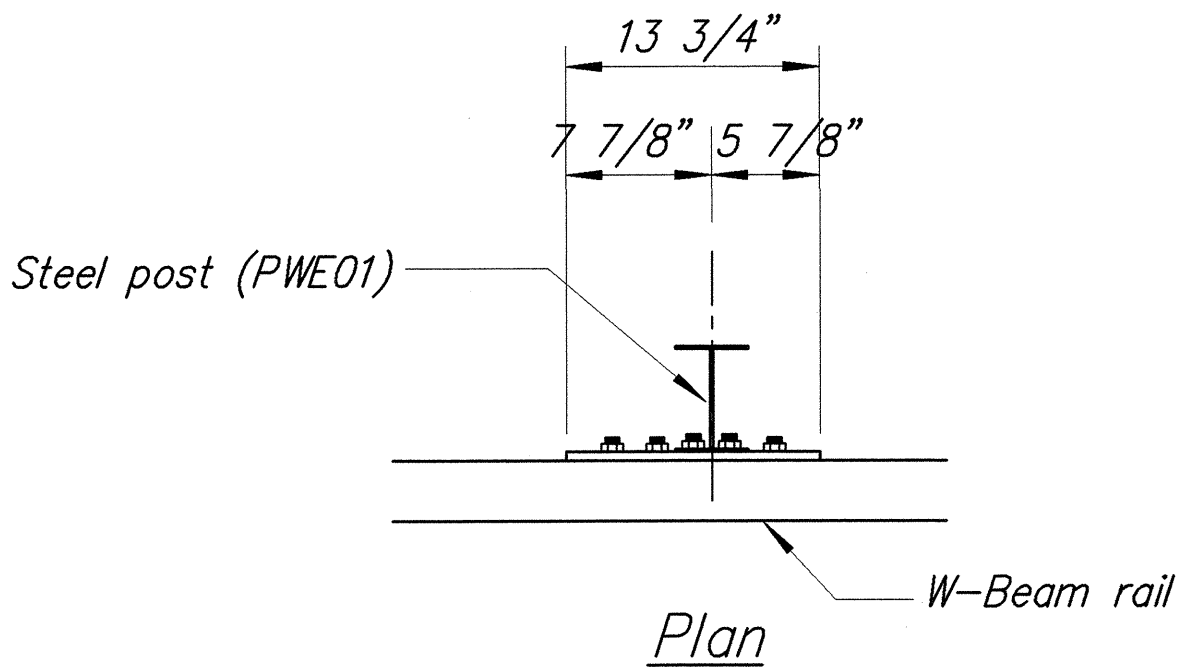
Steel Plate - 1/2"
(Hot-dip Zinc Coated Galvanized-
Welded or Bolted to Post)



Square Washer
(3/16" Thick - Hot-dip
Zinc Coated Galvanized)

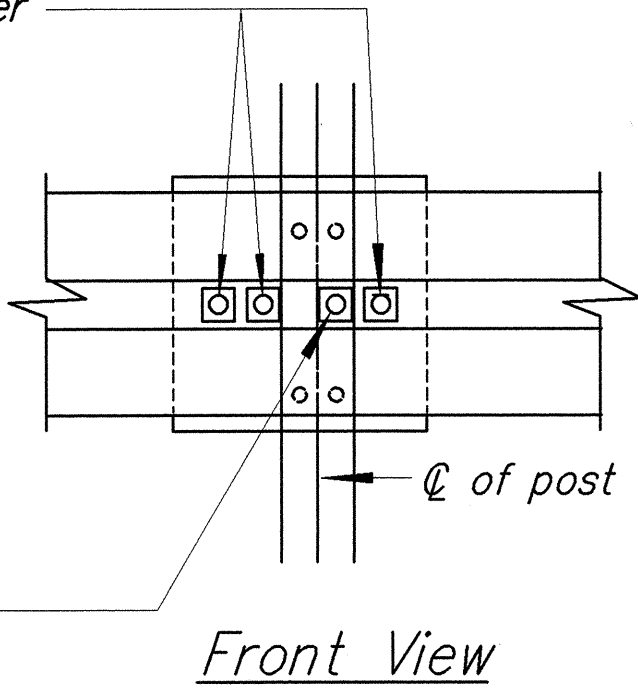


RUBRAIL ANCHOR DETAILS



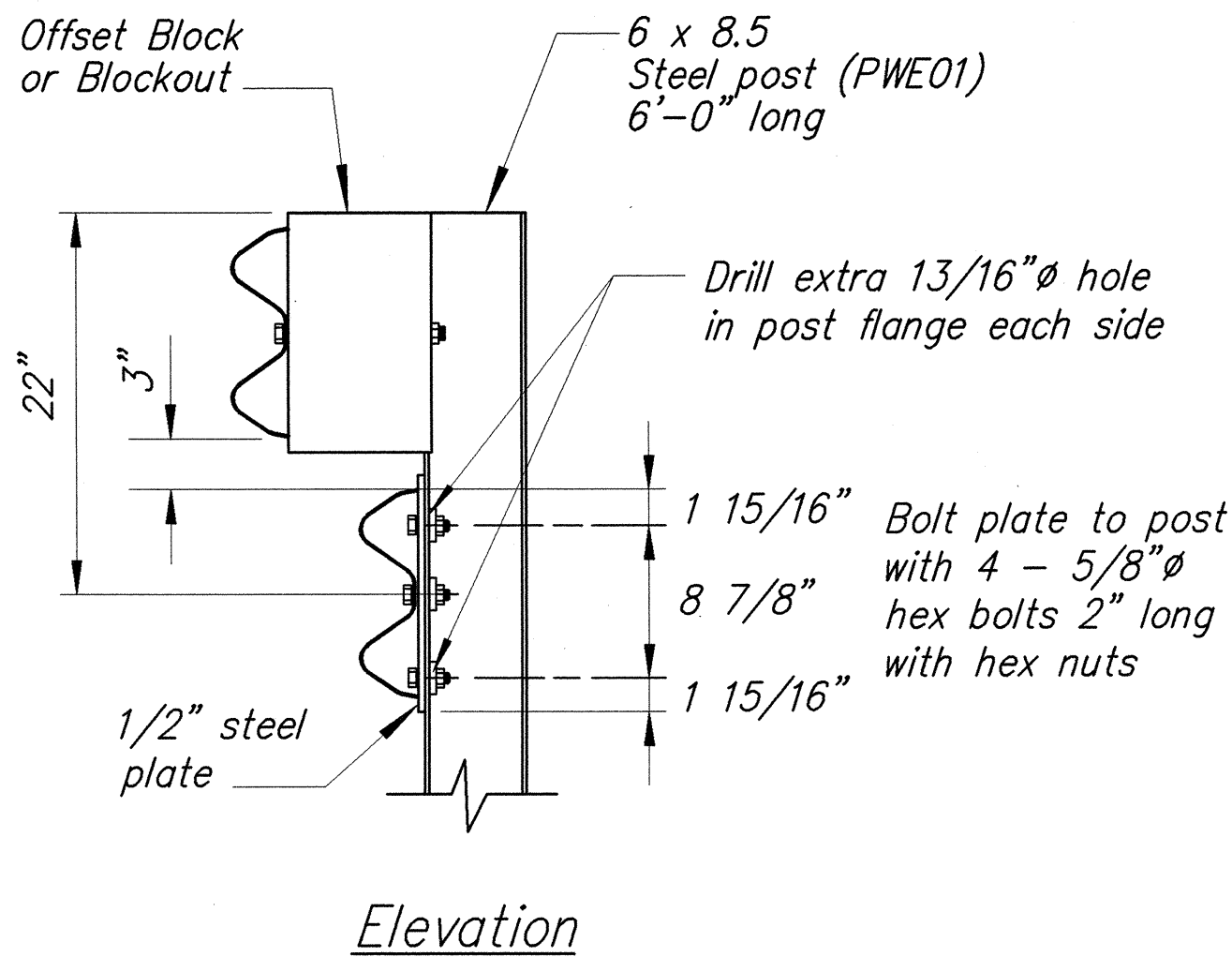
3 - 7/8" ϕ holes to be field drilled in rail
and attached to steel plate with 7/8" ϕ hex
bolts 1 15/16" long with square washer

