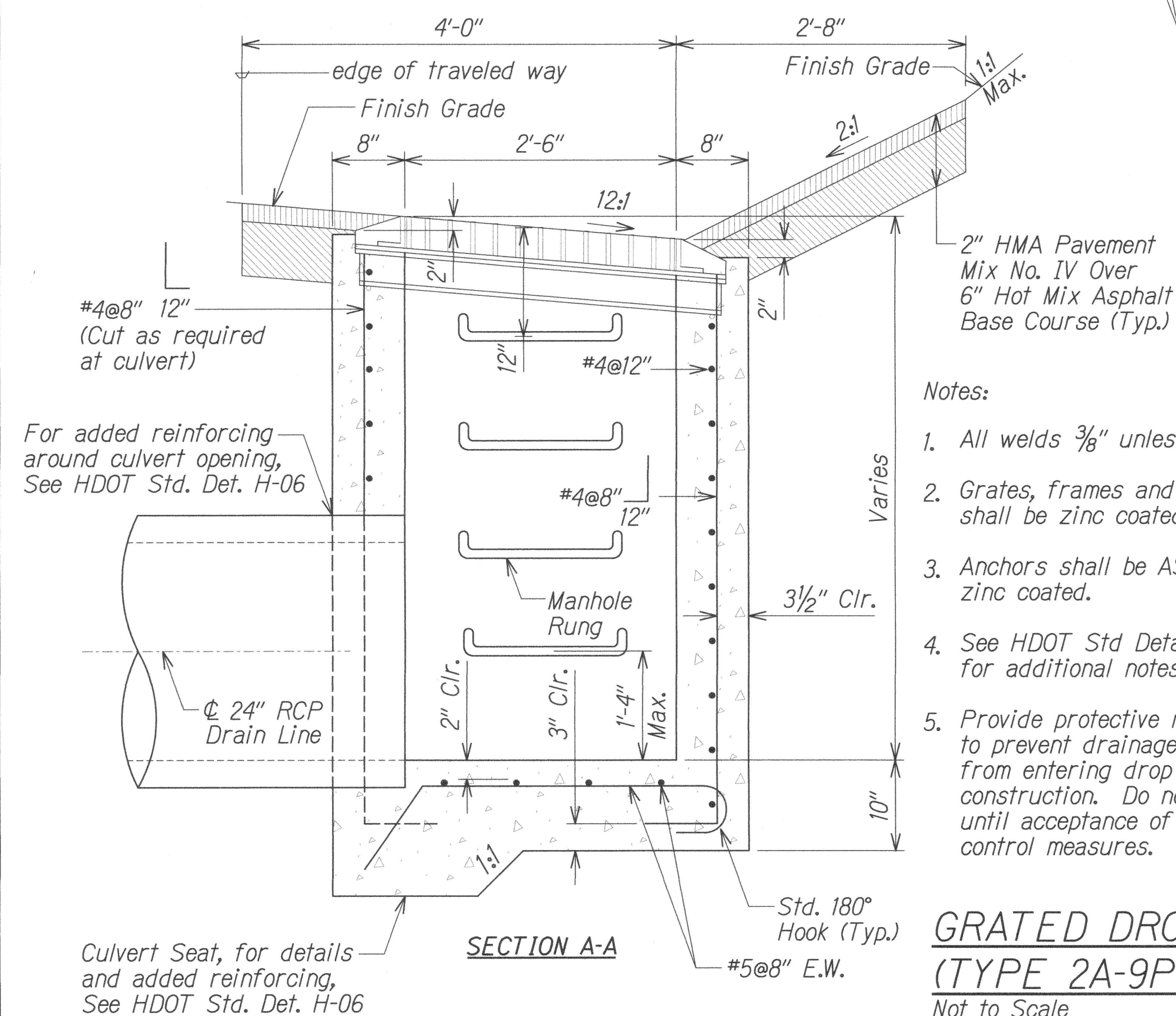
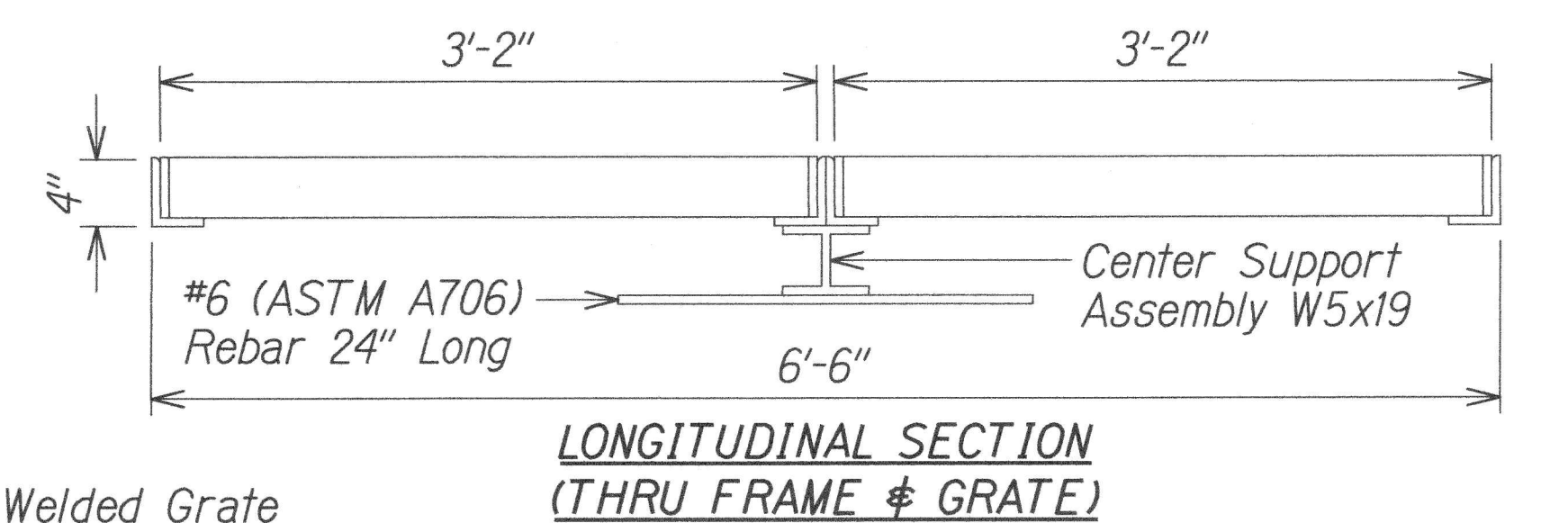
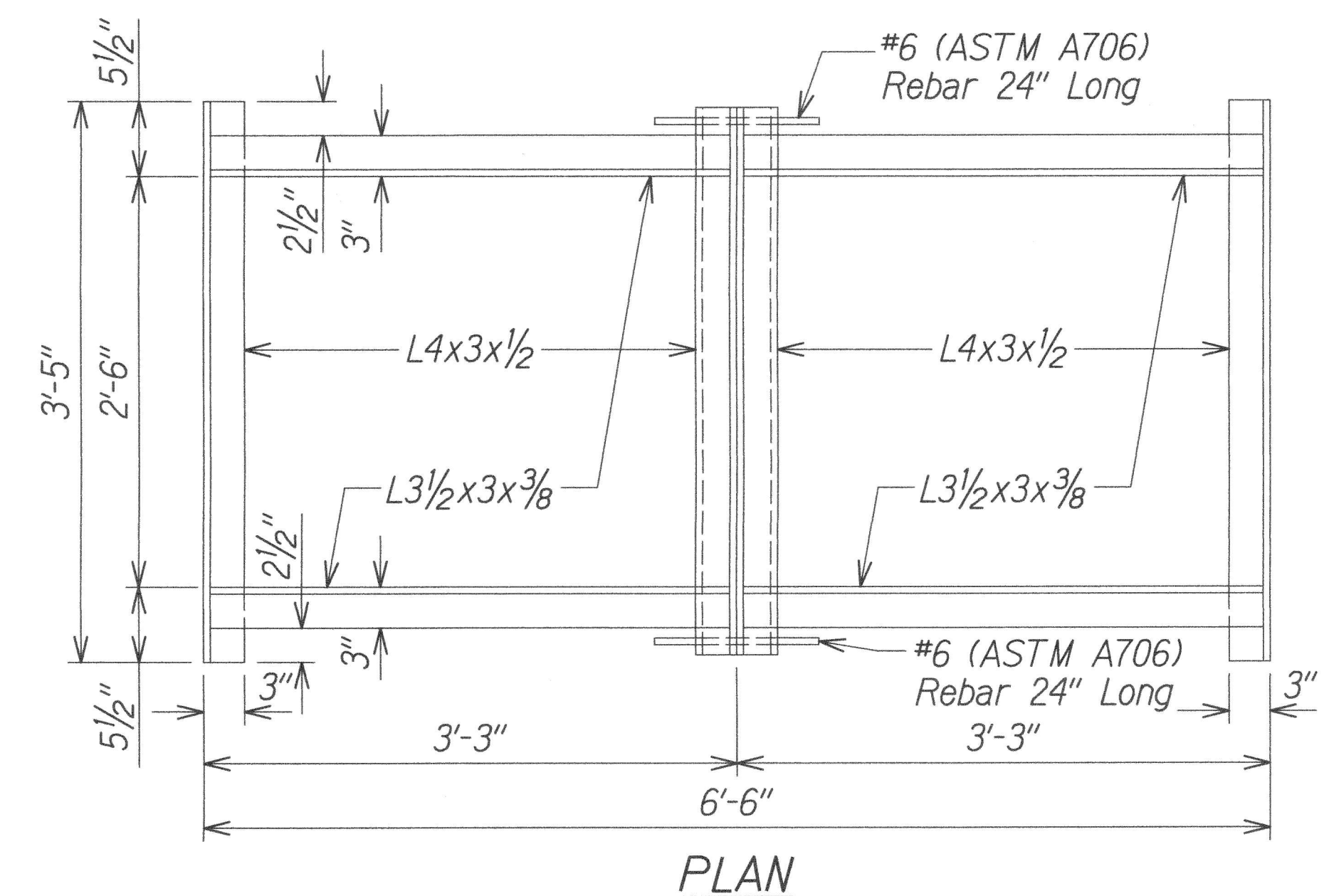
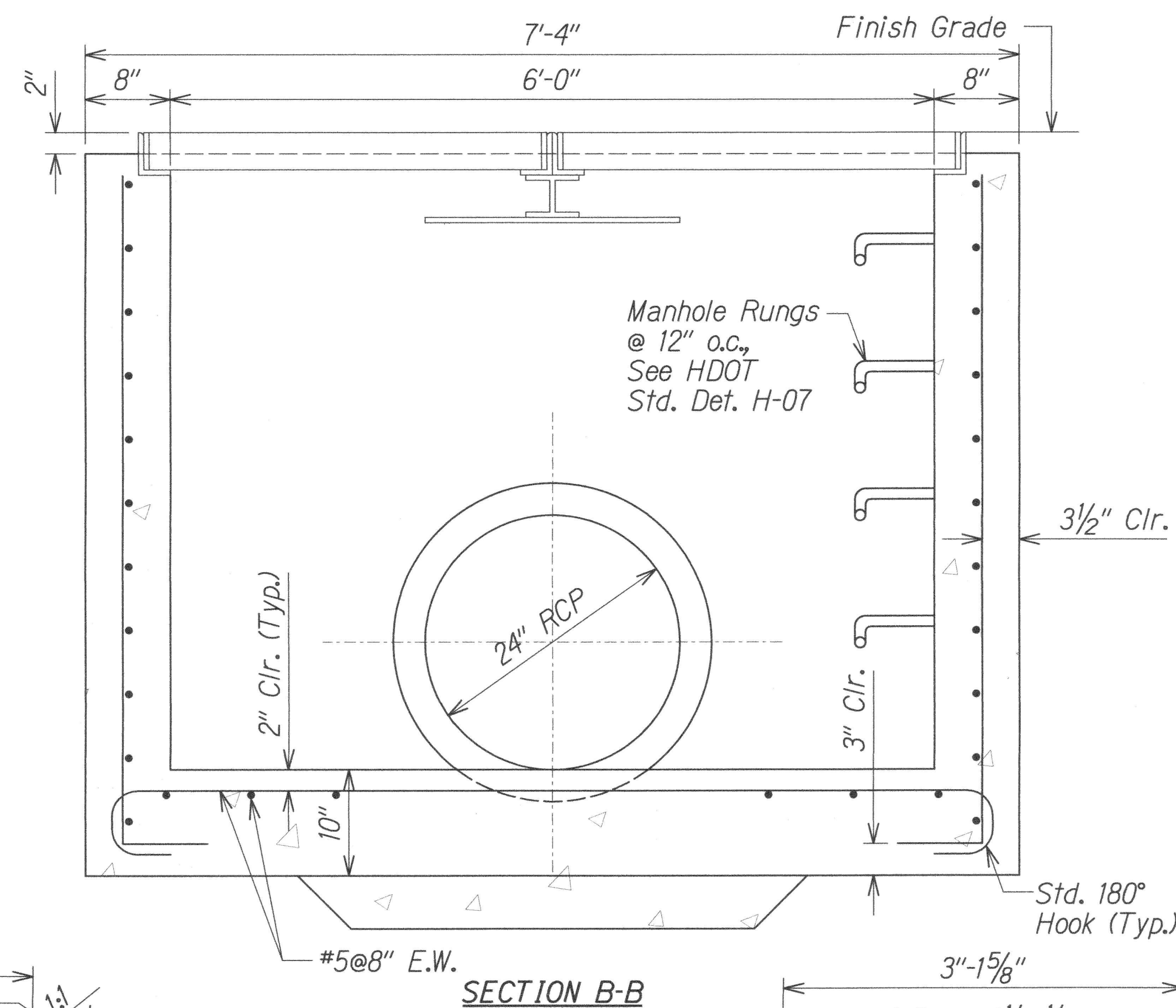
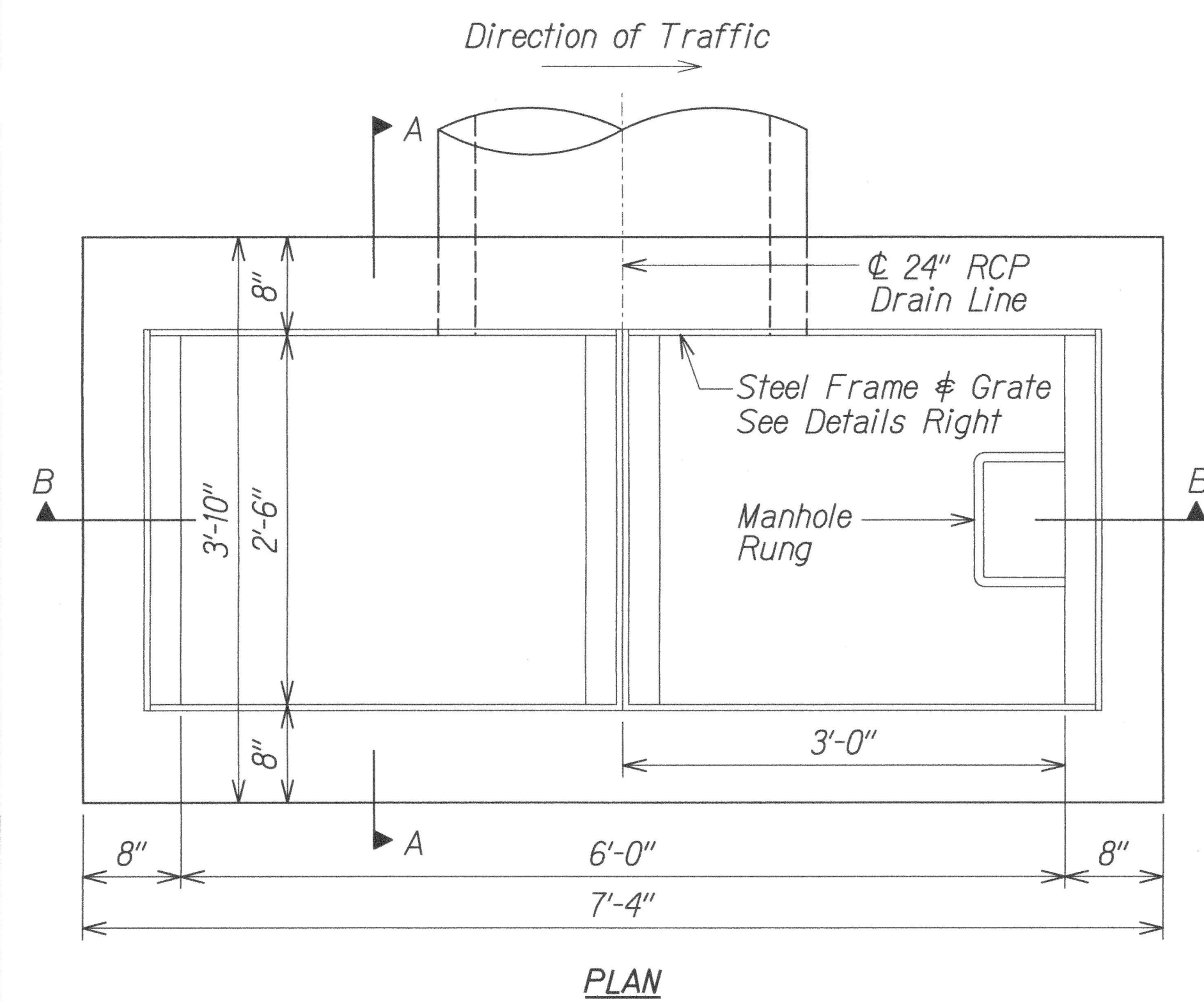


