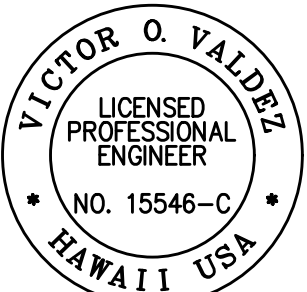


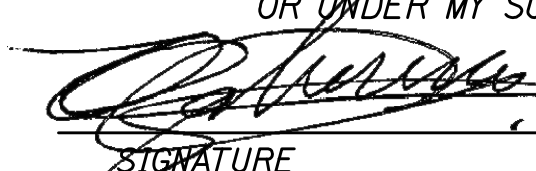
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FED. ROAD DIST. NO.	STATE	FED-AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-072-1(059)	2021	141	243

SCHEDULE - EXISTING GUARDRAIL UPGRADE				
DESCRIPTION	FROM	TO	DISTANCE (Feet)	GUARDRAIL UPGRADE (Feet)
Kalaniana'ole Hwy. (Rt.)	⦿-1 30+71	⦿-1 31+18	46.88	- MSKT-SP-MGS Terminal (8" Block) TL-3
Kalaniana'ole Hwy. (Rt.)	⦿-1 31+18	⦿-1 31+81	62.50	- 31" W-Beam Guardrail with Standard 8" Offset Block
Kalaniana'ole Hwy. (Rt.)	⦿-1 31+81	⦿-1 32+50	68.75	- Long-Span MGS Type 3 W-Beam, 31 Inches (1 Post Omitted)
Kalaniana'ole Hwy. (Rt.)	⦿-1 32+50	⦿-1 33+37	87.50	- 31" W-Beam Guardrail with Standard 8" Offset Block
Kalaniana'ole Hwy. (Rt.)	⦿-1 33+37	⦿-1 33+60	23.28	- Trailing-end Anchorage System
Kalaniana'ole Hwy. (Lt.)	⦿-3 21+03	⦿-3 21+26	23.28	- Trailing-end Anchorage System
Kalaniana'ole Hwy. (Lt.)	⦿-3 21+26	⦿-3 22+01	75	- 31" W-Beam Guardrail with Standard 8" Offset Block
Kalaniana'ole Hwy. (Lt.)	⦿-3 22+01	⦿-3 22+76	75	- Long-Span MGS Type 3 W-Beam, 31 Inches (2 Posts Omitted)
Kalaniana'ole Hwy. (Lt.)	⦿-3 22+76	⦿-3 31+82	906	- 31" W-Beam Guardrail with Standard 8" Offset Block
Kalaniana'ole Hwy. (Lt.)	⦿-3 31+82	⦿-3 32+51	68.75	- Long-Span MGS Type 3 W-Beam, 31 Inches (1 Post Omitted)
Kalaniana'ole Hwy. (Lt.)	⦿-3 32+51	⦿-3 49+68	1,720	- 31" W-Beam Guardrail with Standard 8" Offset Block
Kalaniana'ole Hwy. (Lt.)	⦿-3 49+68	⦿-3 50+43	75	- Long-Span MGS Type 3 W-Beam, 31 Inches (1 Post Omitted)
Kalaniana'ole Hwy. (Lt.)	⦿-3 50+43	⦿-3 50+55	12.50	- 31" W-Beam Guardrail with Standard 8" Offset Block
Kalaniana'ole Hwy. (Lt.)	⦿-3 50+55	⦿-3 51+02	46.88	- MSKT-SP-MGS Terminal (8" Block) TL-3
Kalaniana'ole Hwy. (Rt.)	⦿-3 21+41	⦿-3 21+88	46.88	- MSKT-SP-MGS Terminal (8" Block) TL-3
Kalaniana'ole Hwy. (Rt.)	⦿-3 21+88	⦿-3 22+01	12.50	- 31" W-Beam Guardrail with Standard 8" Offset Block
Kalaniana'ole Hwy. (Rt.)	⦿-3 22+01	⦿-3 22+76	75	- Long-Span MGS Type 3 W-Beam, 31 Inches (2 Posts Omitted)
Kalaniana'ole Hwy. (Rt.)	⦿-3 22+76	⦿-3 22+99	23.28	- Trailing-end Anchorage System

SCHEDULE - EXISTING GUARDRAIL UPGRADE				
DESCRIPTION	FROM	TO	DISTANCE (Feet)	GUARDRAIL UPGRADE (Feet)
Kalaniana'ole Hwy. (Rt.)	⦿-3 63+22	⦿-3 63+69	46.88	- MSKT-SP MGS Terminal (8" Block) TL-3
Kalaniana'ole Hwy. (Rt.)	⦿-3 63+69	⦿-3 63+94	25	- 31" W-Beam Guardrail with Standard 8" Offset Block
Kalaniana'ole Hwy. (Rt.)	⦿-3 63+94	⦿-3 64+63	68.75	- Long-Span MGS Type 3 W-Beam, 31 Inches (1 Post Omitted)
Kalaniana'ole Hwy. (Rt.)	⦿-3 64+63	⦿-3 64+86	23.28	- Trailing-end Anchorage System
Kalaniana'ole Hwy. (Lt.)	⦿-3 63+93	⦿-3 64+16	23.28	- Trailing-end Anchorage System
Kalaniana'ole Hwy. (Lt.)	⦿-3 64+16	⦿-3 64+63	47	- Long-Span MGS Type 3 W-Beam, 31 Inches (1 Post Omitted)
Kalaniana'ole Hwy. (Lt.)	⦿-3 64+63	⦿-3 66+97	234	- 31" W-Beam Guardrail with Standard 8" Offset Block
Kalaniana'ole Hwy. (Lt.)	⦿-3 66+97	⦿-3 67+44	46.88	- MSKT-SP-MGS Terminal (8" Block) TL-3
Kalaniana'ole Hwy. (Rt.)	⦿-3 68+83	⦿-3 69+30	46.88	- MSKT-SP-MGS Terminal (8" Block) TL-3
Kalaniana'ole Hwy. (Rt.)	⦿-3 69+30	⦿-3 69+37	7	- 31" W-Beam Guardrail with Standard 8" Offset Block
Kalaniana'ole Hwy. (Rt.)	⦿-3 69+37	⦿-3 70+12	75	- Long-Span MGS Type 3 W-Beam, 31 Inches (2 Posts Omitted)
Kalaniana'ole Hwy. (Rt.)	⦿-3 70+12	⦿-3 70+35	23.28	- Trailing-end Anchorage System
Kalaniana'ole Hwy. (Rt.)	⦿-3 78+02	⦿-3 78+49	46.88	- MSKT-SP-MGS Terminal (8" Block) TL-3
Kalaniana'ole Hwy. (Rt.)	⦿-3 78+49	⦿-3 78+61	12.50	- 31" W-Beam Guardrail with Standard 8" Offset Block
Kalaniana'ole Hwy. (Rt.)	⦿-3 78+61	⦿-3 79+02	40.60	- Long-Span MGS Type 3 W-Beam, 31 Inches (1 Post Omitted)
Kalaniana'ole Hwy. (Rt.)	⦿-3 79+02	⦿-3 79+25	23.28	- Trailing-end Anchorage System



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SIGNATURE
04/30/22
EXPIRATION DATE
OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GUARDRAIL SCHEDULE
KALANIANA'OLE HIGHWAY IMPROVEMENTS PHASE 2
Poalima Street to Vicinity of Makai Pier
Federal-Aid Project No. NH-072-1(059)

Scale: N/A
Date: January 2021

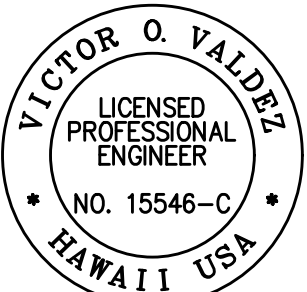
SHEET No. **R58** OF **66** SHEETS

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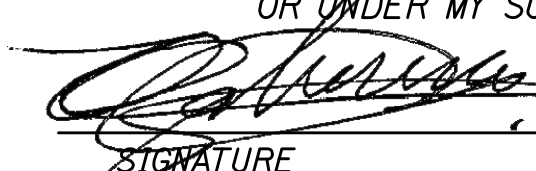
FED. ROAD DIST. NO.	STATE	FED-AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-072-1(059)	2021	142	243

SCHEDULE - EXISTING GUARDRAIL UPGRADE				
DESCRIPTION	FROM	TO	DISTANCE (Feet)	GUARDRAIL UPGRADE (Feet)
Kalaniana'ole Hwy. (Rt.)	⦿-3 83+08	⦿-3 83+55	46.88	- MSKT-SP-MGS Terminal (8" Block) TL-3
Kalaniana'ole Hwy. (Rt.)	⦿-3 83+55	⦿-3 83+68	12.5	- 31" W-Beam Guardrail with Standard 8" Offset Block
Kalaniana'ole Hwy. (Rt.)	⦿-3 83+68	⦿-3 84+43	75	- Long-Span MGS Type 3 W-Beam, 31 Inches (2 Posts Omitted)
Kalaniana'ole Hwy. (Rt.)	⦿-3 84+43	⦿-3 85+49	106.20	- 31" W-Beam Guardrail with Standard 8" Offset Block
Kalaniana'ole Hwy. (Rt.)	⦿-3 85+49	⦿-3 86+17	68.75	- Long-Span MGS Type 3 W-Beam, 31 Inches (1 Post Omitted)
Kalaniana'ole Hwy. (Rt.)	⦿-3 86+17	⦿-3 87+21	103.90	- 31" W-Beam Guardrail with Standard 8" Offset Block
Kalaniana'ole Hwy. (Rt.)	⦿-3 87+21	⦿-3 87+90	68.75	- Long-Span MGS Type 3 W-Beam, 31 Inches (1 Post Omitted)
Kalaniana'ole Hwy. (Rt.)	⦿-3 87+90	⦿-3 88+14	23.28	- Trailing-end Anchorage System
Kalaniana'ole Hwy. (Lt.)	⦿-3 83+50	⦿-3 83+73	23.28	- Trailing-end Anchorage System
Kalaniana'ole Hwy. (Lt.)	⦿-3 83+73	⦿-3 84+48	75	- Long-Span MGS Type 3 W-Beam, 31 Inches (2 Posts Omitted)
Kalaniana'ole Hwy. (Lt.)	⦿-3 84+48	⦿-3 85+49	100.60	- 31" W-Beam Guardrail with Standard 8" Offset Block
Kalaniana'ole Hwy. (Lt.)	⦿-3 85+49	⦿-3 86+17	68.75	- Long-Span MGS Type 3 W-Beam, 31 Inches (1 Post Omitted)
Kalaniana'ole Hwy. (Lt.)	⦿-3 86+17	⦿-3 87+21	104	- 31" W-Beam Guardrail with Standard 8" Offset Block
Kalaniana'ole Hwy. (Lt.)	⦿-3 87+21	⦿-3 87+90	68.75	- Long-Span MGS Type 3 W-Beam, 31 Inches (1 Post Omitted)
Kalaniana'ole Hwy. (Lt.)	⦿-3 87+90	⦿-3 90+05	217.40	- 31" W-Beam Guardrail with Standard 8" Offset Block
Kalaniana'ole Hwy. (Lt.)	⦿-3 90+05	⦿-3 90+73	68.75	- Long-Span MGS Type 3 W-Beam, 31 Inches (1 Post Omitted)
Kalaniana'ole Hwy. (Lt.)	⦿-3 90+73	⦿-3 99+71	899.30	- 31" W-Beam Guardrail with Standard 8" Offset Block

SCHEDULE - EXISTING GUARDRAIL UPGRADE				
DESCRIPTION	FROM	TO	DISTANCE (Feet)	GUARDRAIL UPGRADE (Feet)
Kalaniana'ole Hwy. (Lt.)	⦿-3 99+71	⦿-3 100+39	68.75	- Long-Span MGS Type 3 W-Beam, 31 Inches (1 Post Omitted)
Kalaniana'ole Hwy. (Lt.)	⦿-3 100+39	⦿-3 103+12	272.60	- 31" W-Beam Guardrail with Standard 8" Offset Block
Kalaniana'ole Hwy. (Lt.)	⦿-3 103+12	⦿-3 103+59	46.88	- MSKT-SP-MGS Terminal (8" Block) TL-3
Kalaniana'ole Hwy. (Rt.)	⦿-3 89+32	⦿-3 89+79	46.88	- MSKT-SP-MGS Terminal (8" Block) TL-3
Kalaniana'ole Hwy. (Rt.)	⦿-3 89+79	⦿-3 90+04	25	- 31" W-Beam Guardrail with Standard 8" Offset Block
Kalaniana'ole Hwy. (Rt.)	⦿-3 90+04	⦿-3 90+73	68.75	- Long-Span MGS Type 3 W-Beam, 31 Inches (1 Post Omitted)
Kalaniana'ole Hwy. (Rt.)	⦿-3 90+73	⦿-3 90+97	23.28	- Trailing-end Anchorage System
Kalaniana'ole Hwy. (Rt.)	⦿-3 98+98	⦿-3 99+45	46.88	- MSKT-SP-MGS Terminal (8" Block) TL-3
Kalaniana'ole Hwy. (Rt.)	⦿-3 99+45	⦿-3 99+70	25	- 31" W-Beam Guardrail with Standard 8" Offset Block
Kalaniana'ole Hwy. (Rt.)	⦿-3 99+70	⦿-3 100+39	68.75	- Long-Span MGS Type 3 W-Beam, 31 Inches (1 Post Omitted)
Kalaniana'ole Hwy. (Rt.)	⦿-3 100+39	⦿-3 100+62	23.28	- Trailing-end Anchorage System
Kalaniana'ole Hwy. (Lt.)	⦿-3 107+01	⦿-3 107+24	23.28	- Trailing-end Anchorage System
Kalaniana'ole Hwy. (Lt.)	⦿-3 107+24	⦿-3 108+49	125	- 31" W-Beam Guardrail with Standard 8" Offset Block
Kalaniana'ole Hwy. (Lt.)	⦿-3 108+49	⦿-3 108+77	28.13	- MGS Transition to Strong Post Guardrail



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 04/30/22

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OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GUARDRAIL SCHEDULE
KALANIANA'OLE HIGHWAY IMPROVEMENTS PHASE 2
Poalima Street to Vicinity of Makai Pier
Federal-Aid Project No. NH-072-1(059)

