

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537, 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	A01

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Know what's below.
Call before you dig.

PLANS PREPARED BY



U.S. Department of Transportation
Federal Highway
Administration

EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA
JANUARY, 2020

U.S. DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

DELAWARE WATER GAP NATIONAL
RECREATION AREA

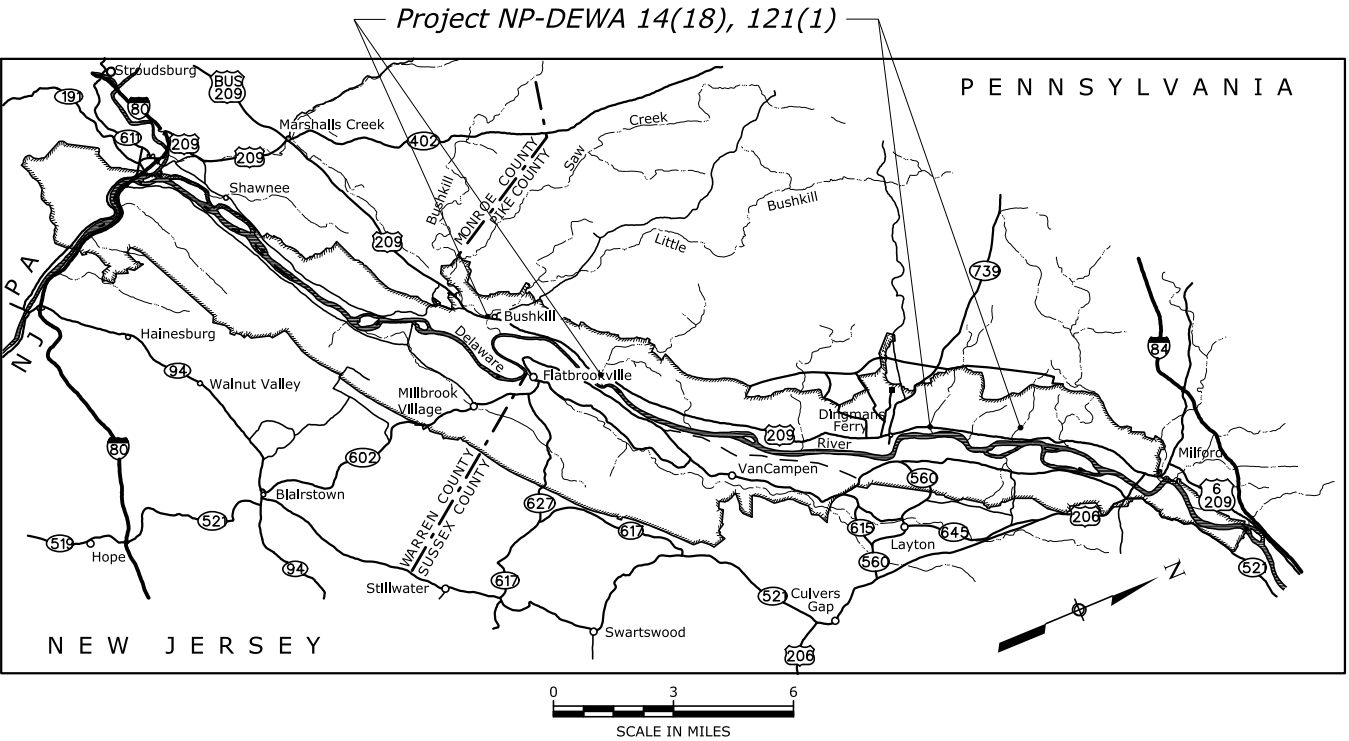
PLANS FOR PROPOSED

PROJECT NP-DEWA 14(18), 121(1)

PMIS # 222412, 222537, 222539, 222540

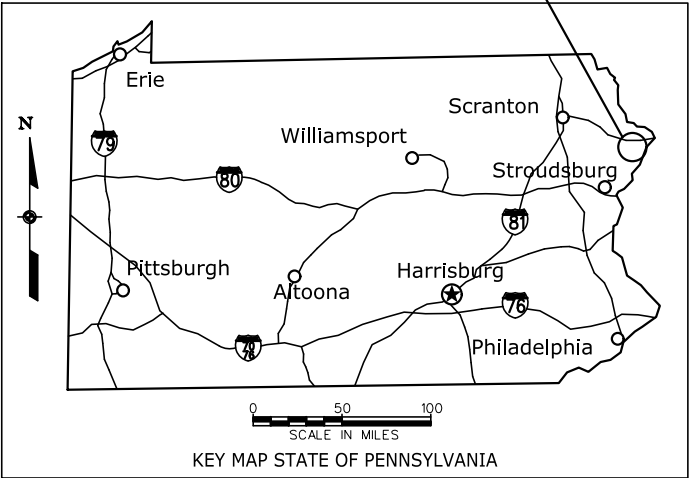
REHABILITATION AND PREVENTATIVE MAINTENANCE OF BRIDGES

DELAWARE, LEHMAN, AND MIDDLE SMITHFIELD TOWNSHIPS, PENNSYLVANIA
PIKE COUNTY, PENNSYLVANIA



Schedule	Description	Structure No.	Width	Length	BIP Report Date	RIP Milepost/Cycle #
A	Adams Creek Bridge	NO. 4320-013P	26.3'	28'	11/14/17	Rte. 0014, MP 14.6 / Cycle 5
A	Bushkill Creek Bridge	NO. 4320-009P	45'	189.7'	11/15/17	Rte. 0014, MP 1.4 / Cycle 5
A	Toms Creek Bridge	NO. 4320-049P	48.8'	62.5'	11/15/17	Rte. 0014, MP 4.9 / Cycle 5
A	Conashaugh Creek Culvert	NO. 4320-022P	11.8'	26'	11/11/13	Rte. 0121, MP 0.4 / Cycle 5

NP-DEWA 14(18), 121(1)



DESCRIPTION OF PROJECT

IMPROVEMENT: Structure rehabilitation, preventative bridge maintenance, scour protection of structures, roadway pavement maintenance, and guardrail installation at 4 bridges sites.

PROJECT LENGTH: 0.06 Miles

LANE MILES: 0.12 Miles

BRIDGE:	TYPE
Adams Creek Bridge	Concrete Tee Beam
Bushkill Creek Bridge	Steel Girder
Toms Creek Bridge	Prestressed Concrete Girder
Conashaugh Creek Culvert	Concrete Arch Culvert

DESIGN DESIGNATION:	U.S. ROUTE 209	ZIMMERMANN ROAD
ADT (2020)	6500	50
ADT (2040)	6800	70
DHV	N/A	11
D	50/50	50/50
%Truck	N/A	N/A
V (MPH)	40	25
C/A	None	None
e(max)	Match Existing	N/A

SPECIFICATIONS:

"Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects", FP-14.

Project Manager	Highway Design Manager	Lead Designer
Ramesh Kotadia	Shoukat Nawaz	Francisco Santaliz

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Abutment	Abut.	Mainline	M.L.
Aggregate	aggr.	Material	matl.
Ahead	AH	Maximum	max.
Alternate	alt.	Mile[Kilometer] post	M.P.[K.P.]
Average daily traffic	ADT	Minimum	min.
Back	BK	Monument	mon. or MON
Backslope Anchor Terminal	BAT	Mechanically stabilized embankment	MSE
Balance point	BP	Nominal Max. Size Aggregate	NMSA
Bearing	brg.	Normal crown	NC or NCR
Beginning	beg.	North	N
Bench mark	BM	Original ground	OG
Broken White	BW	Out to out	o. to o.
Centerline	CL	Outside diameter	OD
Center to center	cc, c-c or c. to c.	On centers	o. c.
Centers	ctrs.	Pavement	pvmt.
Clear	clr.	Plate	pl.
Column	col.	Point of compound curve	PCC
Connection	conn.	Point of curve	PC
Construction joint	Constr. jt.	Point of curve to spiral	PCS or CS
Continuous	cont.	Point of intersection	PI
Corrugated metal pipe	CMP	Point of spiral to curve	PSC or SC
Culvert	culv.	Point of spiral to reverse spiral	SRS
Curve central angle (spiral curve transitions)	Δ _c	Point of spiral to tangent	PST or ST
Curve total angle (curve delta or deflection)	Δ	Point of tangent	PT
Design hourly volume	DHV	Point of tangent to spiral	PS or TS
Design speed	V	Point on curve	POC
Diagonal	diag.	Point on spiral	POS
Diameter	D, dia., or	Point on tangent	POT
Diaphragm	diaph.	Radius	R
Distance	dist.	Reinforcement (reinforced)	reinf.
Double Solid Yellow	DSY	Required	reqd.
Drawing(s)	dwg(s), or drwg(s)	Right	Rt., rt. or RT
Drop Inlet	DI	Right-of-way	R/W
East	E	Roadway	Rdwy.
Edge of pavement	EP or EOP	Route	Rte.
Elevation	elev.	Section	Sec.
Elevation with number	El. 94.161	Solid White	SW
	[El. 94.16]	South	S
Embankment	emb.	Spacing, spaces or spaced	spa.
End section	ES	Spiral central angle	s
Equation	EQ or eq.	Standard	std.
Equivalent Single Axle Load	ESAL	Station	Sta.
Excavation	exc.	Steel Backed Timber	SBT
Expansion joint	exp. jt.	Stiffener	stiff.
Flared Anchor Terminal	FAT	Stringer	stgr.
Footing	ftg.	Structure	struc.
Galvanized	galv.	Superelevation rate	e
Gage(gauge)	ga.	Symmetrical	sym.
Gyratory Mix, Asphalt	GACP	Tangent distance	T
Concrete Pavement		(tangent length)	
Headwall	hdwl.	Tangent distance (spiral curve transition)	Ts
Hexagon	hex.	Temporary benchmark	TBM
High water	HW	Temporary construction easement	TCE
Inside diameter	ID	Thread	thd.
Joint	jt.	Township	T.
Lamination	lam.	Typical	typ.
Latitude	lat.	Vehicle per hour	vph
Left	lt., Lt. or LT	Vertical point of intersection	VPI
Length of curve(simple curve)	L	West	W
Length of curve (spiral curve transition)	Lc		
Length of spiral	Ls		
Longitudinal(longitude)	long.		
Low water	LW		

NATIONAL BOUNDARY	----
STATE BOUNDARY	-----
COUNTY BOUNDARY	-----
CITY BOUNDARY	-----
TOWNSHIP or RANGE LINE	-----
SECTION LINE	-----
1/4 SECTION LINE	-----
1/16 SECTION LINE	-----
NATIONAL PARK or FOREST BOUNDARY	////
PROPERTY LINE	-----
TRAVERSE POINT (Horizontal & Vertical) Top of Triangle Points North	T-45 2,645.9
TRAVERSE POINT (Horizontal)	T-3
BRASS CAP	▲
STEEL PIN	●
HUB & TACK	○
SPOT ELEVATION	x 99.9
COORDINATE GRID TICK	+

RIGHT-OF-WAY LINE	EXISTING R/W	PROPOSED R/W
RIGHT-OF-WAY LINE with MONUMENT	○ R/W	● R/W
SECTION CORNER	FOUND 36 31 1 6	PROJECTED 36 31 1 6
1/4 SECTION CORNER	15 22	15 22
1/16 SECTION	●	○
PROPERTY CORNER	●	No Symbol
PARCEL NUMBER	No Symbol	400
EASEMENT (Permanent - Construction)	P/E	C/E
ROUTE NUMBERS	26 INTERSTATE	25 U.S. 694 STATE
SLOPE STAKE	TOP OF CUT TOE OF FILL TRANSITION	
ROADWAY, EXISTING	EOP EOG	
RAILROAD	SINGLE TRACK MULTIPLE TRACK	
TRAIL		
INTERMITTENT DRAINAGE/ SMALL CREEK		
SPRING		
LARGE CREEK/RIVER		
LAKE, POND or RESERVOIR; MARSHLAND		
PAVEMENT REMOVAL/ROADWAY OBLITERATION		AREA PATTERN
FULL DEPTH PAVEMENT		
SIDEWALK ASPHALT/CONCRETE		
MILL AND OVERLAY		
OVERLAY		
SILT FENCE		SF
DIVERSION BERM		DB
DIVERSION CHANNEL		
CHECK DAM		
RIPRAP/CULVERT RIPRAP		
BORING LOCATION	B-1	
TEST PIT	TP-1	
NORTH ARROW		N
MATERIAL SOURCE		

FENCE	
GATE with FENCE	
CATTLEGUARD	
GUARDRAIL	
MEDIAN & SIDE (CONCRETE) BARRIER	
SIGNS	POST MOUNTED PORTABLE
RETAINING WALL	
OVERHEAD(POWER POLE) UTILITIES P=Electrical for transmission line E=Electrical for distribution line T=Telephone, E&T=Joint Electrical and Telephone FO=Fibre optics	
SUPPORT POLE with ANCHOR	
TELEPHONE BOOTH or PEDESTAL	
STREET LIGHT	
UNDERGROUND UTILITIES G=gas, O=oil, P=power, SS=sanitary sewer, SD=storm drain, T=telephone, W=water E=electrical, FO=fiber optics	
BRIDGE	
PIPE CULVERT (arrow shows flow)	
PIPE CULVERT with END SECTION	
PIPE CULVERT with HEADWALL	
CULVERT with DROP INLET	
BOX CULVERT	
UNDERDRAIN	
BUILDING	
TREELINE; TREE	

BRIDGE INVENTORY PROGRAM	BIP	SELECTIVE CLEARING AND GRUBBING	
ORDINARY HIGH WATER MARK	OHWM	SELECTIVE CLEARING	
ROAD INVENTORY PROGRAM	RIP	DELINEATED STREAM BOUNDARY	
STABILIZED CONSTRUCTION EXIT		ROCKERY WALL	
LIMITS OF DISTURBANCE	LOD	ON-SITE CONCRETE WASHOUT STRUCTURE	CWS
ORDINARY HIGH WATER		SHOULDER RECONDITIONING	
FIBER ROLL			
WATER FILTRATION BAG	FB		
DIRECTION OF FLOW			
EMBANKMENT CONSTRUCTION			
PERMANENT STREAM IMPACTS			
TEMPORARY STREAM IMPACTS			
DIVERSION BERM / DIVERSION BERM FOOTPRINT	DB		

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

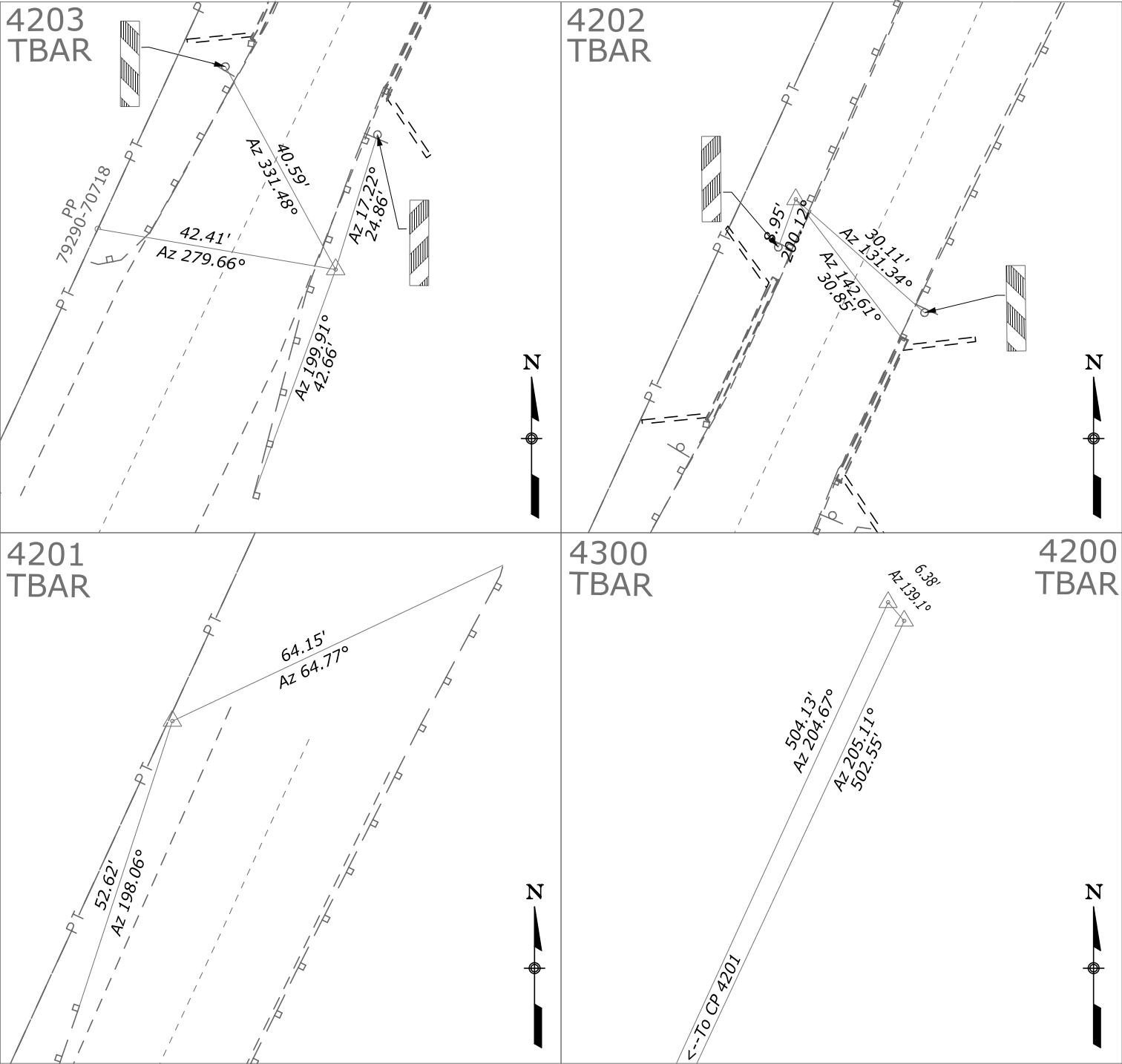
**DELAWARE WATER GAP
NATIONAL RECREATION AREA**

SYMBOLS AND ABBREVIATIONS

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	A04

NOTE:

1. Azimuth shown is based on north axis at clockwise rotation.



Coordinate System
Name: United States/State Plane 1983
Datum: NAD 1983 (Conus)
Zone: Pennsylvania North 3701
Geoid: GEOID12B (Conus)
Vertical datum: NAVD88

POINT NUMBER	NORTHING	EASTING	ELEVATION	REMARKS
4200	404615.608	2761698.778	417.294	TBAR
4201	404161.001	2761485.683	395.397	TBAR
4202	404020.203	2761429.474	396.835	TBAR
4203	403941.059	2761428.586	401.182	TBAR
4300	404618.867	2761695.955	412.587	TBAR