1" ϕ holes to be field drilled in
rail and through post flange.
Attach to steel plate with 7/8" ϕ hex
bolts 2" long with square washer

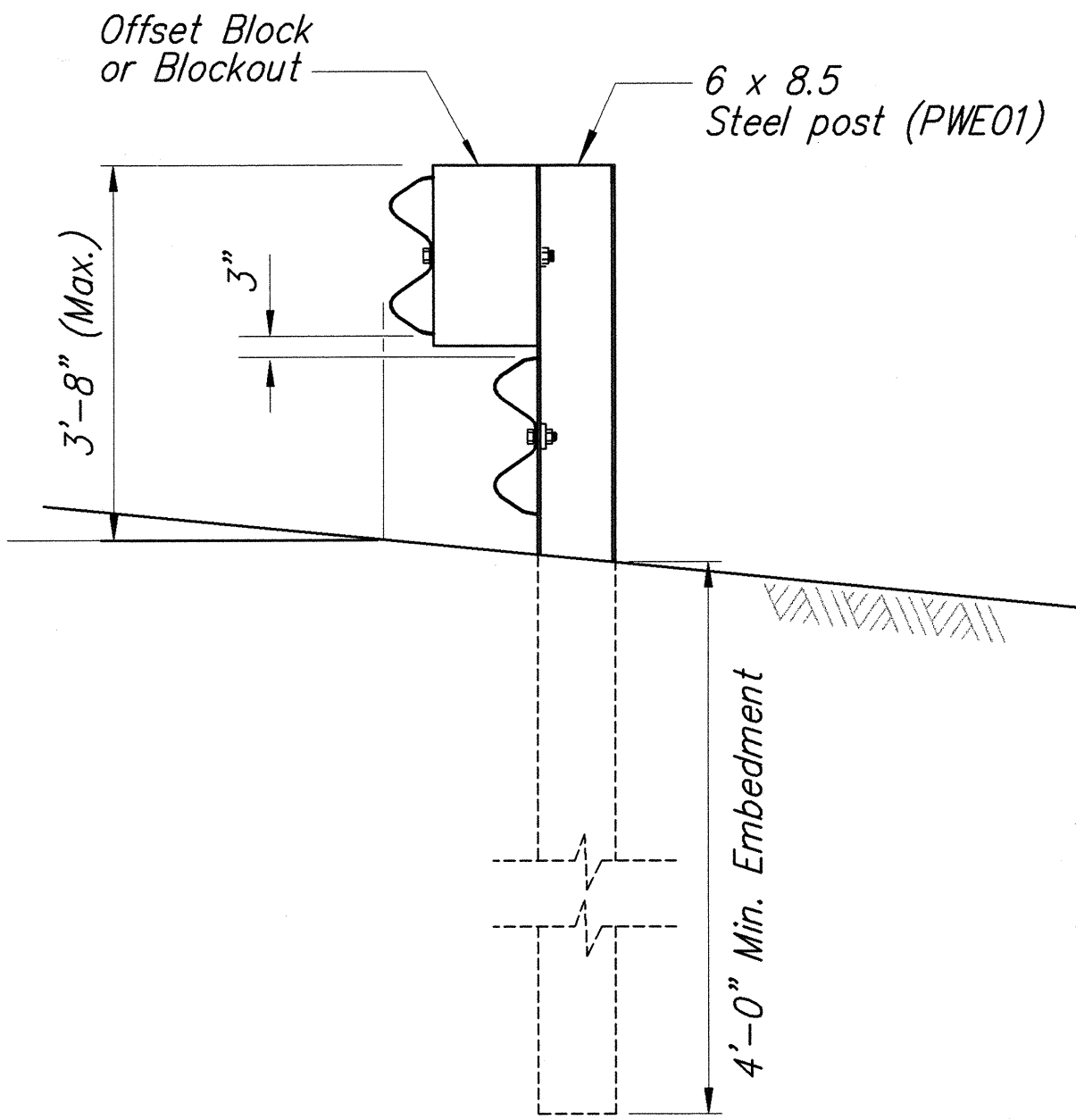
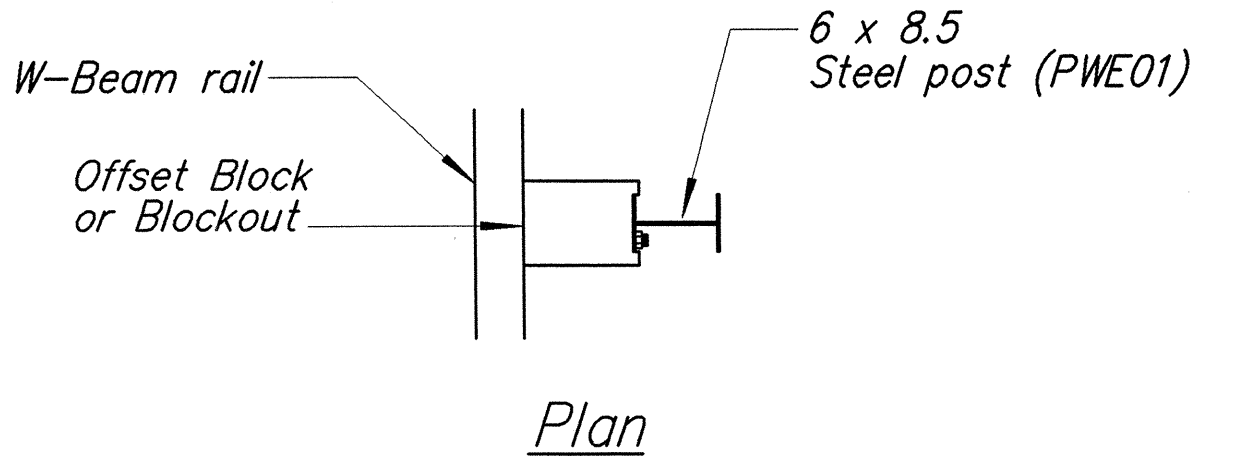
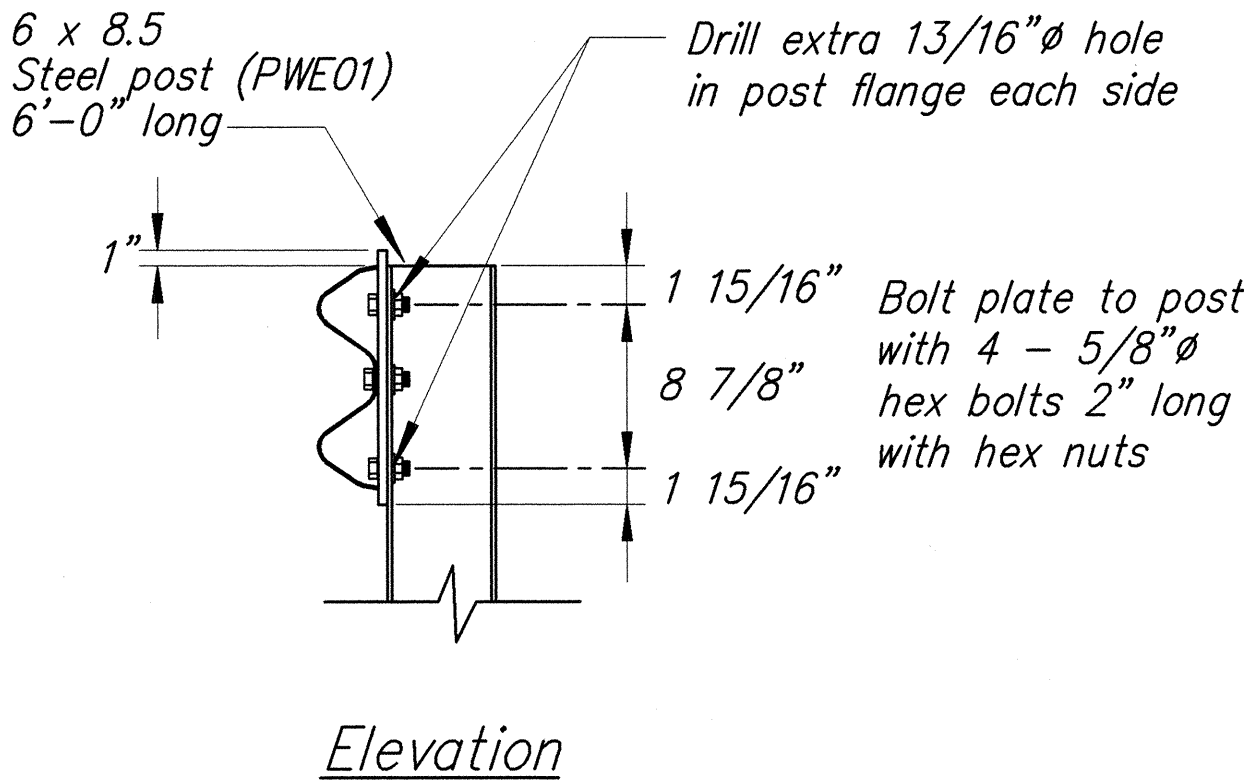


