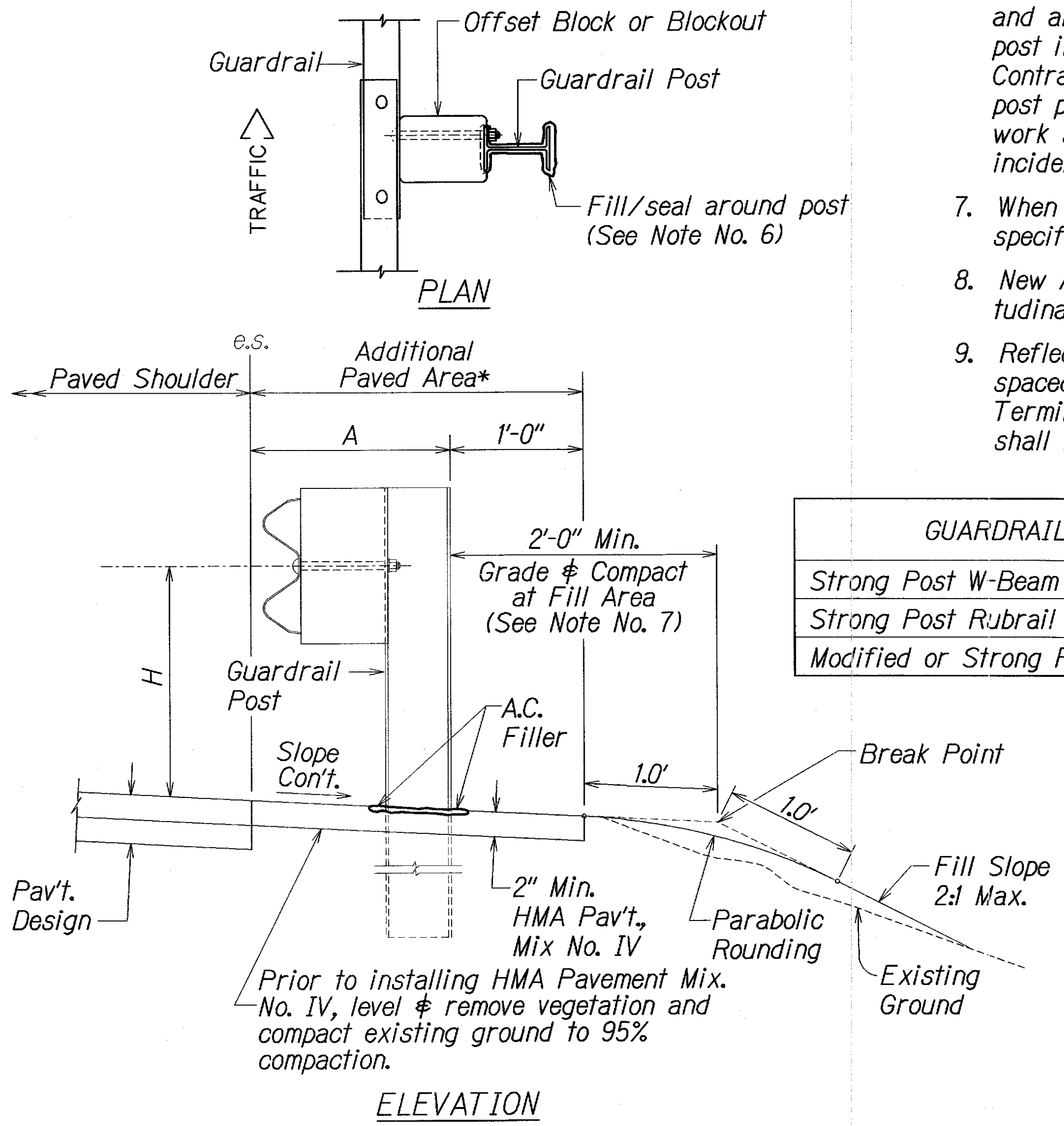
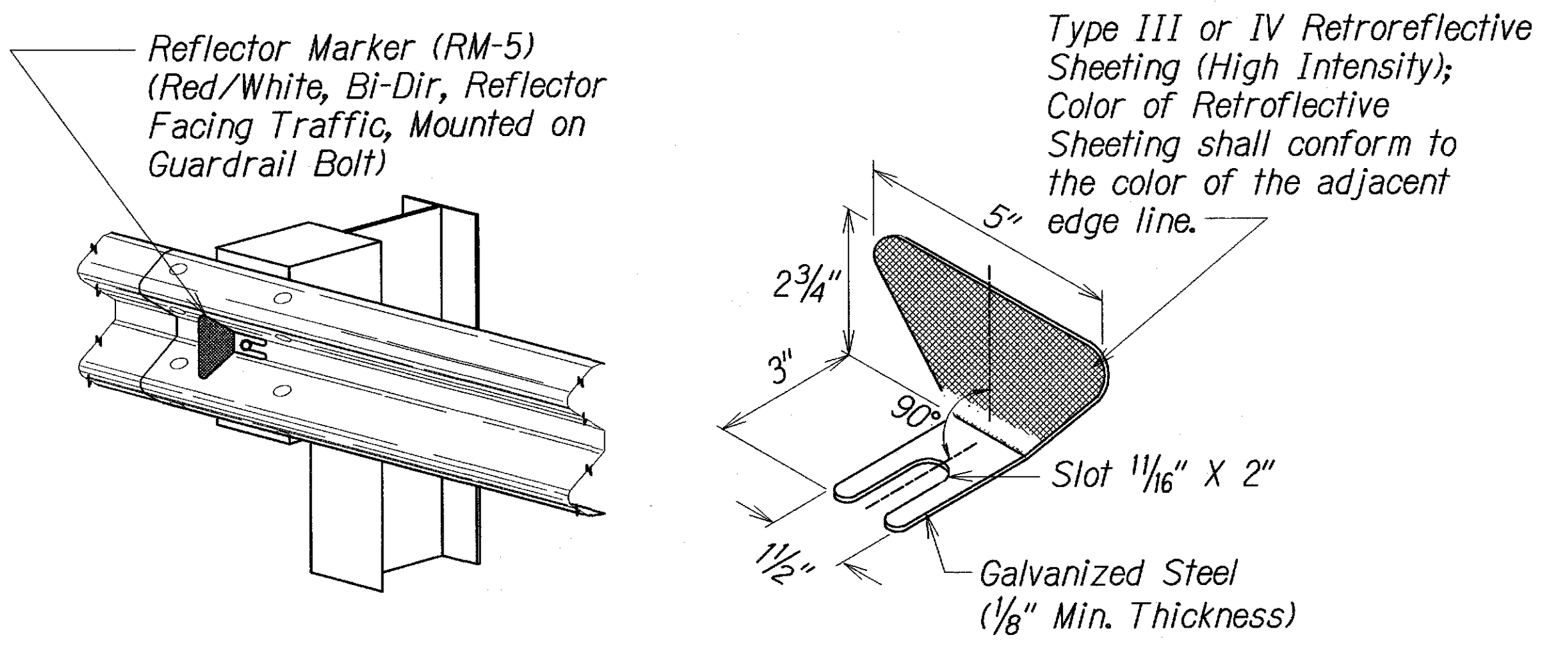
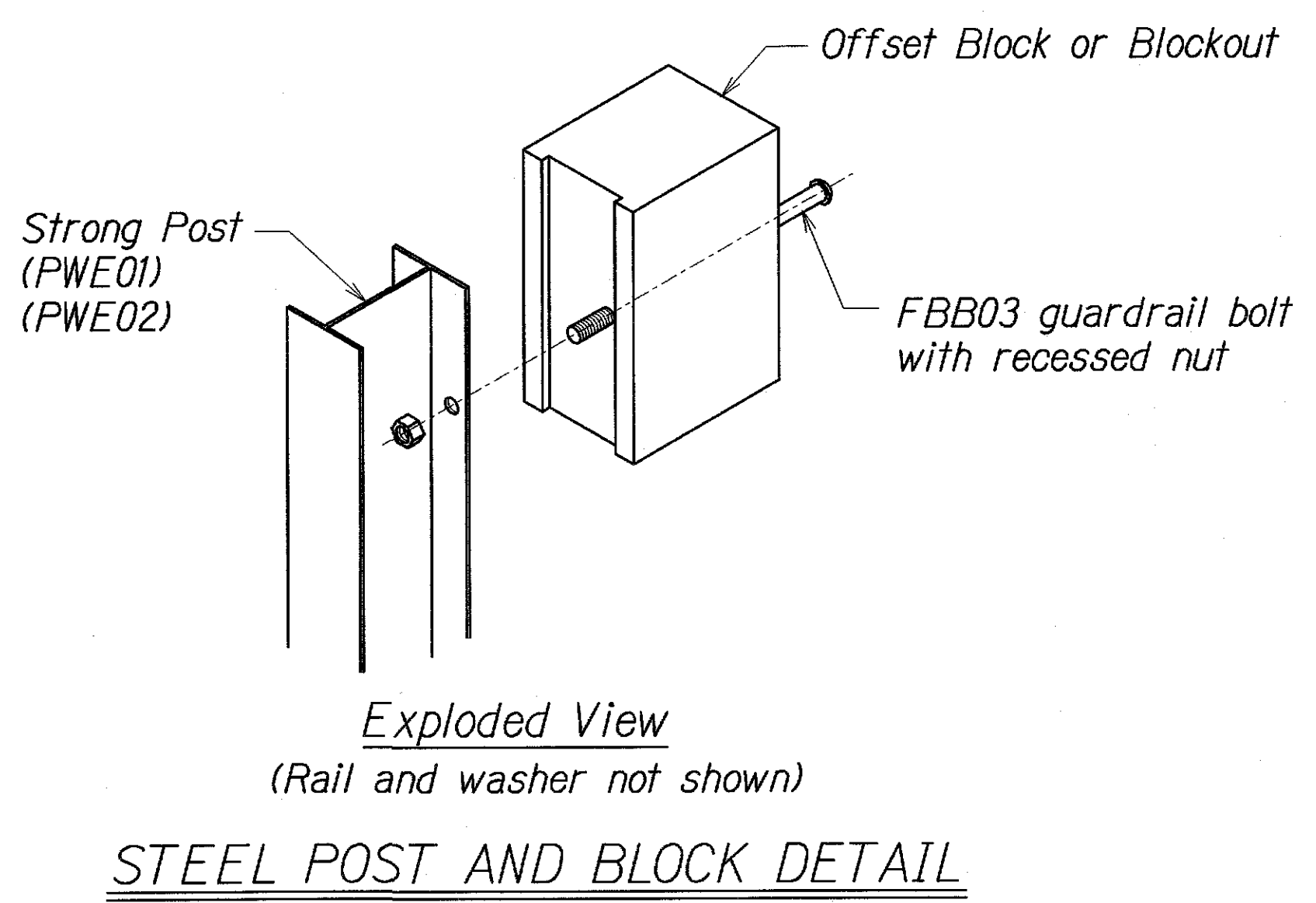
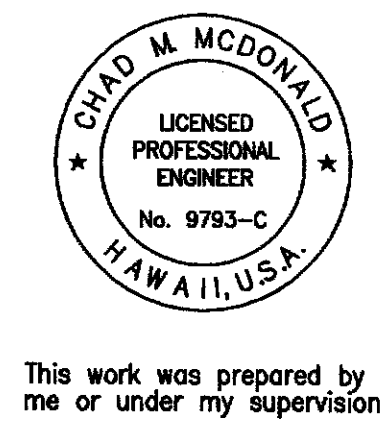


GENERAL NOTES

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.



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

Chad M. McDonald 4/30/2012
MITSUNAGA & ASSOCIATES, INC. EXP. DATE

NOTE: Contractor to check and verify dimensions of job before proceeding with work.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GUARDRAIL DETAILS & NOTES

MAMALAHOA HIGHWAY RESURFACING
Kaunapali to Makalei Road
Project No. 190B-01-09M

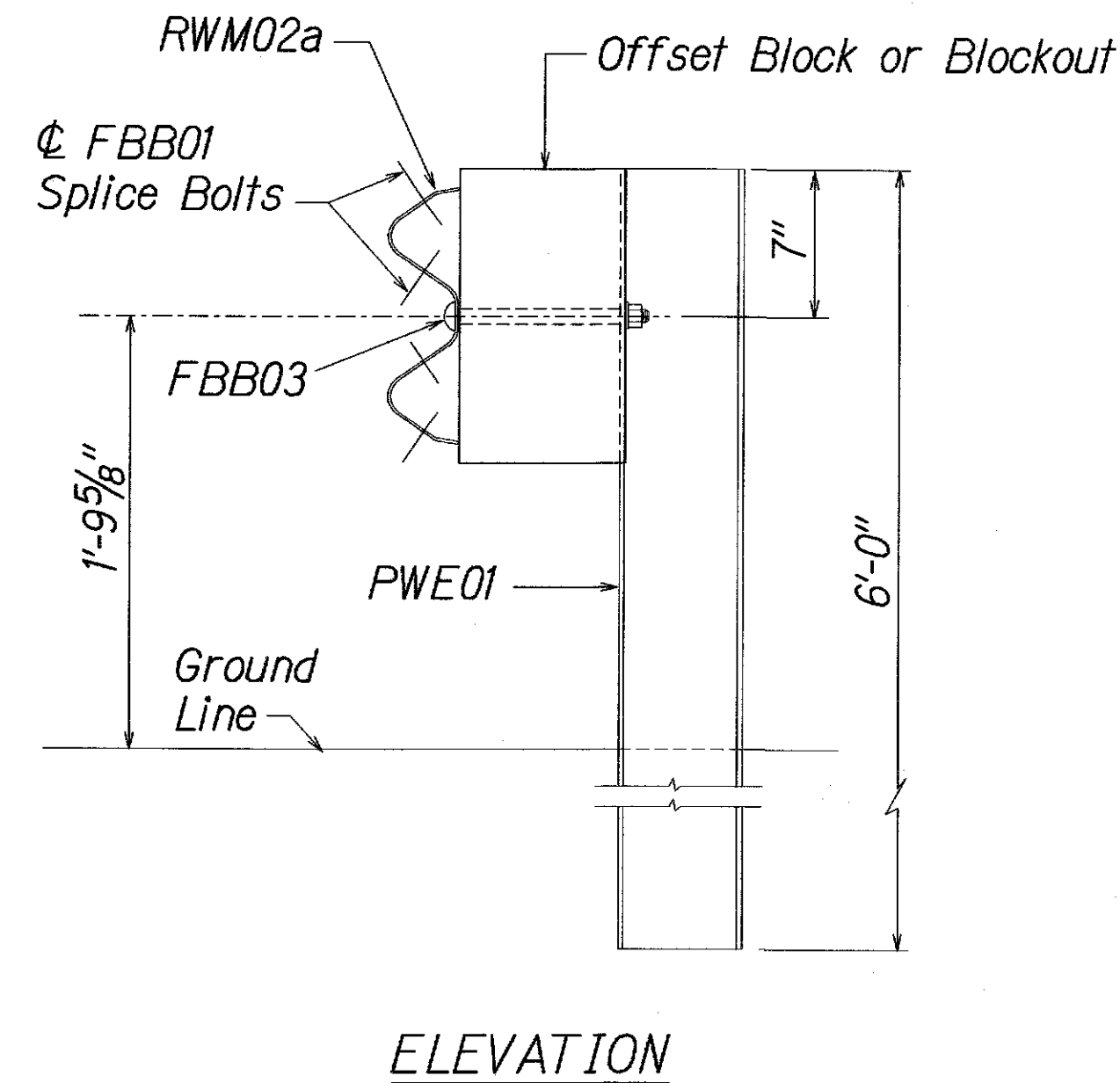
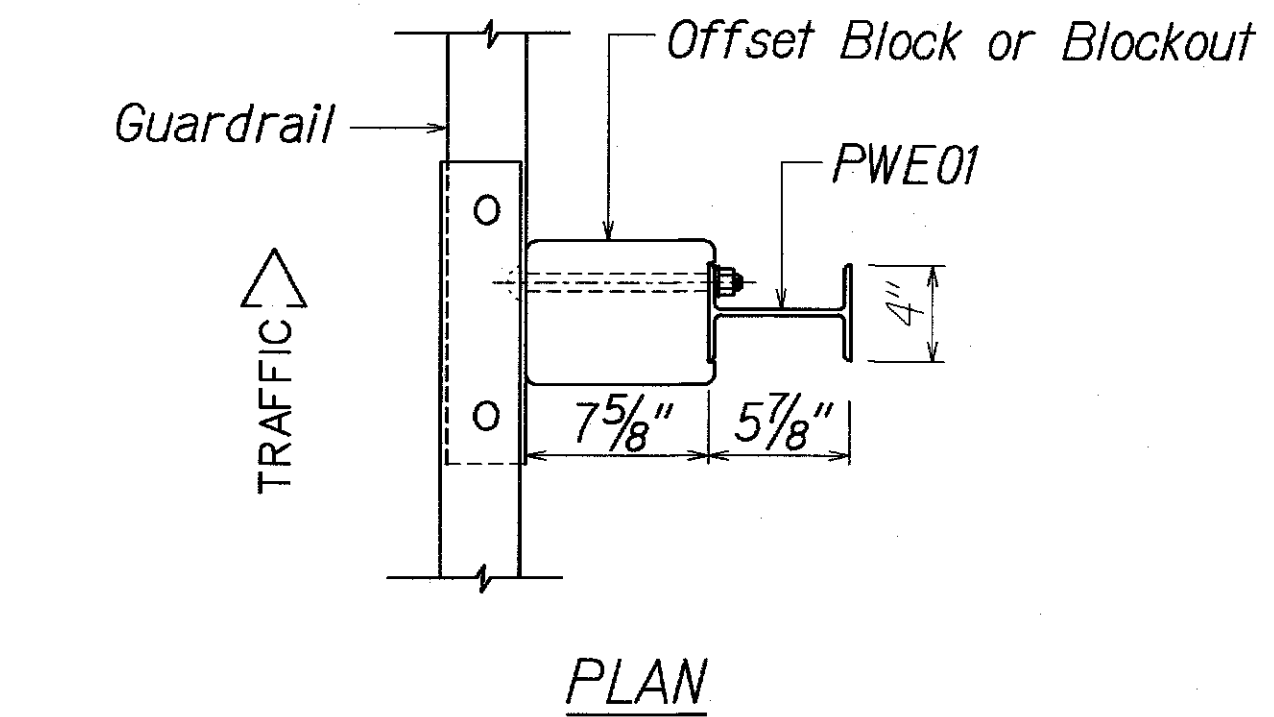
Scale: As Noted Date: May 2010

SHEET No. **C-7** OF **54** SHEETS

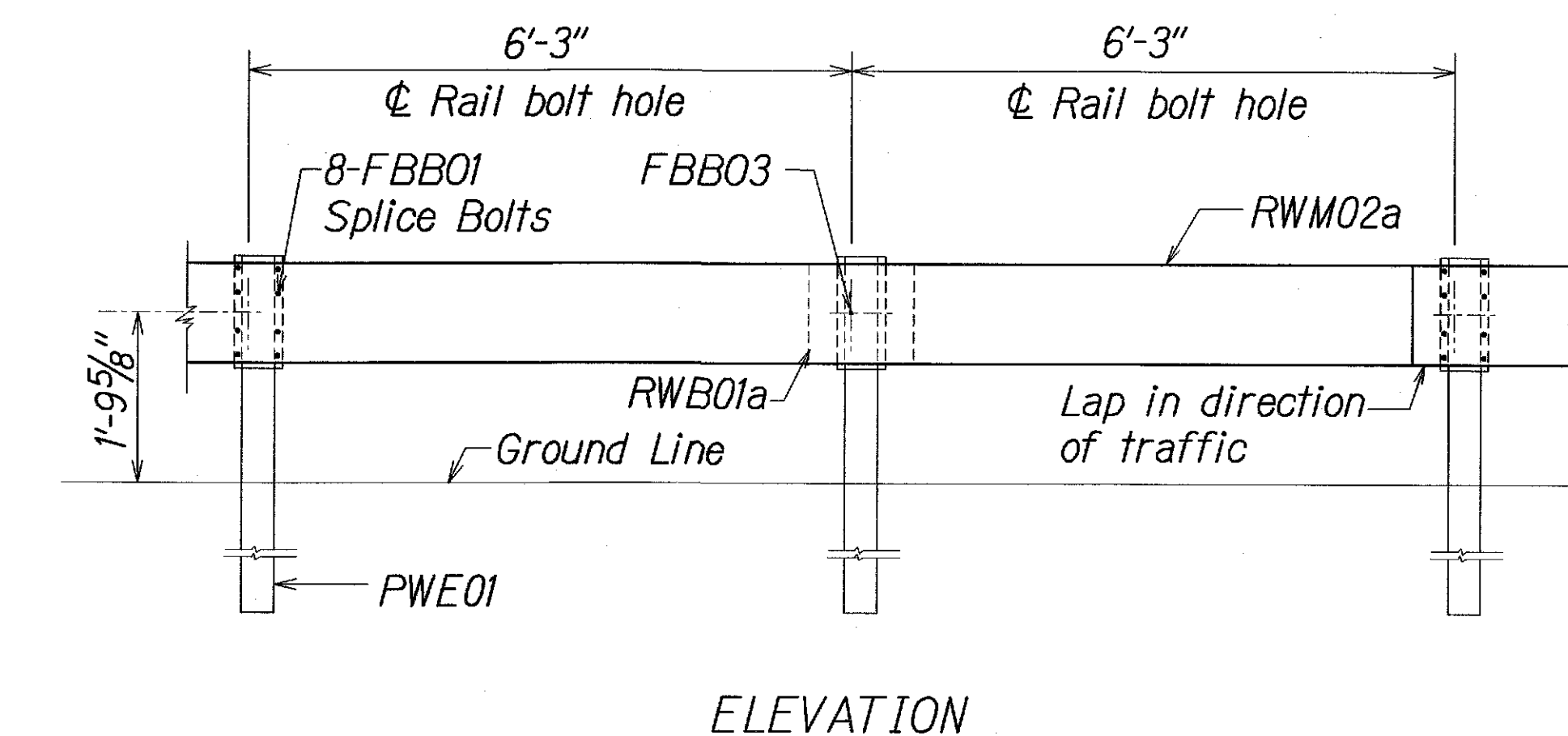
REVISIONS

NO.	DATE	DESCRIPTION
1	4/30/2012	ISSUED FOR BIDDING

DESIGNED BY: MITSUNAGA & ASSOCIATES, INC.
CHECKED BY: MITSUNAGA & ASSOCIATES, INC.
DRAWN BY: MITSUNAGA & ASSOCIATES, INC.
ORIGINAL PLAN

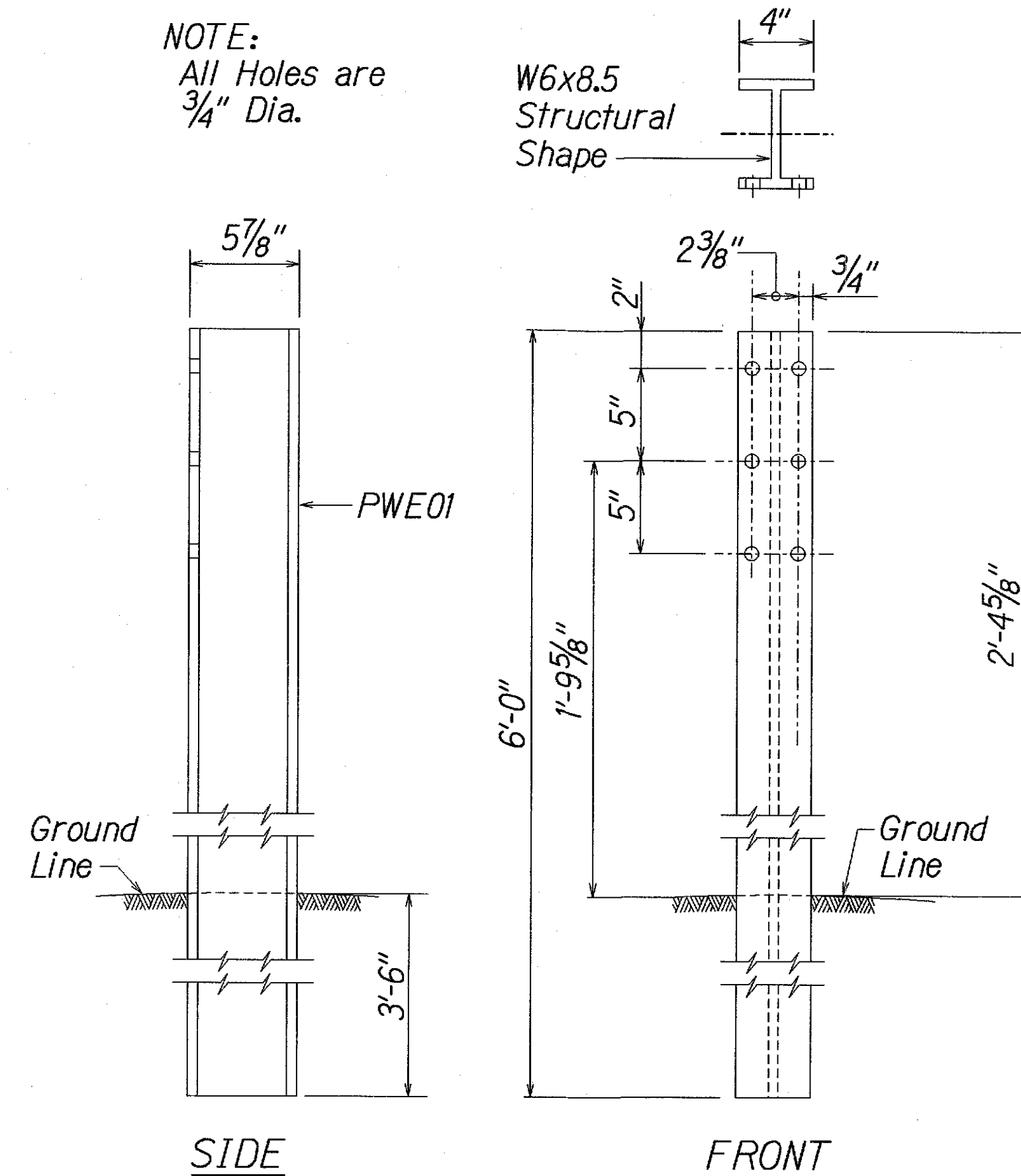


STRONG POST W-BEAM GUARDRAIL (SGR04a)

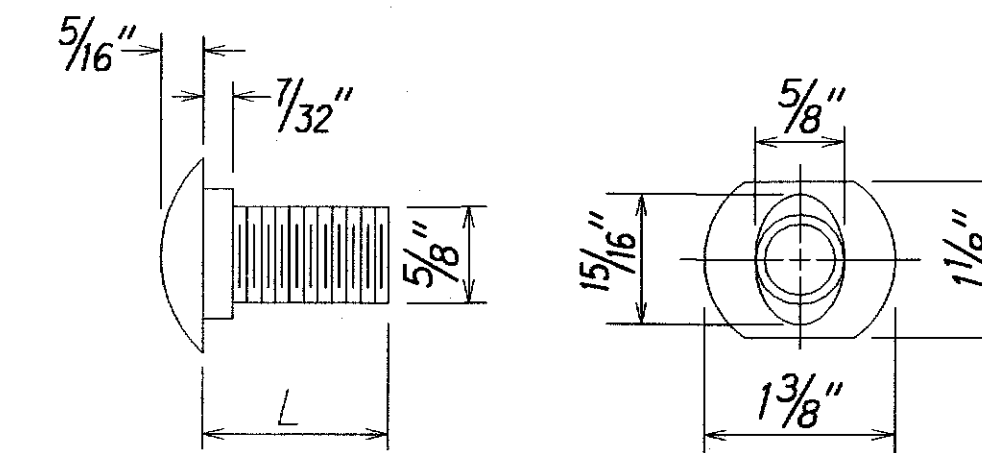


STRONG POST W-BEAM GUARDRAIL WITH RECYCLED OFFSET BLOCK OR PLASTIC BLOCKOUT

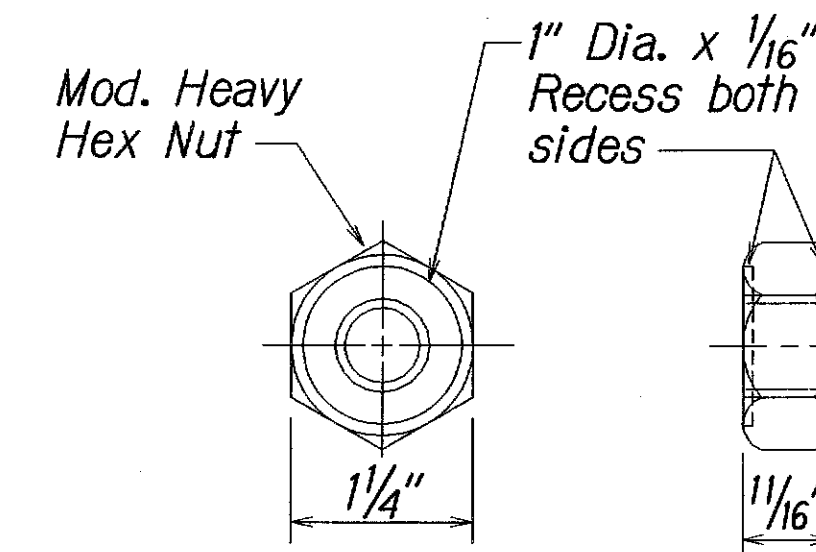
NOTE:
All Holes are
3/4" Dia.