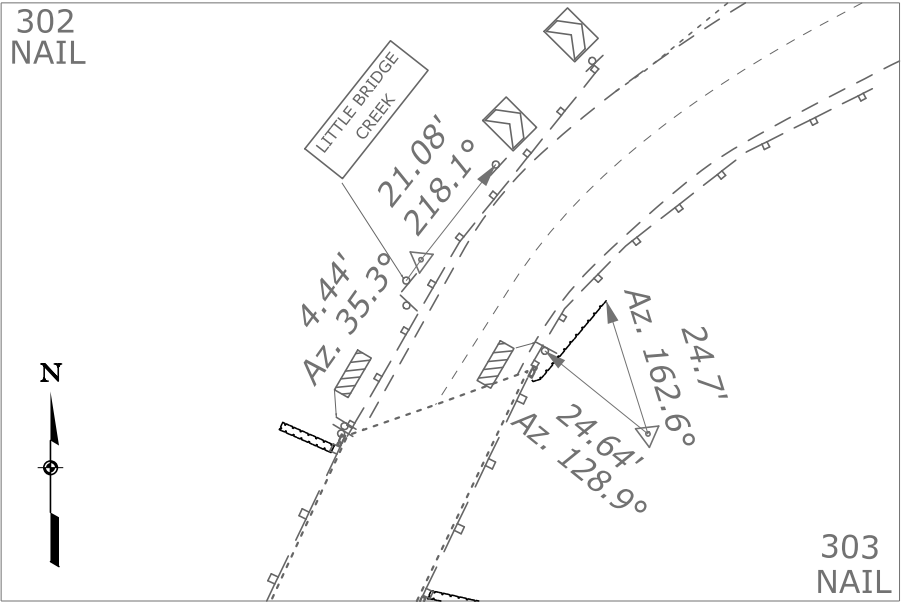
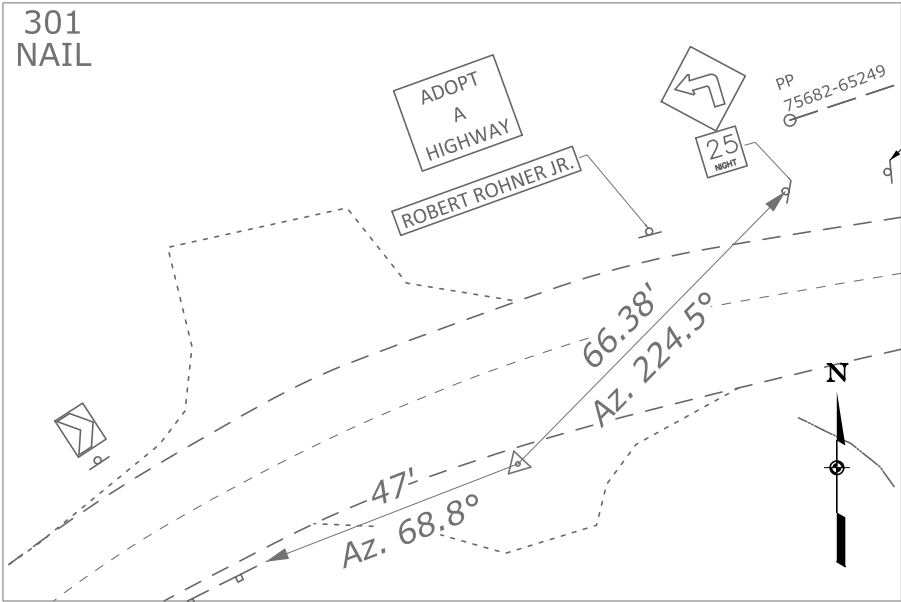
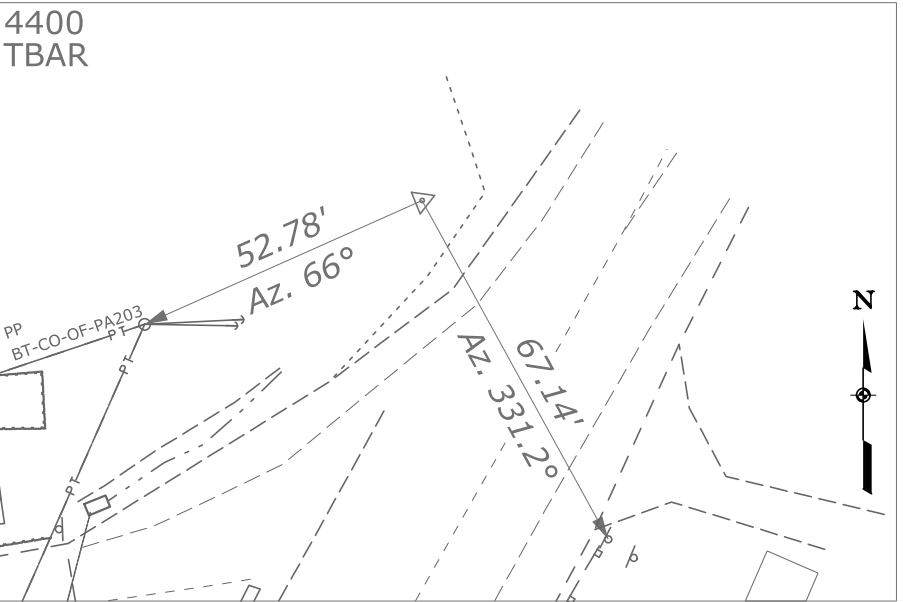
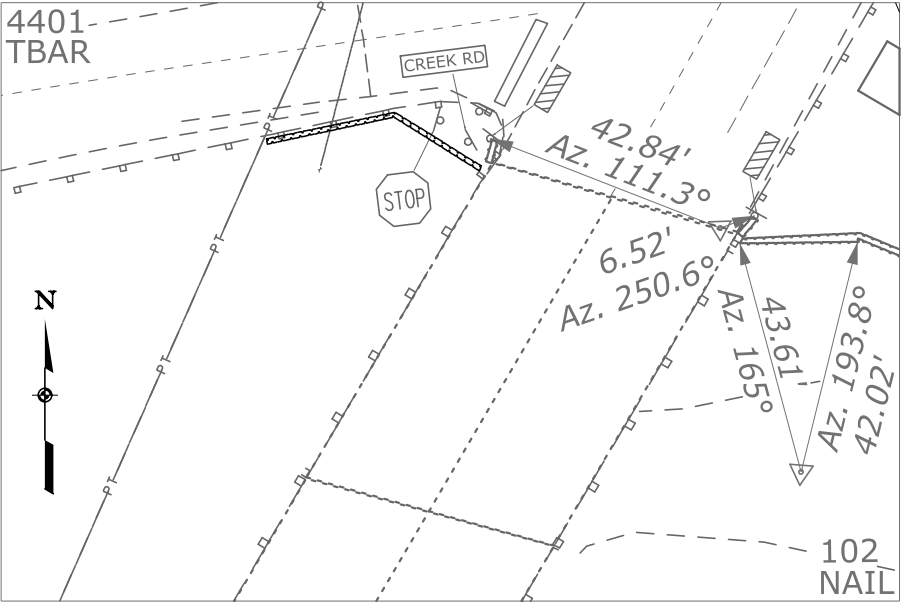
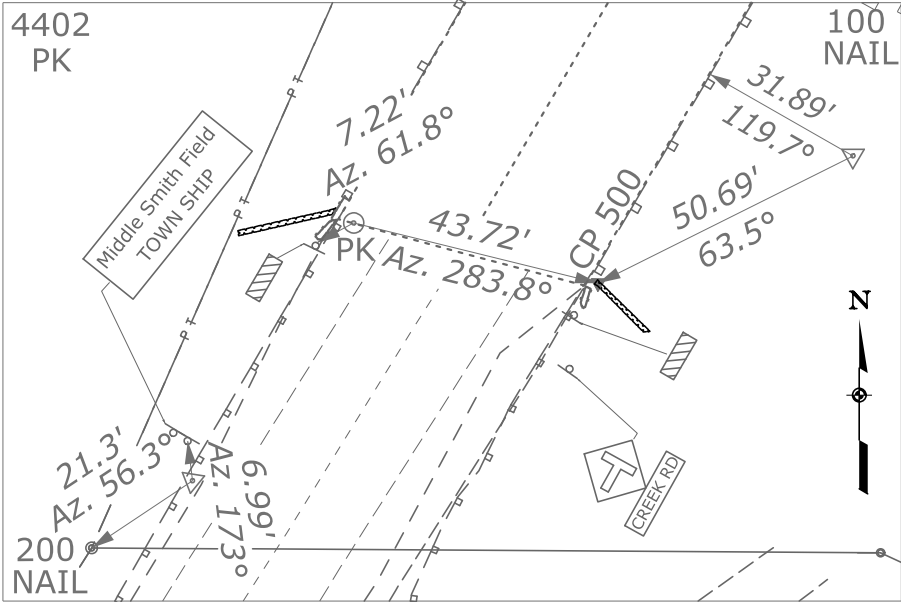
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STERLING, VIRGINIA

DELAWARE WATER GAP
NATIONAL RECREATION AREA

SURVEY INFORMATION

ADAMS CREEK BRIDGE
ROUTE 209

NO SCALE



Coordinate System Details

Coordinate System : US State Plane 1983
Zone : Pennsylvania North 3701
Hor. Datum : NAD 1983 (Conus)
Vert. Datum : NAVD 1988 (Conus)
Geoid Model : GEIOD12B (Conus)

Pt. #	Northing	Easting	Elev.	Type
100	348935.92	2725590.01	349.58	NAIL
102	349034.64	2725650.34	347.19	NAIL
200	348879.51	2725475.30	359.52	NAIL
301	349066.51	2725442.44	353.01	NAIL
302	349019.84	2725320.26	359.39	NAIL
303	348989.58	2725359.69	349.60	NAIL
500	348913.82	2725545.75	360.58	MON;BMP.D.H.ELEV
4400	349180.04	2725634.43	360.75	TBAR
4401	349077.03	2725636.27	362.08	TBAR
4402	348924.27	2725503.30	360.01	PK

NOTE:

1. Azimuth shown is based on north axis at clockwise rotation.

NO SCALE

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DELAWARE WATER GAP
NATIONAL RECREATION AREA

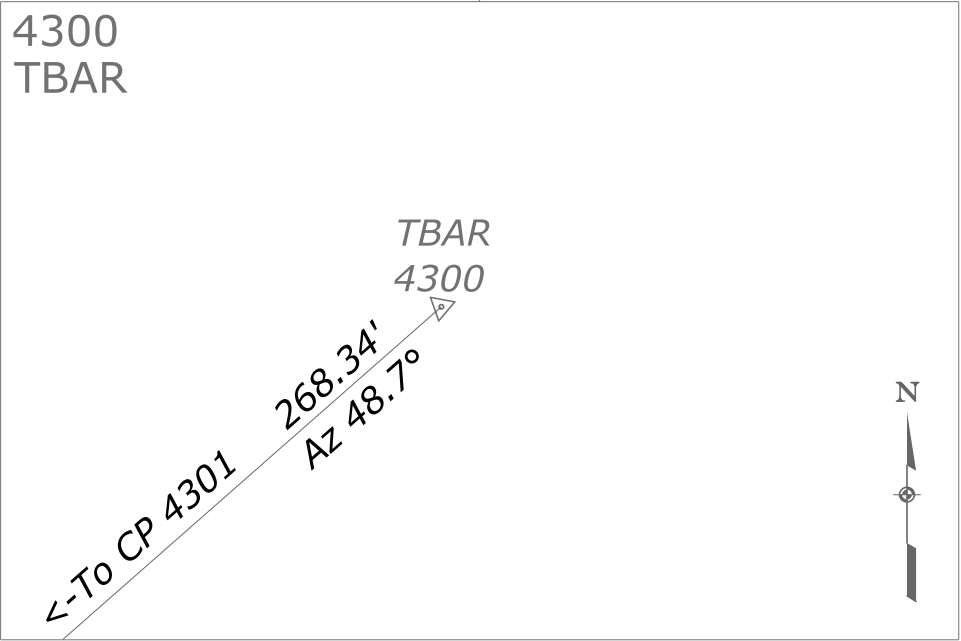
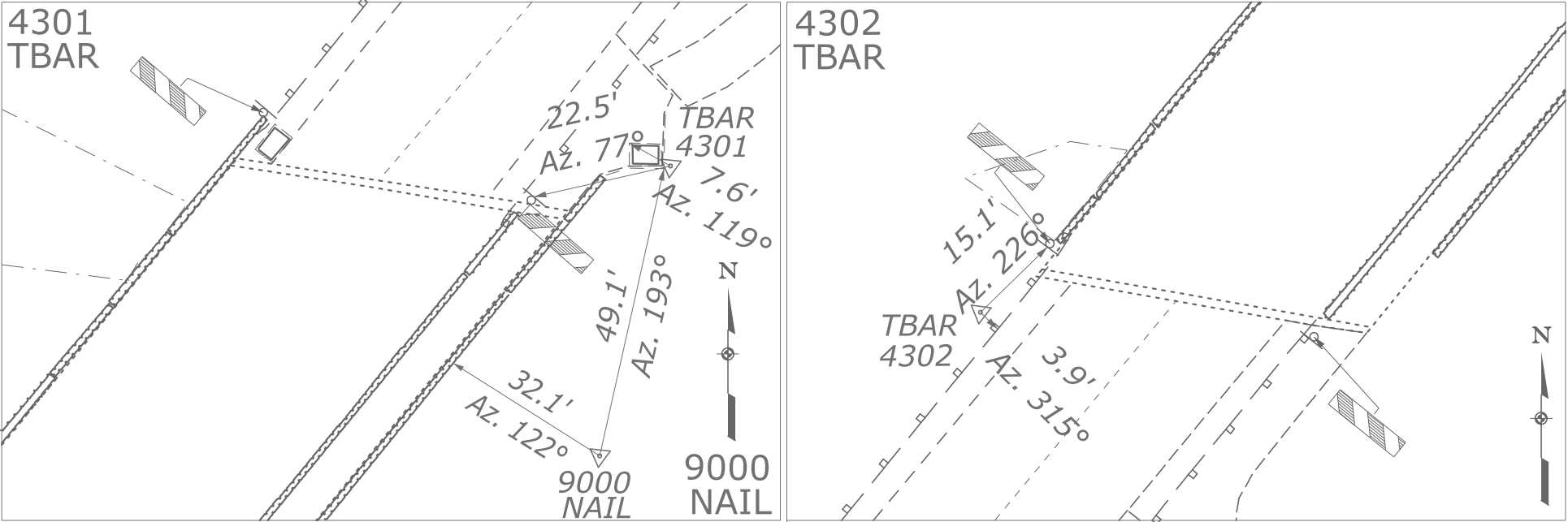
SURVEY INFORMATION

BUSHKILL CREEK BRIDGE
US ROUTE 209

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537, 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	A06

NOTE:

1. Azimuth shown is based on north axis at clockwise rotation.



Coordinate System Details

Coordinate System : US State Plane 1983
Zone : Pennsylvania North 3701
Hor. Datum : NAD 1983 (Conus)
Vert. Datum : NAVD 1988 (Conus)
Geoid Model : GEIOD12B (Conus)

Project Control Points

Pt #	Northing	Easting	Elev.	Type
4300	361806.61	2739090.66	359.46	TBAR
4301	361629.55	2738889.12	365.56	TBAR
4302	361554.49	2738752.90	366.11	TBAR
9000	361583.05	2738877.77	352.64	NAIL

NO SCALE

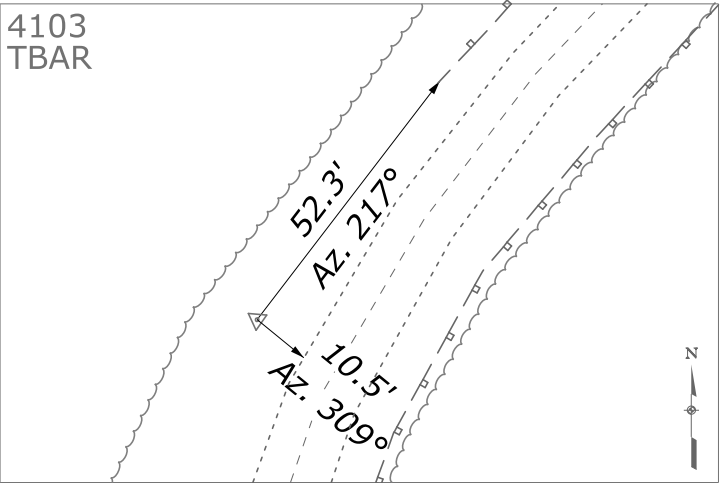
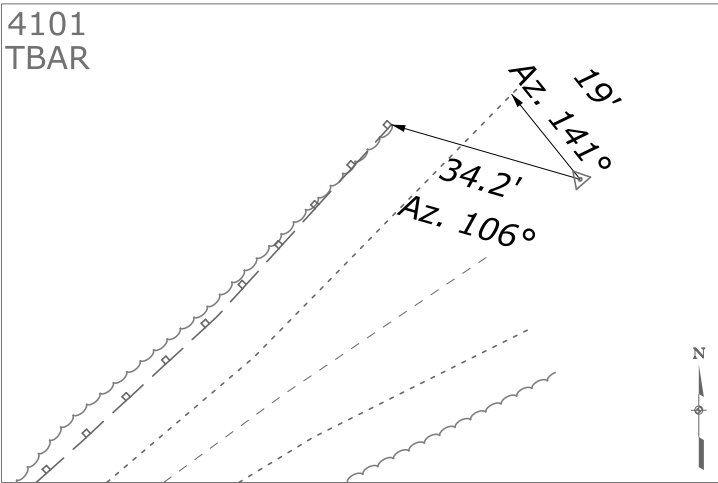
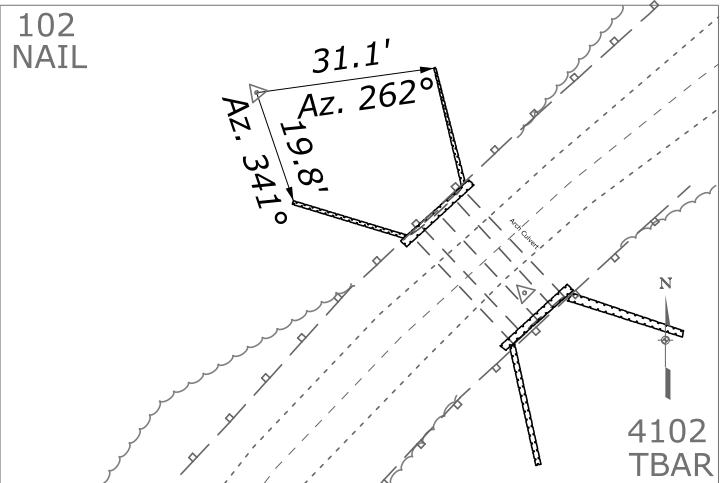
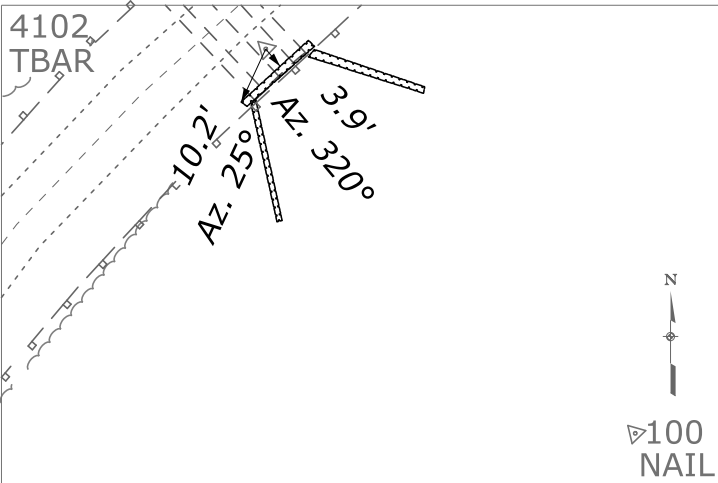
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STERLING, VIRGINIA

DELAWARE WATER GAP
NATIONAL RECREATION AREA

SURVEY INFORMATION

TOMS CREEK BRIDGE
US ROUTE 209

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537, 222539, 222540	620, 140556	PA	NP-DEWA 14(18), 121(1)	A07



Coordinate System Details

Coordinate System : US State Plane 1983
Zone : Pennsylvania North 3701
Hor. Datum : NAD 1983 (Conus)
Vert. Datum : NAVD 1988 (Conus)
Geoid Model : GEIOD12B (Conus)

Project Control Points

Pt #	Northing	Easting	Elev.	Type
100	415670.99	2766136.55	432.76	NAIL
102	415772.51	2766025.83	432.79	NAIL
4101	415831.64	2766180.44	450.03	TBAR
4102	415737.73	2766072.36	444.21	TBAR
4103	415664.61	2765980.78	448.01	TBAR

NOTE:

1. Azimuth shown is based on north axis at clockwise rotation.

NO SCALE

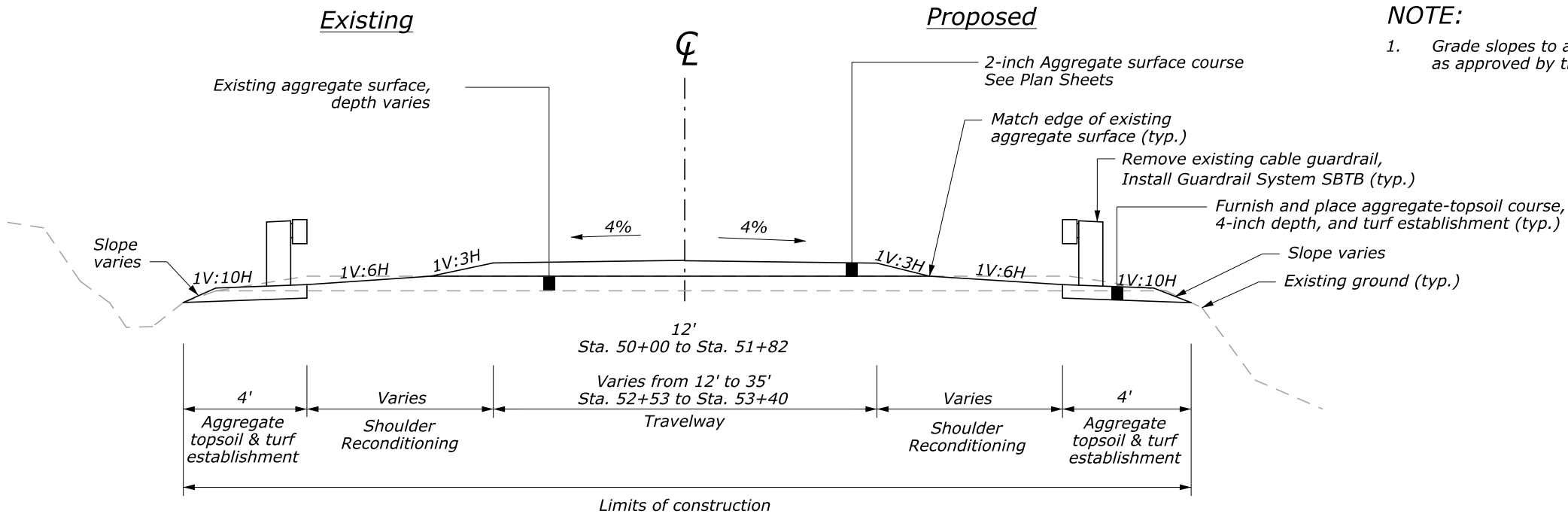
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STERLING, VIRGINIA