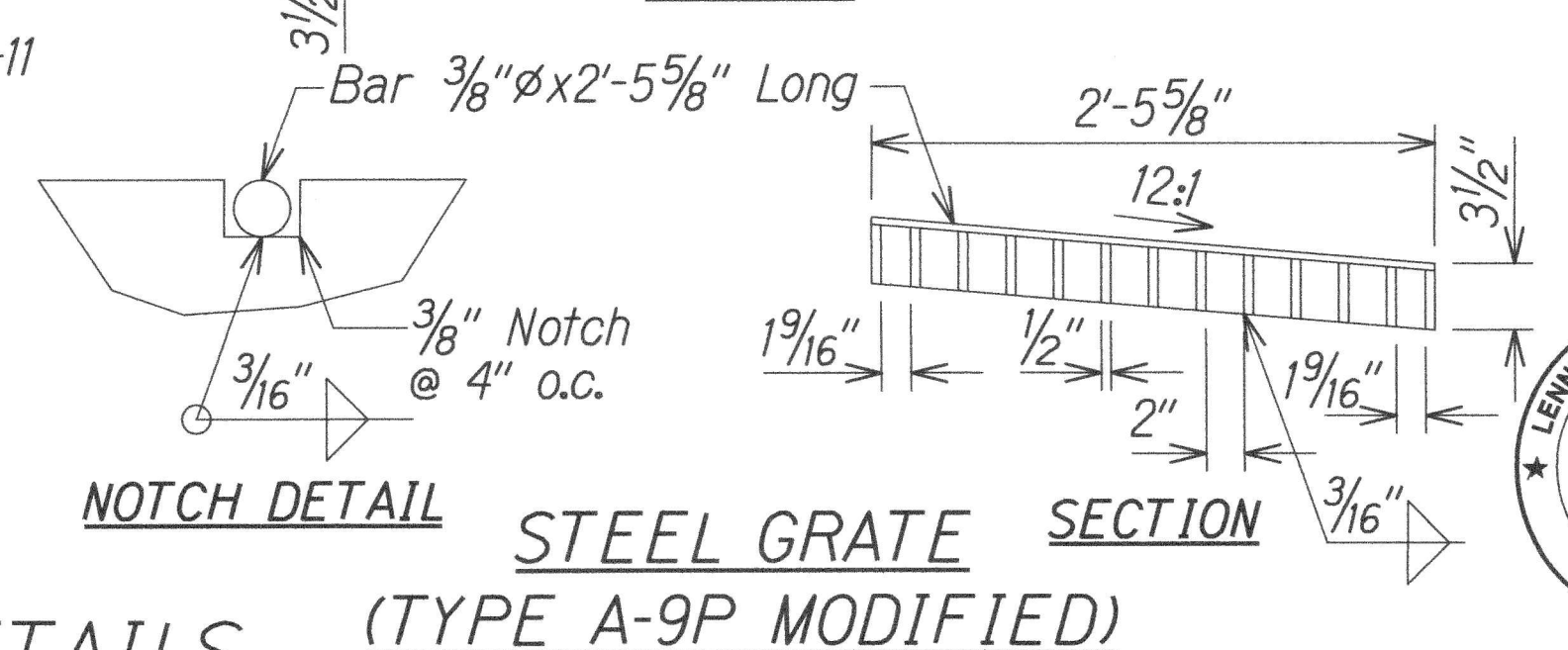
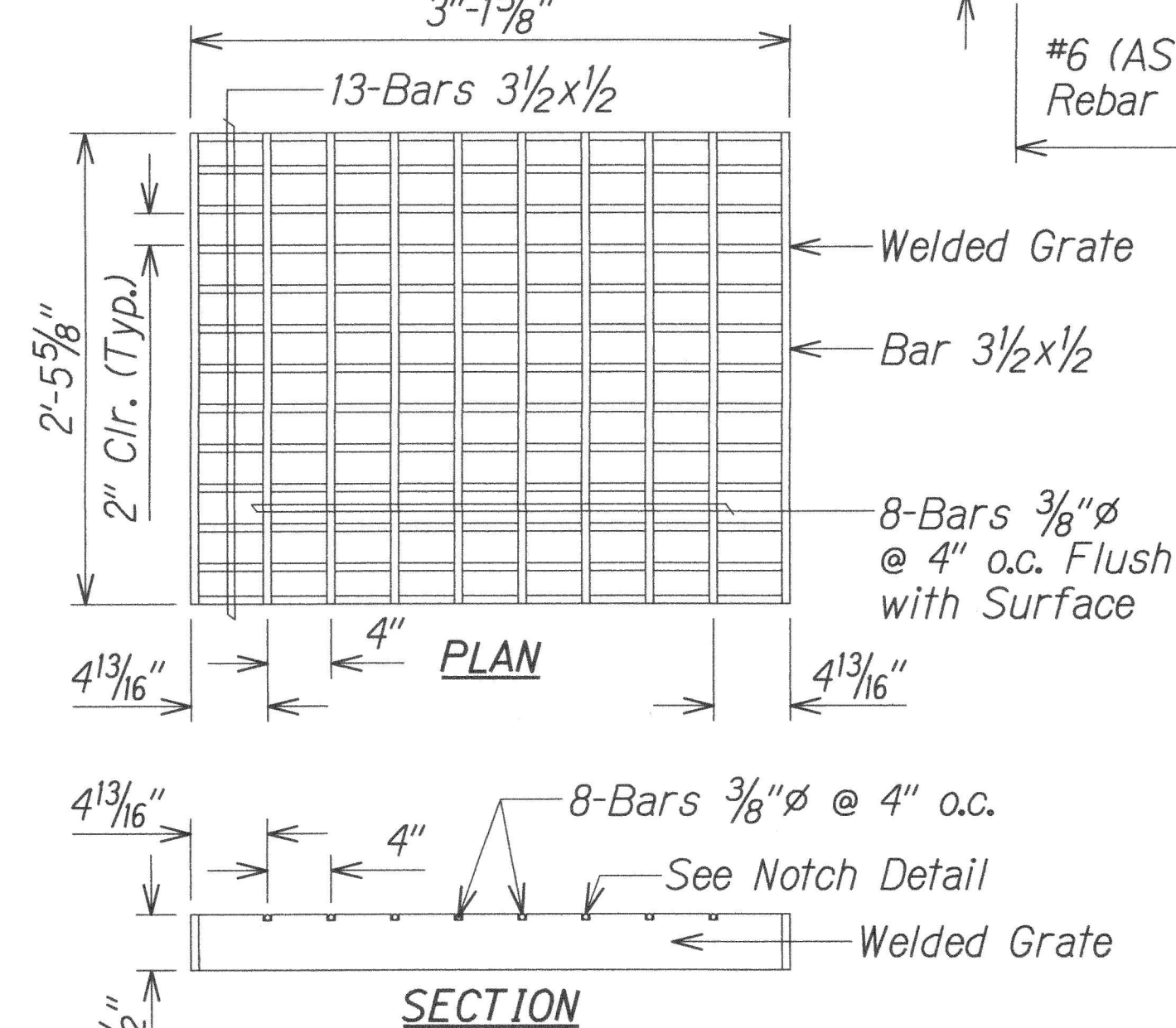
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0190(016)	2016	13	36



