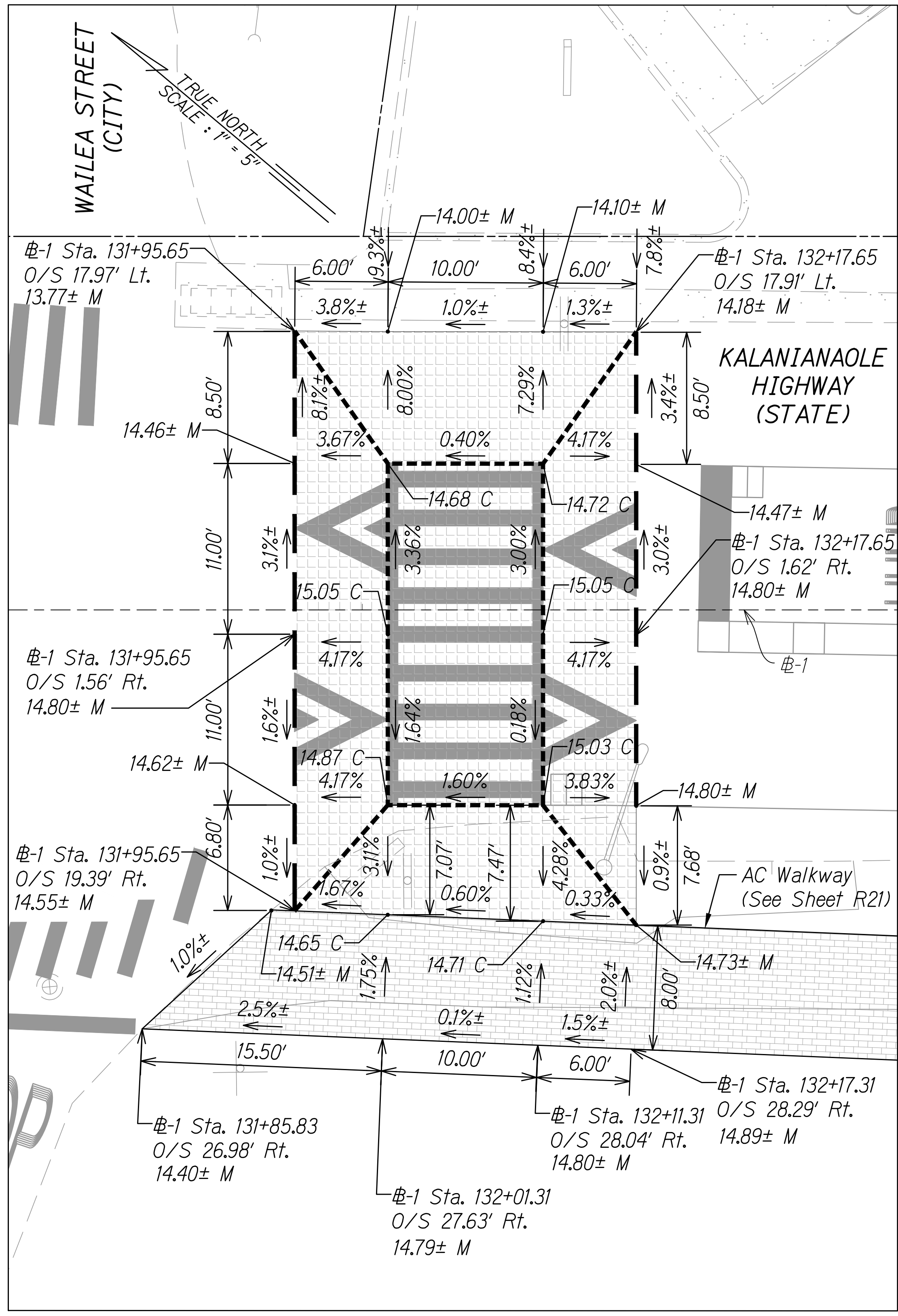
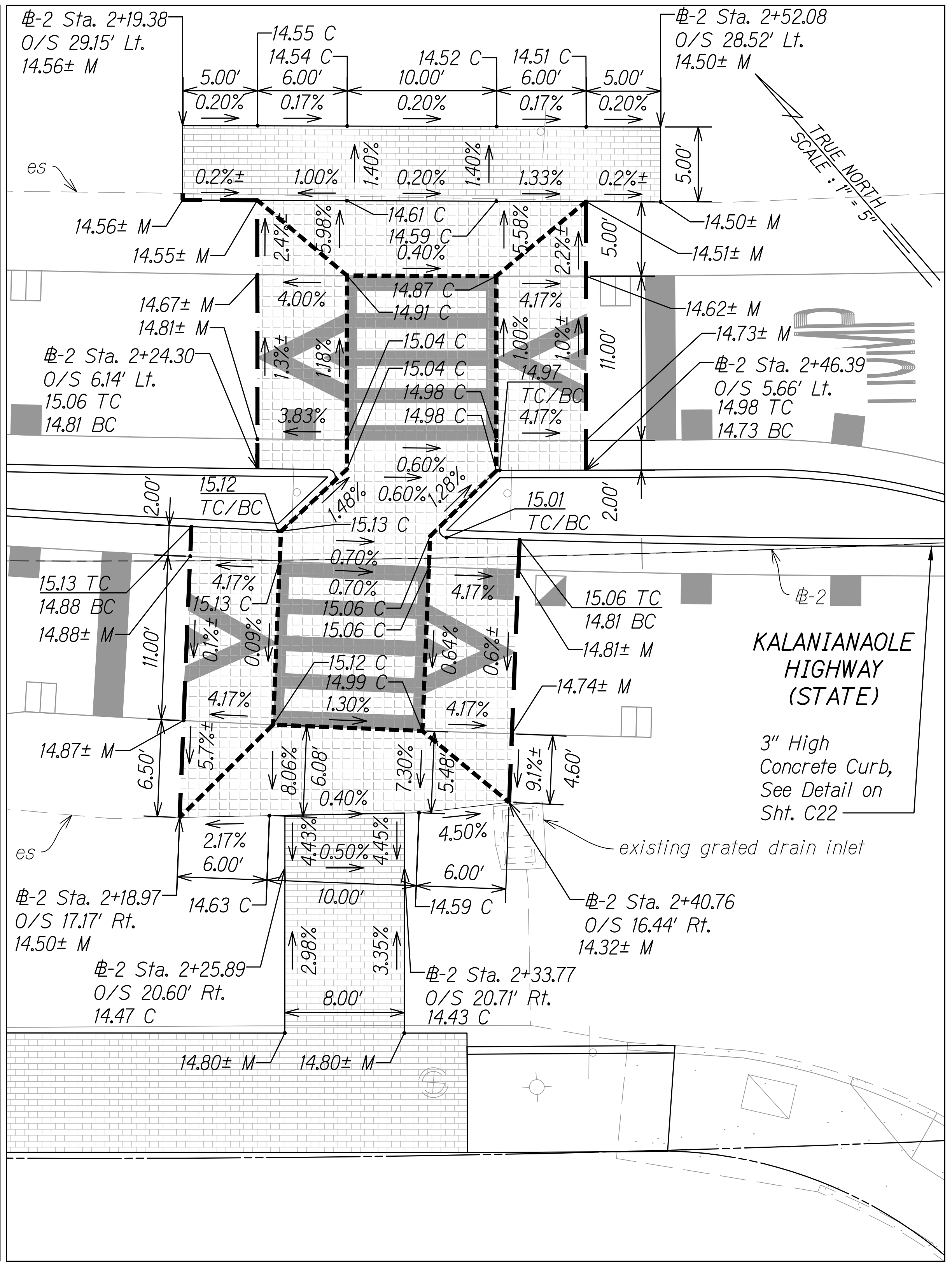


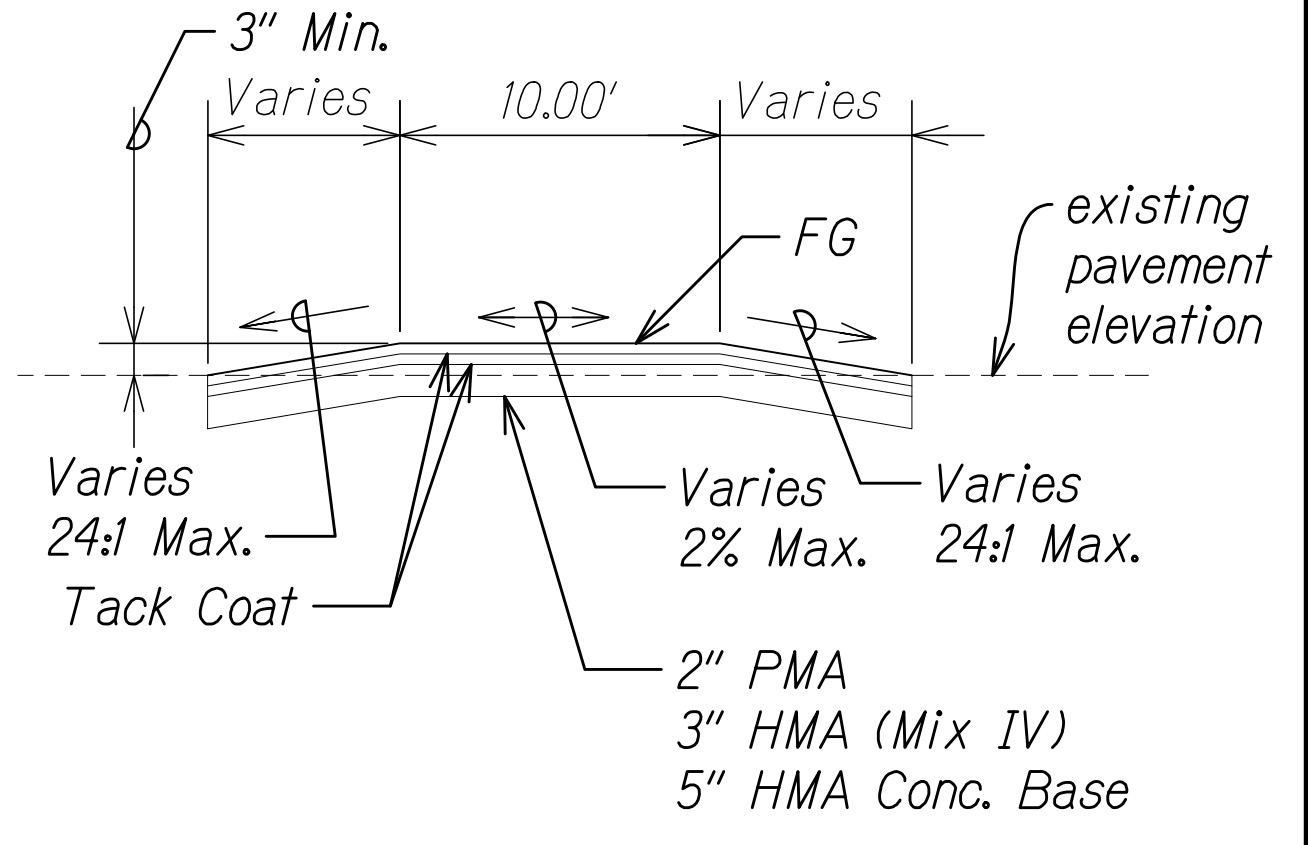
FED. ROAD DIST. NO.	STATE	FED-AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-072-1(059)	2021	73	243



**RAISED CROSSWALK
DETAILED GRADING - WALEA STREET**
SCALE: 1" = 5'

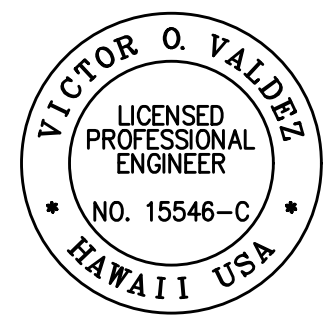
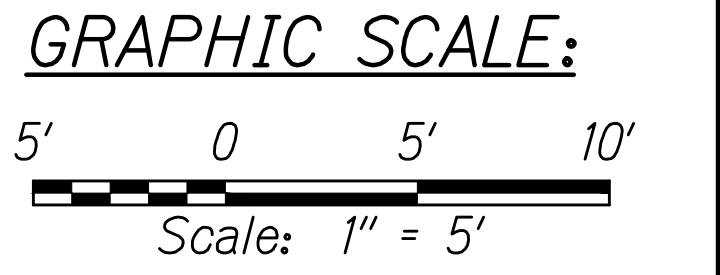


**RAISED CROSSWALK
DETAILED GRADING - NAKINI STREET**
SCALE: 1" = 5'



TYPICAL SECTION
SCALE: 1" = 5'

- LEGEND:**
- Sawcut and provide Smooth Riding Connection
 - Grade break
 - 21.7± M Match existing grade
 - Pavement Reconstruction:
 - 2" PMA
 - 3" HMA (Mix IV)
 - 5" HMA Conc. Base
 - AC Walkway Paving:
 - 2" HMA (Mix IV)



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04/30/22
EXPIRATION DATE
OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONSTRUCTION DETAILS

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

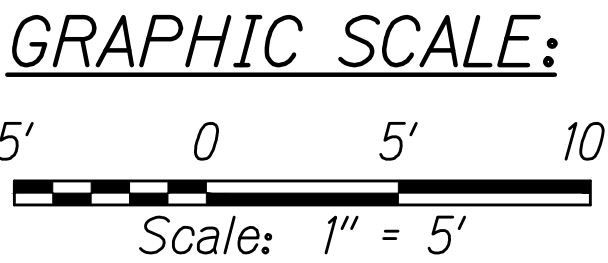
Scale: 1" = 20' Date: January 2021

SHEET No. **C17** OF **18** SHEETS

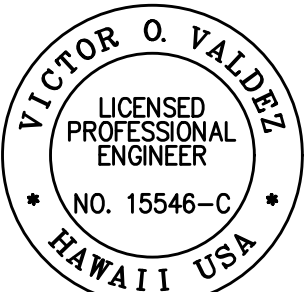
FED. ROAD DIST. NO.	STATE	FED-AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-072-1(059)	2021	74	243

NOTE:
For Typical Section, see Sheet C17.

- LEGEND:**
- Sawcut and provide Smooth Riding Connection
 - Grade break
 - Match existing grade
 - Pavement Reconstruction:
2" PMA
3" HMA (Mix IV)
5" HMA Conc. Base
 - AC Walkway Paving:
2" HMA (Mix IV)