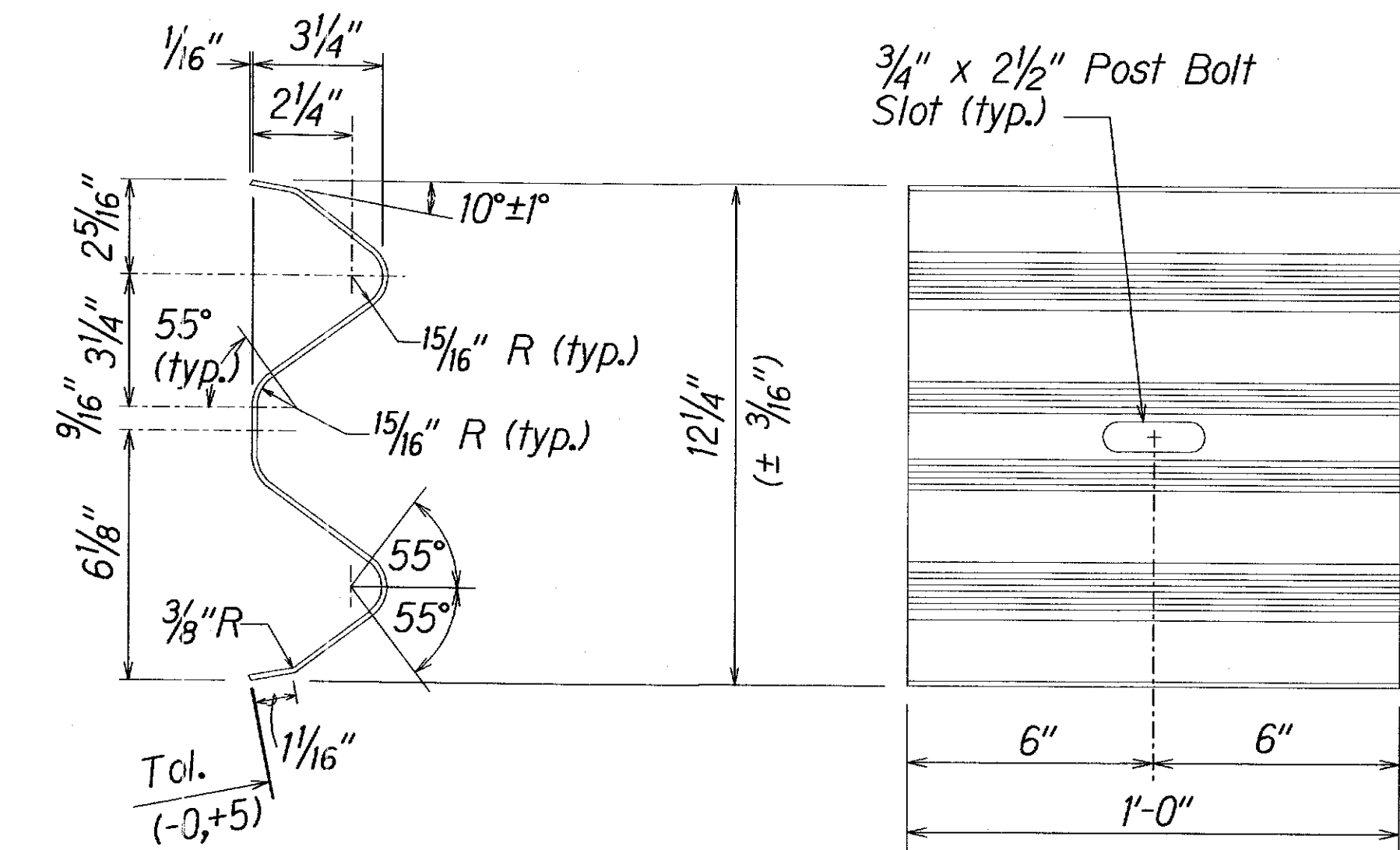
W-BEAM STRONG POST (PWE01)



DESIGNATOR	L
FBB01	1 3/8"
FBB02	2"
FBB03	10"

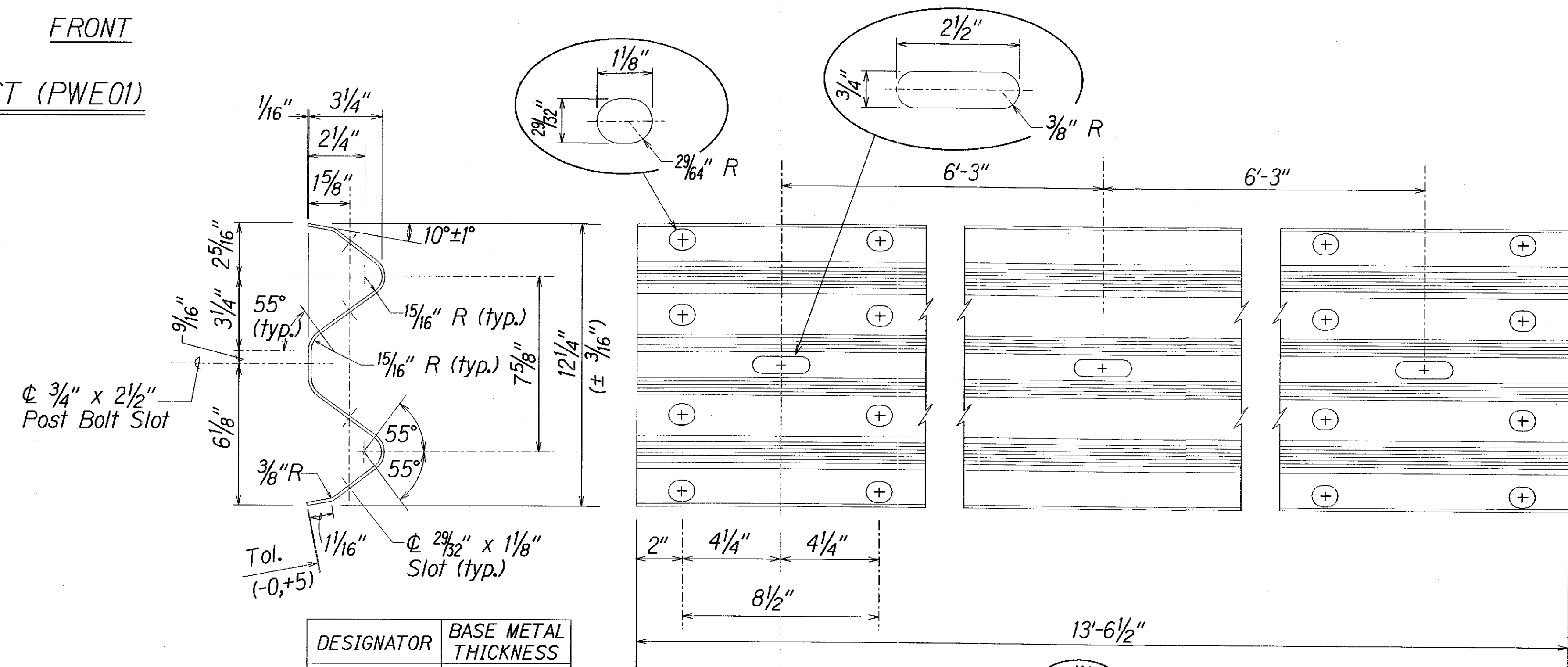


GUARDRAIL BOLTS AND RECESSED NUT



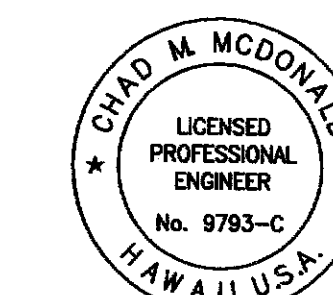
DESIGNATOR	BASE METAL THICKNESS
RWB01a	12 Gauge

W-BEAM BACK-UP-PLATE (RWB01a)



DESIGNATOR	BASE METAL THICKNESS
RWM02a	12 Gauge

2 SPACE W-BEAM GUARDRAIL (RWM02a)



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NOTE: Contractor to check and verify dimensions at job before proceeding with work.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRONG POST W-BEAM GUARDRAIL

MAMALAHOA HIGHWAY RESURFACING

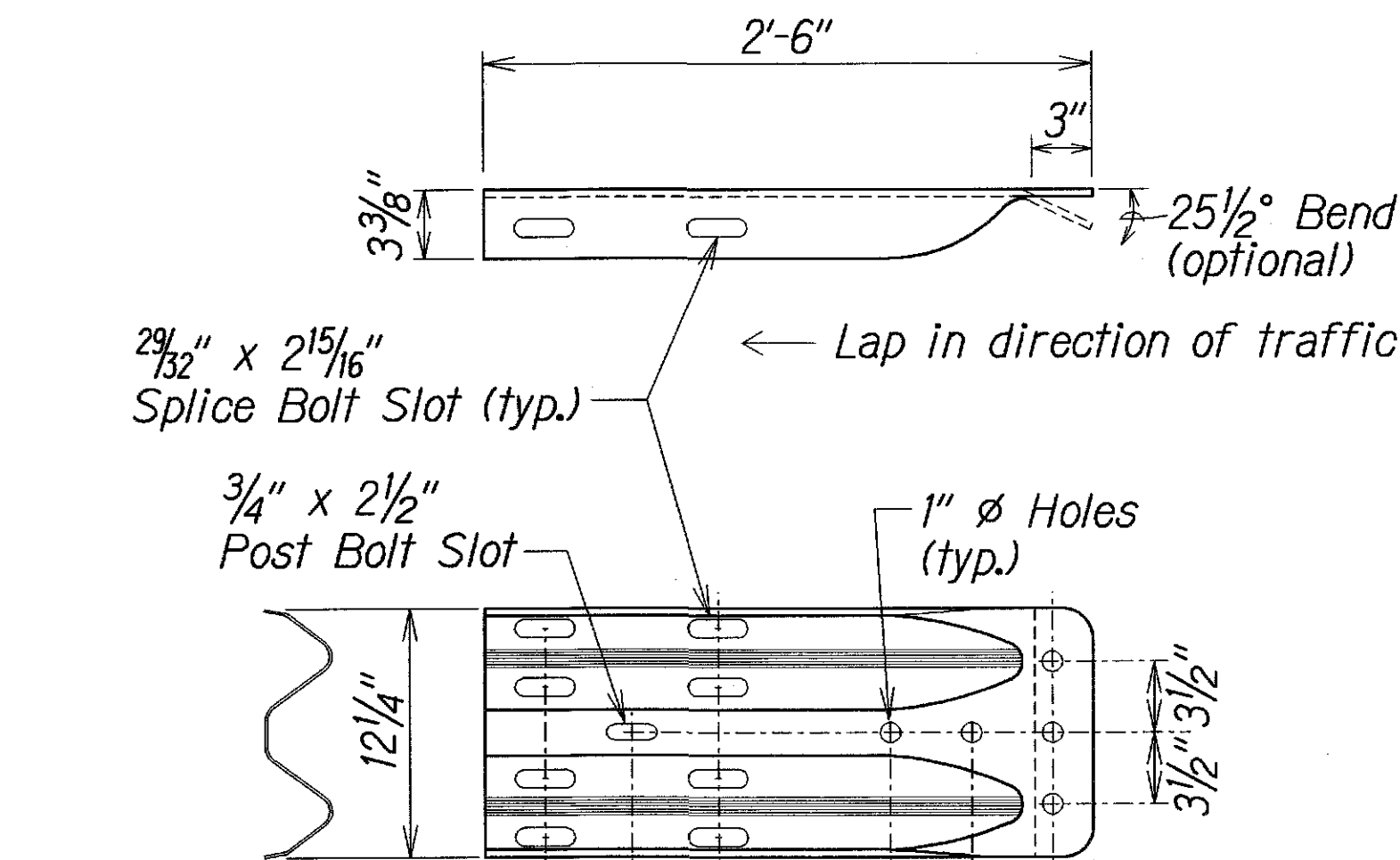
Kaupulehu to Makalei Road

Project No. 190B-01-09M

Scale: As Noted Date: May 2010

SHEET No. C-8 OF 54 SHEETS

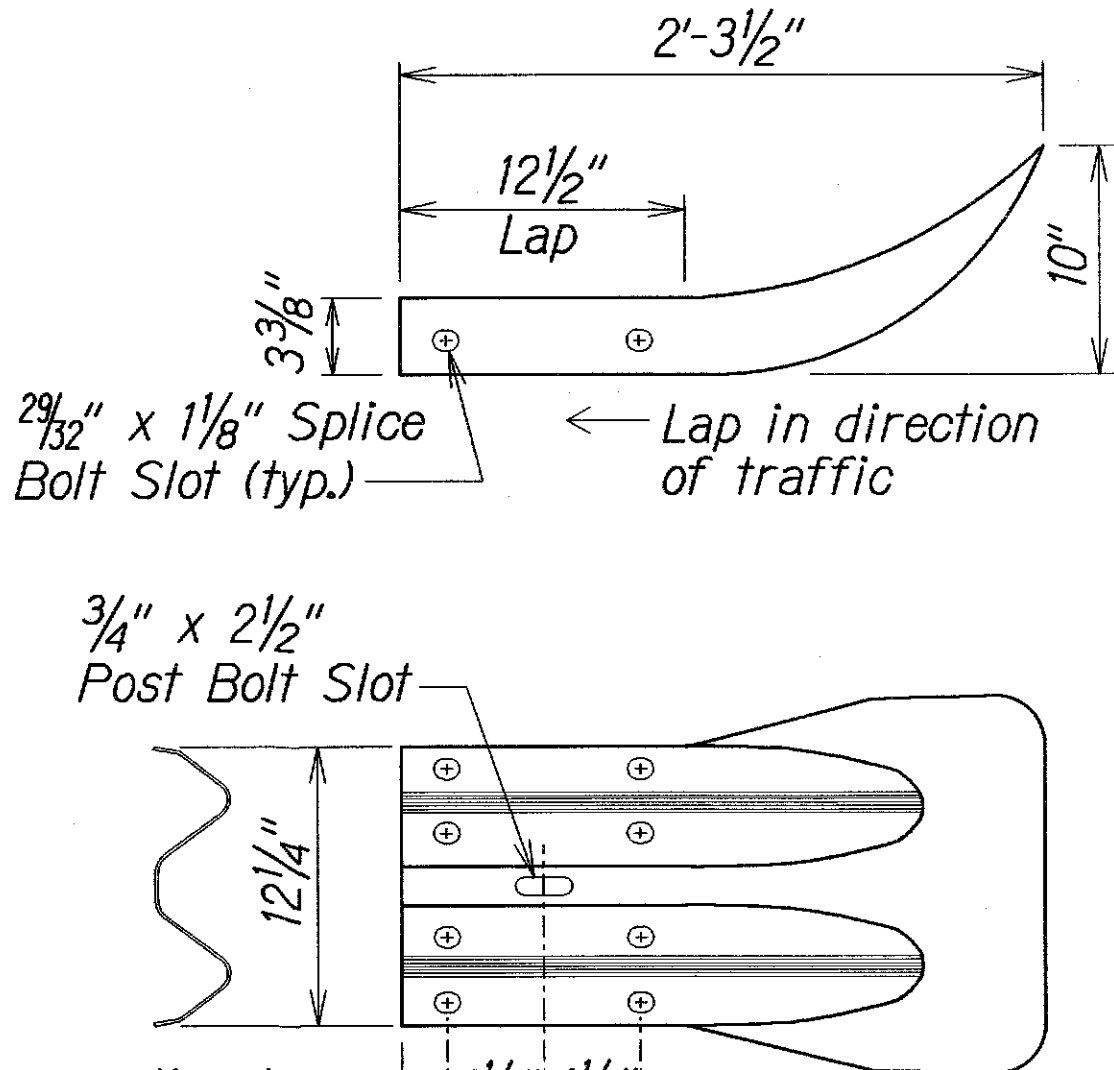
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	190B-01-09M	2010	11	54



The cross-sectional dimensions for this part are to fit over part RWM02a on the approach end and under part RWM02a on the trailing end.

DESIGNATOR	BASE METAL THICKNESS
RWE02b	10 Gauge

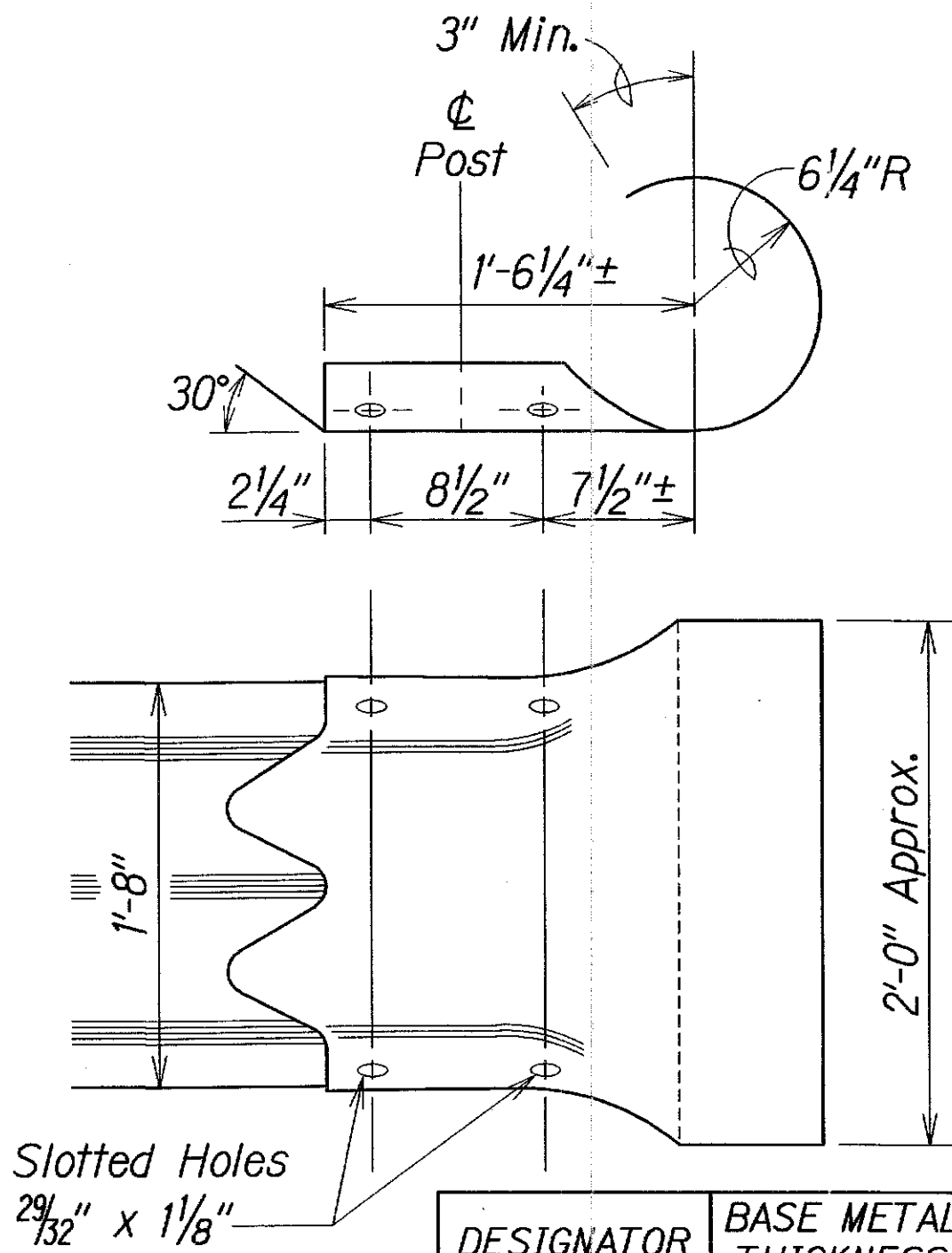
W-BEAM TERMINAL CONNECTOR (RWE02b)



The cross-sectional dimensions for this part are to fit over part RWM02a on the approach end and under part RWM02a on the trailing end.