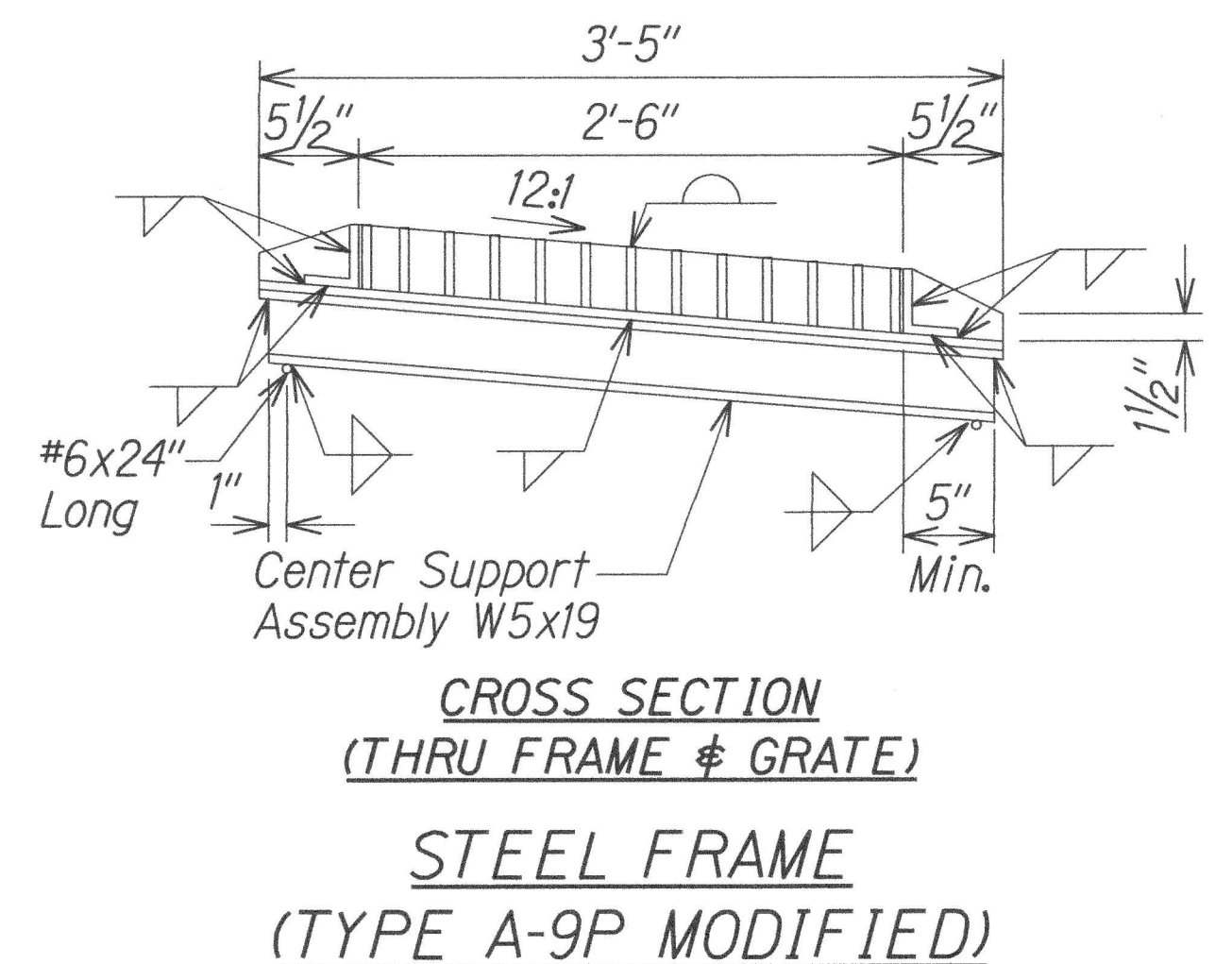
- Notes:
- All welds 3/8" unless otherwise noted.
 - Grates, frames and center support assembly shall be zinc coated after fabrication.
 - Anchors shall be ASTM A 307 and zinc coated.
 - See HDOT Std Details B-01, H-09 and H-11 for additional notes.
 - Provide protective measures/sandbags to prevent drainage and sediment from entering drop inlet during construction. Do not remove sandbags until acceptance of final project erosion control measures.