POST ANCHOR DETAILS

RUBRAIL DETAIL FOR MODIFIED TYPE "A-1" FLARE
(WHEN CALLED FOR IN PLANS)



Note:
All fasteners, posts, blocks and rail
elements 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-AGCARTBA
Joint Cooperative Committee.



STEEL POST GUARDRAIL
WITH RUBRAIL

6/4/03 Sheet added

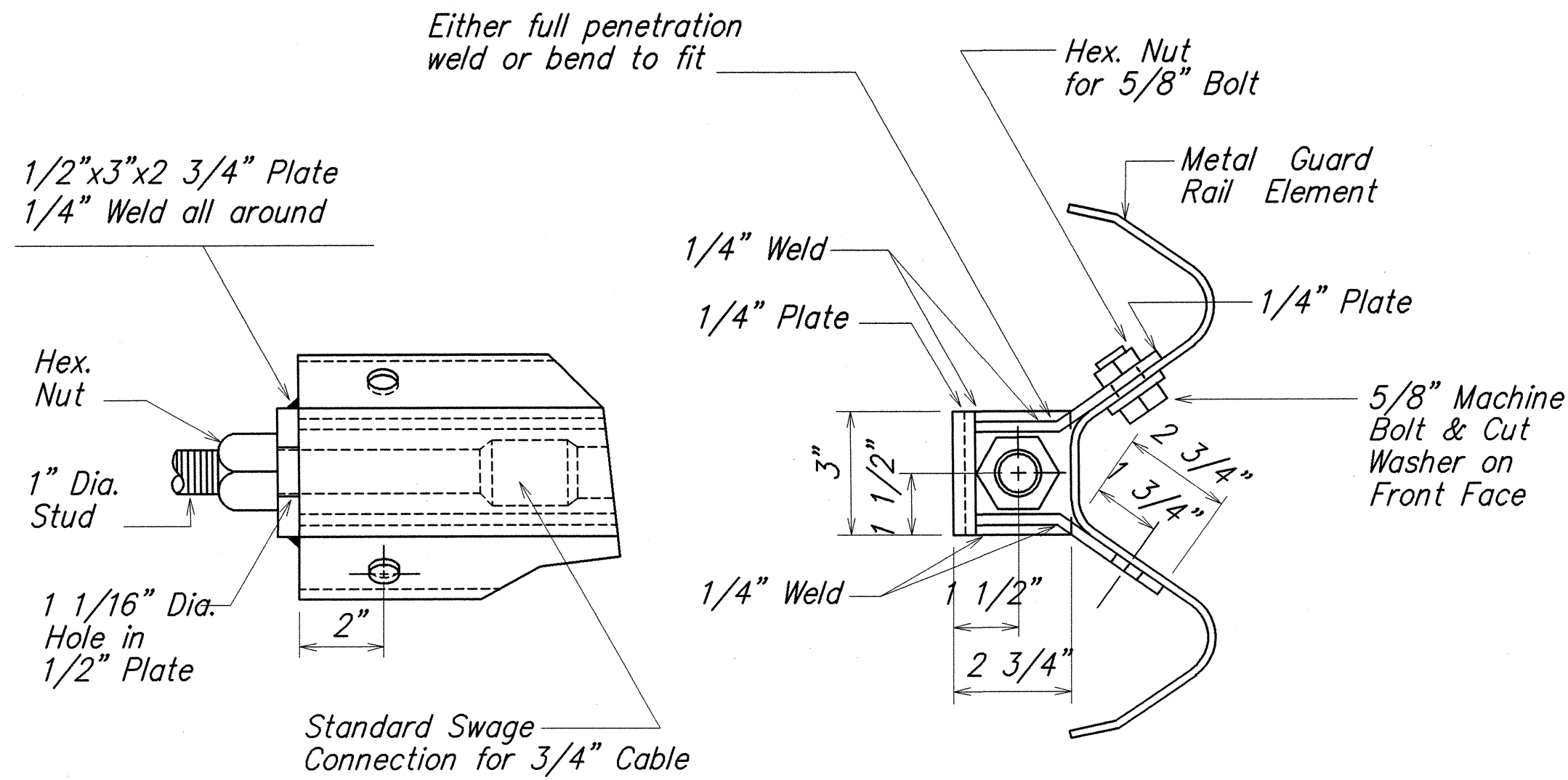
DATE REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
MODIFIED TYPE "A-1" FLARE
RUBRAIL DETAILS
INTERSTATE ROUTE H-1 REHABILITATION
Vicinity Of Makakilo Interchange
Project No. H1A-01-02M