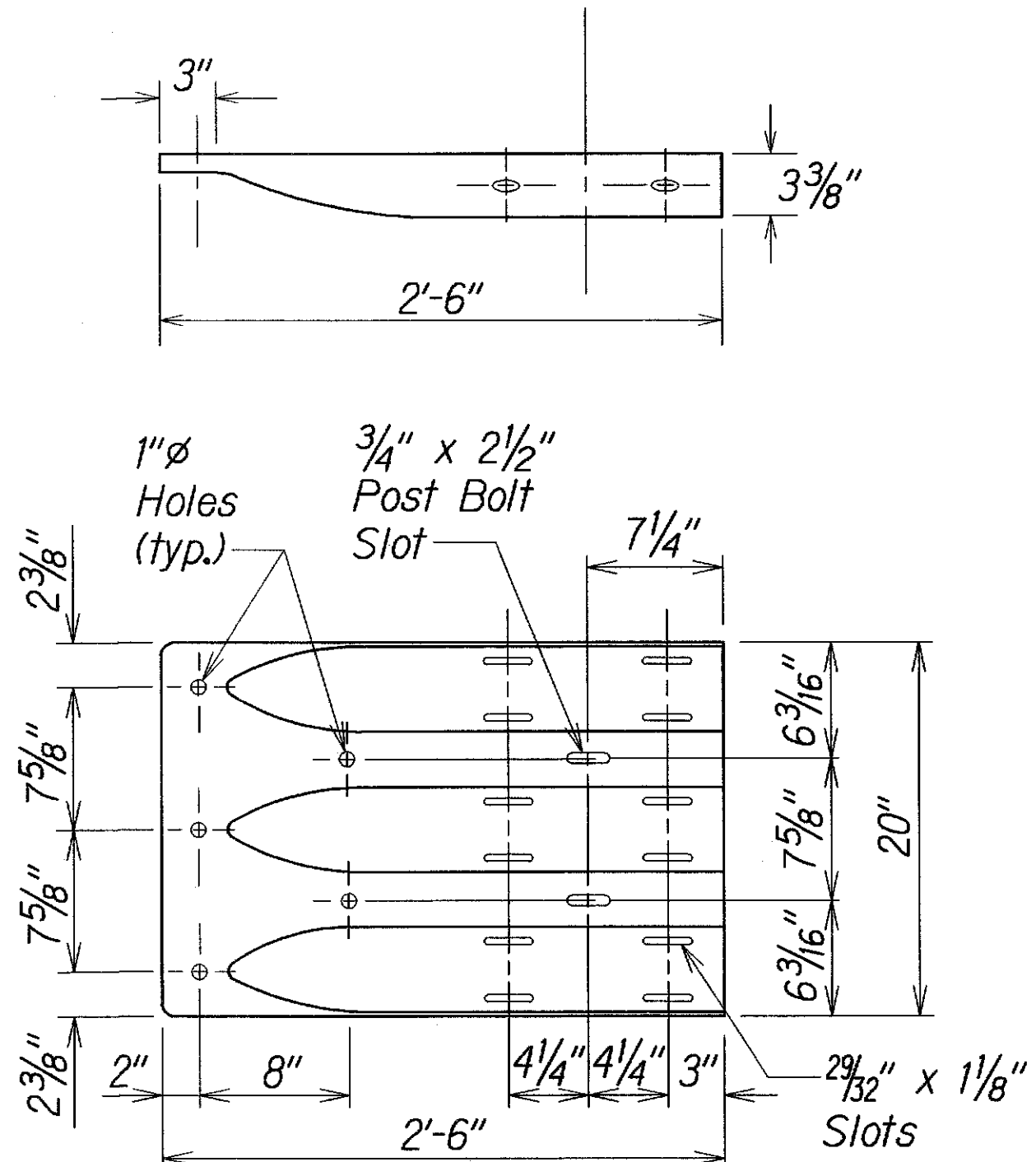
DESIGNATOR	BASE METAL THICKNESS
RWE01a	12 Gauge

W-BEAM END SECTION (FLARED RWE01a)



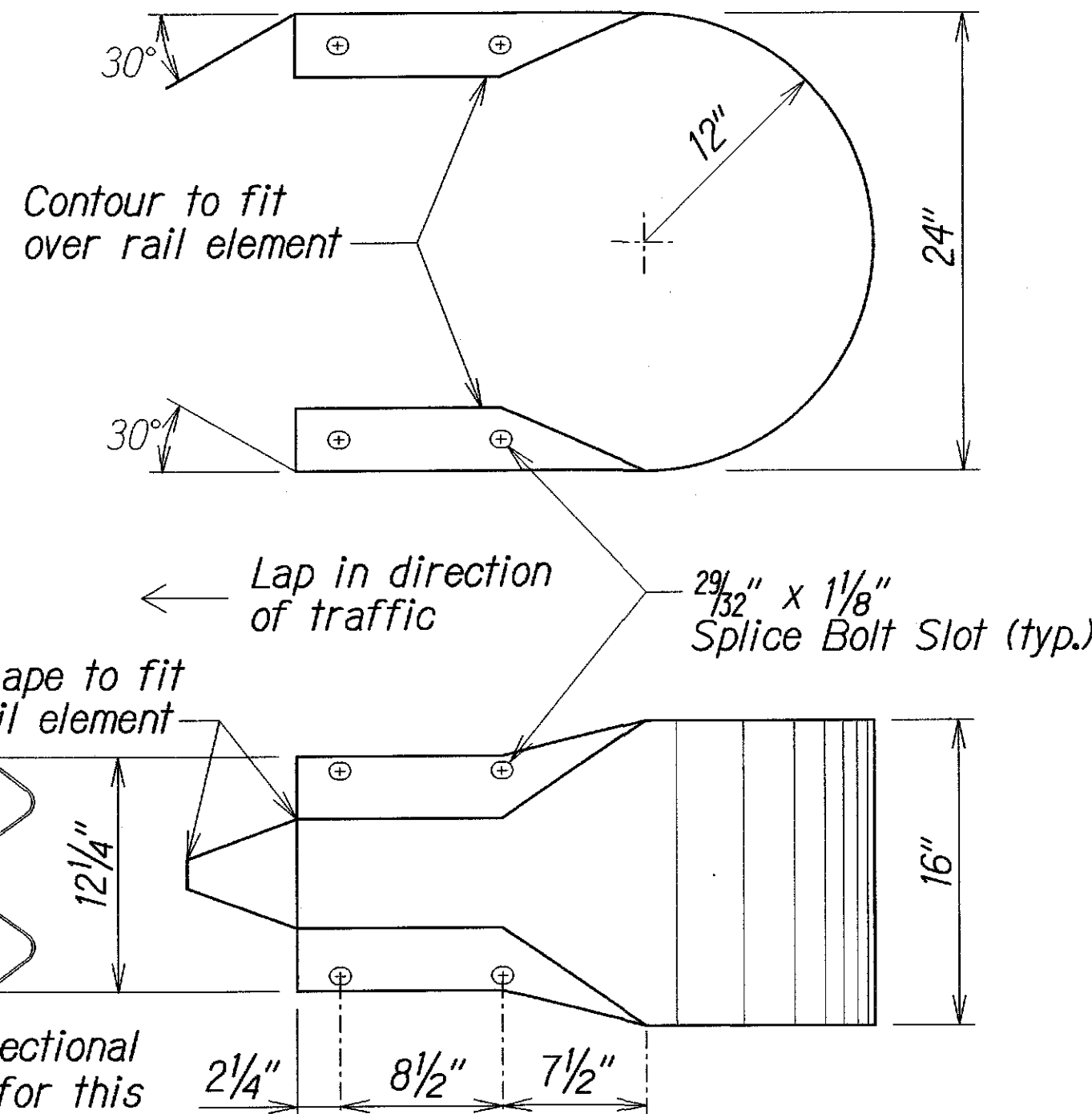
DESIGNATOR	BASE METAL THICKNESS
RTE02b	10 Gauge

THRIE-BEAM SECTION (ROUNDED) (RTE02b)



DESIGNATOR	BASE METAL THICKNESS
RTE01b	10 Gauge

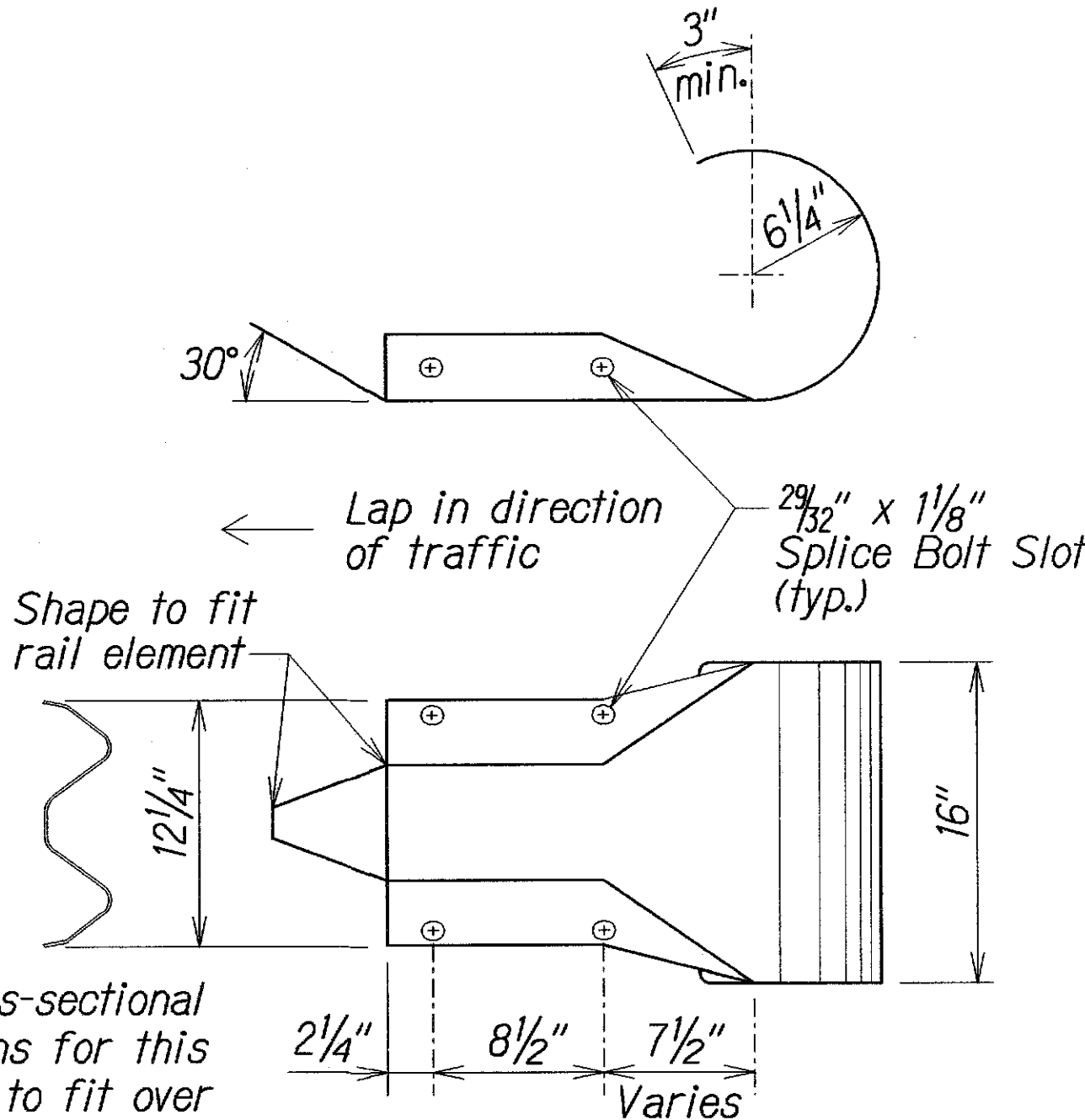
THRIE-BEAM TERMINAL CONNECTOR (RTE01b)



The cross-sectional dimensions for this part are to fit over part RWM02a

DESIGNATOR	BASE METAL THICKNESS
RWE06a	12 Gauge

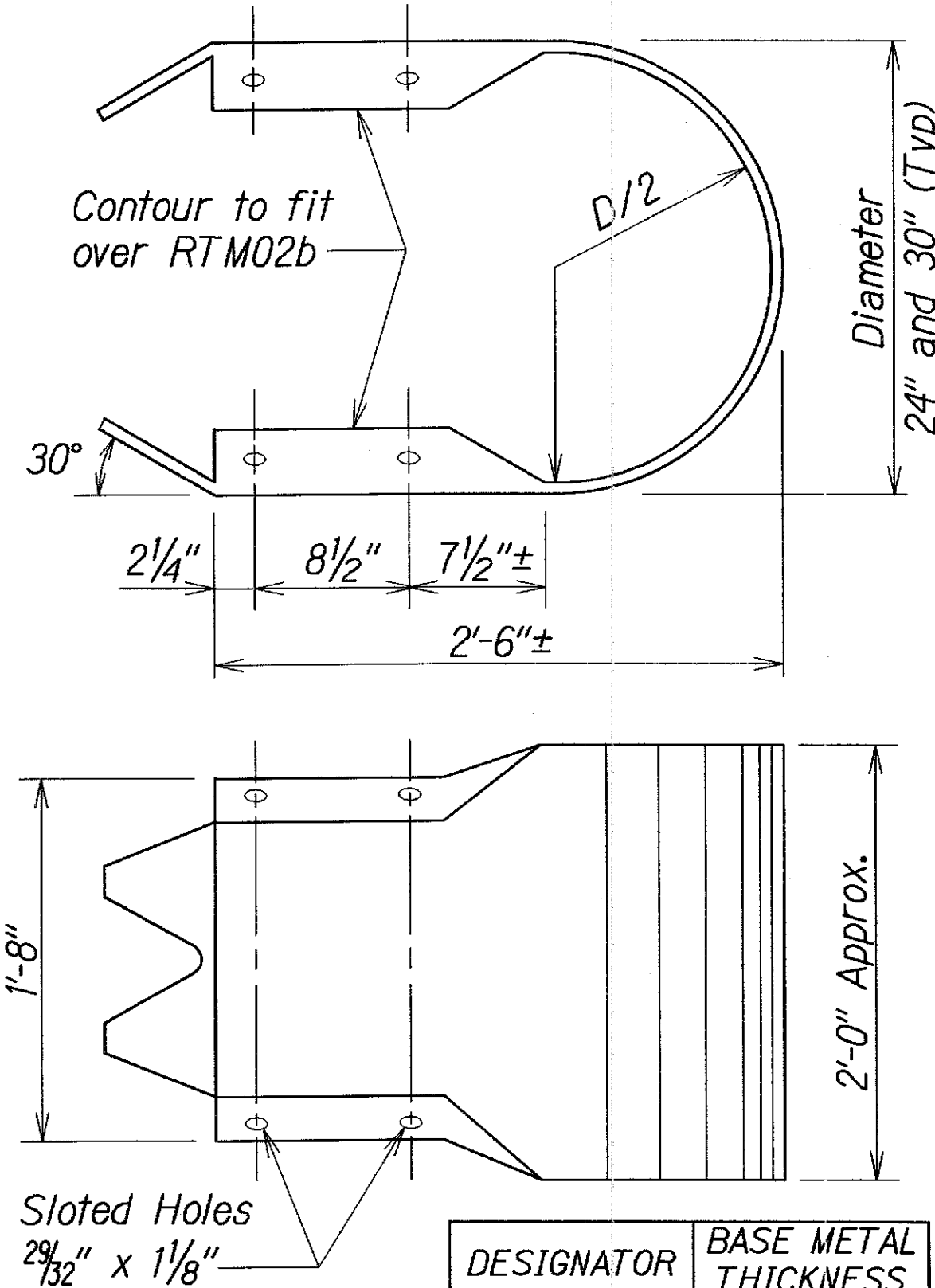
W-BEAM END SECTION (BUFFER RWE06a)



The cross-sectional dimensions for this part are to fit over part RWM02a

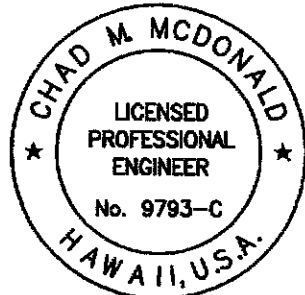
DESIGNATOR	BASE METAL THICKNESS
RWE03a	12 Gauge

W-BEAM END SECTION (ROUNDED RWE03a)



DESIGNATOR	BASE METAL THICKNESS
RTE03b & RTE04b	10 Gauge

THRIE-BEAM END SECTION (BUFFER RTE03b or RTE04b)




This work was prepared by me or under my supervision

Chad M. McDonald
MITSUNAGA & ASSOCIATES, INC. EXP. DATE
NOTE: Contractor to check and verify dimensions at job before proceeding with work.

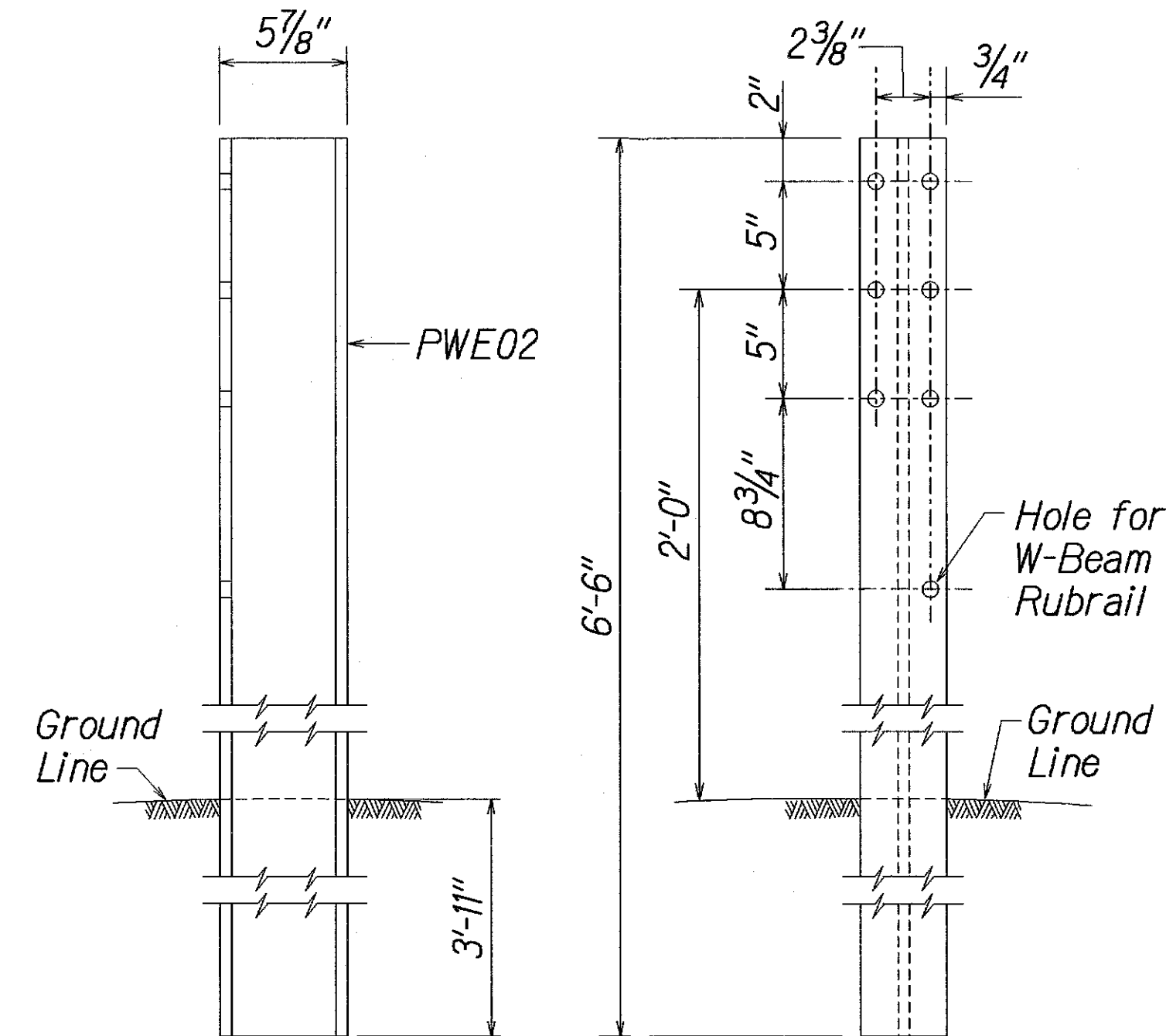
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
GUARDRAIL TERMINAL CONNECTORS AND END SECTIONS
MAMALAHOA HIGHWAY RESURFACING
Kaupulehu to Makalei Road
Project No. 190B-01-09M
Scale: As Noted Date: May 2010
SHEET No. C-9 OF 54 SHEETS

11

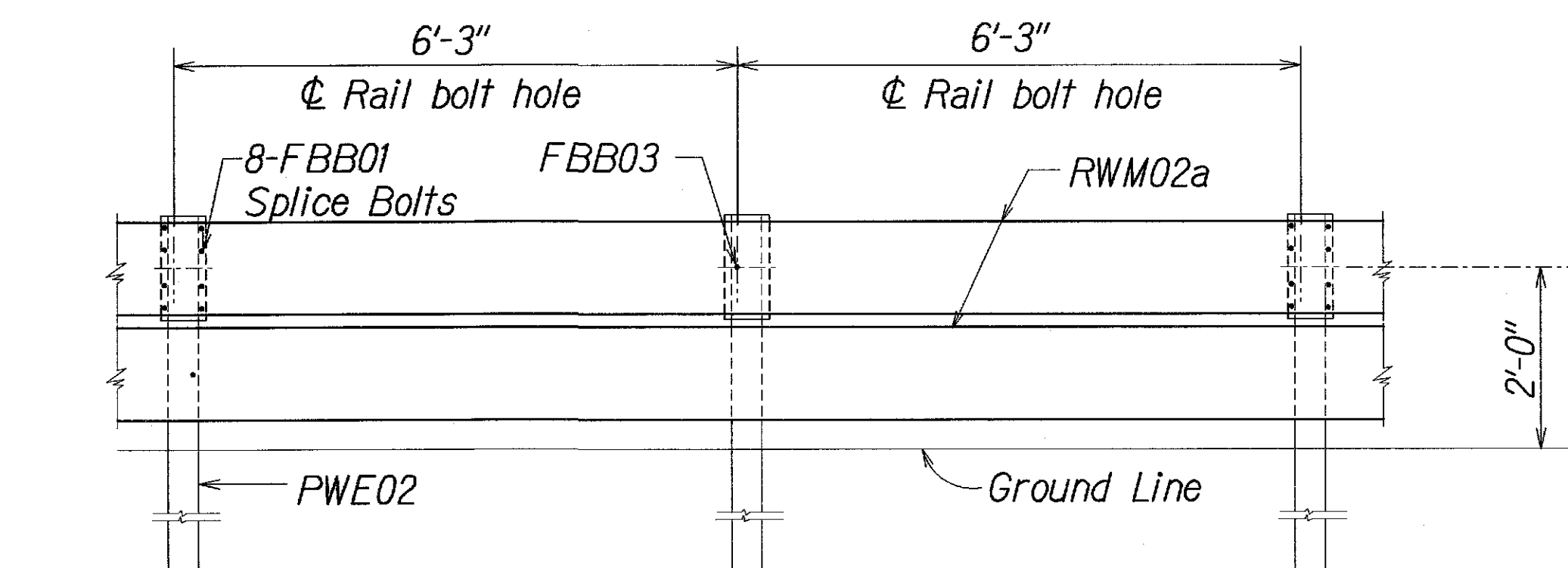
W6x8.5
Structural
Shape



A technical drawing of a W6x8.5 structural shape. The drawing shows the cross-section of the beam, including the top flange, web, and bottom flange. A dimension line indicates the width of the top flange is 4 inches. An arrow points from the text 'Structural Shape' to the web of the beam.

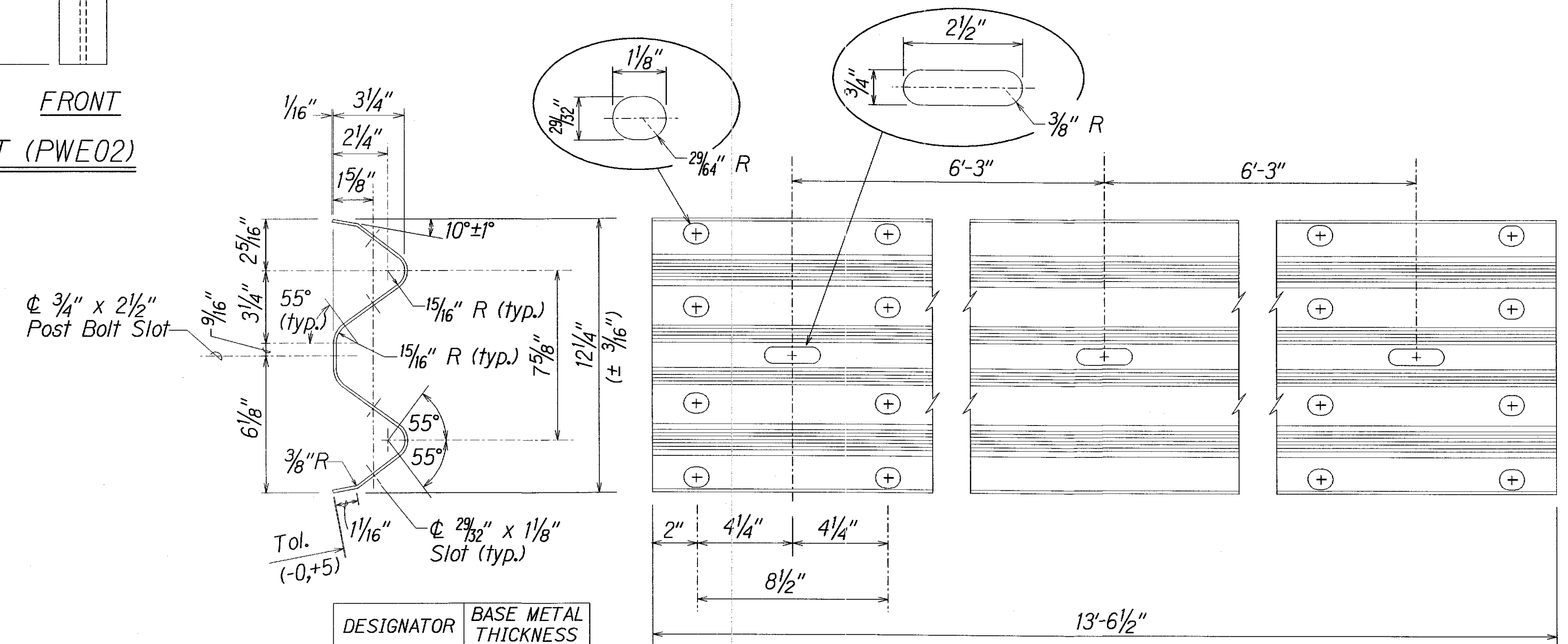


SIDE FRONT
W-BEAM STRONG POST (PWE02)

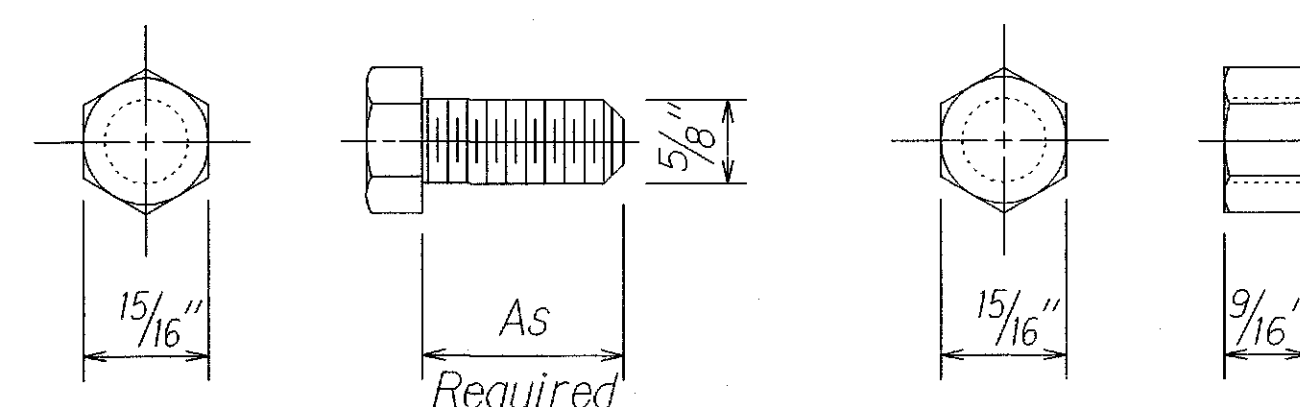


ELEVATION

STRONG POST RUBRAIL (W-BEAM) GUARDRAIL WITH
RECYCLED OFFSET BLOCK OR PLASTIC BLOCKOUT

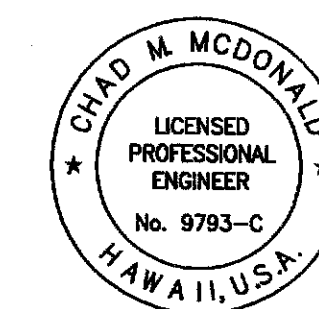


2 SPACE W-BEAM GUARDRAIL (RWM02a)



HEX BOLT & NUT (FBX16a)