Scale: N/A Date: January 2021

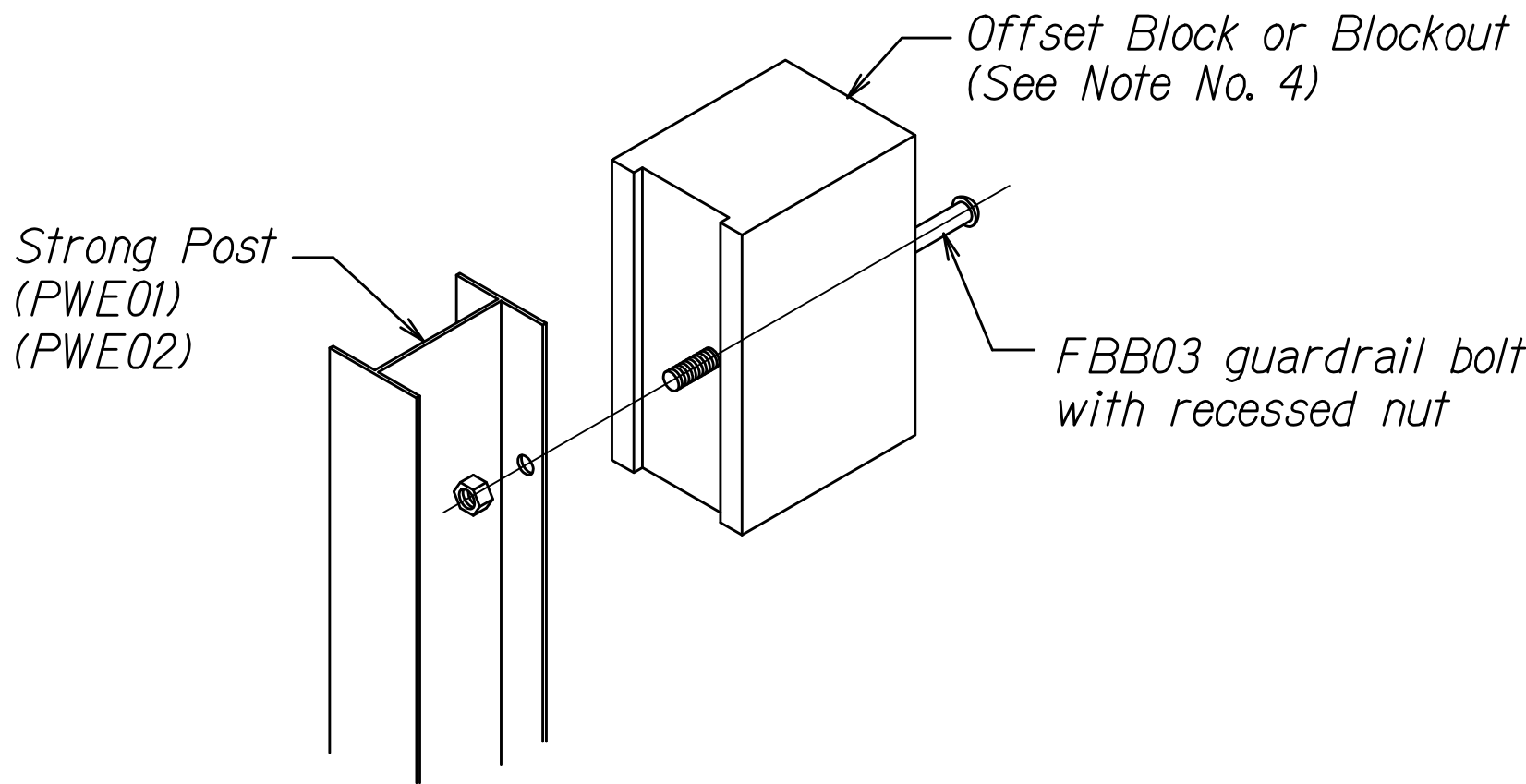
SHEET No. **R59** OF **66** SHEETS

FED. ROAD DIST. NO.	STATE	FED-AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-072-1(059)	2021	143	243

GENERAL NOTES

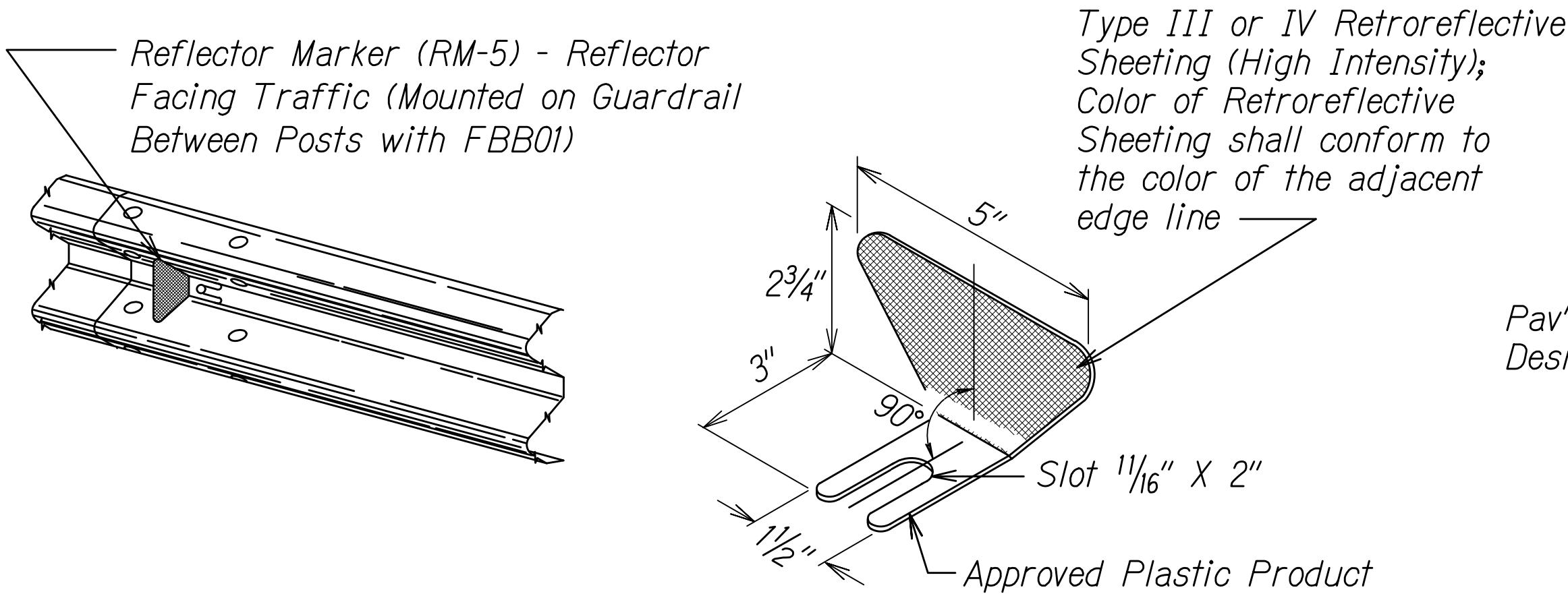
1. All hardware, posts and fasteners shall be hot-dip zinc coated galvanized after fabrication. No punching, drilling or cutting will be permitted after galvanizing.
2. Where conditions require, special post lengths in increments of 6 inches may be specified by the Engineer.
3. All fasteners, posts, and rail elements (i.e. FBB03, PWE01, RWM04b, 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 Blockout 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. Minimum working width (clear distance) between back of MGS post to any fixed object is 4'-1" (49").
9. New Hot Mix Asphalt (HMA) pavement at guardrails shall extend 6 feet longitudinally beyond terminal ends.
10. 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 guardrail system.

GUARDRAIL TYPE	DIMENSION	
	H	A
MGS w/ Standard 8" Offset Block	2'-1"	1'-6"
MGS w/ No Blockout	2'-7/8"	9/4"

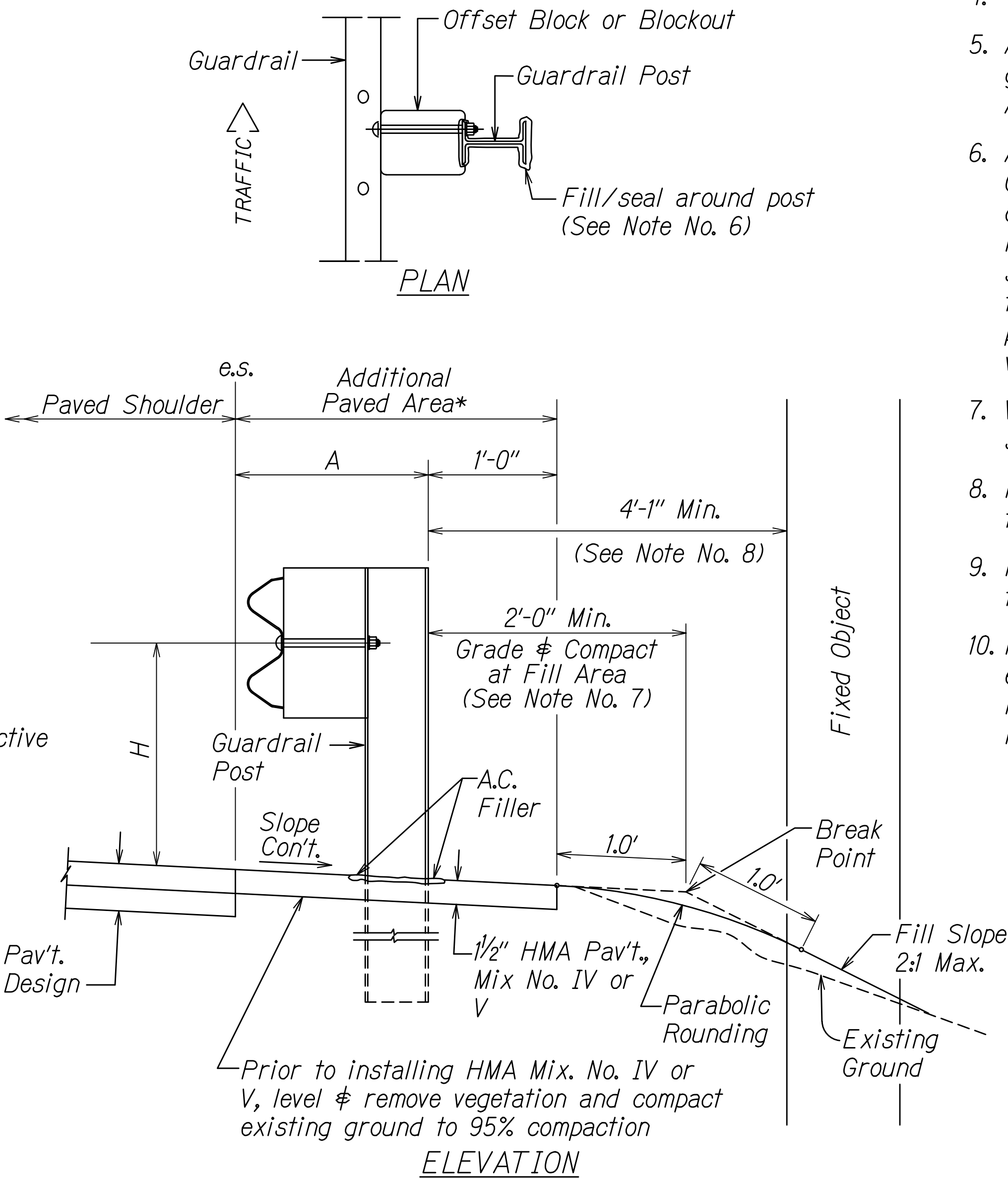


Exploded View
(Rail and washer not shown)

STEEL POST AND BLOCK DETAIL



REFLECTOR MARKER (RM-5) DETAIL AND TYPICAL INSTALLATION



TYPICAL GUARDRAIL INSTALLATION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

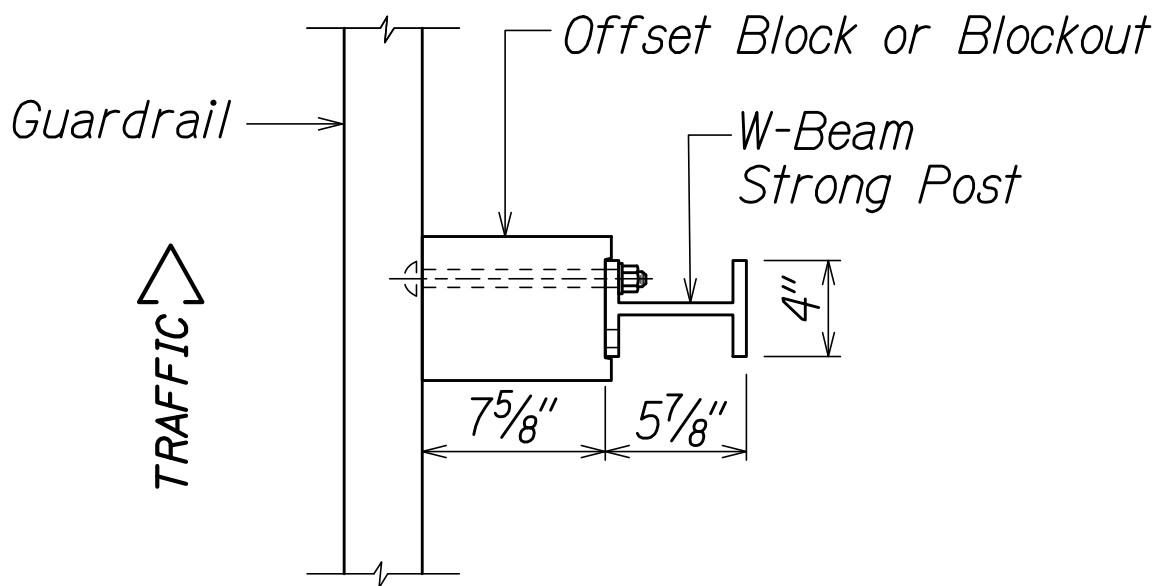
GUARDRAIL DETAILS AND NOTES

KALANIANA'OLE HIGHWAY IMPROVEMENTS PHASE 2
Poalima Street to Vicinity of Makai Pier
Federal-Aid Project No. NH-072-1(059)