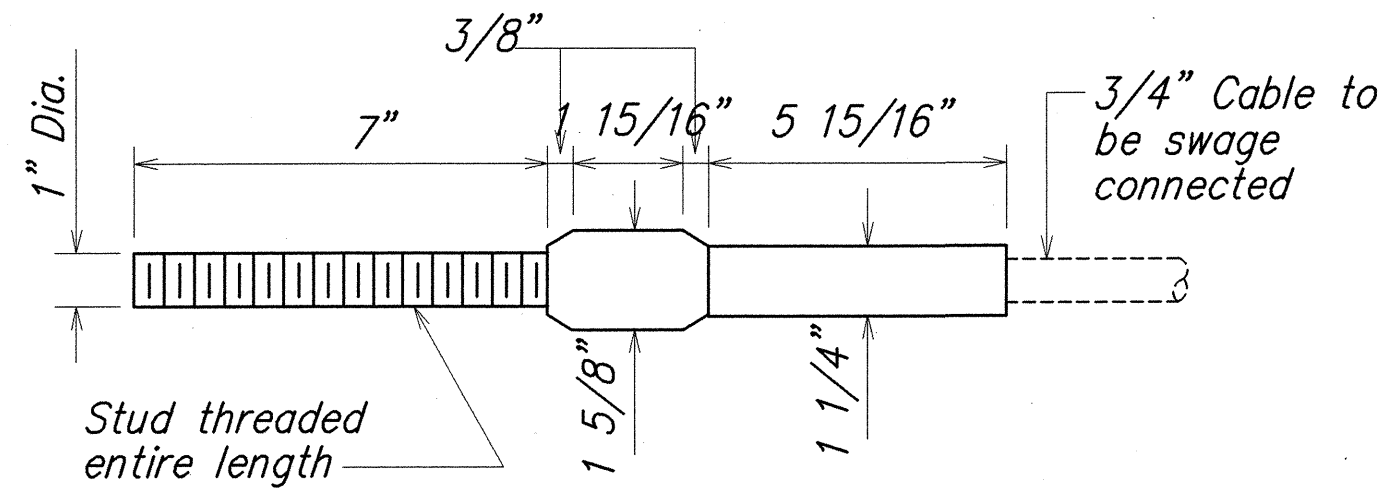
Scale: As Noted Date: April 2003

SHEET No. C-31B OF 42 SHEETS

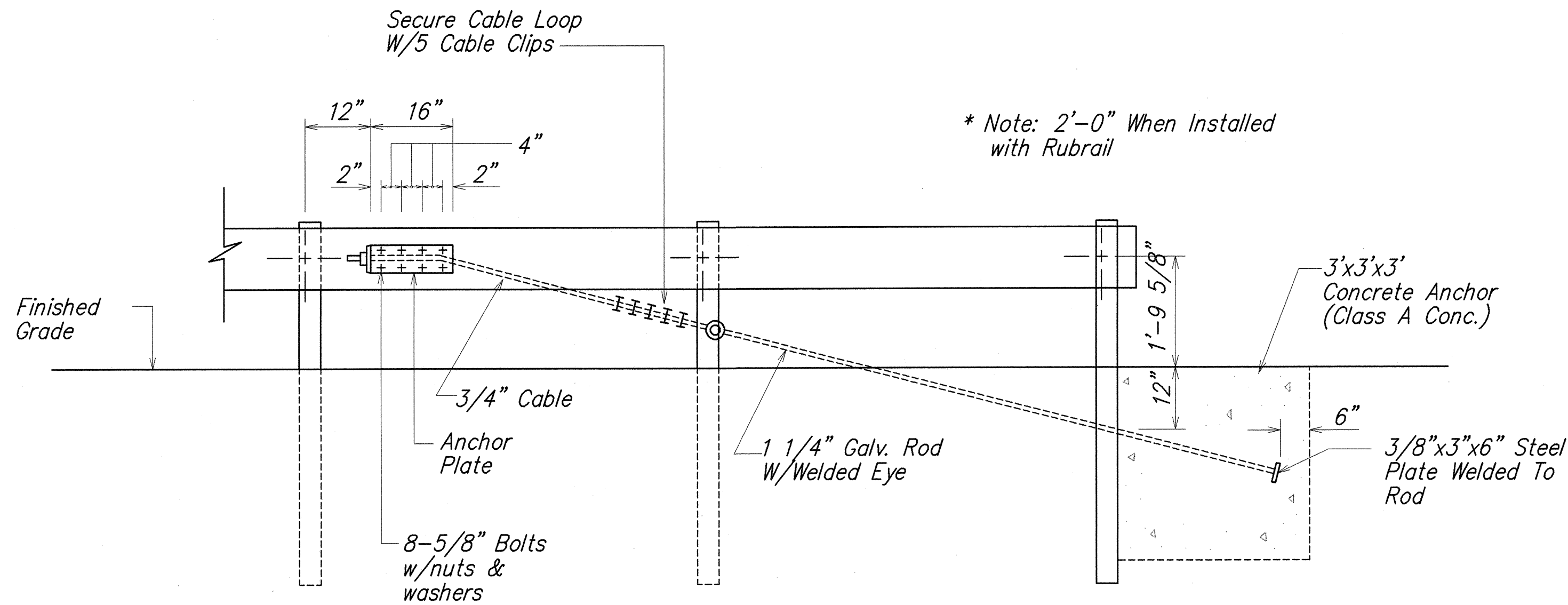
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	H1A-01-02M	2003	33	88