**RAISED CROSSWALK
DETAILED GRADING - HULI STREET**
SCALE: 1" = 5'



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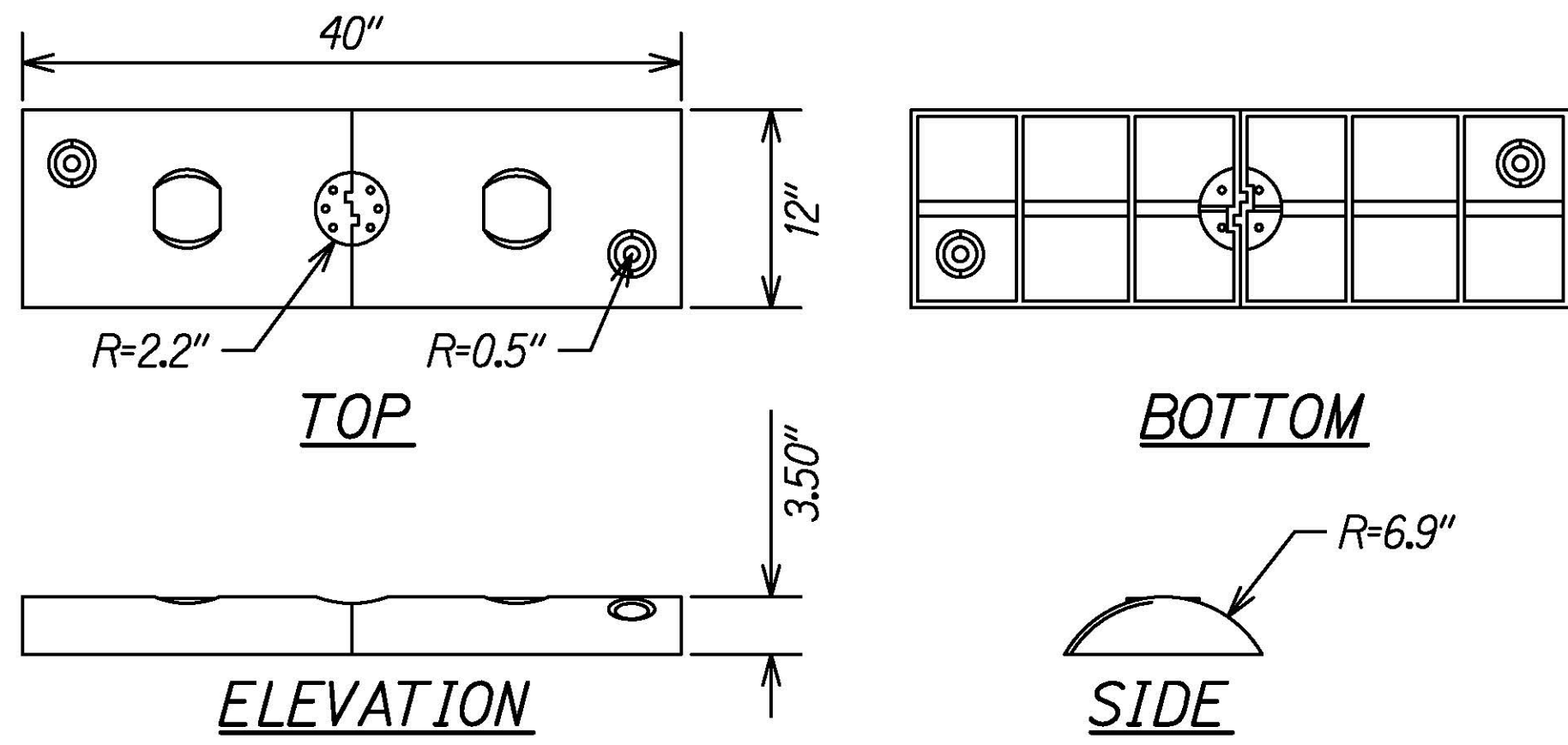
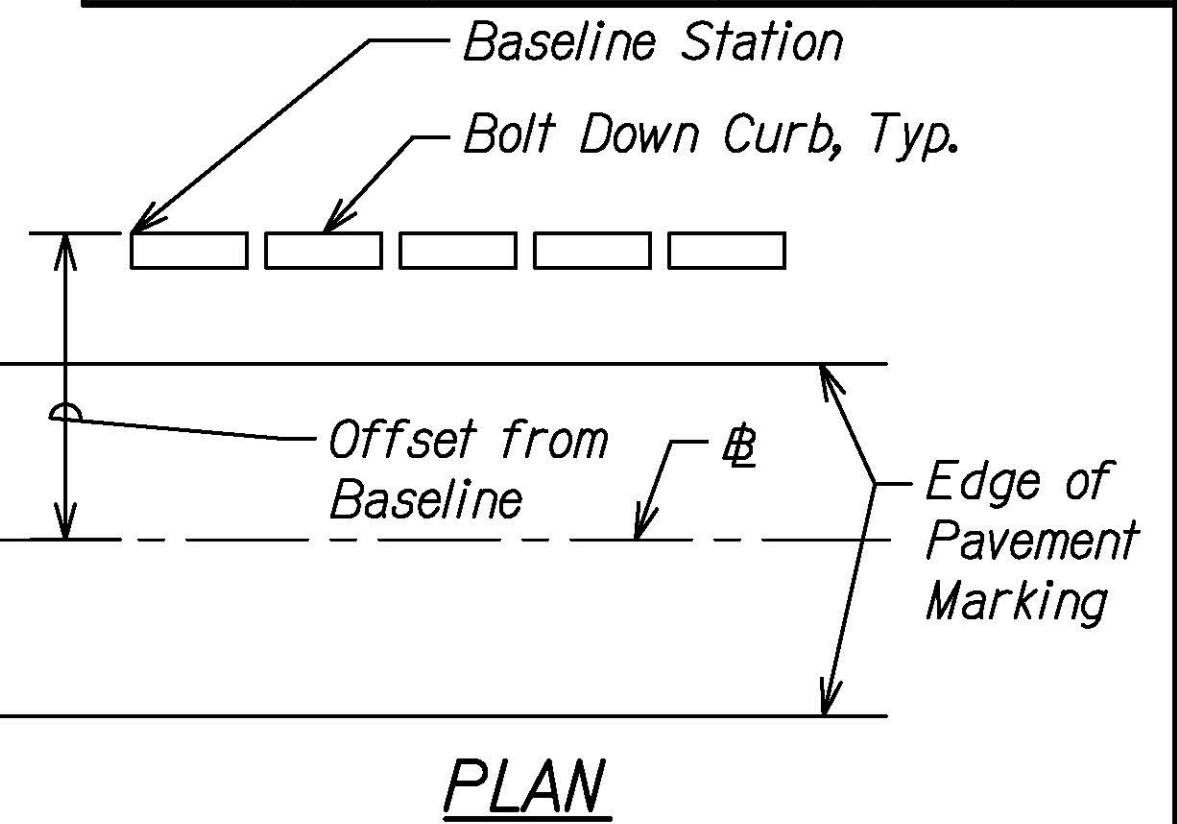
04/30/22
EXPIRATION DATE
OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONSTRUCTION DETAILS
KALANIANA'OLE HIGHWAY IMPROVEMENTS PHASE 2
Poalima Street to Vicinity of Makai Pier
Federal-Aid Project No. NH-072-1(059)
Scale: 1" = 20' Date: January 2021

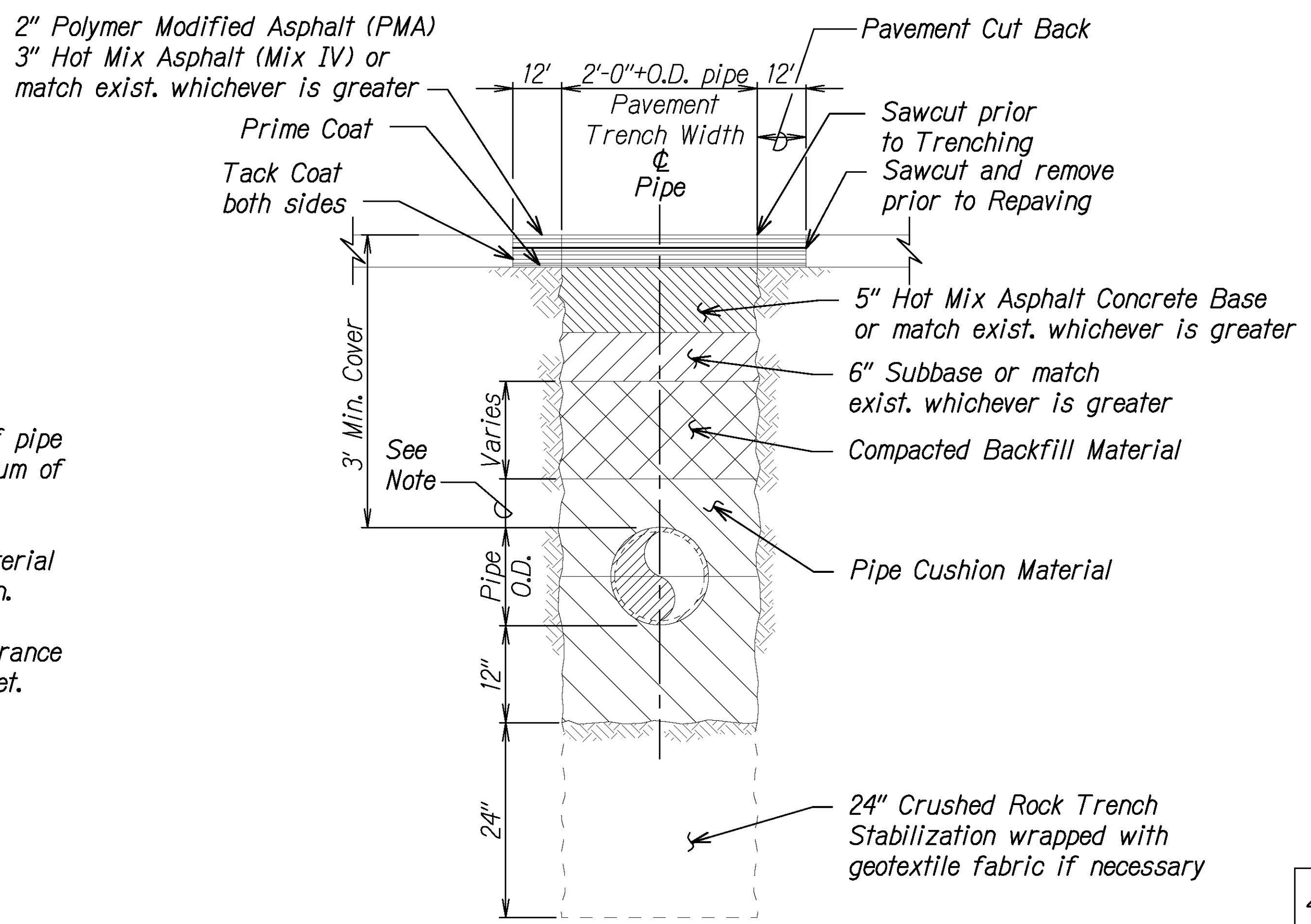
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FED. ROAD DIST. NO.	STATE	FED-AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-072-1(059)	2021	ADD. 75	243

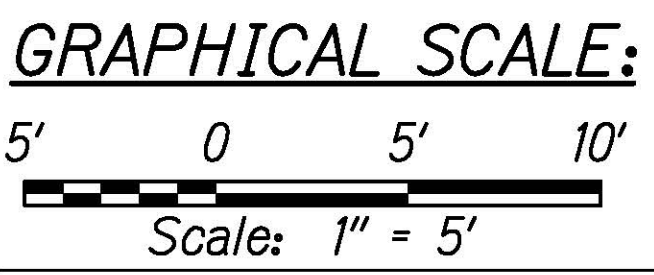


- NOTES:**
- Bolt Down Curbing System color shall be White.
 - Bolt Down Curbing System shall be Crashworthiness Tested to 2009 M.A.S.H. Standards.
 - Install using 1/2" x 4" concrete screw anchors or 5/8" x 5" plastic sleeve anchors.

BOLT DOWN CURB DETAIL
NOT TO SCALE



- NOTES:**
- 12" of Cushion Material for pipes 16" or larger. 6" Cushion Material for pipes 12" or smaller at locations where invert is above 4-foot elevation.
 - 12" of Cushion Material for all pipe sizes at locations where the invert is at or below the 4-foot elevation.



WATERLINE TRENCH RESTORATION
NOT TO SCALE

APPROVED:

MANAGER AND CHIEF ENGINEER, BWS
(For work affecting BWS Facilities in
City/State R/W and BWS Easements only)