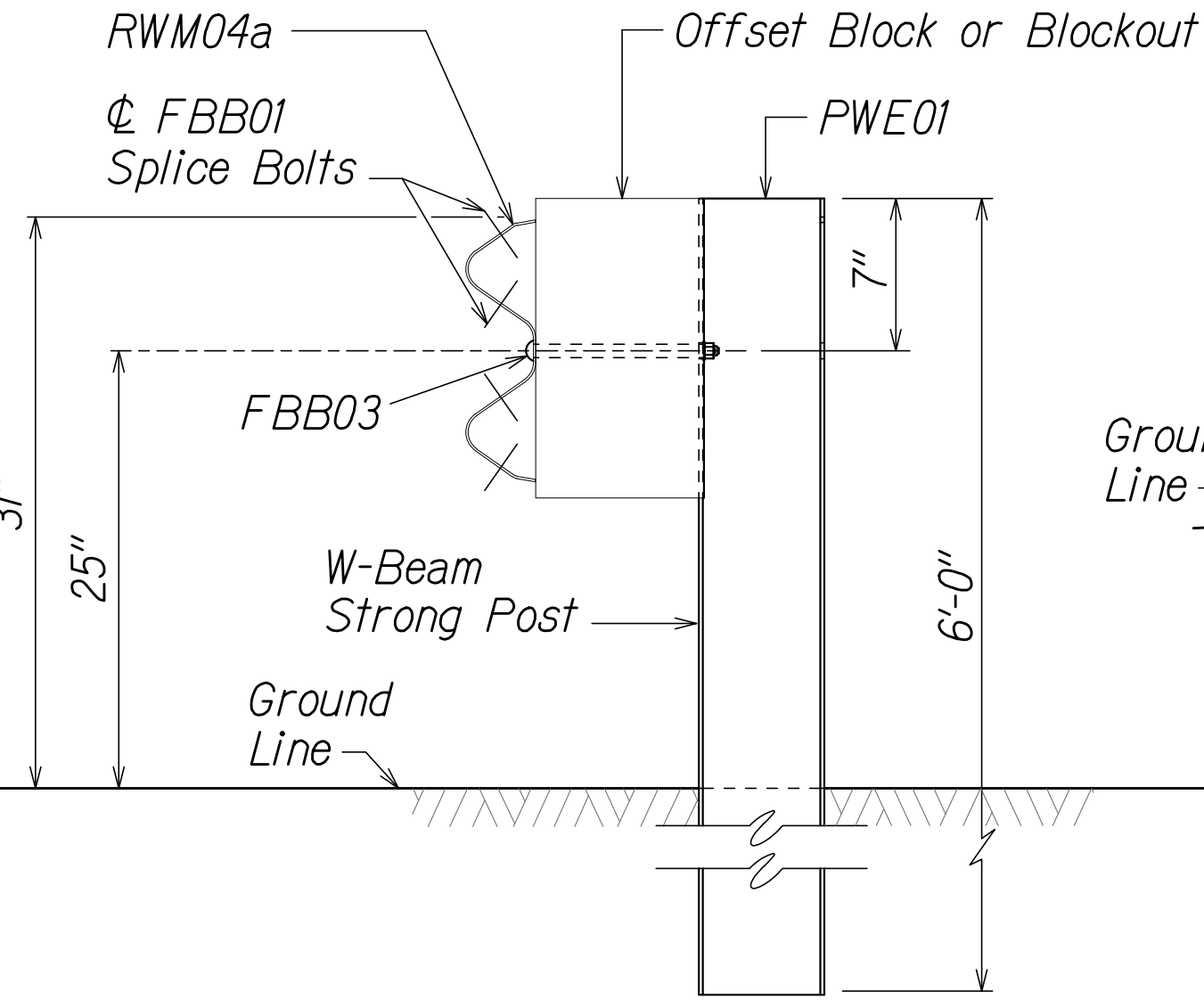
Scale: N/A Date: January 2021

SHEET No. R60 OF 66 SHEETS

FED. ROAD DIST. NO.	STATE	FED-AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-072-1(059)	2021	144	243

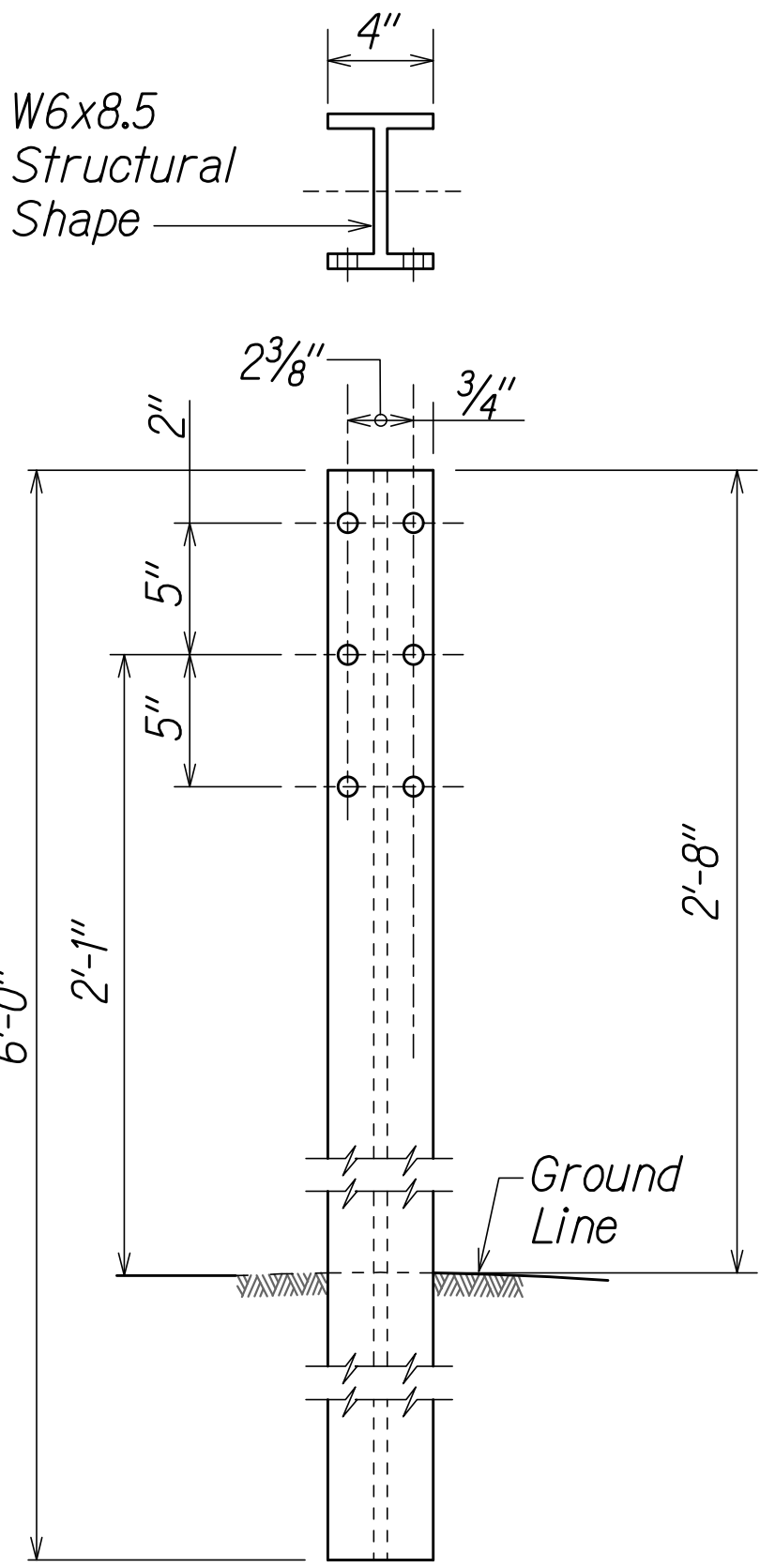


PLAN

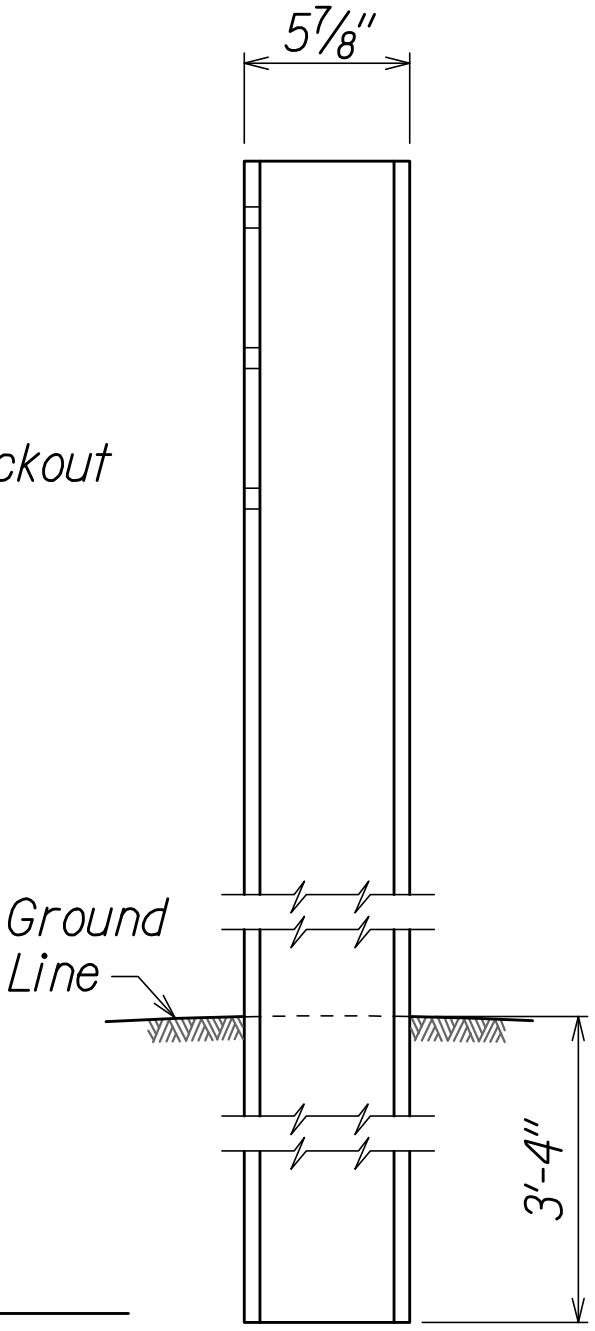


SECTION A-A

NOTE:
All Holes are
3/4" Dia.

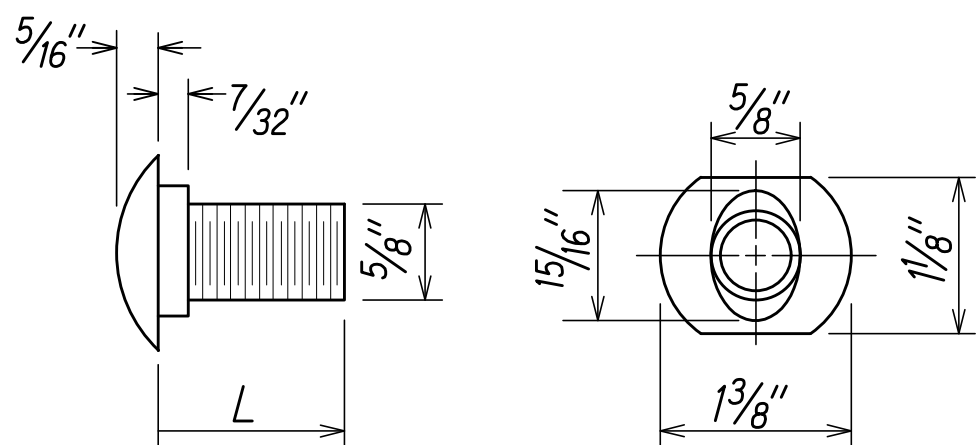


FRONT

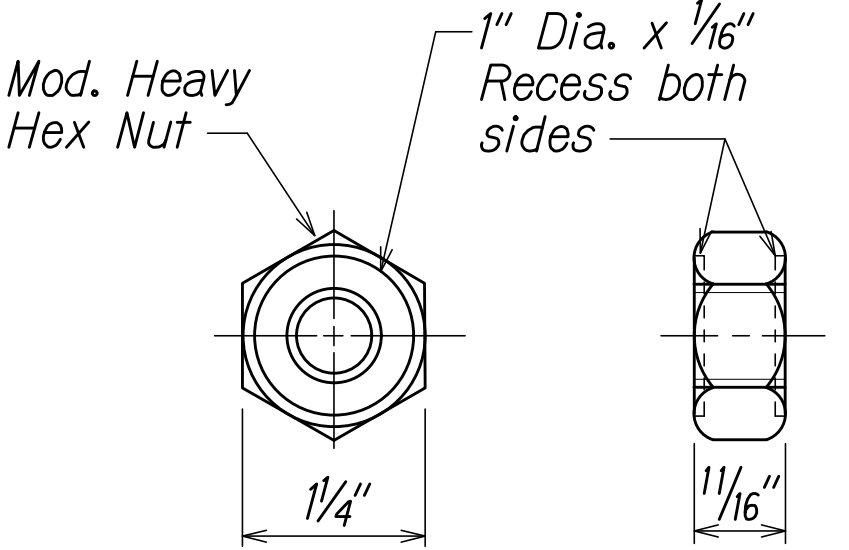


SIDE

W-BEAM STRONG POST
(PWE01)

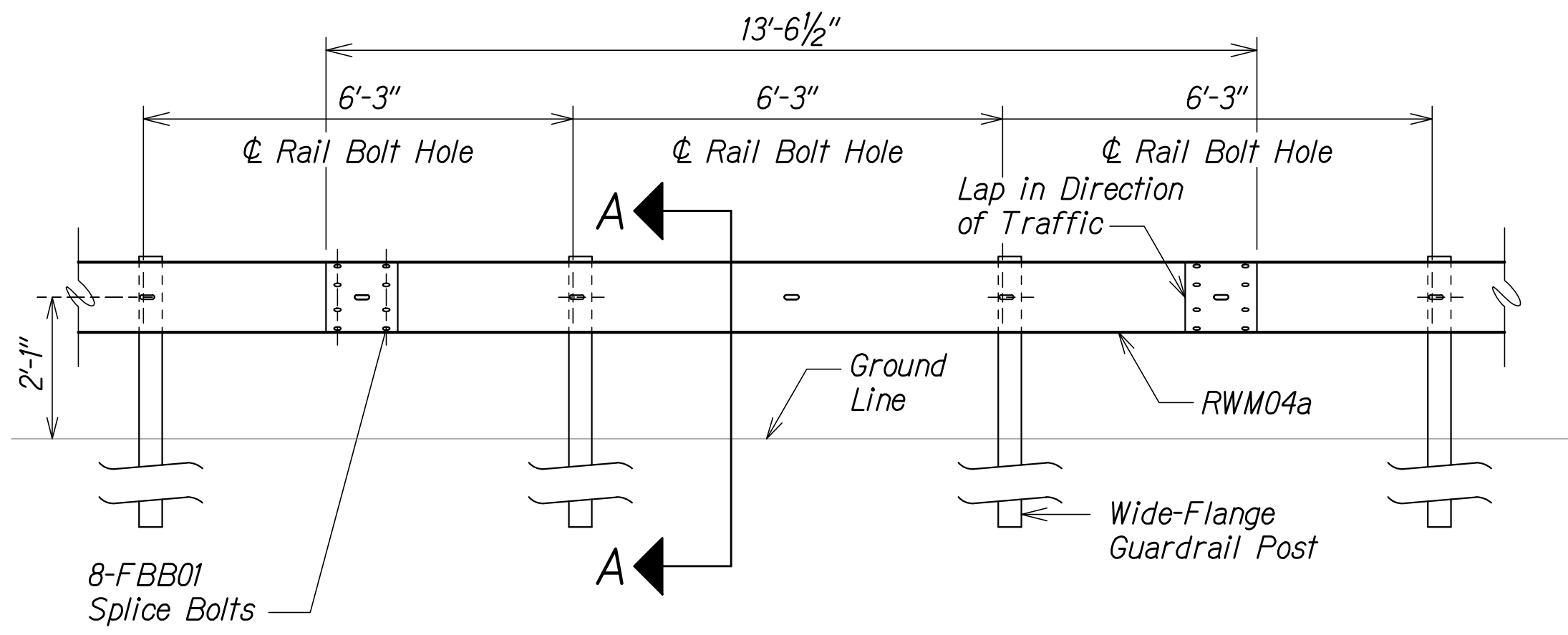
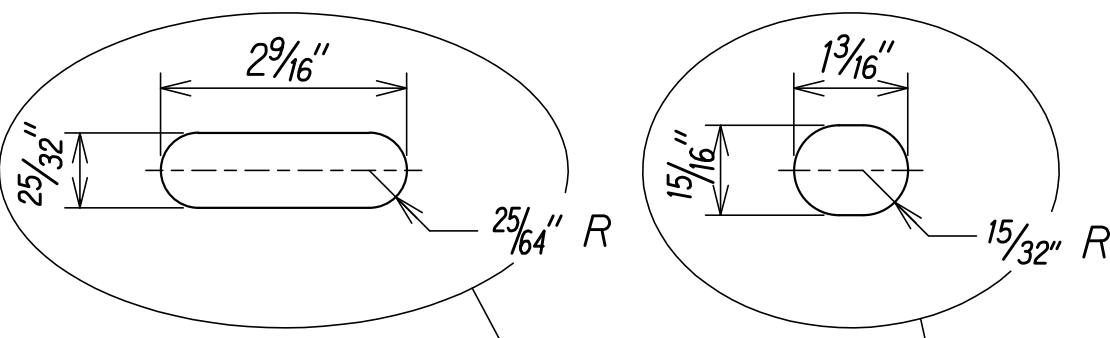