ANCHOR PLATE DETAILS

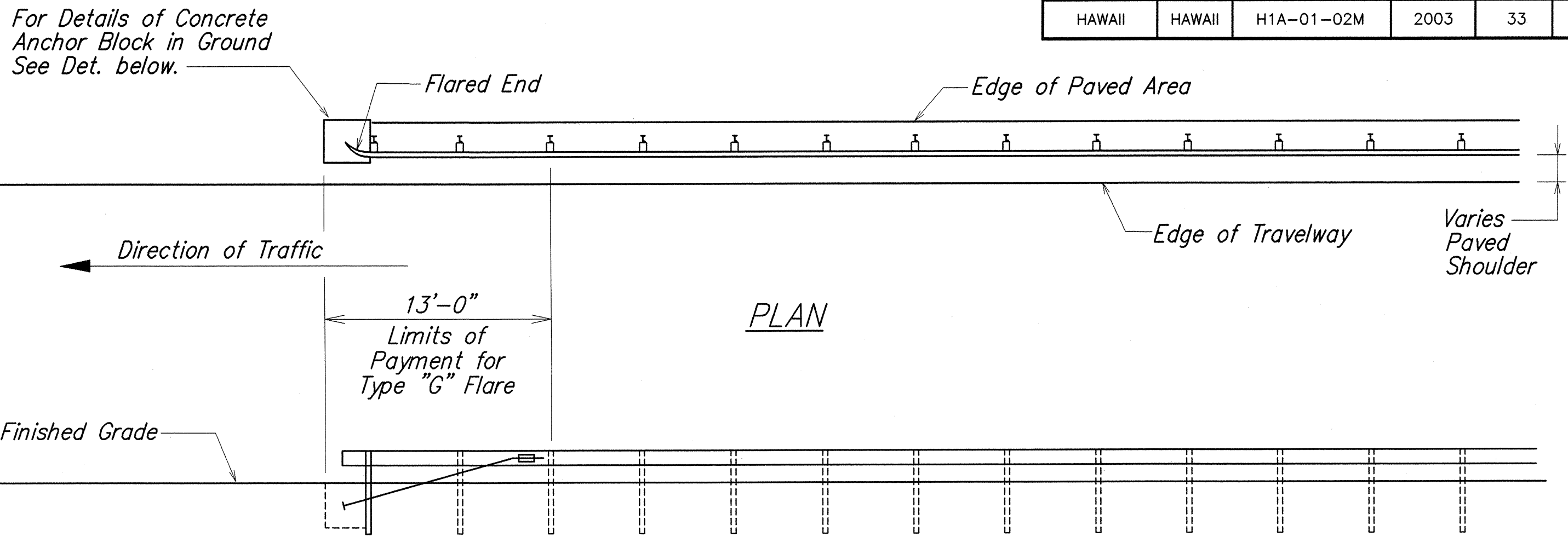


STANDARD SWAGED FITTING
AND STUD



ANCHOR BLOCK DETAIL

- Concrete, G.R.P., excavation, anchor rod and miscellaneous appurtenances necessary to anchor the guardrail ends shall be incidental to metal guardrail.



ELEVATION

TYPE "G" FLARE END TERMINAL

NOTE:

Type "G" Modified End Terminal is a site specific end terminal with a taper and radial termini. A site specific detailed drawing is required for all Type "G" Modified End Terminal and must receive Engineer's approval.

The taper (flare rate) of the guardrail shall follow the latest edition of AASHTO'S Roadside Design Guide (currently, Table 5.6 – Suggested Flare Rate for Barrier Design, page 5–21, Jan. 1996 edition).

The radius of the radial termini is an Engineer's judgement based on the site evaluation. The Engineer shall consider safety (minimize the spearing & blunt end situation); degree and potential seriousness of the hazard; bicycle and pedestrian accessibility; maintenance equipment accessibility; Right-of-Way availability; the smallest radii the metal w-beam/thrie-beam railing can be constructed (check with supplier/contractor); posted speed limit; angle of vehicle impact; and aesthetics when designing the Type "G" Modified End Terminal.

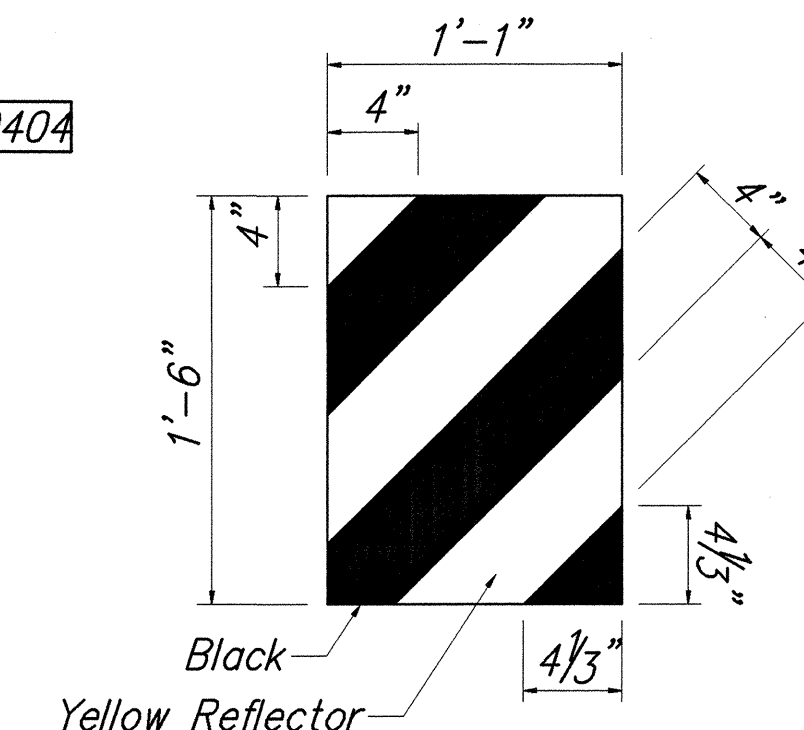
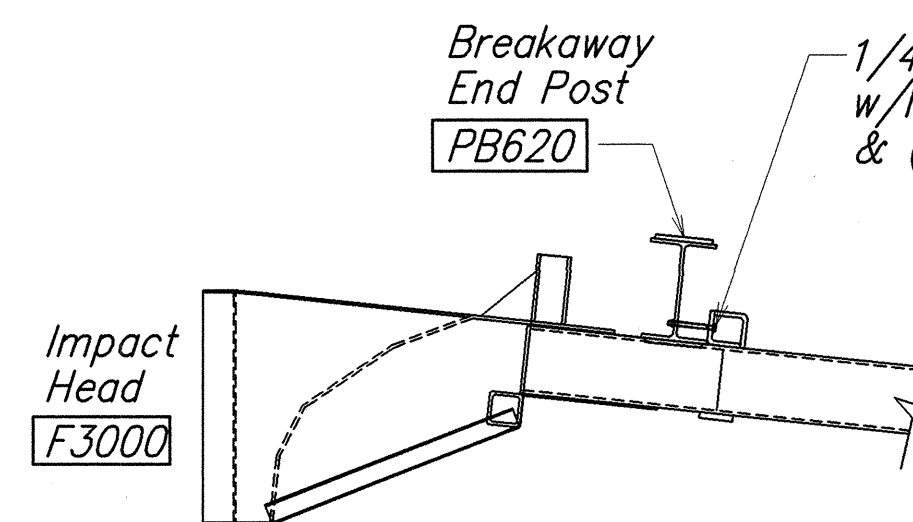
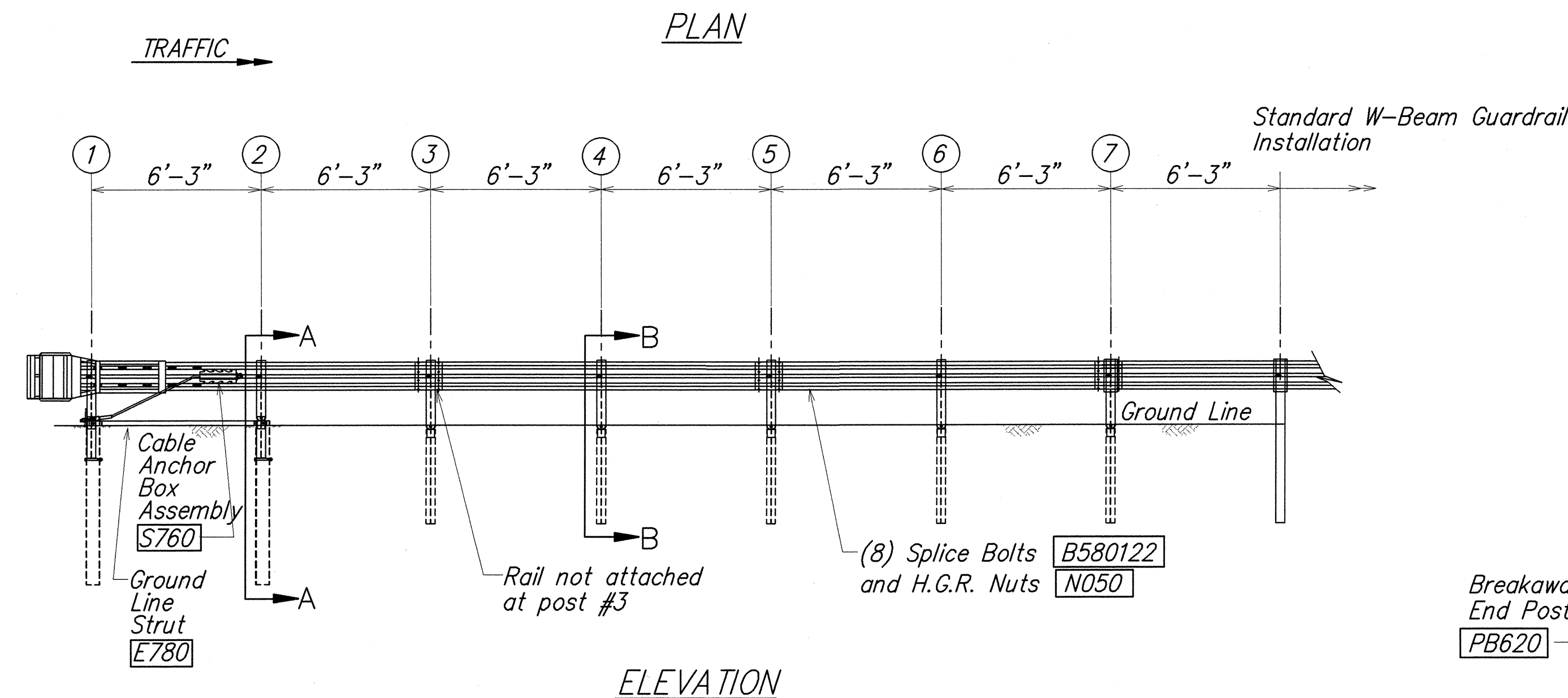
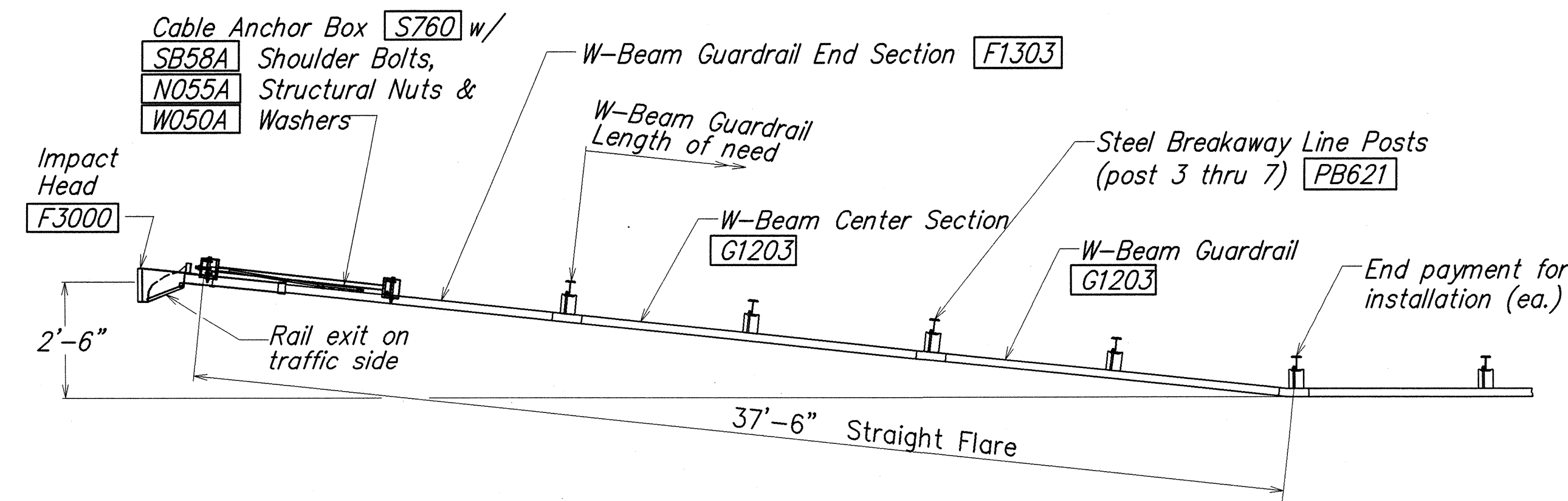
During construction, the Contractor shall layout the proposed Type "G" Modified End Terminal and receive approval from the Construction Engineer prior to installation.