GRATED DROP INLET DETAILS
(TYPE 2A-9P MODIFIED)

Not to Scale



STEEL GRATE
(TYPE A-9P MODIFIED)



STEEL FRAME
(TYPE A-9P MODIFIED)

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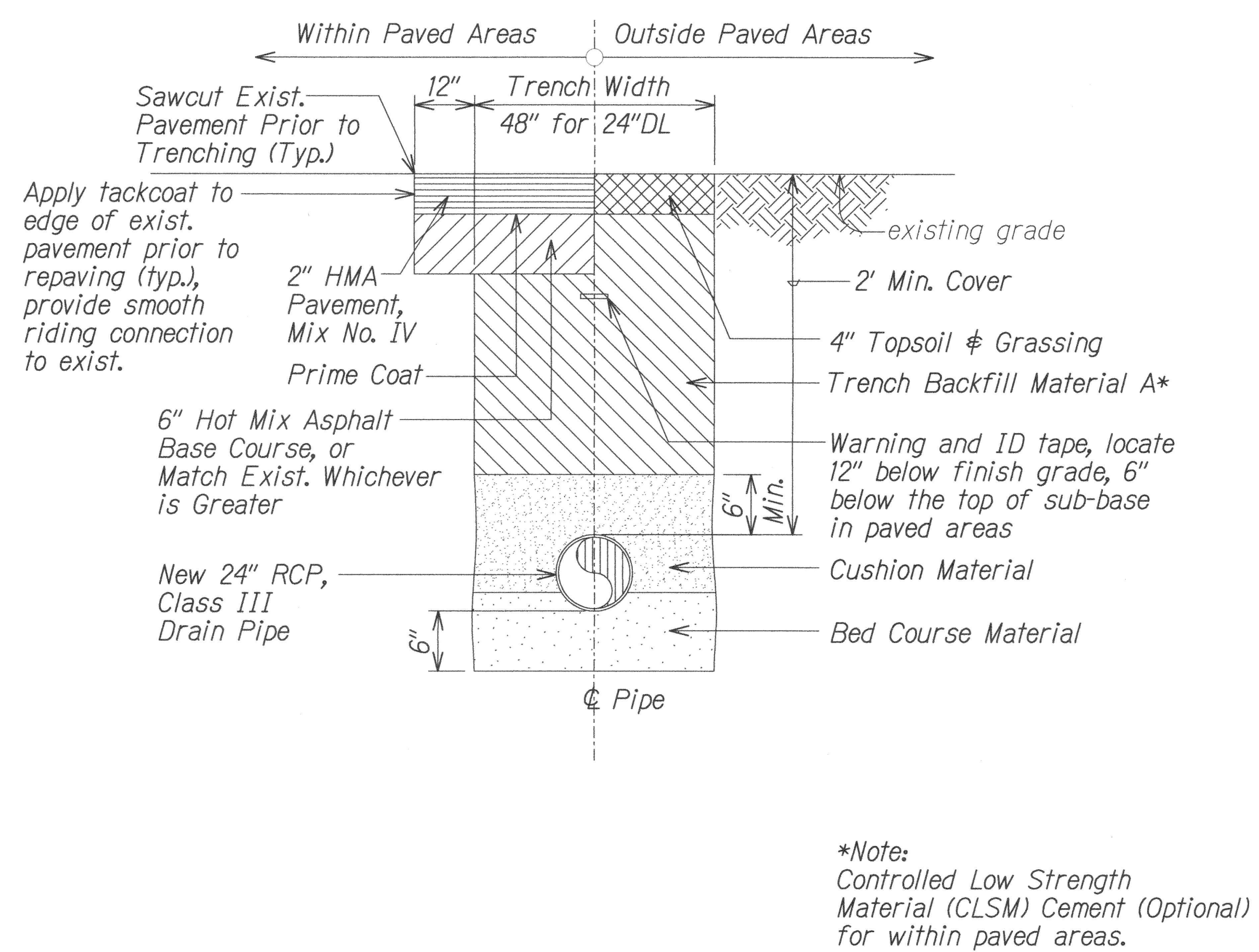
This work was prepared by me or under my supervision.
Jennie Okano-Kendrick
Expiration Date of License 4/18.

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CIVIL DETAILS
MAMALAHOA HIGHWAY
DRAINAGE IMPROVEMENTS
Vicinity of Puuwaawaa Ranch Road
Federal-Aid Project No. STP-0190(016)
Scale: Not to Scale Date: April 2016

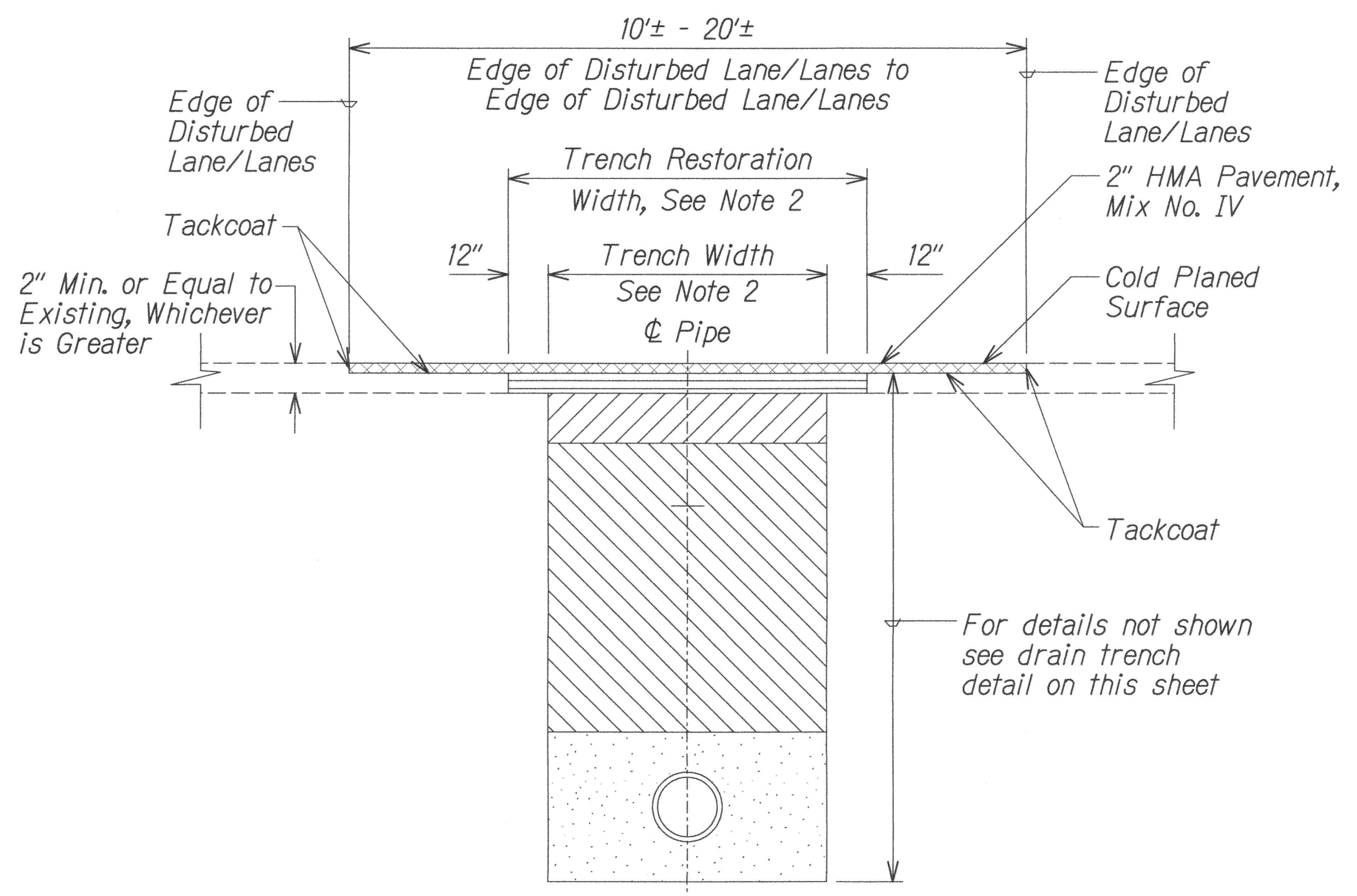
SHEET No. 1 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0190(016)	2016	15	36



DRAIN TRENCH DETAIL
Not to Scale

1
11/15



- Notes:
1. Pavement structure shall be equal to or better than existing in thickness and quality.
 2. For details not shown, see drain trench detail on this sheet.
 3. For pavement restoration outside of trench restoration width cold plane 2 inches of A.C. then repave entire lane/lanes width with 2 inches of Hot Mix Asphalt Pavement, Mix No. IV.
 4. All disturbed pavement markings shall be replaced and all required utility adjustments such as manhole covers etc. shall be done by the permittee.
 5. This detail applies to longitudinal trenches only.

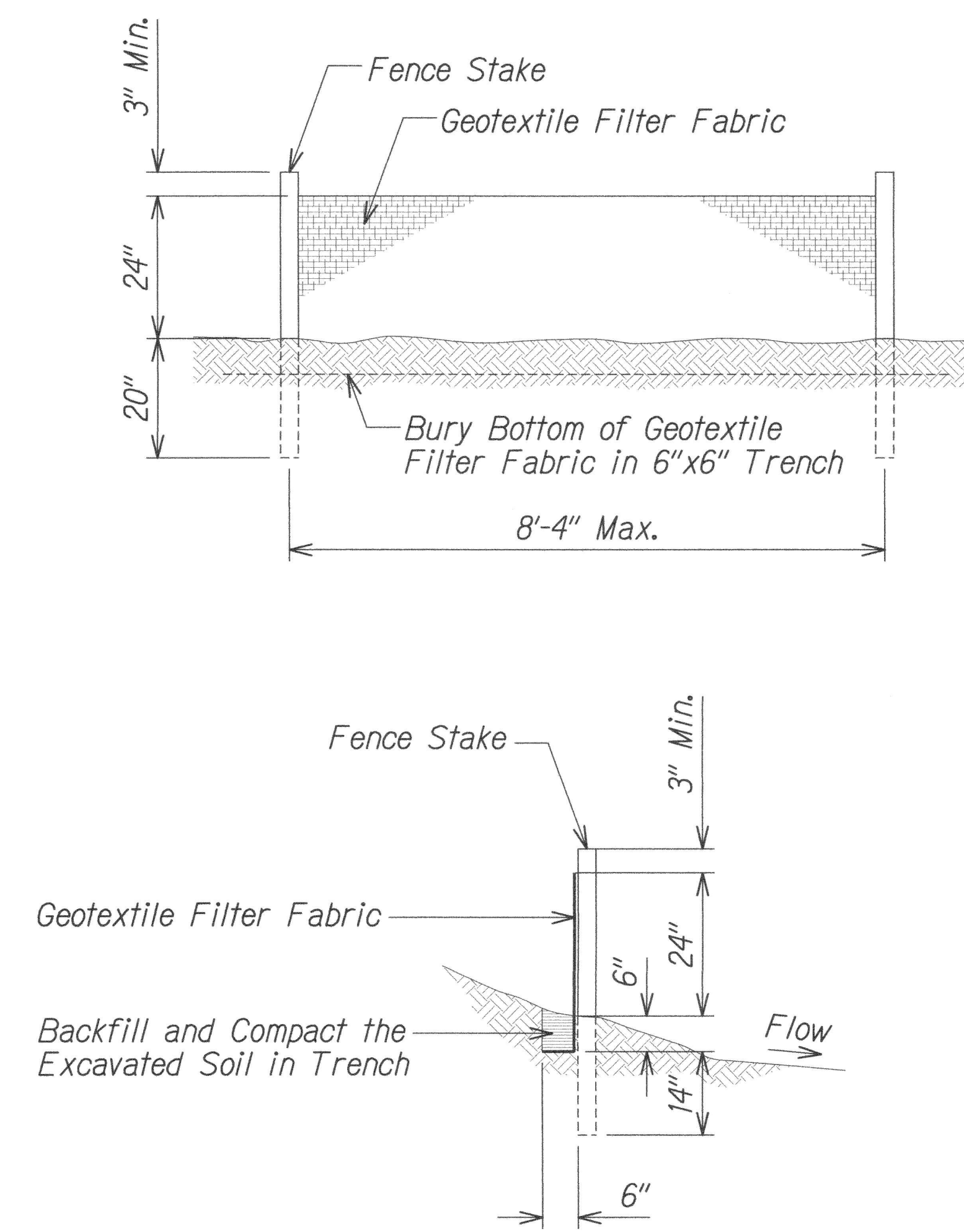
PAVEMENT (LANE) RESTORATION DETAIL
Not to Scale