DESIGNATOR	L
FBB01	1 3/8"
FBB02	2"
FBB03	10"



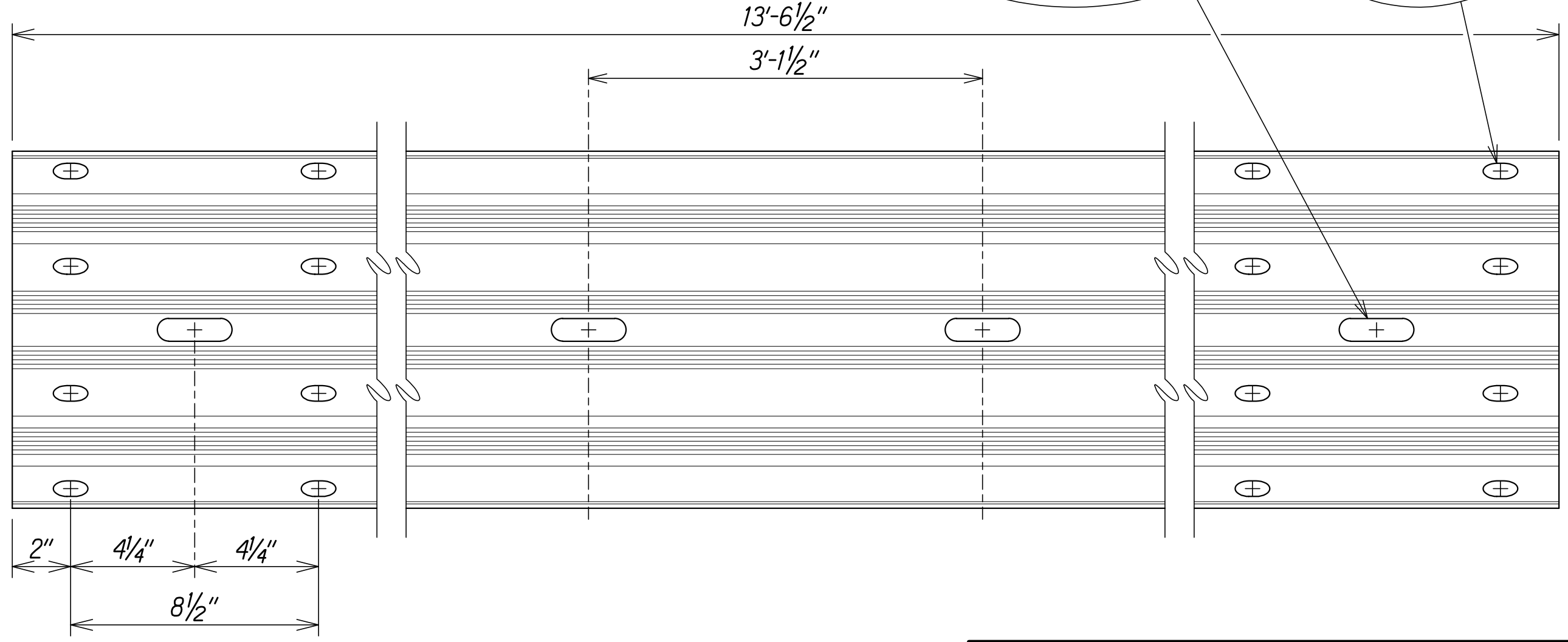
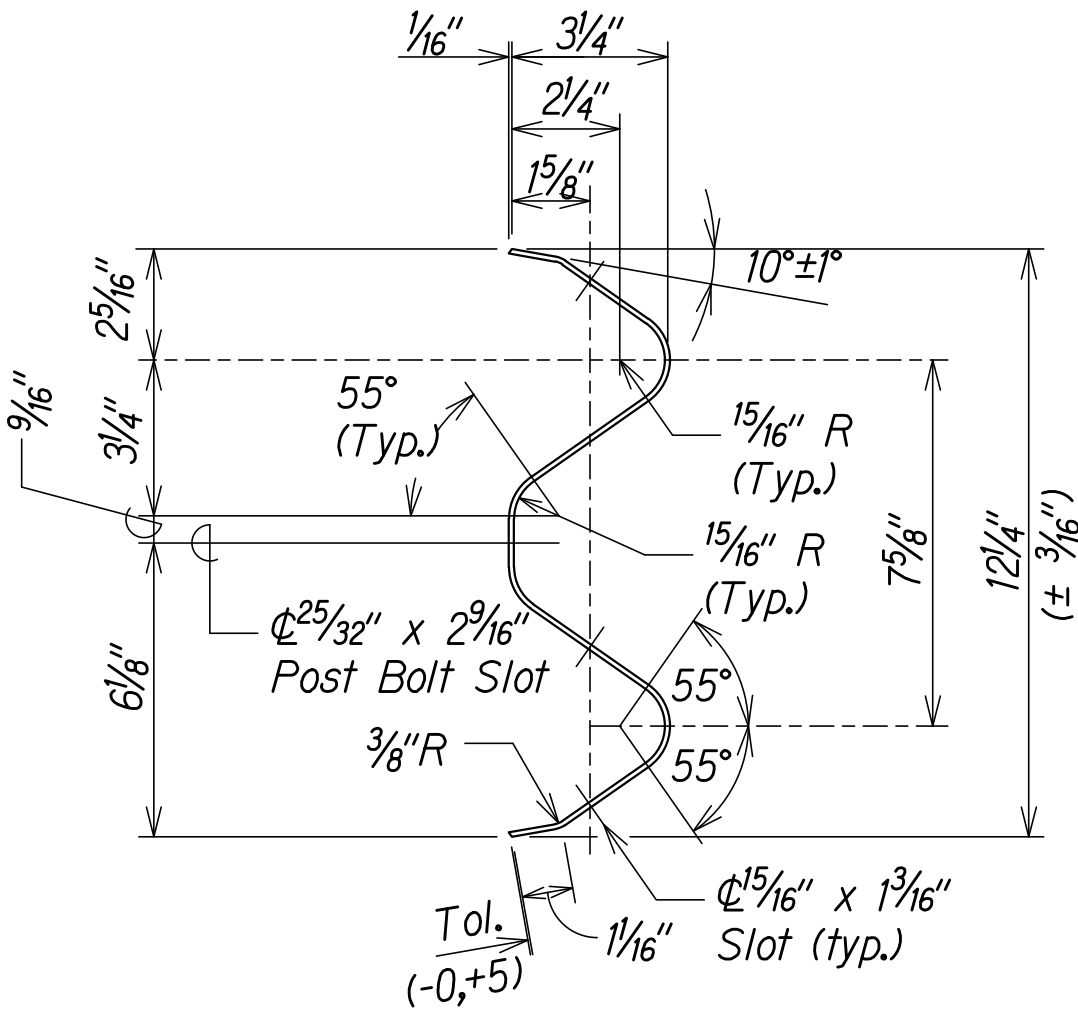
GUARDRAIL BOLTS AND RECESSED NUT

DESIGNATOR	BASE METAL THICKNESS
RWM04a	12 Gauge



ELEVATION

MIDWEST GUARDRAIL SYSTEM WITH
STANDARD 8" OFFSET BLOCK (SGR47)



4 SPACE W-BEAM GUARDRAIL (RWM04a)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**3" W-BEAM GUARDRAIL WITH
STANDARD 8" OFFSET BLOCK**

KALANIANA'OLE HIGHWAY IMPROVEMENTS PHASE 2

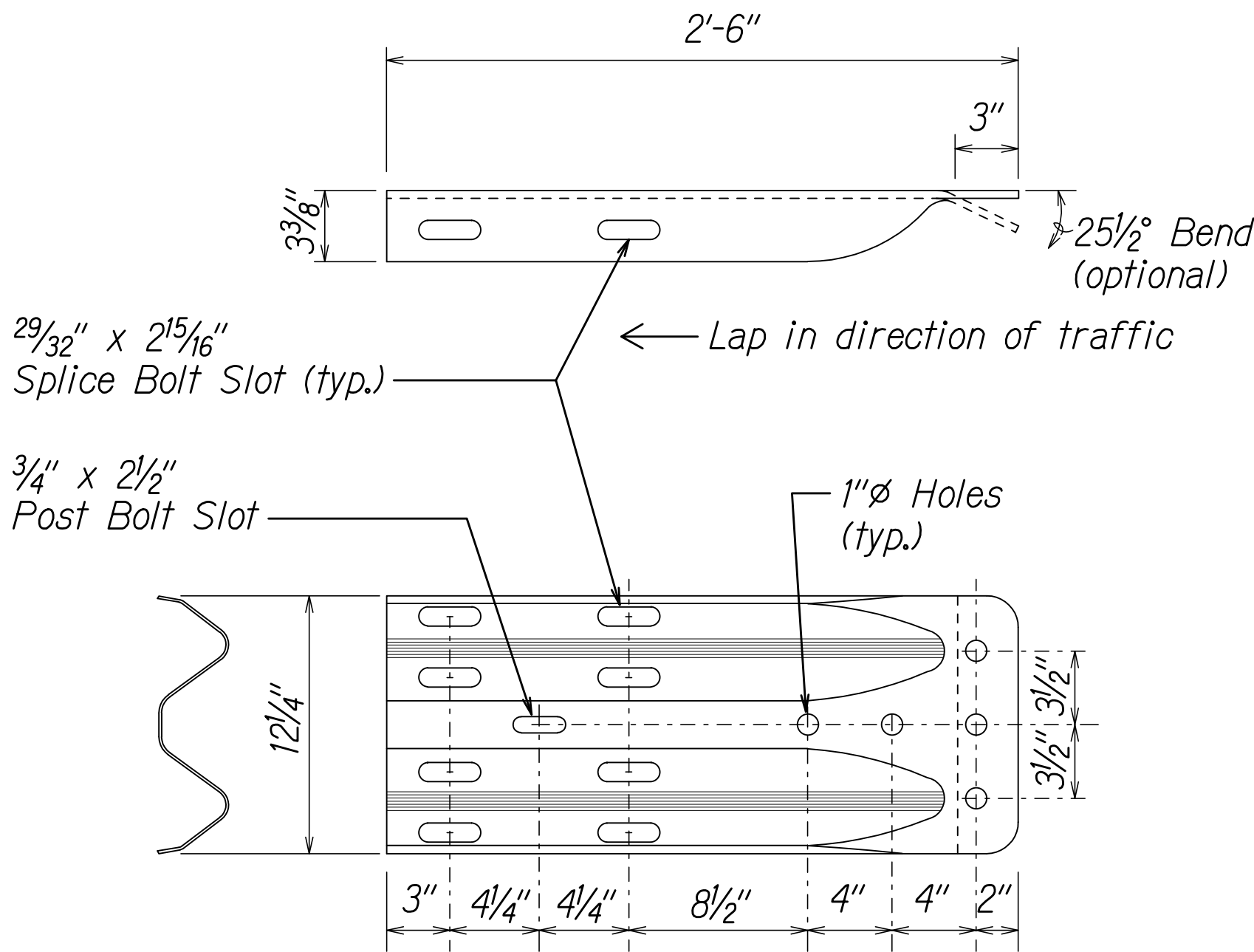
Polima Street to Vicinity of Makai Pier

Federal-Aid Project No. NH-072-1(059)

Scale: NTS Date: January 2021

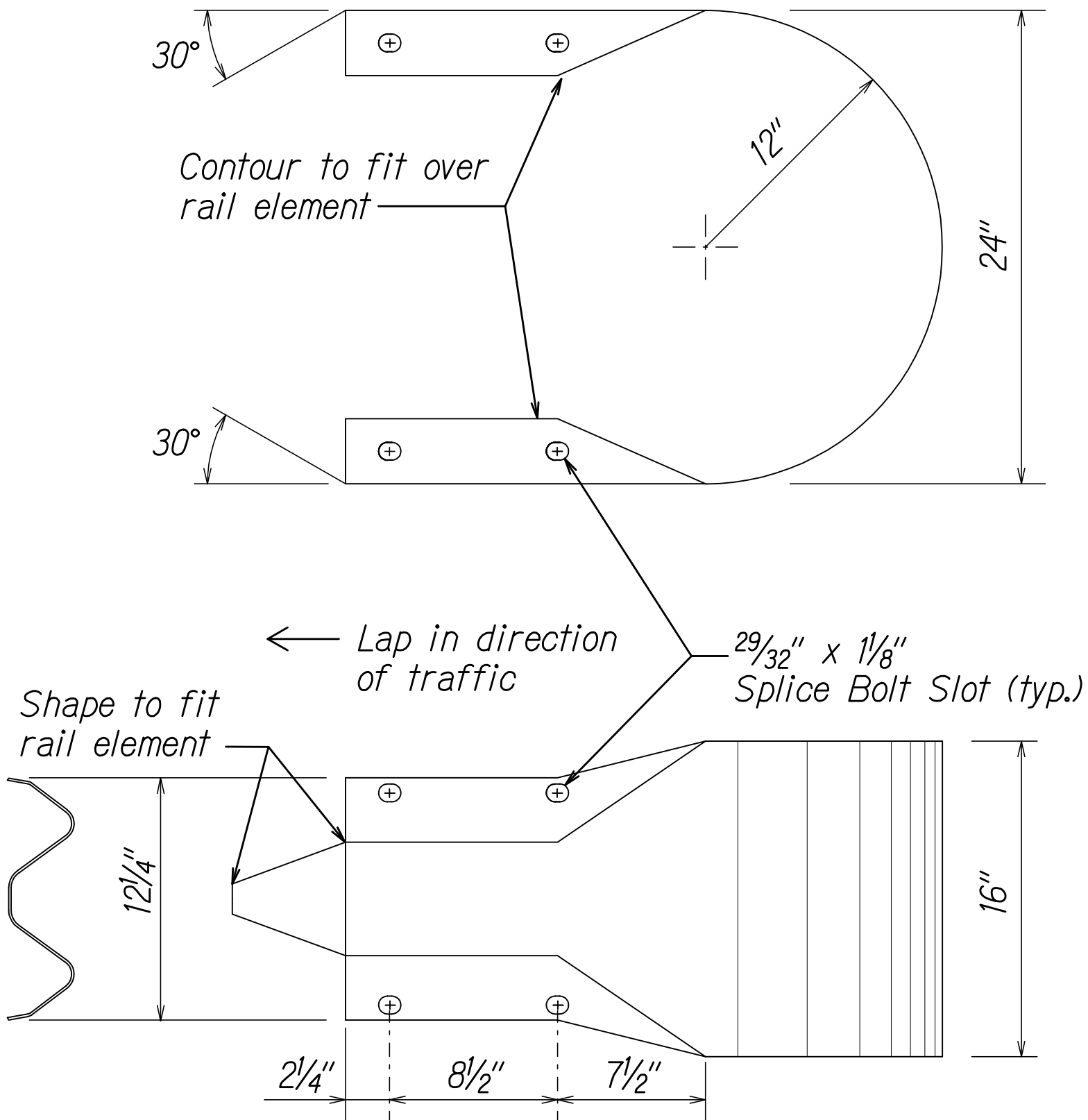
SHEET No. R61 OF 66 SHEETS

FED. ROAD DIST. NO.	STATE	FED-AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-072-1(059)	2021	145	243