DELAWARE WATER GAP
NATIONAL RECREATION AREA

SURVEY INFORMATION

CONASHAUGH CREEK CULVERT
ZIMMERMANN ROAD

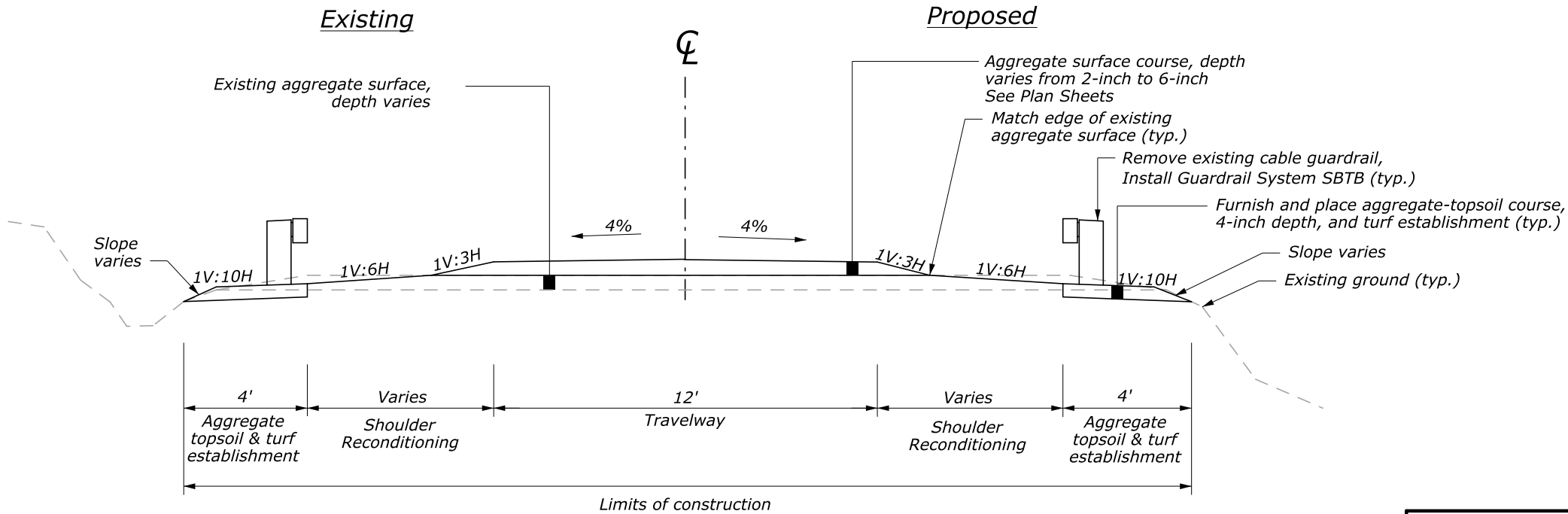
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NOTE:

1. Grade slopes to achieve positive drainage as approved by the CO.

**Conashaugh Creek Culvert
Zimmeramn Road
Sta. 50+00 to Sta. 51+82, Sta. 52+53 to Sta. 53+40**



**Conashaugh Creek Culvert (Culvert Approaches)
Zimmermann Road
Sta. 51+82 to Sta. 52+07, Sta. 52+23 to Sta. 52+53**

U.S. DEPARTMENT OF TRANSPORTATION
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**DELAWARE WATER GAP
NATIONAL RECREATION AREA**

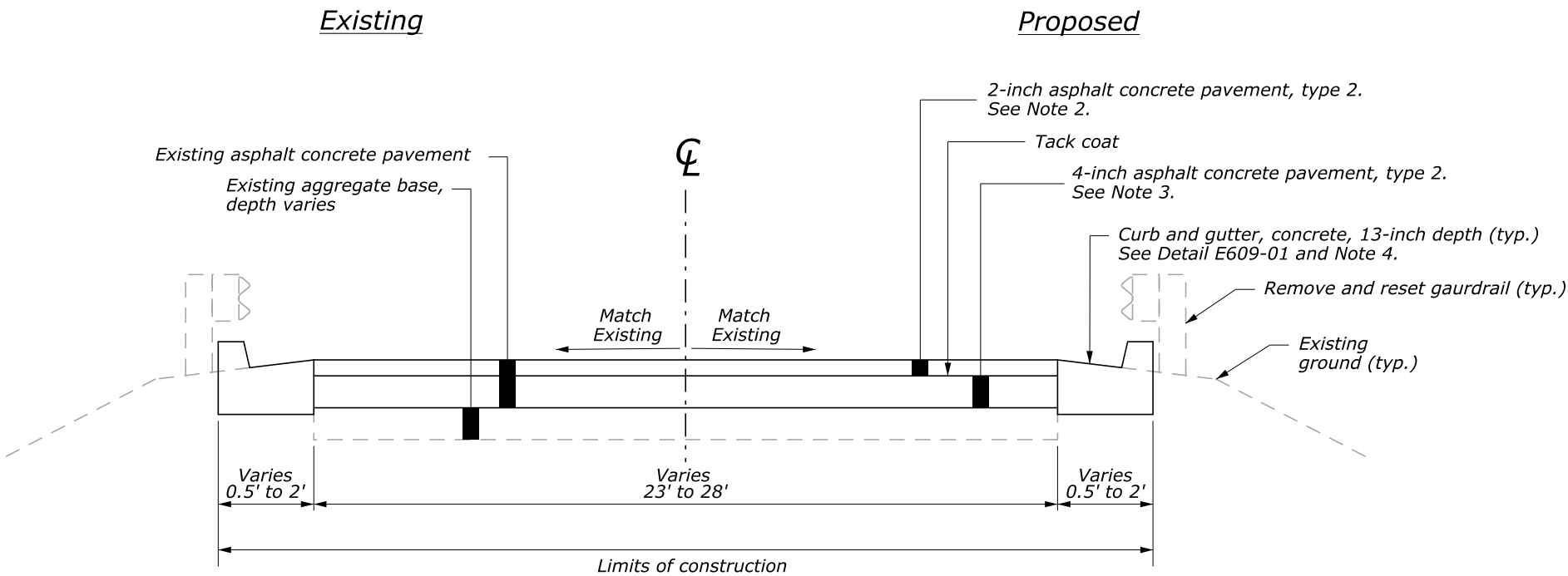
TYPICAL SECTIONS

NO SCALE

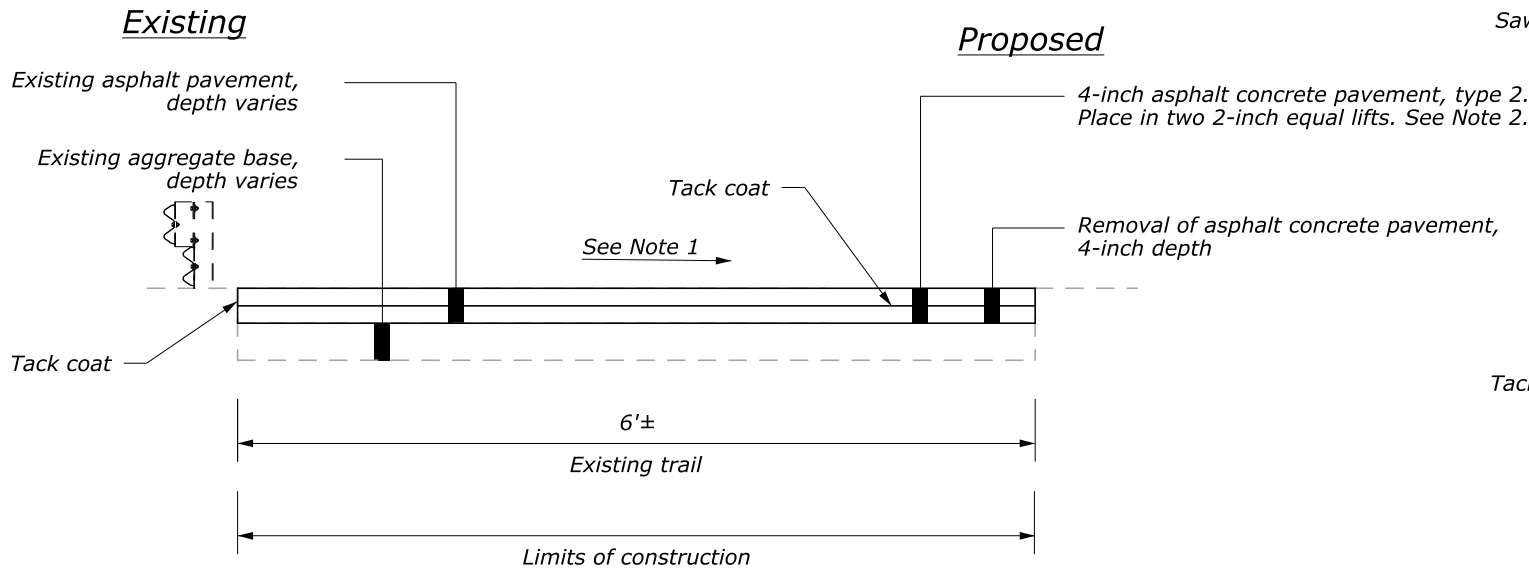
PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
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NOTES:

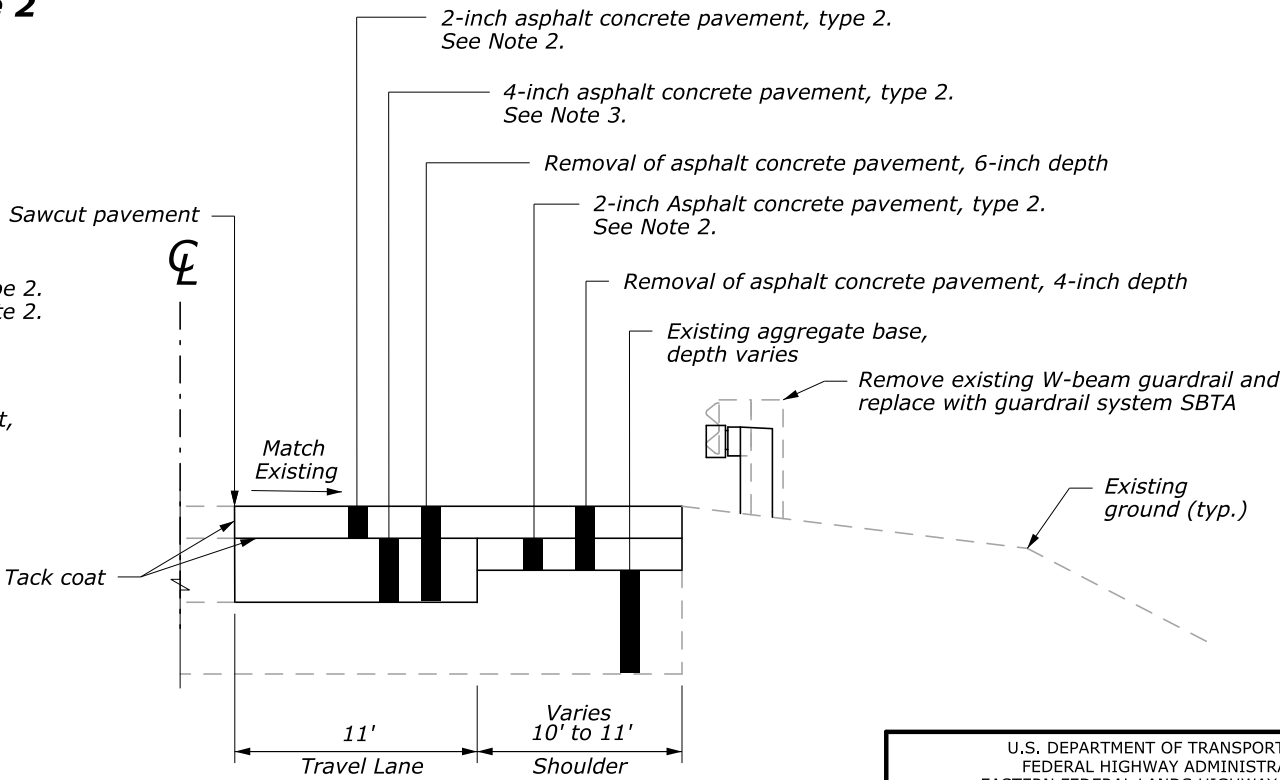
1. Grade slopes to achieve positive drainage as approved by the CO.
2. Use ½-inch nominal maximum size aggregate, 0.3 to <3 million ESAL, PG 64-22
3. Use ¾-inch nominal maximum size aggregate, 0.3 to <3 million ESAL, PG 64-22
4. Place curb below the face of the guardrail.



**Adams Creek Bridge Approach
U.S. Route 209
Asphalt Concrete Pavement Patch, Type 2**



**Toms Creek Trail
U.S. Route 209
Asphalt Concrete Pavement Patch, Type 3**



**Bushkill Creek Bridge Northern Approach
U.S. Route 209
Asphalt Concrete Pavement Patch, Type 2**

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

DELAWARE WATER GAP
NATIONAL RECREATION AREA

TYPICAL SECTIONS

NO SCALE

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PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537, 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	C01

Line Item No.	Pay Item Number	Pay Item Description	Unit	Estimated Quantities
				Bid Schedule
A0100	15101-0000	MOBILIZATION	LPSM	ALL
A0120	15201-0000	CONSTRUCTION SURVEY AND STAKING	LPSM	ALL
A0140	15401-0000	CONTRACTOR TESTING	LPSM	ALL
A0160	15401-0000	CONTRACTOR TESTING (ARCHAEOLOGICAL MONITORING)	LPSM	ALL
A0180	15702-4000	SOIL EROSION CONTROL, FILTER BAG	LPSM	ALL
A0200	15705-1400	SOIL EROSION CONTROL, FIBER ROLL	LNFT	1,600
A0220	15705-1800	SOIL EROSION CONTROL, TEMPORARY DIVERSION BERM	LNFT	1,000
A0240	15706-1000	SOIL EROSION CONTROL, INLET PROTECTION	EACH	1
A0260	15706-1600	SOIL EROSION CONTROL, STABILIZED CONSTRUCTION EXIT	EACH	3
A0280	15706-2300	SOIL EROSION CONTROL, ON-SITE CONCRETE WASHOUT STRUCTURE	EACH	1
A0300	15720-0000	STORM WATER POLLUTION PREVENTION PLAN	LPSM	ALL
A0320	20103-0000	CLEARING AND GRUBBING	SQYD	2,400
A0340	20202-0000	SELECTIVE CLEARING	SQYD	20
A0360	20206-0000	SELECTIVE CLEARING AND GRUBBING	SQYD	1,300
A0380	20301-2300	REMOVAL OF SIGN/MARKER	EACH	4
A0400	20302-1200	REMOVAL OF GUARDRAIL	LNFT	680
A0420	20304-9000	REMOVAL OF STREAM DEBRIS	LPSM	ALL
A0440	20401-0000	ROADWAY EXCAVATION (GRAVEL BAR REMOVAL)	CUYD	3,200
A0460	20420-0000	EMBANKMENT CONSTRUCTION	CUYD	55
A0480	20466-0000	CONSERVE AND STOCKPILE TOPSOIL	CUYD	10
A0500	25102-0600	PLACED RIPRAP, METHOD A, CLASS 6	TON	1,250
A0520	25210-0000	ROCKERY (WALL)	SQFT	80
A0540	30110-0000	AGGREGATE SURFACE COURSE	TON	75
A0560	30303-4000	SHOULDER RECONDITIONING	SQYD	600
A0580	31302-0400	AGGREGATE-TOPSOIL COURSE, 4-INCH DEPTH	SQYD	840
A0600	41801-2000	ASPHALT CONCRETE PAVEMENT PATCH, TYPE 2	SQYD	260
A0620	41801-3000	ASPHALT CONCRETE PAVEMENT PATCH, TYPE 3	SQYD	30
A0640	55201-1200	STRUCTURAL CONCRETE, CLASS S (SEAL)	CUYD	5
A0660	55220-0000	REPAIR CONCRETE	SQYD	120
A0680	55224-0000	SEAL CONCRETE SURFACE	SQYD	560
A0700	55225-0000	CLEAN AND RESEAL JOINTS	LNFT	510
A0720	55235-0000	EXPANSION JOINTS (STRIP SEAL)	LNFT	100
A0740	55506-0000	MISCELLANEOUS STEEL (ANCHOR BOLT WASHER)	EACH	28
A0760	55601-1000	BRIDGE RAILING, STEEL, ONE RAIL	LNFT	190
A0780	60706-0000	CLEANING DRAINAGE STRUCTURE (SCUPPER)	EACH	4
A0800	60902-1100	CURB AND GUTTER, CONCRETE, 13-INCH DEPTH	LNFT	110
A0820	61701-1200	GUARDRAIL SYSTEM G4, TYPE 2, CLASS A STEEL POSTS	LNFT	70
A0840	61701-3900	GUARDRAIL SYSTEM SBTA	LNFT	20
A0860	61701-4000	GUARDRAIL SYSTEM SBTB	LNFT	440
A0880	61702-0100	TERMINAL SECTION, TYPE SBT-BAT	EACH	1

Line Item No.	Pay Item Number	Pay Item Description	Unit	Estimated Quantities
				Bid Schedule
A0900	61702-0510	TERMINAL SECTION, TYPE SBT-FAT	EACH	5
A0920	61707-1000	STRUCTURE TRANSITION RAILING, G4 SYSTEM	LNFT	25
A0940	61707-2000	STRUCTURE TRANSITION RAILING, SBT SYSTEM	LNFT	65
A0960	61708-1000	REMOVE AND RESET, GUARDRAIL	LNFT	160
A0980	62405-0300	PLACING CONSERVED TOPSOIL, 4-INCH DEPTH	SQYD	30
A1000	62502-0000	TURF ESTABLISHMENT	SQYD	2,150
A1020	62630-0300	PLANTINGS, SEEDLINGS, CONTAINER GROWN	EACH	245
A1040	62901-0600	ROLLED EROSION CONTROL PRODUCT, TYPE 2.B	SQYD	2,150
A1060	63304-0900	SIGNS, ALUMINUM PANELS, TYPE 3 SHEETING	SQFT	30
A1080	63308-3000	OBJECT MARKER, TYPE 3	EACH	8
A1100	63309-0900	DELINEATOR, TYPE FLEXIBLE	EACH	18
A1120	63316-1000	REMOVE AND RESET SIGN	EACH	1
A1140	63316-3000	REMOVE AND RESET OBJECT MARKER	EACH	3
A1160	63401-0700	PAVEMENT MARKINGS, TYPE D, SOLID	LNFT	2,100
A1180	63403-0400	PAVEMENT MARKINGS, TYPE D	SQFT	110
A1200	63502-1300	TEMPORARY TRAFFIC CONTROL, DRUM	EACH	30
A1220	63502-3100	TEMPORARY TRAFFIC CONTROL, TRAFFIC SIGNAL SYSTEM	EACH	1
A1240	63503-0300	TEMPORARY TRAFFIC CONTROL, BARRICADE TYPE 3	LNFT	140
A1260	63503-0700	TEMPORARY TRAFFIC CONTROL, PAVEMENT MARKINGS (STOP LINES)	LNFT	80
A1280	63504-1000	TEMPORARY TRAFFIC CONTROL, CONSTRUCTION SIGN	SQFT	770
A1300	63507-0800	TEMPORARY TRAFFIC CONTROL, PORTABLE CHANGEABLE MESSAGE SIGN	DAY	21
A1320	63701-0000	FIELD OFFICE	EACH	1

U.S. DEPARTMENT OF TRANSPORTATION
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EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