DESIGNATOR	BASE METAL THICKNESS
RWM02a	12 Gauge



Chia N. McGinnis 4/30/2012
MITSUNAGA & ASSOCIATES, INC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

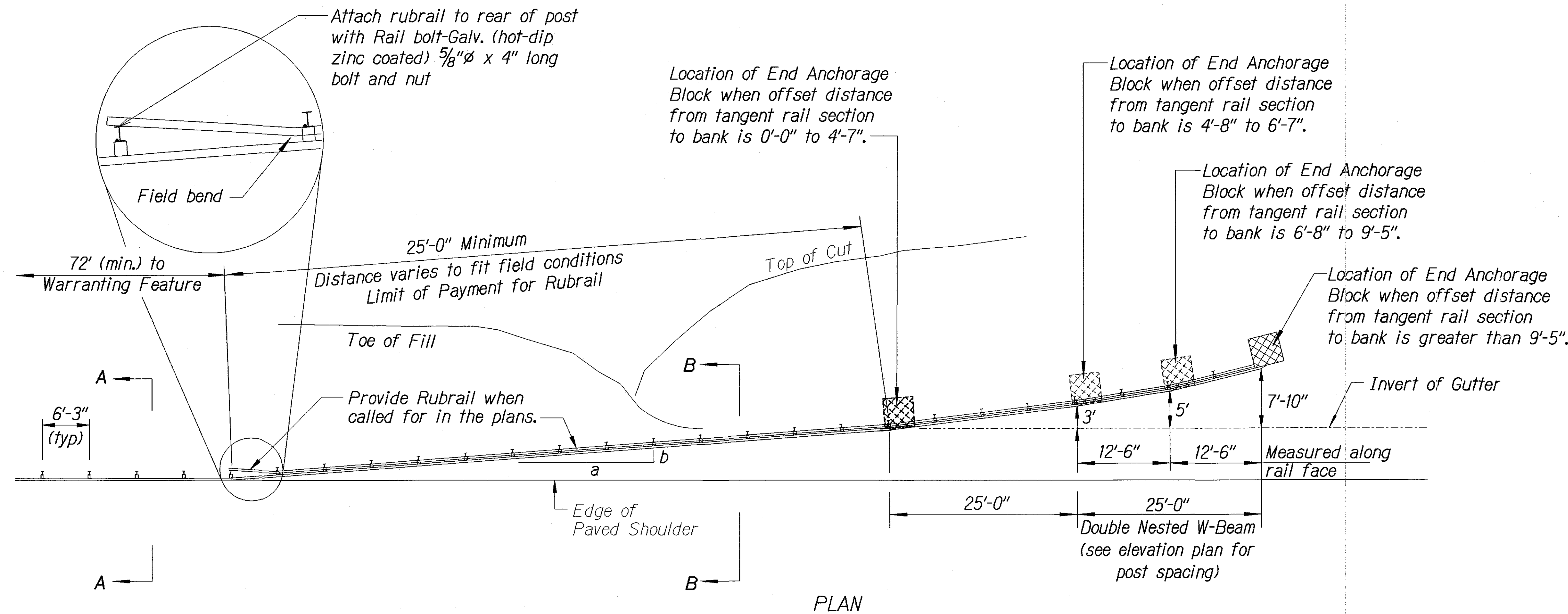
STRONG POST RUBRAIL
(W-BEAM) GUARDRAIL

MAMALAHOA HIGHWAY RESURFACING
Kaupulehu to Makalei Road
Project No. 190B-01-09M

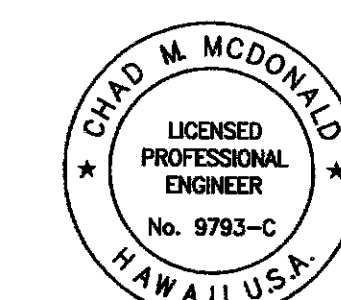
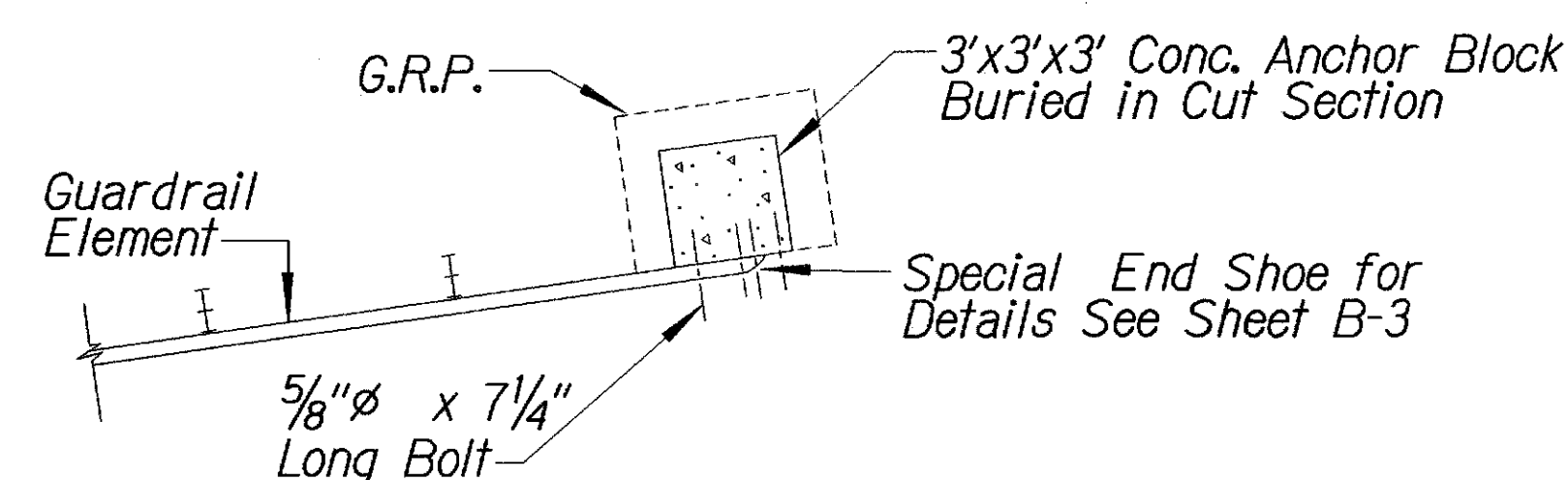
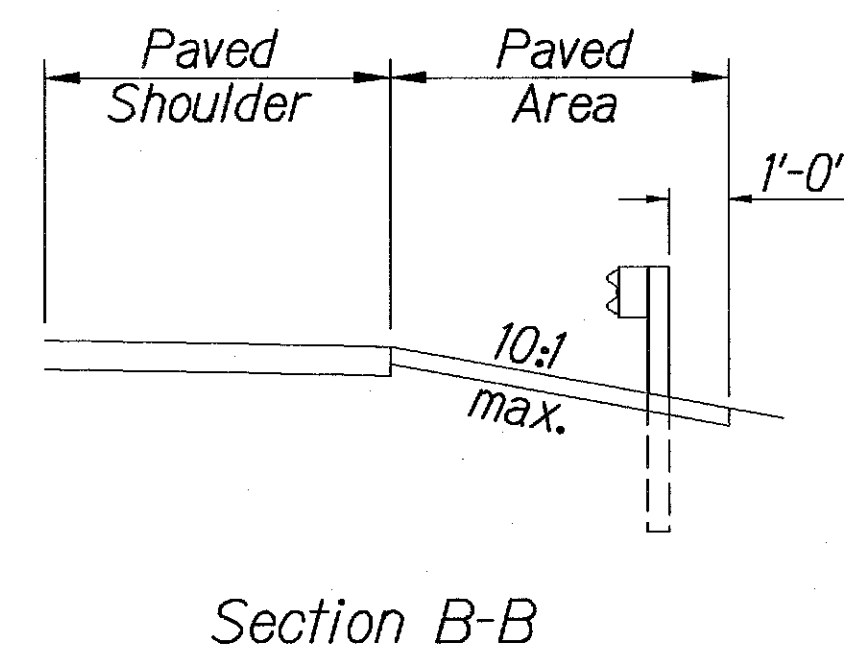
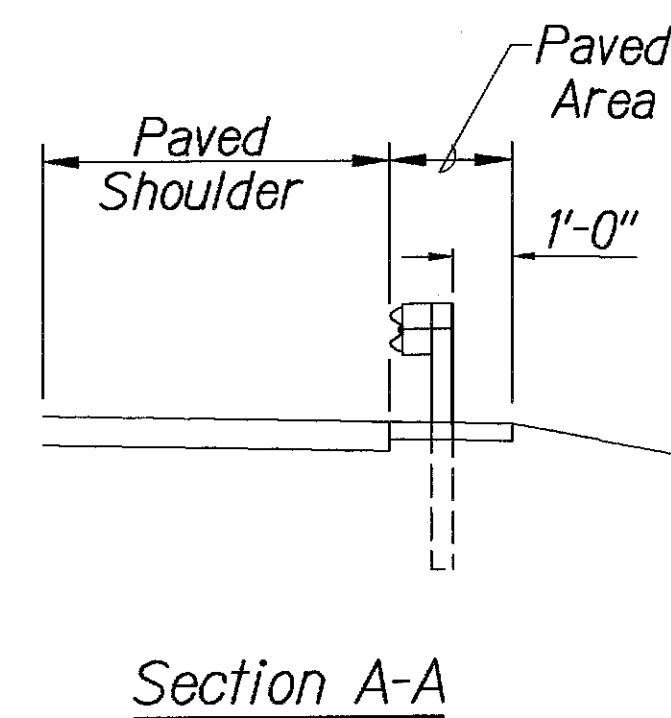
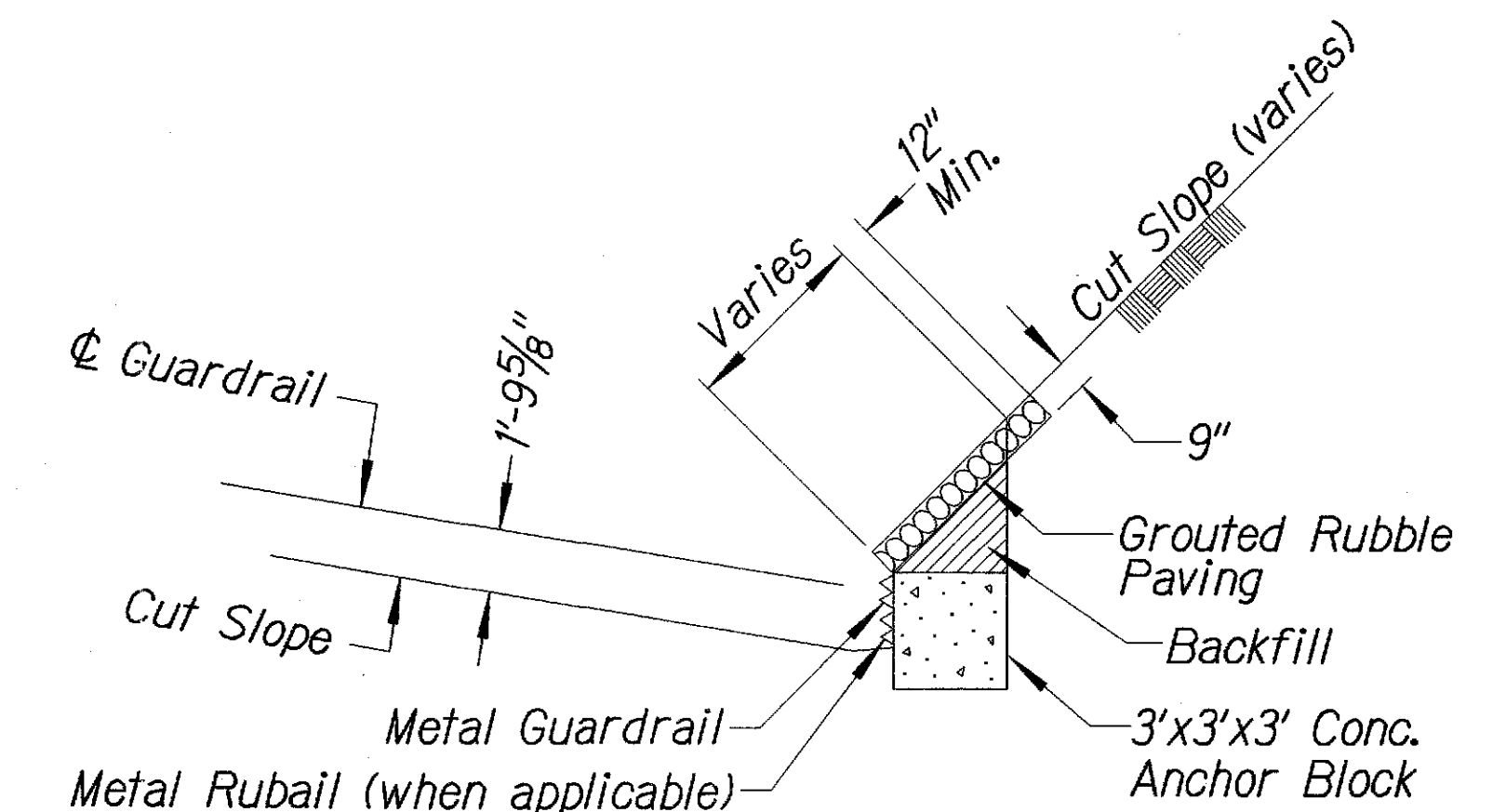
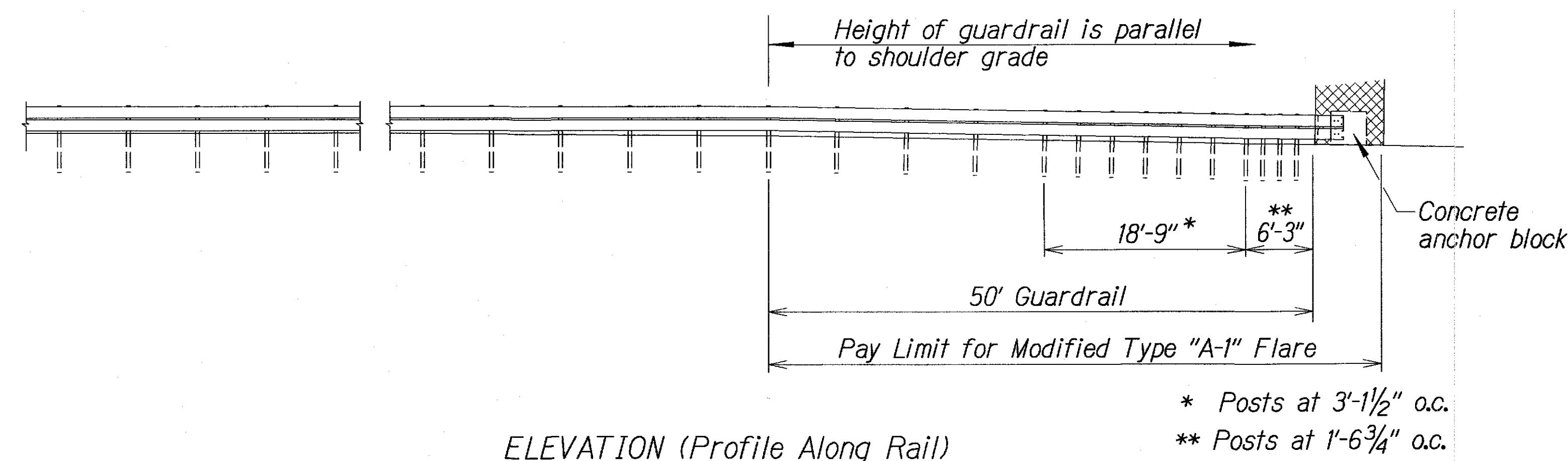
Scale: As Noted Date: May 2010

SHEET No. **C-10** OF **54** SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	190B-01-09M	2010	13	54



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



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MITSUNAGA & ASSOCIATES, INC. EXP. DATE 4/30/2012

NOTE: Contractor to check and verify dimensions of job before proceeding with work.

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

MODIFIED TYPE "A-1" FLARE

MAMALAHOA HIGHWAY RESURFACING

Kaupulehu to Makalei Road

Project No. 190B-01-09M

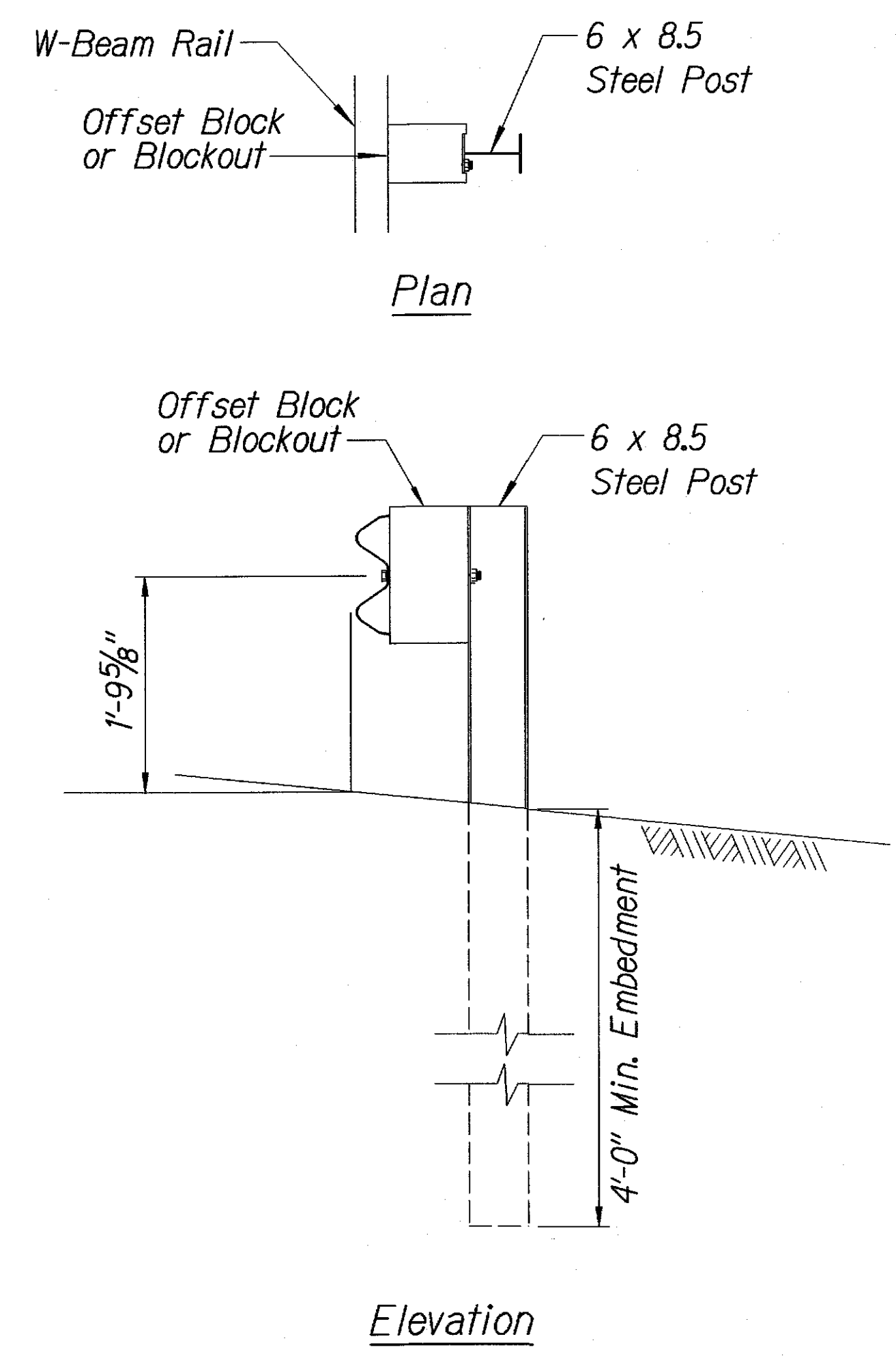
Scale: As Noted

Date: May 2010

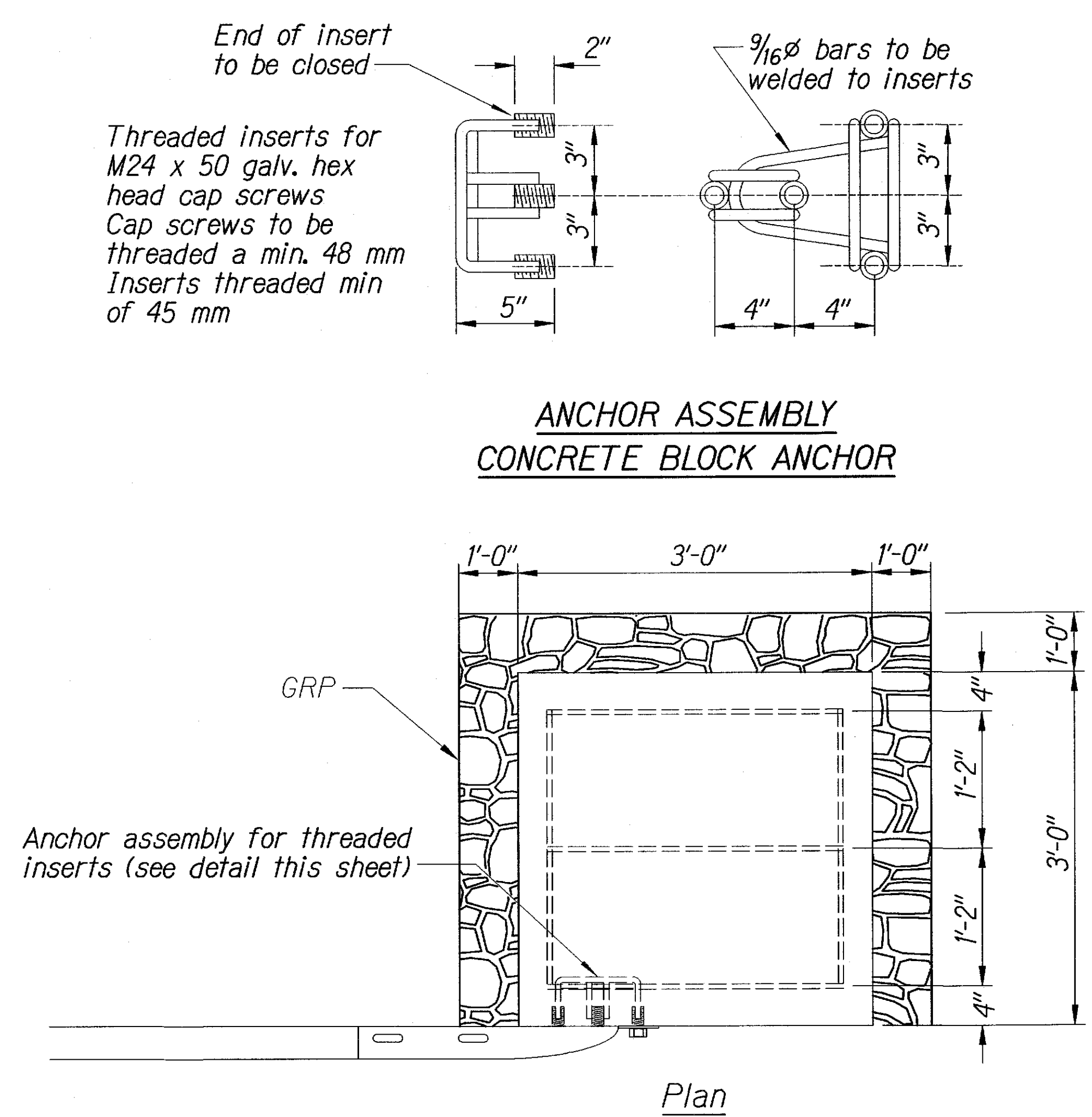
SHEET No. C-11 OF 54 SHEETS

SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
CHECKED BY	
NOTE BOOK	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	190B-01-09M	2010	14	54

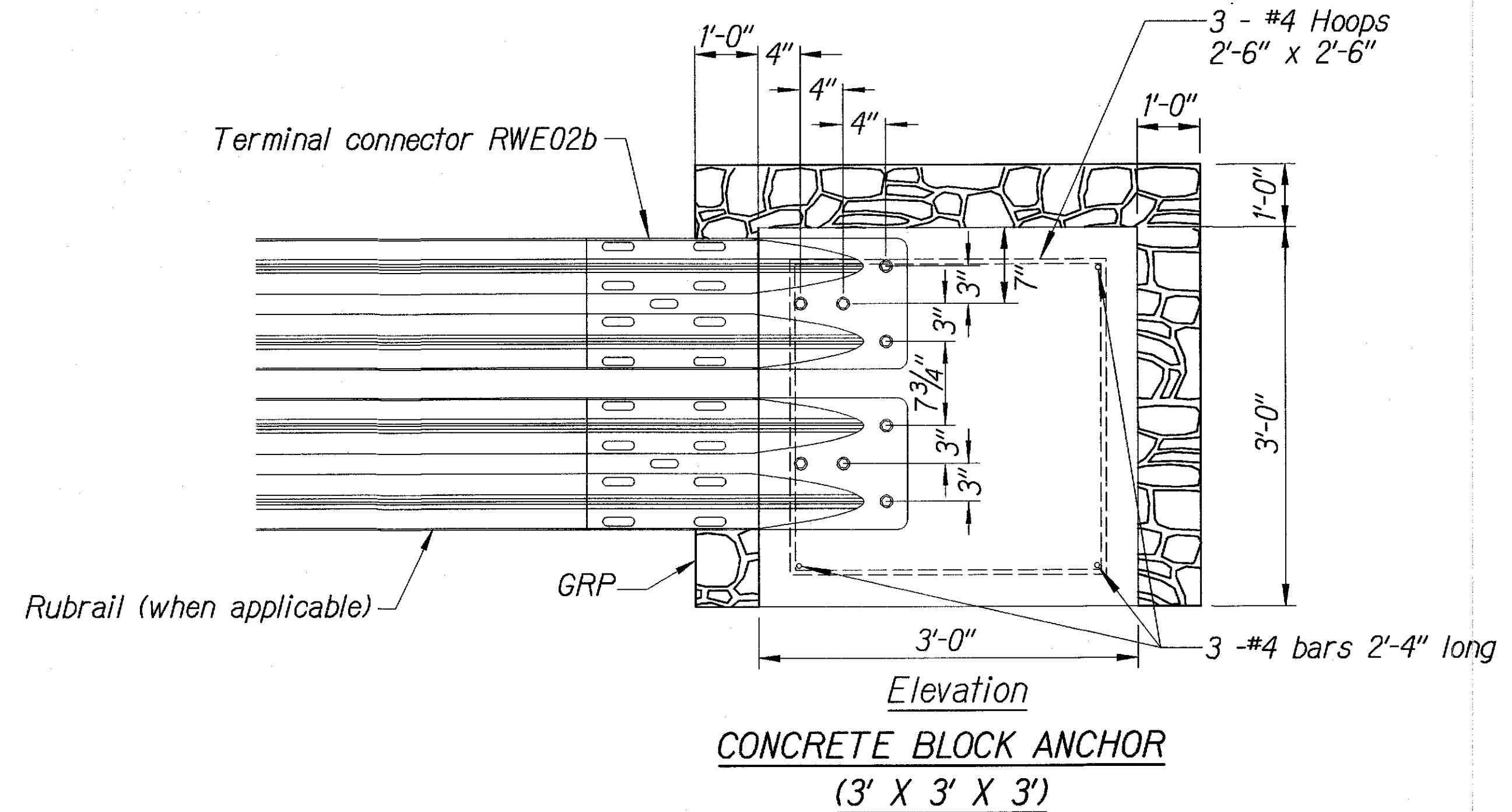


STRONG POST W-BEAM GUARDRAIL

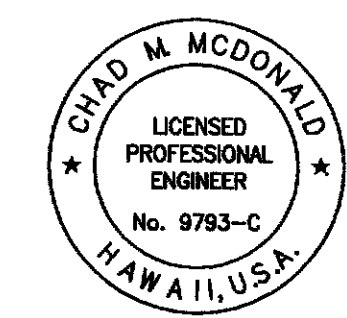


Note:

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.