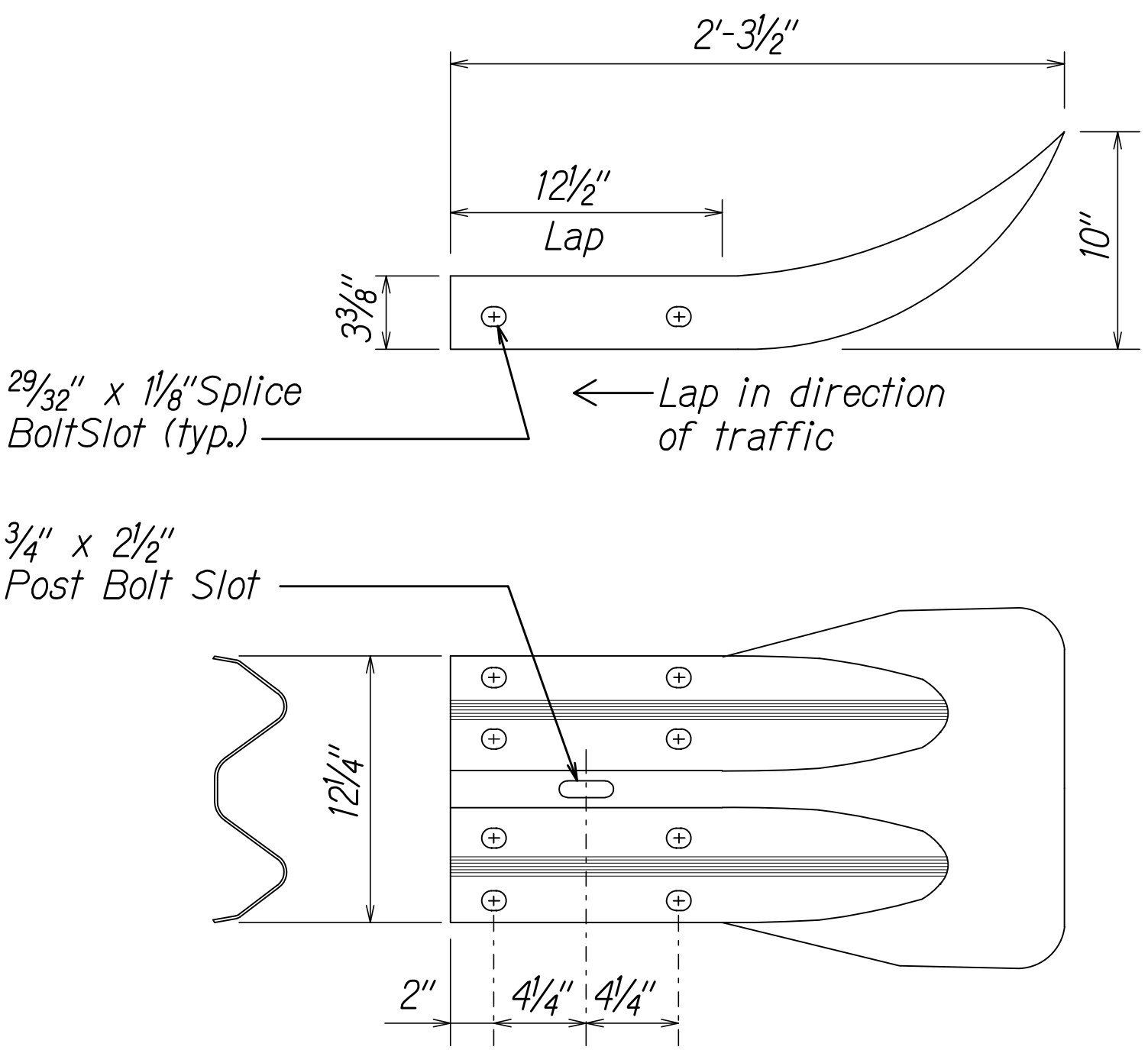
DESIGNATOR	BASE METAL THICKNESS
RWE02b	10 Gauge

W-BEAM TERMINAL CONNECTOR (RWE02b)



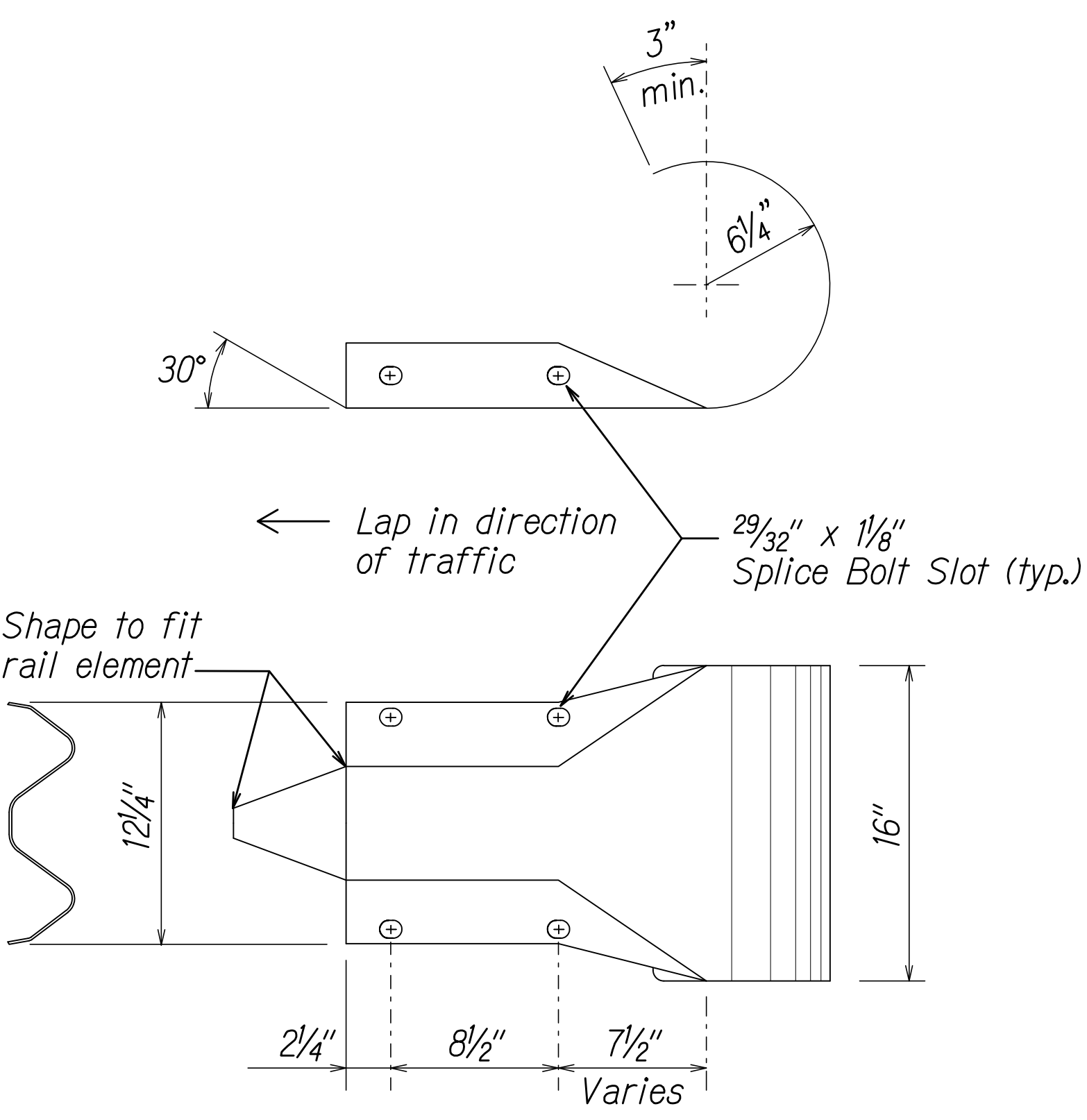
DESIGNATOR	BASE METAL THICKNESS
RWE06a	12 Gauge

W-BEAM END SECTION (BUFFER RWE06a)



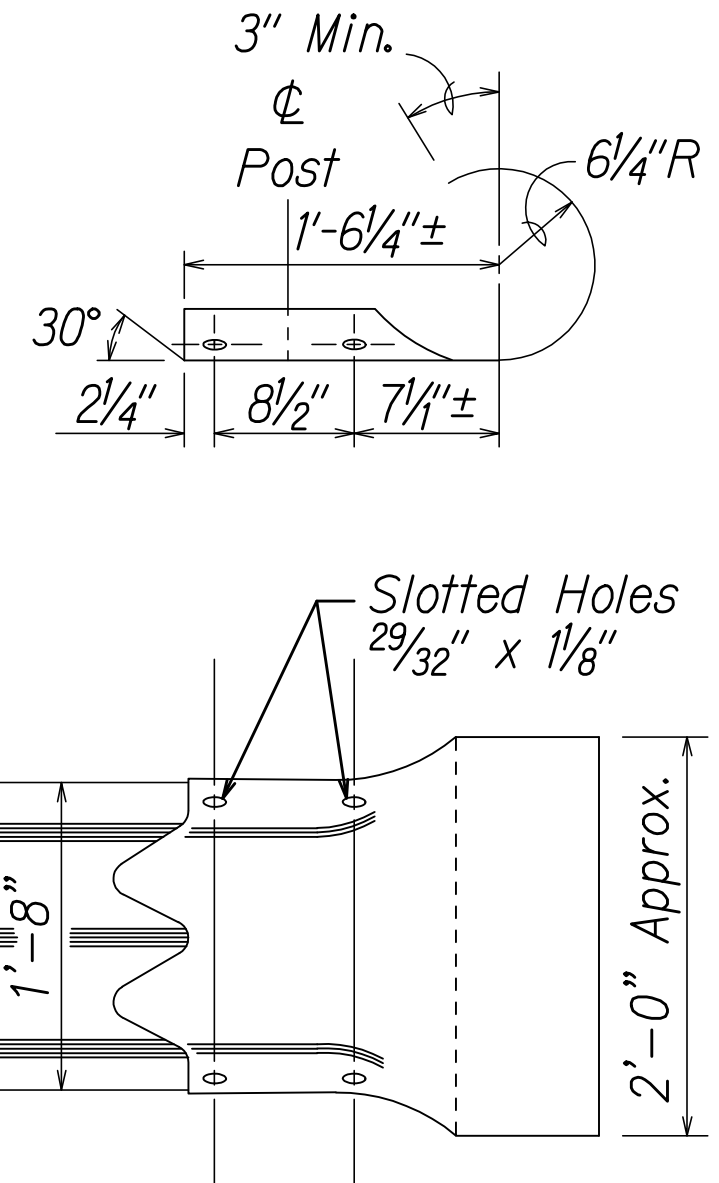
DESIGNATOR	BASE METAL THICKNESS
RWE01a	12 Gauge

W-BEAM END SECTION (FLARED RWE01a)



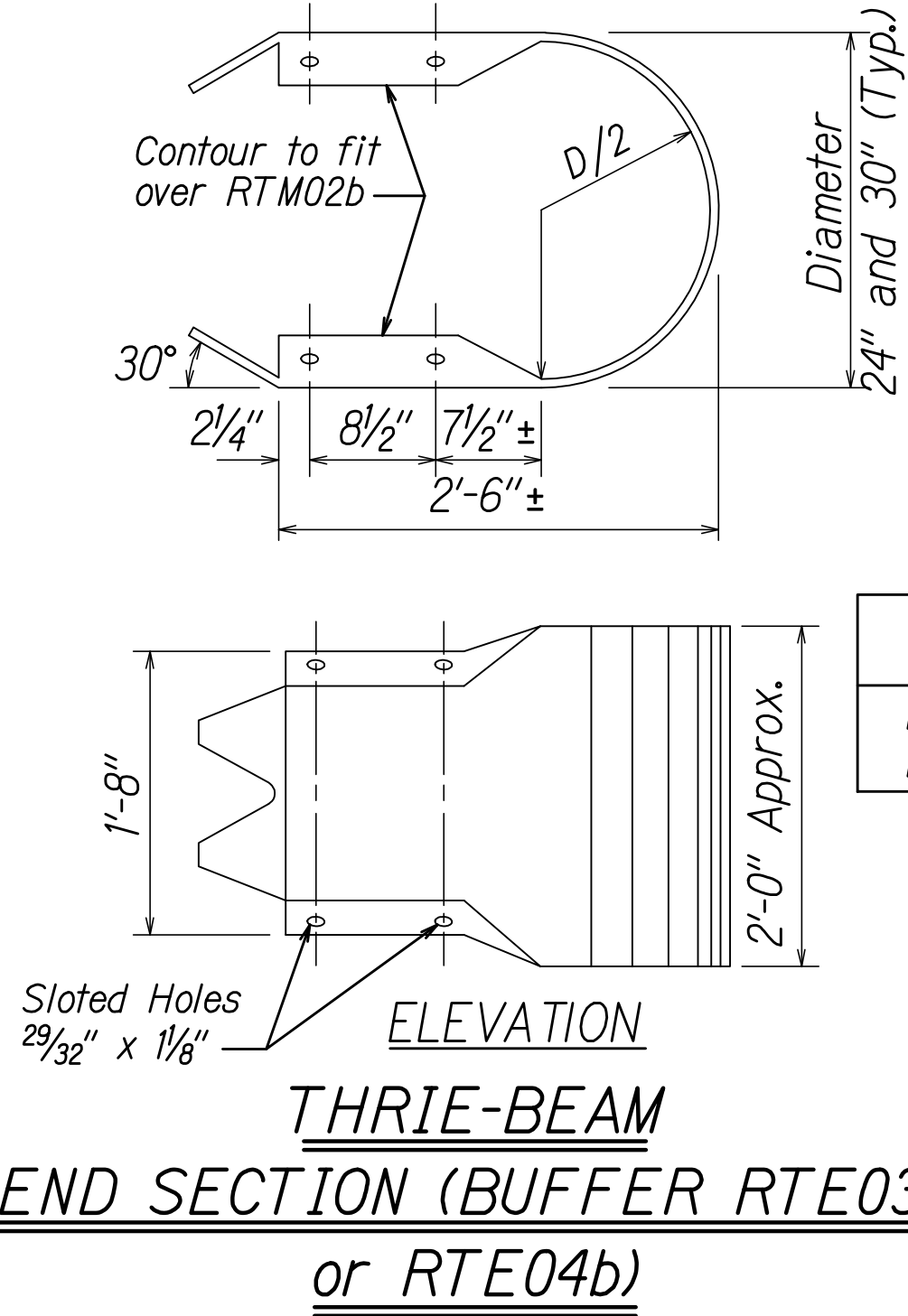
DESIGNATOR	BASE METAL THICKNESS
RWE03a	12 Gauge