ORIGINAL PLAN	DATE
NO.	
SURVEY PLOTTED BY	DATE
DESIGNED BY	DATE
QUANTITIES BY	DATE
CHECKED BY	DATE

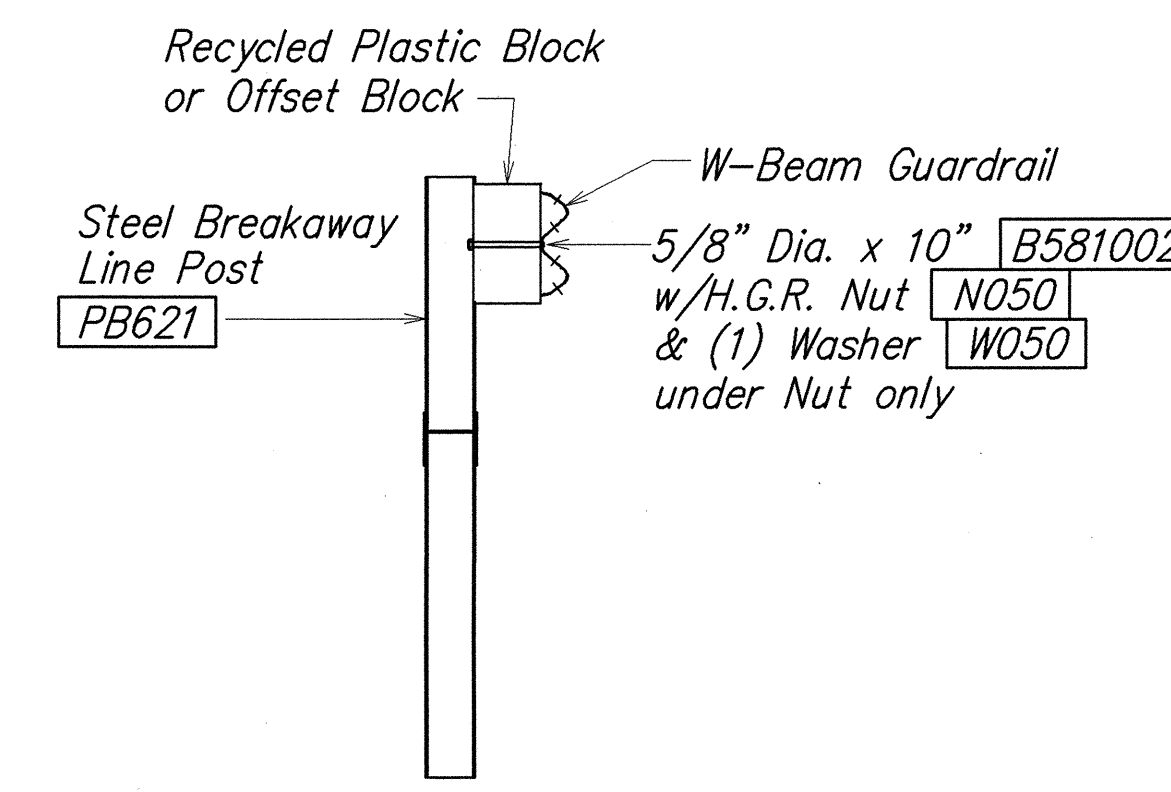