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



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NOTE: Contractor to check and verify dimensions of job before proceeding with work.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

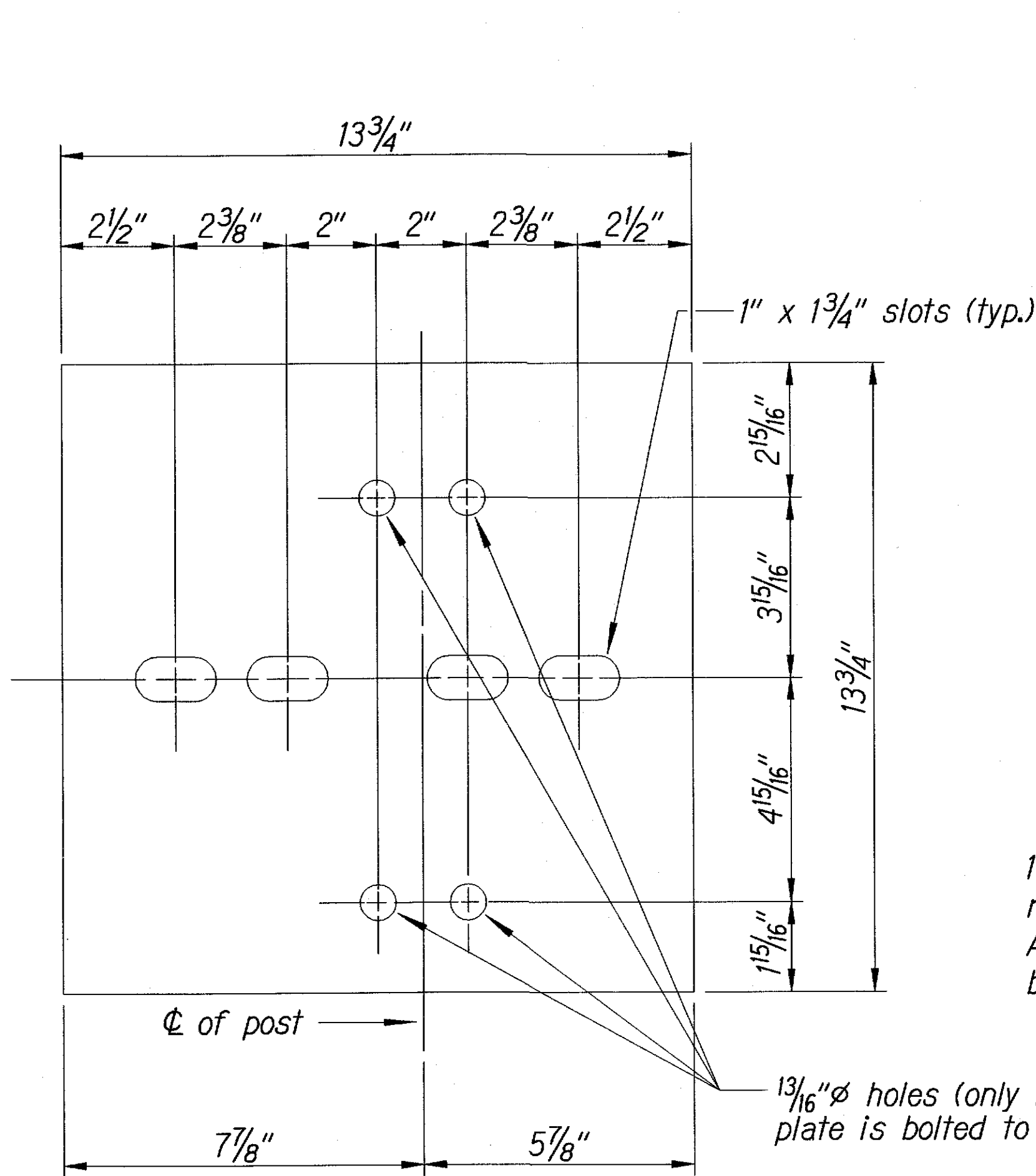
MODIFIED TYPE "A-1" FLARE
MAMALAHOA HIGHWAY RESURFACING
Kaupulehu to Makalei Road
Project No. 190B-01-09M

Scale: As Noted
Date: May 2010

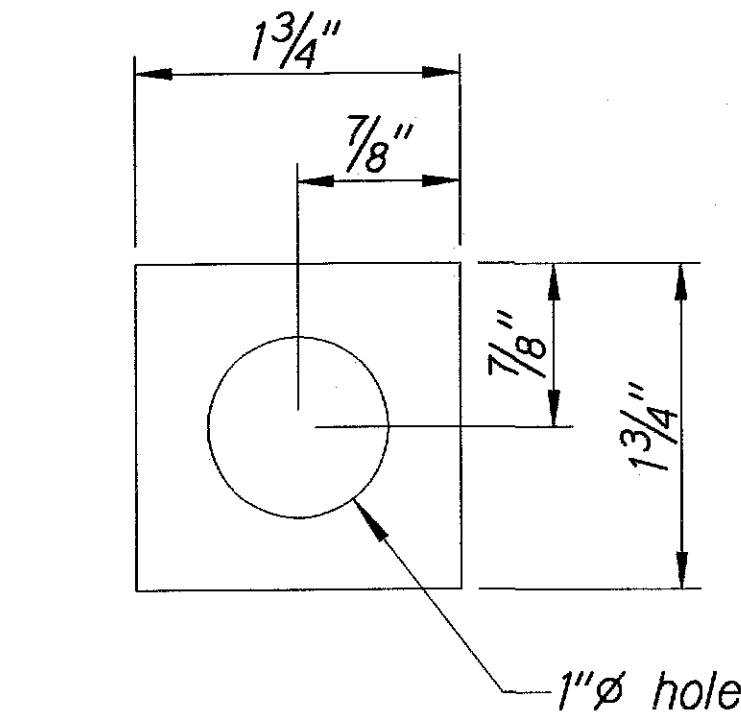
SHEET No. C-12 OF 54 SHEETS

SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	

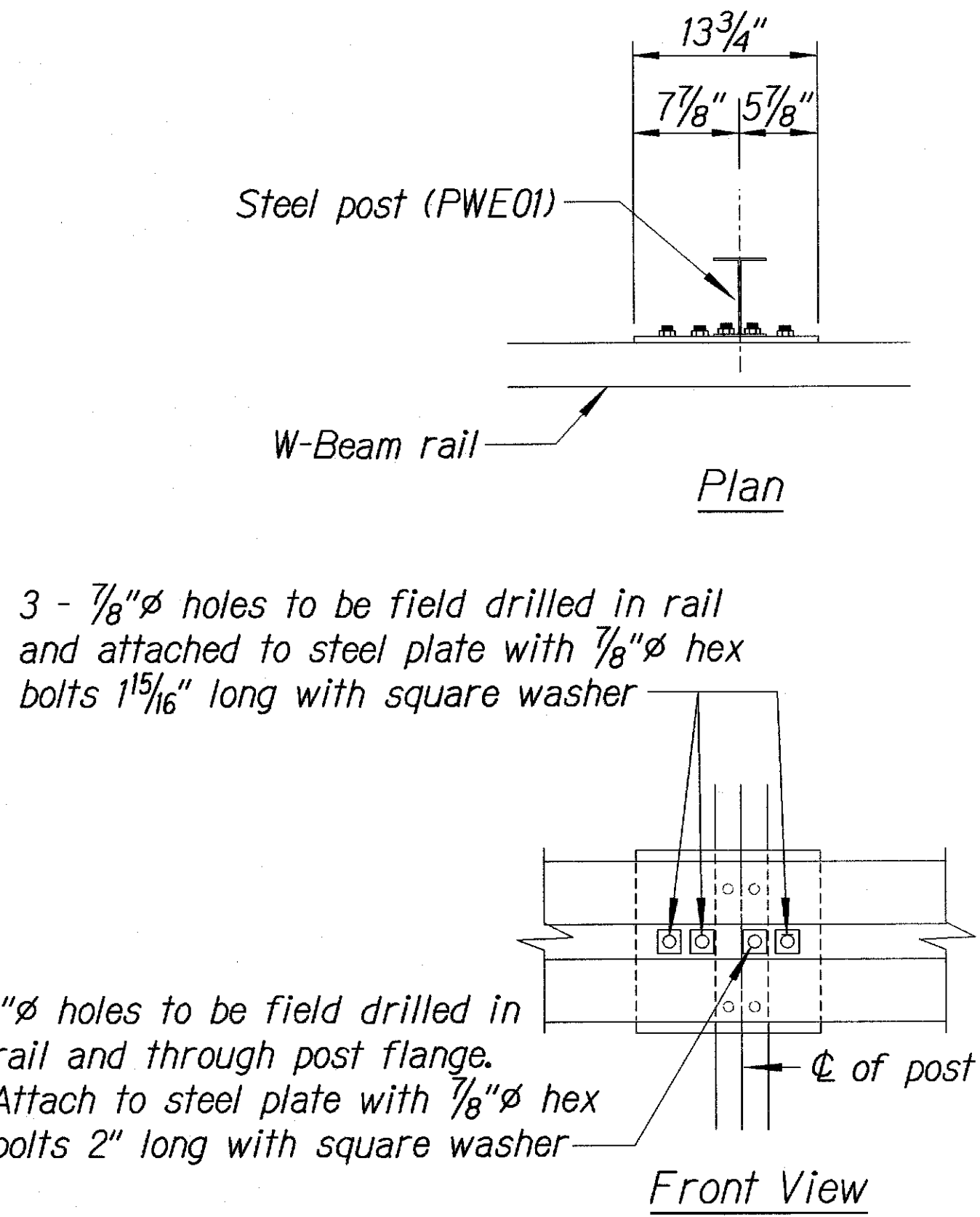
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	190B-01-09M	2010	15	54



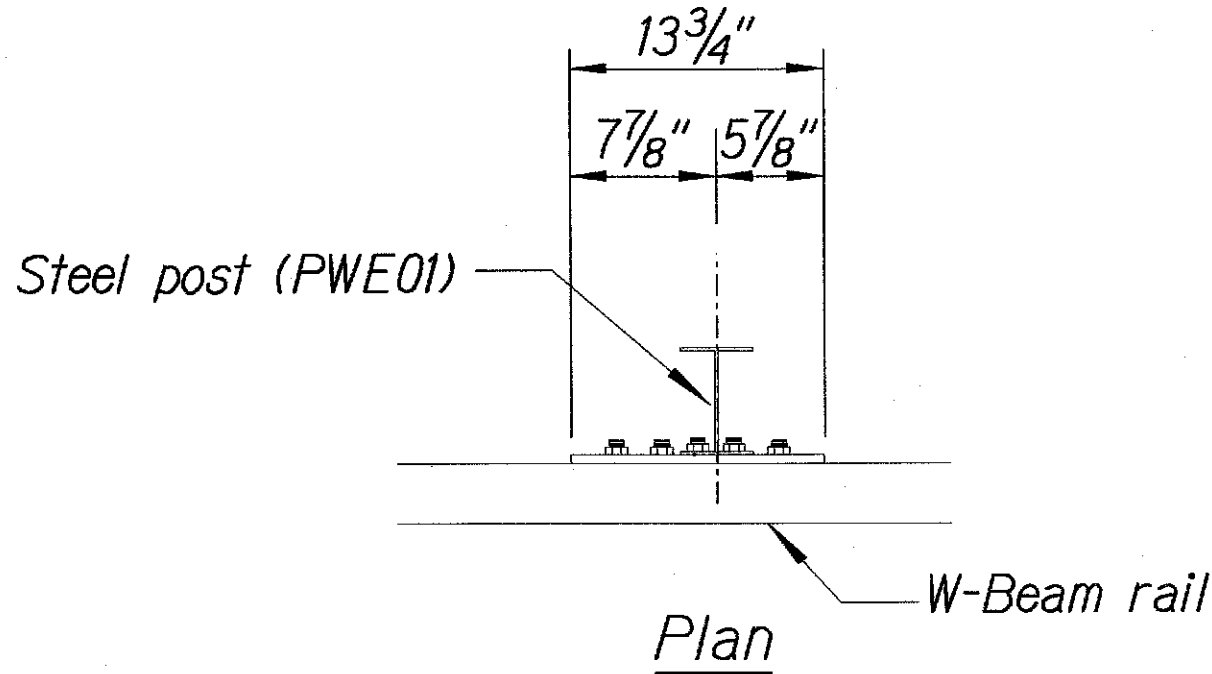
Steel Plate - 1/2"
(Hot-dip Zinc Coated Galvanized-
Welded or Bolted to Post)



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

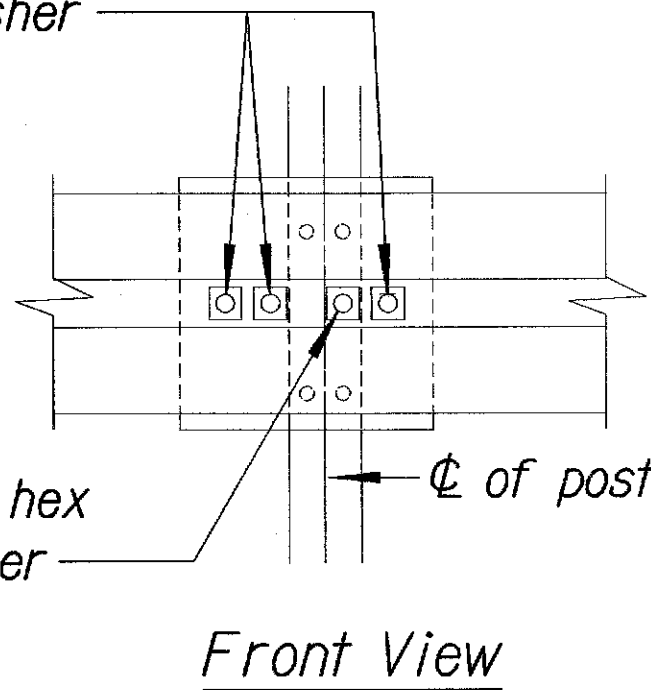


RUBRAIL ANCHOR DETAILS



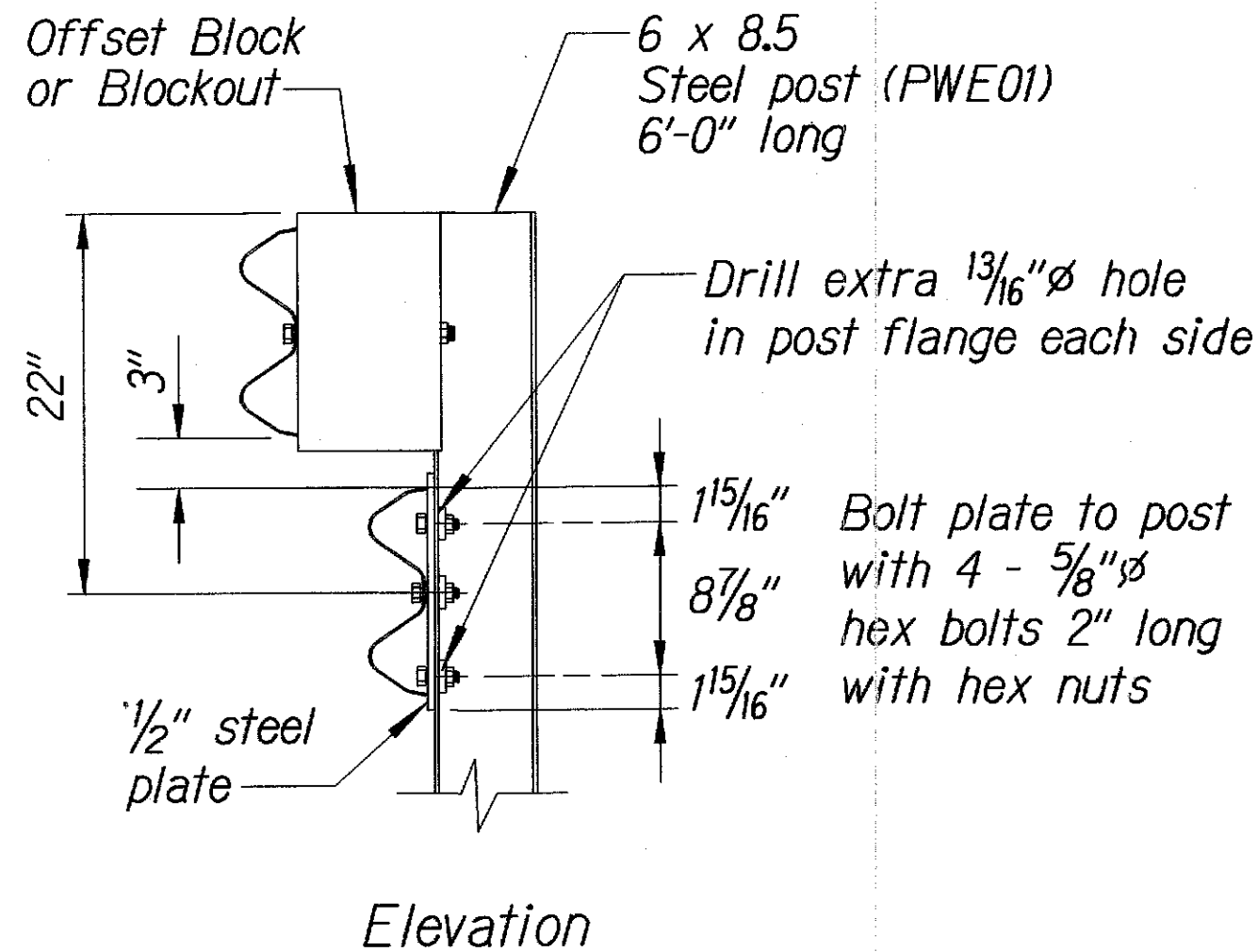
3 - 7/8" holes to be field drilled in rail
and attached to steel plate with 7/8" hex
bolts 1 15/16" long with square washer

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



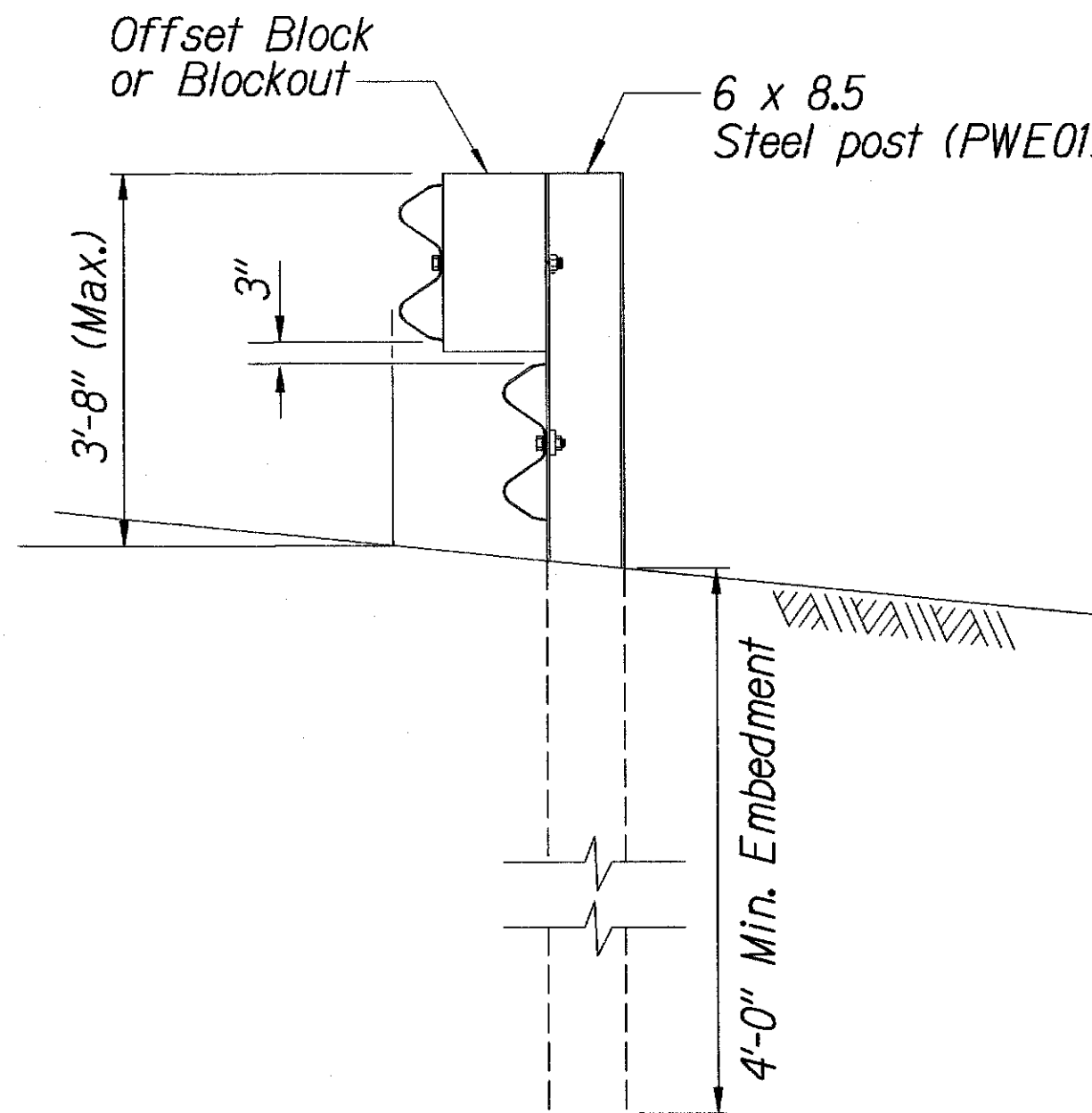
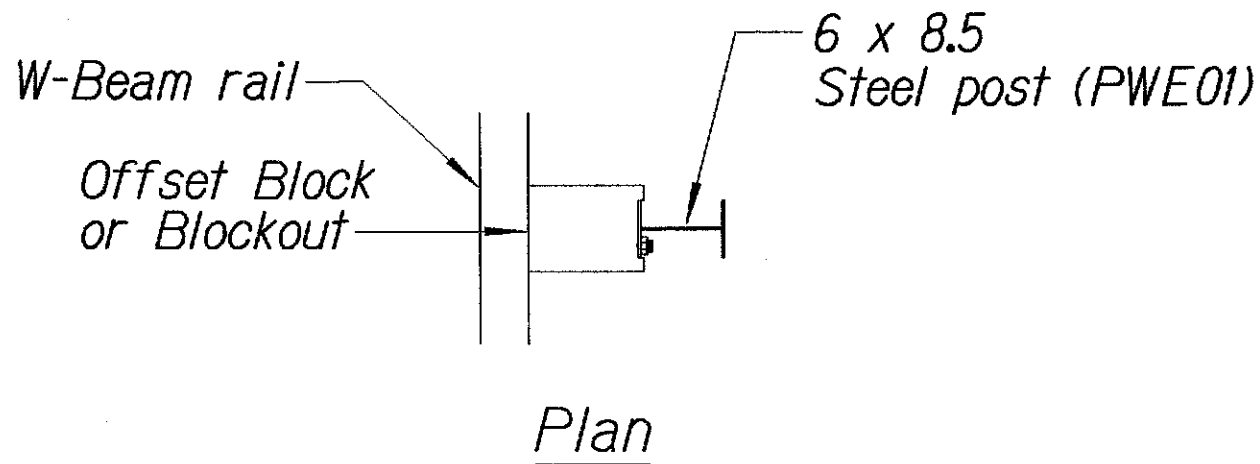
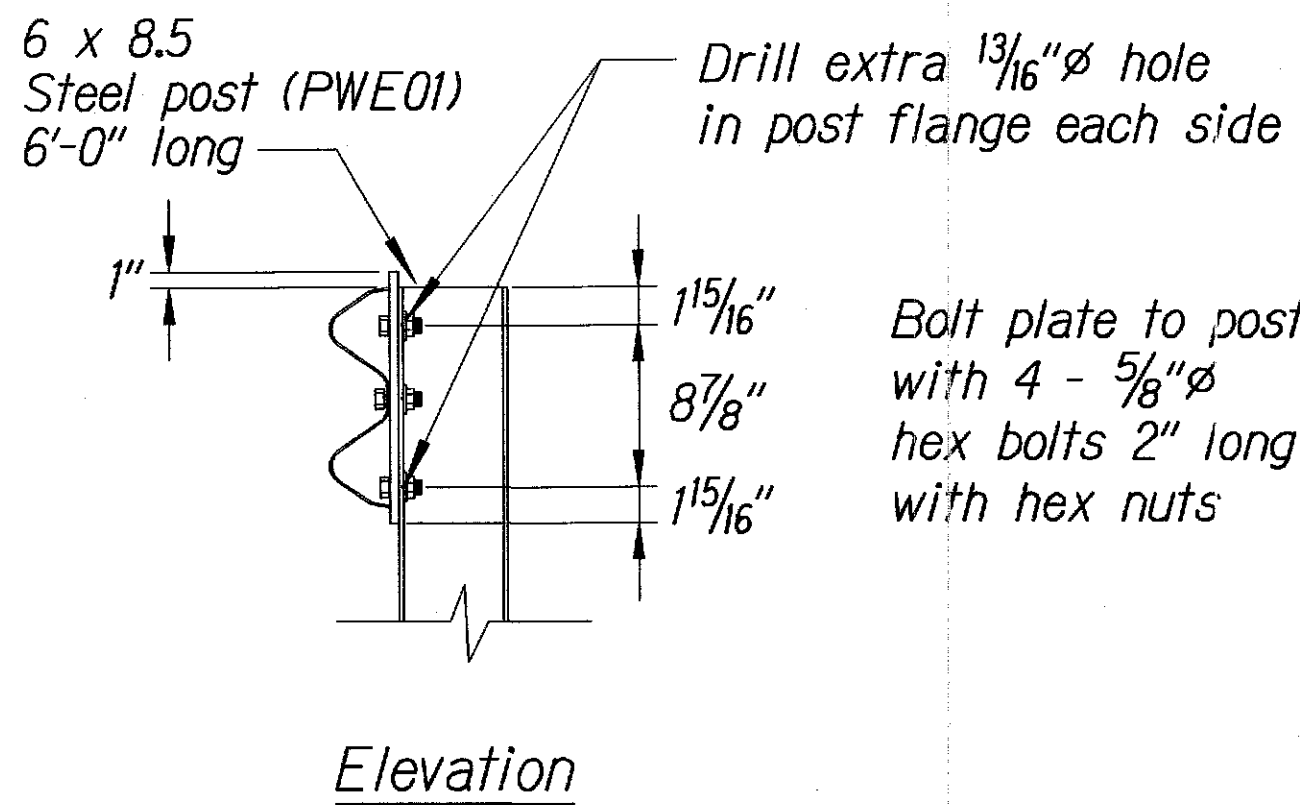
POST ANCHOR DETAILS