DELAWARE WATER GAP
NATIONAL RECREATION AREA

TABULATION OF QUANTITIES

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PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537, 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	C02

SOIL EROSION CONTROL SUMMARY

SHEET	STRUCTURE NO.	Pay Item 15702-4000 Soil Erosion Control, Filter Bag Lpsm	Pay Item 15705-1400 Soil Erosion Control, Fiber Roll Lnft	Pay Item 15705-1800 Soil Erosion Temporary Diversio n Berm Lnft	Pay Item 15706-1000 Soil Erosion Control, Inlet Protection Each	Pay Item 15706-1600 Soil Erosion Control, Stabilized Construction Exit Each	Pay Item 15706-2300 Soil Erosion Control, On- Site Concrete Washout Structure Each	Pay Item 62901-0600 Rolled Erosion Control Product, Type 2.B Sqyd	REMARKS
M04	4320-009P	1	235	420		1			Bushkill Creek Bridge Phase 1
M05	4320-009P	1	135	301		1			Bushkill Creek Bridge Phase 2
M02	4320-013P	1	295	75		1			Adams Creek Bridge Phase 1
M03	4320-013P	1	40	82					Adams Creek Bridge Phase 2
M07	4320-022P		670						Conashaugh Culvert
M06	4320-049P		104						Toms Creek Bridge
M08	4320-013P						1		Adams Creek Staging Area
D03	4320-049P				1				Toms Creek Bridge
M18	4320-013P							108	Adams Creek Bridge Phase 1
M19	4320-013P							280	Adams Creek Bridge Phase 2
M20	4320-009P							737	Bushkill Creek Bridge Phase 1
M21	4320-009P							186	Bushkill Creek Bridge Phase 2
M22	4320-049P							32	Toms Creek Bridge
M23	4320-022P							617	Conashaugh Culvert
Subtotal This Sheet		1	1479	878	1	3	1	1960	
Rounded Total		1	1600	1000	1	3	1	2150	

CLEARING AND REMOVALS SUMMARY

SHEET	STRUCTURE NO.	SIDE	Pay Item 20103-0000 Clearing and Grubbing Sqyd	Pay Item 20202-0000 Selective Clearing Sqyd	Pay Item 20206-0000 Selective Clearing and Grubbing Sqyd	Pay Item 20302-1200 Removal of Guradrail Lnft	Pay Item 20304-9000 Removal of Stream Debris Lpsm	REMARKS
D02	4320-009P	RT LT	2178			125	1	Bushkill Creek Bridge
M04/M05	4320-009P	RT LT			864			Bushkill Creek Bridge
D01	4320-013P	RT LT		16	30			Adams Creek Bridge
M02/M03	4320-013P	RT LT			307			Adams Creek Bridge
D04	4320-022P	RT LT				211 192		Conashaugh Culvert
D03	4320-049P	RT LT				38 46		Toms Creek Bridge
Subtotal This Sheet			2178	16	1201	612	1	
Rounded Total			2400	20	1300	680	1	

DRAINAGE SUMMARY

SHEET	STRUCTURE NO.	SIDE	Pay Item 60902-1100 Curb and Gutter, Concrete, 13- Inch Depth Lnft	REMARKS
D01	4320-013P	RT LT	50 50	Adams Creek Bridge
Subtotal This Sheet			100	
Rounded Total			110	

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NATIONAL RECREATION AREA

SUMMARIES AND SCHEDULES

Sheet 1 of 4

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PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537, 222539, 222540	620, 140556	PA	NP-DEWA 14(18), 121(1)	C03

EARTHWORK SUMMARY

SHEET	STRUCTURE NO.	Pay Item 20401-0000 Roadway Excavation (Gravel Bar Removal) Cuyd	Pay Item 20420-0000 Embankment Construction Cuyd	Pay Item 20466-0000 Conserve and Stockpile Topsoil Cuyd	Pay Item 30110-0000 Aggregate Surface Course Ton	Pay Item 30303-4000 Shoulder Reconditioning Sqyd	Pay Item 31302-0400 Aggregate- Topsoil Course, 4- Inch Depth Sqyd	Pay Item 41801-2000 Asphalt Concrete Pavement Patch, Type 2 Sqyd	Pay Item 41801-3000 Asphalt Concrete Pavement Patch, Type 3 Sqyd	Pay Item 62405-0300 Placing Conserved Topsoil, 4- Inch Depth Sqyd	Pay Item 62502-0000 Turf Establishment Sqyd	Pay Item 62511-1000 Seeding, Dry Method Sqyd	Pay Item 62630-0300 Plantings, Seedlings, Container Grown Each	REMARKS
D02	4320-009P	2904					54	93			54			Bushkill Creek Bridge
M20	4320-009P											737	176	Bushkill Creek Bridge Phase 1
M21												186	21	Bushkill Creek Bridge Phase 2
D01	4320-013P		48	8		29	62	140		24	44			Adams Creek Bridge
M18	4320-013P											108	12	Adams Creek Bridge Phase 1
M19												280	36	Adams Creek Bridge Phase 2
D04	4320-022P				68	510	617				617			Conashaugh Culvert
M23												617		Conashaugh Culvert
D03	4320-049P						25		25		25			Toms Creek Bridge
M22												32		Toms Creek Bridge
Subtotal this Sheet		2904	48	8	68	539	758	233	25	24	740	1960	245	
Rounded Total		3200	55	10	75	600	840	260	30	30	820	2,150	245	

GUARDRAIL SUMMARY

SHEET	STRUCTURE NO.	SIDE	Pay Item 61701-1200 Guardrail System G4, Type 2, Class A Steel Posts Lnft	Pay Item 61701-3900 Guardrail System SBTA Lnft	Pay Item 61701-4000 Guardrail System SBTB Lnft	Pay Item 61702-0100 Terminal Section, Type SBT- BAT Each	Pay Item 61702-0510 Terminal Section, Type SBT- FAT Each	Pay Item 61707-1000 Structure Transition Railing, G4 System Lnft	Pay Item 61707-2000 Structure Transition Railing, SBT System Lnft	Pay Item 61708-1000 Remove And Reset, Guardrail Lnft	REMARKS
D02	4320-009P	RT LT		15			2		60		Bushkill Creek Bridge
D01	4320-013P	RT LT								95 50	Adams Creek Bridge
D04	4320-022P	RT LT			211 192	1 2	1 2				Conashaugh Culvert
D03	4320-049P	RT LT	38 25					21			Toms Creek Bridge
Subtotal This Sheet			63	15	403	1	5	21	60	145	
Rounded Total			70	20	440	1	5	25	65	160	

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PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537, 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	C04

NOTE:
1. Furnish wood posts for all permanent signs.

PERMANENT SIGNS

SHEET	LOCATION	MUTCD NO.	PROPOSED SIGN TEXT	Pay Item 20301-2300	Pay Item 63308-3000	Pay Item 63309-0900	Pay Item 63316-1000	Pay Item 63316-3000	PANEL SIZE			COLOR COMBINATION	QUANTITY	Pay Item 63304-0900 Signs, Aluminum Panels, Type 3 Sheeting Sqft	REMARKS
	STRUCTURE NO.			Removal of Sign/Marker	Object Markers, Type 3	Delineator, Type Flexible	Remove and Reset Sign	Remove And Reset Object Marker	WIDTH	HEIGHT	AREA				
				Each	Each	Each	Each	Each	(in)	(in)	(Sqft)				
D02	4320-009P	W11-1	Bicycle						30	30	6.25	Black on Yellow	1	6	
D02	4320-009P	W16-1P	Share the Road						18	24	3.00	Black on Yellow	1	3	
D02	4320-009P					16	1	2							Bushkill Creek Bridge
D01	4320-013P	W5-2	Narrow Bridge						36	36	9.00	Black on Yellow	2	18	
D04	4320-022P				4										Conashaugh Culvert
D03	4320-049P			4	4										Toms Creek Bridge
D01	4320-013P							1							Adams Creek Bridge
Subtotal This Sheet				4	8	16	1	3			18.3		4	27	
Rounded Total				4	8	18	1	3			*		*	30	

NOTE: 1. Construct and erect all signs in accordance with the "Manual on Uniform Traffic Control Devices" (MUTCD), latest edition. * For information only

PAVEMENT STRIPING SUMMARY

SHEET	STRUCTURE NO.	Pay Item 63401-0700		Pay Item 63403-0400	REMARKS
		Pavement Markings, Type D, Solid		Pavement Markings, Type D	
		Lnft		Sqft	
		White	Yellow		
P02	4320-009P	1410	39	96	Bushkill Creek Bridge
P01	4320-013P	216	216		Adams Creek Bridge
		1626	255		
Subtotal This Sheet		1881		96	
Rounded Total		2100		110	

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SUMMARIES AND SCHEDULES

Sheet 3 of 4

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PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	C05

CONSTRUCTION SIGNS

SHEET	MUTCD NO.	SIGN TEXT	PANEL SIZE			COLOR COMBINATION	QUANTITY	Pay Item	Pay Item	Pay Item	Pay Item	Pay Item	Pay Item	REMARKS
			63502-1300	63502-3100	63503-0300			63503-0700	63504-1000	63507-0800				
			Temp. Traffic Control, Drum	Temp. Traffic Control, Traffic Signal System	Temp. Traffic Control, Barricade Type 3			Temp. Traffic Control, Pavement Markings (Stop Lines)	Temp. Traffic Control, Construction Signs	Temp. Traffic Control, Portable Changeable Message Sign				
			Each	Each	Lnft			Lnft	Sqft	Day				
N01, N07, S26	W20-1	Road Work (with distance)	36	36	9.00	Black on Orange	4					36		
N02-N07, S26	W20-3	Road Closed (with distance)	36	36	9.00	Black on Orange	8					72		
N01, S26	W20-4	One Lane Road (with distance)	36	36	9.00	Black on Orange	2					18		
N01, S26	W3-3	Traffic Signal	36	36	9.00	Black on Orange	2					18		
N01, S26	R10-6	Stop Here on Red	24	36	6.00	Black on White	2					12		
N01-N07	G20-2	End Road Work	36	18	4.50	Black on Orange	6					27		
N02, N07	R11-2	Road Closed	48	30	10.00	Black on White	4					40		
N07	W16-8p	Zimmermann Road	30	8	1.67	Black on Orange	4					7		
N03-N05, N07	R11-3a	Road Closed X Miles Ahead	60	30	12.50	Black on White	4					50		
N03-N05	M4-10	Detour	48	18	6.00	Black on Orange	1					6		
N03-N05	W20-2	Detour (with distance)	36	36	9.00	Black on Orange	1					9		
N03-N05	M4-8	Detour	24	12	2.00	Black on Orange	37					74		
N03-N05	M3-1	North	24	12	2.00	Black on White	14					28		
N03-N05	M3-3	South	24	12	2.00	Black on White	23					46		
N03-N05	M1-4	209	30	24	5.00	Black on White	37					185		
N03-N05	M5-1	Advance Turn Arrow, Left	21	15	2.19	Black on White	3					7		
N03-N05	M5-1	Advance Turn Arrow, Right	21	15	2.19	Black on White	4					9		
N03-N05	M6-1	Left/Right Arrow	21	15	2.19	Black on White	13					28		
N03-N05	M6-3	Straight Arrow	21	15	2.19	Black on White	12					26		
N06	R9-9 (Mod)	Trail Closed	24	12	2.00	Black on White	2					4		
N02-N05										70			21	Adams Creek Closure
N07										30				Conashaugh Closure
M02-M05										10				Stabilized Construction Exits
N01, S26								30	1		72			All Single Lane Closures
N06										16				Toms Creek Trail Closure
Subtotal this Sheet					107		183	30	1	126	72	702	21	
Rounded Total					*		*	30	1	140	80	770	21	

NOTES:

1. Construct and erect all signs in accordance with the "Manual on Uniform Traffic Control Devices" (MUTCD), latest edition.

* For information only

NOTE:

1. Deliver construction signs to NPS maintenance site at the end of project.

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SUMMARIES AND SCHEDULES

Sheet 4 of 4

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537, 222539, 222540	620, 140556	PA	NP-DEWA 14(18), 121(1)	D01

NOTES:

1. See Permanent Striping Plans for striping and sign placement.
2. Transition curb height from 6 inches to 0 inches at curb ends located away from the bridge. Match face of curbs with face of bridge railings at curb ends towards the bridge. Place curb below the face of the guardrail.
3. Grade approach shoulders for positive drainage as directed by the CO so that storm water sheet-flows before getting to the bridge.
4. See Erosion & Sediment Control Plans for stream access locations.
5. See Temporary Traffic Control Plans for road closure detour.
6. Contact First Energy/MetEd if the OSHA-mandated radius will be encroached.
7. See Landscape & Seeding Plans for turf establishment locations and quantities.

Remove and reset object marker.

Asphalt Pavement Full Depth Patch, Type 2, 87 sqyd. Place curb and gutter, concrete, 13-inch depth, 30 lft each side at edges of pavement. Match existing edges of pavement. See Typical Sections and Note 2.

Remove and reset guardrail, 30 lft.

Furnish & place aggregate-topsoil course, 4-inch depth, according to Section 313 following curb installation, 7 sqyd. See Note 7.

See Note 6

Begin Work

N 403,909.32
E 2,761,393.93

Perform shoulder reconditioning, 29 sqyd. See Note 3.

Remove and reset guardrail, 75 lft.

Furnish & place aggregate-topsoil course, 4-inch depth, according to Section 313 following shoulder reconditioning, 47 sqyd. See Note 7.

Perform selective clearing, 16 sqyd.

Conserve and stockpile topsoil according to Subsection 204.05, 8 cuyd. Furnish & place conserved topsoil, 4-inch depth, according to Section 624 and Section A-A following embankment work, 24 sqyd. See Note 7.

See Bridge Plans for Bridge Repairs.

Furnish & place aggregate-topsoil course, 4-inch depth, according to Section 313 following curb installation, 4 sqyd. See Note 7.

Remove and reset guardrail, 20 lft.

Asphalt Pavement Full Depth Patch, Type 2, 53 sqyd. Place curb and gutter, concrete, 13-inch depth, 20 lft each side at edges of pavement. Match existing edges of pavement. See Typical Sections and Note 2.

Furnish & place aggregate-topsoil course, 4-inch depth, according to Section 313 following curb installation, 4 sqyd. See Note 7.

Remove and reset guardrail, 20 lft.

Install rockery wall. See Bridge Plans and Section A-A.

Perform embankment construction, 48 cuyd, and selective clearing and grubbing, 30 sqyd.

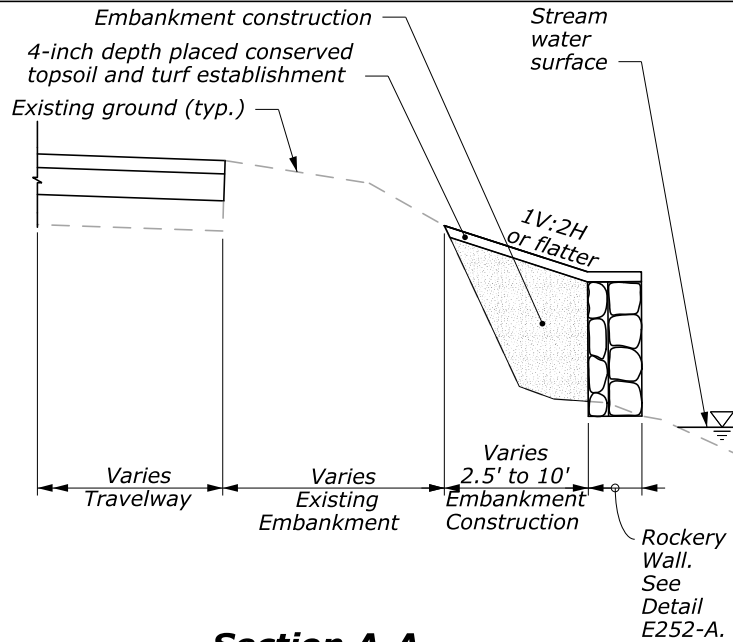
OHWM Line (typ.)
Elev. 385.20'

End Work

N 404,138.87
E 2,761,501.05

Existing edge of pavement. (typ.)

U.S. Route 209



Section A-A
(NOT TO SCALE)

0 10' 20'
Scale in Feet

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DELAWARE WATER GAP
NATIONAL RECREATION AREA

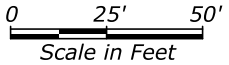
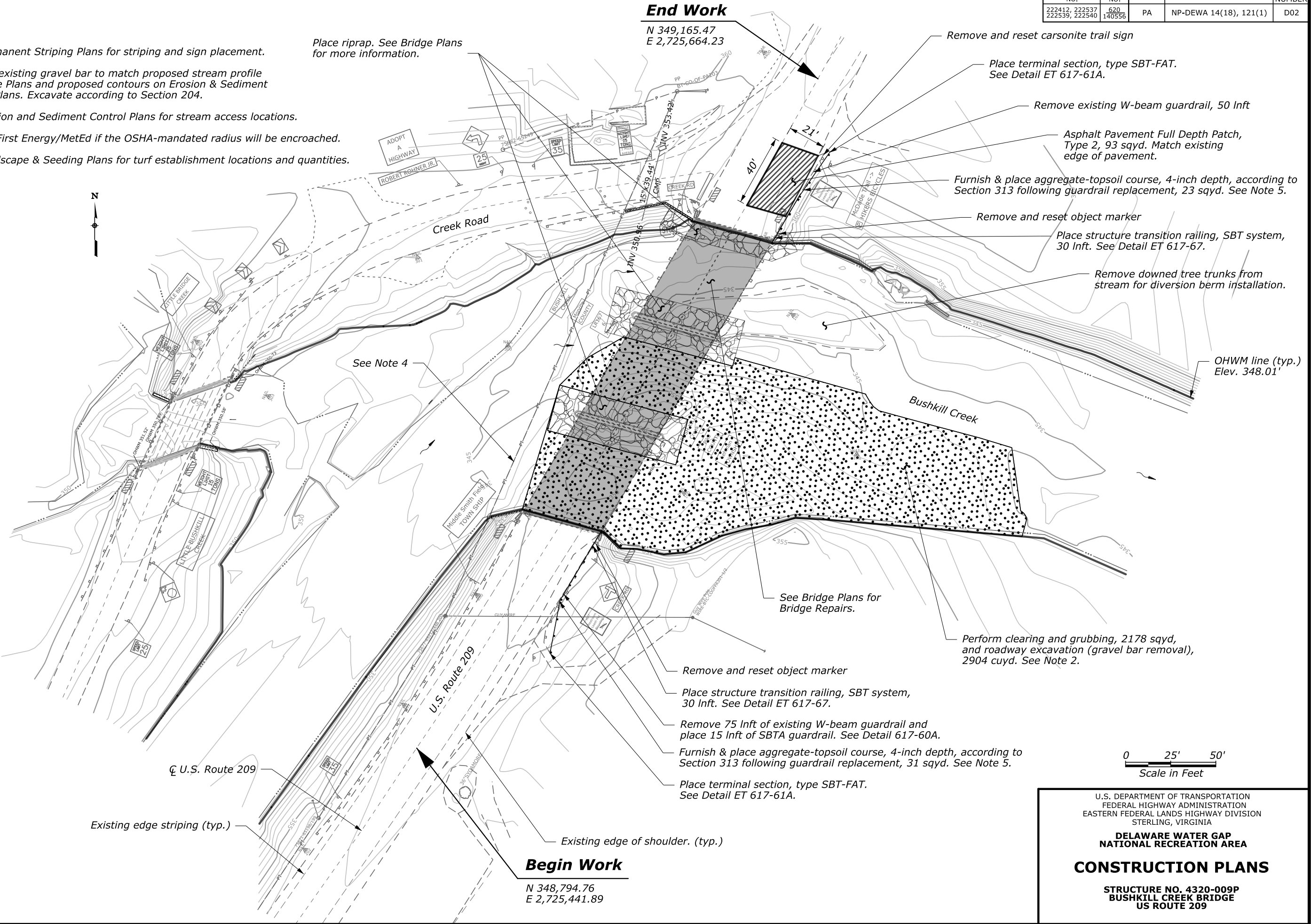
CONSTRUCTION PLANS

STRUCTURE NO. 4320-013P
ADAMS CREEK BRIDGE
US ROUTE 209

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537, 222539, 222540	620, 140556	PA	NP-DEWA 14(18), 121(1)	D02

NOTES:

1. See Permanent Striping Plans for striping and sign placement.
2. Remove existing gravel bar to match proposed stream profile on Bridge Plans and proposed contours on Erosion & Sediment Control Plans. Excavate according to Section 204.
3. See Erosion and Sediment Control Plans for stream access locations.
4. Contact First Energy/MetEd if the OSHA-mandated radius will be encroached.
5. See Landscape & Seeding Plans for turf establishment locations and quantities.