DATE

VICTOR O. VALDEZ
LICENSED PROFESSIONAL ENGINEER
NO. 15546-C
HAWAII USA

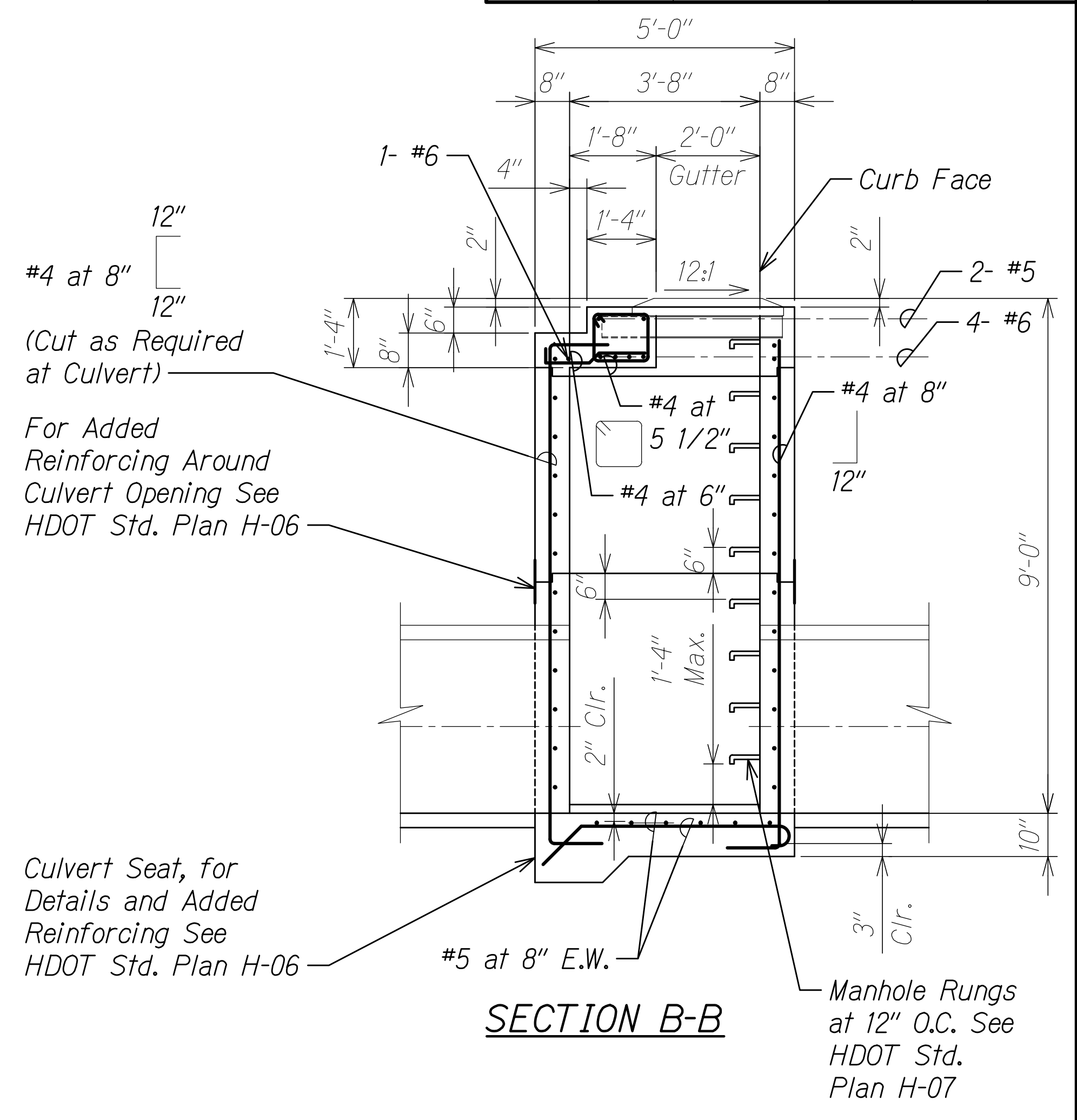
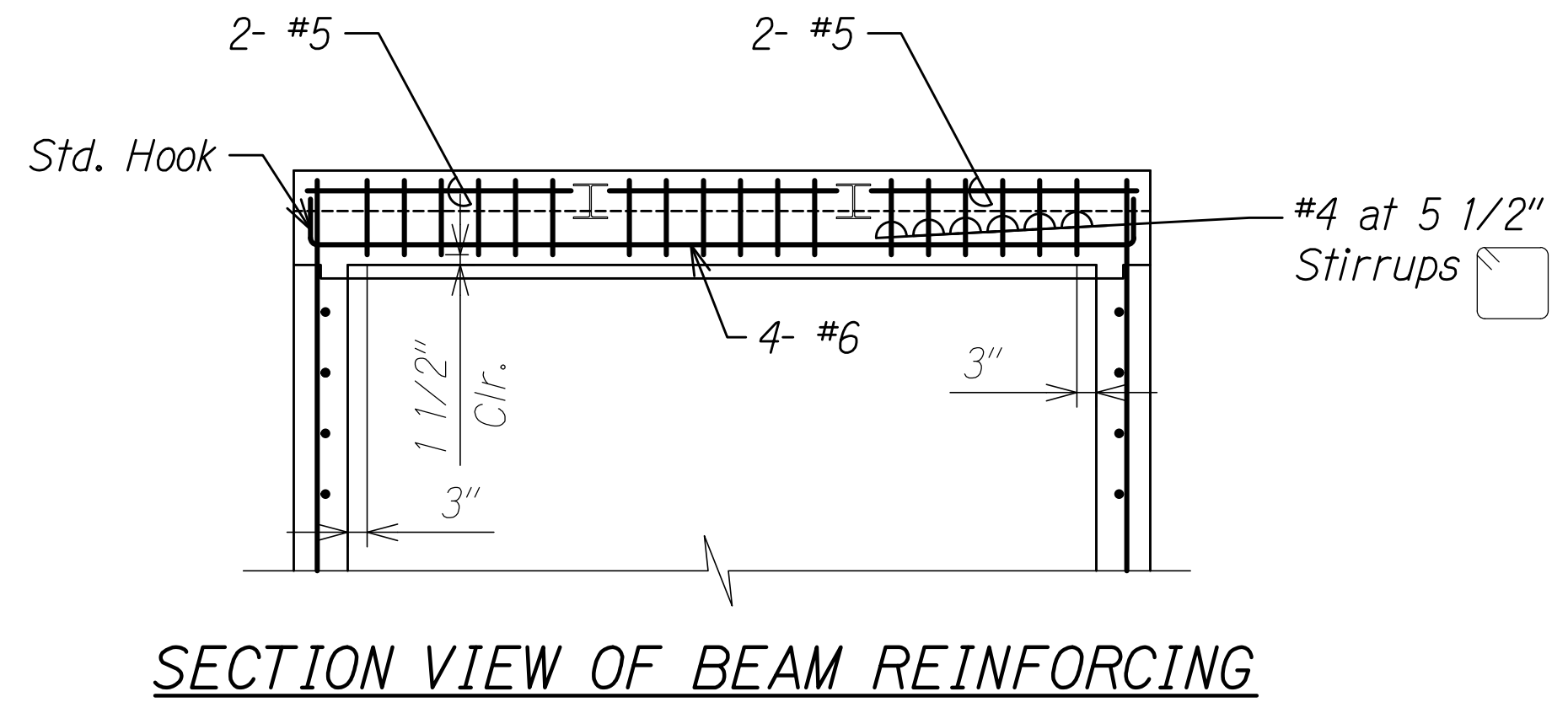
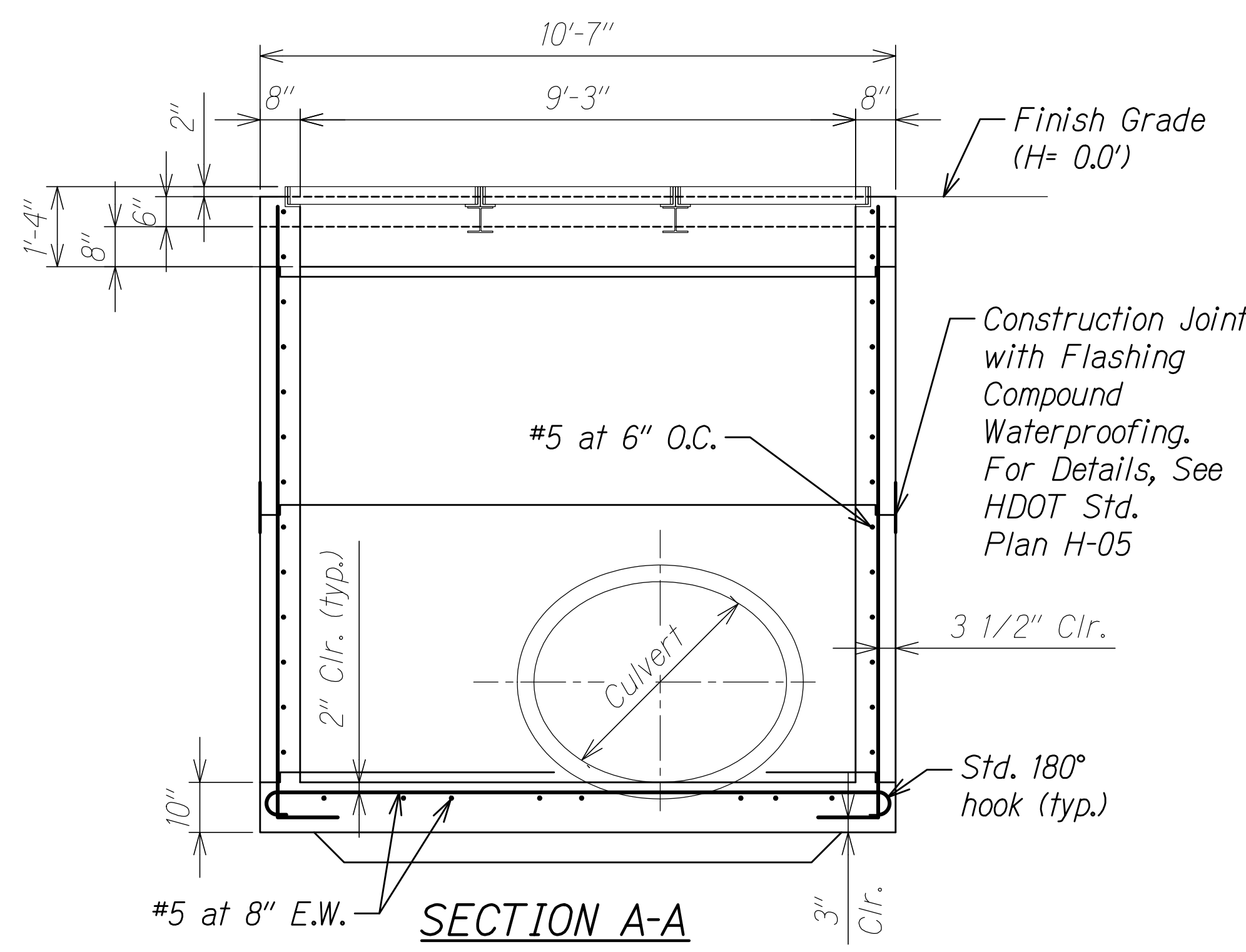
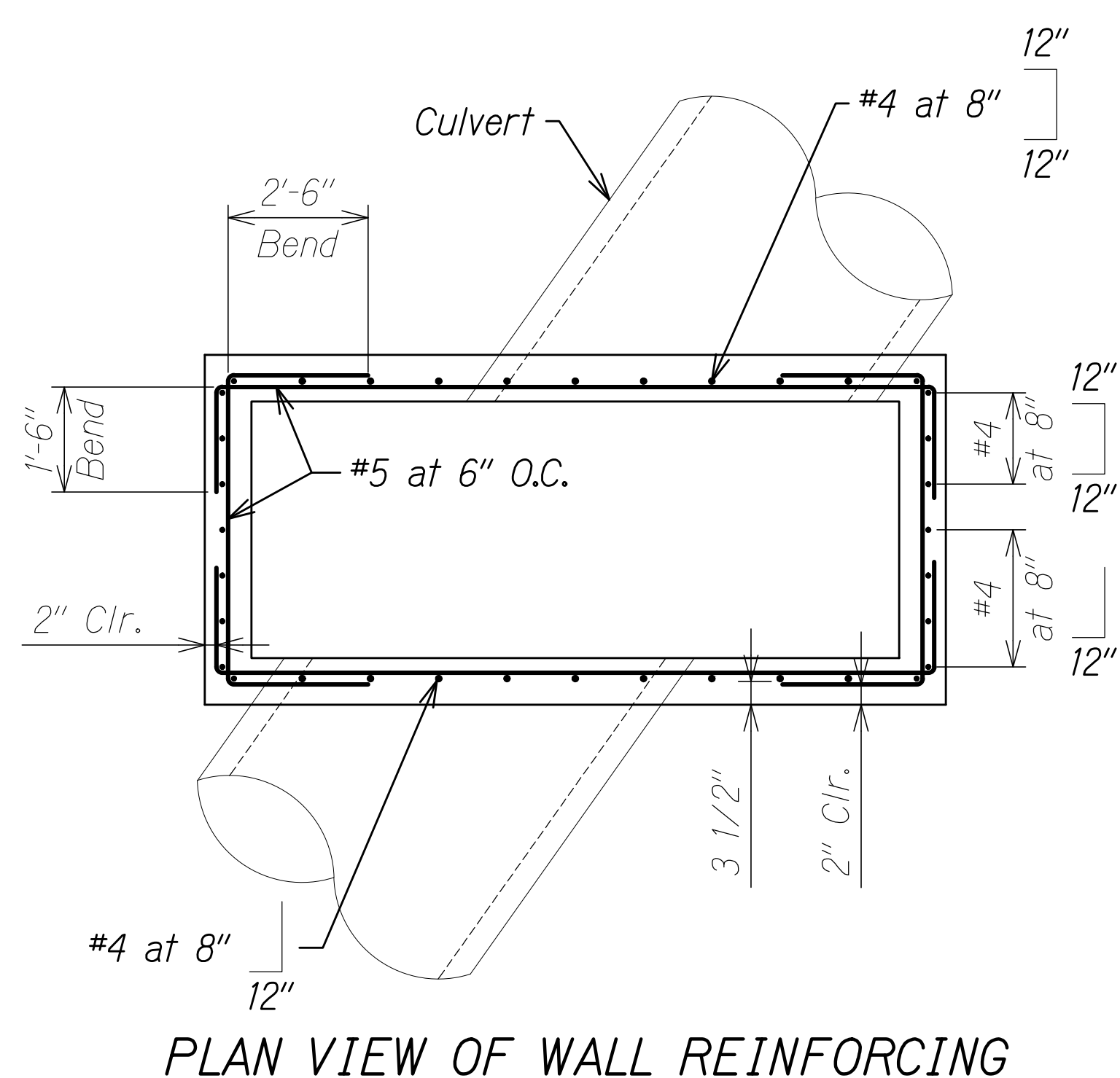
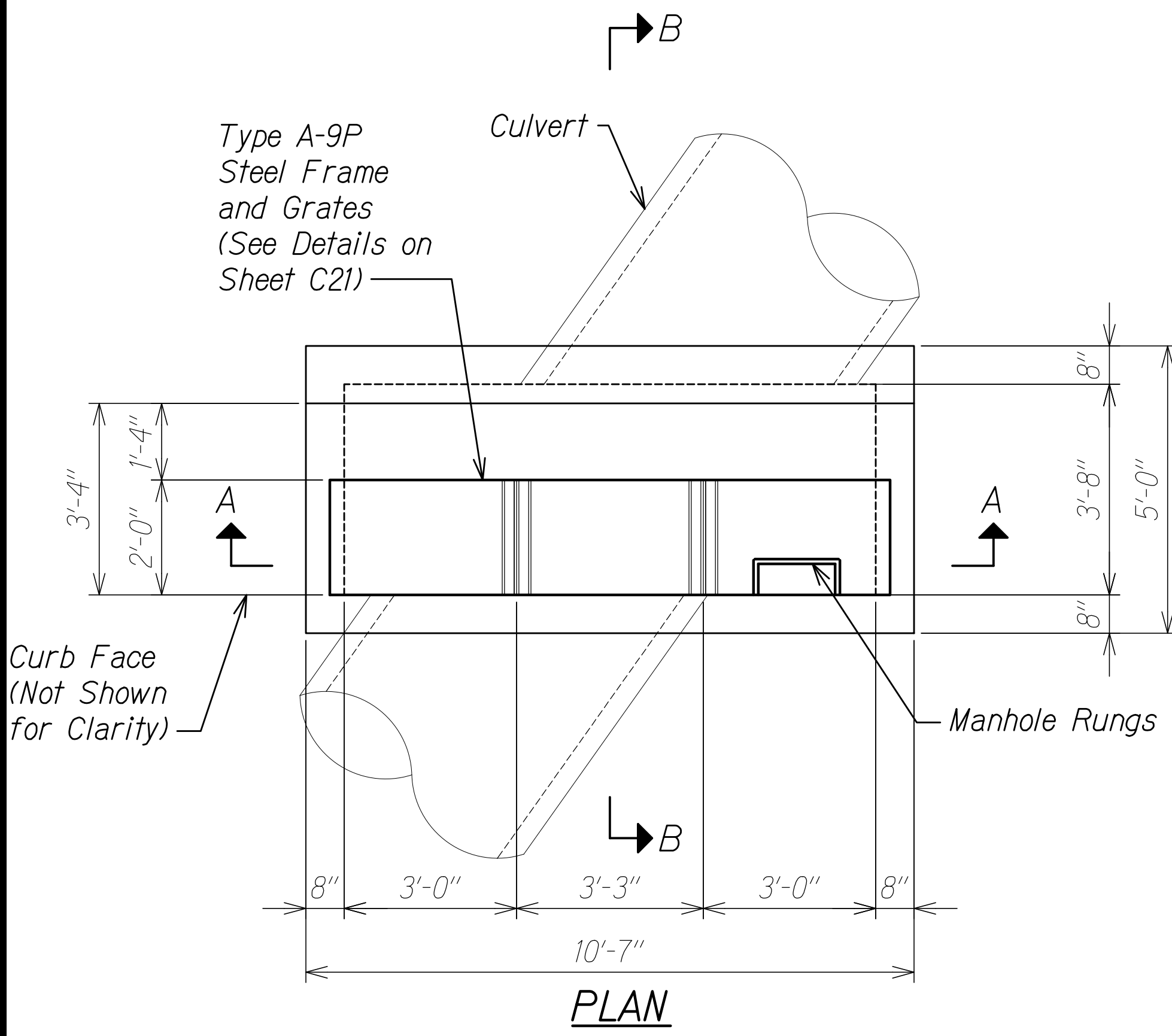
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04/30/22
EXPIRATION DATE
OF THE LICENSE

4/16/21	Updated Dimension - BWS Comments 4/12/21
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
CONSTRUCTION DETAILS	
KALANIANA'OLE HIGHWAY IMPROVEMENTS PHASE 2	
Poalima Street to Vicinity of Makai Pier	
Federal-Aid Project No. NH-072-1(059)	
Scale: As Shown	Date: March 2021
SHEET No. C19 OF 27 SHEETS	

FED. ROAD DIST. NO.	STATE	FED-AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-072-1(059)	2021	76	243



- GENERAL NOTES:**
- General Criteria
 - At-rest Horizontal Pressure - 80 pcf (2 to 1 sloping backfill, above groundwater)
 - At-rest Vertical Pressure - 40 pcf (2 to 1 sloping backfill, above groundwater)
 - Allowable Bearing Capacity - 1,700 psf+8 x (overburden pressure); where overburden pressure equals 100 pcf x H
 - Live load Surcharge (Equivalent Height of Soil), 3'-0"
 - Exposure Factor (For Crack Control) = 1.0 for Class 1 exposure
 - For vertical rebar lap splice length, See HDOT Std. Plan H-03.
 - See HDOT Std. Plan B-01 for additional notes.

MODIFIED TYPE 2A-9P GRATED DROP INLET DETAILS

SCALE: Not to Scale

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04/30/22

EXPIRATION DATE OF THE LICENSE

LEE T. TAKUSHI
LICENSED PROFESSIONAL ENGINEER
NO. 4767-S
HAWAII USA

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONSTRUCTION DETAILS

KALANIANA'OLE HIGHWAY IMPROVEMENTS PHASE 2

Polima Street to Vicinity of Makai Pier

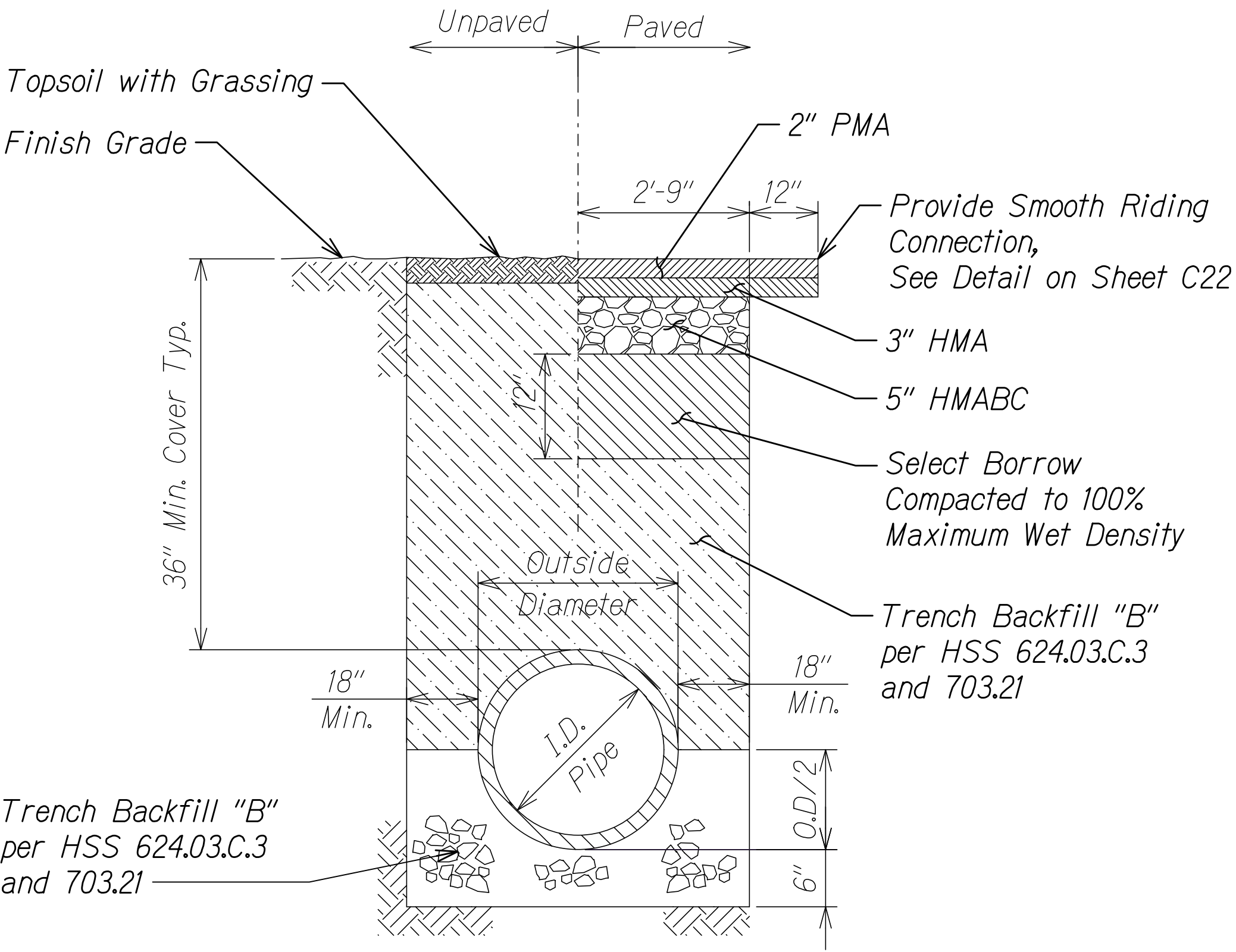
Federal-Aid Project No. NH-072-1(059)