W-BEAM END SECTION (ROUNDED RWE03a)



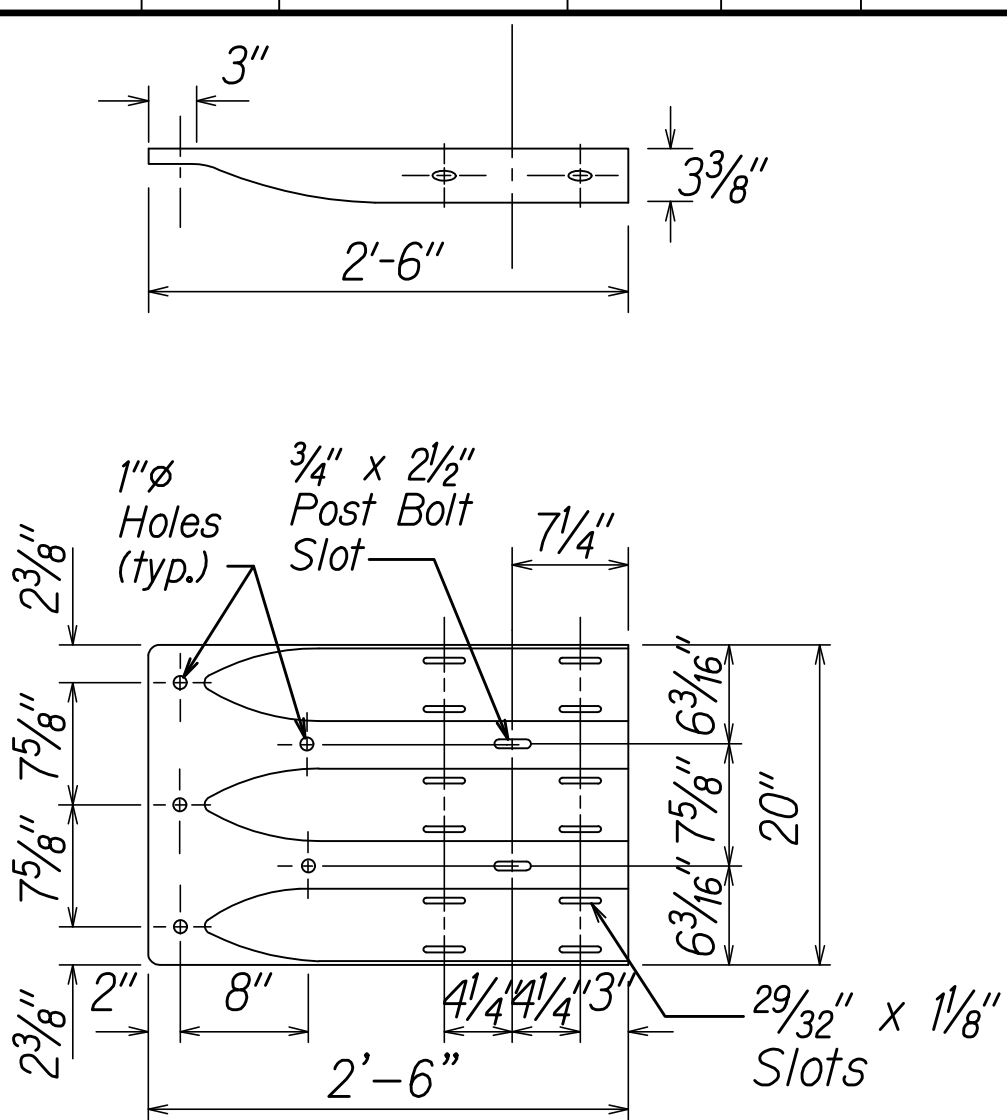
DESIGNATOR	BASE METAL THICKNESS
RTE02b	10 Gauge

THRIE-BEAM SECTION (ROUNDED) (RTE02b)



DESIGNATOR	BASE METAL THICKNESS
RTE03b & RTE04b	10 Gauge

THRIE-BEAM END SECTION (BUFFER RTE03b or RTE04b)



DESIGNATOR	BASE METAL THICKNESS
RTE01b	10 Gauge

THRIE-BEAM TERMINAL CONNECTOR (RTE01b)

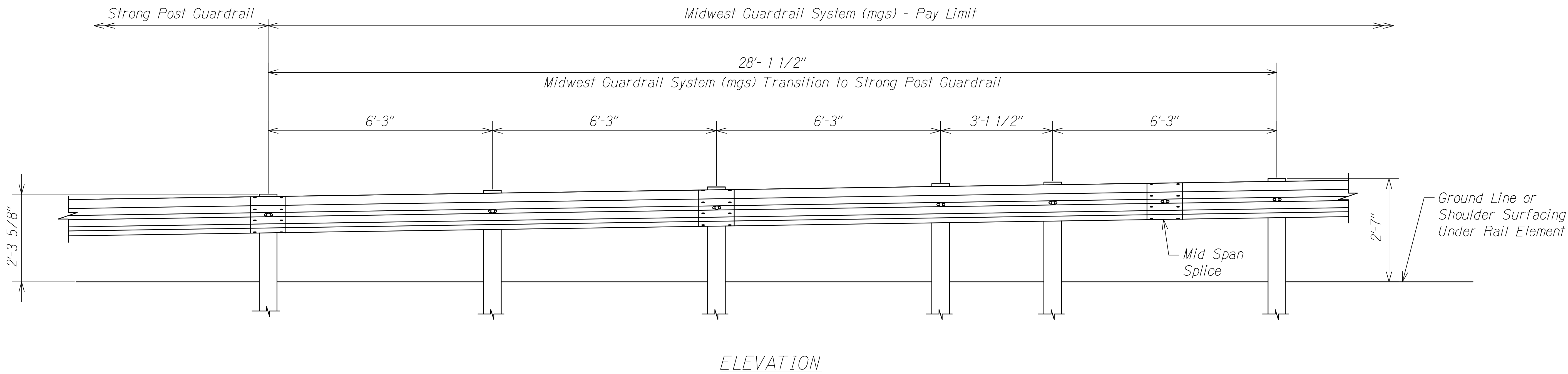
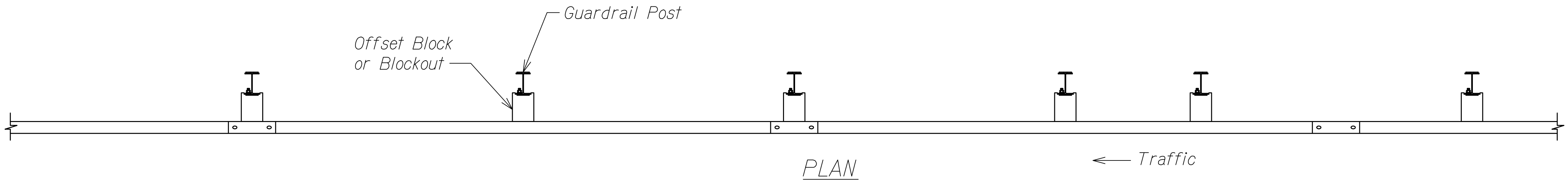
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**GUARDRAIL TERMINAL CONNECTORS
AND END SECTIONS**
KALANIANA'OLE HIGHWAY IMPROVEMENTS PHASE 2
Poalima Street to Vicinity of Makai Pier
Federal-Aid Project No. NH-072-1(059)

Scale: NTS
Date: January 2021

SHEET No. R62 OF 66 SHEETS

FED. ROAD DIST. NO.	STATE	FED-AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-072-1(059)	2021	146	243



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**MGS TRANSITION TO
STRONG POST GUARDRAIL**

KALANIANA'OLE HIGHWAY IMPROVEMENTS PHASE 2

Polima Street to Vicinity of Makai Pier

Federal-Aid Project No. NH-072-1(059)

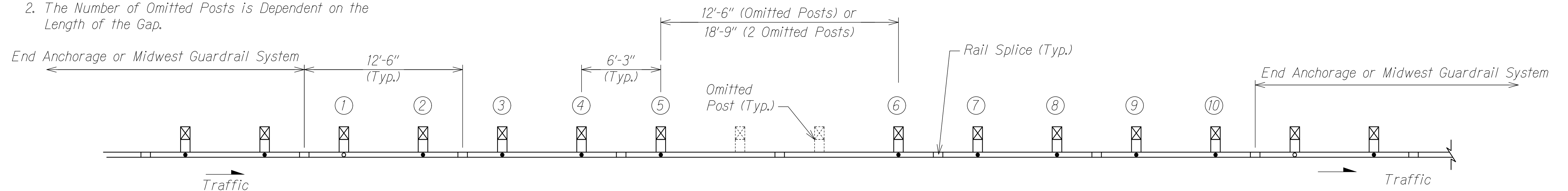
Scale: NTS Date: January 2021

SHEET No. **R63** OF **66** SHEETS

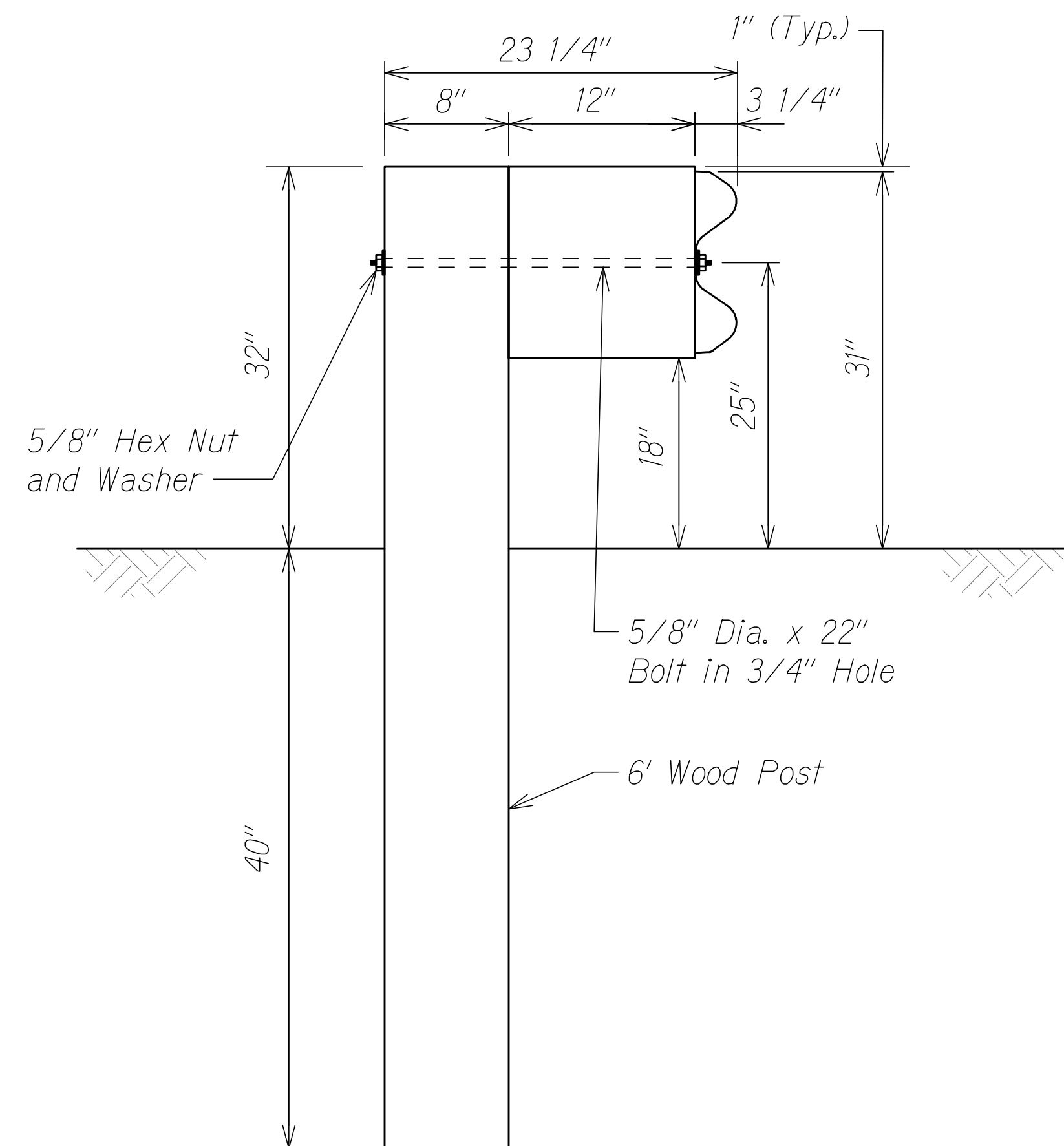
C:\CIVIL 3D PROJECTS\2017_002.000.DOT KAL HWY RESURFACING POALIMA TO HULI\01 CE DWG\R63 MGS TRANSITION TO STRONG POST GUARDRAIL.DWG 11/3/2020 6:28 PM

NOTES:

- Posts ①, ②, ⑨, and ⑩ May be Timber or Steel.
- The Number of Omitted Posts is Dependent on the Length of the Gap.