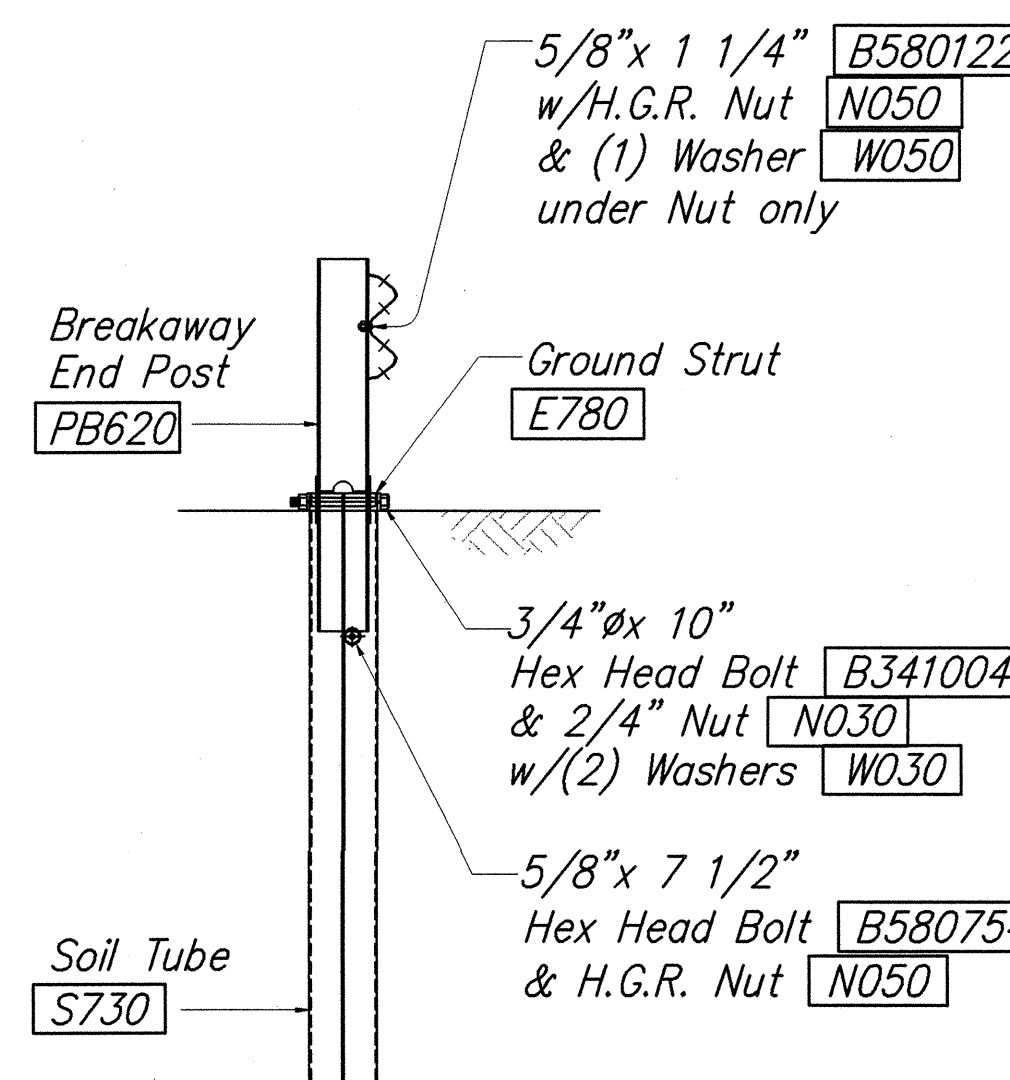
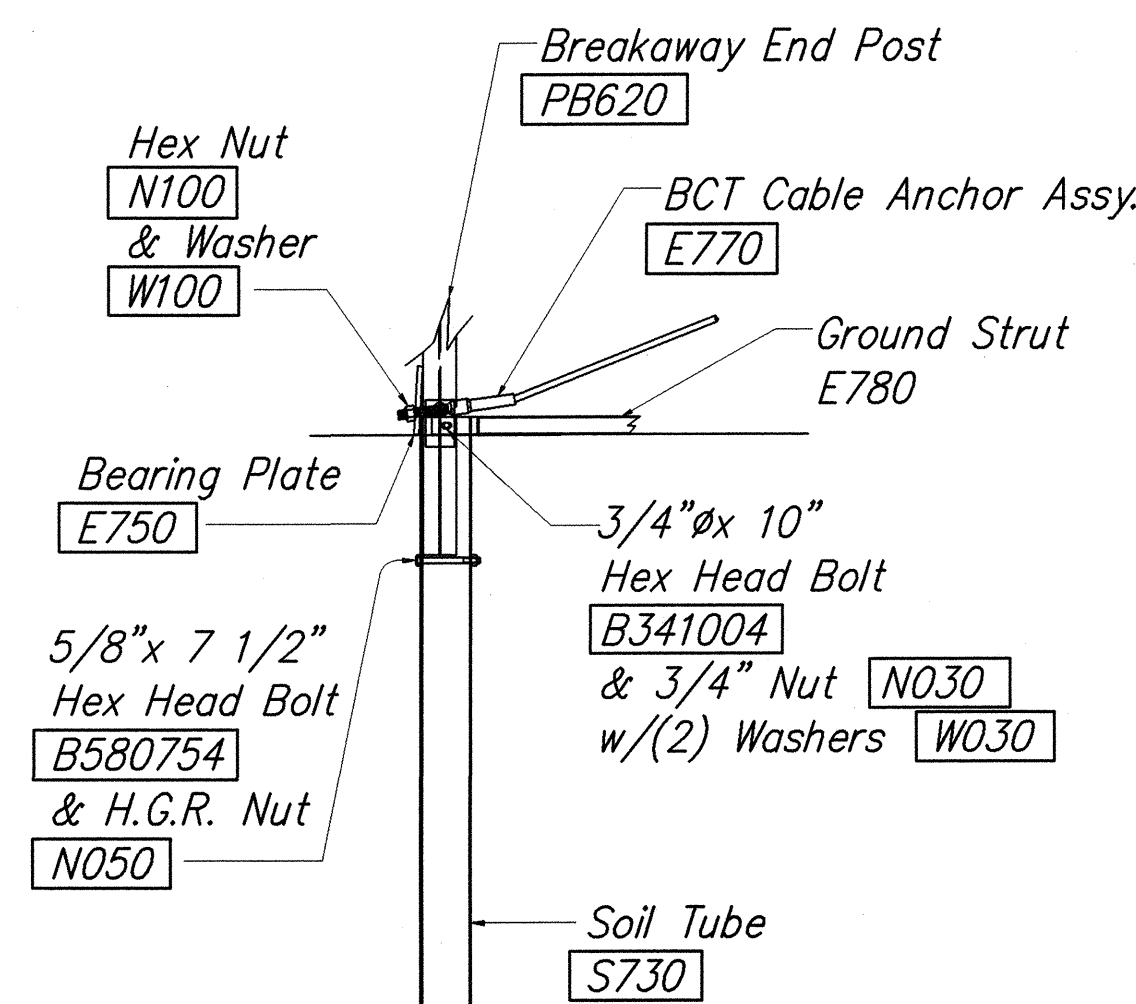
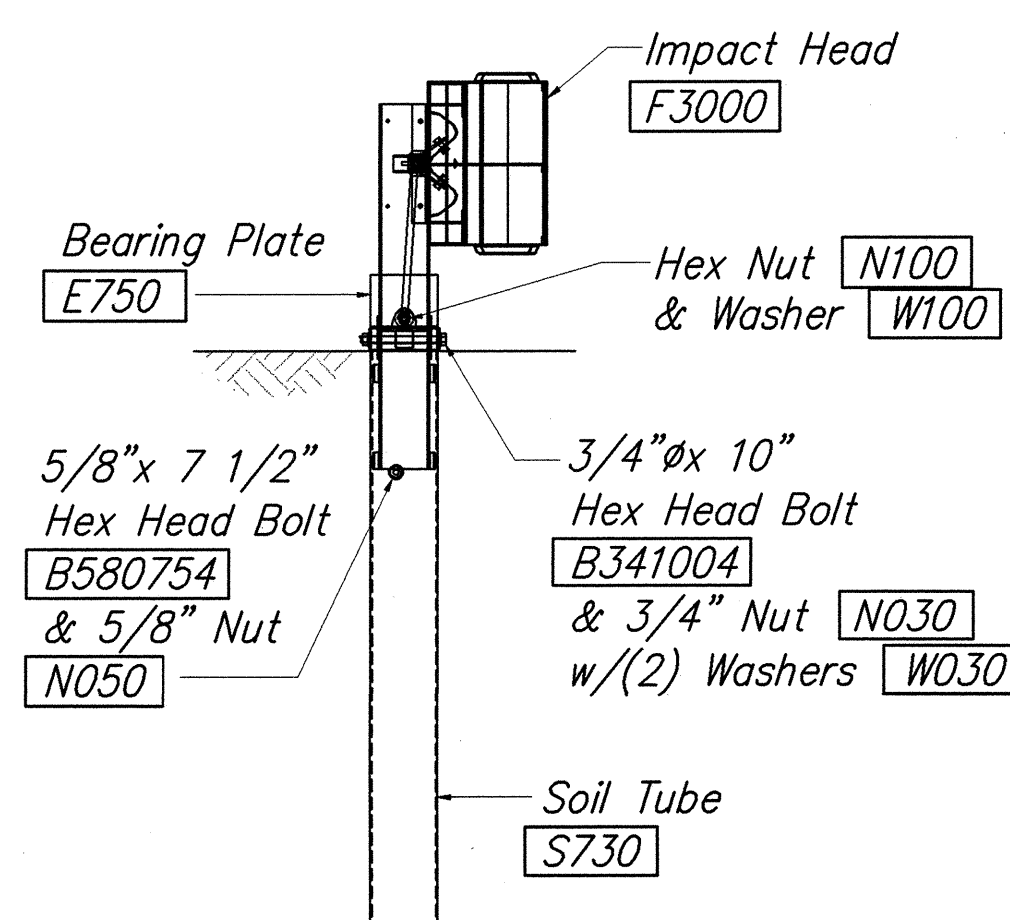
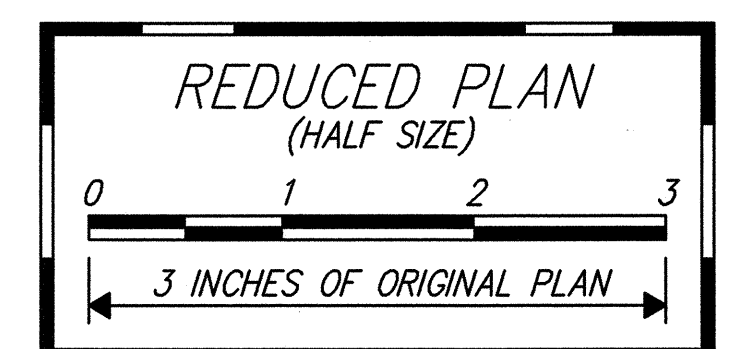