Scale: As Shown Date: January 2021

SHEET No. C20 OF 27 SHEETS

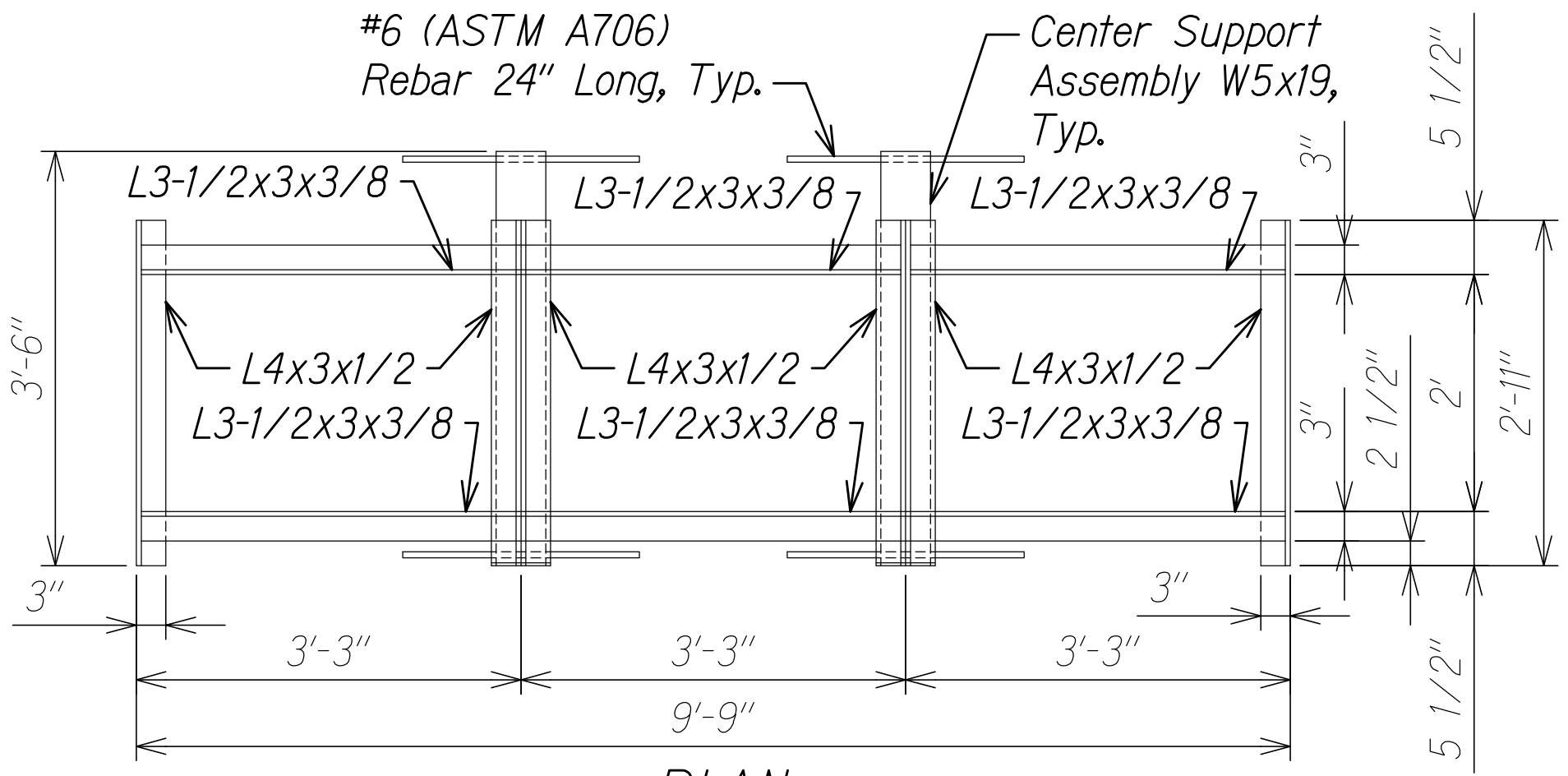
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FED. ROAD DIST. NO.	STATE	FED-AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-072-1(059)	2021	77	243

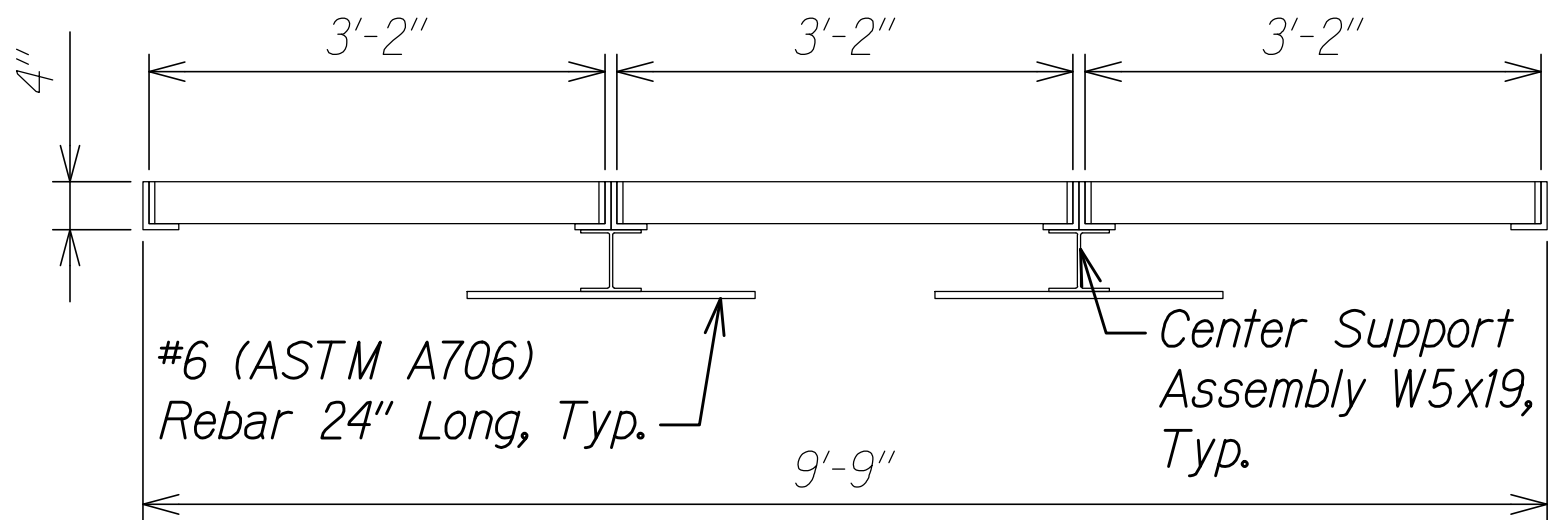


DRAINLINE TRENCH DETAIL
Not to Scale

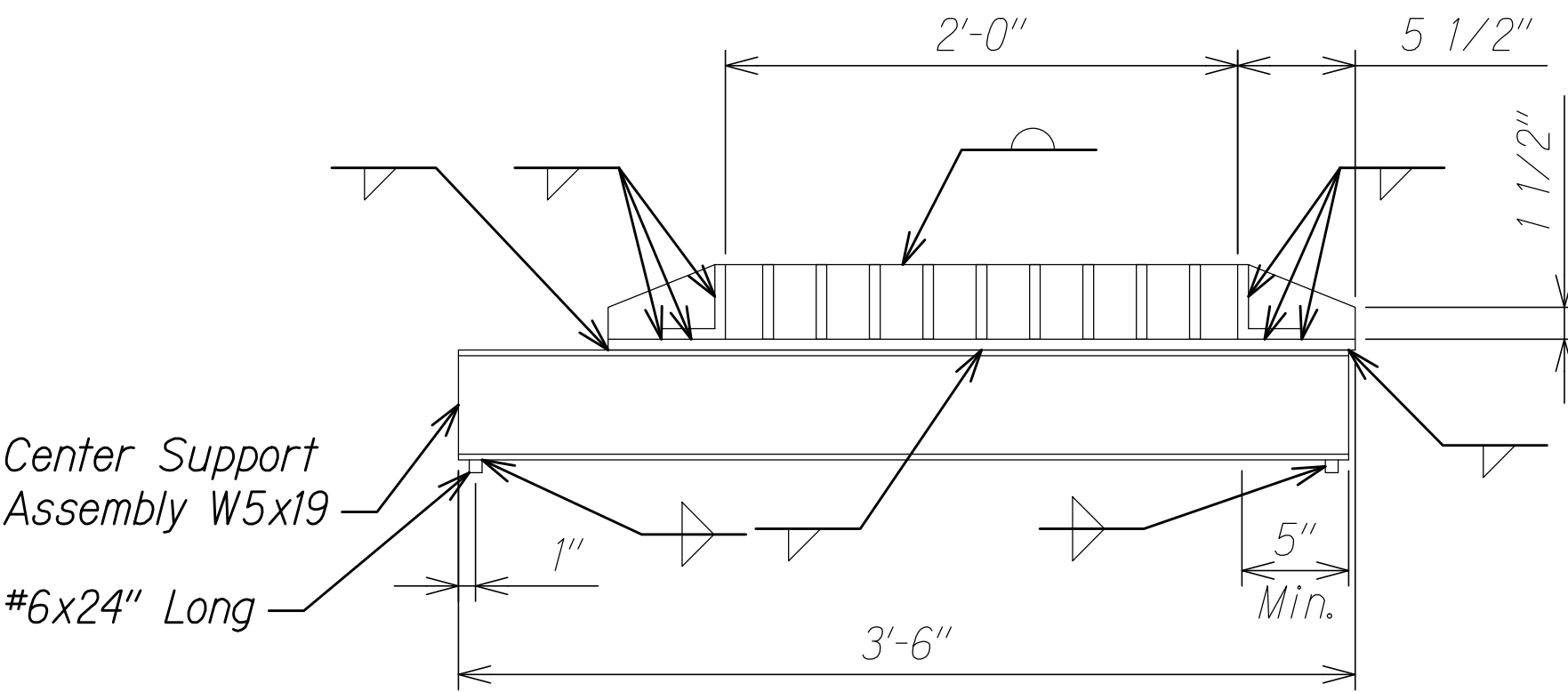
- GENERAL NOTES:**
- 1. All welds 3/8" unless otherwise noted.
 - 2. Frames and center support assembly shall be zinc coated after fabrication.
 - 3. See HDOT Std. Plan B-01 for additional notes.



PLAN
(Three Grates)

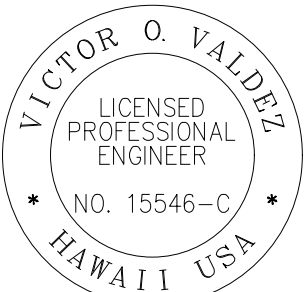


LONGITUDINAL SECTION
(Thru Frame and Grates)



CROSS SECTION
(Thru Frame and Grates)

TYPE A-9P STEEL FRAME DETAILS
Not to Scale



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HIGHWAYS DIVISION

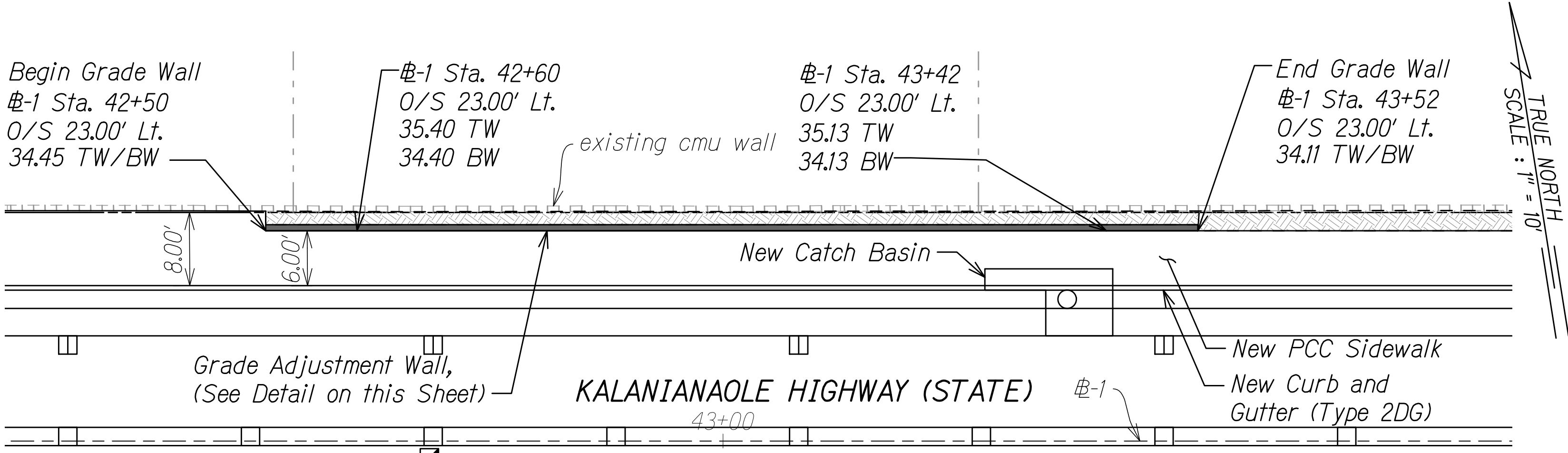
CONSTRUCTION DETAILS

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

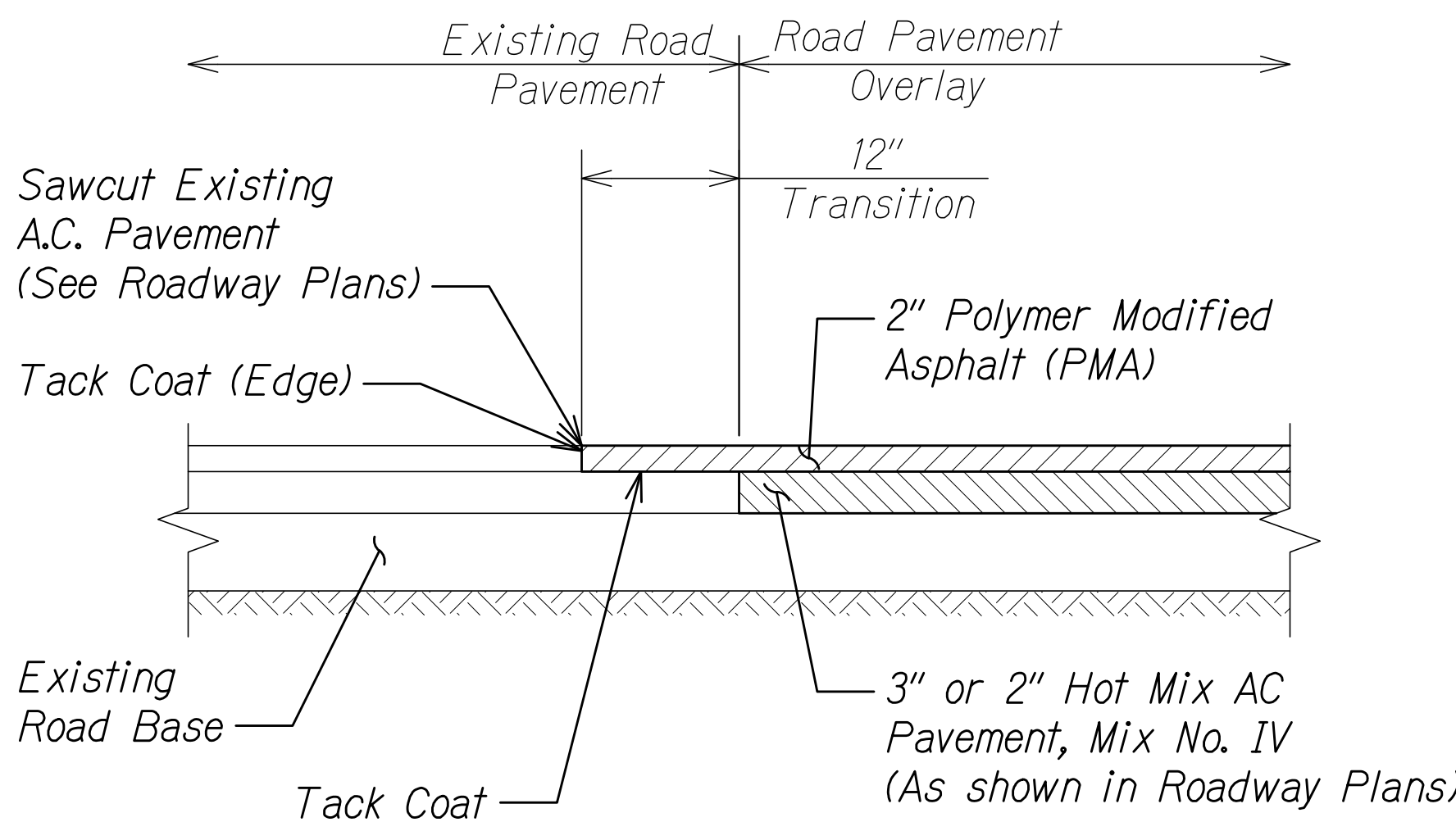
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SHEET No. C21 OF 27 SHEETS