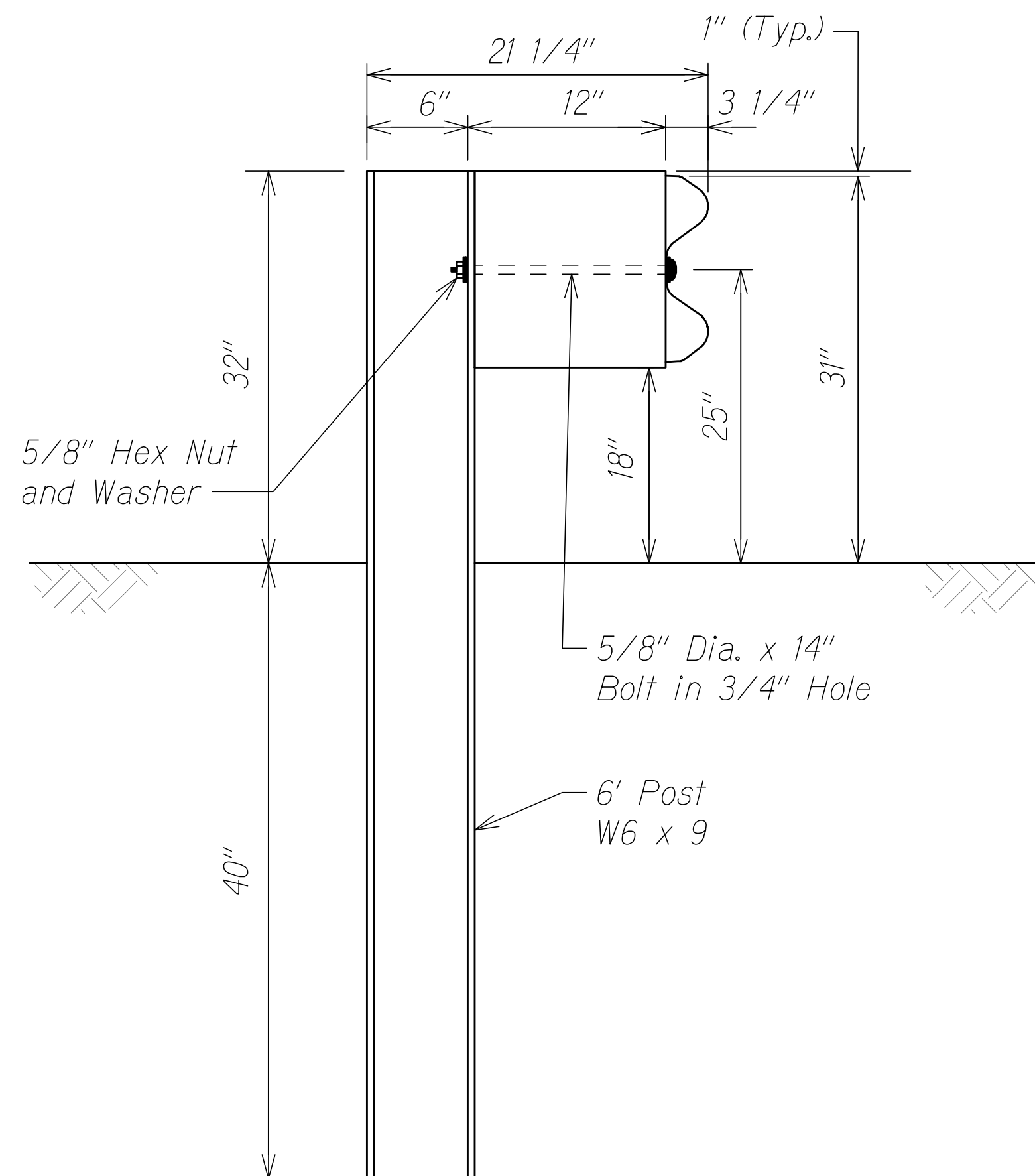


LONG-SPAN RAILING FOR ONE OR TWO OMITTED POSTS AT GAP



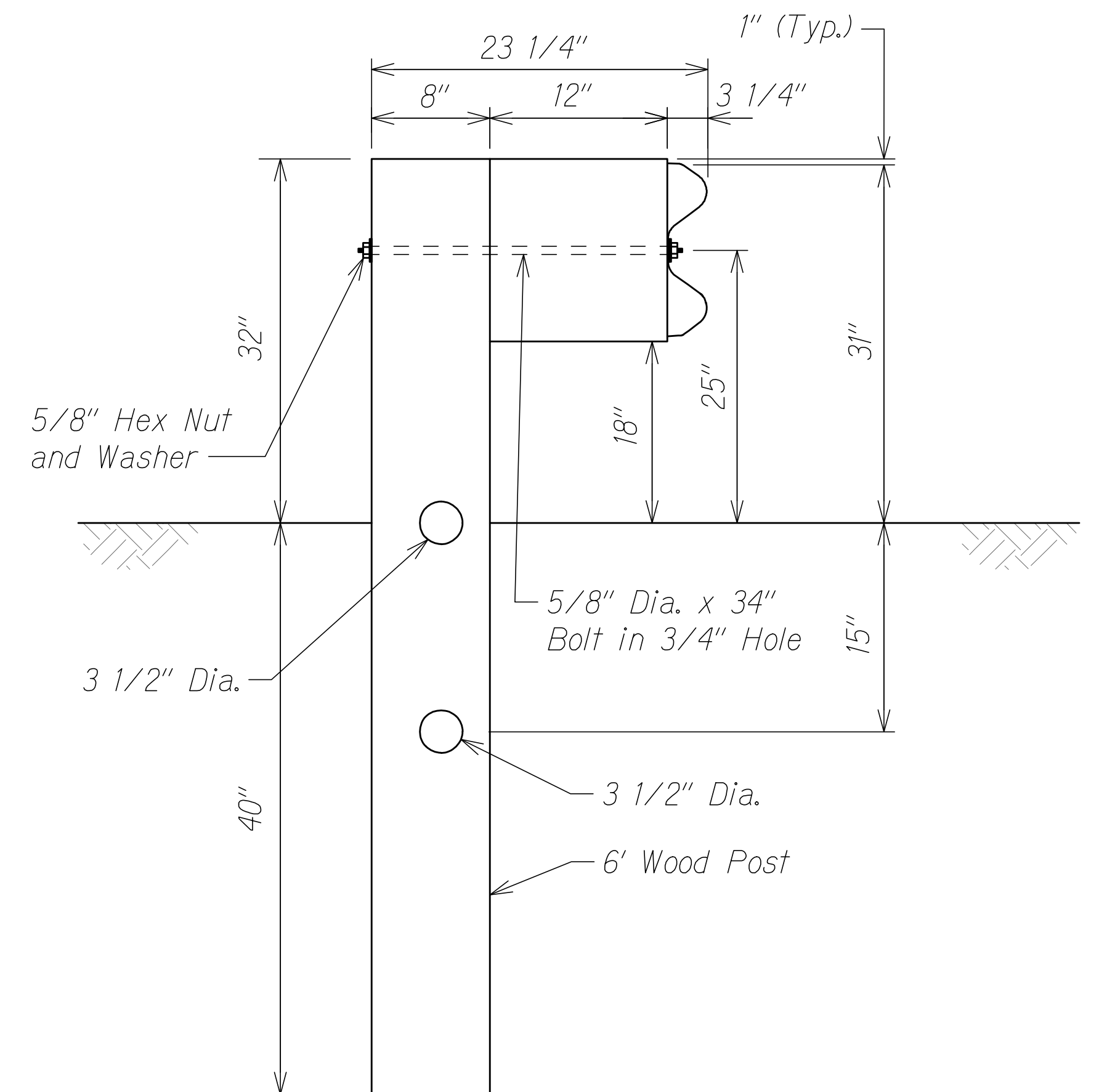
TIMBER POST

Posts ① - ② And ⑨ - ⑩
(See Note 1)



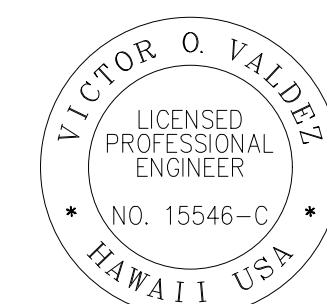
STEEL POST

Posts ① - ② And ⑨ - ⑩
(See Note 1)



BREAKAWAY TIMBER POST

Posts ③ - ⑧



THIS WORK WAS PREPARED BY ME
OR UNDER MY SUPERVISION

SIGNATURE

04/30/22
EXPIRATION DATE
OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**LONG-SPAN MGS TYPE 3
W-BEAM (31 INCHES)**

KALANIANA'OLE HIGHWAY IMPROVEMENTS PHASE 2

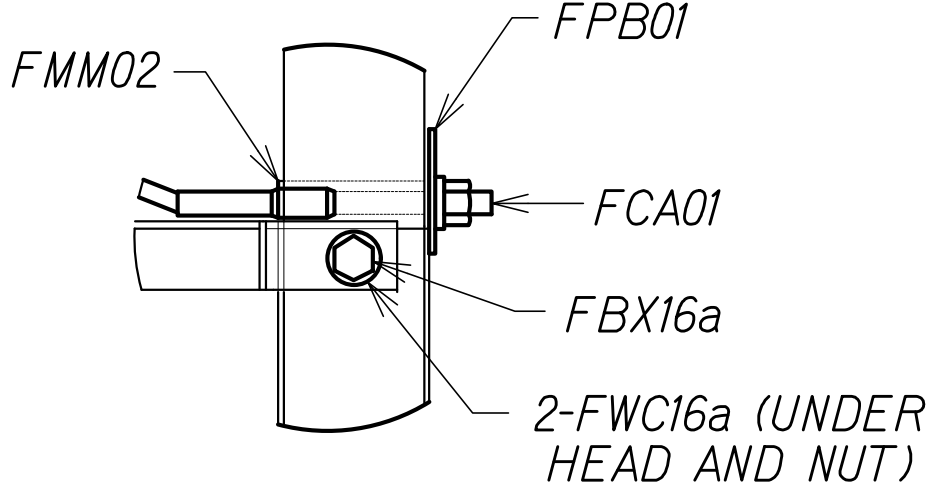
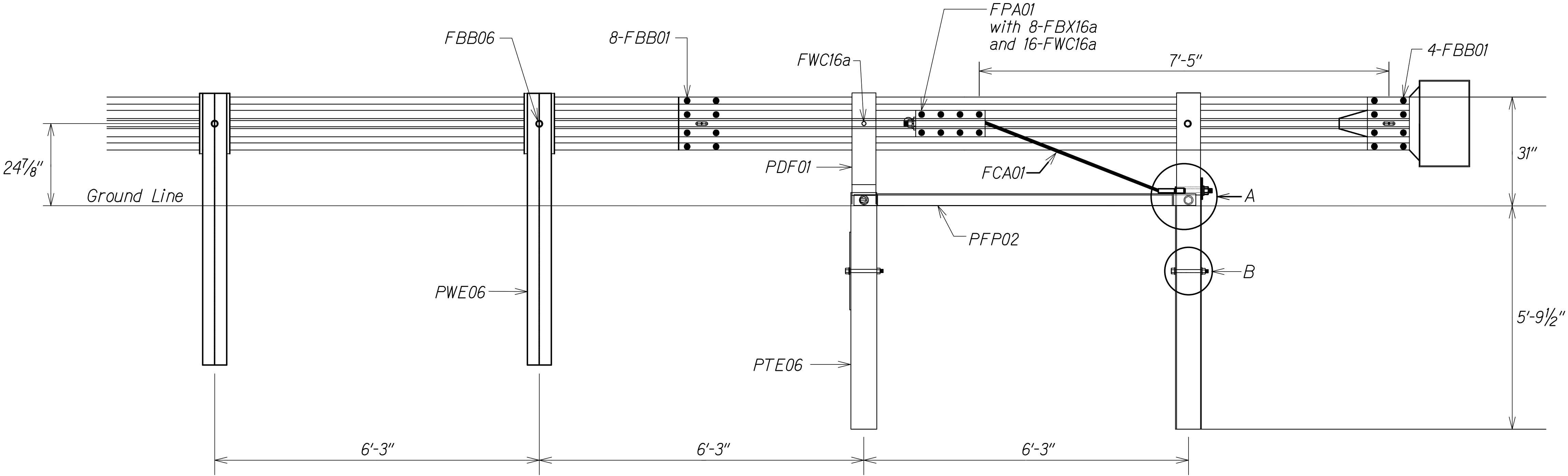
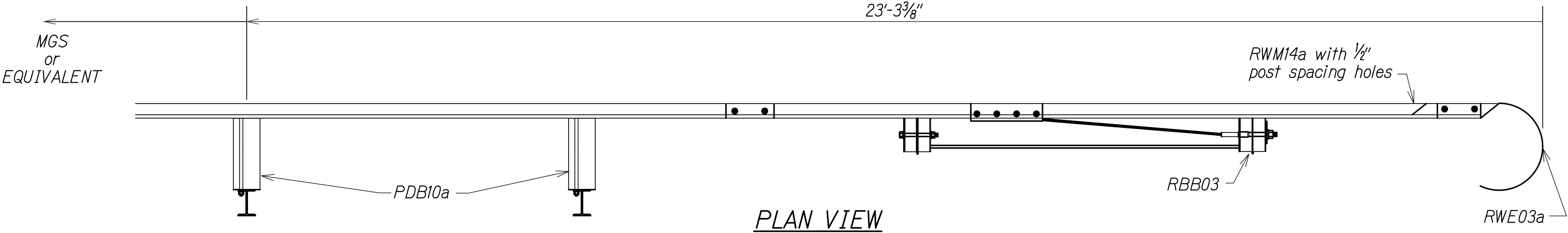
Poalima Street to Vicinity of Makai Pier

Federal-Aid Project No. NH-072-1(059)

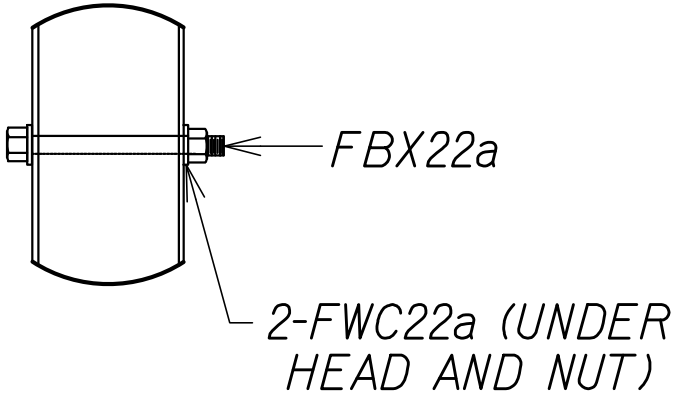
Scale: NTS Date: January 2021

SHEET No. R64 OF 66 SHEETS

FED. ROAD DIST. NO.	STATE	FED-AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-072-1(059)	2021	148	243