2
8/15

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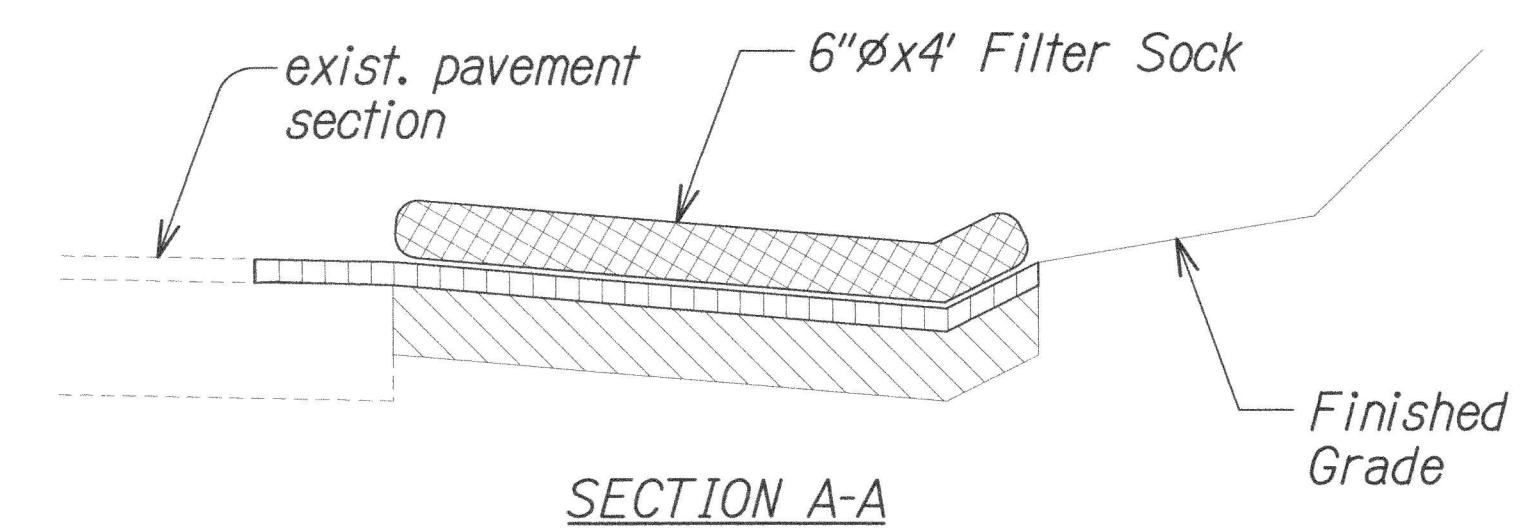
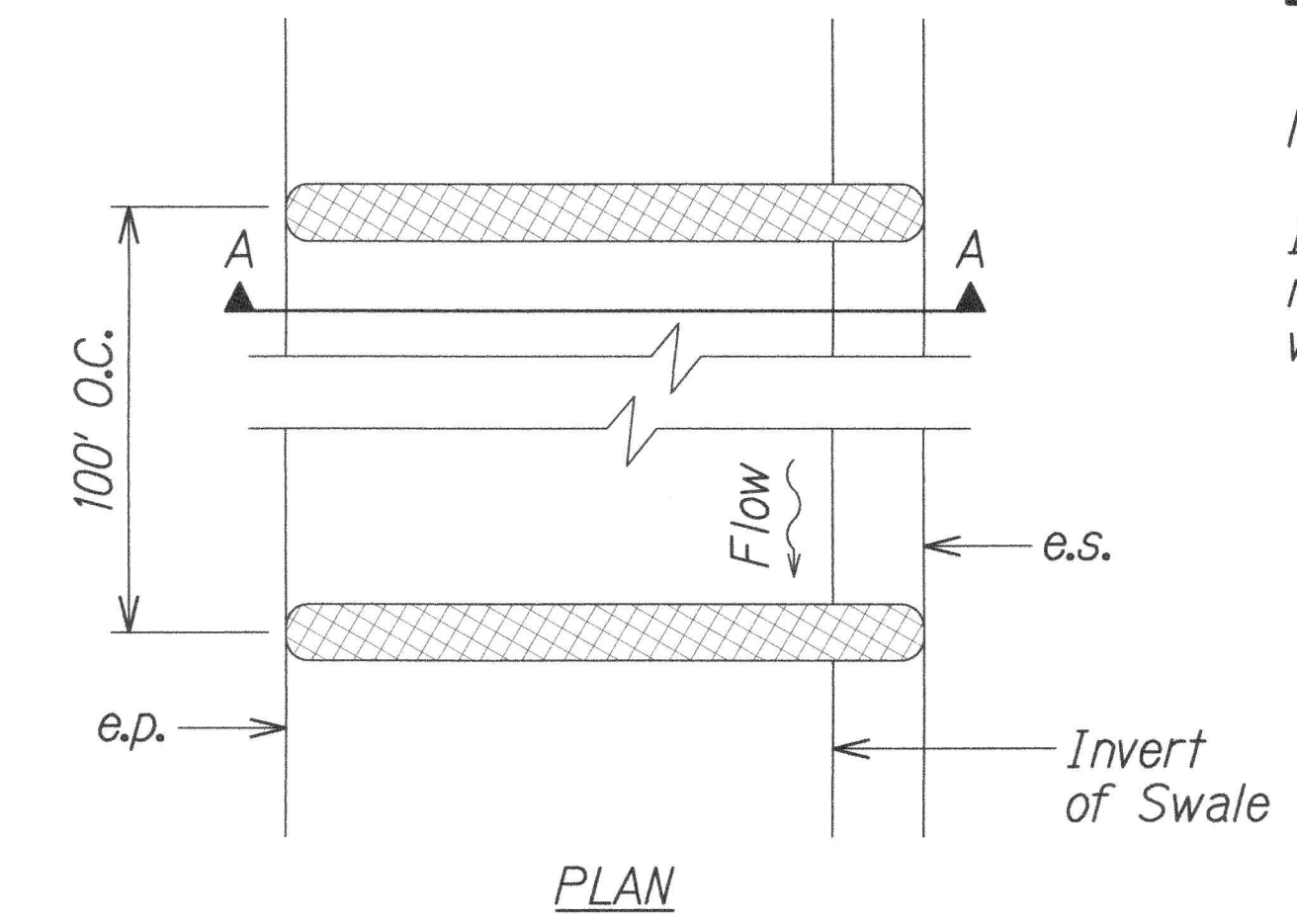
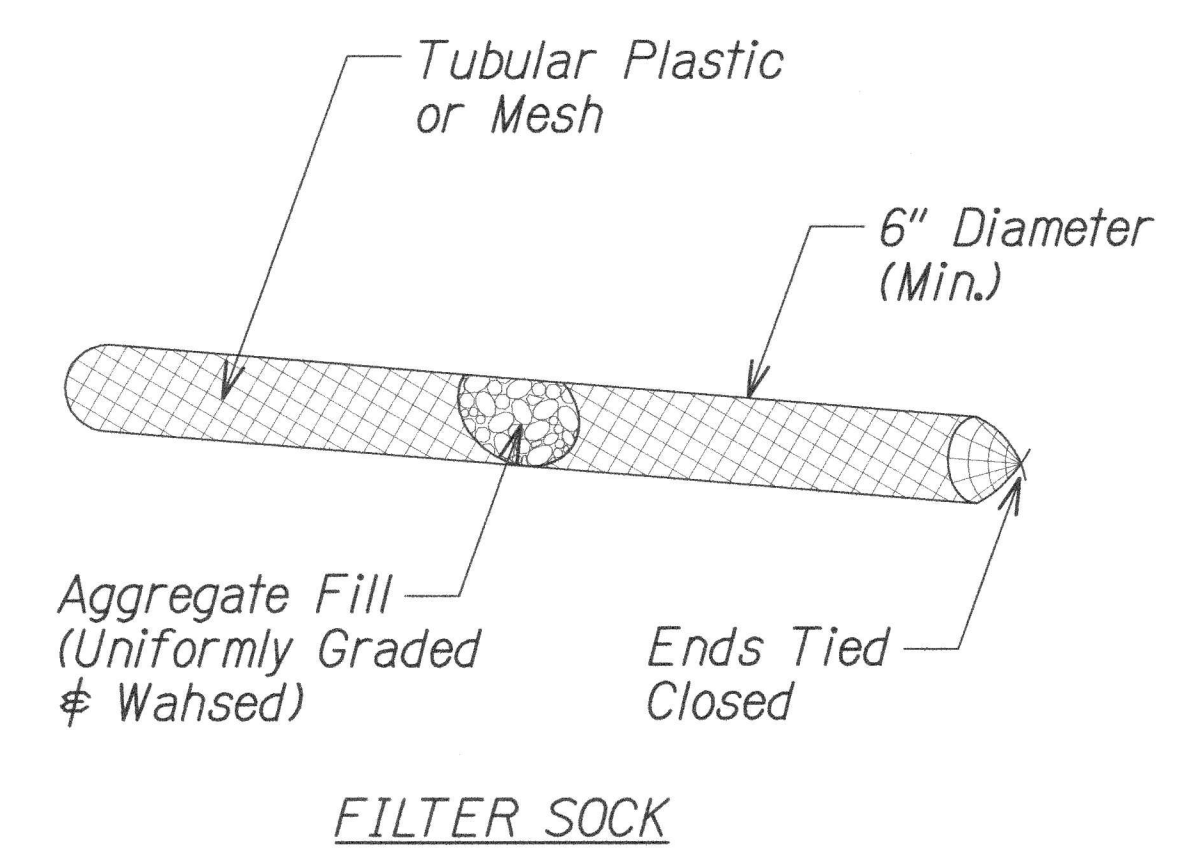
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Federal-Aid Project No. STP-0190(016)
Scale: Not to Scale Date: April 2016
SHEET No. 3 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0190(016)	2016	16	36