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**DELAWARE WATER GAP
NATIONAL RECREATION AREA**

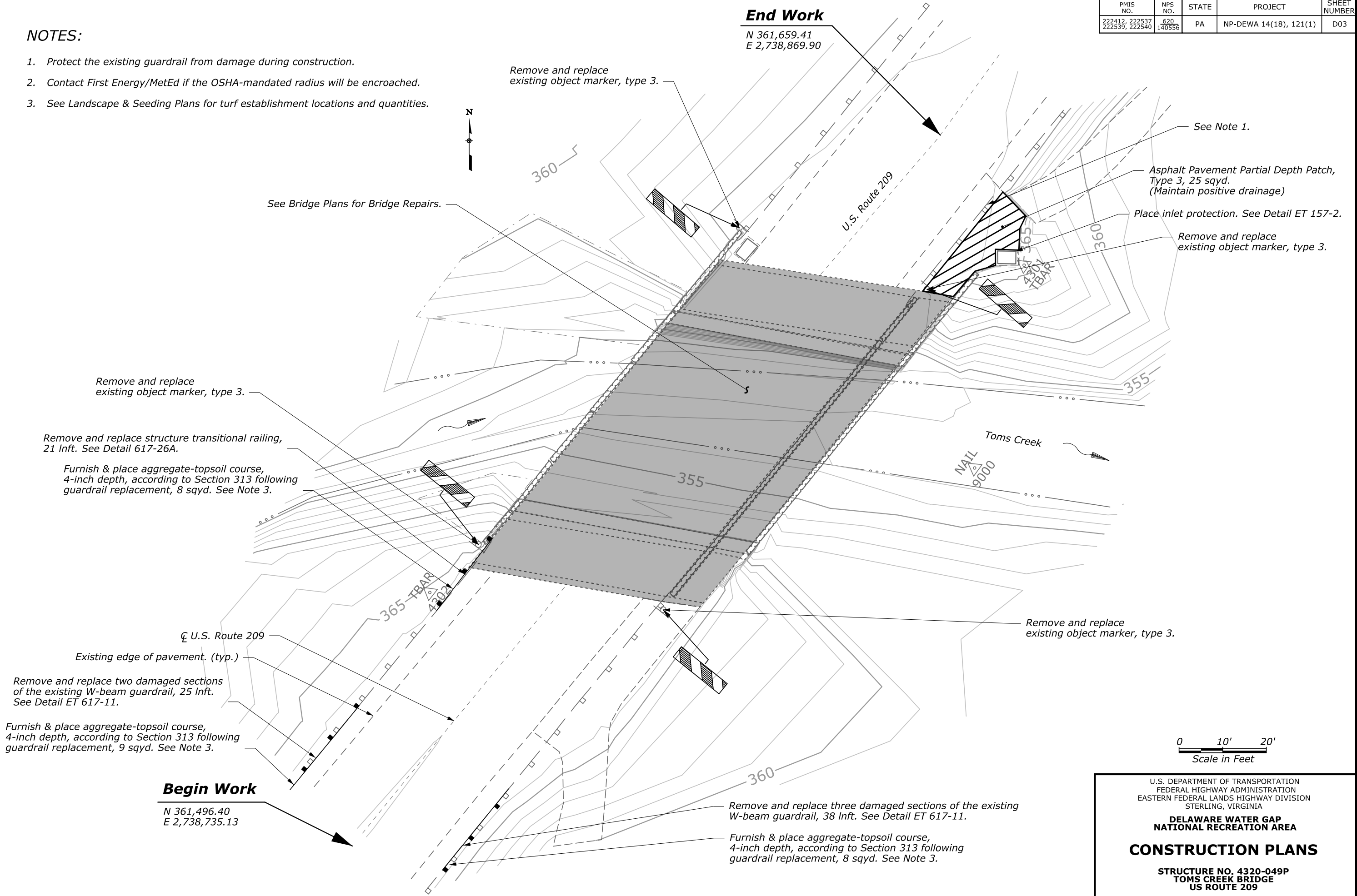
CONSTRUCTION PLANS

**STRUCTURE NO. 4320-009P
BUSHKILL CREEK BRIDGE
US ROUTE 209**

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537, 222539, 222540	620, 140556	PA	NP-DEWA 14(18), 121(1)	D03

NOTES:

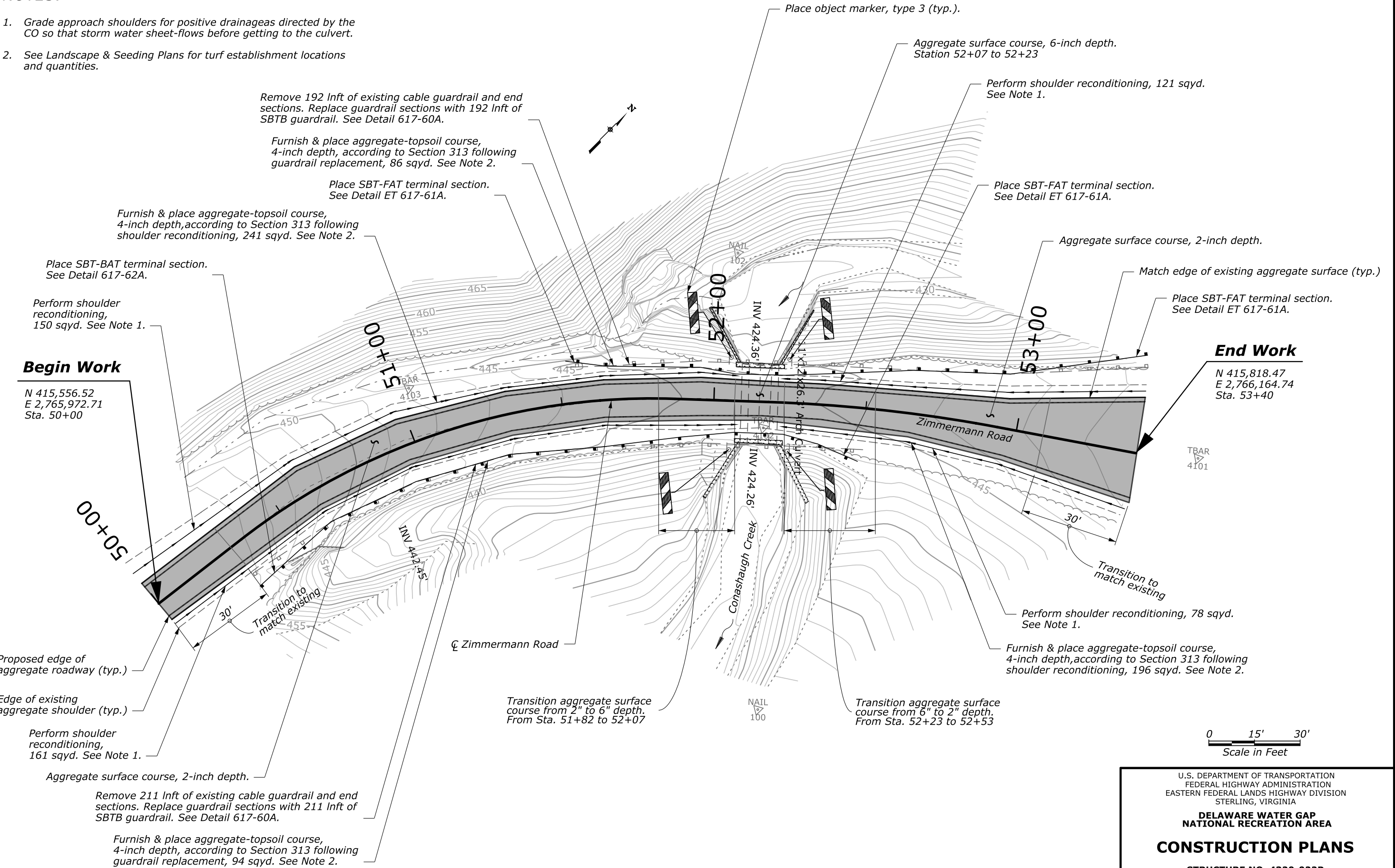
1. Protect the existing guardrail from damage during construction.
2. Contact First Energy/MetEd if the OSHA-mandated radius will be encroached.
3. See Landscape & Seeding Plans for turf establishment locations and quantities.



PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	D04

NOTES:

- Grade approach shoulders for positive drainageas directed by the CO so that storm water sheet-flows before getting to the culvert.
- See Landscape & Seeding Plans for turf establishment locations and quantities.



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**DELAWARE WATER GAP
NATIONAL RECREATION AREA**

CONSTRUCTION PLANS

**STRUCTURE NO. 4320-022P
CONASHAUGH CREEK CULVERT
ZIMMERMANN ROAD**

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Project Description

This project consists of performing bridge rehabilitation and preventive maintenance repairs on 4 bridges in the Delaware Water Gap National Recreation Area. This work includes structure rehabilitation, preventative bridge maintenance, scour protection of structures, roadway pavement maintenance, and guardrail installation at 4 bridge sites.

Soil disturbing activities include clearing and grubbing, embankment reconstruction, roadway grading, and staging. The total disturbed area for the project is approximately 1.58 acres.

The receiving body of water is the Delaware River.

Prohibited Discharges

- The following discharges are prohibited:
 - Wash-water from concrete, paint, curing compounds, and other construction materials
 - Fuels, oils, equipment-related compounds
 - Soaps, solvents used for vehicle washing
 - Waste, garbage, sanitary waste

Inspect and maintain on a regular basis, all mechanized equipment used in or near surface water to prevent contamination from fuels, lubricants, hydraulic fluids, or other toxic materials.

Solid waste generated from the project will consist of construction debris, garbage, and empty containers. Collect and store all waste in dumpsters, or in metal or plastic drums, as appropriate. Reuse, salvage, or recycle as many of the waste materials as economically feasible according to Subsection 107.13.

Hazardous waste will not be generated from normal construction activities. Equipment fueling and maintenance could generate spills, leaks, and hazardous wastes like motor oil, diesel, gasoline, and battery fluid. If feasible, conduct these activities in a covered area to avoid contact with storm water. Store all hazardous waste materials in appropriate and clearly marked containers away from other non-waste materials. Do not dispose of hazardous waste materials into the on-site dumpsters. Dispose of material according to Federal, State, and local regulations.

Develop and implement a Spill Prevention Control and Countermeasures (SPCC) plan following the requirements under 40 CFR 112 and 29 CFR 1926, Subpart H as directed by the CO. Report spills large enough to discharge to surface waters to the National Response Center at 1-800-424-8802.

General Guidelines

The Erosion & Sediment Control Narrative is meant as a guideline for preventing erosion and controlling sediment. The work consists of applying measures throughout the life of the project to control erosion and to minimize the sedimentation of rivers, streams, and impoundments such as lakes, reservoirs, bays, and coastal waters. The measures consist of soil erosion control measures which are also defined and outlined in the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-14, and the Special Contract Requirements.

Do not modify the type, size, or location of any control or practice without prior approval from the Contracting Officer (CO).

No construction access will be permitted through a wetland or waterway.

Do not allow construction vehicles to track sediment outside the project limits.

Do not allow any construction equipment to operate on or access the down-slope side of the perimeter control measures.

Direct storm water to vegetated buffer areas and do not discharge directly into surface waters.

Sequence of Construction

Phase I Establish Perimeter Controls

Prior to any clearing, grubbing, or excavation, construct perimeter controls to ensure that disturbed sediment does not leave the project site. Perimeter controls include fiber roll, stabilized construction exits, and other specified measures outside the construction limits.

Phase II Intermediate Controls

Apply intermediate controls during rough grading operations. Install fiber roll in areas surrounding the culverts as called out in the Erosion and Sediment Control plans. Install check dams in ditches along the roadway.

Apply temporary turf establishment in disturbed areas that will remain exposed for over 14 calendar days within 7 days. Apply permanent turf establishment to the finished slopes according to Section 625.

At the end of each day’s grading operations, shape earthwork to minimize and control erosion from storm runoff.

Install inlet protection prior to diverting water through inlets.

Provide fiber roll around all stockpiled excavated roadway material. Apply temporary turf establishment to stockpiles remaining in place longer than 14 days within 7 days of stockpiling.

Provide watering for dust control within the construction limits, on active haul roads, and in pits and staging areas. No water can be obtained from Park waterways for this project. Syphoning is expressly prohibited.

Phase III Final Construction / Stabilization

- After completion of roadway construction, do the following as directed by the CO:
 - Finish grading, place riprap, and apply permanent turf establishment to any remaining disturbed areas.
 - Where necessary, replace eroded topsoil and re-apply permanent turf establishment to disturbed areas where vegetation has not established.
 - Inspect, clean, and repair all culvert outlet protection, riprap basins, and stabilized channels.
 - Remove all devices used for dewatering.
 - Remove fiber rolls only after all upslope areas are stabilized and vegetation is well established.

Remove all other perimeter controls when 70 percent of revegetation has occurred or directed by the CO.

Maintenance and Inspection Procedures

Unless stated otherwise, construct and maintain all vegetated and structural erosion control practices according to Section 157, the details shown in the plans, and the individual permitting requirements. Check and maintain erosion control measures once every 7 days and within 24 hours after a rain of 0.25 inches or more, and daily during wet weather. Repair or replace any damaged measures by the end of the day.

Temporary diversion berm - inspect the temporary diversion berm daily and maintain while in use. Repair temporary diversion berm as needed after rainfall events or as directed by the CO.

Filter bags - check the filter bags daily during dewatering operations for punctures, tears, or other damage, and for capacity. Immediately cease pumping and replace damaged filter bags, or bags that have reached their rated capacity.

Fiber roll - inspect weekly after each runoff event. Remove sediment deposits from the fiber roll when it reaches half the height of the device. Replace damaged fiber roll within 24 hours of inspection.

Stabilized construction exit - inspect every 7 calendar days and after a storm event of 0.5 inch or greater. If vehicles passing through stabilized exit continue to track sediment onto adjacent roadways, replenish stone or replace it completely. Immediately sweep any sediment on roadway.

On-site concrete washout structure - inspect for damage regularly. Immediately repair any damage to ensure that no materials leave the washout area. Remove concrete materials and dispose of offsite. Collect and retain all concrete washout water and solids in leak proof containers, so that caustic material does not reach the soil surface and then migrate to surface waters or into the ground water. Recycle 100 percent of the collected concrete washout water and solids.

Inlet protection - inspect to ensure that inlet protection remains firmly in place and is not damaged or clogged. Clean clogged inlet protection or replace clogged or damaged inlet protection as necessary.

Rolled erosion control product - inspect matting after every significant rainfall (0.5 inch or greater) event for damage and erosion beneath the matting. Replacement of matting may be necessary if damaged by equipment. Check staples and stakes to make sure they are securely in the ground.

Record the inspection date and summary of findings within 24 hours of completing a site inspection.

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FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

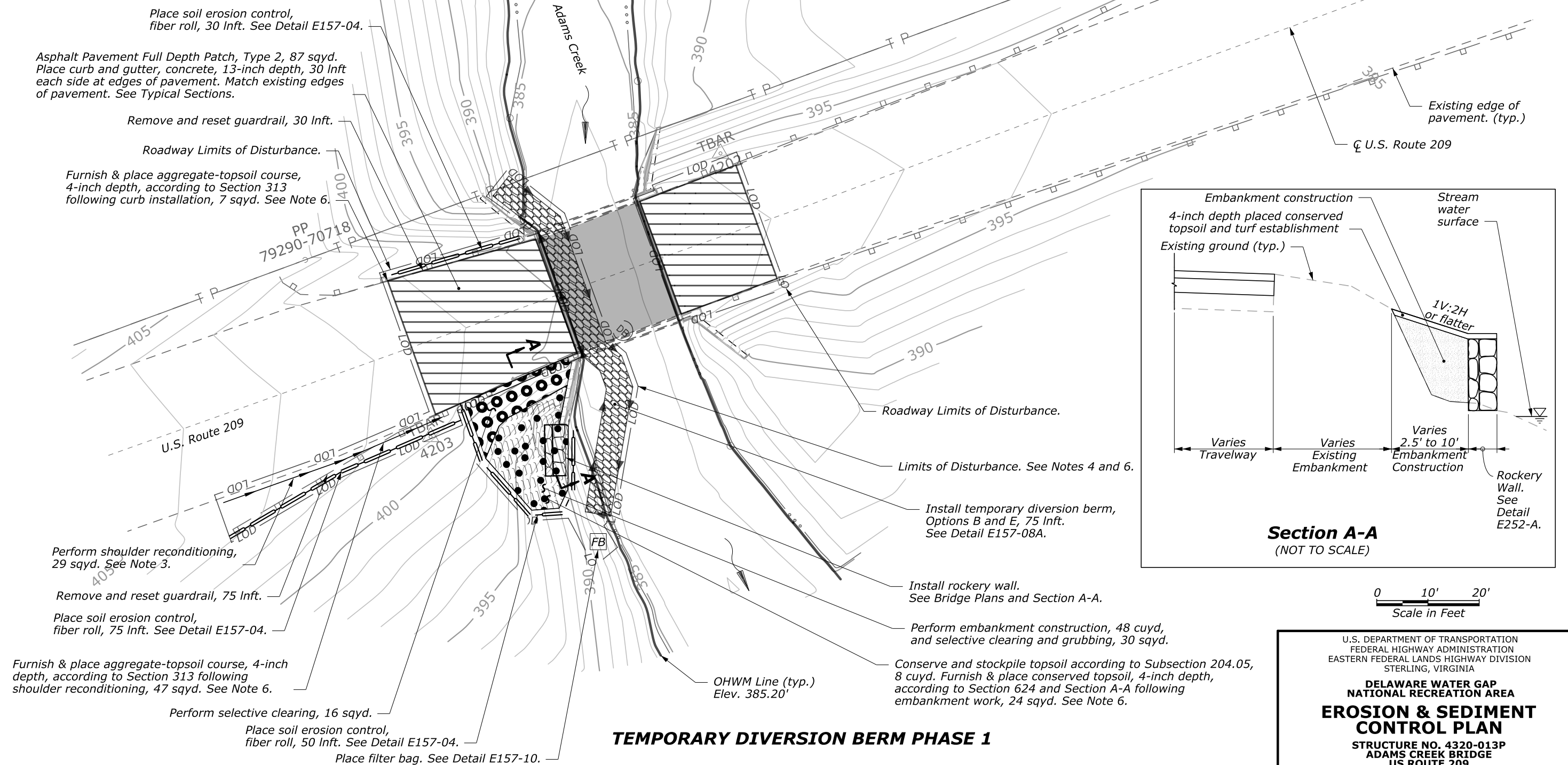
DELAWARE WATER GAP
NATIONAL RECREATION AREA

EROSION & SEDIMENT
CONTROL NARRATIVE

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	M02

NOTES:

1. *See Construction Plans for proposed roadway repairs.*
2. *See Bridge Plans for proposed bridge repairs.*
3. *Grade approach shoulders for positive drainage as directed by the CO so that stormwater sheet-flows before getting to the bridge.*
4. *Perform selective clearing and grubbing on stream bank and construction exit, 36 sqyd.*
5. *Place diversion one phase at a time. Remove diversion and restore disturbed land before moving to the next phase.*
6. *See Landscape & Seeding Plans for turf establishment locations and quantities.*



PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537, 222539, 222540	620, 140556	PA	NP-DEWA 14(18), 121(1)	M03

NOTES:

1. Do not encroach water way when placing temporary stabilized construction exit.
2. See Construction Plans for proposed roadway repairs.
3. See Bridge Plans for proposed bridge repairs.
4. Perform selective clearing and grubbing on stream bank and construction exit, 271 sqyd.
5. Place diversion one phase at a time. Remove diversion and restore disturbed land before moving to the next phase.
6. See Landscape & Seeding Plans for turf establishment locations and quantities.

Install temporary diversion berm, Options B and E, 82 Inft. See Detail E157-08A.

Asphalt Pavement Full Depth Patch, Type 2, 53 sqyd.
Place asphalt curb, 6-inch depth, 40 Inft at edges of pavement. Match existing edges of pavement. See Typical Sections.

Roadway Limits of Disturbance.

Furnish & place aggregate-topsoil course, 4-inch depth, according to Section 313 following curb installation, 4 sqyd. See Note 6.

Remove and reset guardrail, 20 Inft.

Place soil erosion control, fiber roll, 20 Inft. See Detail E157-04.

Construct temporary stabilized construction exit. See Detail E157-01A and Note 1.

Place soil erosion control, fiber roll, 140 Inft. See Detail E157-04.

Existing edge of pavement. (typ.)

U.S. Route 209

Roadway Limits of Disturbance.