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

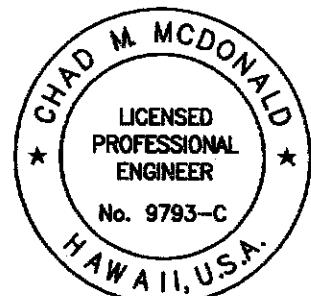


Note:

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



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me or under my supervision

Chad M. McDonald
MITSUNAGA & ASSOCIATES, INC. EXP. DATE
4/30/2012

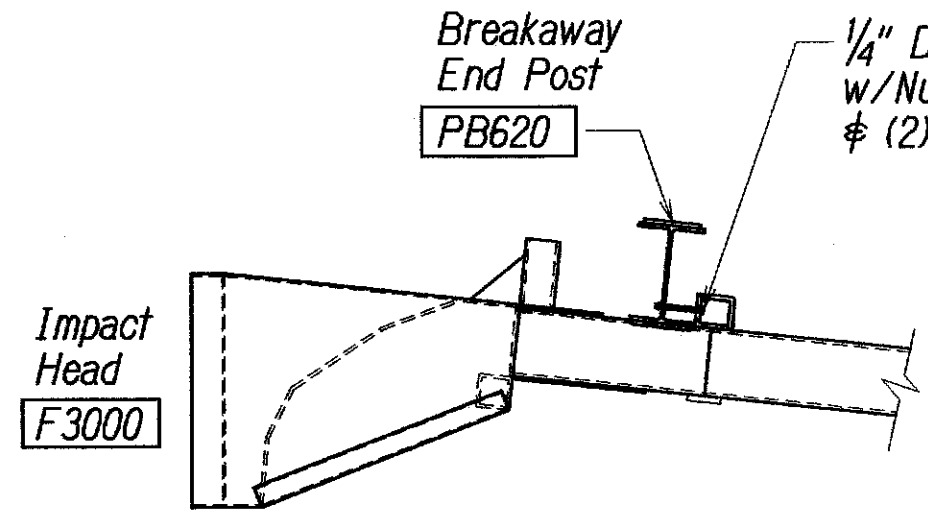
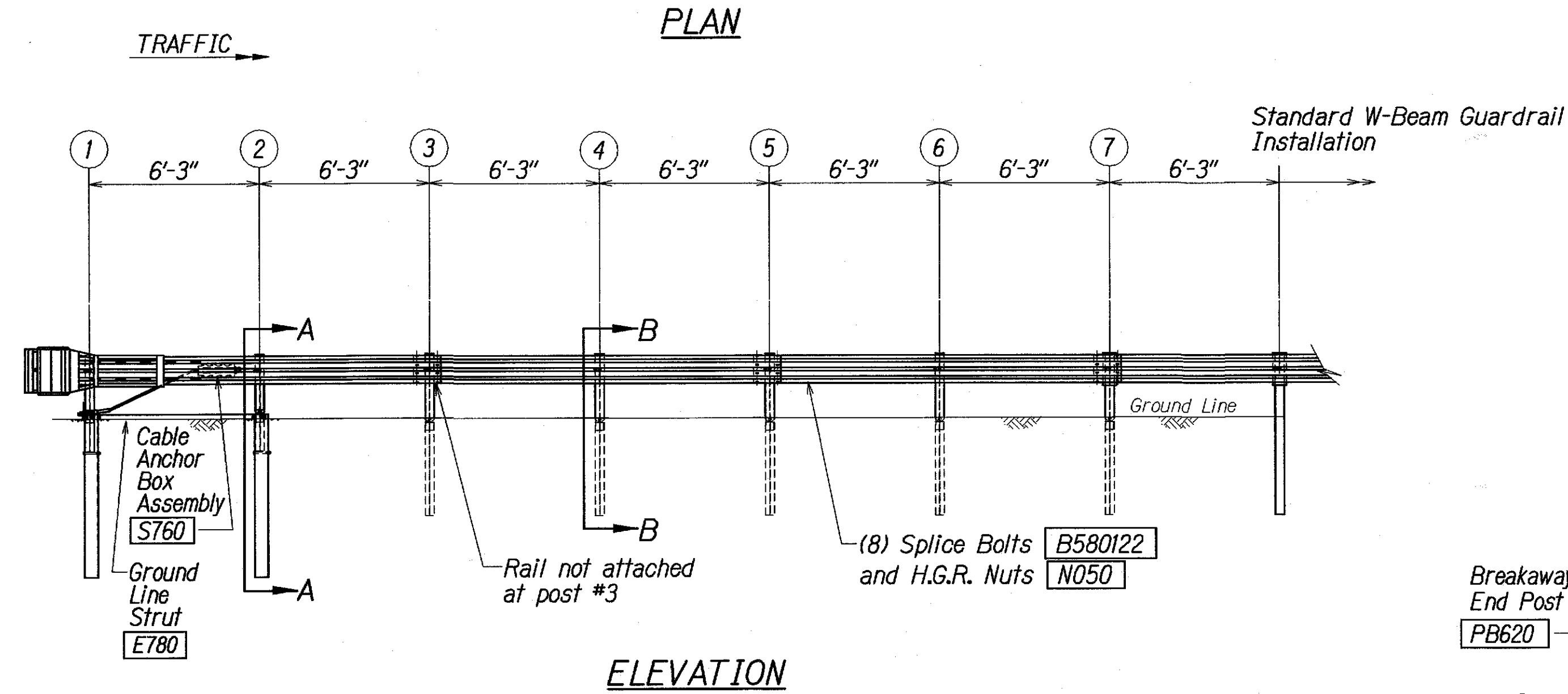
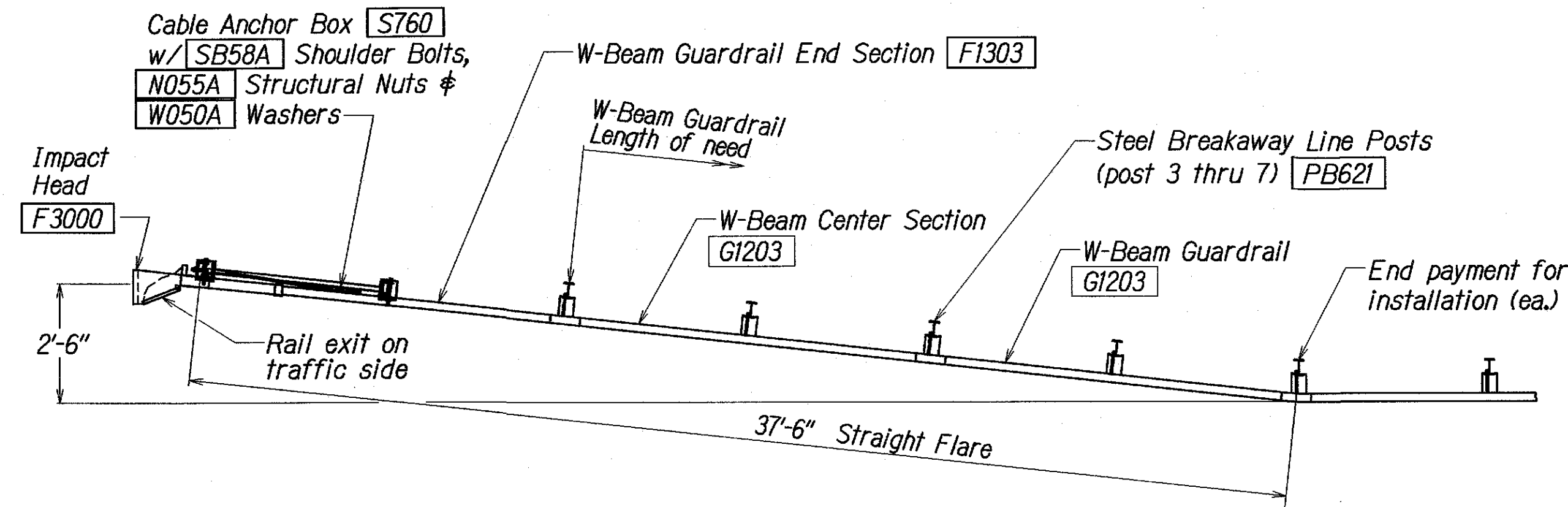
NOTE: Contractor to check and verify
dimensions at job before proceeding with work.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
MODIFIED TYPE "A-1" FLARE
RUBRAIL DETAILS
MAMALAOHA HIGHWAY RESURFACING
Kaupulehu to Makalei Road
Project No. 190B-01-09M

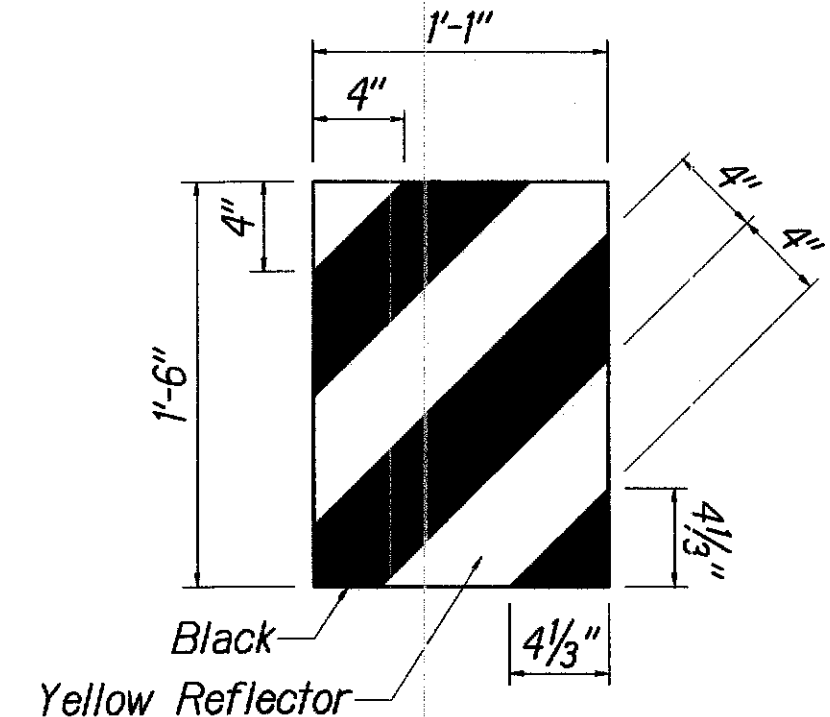
Scale: As Noted Date: May 2010

SHEET No. C-13OF 54 SHEETS

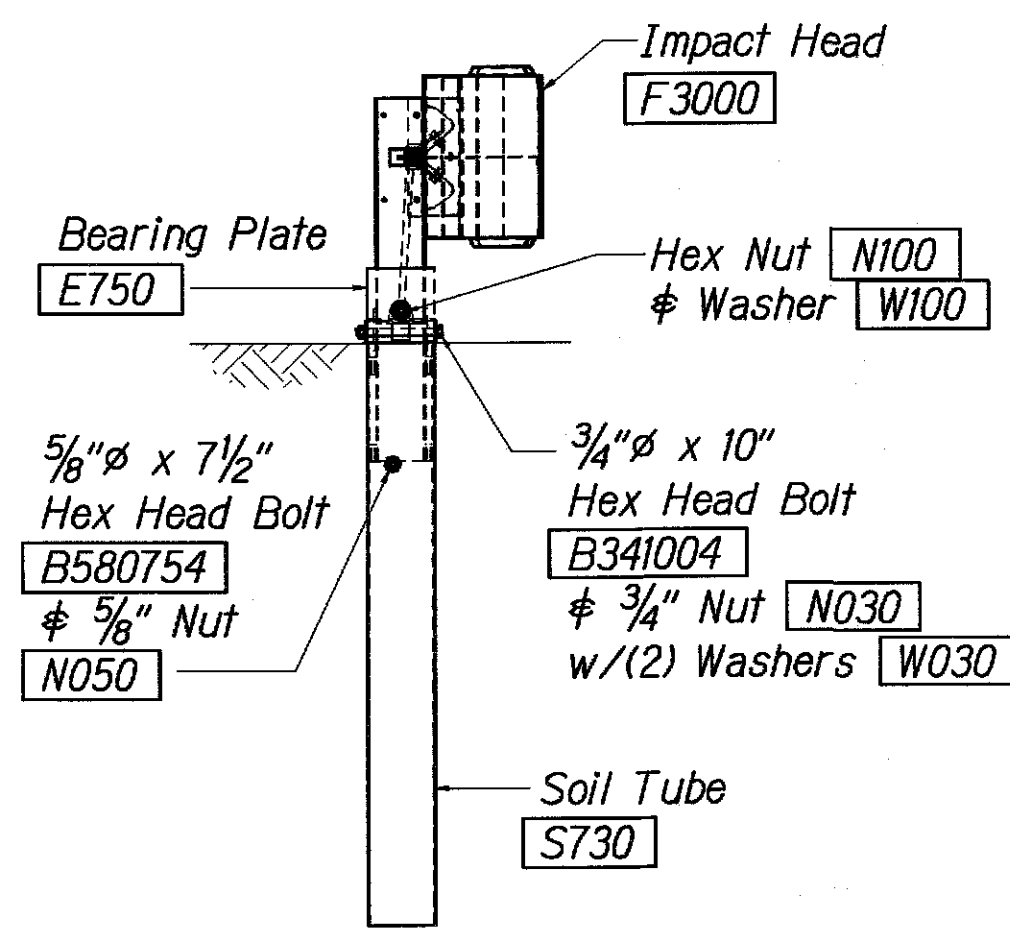
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	190B-01-09M	2010	16	54



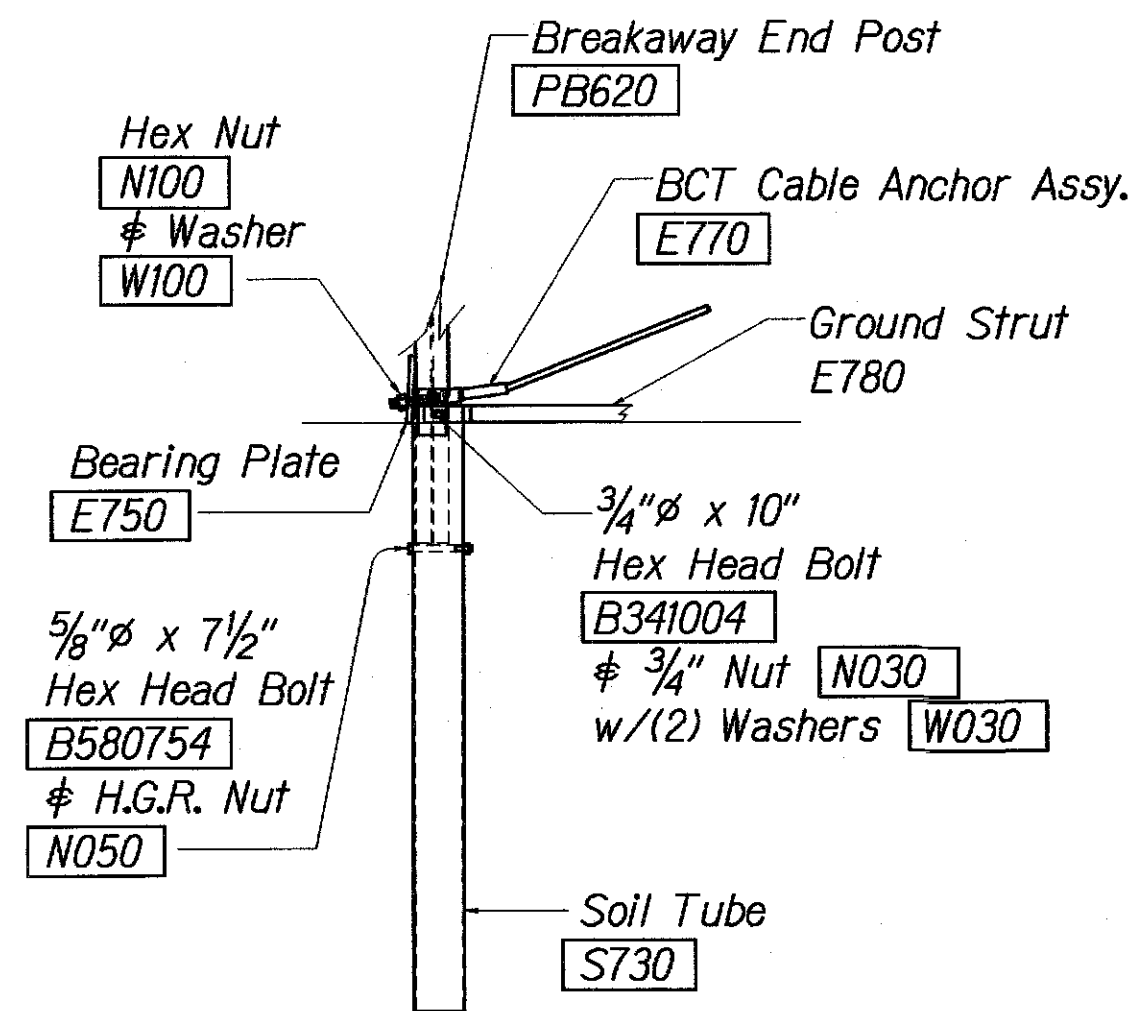
IMPACT HEAD CONNECTING DETAIL



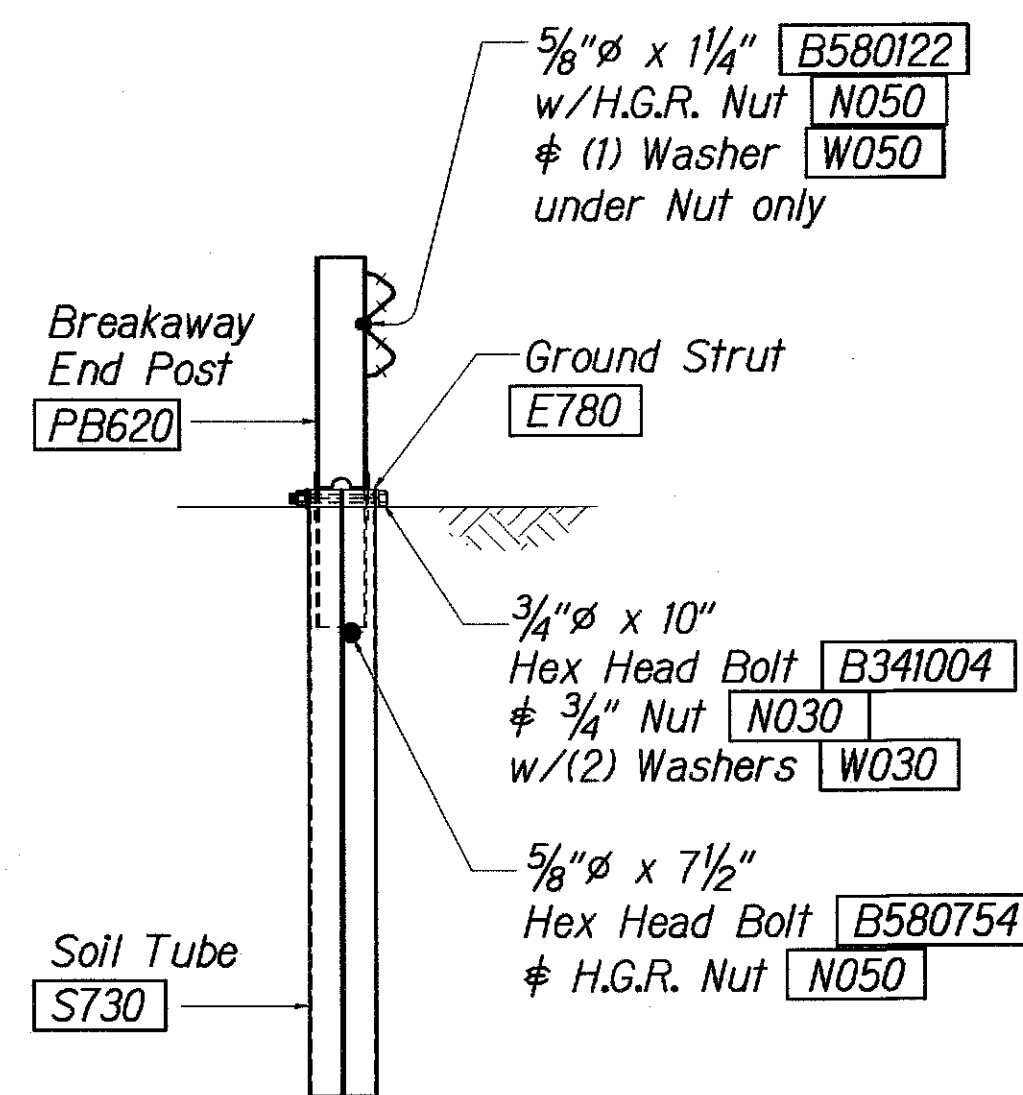
IHRM(R) IMPACT HEAD REFLECTOR MARKER INSERT DETAIL



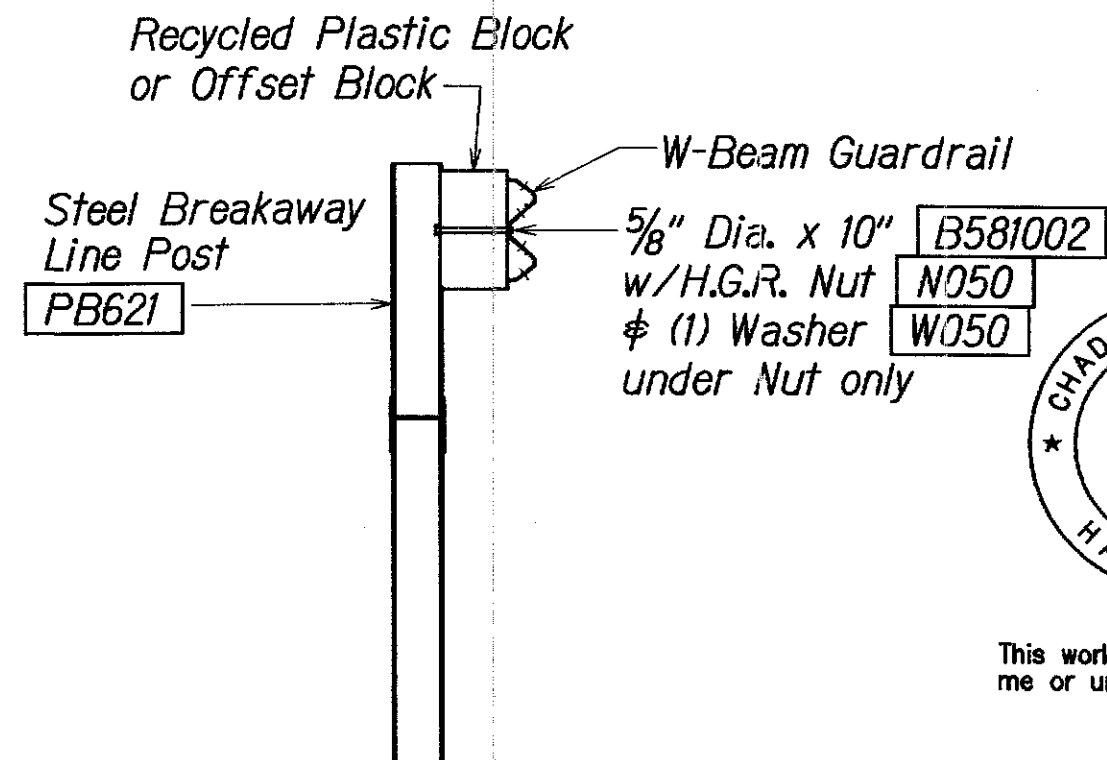
FRONT VIEW OF POST 1



PARTIAL VIEW OF POST 1



SECTION A-A at Post #2



SECTION B-B

(Typical @ Post 3 - 7)
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.