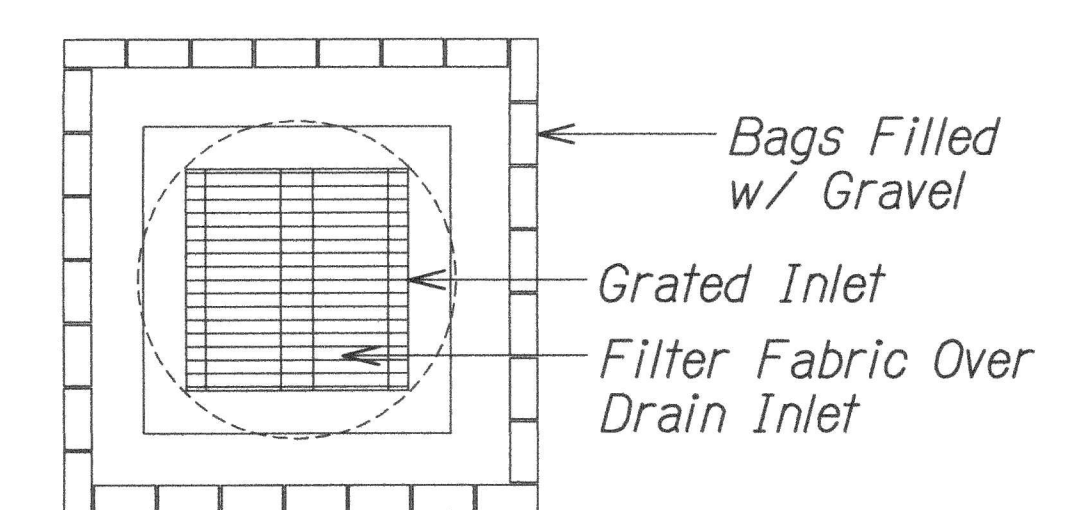
- Notes:
1. The filter fabric shall be a minimum of 36 inches wide.
 2. If silt fence is obtained from manufacturer as a package (I.E. fabric attached to post) the manufacturer's installation instruction shall be adhered to.
 3. Fence stakes may be wood or metal, must be capable of supporting anticipated loads.

SILT FENCE DETAILS
Not to Scale



Note:
Install filter socks directly on ground making sure bottom of log is in full contact with ground.