Place soil erosion control, fiber roll, 20 Inft. See Detail E157-04.

Furnish & place aggregate-topsoil course, 4-inch depth, according to Section 313 following curb installation, 4 sqyd. See Note 6.

Remove and reset guardrail, 20 Inft.

Place filter bag. See Detail E157-10.

Limits of Disturbance. See Notes 4 and 6.

OHWM Line (typ.)
Elev. 385.20'

0 10' 20'
Scale in Feet

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

DELAWARE WATER GAP
NATIONAL RECREATION AREA
**EROSION & SEDIMENT
CONTROL PLAN**

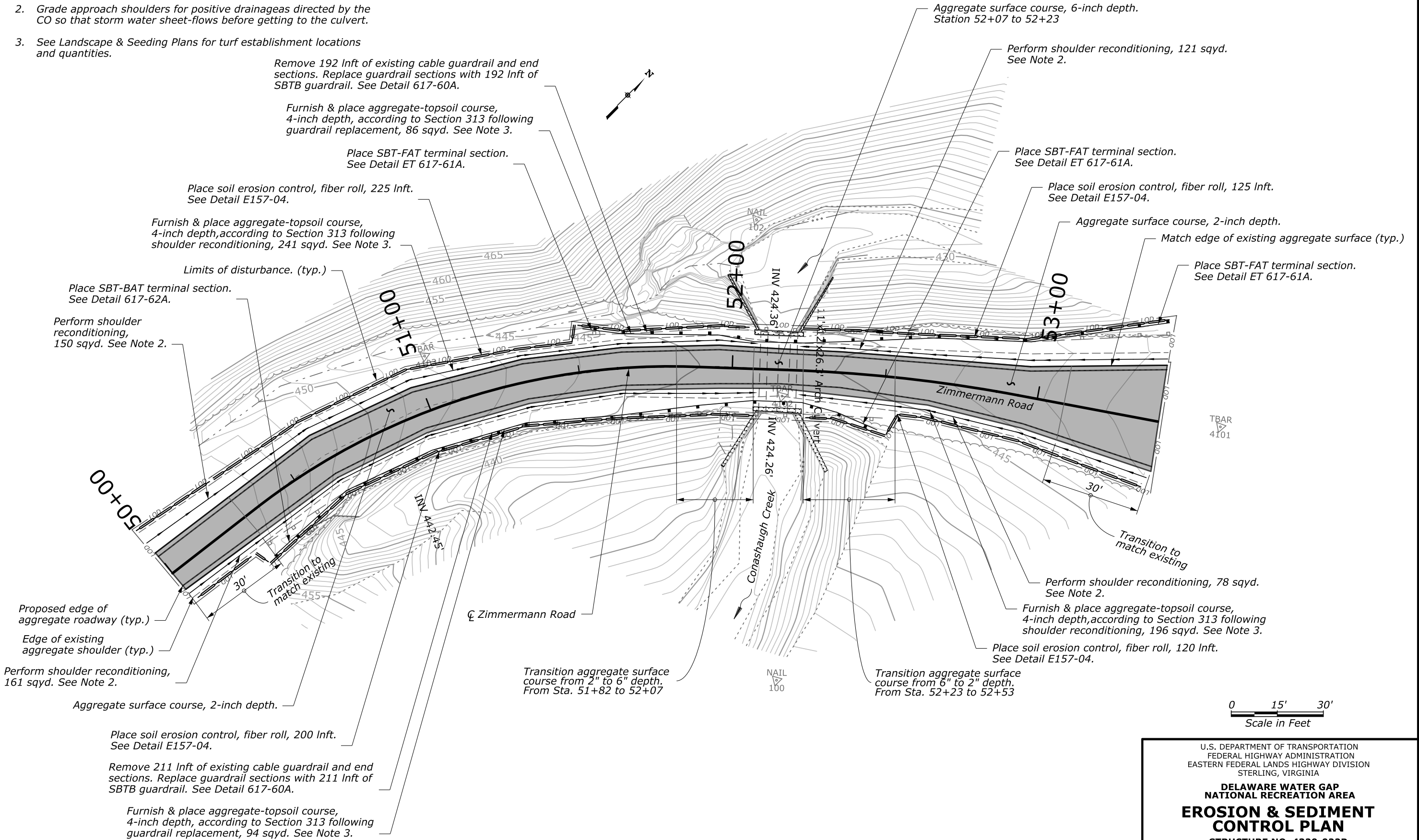
STRUCTURE NO. 4320-013P
ADAMS CREEK BRIDGE
US ROUTE 209

TEMPORARY DIVERSION BERM PHASE 2

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	M07

NOTES:

- See Construction Plans for proposed roadway repairs.
- Grade approach shoulders for positive drainageas directed by the CO so that storm water sheet-flows before getting to the culvert.
- See Landscape & Seeding Plans for turf establishment locations and quantities.



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

DELAWARE WATER GAP
NATIONAL RECREATION AREA
**EROSION & SEDIMENT
CONTROL PLAN**
STRUCTURE NO. 4320-022P
CONASHAUGH CREEK CULVERT
ZIMMERMANN ROAD

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	M08



NOTES:

1. Stage only within existing previously disturbed parking area.
2. Secure staging area site as to not allow visitors to drive through.

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

**DELAWARE WATER GAP
NATIONAL RECREATION AREA**

STAGING LOCATIONS

**STRUCTURE NO. 4320-013P
ADAMS CREEK BRIDGE**

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537, 222539, 222540	620, 140556	PA	NP-DEWA 14(18), 121(1)	M09



NOTES:

1. Stage only within existing previously disturbed area.
2. Secure staging area site as to not allow visitors to drive through.

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

**DELAWARE WATER GAP
NATIONAL RECREATION AREA**

STAGING LOCATIONS

**STRUCTURE NO. 4320-009P
BUSHKILL CREEK BRIDGE**

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222539, 222540	620, 140556	PA	NP-DEWA 14(18), 121(1)	M11



NOTES:

1. Stage only within existing previously disturbed road.
2. Secure staging area site as to not allow visitors to drive through.

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

**DELAWARE WATER GAP
NATIONAL RECREATION AREA**

STAGING LOCATIONS

**STRUCTURE NO. 4320-022P
CONASHAUGH CREEK CULVERT**

NOTES:

1. See Erosion and Sediment Control Plans for proposed sediment control measures.
2. See Construction Plans for proposed roadway repairs.
3. See Bridge Plans for proposed bridge repairs.

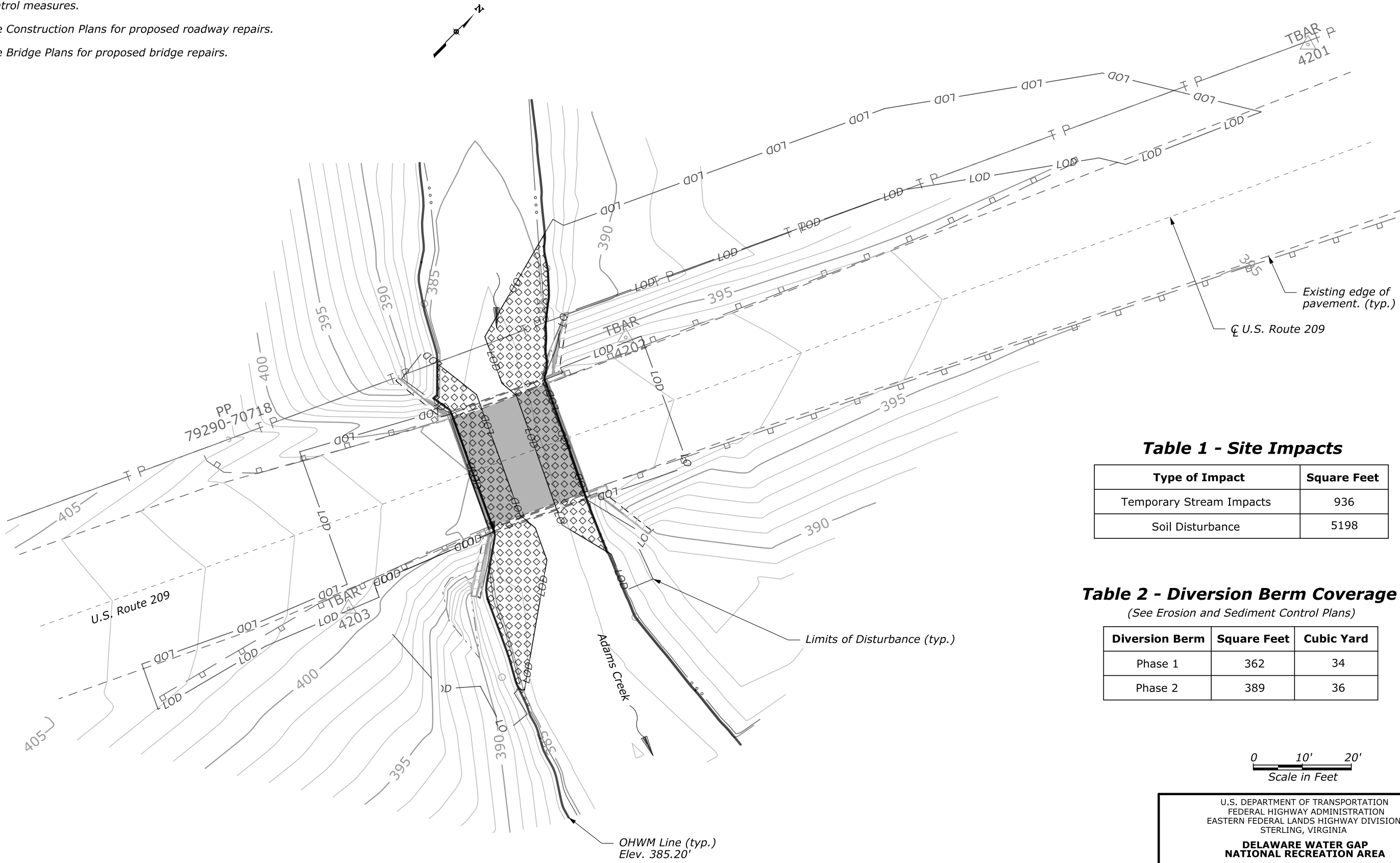
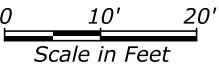


Table 1 - Site Impacts

Type of Impact	Square Feet
Temporary Stream Impacts	936
Soil Disturbance	5198

Table 2 - Diversion Berm Coverage
(See Erosion and Sediment Control Plans)

Diversion Berm	Square Feet	Cubic Yard
Phase 1	362	34
Phase 2	389	36



U.S. DEPARTMENT OF TRANSPORTATION
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STERLING, VIRGINIA

DELAWARE WATER GAP
NATIONAL RECREATION AREA
**SOIL DISTURBANCE &
STREAM IMPACTS PLAN**
STRUCTURE NO. 4320-013P
ADAMS CREEK BRIDGE
US ROUTE 209

NOTES:

- 1. See Erosion and Sediment Control Plans for proposed sediment control measures.
- 2. See Construction Plans for proposed roadway repairs.
- 3. See Bridge Plans for proposed bridge repairs.

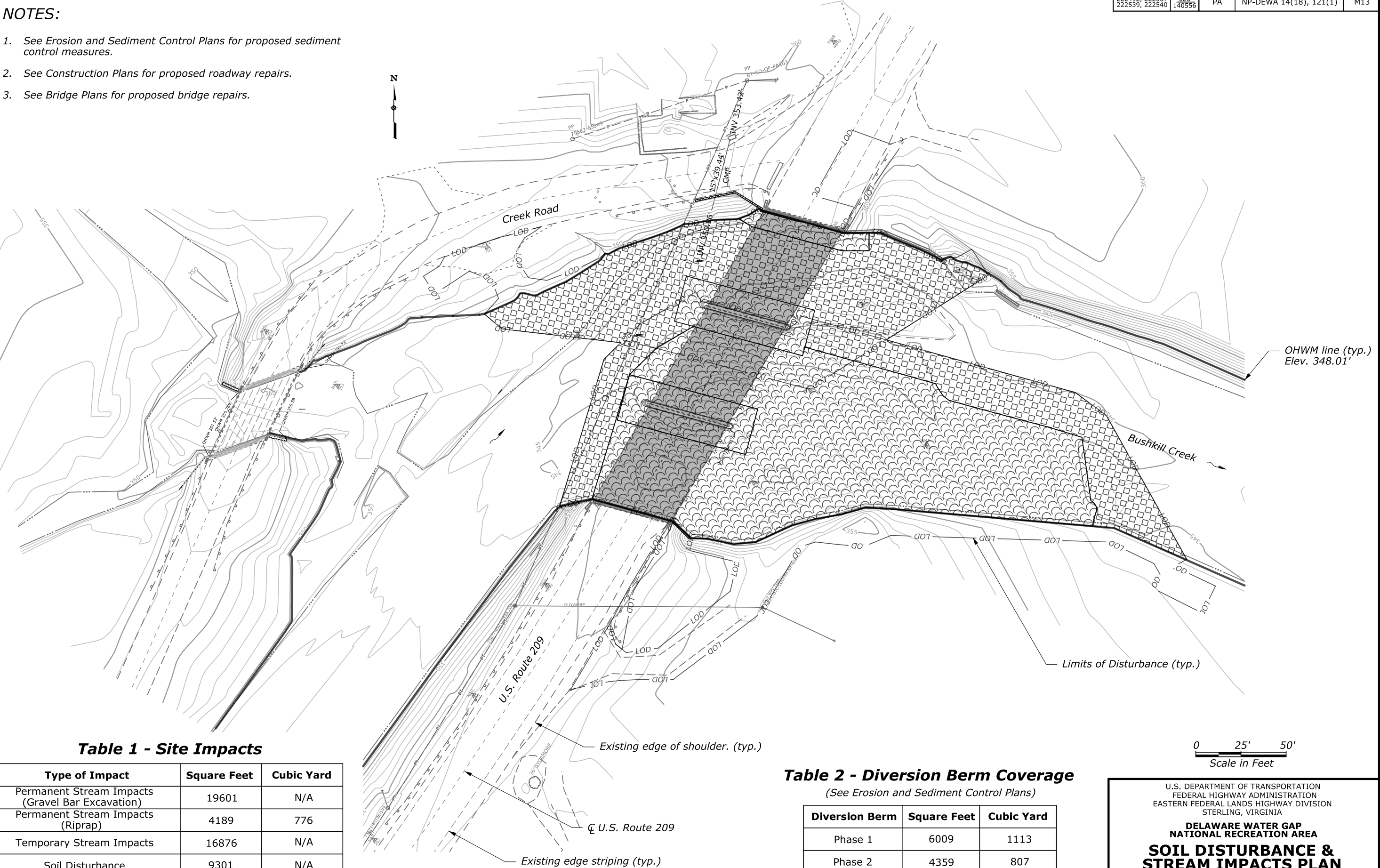


Table 1 - Site Impacts

Type of Impact	Square Feet	Cubic Yard
Permanent Stream Impacts (Gravel Bar Excavation)	19601	N/A
Permanent Stream Impacts (Riprap)	4189	776
Temporary Stream Impacts	16876	N/A
Soil Disturbance	9301	N/A

Table 2 - Diversion Berm Coverage

(See Erosion and Sediment Control Plans)

Diversion Berm	Square Feet	Cubic Yard
Phase 1	6009	1113
Phase 2	4359	807

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FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

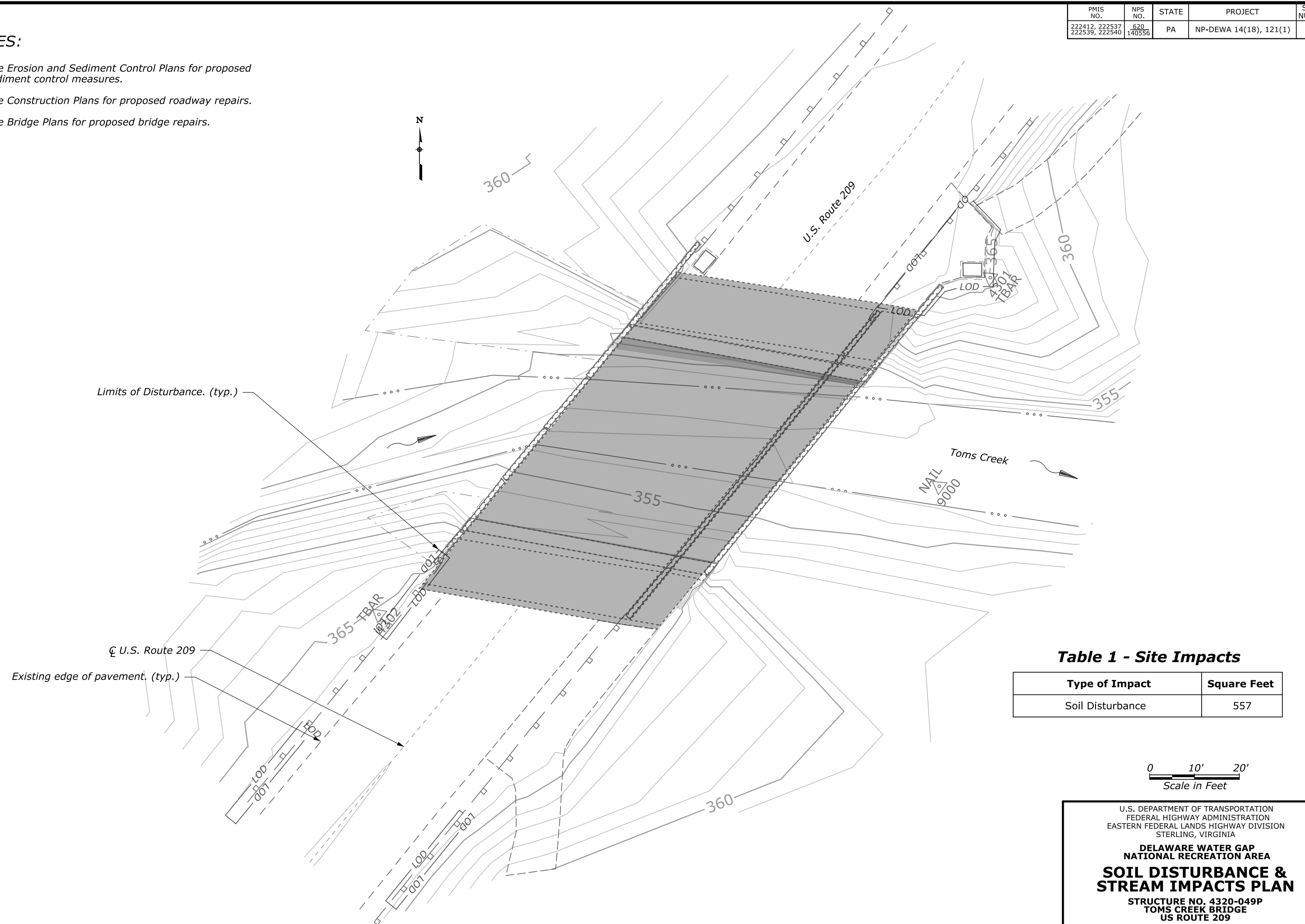
DELAWARE WATER GAP
NATIONAL RECREATION AREA
SOIL DISTURBANCE &
STREAM IMPACTS PLAN

STRUCTURE NO. 4320-009P
BUSHKILL CREEK BRIDGE
US ROUTE 209

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	M14

NOTES:

1. See *Erosion and Sediment Control Plans* for proposed sediment control measures.
2. See *Construction Plans* for proposed roadway repairs.
3. See *Bridge Plans* for proposed bridge repairs.



NOTES:

- 1. See Construction Plans for proposed roadway repairs.
- 2. Grade approach shoulders for positive drainageas directed by the CO so that storm water sheet-flows before getting to the culvert.