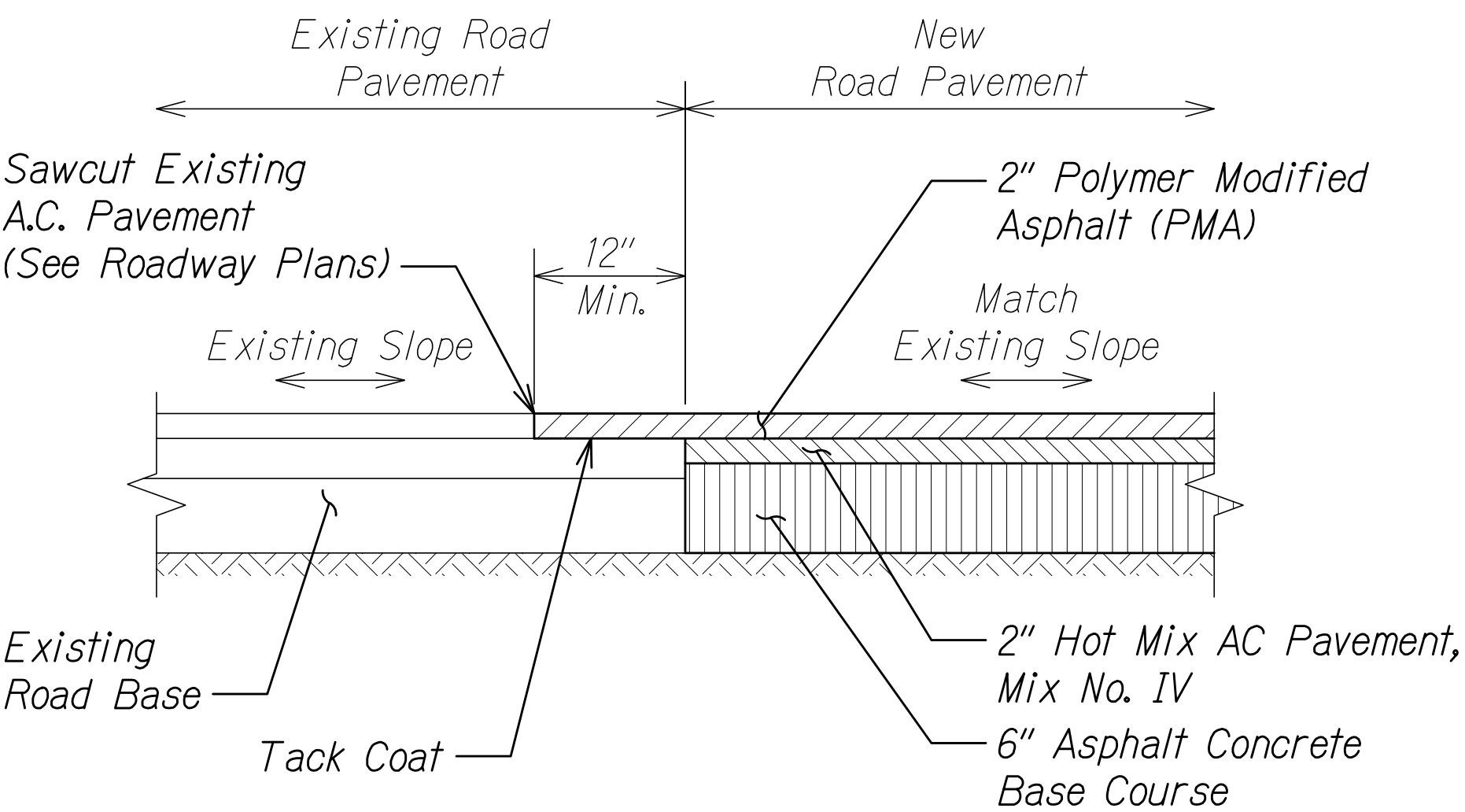
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HAWAII	HAW.	NH-072-1(059)	2021	78	243



GRADE ADJUSTMENT WALL INSET
SCALE: 1" = 10'

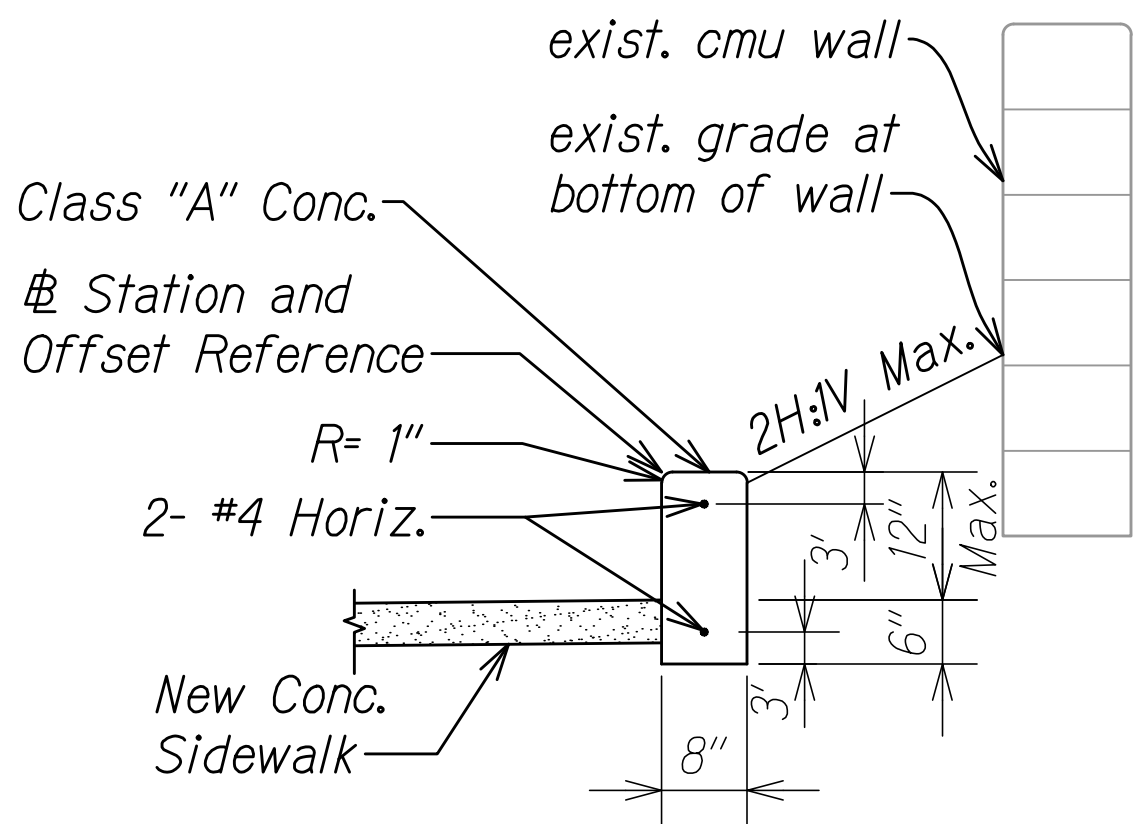


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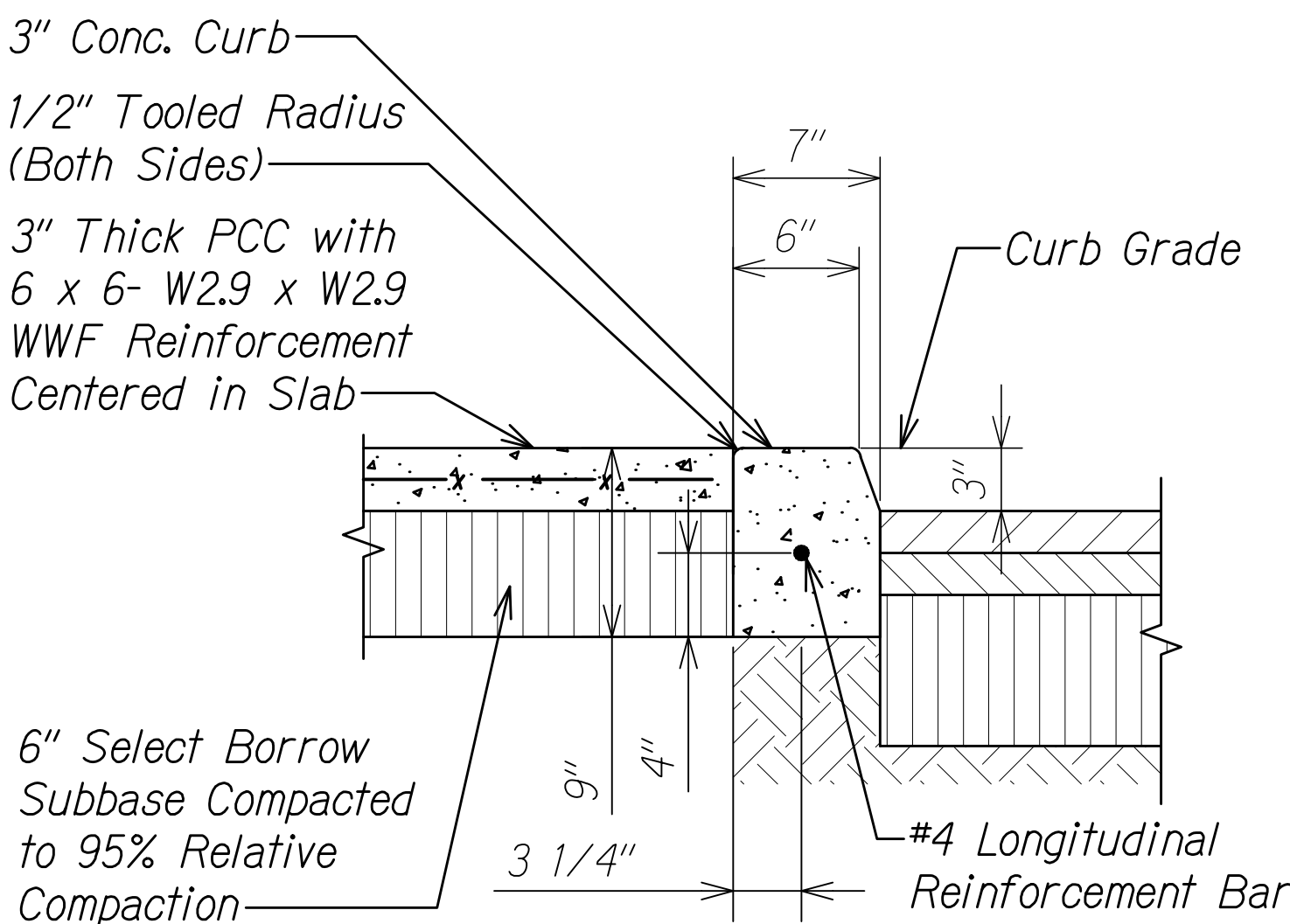


PAVEMENT RECONSTRUCTION

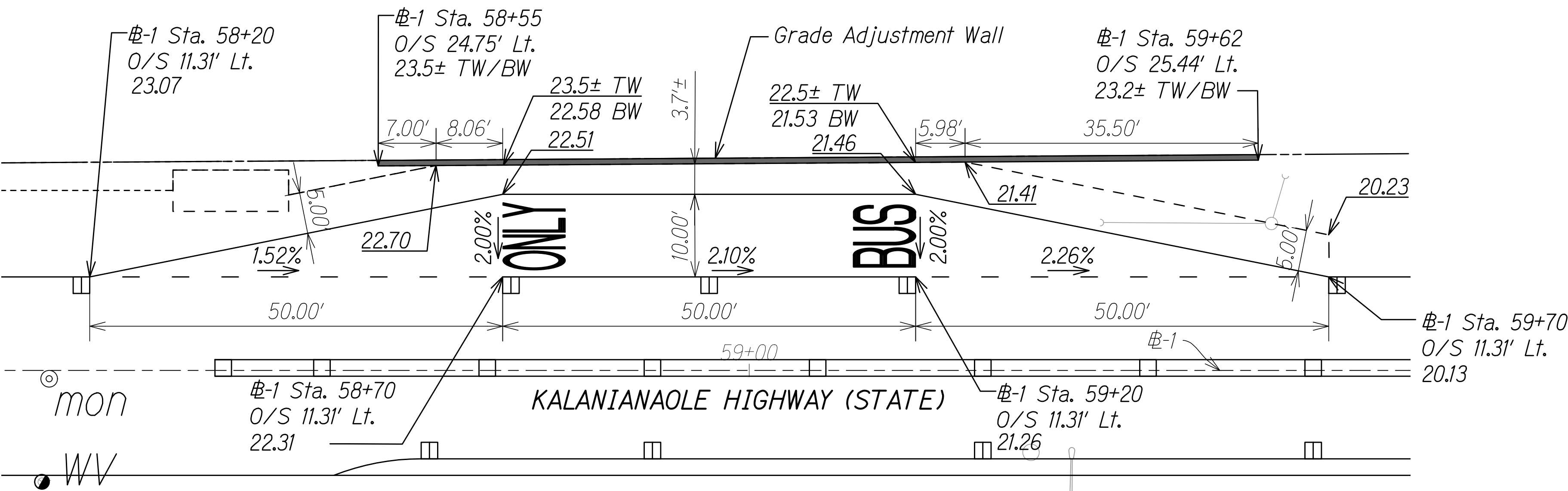
SMOOTH RIDING TRANSITION DETAIL
NOT TO SCALE



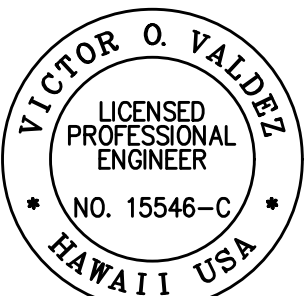
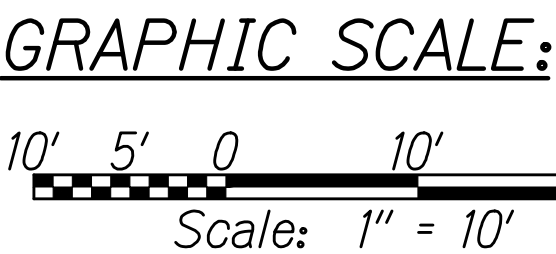
GRADE ADJUSTMENT WALL DETAIL
NOT TO SCALE



3-INCH CONCRETE MEDIAN AND CURB DETAIL
NOT TO SCALE



BUS PULLOUT DETAILED GRADING AT STA. 59+00
SCALE: 1" = 10'



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STATE OF HAWAII
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HIGHWAYS DIVISION

CONSTRUCTION DETAILS
KALANIANA'OLE HIGHWAY IMPROVEMENTS PHASE 2
Poalima Street to Vicinity of Makai Pier
Federal-Aid Project No. NH-072-1(059)
Scale: As Shown Date: January 2021

SHEET No. C22 OF 27 SHEETS

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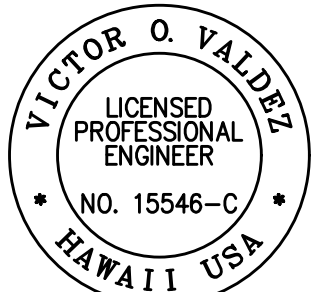
FED. ROAD DIST. NO.	STATE	FED-AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-072-1(059)	2021	79	243

Centerline Horizontal Data (C)

Point #	Type	Station	Offset	Δ (Delta)	Radius	Tangent	Curve Legth
1	BOA	1 29+08.28	1.00 Lt.	-	-	-	-
2	PI	1 29+51.18	1.00 Lt.	-	-	-	-
3	PI	1 30+40.96	2.00 Lt.	-	-	-	-
4	PI	1 31+15.32	2.00 Lt.	-	-	-	-
5	PI	1 32+89.62	1.00 Rt.	-	-	-	-
6	PI	1 35+08.28	1.00 Rt.	-	-	-	-
7	PI	1 37+08.28	0.50 Lt.	-	-	-	-
8	PI	1 44+00.00	0.50 Lt.	-	-	-	-
9	PI	1 46+00.00	2.31 Lt.	-	-	-	-
10	PI	1 51+50.00	2.31 Lt.	-	-	-	-
11	PI	1 53+50.00	0.31 Lt.	-	-	-	-
12	PC	1 60+92.24	0.31 Lt.	25° 29' 19"	890.00'	201.29'	395.93'
13	PCC	1 64+88.46	1.52 Lt.	7° 07' 08"	550.00'	34.21'	68.34'
14	PT	1 65+56.75	2.06 Lt.	-	-	-	-
15	PI	1 67+56.38	1.74 Rt.	-	-	-	-
16	PI	1 70+20.39	2.94 Rt.	-	-	-	-
17	PI	1 72+55.07	1.00 Lt.	-	-	-	-
18	PI	1 77+75.08	1.00 Lt.	-	-	-	-
19	PI	1 80+36.99	1.35 Rt.	-	-	-	-
20	PI	1 82+18.99	0.50 Lt.	-	-	-	-
21	PI	1 83+73.89	0.50 Lt.	-	-	-	-
22	PI	1 85+56.34	1.00 Lt.	-	-	-	-
23	PI	1 90+68.40	1.00 Lt.	-	-	-	-
24	PI	1 91+88.40	2.00 Lt.	-	-	-	-
25	PC	1 94+54.64	2.00 Lt.	9° 23' 00"	1350.00'	110.79'	221.09'