AGGREGATE FILTER BERM (FILTER SOCK)
Not to Scale

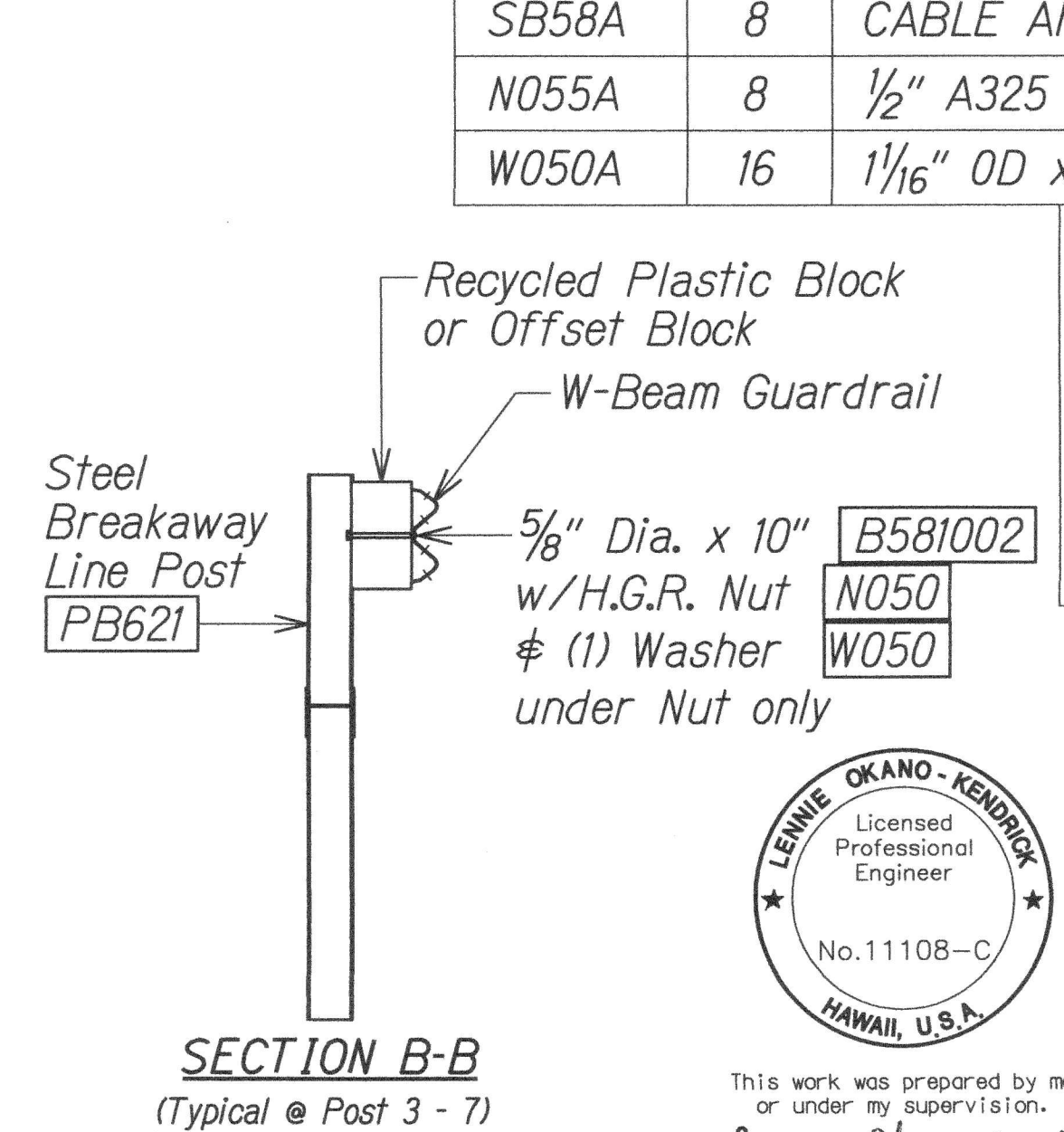
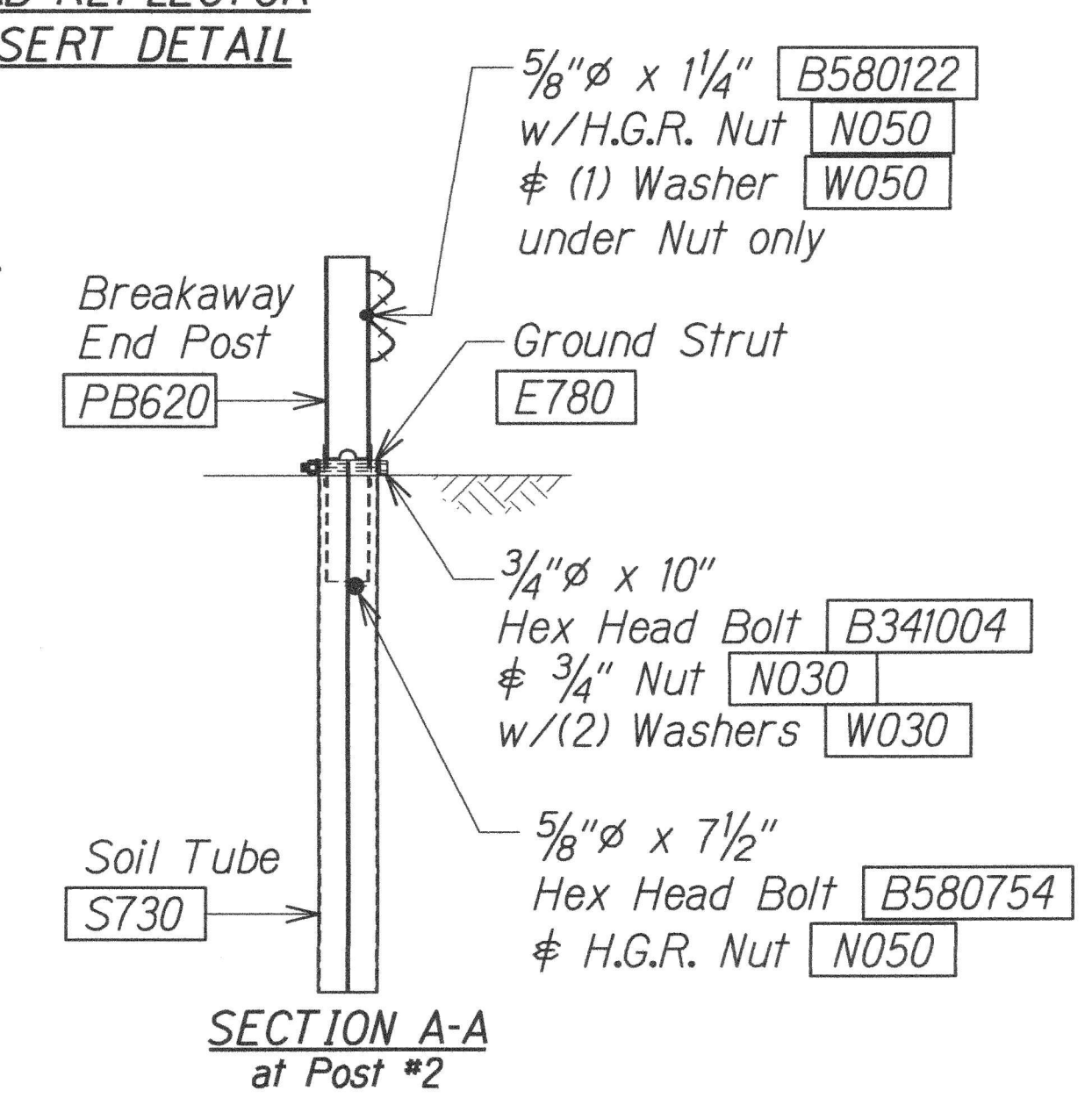
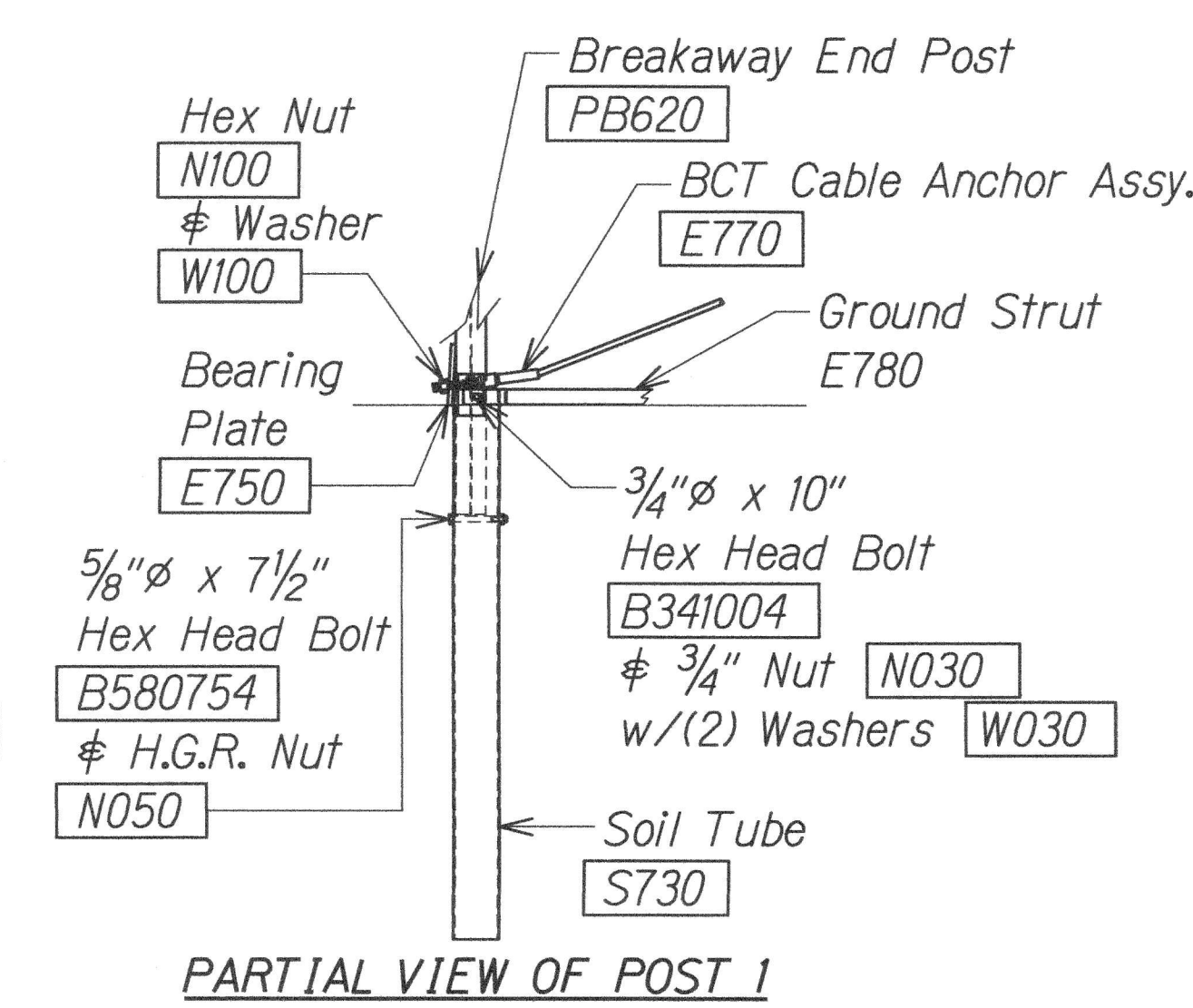
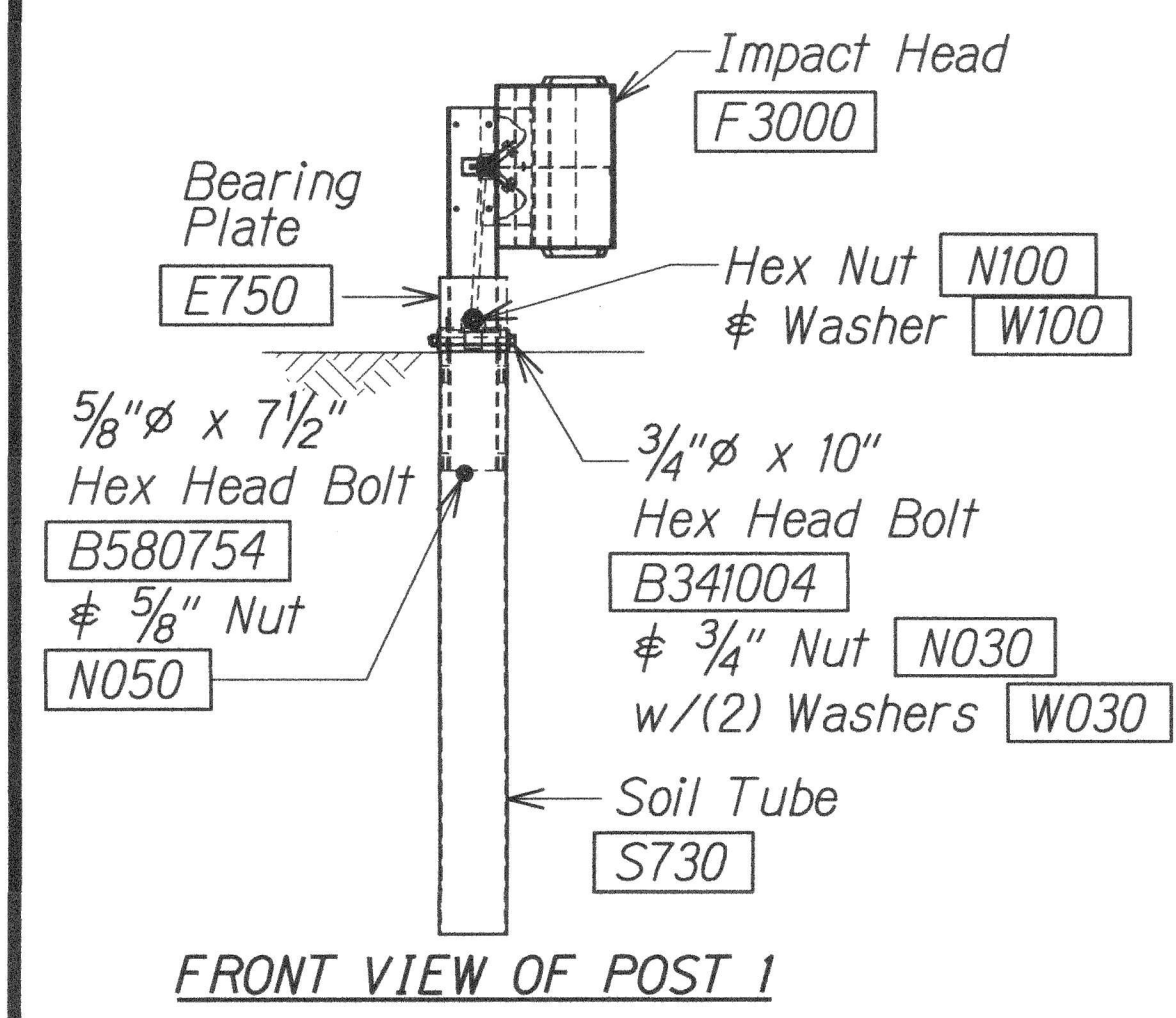
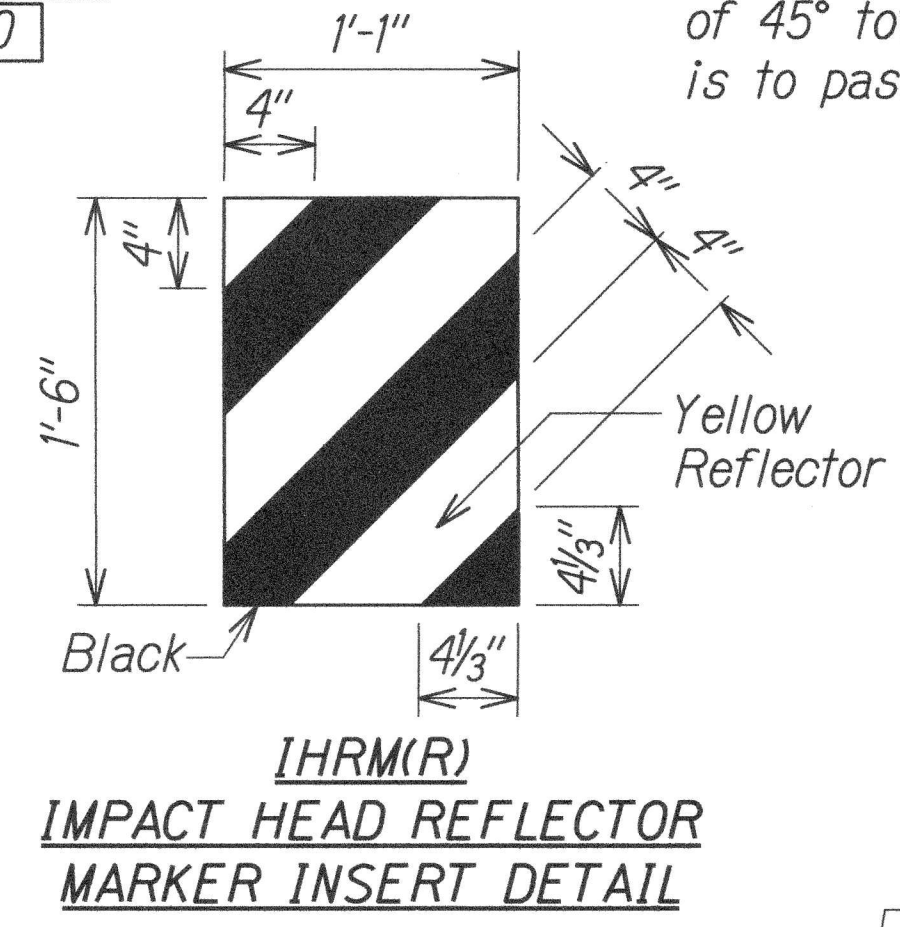
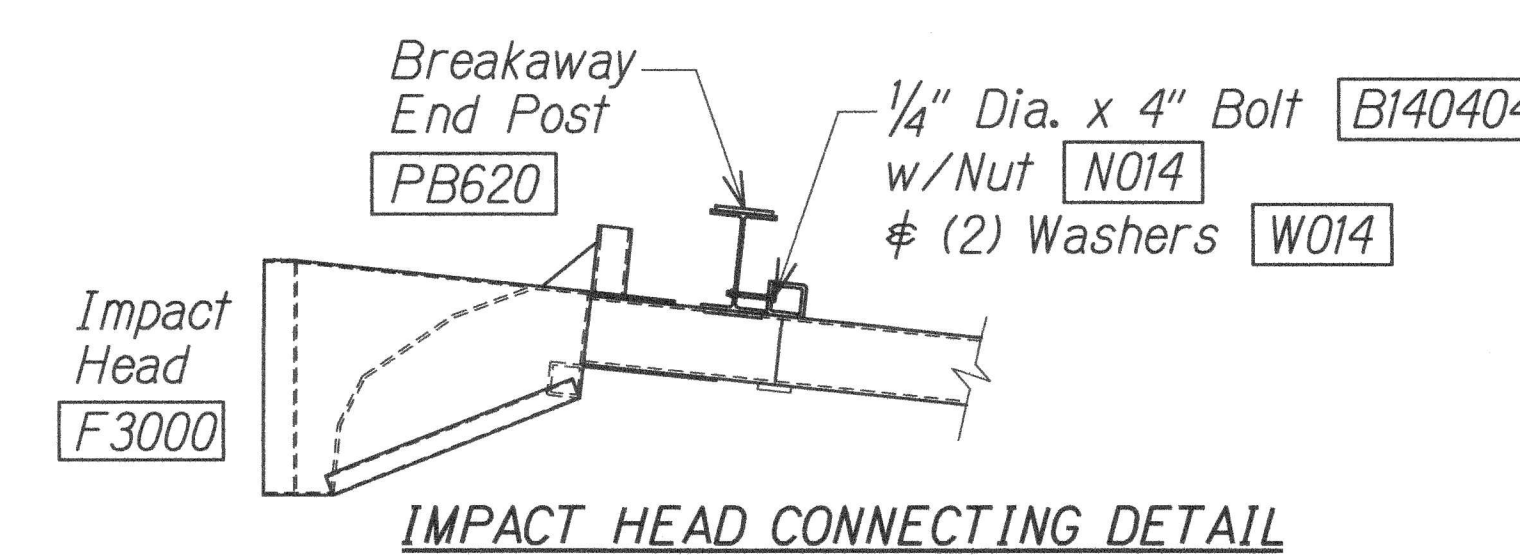
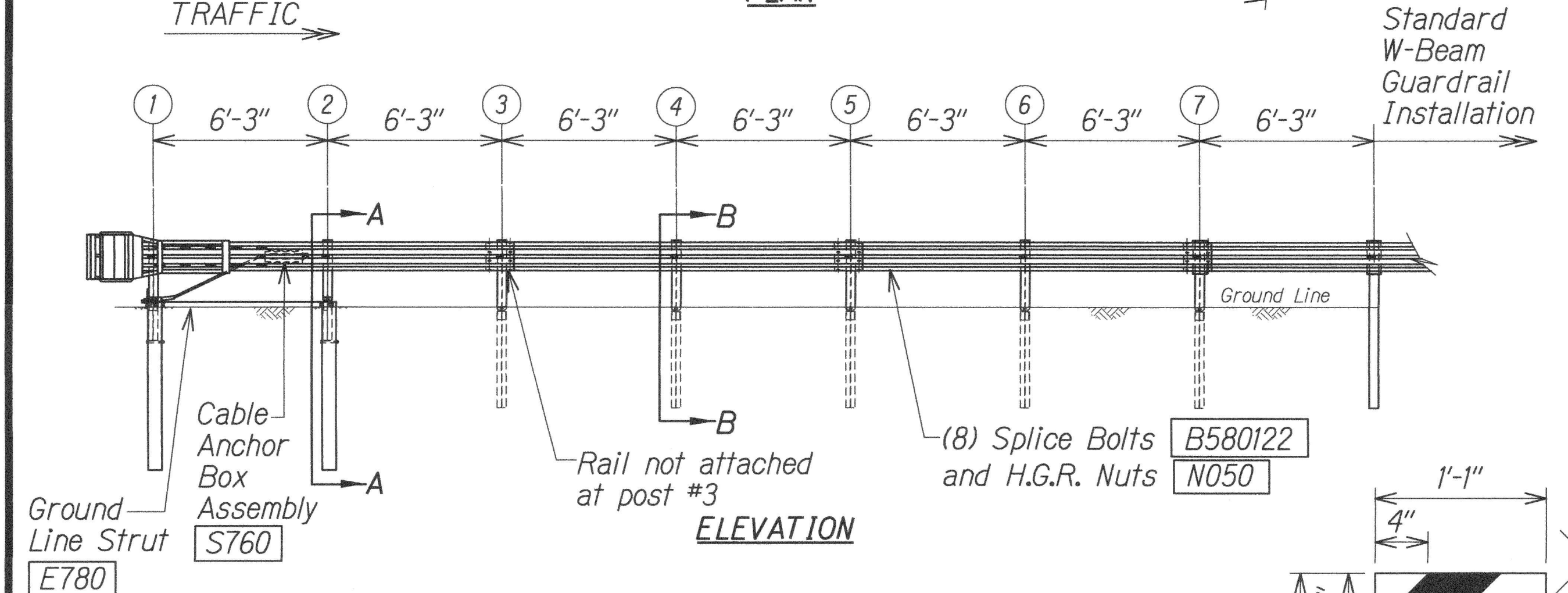
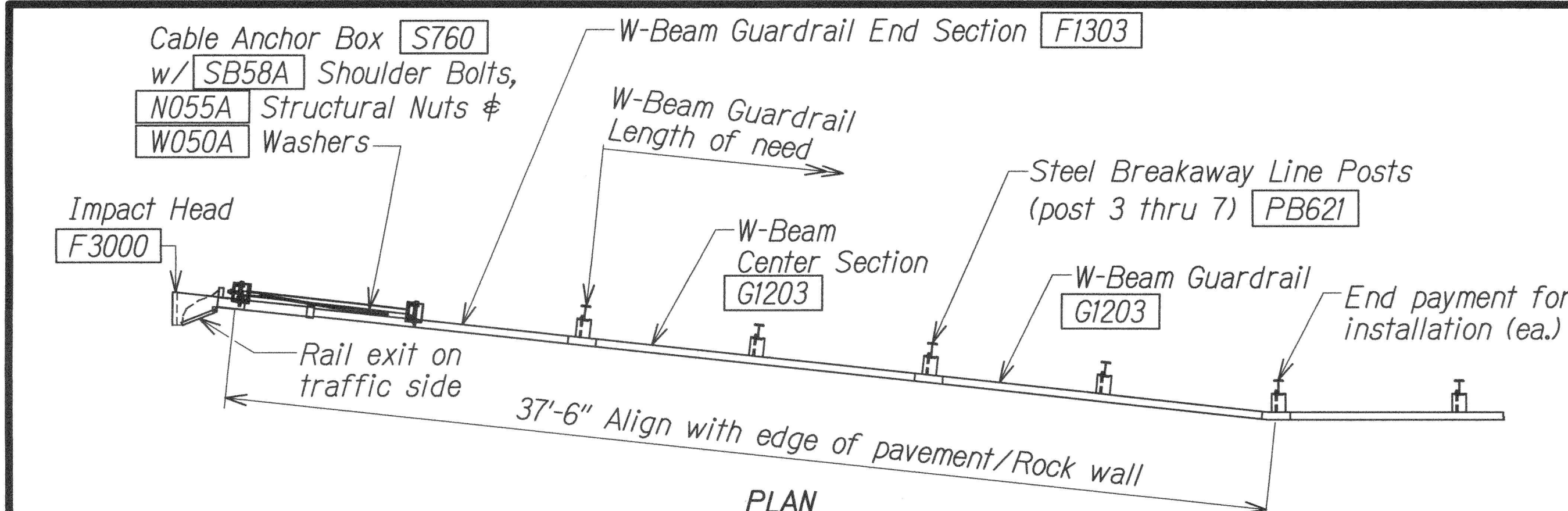


GRATED INLET EROSION CONTROL PLAN
Not to Scale

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Federal-Aid Project No. STP-0190(016)
Scale: Not to Scale Date: April 2016
SHEET No. 4 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0190(016)	2016	17	36

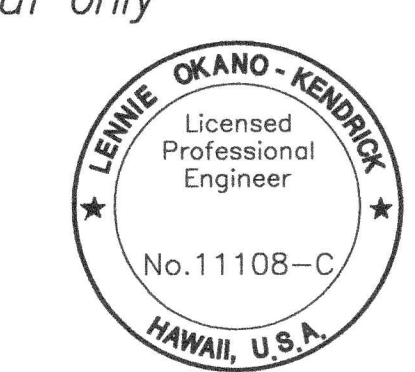


Foundation Tube Options For Posts 1 & 2

- *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

- GENERAL NOTES**
1. Breakaway steel posts are required with the FLEAT Terminal.
 2. All bolts, nuts, cable assemblies, cable anchors and bearing plates shall be galvanized.
 3. 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.
 4. 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.
 5. 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.
 6. 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.
 7. (R) or (L) indicates right or left Impact Head Reflector Marker (IHRM). Providing and installing of IHRM shall be considered incidental to end treatment.
 8. 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



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