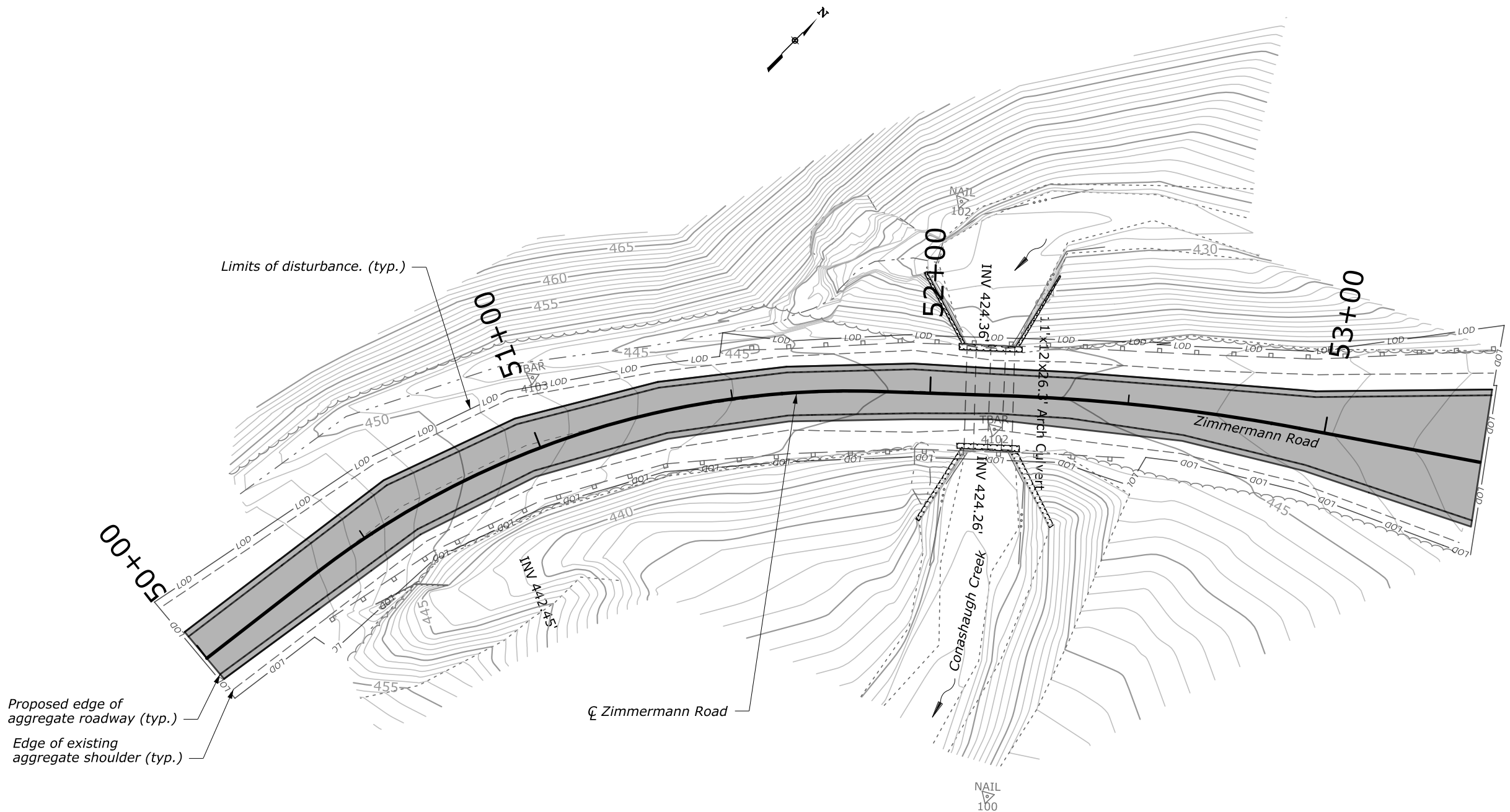


Table 1 - Site Impacts

Type of Impact	Square Feet
Soil Disturbance	11315

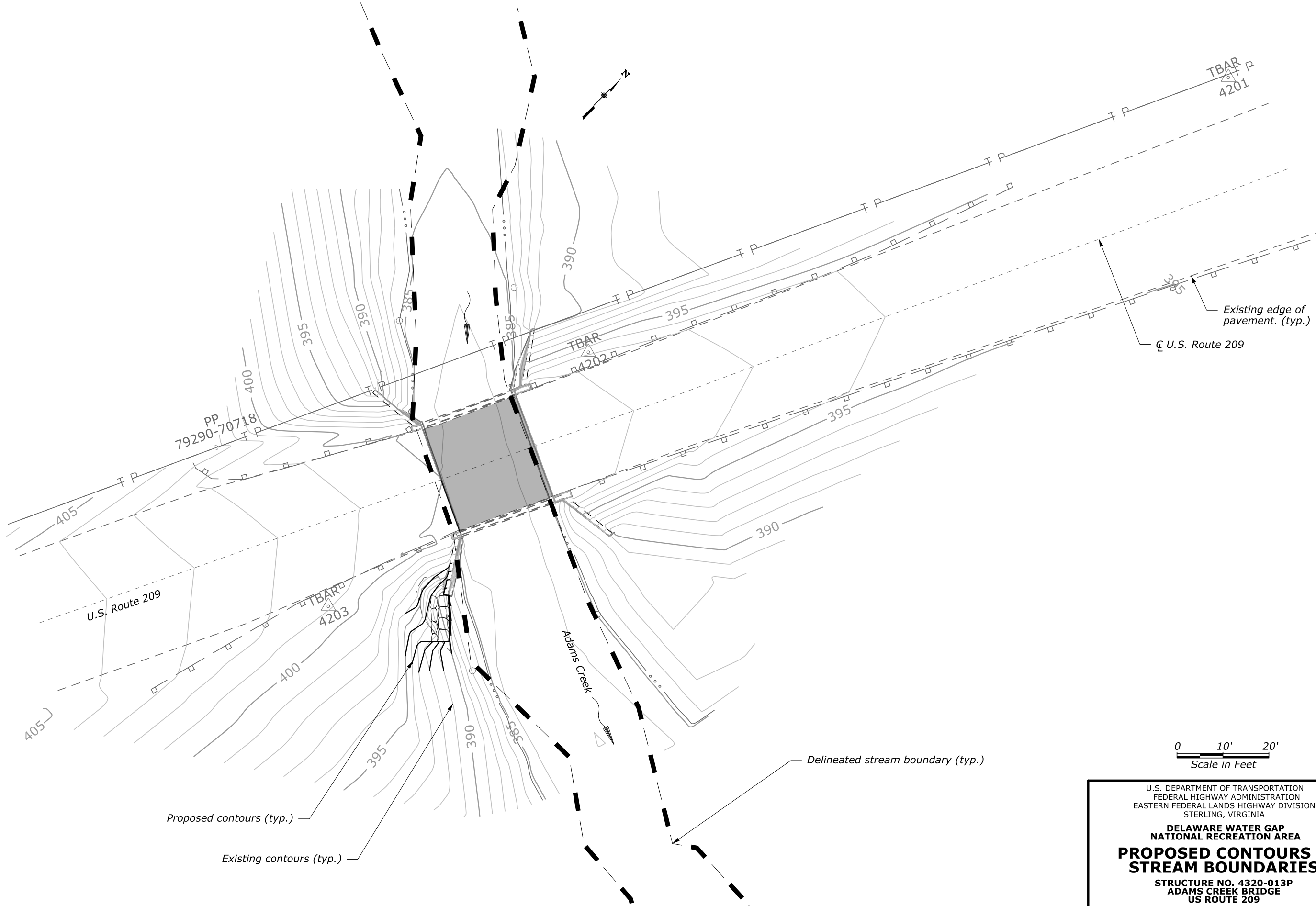
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EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

**DELAWARE WATER GAP
NATIONAL RECREATION AREA**

**SOIL DISTURBANCE &
STREAM IMPACTS PLAN**

STRUCTURE NO. 4320-022P
CONASHAUGH CREEK CULVERT
ZIMMERMANN ROAD

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537, 222539, 222540	620, 140556	PA	NP-DEWA 14(18), 121(1)	M16



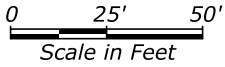
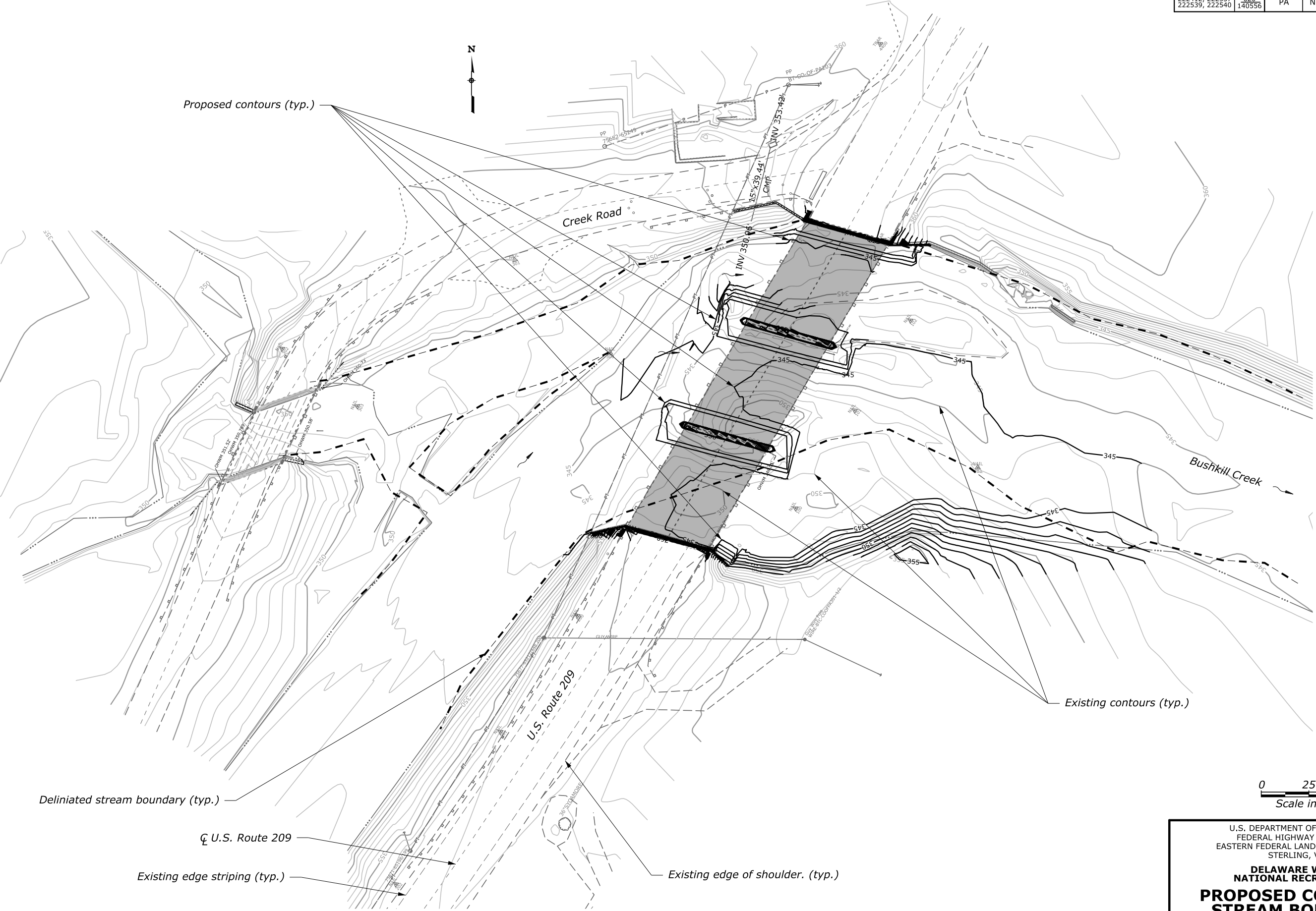
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Scale in Feet

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

**DELaware WATER GAP
NATIONAL RECREATION AREA
PROPOSED CONTOURS &
STREAM BOUNDARIES**

STRUCTURE NO. 4320-013P
ADAMS CREEK BRIDGE
US ROUTE 209

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537, 222539, 222540	620, 140556	PA	NP-DEWA 14(18), 121(1)	M17



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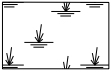
**DELAWARE WATER GAP
NATIONAL RECREATION AREA
PROPOSED CONTOURS &
STREAM BOUNDARIES**

**STRUCTURE NO. 4320-009P
BUSHKILL CREEK BRIDGE
US ROUTE 209**

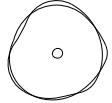
NOTES:

- See Erosion and Sediment Control Plans for proposed sediment control measures.
- See Construction Plans for proposed roadway repairs.
- See Bridge Plans for proposed bridge repairs.
- Apply 108 square yards of turf establishment in disturbed areas within the limits of disturbance on stream bank according to Section 625. Place plantings in disturbed areas on stream bank.
- Exact tree and shrub planting locations will be determined by the CO.
- Adjust the number of planting species based on species availability and as directed by the CO.
- Plant trees and shrubs according to Detail E626-A.
- Place rolled erosion control product, Type 2.B, 108 square yards in disturbed areas within the limits of disturbance and according to Detail E629-01.

LEGEND:



Turf
Establishment



Tree



Shrub

Table 1 - Trees

Container, native, seed-grown trees

Scientific Name	Common Name	Size	Spacing (Between Trees)	Number (See Note 6)
<i>Acer Saccharum</i>	Sugar Maple	6' - 8' Height	35' - 50'	0
<i>Cornus Florida</i>	Flowering Dogwood	6' - 8' Height	20'	1
<i>Betula Alleghaniensis</i>	Yellow Birch	6' - 8' Height	20' - 30'	1
<i>Prunus Pensylvanica</i>	Fire Cherry	6' - 8' Height	10' - 12'	2
<i>Platanus Occidentalis</i>	American Sycamore	6' - 8' Height	40'	0

Table 2 - Shrubs

Container, native, seed-grown shrubs

Scientific Name	Common Name	Size	Spacing (Between Shrubs)	Number (See Note 6)
<i>Salix Discolor</i>	Pussy Willow	18" - 24" Height	5' - 10'	1
<i>Ilex Verticillata</i>	Winterberry	18" - 24" Height	3' - 5'	1
<i>Callicarpa Americana</i>	Beauty Bush	18" - 24" Height	3' - 6'	1
<i>Rhododendron Periclymenoides</i>	Pinxterbloom Azalea	18" - 24" Height	3' - 6'	1
<i>Myrica Pensylvanica</i>	Northern Bayberry	18" - 24" Height	3' - 4'	1

Table 3 - Groundcover

Container, native, seed-grown shrubs

Scientific Name	Common Name	Size	Spacing (Between Shrubs)	Number (See Note 6)
<i>Gaultheria Procumbens</i>	Wintergreen	8" - 18" Height	1' - 1.5'	1
<i>Rubus Odoratus</i>	Purple-Flowering Raspberry	8" - 18" Height	6' - 8'	1
<i>Parthenocissus Quinquefolia</i>	Virginia-Creeper	8" - 18" Height	3' - 5'	1

0 10' 20'
Scale in Feet

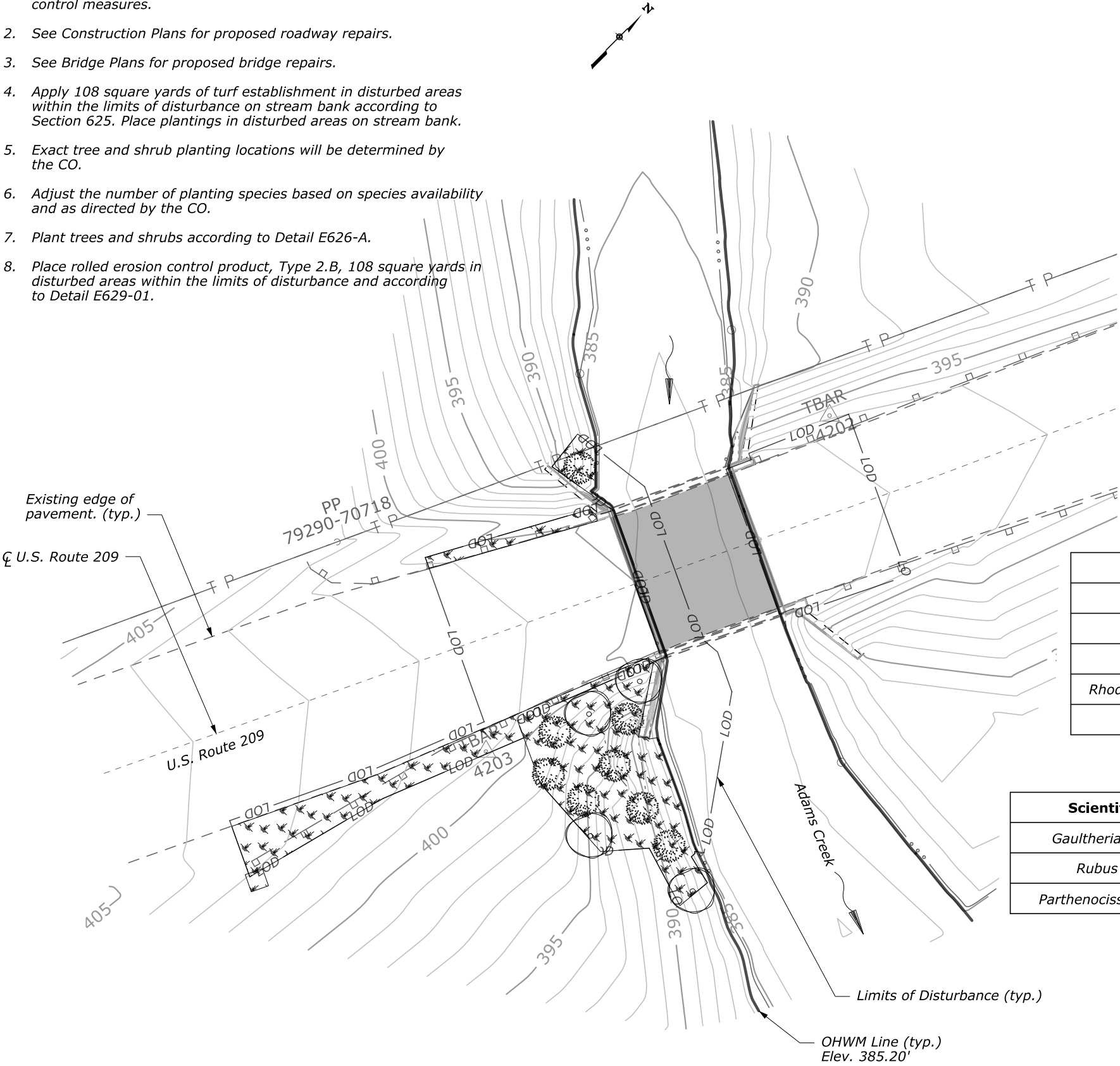
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STERLING, VIRGINIA

DELAWARE WATER GAP
NATIONAL RECREATION AREA

LANDSCAPE &
SEEDING PLAN

STRUCTURE NO. 4320-013P
ADAMS CREEK BRIDGE
US ROUTE 209

LANDSCAPING PHASE 1



NOTES:

- See Erosion and Sediment Control Plans for proposed sediment control measures.
- See Construction Plans for proposed roadway repairs.
- See Bridge Plans for proposed bridge repairs.
- Apply 280 square yards of turf establishment in disturbed areas within the limits of disturbance on stream bank and construction exit according to Section 625. Place plantings in disturbed areas on stream bank and construction exit.
- Exact tree and shrub planting locations will be determined by the CO.
- Adjust the number of planting species based on species availability and as directed by the CO.
- Plant trees and shrubs according to Detail E626-A.
- Place rolled erosion control product, Type 2.B, 280 square yards in disturbed areas within the limits of disturbance and according to Detail E629-01.