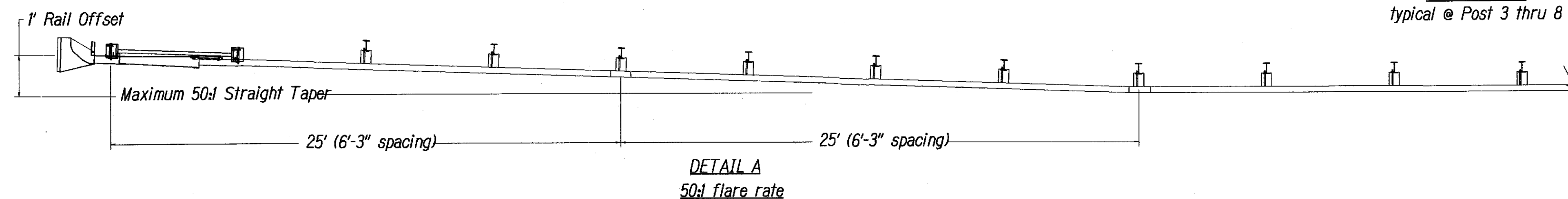
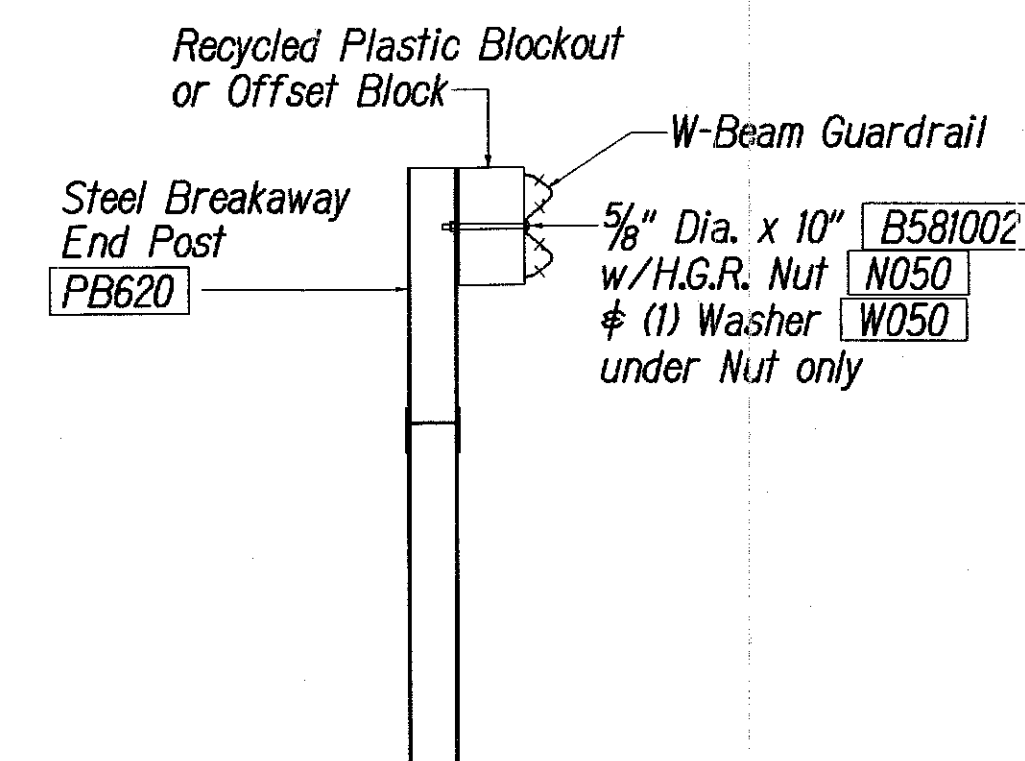
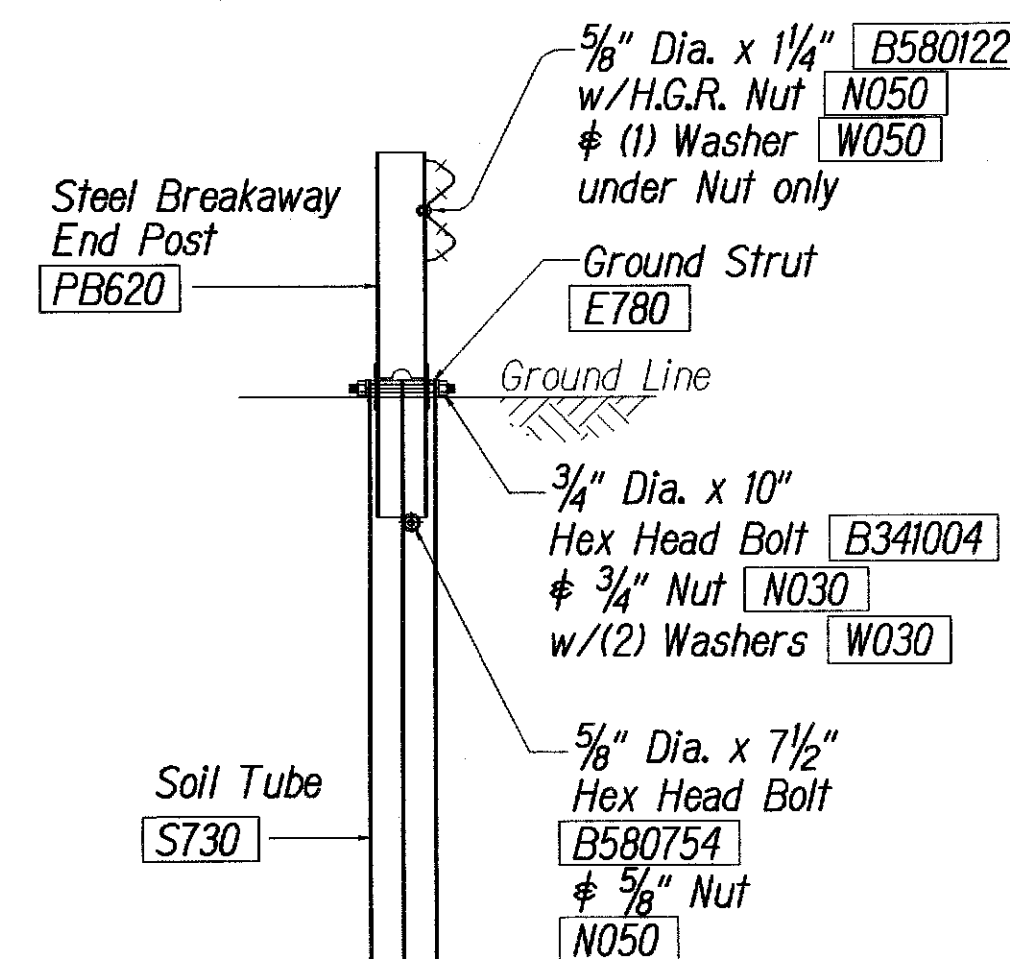
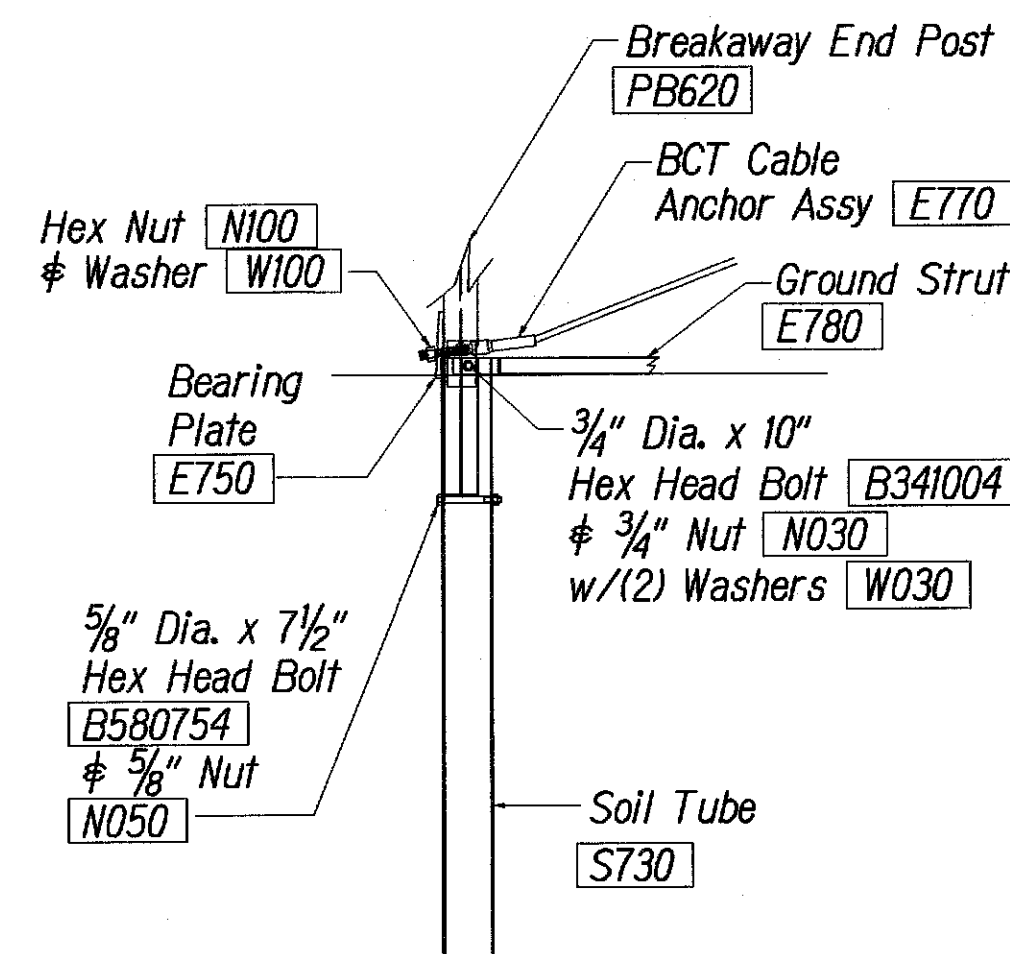
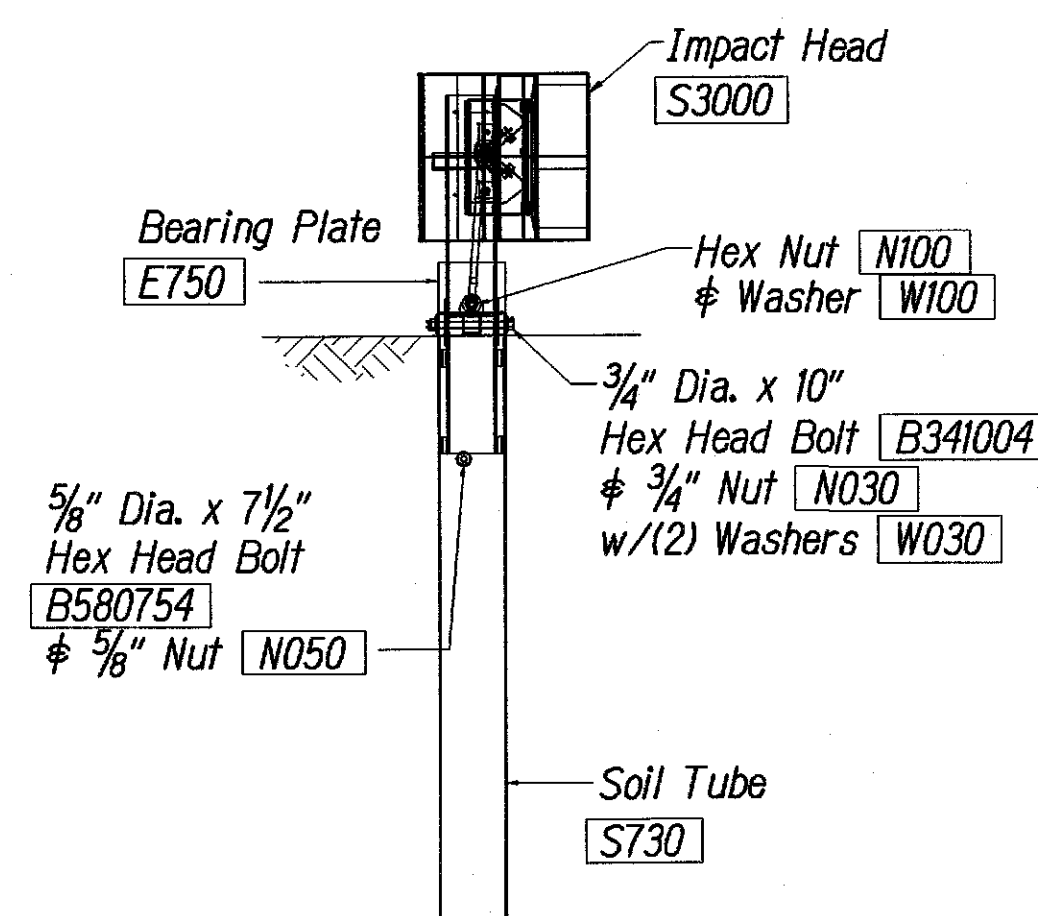
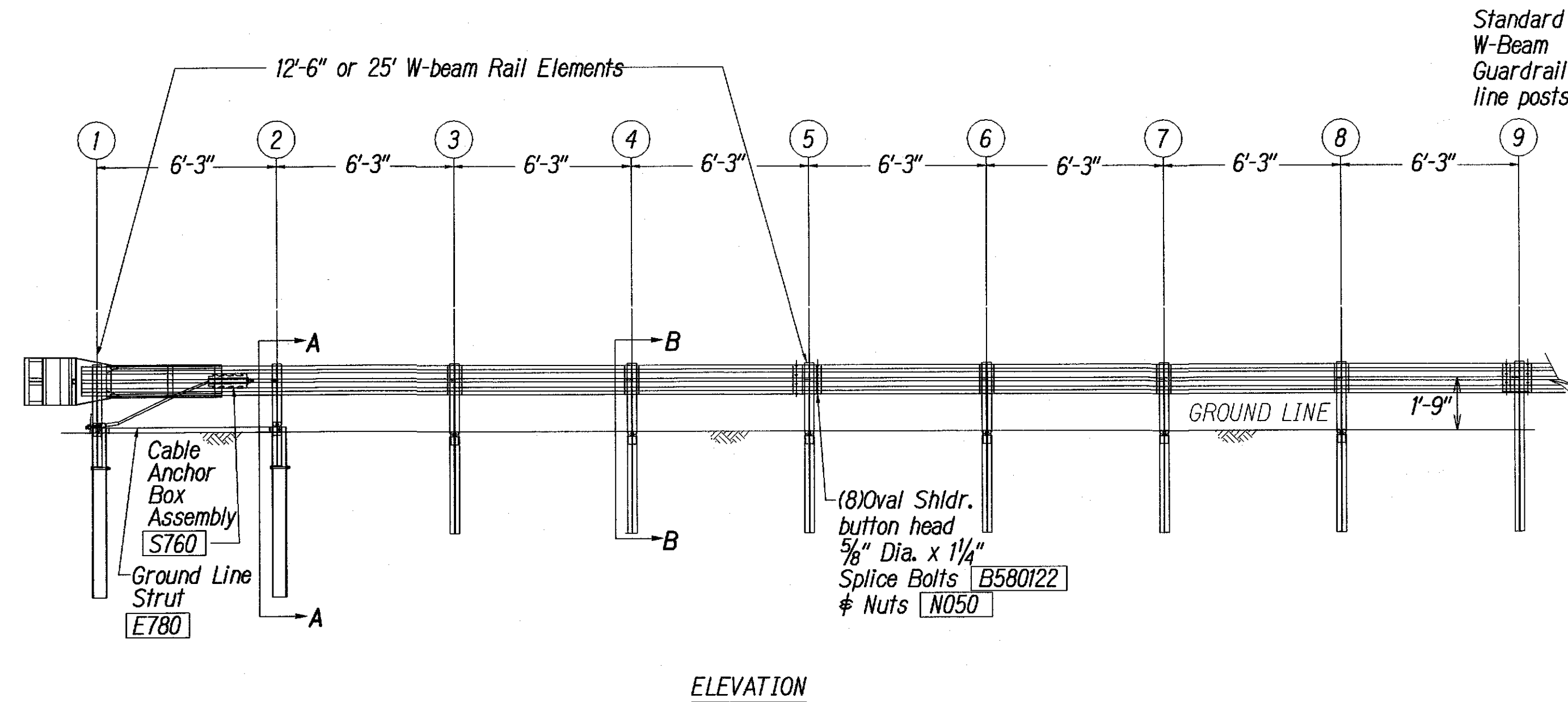
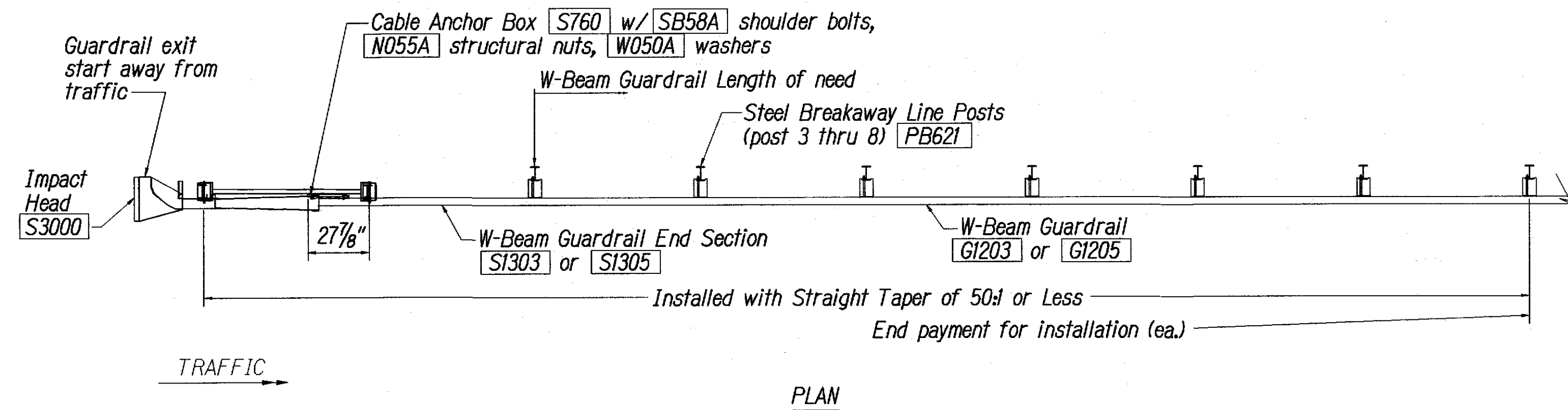
ITEM NO.	QTY.	BILL OF MATERIALS
F3000	1	IMPACT HEAD
F1303	1	W-BEAM GUARDRAIL END SECTION, 12 GA.
G1203	2	W-BEAM GUARDRAIL, 12 GA.
S730	2	*FOUNDATION SOIL TUBE, 6" x 8" x 72"
E750	1	BEARING PLATE
S760	1	CABLE ANCHOR BOX
E770	1	BCT CABLE ANCHOR ASSEMBLY
E780	1	GROUND STRUT
PB620	2	STEEL BREAKAWAY END POST
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 3/16" ID A325 STR. WASHER

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

CHAD M. McDONALD
 LICENSED PROFESSIONAL ENGINEER
 No. 9793-C
 HAWAII, U.S.A.
 This work was prepared by me or under my supervision.
 MITSUNAGA & ASSOCIATES, INC. EXP. DATE 4/30/2012
 NOTE: Contractor to check and verify dimensions of job before proceeding with work.

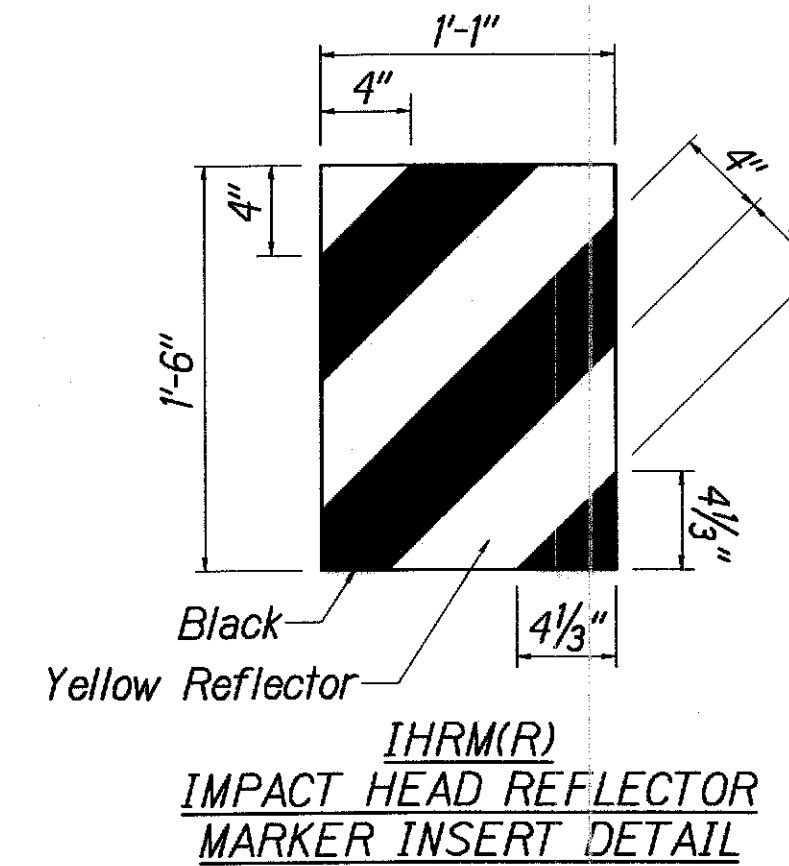
STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
FLEAT-350
FLARED ENERGY ABSORBING TERMINAL
 MAMALAHOA HIGHWAY RESURFACING
 Kaupulehu to Makalei Road
 Project No. 190B-01-09M
 Scale: As Noted Date: May 2010
 SHEET No. C-14 OF 54 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	190B-01-09M	2010	17	54



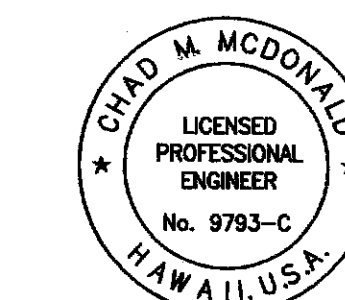
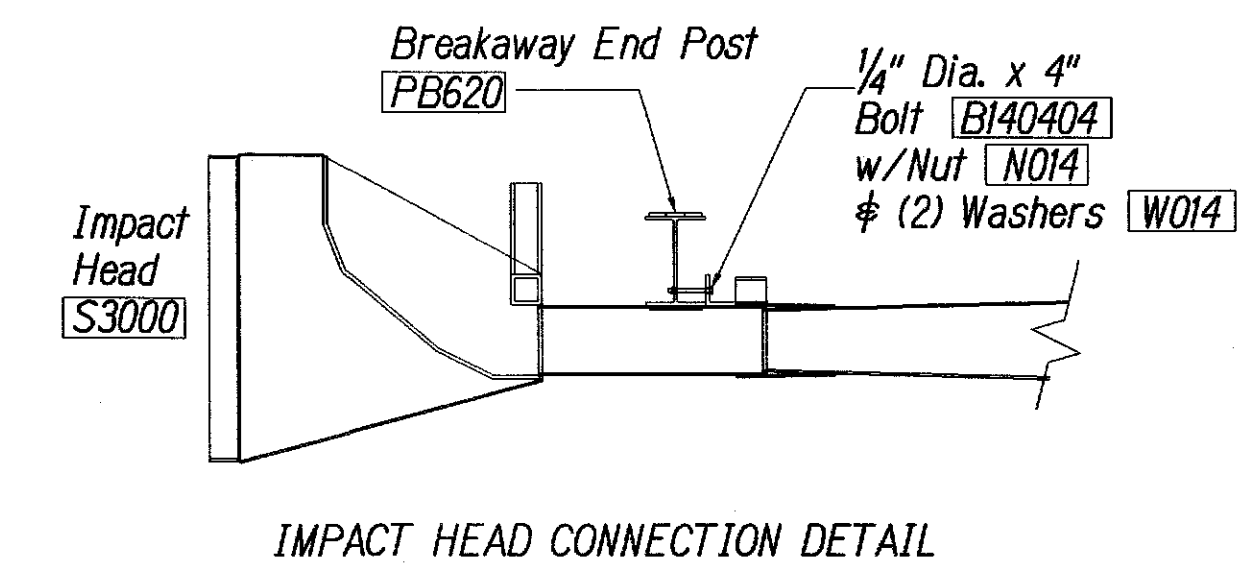
GENERAL NOTES:

- Breakaway steel posts are required with the Sequential Kinking Terminal.
- All bolts, nuts, cable assemblies, cable anchors and bearing plates shall be galvanized.
- When the Sequential Kinking Terminal is selected as the end treatment for W-Beam Guardrail installation, the W-Beam Guardrail will be flared at a rate of 50:1 to prevent the impact head from encroaching on the shoulder. The flare is not required and may be decreased or eliminated for specific installations.
- 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.
- A special site evaluation should be considered prior to using the Sequential Kinking Terminal where there is less than 25' between the outlet side of the Sequential Kinking Terminal and any adjacent driving lane.
- (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
S3000	1	IMPACT HEAD
S1303/S1305	1	W-BEAM GUARDRAIL END SECTION 12 GA. 12.5' or 25'
G1203/G1205	3/1	W-BEAM GUARDRAIL, 12 GA., 12.5' or 25'
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 POSTS
PB621	6	STEEL BREAKAWAY LINE POSTS
	6	RECYCLED PLASTIC BLOCKOUTS OR OFFSET BLOCK
	1	IMPACT HEAD REFLECTOR MARKER - IHRM(R) OR (L)
HARDWARE		
B580122	17/33	5/8" Dia. x 1 1/4" SPLICE BOLTS, POST #2
B580754	2	5/8" Dia. x 7 1/2" HEX BOLTS
B341004	2	3/4" Dia. x 10" HEX BOLTS
B341002	6	5/8" Dia. x 10" H.G.R. BOLT (POST 2 ONLY)
B581802	6	5/8" Dia. x 18" H.G.R. BOLT (POST 3 THRU 8)
N050	26/42	5/8" Dia. H.G.R. NUT (SPLICE 17/33, SOIL TUBES 2, POST 2 THRU 8)
N030	2	3/4" Dia. HEX NUTS
W050	7	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 BOLTS
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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



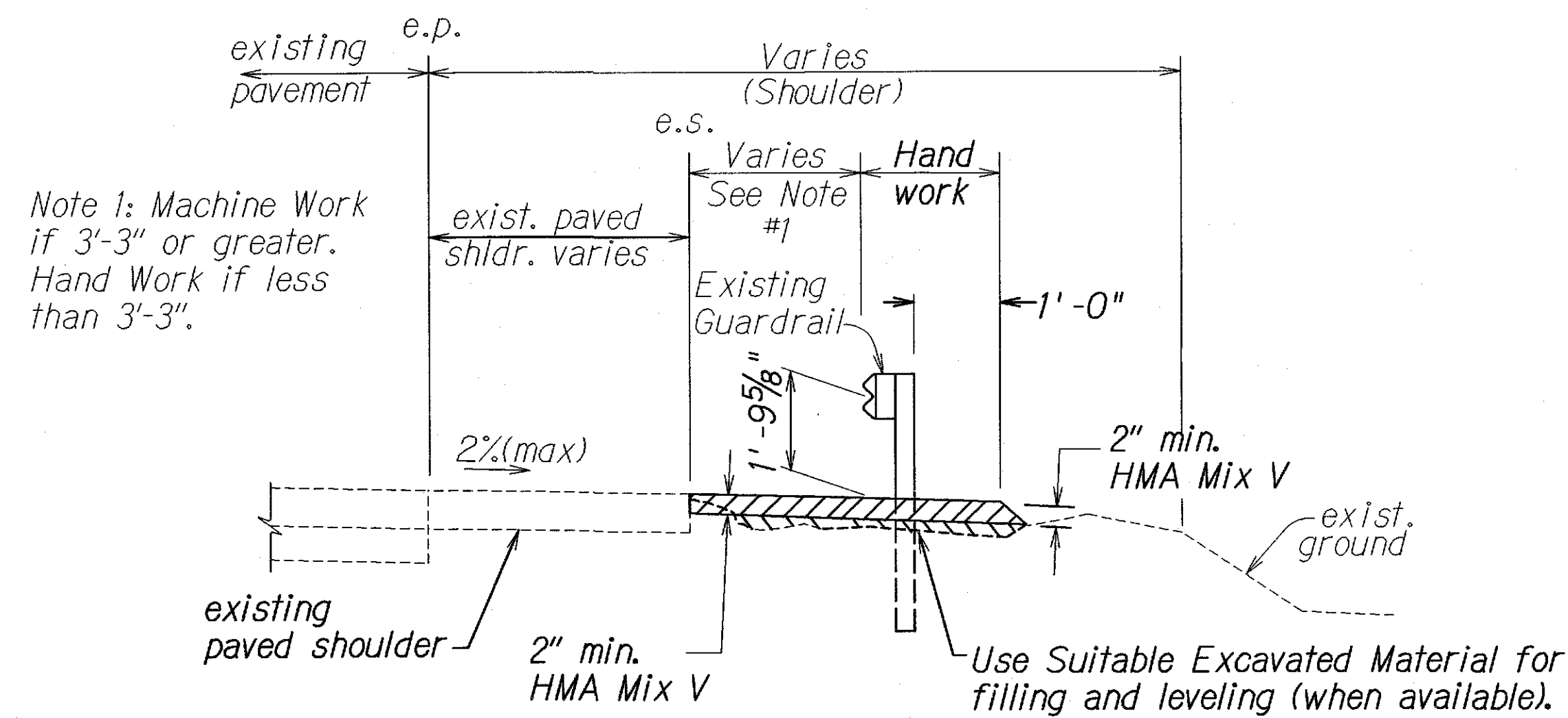
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Chad M. McDonald
 MITSUNAGA & ASSOCIATES, INC. EXP. DATE 4/30/2012

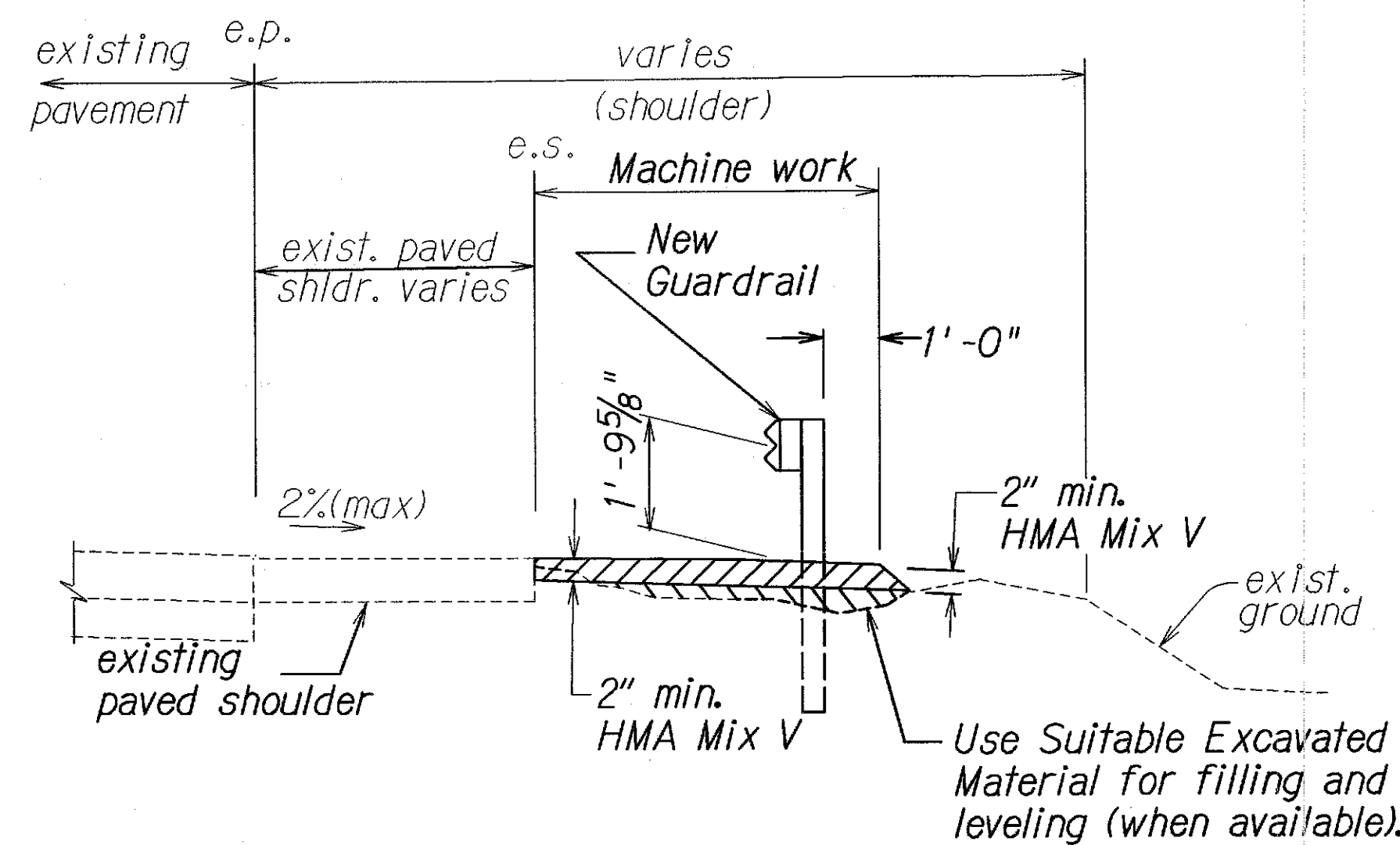
NOTE: Contractor to check and verify dimensions at job before proceeding with work.

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
SKT-350
SEQUENTIAL KINKING TERMINAL
MAMALAHOA HIGHWAY RESURFACING
 Kaupulehu to Makalei Road
 Project No. 190B-01-09M
 Scale: As Noted Date: May 2010
 SHEET No. C-15 OF 54 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	190B-01-09M	2010	19	54

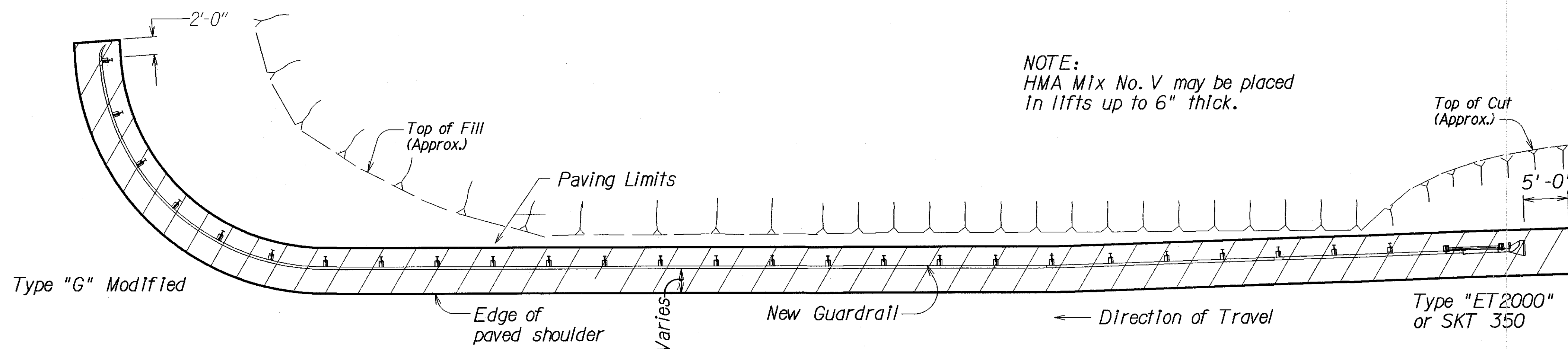


TYPICAL PAVING UNDER EXISTING GUARDRAIL
Not To Scale



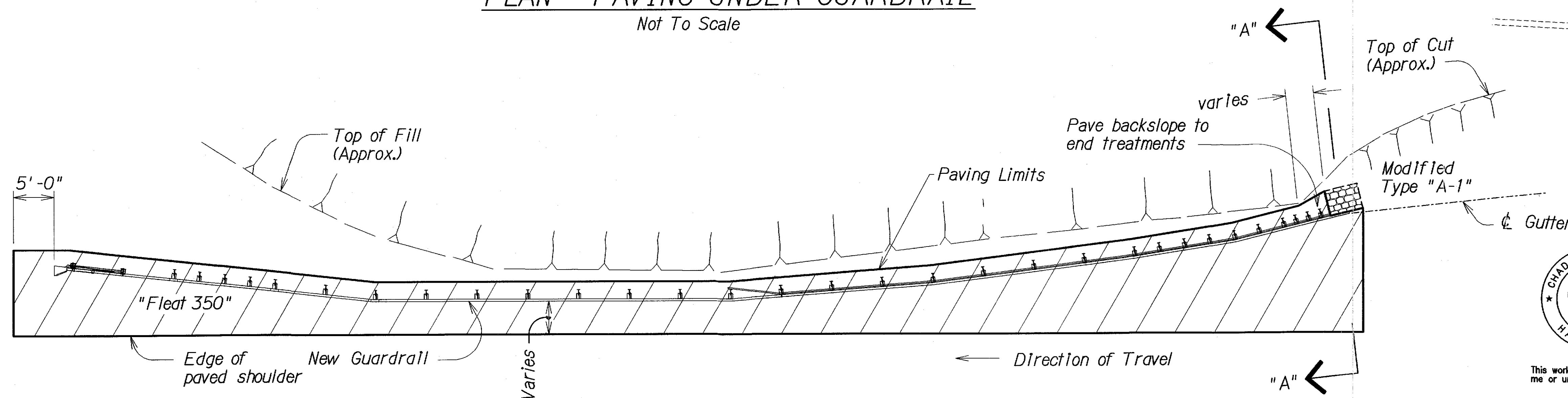
TYPICAL PAVING UNDER NEW GUARDRAIL
Not To Scale

- NOTES:
1. Pay limits for HMA Mix V, Handwork, and HMA Mix V, Machine work, are as shown.
 2. HMA Mix V, Handwork shall be paid for under Item No. 401.0501 - HMA, Mix No. V, Hand Paving under Guardrails. HMA Mix V, Machine Work shall be paid for under Item No. 401.0502 - HMA Pavement, Mix No. V, Machine Paving Under Guardrails.
 3. Excavating, placing, leveling, and compacting of suitable excavated material shall not be paid for separately, but shall be considered incidental to various contract items in Section 401 - HMA Pavement.
 4. Compaction requirements of Cold Planed material shall be in accordance with Section 203 - Excavation and Embankment.
 5. Maintain longitudinal drainage as shown on the plans or as directed by the Engineer.
 6. Contractor's attention is called to the increase in the asphalt content and compaction requirements in Section 401 - HMA Pavement, Paragraph 401.05-(E)-(3) of the Special Provisions.

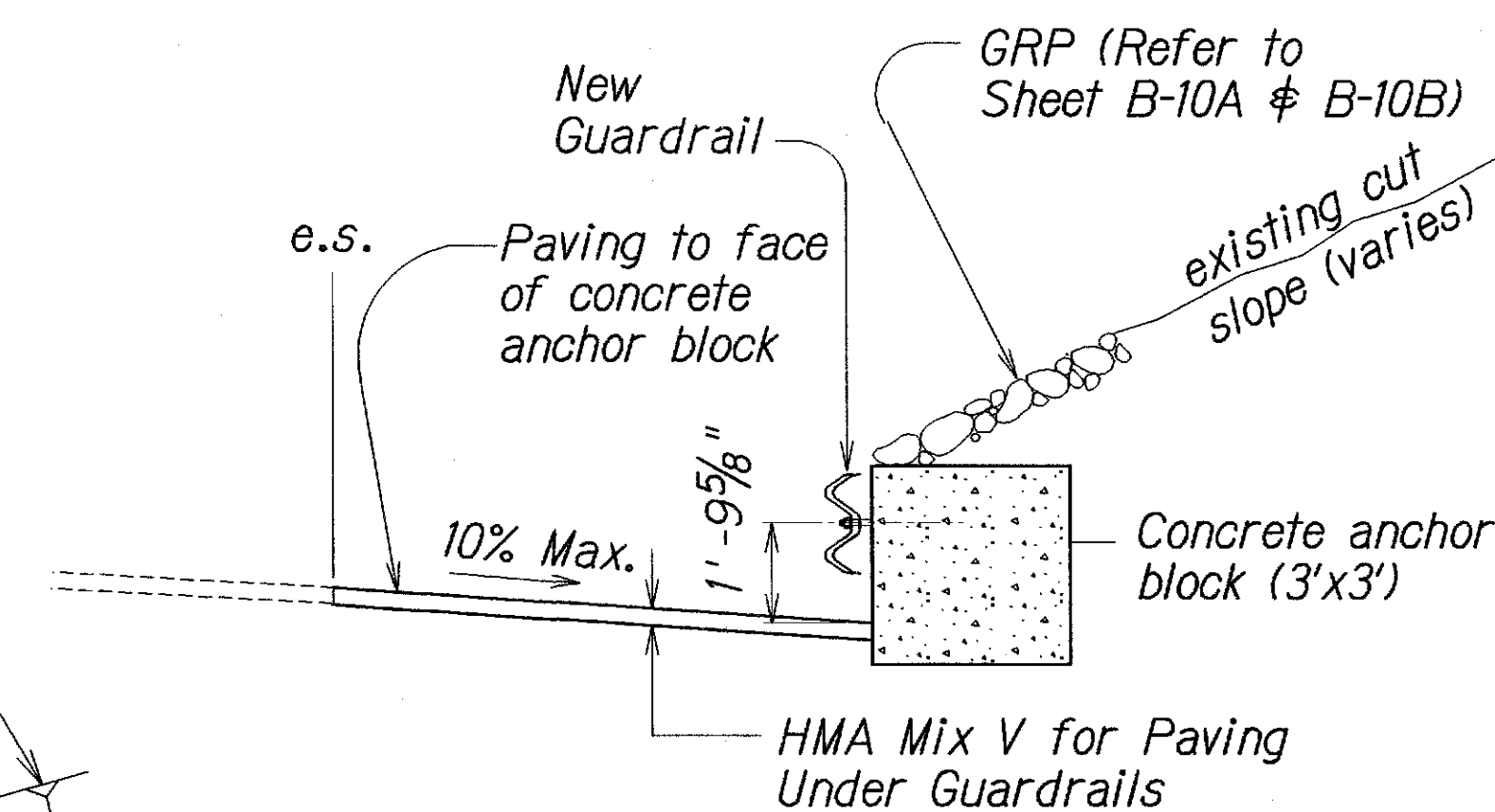


PLAN - PAVING UNDER GUARDRAIL
Not To Scale

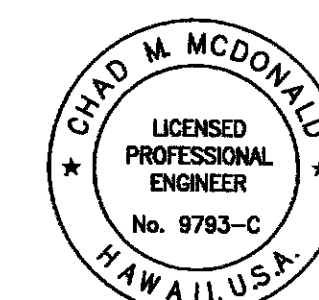
NOTE:
HMA Mix No. V may be placed
in lifts up to 6" thick.



PLAN - PAVING UNDER GUARDRAIL
Not To Scale



SECTION "A-A"
Not To Scale



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me or under my supervision

MITSUNAGA & ASSOCIATES, INC. 4/30/2012
EXP. DATE

NOTE: Contractor to check and verify
dimensions at job before proceeding with work.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
TYPICAL GUARDRAIL PAVING DETAILS
FULL PAVING UNDER GUARDRAIL
MAMALAHOA HIGHWAY RESURFACING
Kaupulehu to Makalei Road
Project No. 190B-01-09M

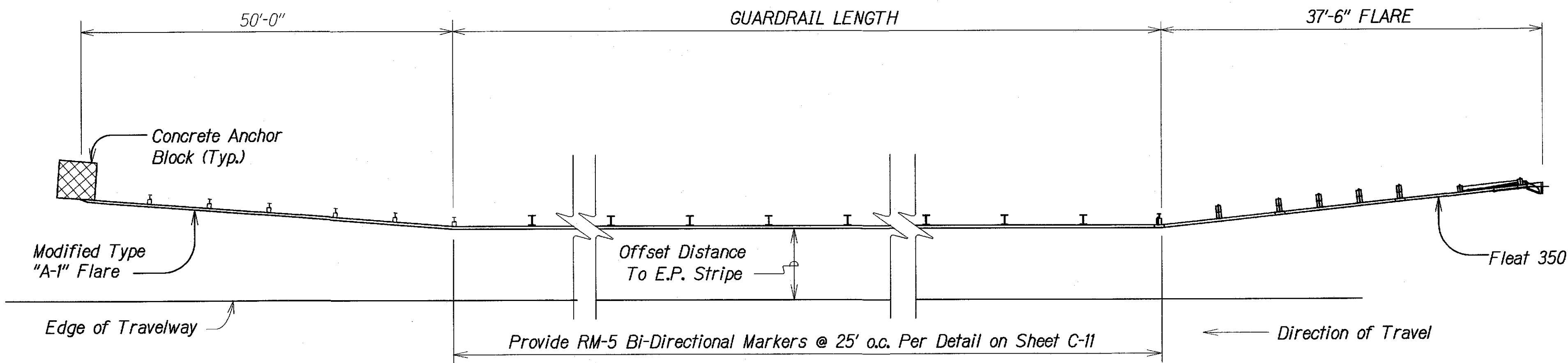
Scale: As Noted Date: May 2010

SHEET No. C-17 OF 54 SHEETS

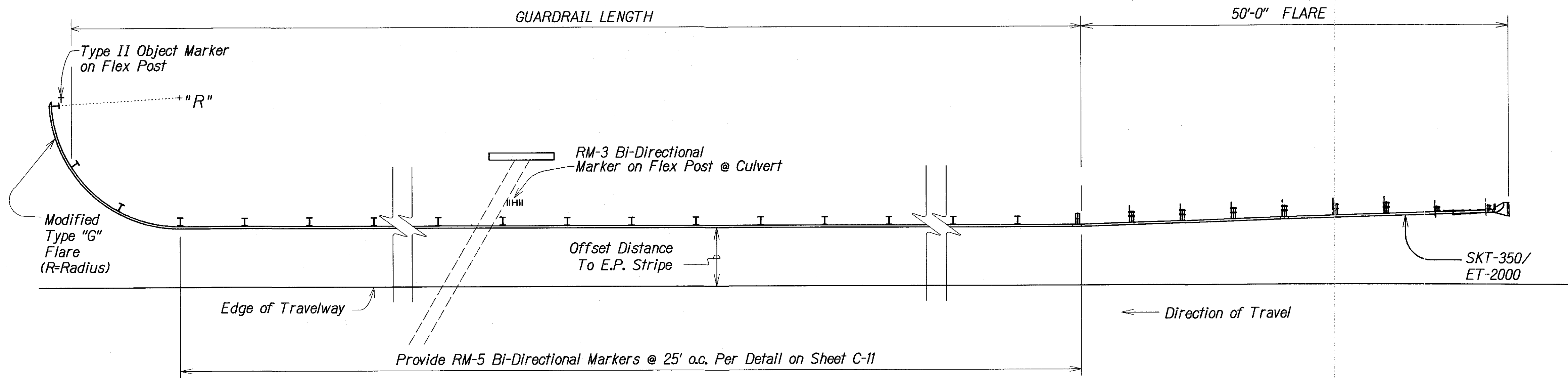
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	190B-01-09M	2010	20	54

NOTES:

1. All reflector markers located behind guardrail and other locations shall be installed with flexible delineator posts.
2. Exact location of Reflector Markers shall be determined in the field by the Engineer.
3. Color of flexible delineator posts shall be white except for RM-3, RM-3 bidirectional, and RM-3/RM-2 combinations shall be yellow posts.
4. RM-5 Bi-Directional Reflectors shall be red/white in color.



TYPICAL @ "MODIFIED A" & "FLEAT 350" END TREATMENT



TYPICAL @ MODIFIED "G" & "SKT-350"/"ET-2000" END TREATMENT

TYPICAL GUARDRAIL REFLECTOR MARKER INSTALLATION
Not To Scale

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
NOTED BY	
APPROVED BY	
PROJECT NO.	
PROJECT NAME	
PROJECT LOCATION	
PROJECT DESCRIPTION	
PROJECT STATUS	
PROJECT BUDGET	
PROJECT SCHEDULE	
PROJECT RISK	
PROJECT IMPACT	
PROJECT BENEFITS	
PROJECT CHALLENGES	
PROJECT OPPORTUNITIES	
PROJECT RISKS	
PROJECT MITIGATIONS	
PROJECT MONITORING	
PROJECT EVALUATION	
PROJECT REPORTING	
PROJECT COMMUNICATION	
PROJECT COLLABORATION	
PROJECT INNOVATION	
PROJECT SUSTAINABILITY	
PROJECT RESILIENCE	
PROJECT ADAPTABILITY	
PROJECT FLEXIBILITY	
PROJECT SCALABILITY	
PROJECT REPLICABILITY	
PROJECT TRANSFERABILITY	
PROJECT GENERALIZABILITY	
PROJECT SPECIFICITY	
PROJECT RELEVANCE	
PROJECT TIMELINESS	
PROJECT ACCURACY	
PROJECT CREDIBILITY	
PROJECT AUTHORITY	
PROJECT VALIDITY	
PROJECT RELIABILITY	
PROJECT PRACTICABILITY	
PROJECT FEASIBILITY	
PROJECT VIABILITY	
PROJECT SUSTAINABILITY	
PROJECT RESILIENCE	
PROJECT ADAPTABILITY	
PROJECT FLEXIBILITY	
PROJECT SCALABILITY	
PROJECT REPLICABILITY	
PROJECT TRANSFERABILITY	
PROJECT GENERALIZABILITY	
PROJECT SPECIFICITY	
PROJECT RELEVANCE	
PROJECT TIMELINESS	
PROJECT ACCURACY	
PROJECT CREDIBILITY	
PROJECT AUTHORITY	
PROJECT VALIDITY	
PROJECT RELIABILITY	
PROJECT PRACTICABILITY	
PROJECT FEASIBILITY	
PROJECT VIABILITY	



This work was prepared by me or under my supervision

CHAD M. McDONALD
MITSUNAGA & ASSOCIATES, INC. EXP. DATE 4/30/2012
NOTE: Contractor to check and verify dimensions of job before proceeding with work.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
**GUARDRAIL REFLECTOR
MARKER DETAIL**
MAMALAHOA HIGHWAY RESURFACING
Kaupulehu to Makalei Road
Project No. 190B-01-09M
Scale: As Noted
Date: May 2010

SHEET No. C-18 OF 54 SHEETS