6/4/03	Sheet added
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
TYPE "G" FLARE	
INTERSTATE ROUTE H-1 REHABILITATION Vicinity Of Makakilo Interchange Project No. H1A-01-02M	
Scale: As Noted	Date: April 2003
SHEET No. C-31C OF 42 SHEETS	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	H1A-01-02M	2003	34	88



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



NOTE: RAIL NOT BOLTED @ POST #3

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 tubes 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. Soil tubes shall not be driven with the post in the tube. If the 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.
G1203	2	W-BEAM GUARDRAIL, 12 GA.
S730	2	*FOUNDATION SOIL TUBE, 6" x 8" x 72"
E750	1	BEARING PLATE
S760	1	CABLE ANCHOR BOX
E770	1	BCT CABLE ANCHOR ASSEMBLY
E780	1	GROUND STRUT
PB620	2	STEEL BREAKAWAY END POST
PB621	5	STEEL BREAKAWAY LINE POST
	5	RECYCLED PLASTIC BLOCKOUT OR OFFSET BLOCK
	1	IMPACT HEAD REFLECTOR MARKER - IHRM(R) OR (L)
HARDWARE		
B580122	25	5/8" Dia. x 1 1/4" SPLICE BOLT, POST #2
B580754	2	5/8" Dia. x 7 1/2" HEX BOLT
B341004	2	3/4" Dia. x 10" HEX BOLT
B581002	5	5/8" Dia. x 10" H.G.R. BOLT (POST 3 THRU 7)
N050	32	5/8" Dia. H.G.R. NUT (SPLICE 24, SOIL TUBES 2, POST 2 THRU 7, 6)
N030	2	3/4" Dia. HEX NUT
W050	6	H.G.R. WASHER
W030	4	3/4" ID WASHER
N100	2	1" ANCHOR CABLE HEX NUT
W100	2	1" ANCHOR CABLE WASHER
B140404	2	1/4" x 4" HEX BOLT
N014	2	1/4" HEX NUT
W014	4	1/4" WASHER
SB58A	8	CABLE ANCHOR BOX SHOULDER BOLT
N055A	8	1/2" A325 STRUCTURAL NUT
W050A	16	1 1/16" OD x 9/16" ID A325 STR. WASHER

6/4/03 [1] State Hwy. Std. Details Revised

DATE REVISION

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
FLEAT-350
FLARED ENERGY ABSORBING TERMINAL
INTERSTATE ROUTE H-1 REHABILITATION
 Vicinity Of Makakilo Interchange
 Project No. H1A-01-02M

Scale: As Noted Date: April 2003

SHEET No. C-32 OF 42 SHEETS