Centerline Horizontal Data (C)

Point #	Type	Station	Offset	Δ (Delta)	Radius	Tangent	Curve Legth
26	PT	1 96+75.59	0.76 Rt.	-	-	-	-
27	PI	1 126+96.46	1.00 Rt.	-	-	-	-
28	PI	1 132+15.72	1.58 Rt.	-	-	-	-
29	PI	1 133+82.21	4.63 Rt.	-	-	-	-
30	PC	2 0+44.18	10.46 Lt.	15° 31' 27"	1312.69'	178.93'	355.67'
31	PCC	2 4+00.82	1.46 Rt.	8° 48' 29"	1145.00'	88.18'	176.02'
32	PT	2 6+18.04	5.00 Rt.	-	-	-	-
33	PI	2 18+55.12	5.00 Rt.	-	-	-	-
34	PI	2 21+62.00	6.00 Lt.	-	-	-	-
35	PC	2 87+53.73	6.00 Lt.	17° 17' 00"	1900.00'	288.76'	573.14'
36	PI	2 93+26.73	5.56 Rt.	-	-	-	-
37	PI	2 99+52.00	6.00 Rt.	-	-	-	-
38	PI	2 103+81.31	10.77 Rt.	-	-	-	-
39	PI	2 104+98.31	16.00 Rt.	-	-	-	-
40	PI	2 106+14.09	16.00 Rt.	-	-	-	-
41	PI	2 106+64.31	11.00 Rt.	-	-	-	-
42	PI	2 108+52.55	11.00 Rt.	-	-	-	-
43	EOA	2 108+77.24	10.65 Rt.	-	-	-	-



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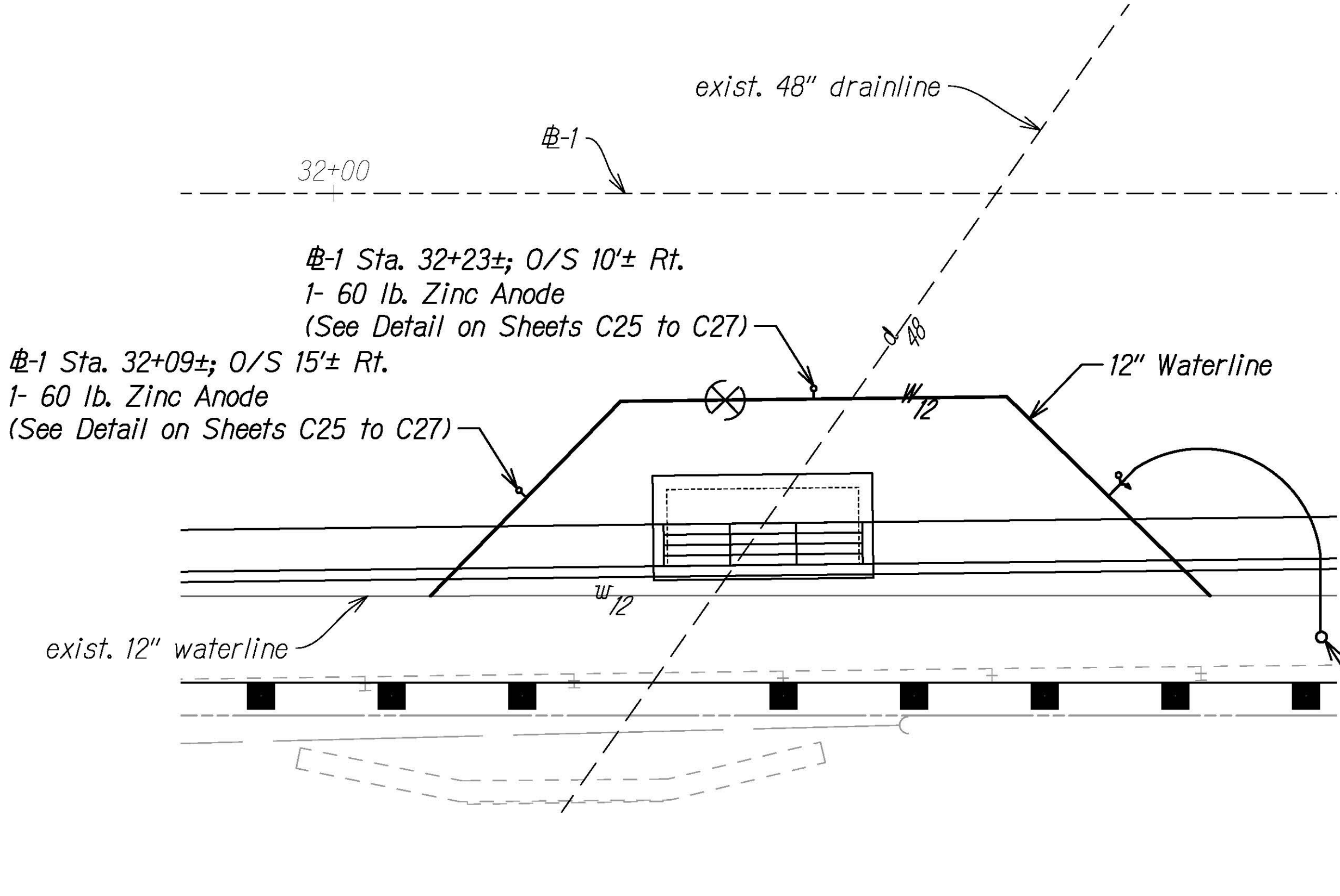
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EXPIRATION DATE
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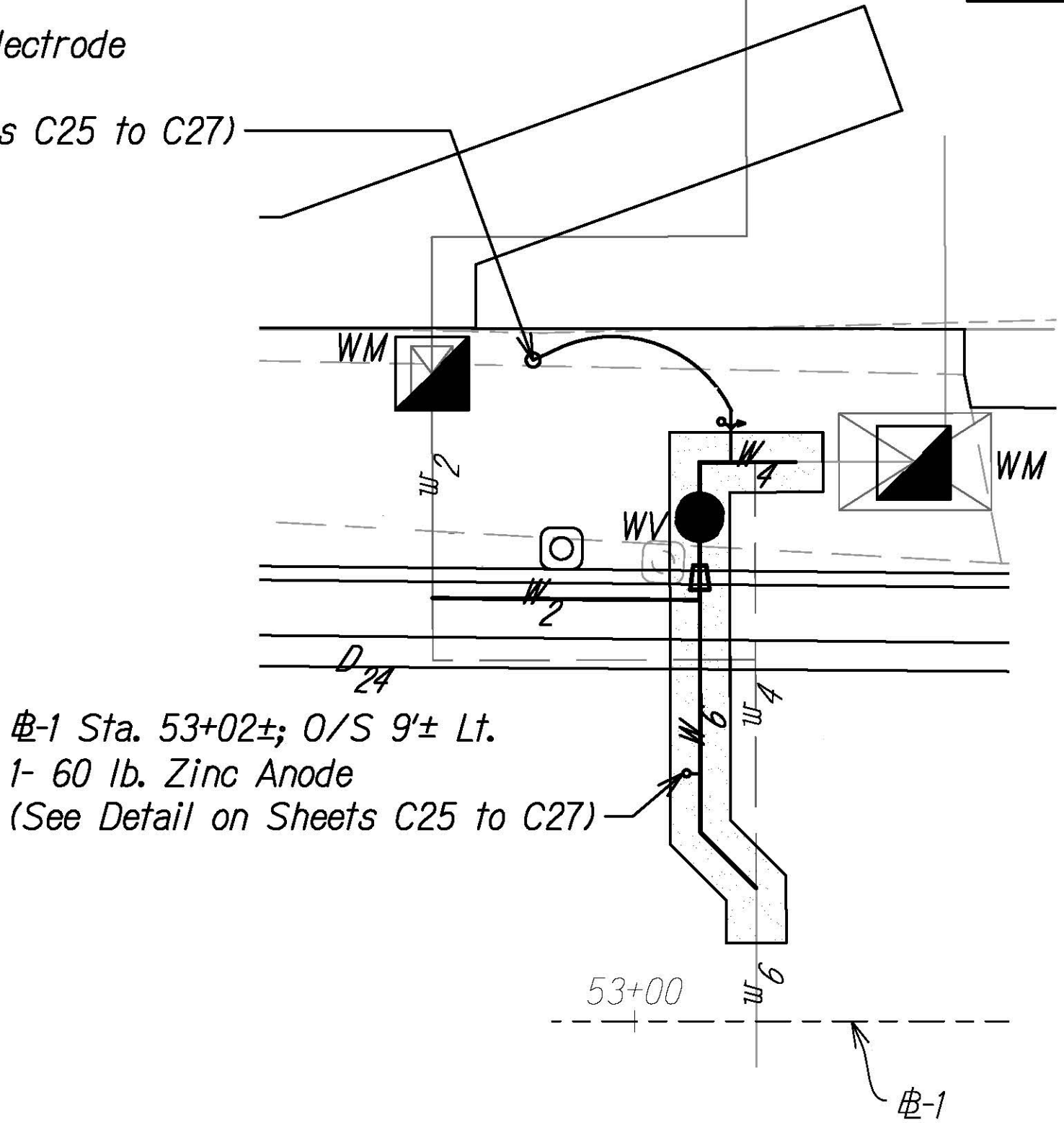
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
**CENTERLINE
HORIZONTAL DATA**
KALANIANA'OLE HIGHWAY IMPROVEMENTS PHASE 2
Poalima Street to Vicinity of Makai Pier
Federal-Aid Project No. NH-072-1(059)
Scale: N/A Date: January 2021

SHEET No. C23 OF 27 SHEETS

FED. ROAD DIST. NO.	STATE	FED-AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-072-1(059)	2021	C.O. ADD. 80	243



Ⓔ-1 Sta. 52+96±; O/S 24'± Lt.
Install RM Test Station - Type T
1- Test Station box
1- Zinc Reference Electrode
1- 60 lb. Zinc Anode
(See Detail on Sheets C25 to C27)



WATERLINE A - CORROSION PROTECTION SYSTEM PLAN

Scale: 1" = 5'

WATERLINE B - CORROSION PROTECTION SYSTEM PLAN

Scale: 1" = 5'

NOTES:

1. For Roadway Baseline, see Roadway Plans Shts. R1 to R43. For Waterline Horizontal Data, see Waterline A Plan and Profile Sht. R50.
2. All buried ductile iron pipe shall be polyethylene encased. All buried ductile iron fittings and valves shall be coated with a bituminous coating.
3. Contractor to install joint bonds with thermite welds at all joints and fittings. See details in Sht. C25.
4. For typical trench restoration sections for direct buried CP wires, see details in Sht. C27.

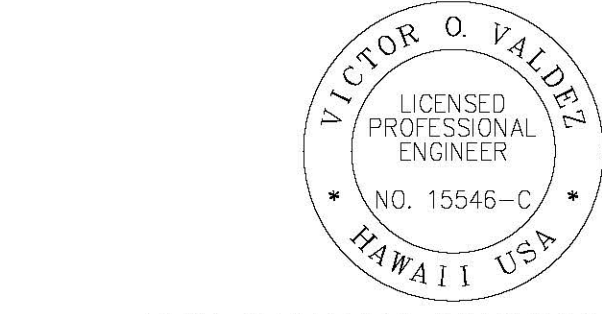
CORROSION PROTECTION NOTES:

1. Unless otherwise specified, all materials and construction of water system facilities and appurtenances shall be in accordance with the City and County of Honolulu, Board of Water Supply's Water System External Corrosion Control Standards, Volume 3, 1991 and Water System Standards, dated 2002, and all subsequent amendments and additions. Additional references may also be made to the National Association of Corrosion Engineers (NACE), NACE International Book of Standards, Volume 1 and 2, dated January 1, 1997.
2. The drawings for the Cathodic Protection Systems are diagrammatic and shall not be scaled for exact locations unless scales are explicitly stated on the specific drawing. Field conditions, non-interference with other utilities or trade, and architectural, mechanical, and structural features shall determine exact locations. Contractor shall note other existing utilities in the area. Care shall be taken during excavation not to damage these utilities. Any damaged utilities shall be repaired to the satisfaction of the utility owner's standards at the Contractor's expense.
3. As-built drawings for the cathodic protection system shall be maintained by the Contractor during installation and construction of the Cathodic Protection Systems. Drawings shall be revised to show exact locations of all anodes, text boxes, insulated pipe flanges, and other related items.

APPROVED:

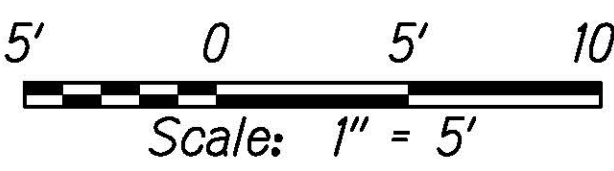
MANAGER AND CHIEF ENGINEER, BWS
(For work affecting BWS Facilities in
City/State R/W and BWS Easements only)

DATE



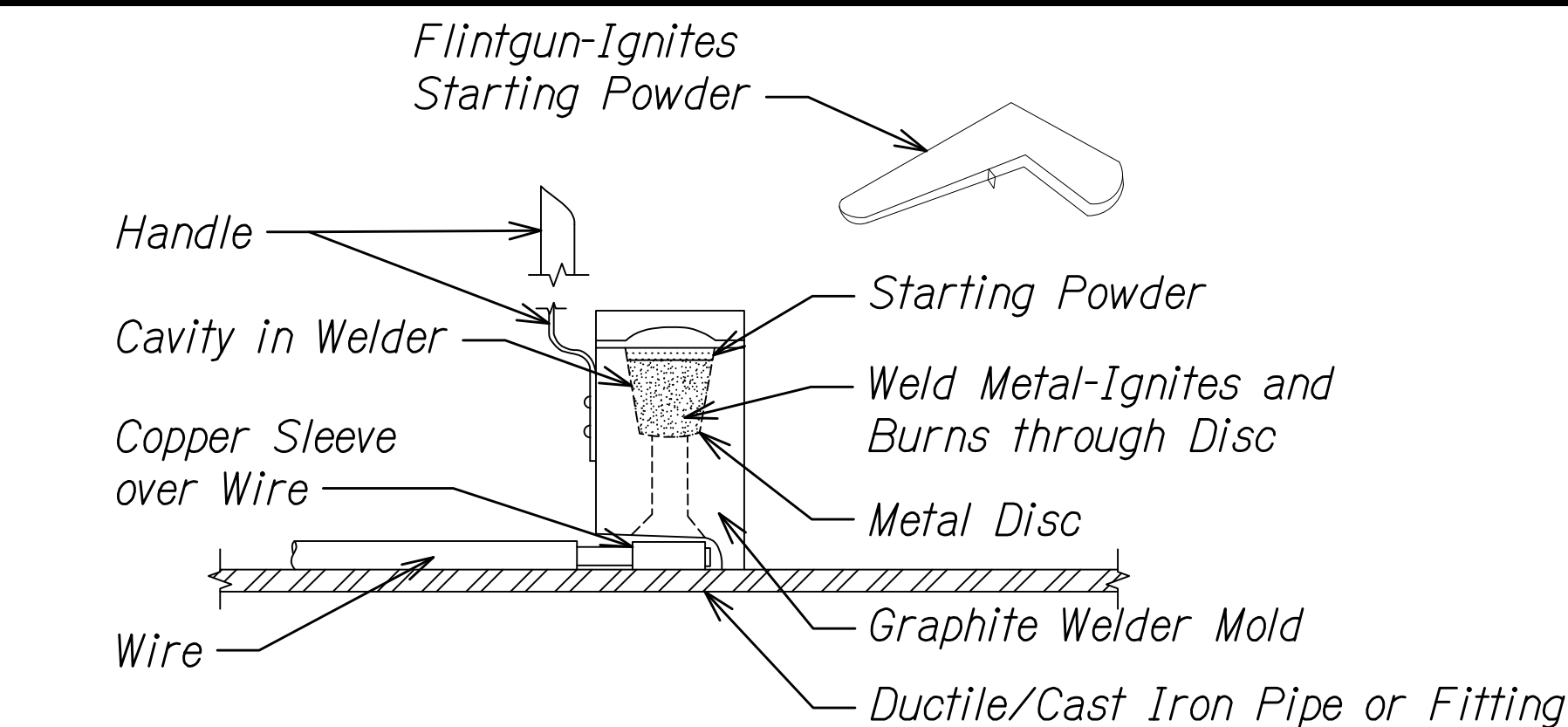
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SIGNATURE: [Signature] EXPIRATION DATE OF THE LICENSE: 04/30/22

GRAPHICAL SCALES:

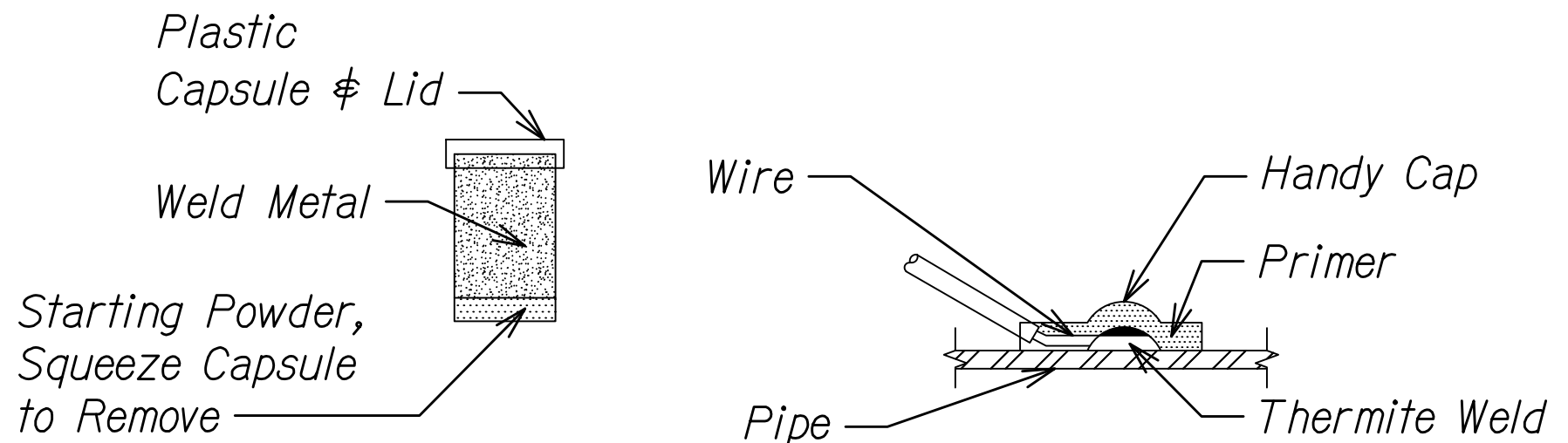


4/16/21	Updated Note 1 and Added Waterline B CPS Plan - BWS Comments 4/12/21
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION CORROSION PROTECTION SYSTEM PLAN AND NOTES KALANIANA'OLE HIGHWAY IMPROVEMENTS PHASE 2 Poalima Street to Vicinity of Makai Pier Federal-Aid Project No. NH-072-1(059) Scale: As Shown Date: March 2021 SHEET No. C24 OF 27 SHEETS	

FED. ROAD DIST. NO.	STATE	FED-AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-072-1(059)	2021	81	243



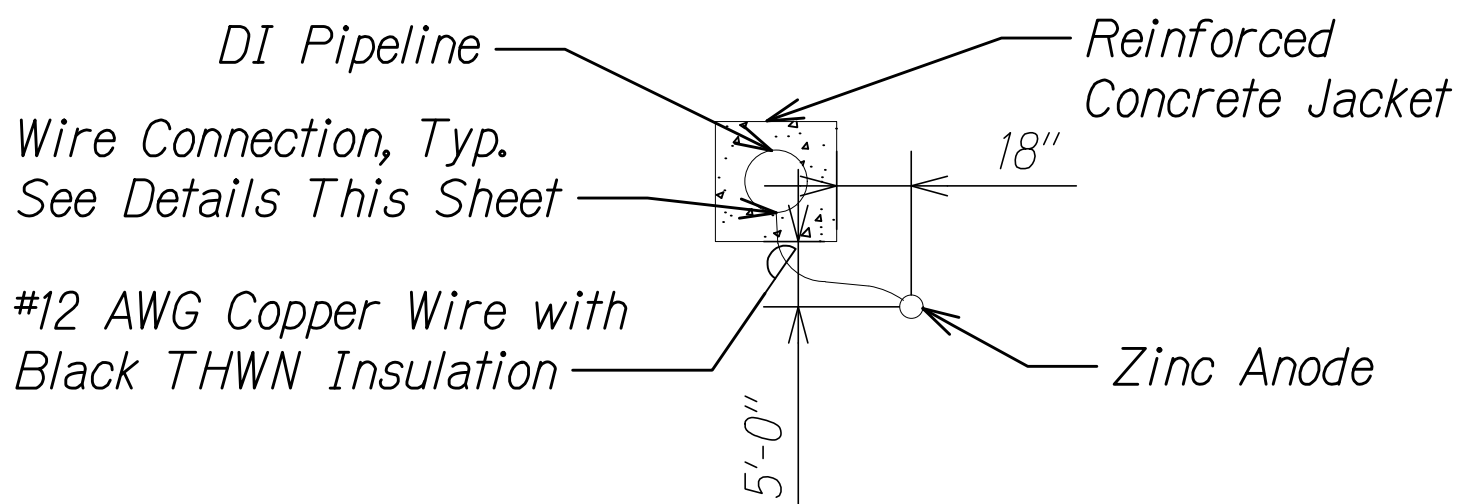
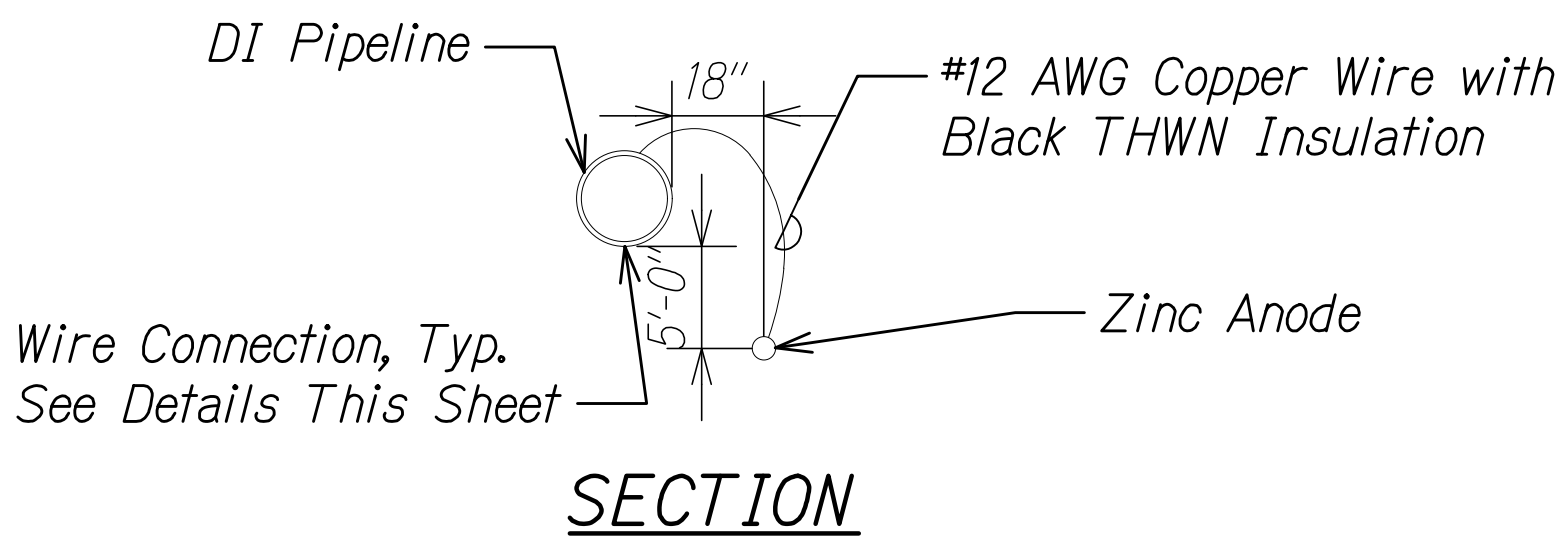
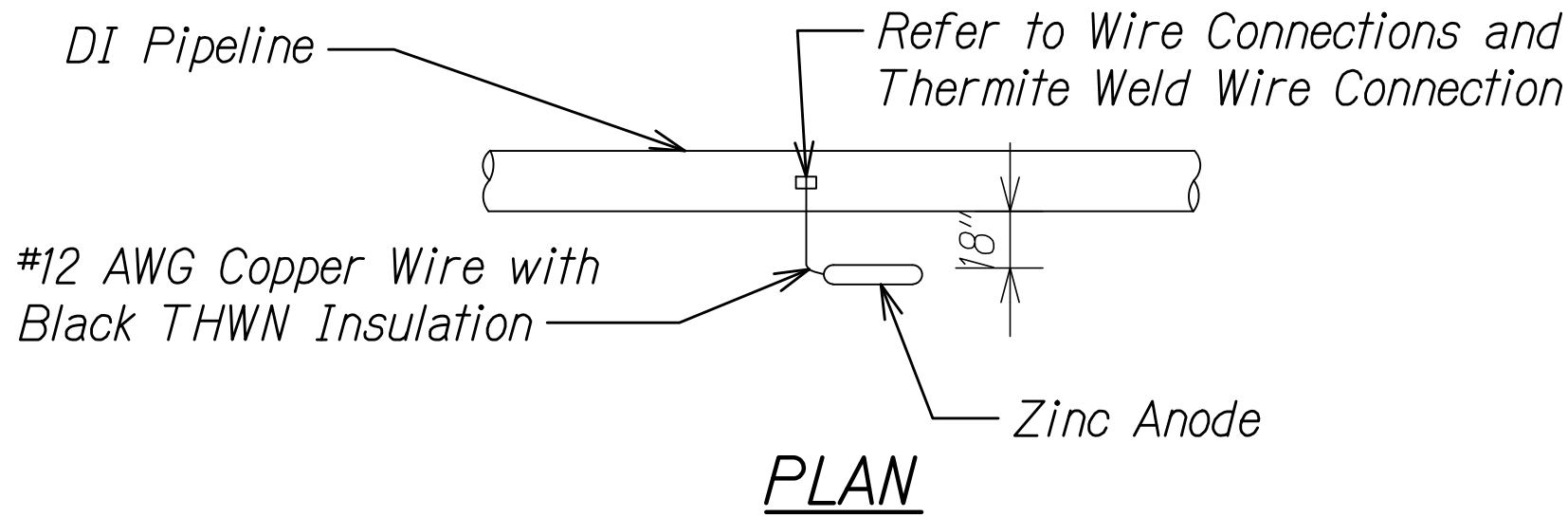
THERMITE WELD



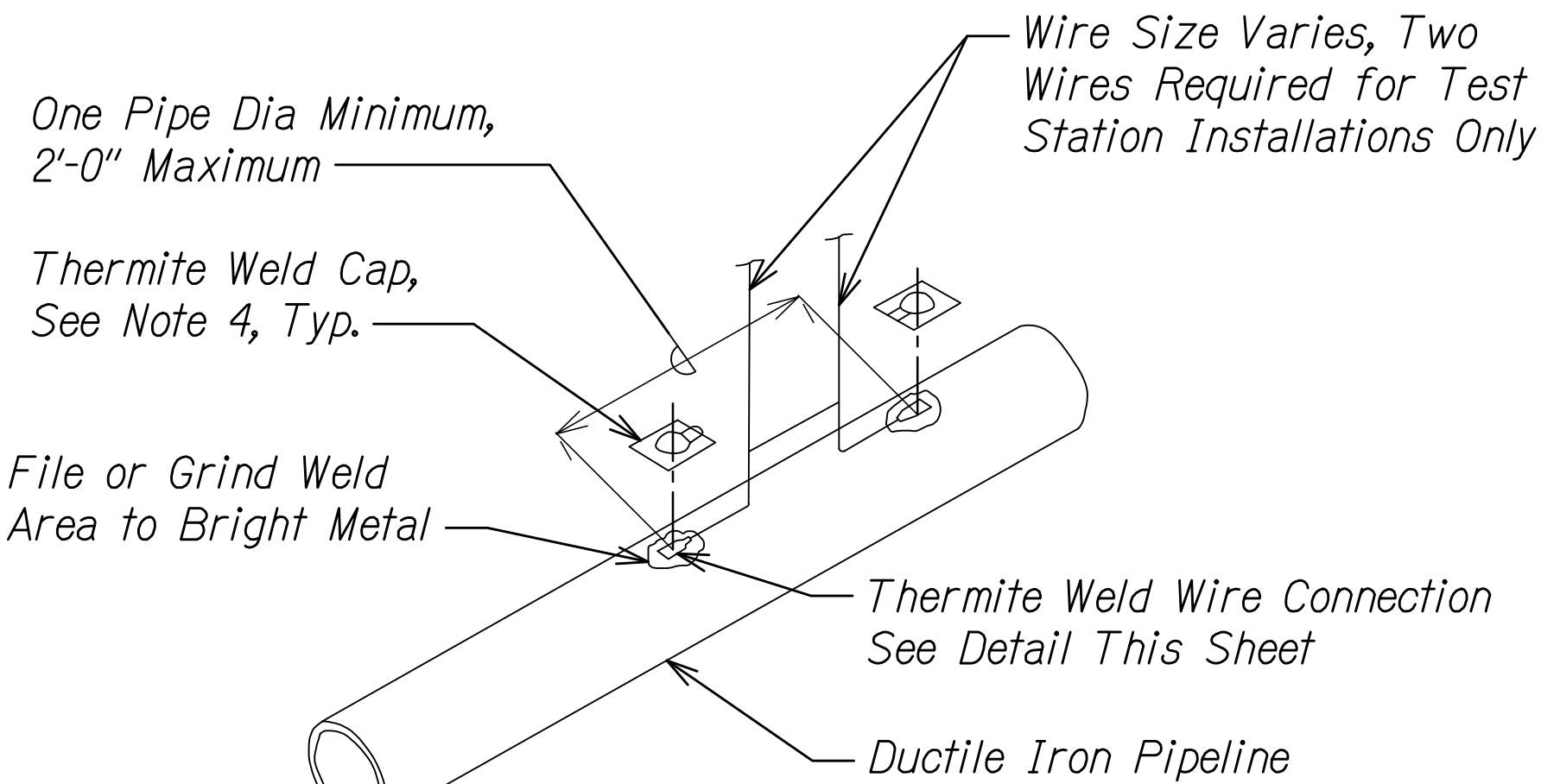
WELD METAL CAPSULE
(Type & Size Varies)

FINISHED WELD
(Wire Brazed to Pipe)

THERMITE WELD WIRE CONNECTION
NOT TO SCALE



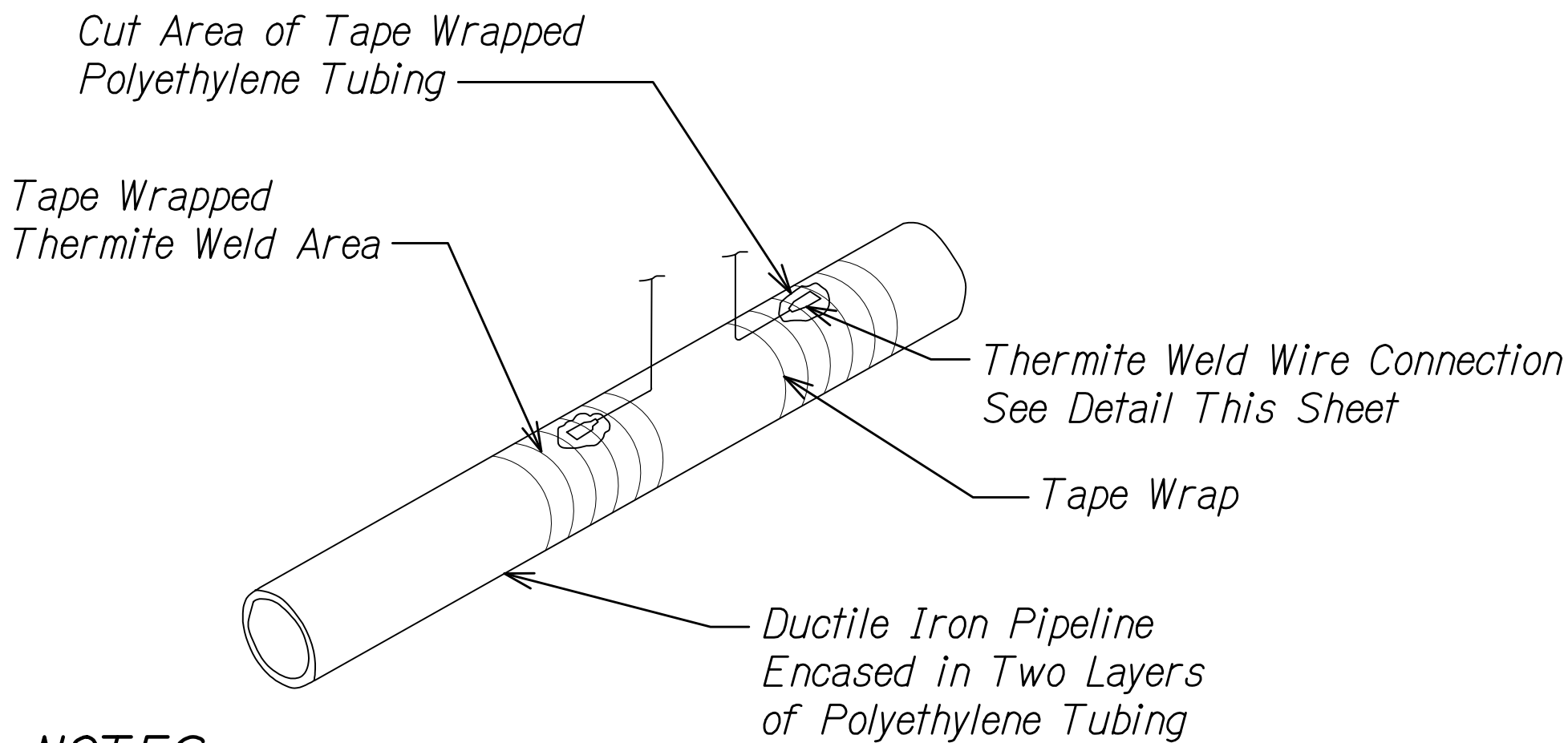
ZINC ANODE INSTALLATION DETAILS
NOT TO SCALE



NOTES:

1. Copper sleeve required for thermite welding of #10 AWG and smaller wire.
2. Use copper sleeve on #2 AWG joint bonding wires.
3. Welder and cartridge size varies according to wire size and pipe materials, consult welder manufacturer for recommended welder and cartridge.
4. Coat weld area and fill recess on thermite weld cap with cold applied coal tar mastic and apply cap to weld.