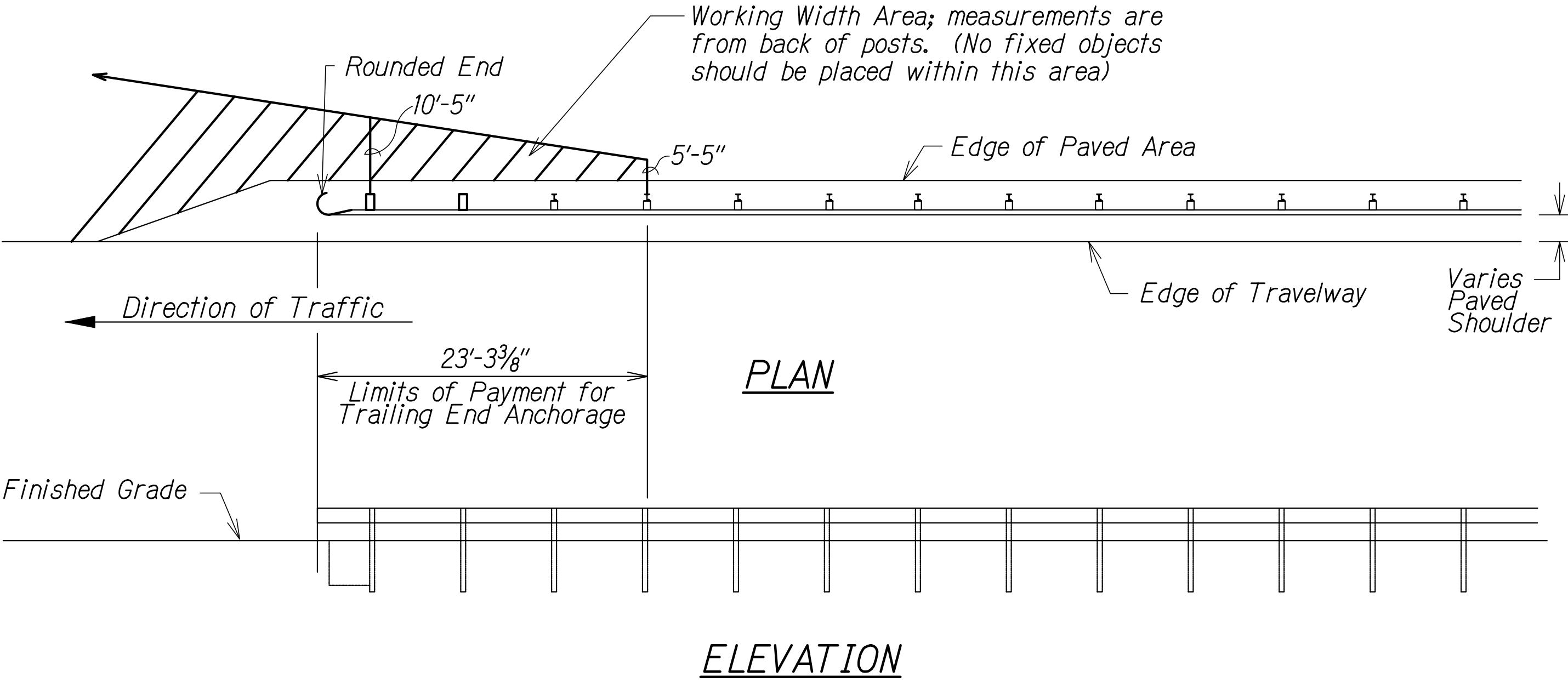


DETAIL A



DETAIL B

ITEM NO.	QTY	COMPONENTS
FBB01	12	Guardrail Bolt and Nut
FBB03	2	Guardrail Bolt and Nut
FBB06	1	Guardrail Bolt and Nut
FBX16a	2	Hex Head Bolt (10") and Nut
FBX16a	8	Hex Head Bolt (1 1/2") and Nut
FBX22a	2	Hex Head Bolt (7 1/2") and Nut
FCA01	1	BCT Anchor Cable Assembly
PDB10a	2	MGS Timber Blockout
PFP02	1	Strut and Yoke Assembly
PWE06	1	Wide-Flange Guardrail Post
FMM02	1	BCT Post Sleeve
FPA01	1	Anchor Bracket Assembly
FPB01	1	BCT Bearing Plate
FWC16a	22	Circular Washer
FWC22a	4	Circular Washer
PDF01	2	BCT Timber Post
PTE06	2	Foundation Tube
RWE03a	1	W-Beam Rounded End Section
RWM14a	1	W-Beam MGS End Section



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**TRAILING-END ANCHORAGE
SYSTEM**

KALANIANA'OLE HIGHWAY IMPROVEMENTS PHASE 2
Poalima Street to Vicinity of Makai Pier
Federal-Aid Project No. NH-072-1(059)

Scale: NTS Date: January 2021

SHEET No. R65 OF 66 SHEETS

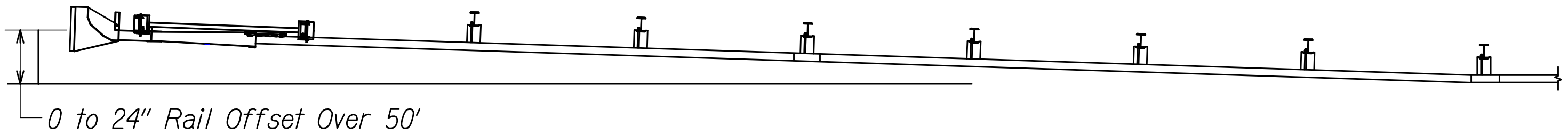
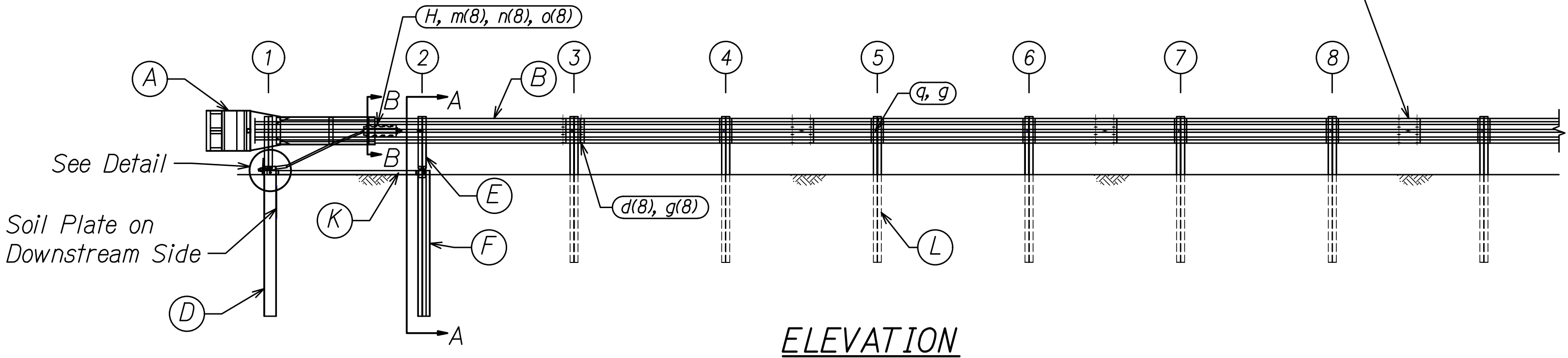
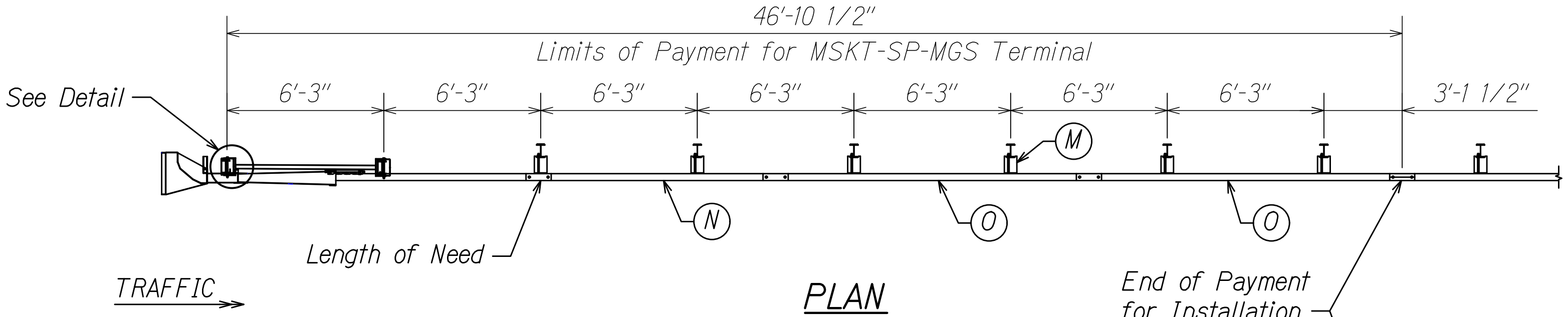
FED. ROAD DIST. NO.	STATE	FED-AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-072-1(059)	2021	149	243

ITEM	QTY.	BILL OF MATERIALS	ITEM NO.
A	1	IMPACT HEAD	MS3000
B	1	W-BEAM GUARDRAIL END SECTION, 12 Ga.	SF1303
C	1	FIRST POST TOP (6x6x $\frac{1}{8}$ " TUBE)	MTPHP1A
D	1	FIRST POST BOTTOM (6' W6x15)	MTPHP1B
E	1	SECOND POST ASSEMBLY TOP	UHP2A
F	1	SECOND POST ASSEMBLY BOTTOM	HP2B
G	1	BEARING PLATE	E750
H	1	CABLE ANCHOR BOX	S760
J	1	BCT CABLE ANCHOR ASSEMBLY	E770
K	1	STRUT	MS785
L	6	6x9 (6x8.5) STEEL POST	P621
M	6	RECYCLED PLASTIC BLOCK OR EQUIV.	CBSP-14
N	1	W-BEAM MGS RAIL SECTION (9'-4 1/2")	GI2025
O	2	W-BEAM MGS RAIL SECTION (12'-6")	GI203A
HARDWARE (All Dimension in Inches)			
a	2	5/16 x 1 HEX BOLT GRD 5	B5160104A
b	4	5/16 WASHER	W0516
c	2	5/16 HEX NUT	N0516
d	25	5/8 Dia. x 1 1/4 SPLICE BOLT (POST #2)	B580122
e	2	5/8 Dia. x 9 HEX BOLT A449	B580904A
f	3	5/8 WASHER	W050
g	33	5/8 Dia. H.G.R. NUT	N050
h	1	3/4 Dia. x 8-1/2 HEX BOLT GRD A449	B340854A
j	1	3/4 Dia. HEX NUT	N030
k	2	1 ANCHOR CABLE HEX NUT	N100
l	2	1 ANCHOR CABLE WASHER	W100
m	8	1/2 RSI SHOULDER BOLT W/ WASHER	SB12A
n	8	1/2 STRUCTURAL NUT	N012A
o	8	1/2 STRUCTURAL WASHER	W012A
p	1	BEARING PLATE RETAINER TIE	CT-100ST
q	6	5/8" x 10" H.G.R. BOLT	B581002

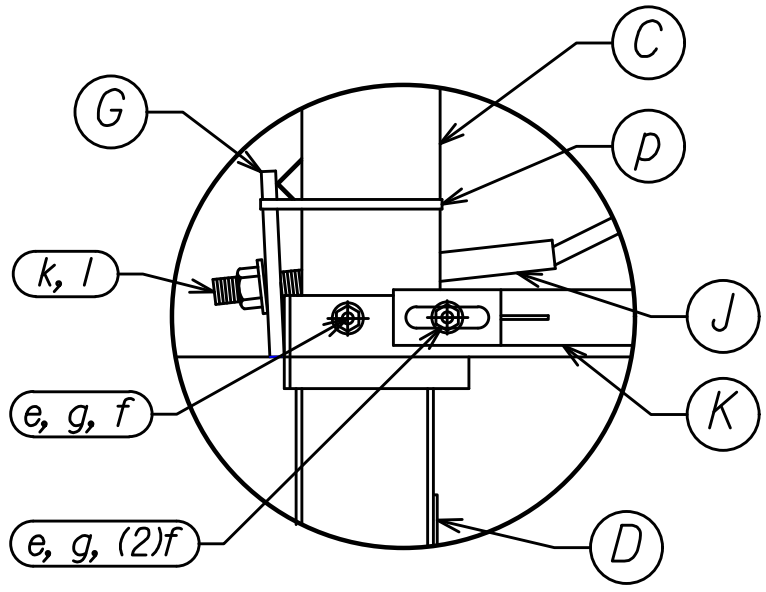
GENERAL NOTES:

1. All bolts, nuts, cable assemblies, cable anchors and bearing plates shall be galvanized.
2. The lower sections of the Posts 1 and 2 shall not protrude more than 4" above ground (measured along a 5' cord longitudinal to the system). Site grading may be necessary to meet this requirement.
3. The lower section of the hinged post should not be driven with the upper post attached. If the post is placed in a drilled hole, the backfill material must be satisfactorily compacted to prevent settlement.
4. When competent rock is encountered, a 12" \varnothing post hole, 20" deep cored into the rock surface may be used if approved by the Engineer for Posts 1 and/or 2. Granular material will be placed in the bottom of the hole, approximately 2.5" deep to provide drainage. The first and/or second post can be field cut to length, placed in the hole and backfilled with suitable backfill. The soil plate may be trimmed if required.
5. 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.

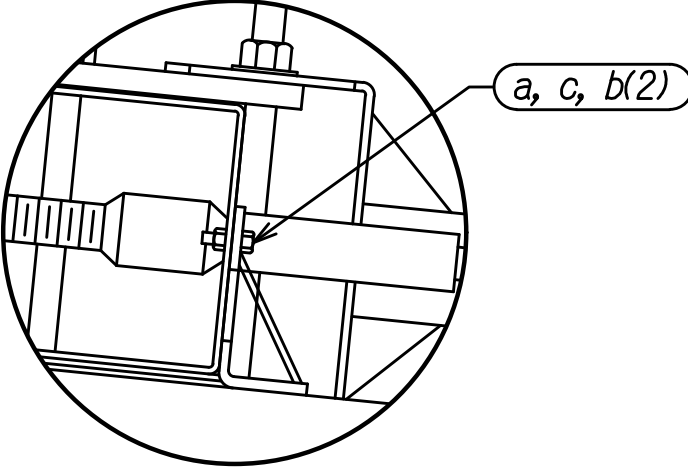
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
MSKT-SP-MGS TERMINAL
(8" BLOCKS) TEST LEVEL 3
KALANIANA'OLE HIGHWAY IMPROVEMENTS PHASE 2
Poalima Street to Vicinity of Makai Pier
Federal-Aid Project No. NH-072-1(059)
Scale: NTS
Date: January 2021
SHEET No. R66 OF 66 SHEETS



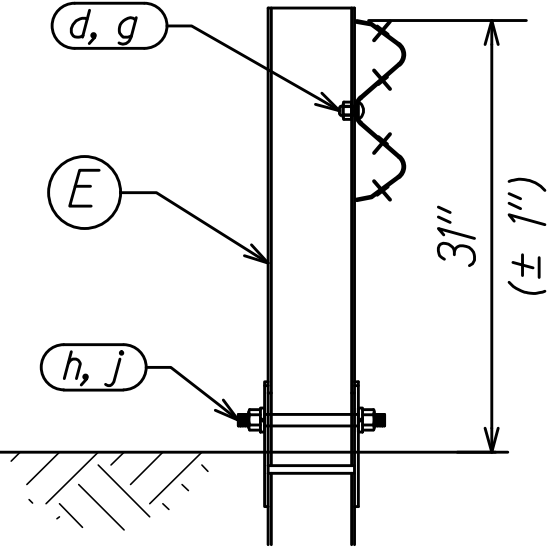
OPTIONAL FLARED INSTALLATION
25:1 maximum flare rate



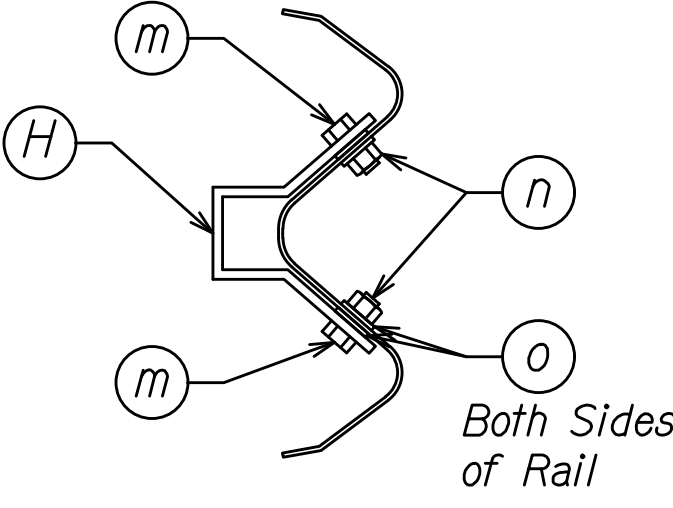
Post #1 Connection Detail



Impact Head Connection Detail



SECTION A-A
at Post #2



SECTION B-B
Anchor Bracket