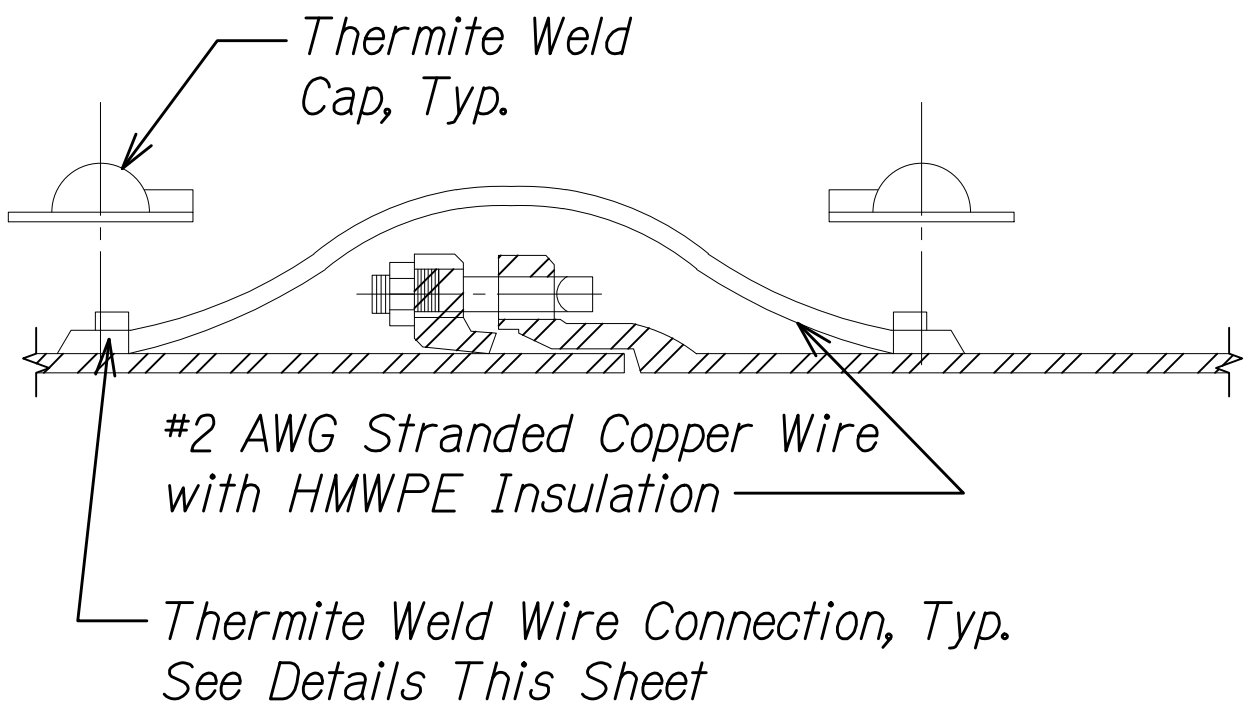
WIRE CONNECTION FOR DUCTILE IRON PIPE
NOT TO SCALE



NOTES:

1. Tape wrap prior to cutting polyethylene tubing for thermite weld installation.
2. Cut open required area of tape wrapped polyethylene tubing to prepare pipe for thermite weld.
3. Tape wrap thermite weld area after weld is installed.

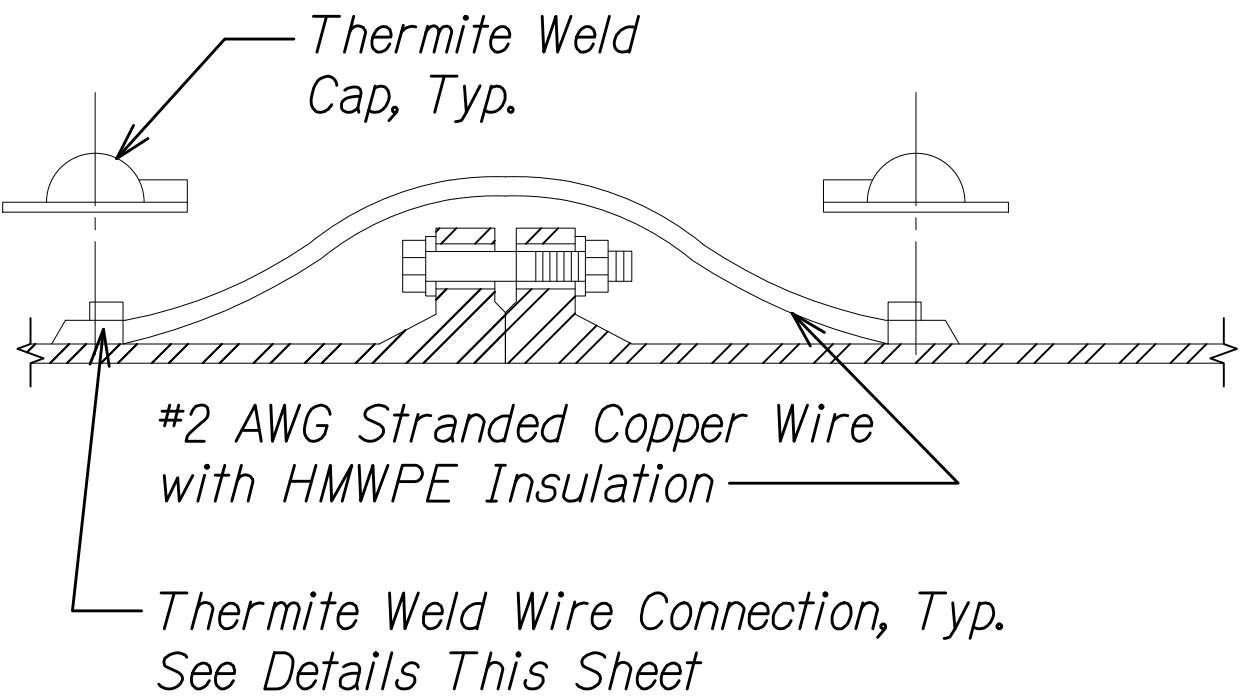
POLYETHYLENE ENCASEMENT AT THERMITE WELD
NOT TO SCALE



NOTE:

Install two bond wires at each pipe joint on pipe 24 inches larger.

MECHANICAL JOINT BOND
NOT TO SCALE



NOTE:

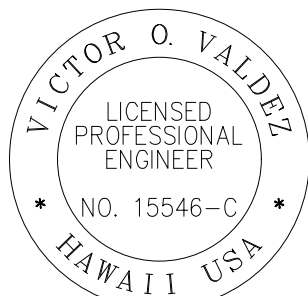
Install two bond wires at each pipe joint on pipe 24 inches larger.

FLANGED JOINT BOND
NOT TO SCALE

APPROVED:

MANAGER AND CHIEF ENGINEER, BWS
(For work affecting BWS Facilities in
City/State R/W and BWS Easements only)

DATE



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

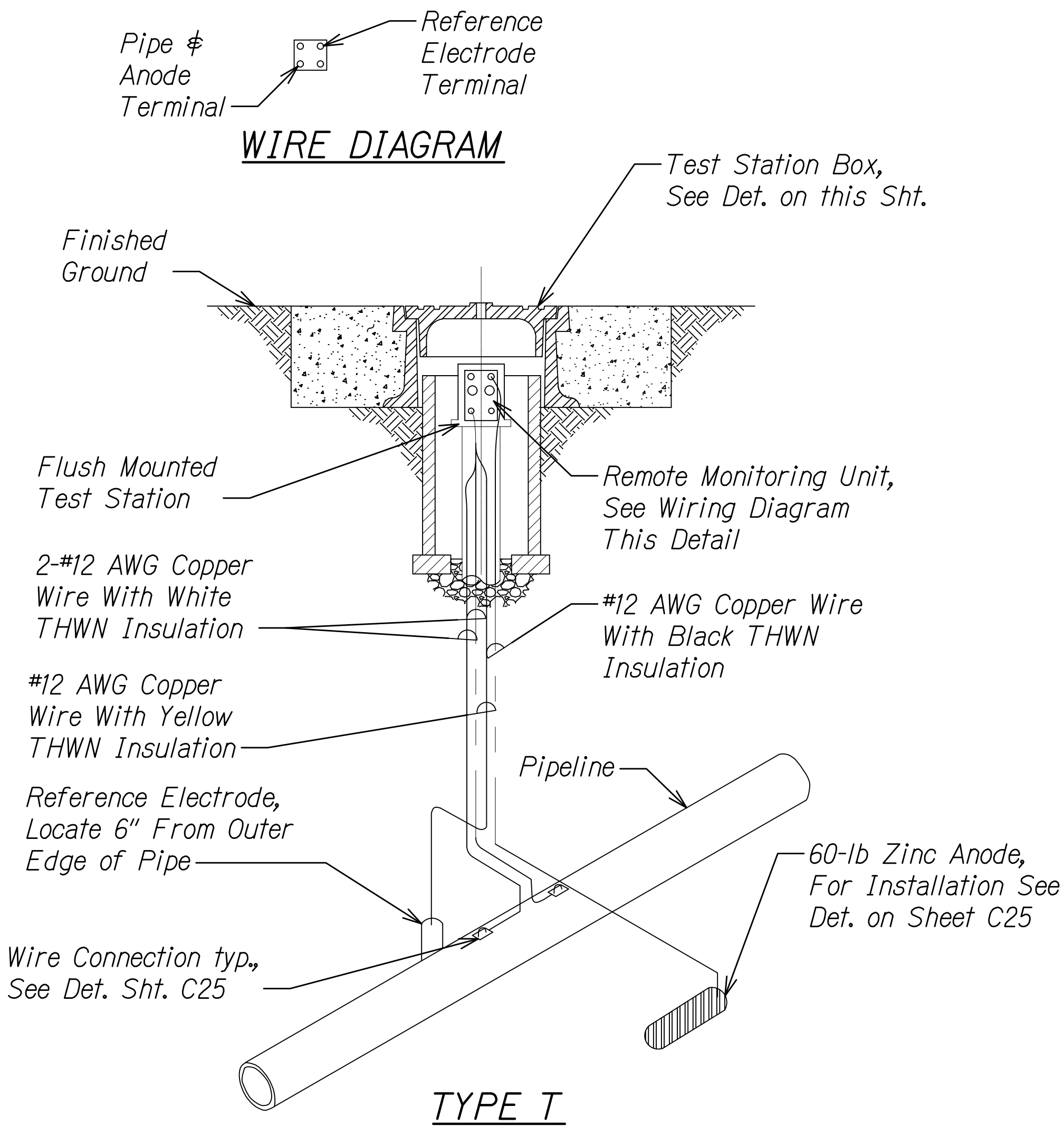
**CORROSION PROTECTION
SYSTEM DETAILS - 1**

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

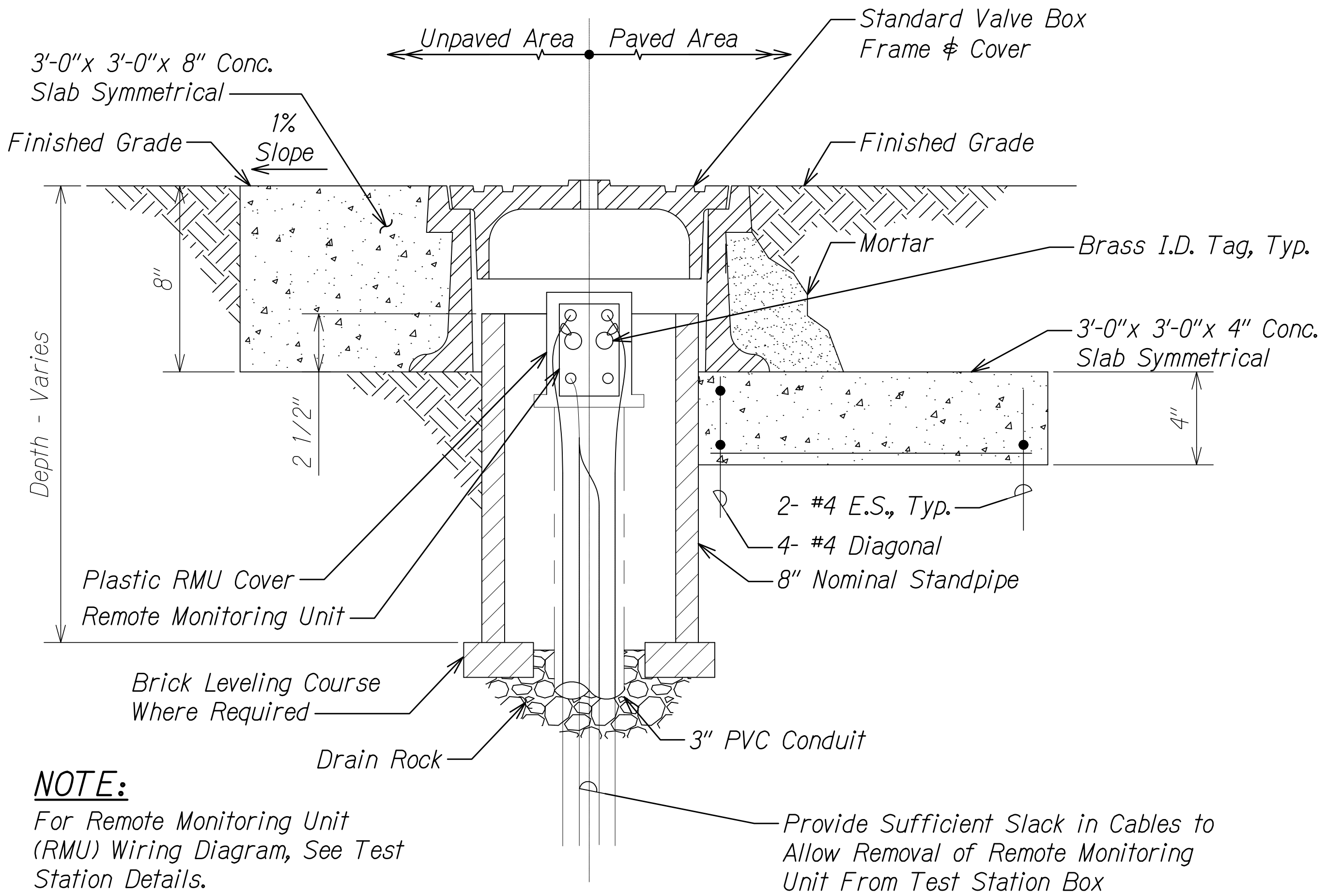
Scale: N/A Date: January 2021

SHEET No. C25 OF 27 SHEETS

FED. ROAD DIST. NO.	STATE	FED-AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-072-1(059)	2021	82	243



REMOTE MONITORING TEST STATION
NOT TO SCALE

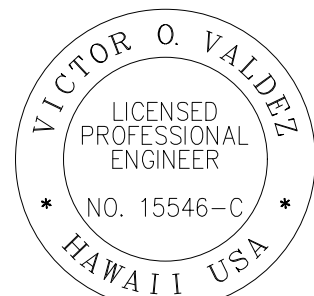


TEST STATION BOX INSTALLATION
NOT TO SCALE

APPROVED:

MANAGER AND CHIEF ENGINEER, BWS
(For work affecting BWS Facilities in
City/State R/W and BWS Easements only)

DATE



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

**CORROSION PROTECTION
SYSTEM DETAILS - 2**

KALANIANA'OLE HIGHWAY IMPROVEMENTS PHASE 2

Polima Street to Vicinity of Makai Pier

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

Scale: N/A Date: January 2021

SHEET No. C26 OF 27 SHEETS