Table 1 - Trees
Container, native, seed-grown trees

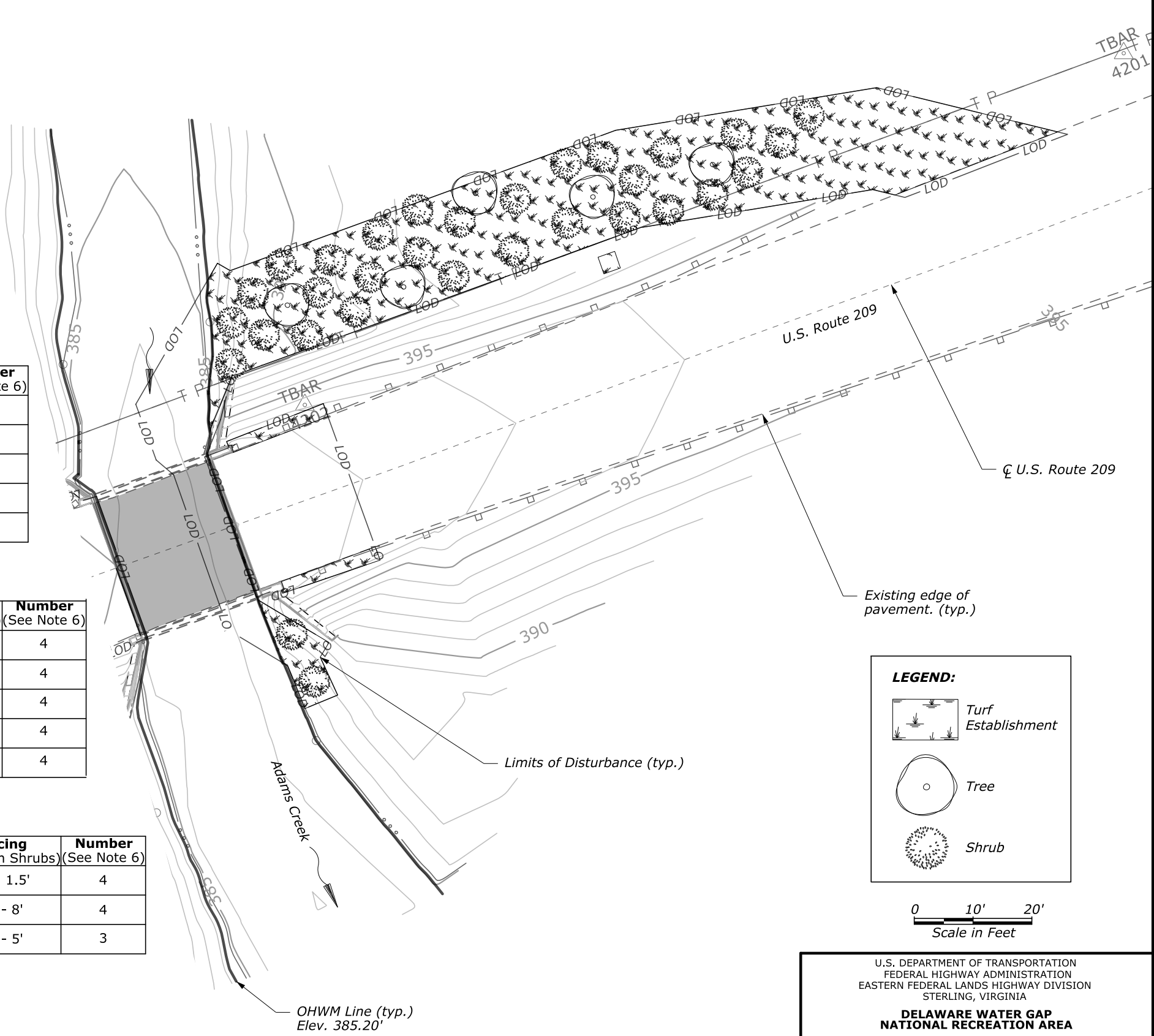
Scientific Name	Common Name	Size	Spacing (Between Trees)	Number (See Note 6)
<i>Acer Saccharum</i>	Sugar Maple	6' - 8' Height	35' - 50'	0
<i>Cornus Florida</i>	Flowering Dogwood	6' - 8' Height	20'	2
<i>Betula Alleghaniensis</i>	Yellow Birch	6' - 8' Height	20' - 30'	1
<i>Prunus Pensylvanica</i>	Fire Cherry	6' - 8' Height	10' - 12'	2
<i>Platanus Occidentalis</i>	American Sycamore	6' - 8' Height	40'	0

Table 2 - Shrubs
Container, native, seed-grown shrubs

Scientific Name	Common Name	Size	Spacing (Between Shrubs)	Number (See Note 6)
<i>Salix Discolor</i>	Pussy Willow	18" - 24" Height	5' - 10'	4
<i>Ilex Verticillata</i>	Winterberry	18" - 24" Height	3' - 5'	4
<i>Callicarpa Americana</i>	Beauty Bush	18" - 24" Height	3' - 6'	4
<i>Rhododendron Periclymenoides</i>	Pinxterbloom Azalea	18" - 24" Height	3' - 6'	4
<i>Myrica Pensylvanica</i>	Northern Bayberry	18" - 24" Height	3' - 4'	4

Table 3 - Groundcover
Container, native, seed-grown shrubs

Scientific Name	Common Name	Size	Spacing (Between Shrubs)	Number (See Note 6)
<i>Gaultheria Procumbens</i>	Wintergreen	8" - 18" Height	1' - 1.5'	4
<i>Rubus Odoratus</i>	Purple-Flowering Raspberry	8" - 18" Height	6' - 8'	4
<i>Parthenocissus Quinquefolia</i>	Virginia-Creeper	8" - 18" Height	3' - 5'	3



LANDSCAPING PHASE 2

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

**DELAWARE WATER GAP
NATIONAL RECREATION AREA**

**LANDSCAPE &
SEEDING PLAN**

STRUCTURE NO. 4320-013P
ADAMS CREEK BRIDGE
US ROUTE 209

Table 1 - Trees
Container, native, seed-grown trees

Scientific Name	Common Name	Size	Spacing (Between Trees)	Number (See Note 6)
<i>Acer Saccharum</i>	Sugar Maple	6' - 8' Height	35' - 50'	0
<i>Cornus Florida</i>	Flowering Dogwood	6' - 8' Height	20'	2
<i>Betula Alleghaniensis</i>	Yellow Birch	6' - 8' Height	20' - 30'	1
<i>Prunus Pensylvanica</i>	Fire Cherry	6' - 8' Height	10' - 12'	50
<i>Platanus Occidentalis</i>	American Sycamore	6' - 8' Height	40'	0

Table 2 - Shrubs
Container, native, seed-grown shrubs

Scientific Name	Common Name	Size	Spacing (Between Shrubs)	Number (See Note 6)
<i>Salix Discolor</i>	Pussy Willow	18" - 24" Height	5' - 10'	15
<i>Ilex Verticillata</i>	Winterberry	18" - 24" Height	3' - 5'	16
<i>Callicarpa Americana</i>	Beauty Bush	18" - 24" Height	3' - 6'	16
<i>Rhododendron Periclymenoides</i>	Pinxterbloom Azalea	18" - 24" Height	3' - 6'	16
<i>Myrica Pensylvanica</i>	Northern Bayberry	18" - 24" Height	3' - 4'	15

NOTES:

- See Erosion and Sediment Control Plans for proposed sediment control measures.
- See Construction Plans for proposed roadway repairs.
- See Bridge Plans for proposed bridge repairs.
- Apply 737 square yards of turf establishment in disturbed areas within the limits of disturbance on stream bank and construction exit according to Section 625. Place plantings in disturbed areas on construction exit.
- Exact tree and shrub planting locations will be determined by the CO.
- Adjust the number of planting species based on species availability and as directed by the CO.
- Plant trees and shrubs according to Detail E626-A.
- Place rolled erosion control product, Type 2.B, 737 square yards in disturbed areas within the limits of disturbance and according to Detail E629-01.

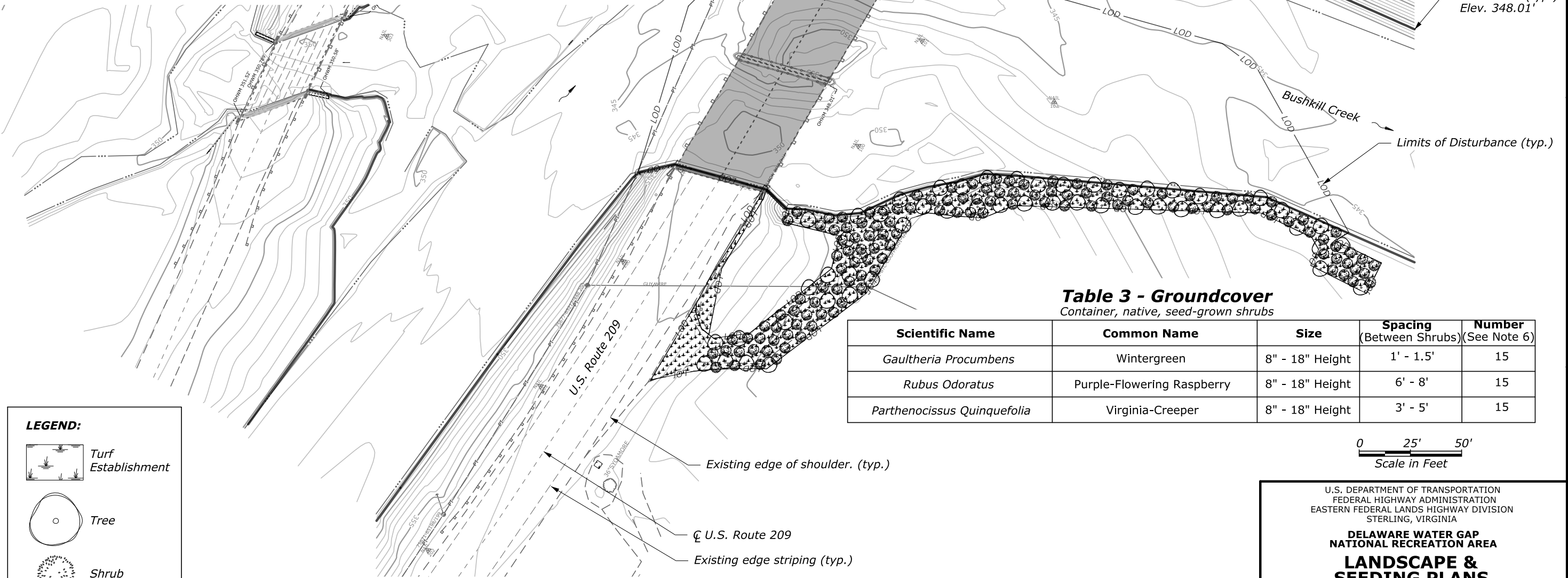


Table 1 - Trees
Container, native, seed-grown trees

Scientific Name	Common Name	Size	Spacing (Between Trees)	Number (See Note 6)
<i>Acer Saccharum</i>	Sugar Maple	6' - 8' Height	35' - 50'	0
<i>Cornus Florida</i>	Flowering Dogwood	6' - 8' Height	20'	1
<i>Betula Alleghaniensis</i>	Yellow Birch	6' - 8' Height	20' - 30'	1
<i>Prunus Pensylvanica</i>	Fire Cherry	6' - 8' Height	10' - 12'	0
<i>Platanus Occidentalis</i>	American Sycamore	6' - 8' Height	40'	1

NOTES:

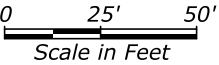
- See Erosion and Sediment Control Plans for proposed sediment control measures.
- See Construction Plans for proposed roadway repairs.
- See Bridge Plans for proposed bridge repairs.
- Apply 186 square yards of turf establishment in disturbed areas within the limits of disturbance on stream bank and construction exit according to Section 625. Place plantings in disturbed areas on construction exit.
- Exact tree and shrub planting locations will be determined by the CO.
- Adjust the number of planting species based on species availability and as directed by the CO.
- Plant trees and shrubs according to Detail E626-A.
- Place rolled erosion control product, Type 2.B, 186 square yards in disturbed areas within the limits of disturbance and according to Detail E629-01.

Table 2 - Shrubs
Container, native, seed-grown shrubs

Scientific Name	Common Name	Size	Spacing (Between Shrubs)	Number (See Note 6)
<i>Salix Discolor</i>	Pussy Willow	18" - 24" Height	5' - 10'	2
<i>Ilex Verticillata</i>	Winterberry	18" - 24" Height	3' - 5'	2
<i>Callicarpa Americana</i>	Beauty Bush	18" - 24" Height	3' - 6'	2
<i>Rhododendron Periclymenoides</i>	Pinxterbloom Azalea	18" - 24" Height	3' - 6'	2
<i>Myrica Pensylvanica</i>	Northern Bayberry	18" - 24" Height	3' - 4'	2

Table 3 - Groundcover
Container, native, seed-grown shrubs

Scientific Name	Common Name	Size	Spacing (Between Shrubs)	Number (See Note 6)
<i>Gaultheria Procumbens</i>	Wintergreen	8" - 18" Height	1' - 1.5'	2
<i>Rubus Odoratus</i>	Purple-Flowering Raspberry	8" - 18" Height	6' - 8'	3
<i>Parthenocissus Quinquefolia</i>	Virginia-Creeper	8" - 18" Height	3' - 5'	3



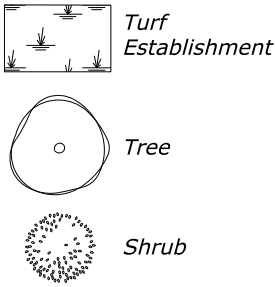
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

**DELAWARE WATER GAP
NATIONAL RECREATION AREA**

**LANDSCAPE &
SEEDING PLANS**

STRUCTURE NO. 4320-009P
BUSHKILL CREEK BRIDGE
US ROUTE 209

LEGEND:

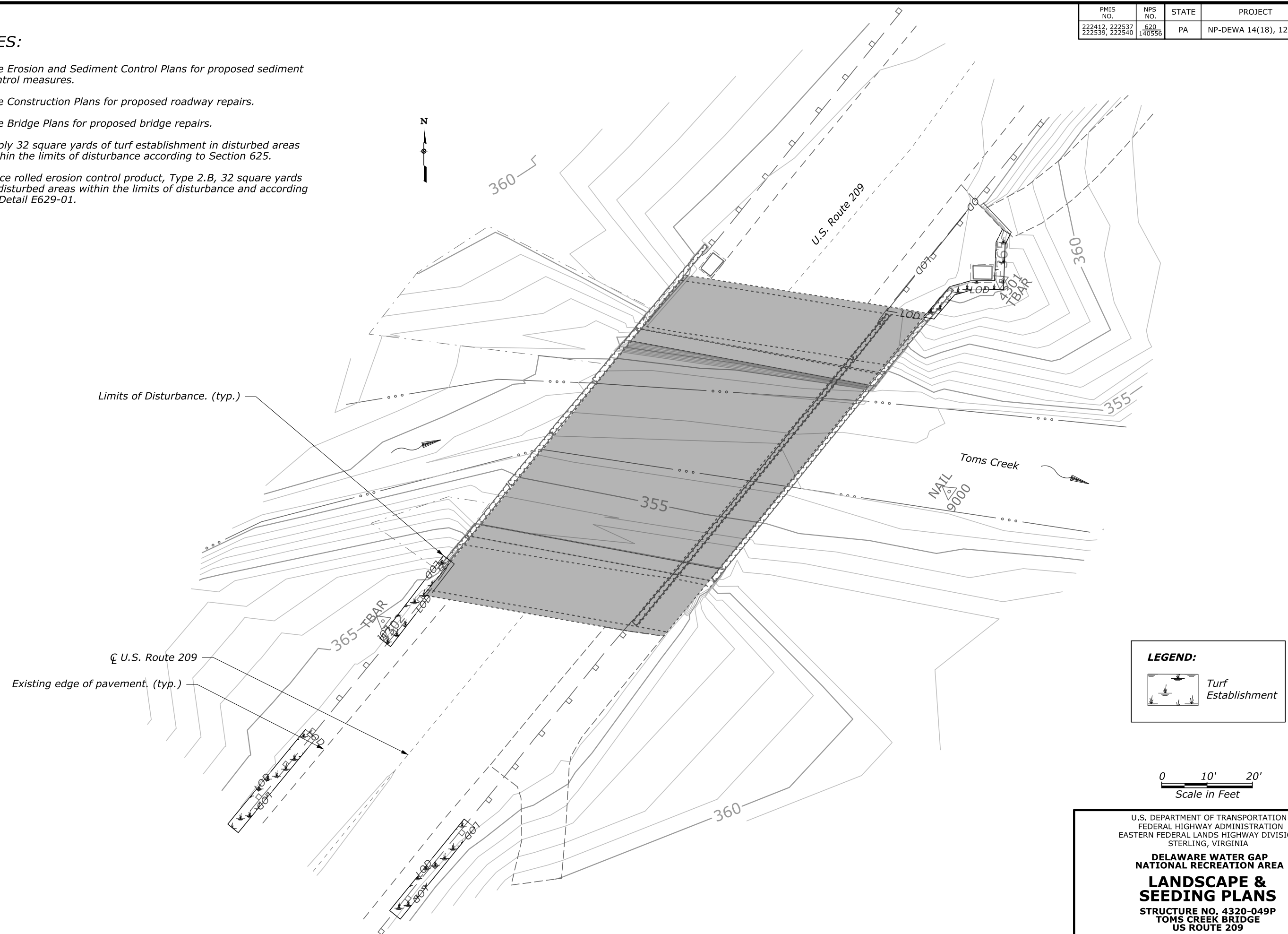


LANDSCAPING PHASE 2

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	M22

NOTES:

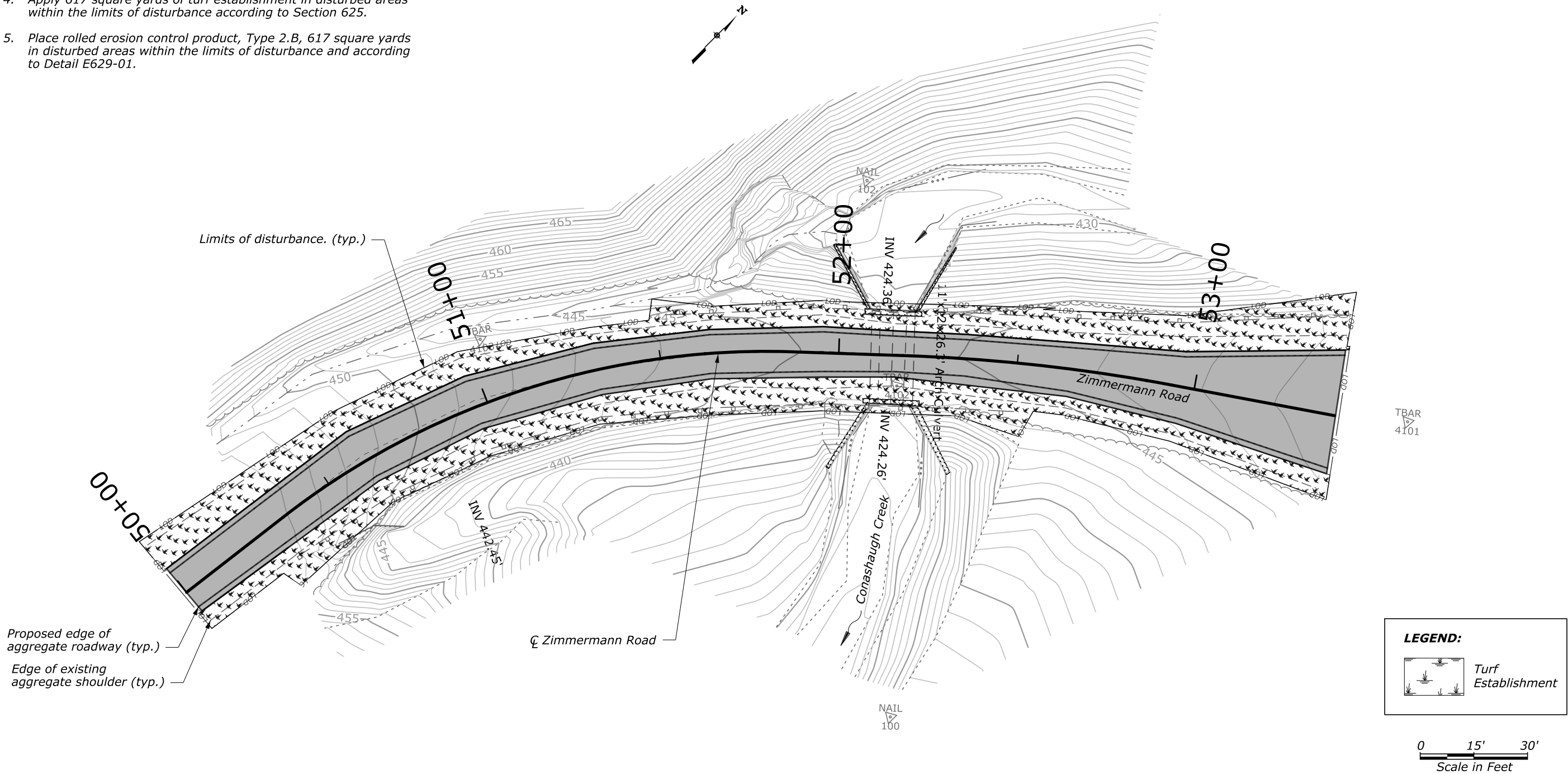
1. *See Erosion and Sediment Control Plans for proposed sediment control measures.*
2. *See Construction Plans for proposed roadway repairs.*
3. *See Bridge Plans for proposed bridge repairs.*
4. *Apply 32 square yards of turf establishment in disturbed areas within the limits of disturbance according to Section 625.*
5. *Place rolled erosion control product, Type 2.B, 32 square yards in disturbed areas within the limits of disturbance and according to Detail E629-01.*



PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537, 222539, 222540	620, 140556	PA	NP-DEWA 14(18), 121(1)	M23

NOTES:

1. See Erosion and Sediment Control Plans for proposed sediment control measures.
2. See Construction Plans for proposed roadway repairs.
3. See Bridge Plans for proposed bridge repairs.
4. Apply 617 square yards of turf establishment in disturbed areas within the limits of disturbance according to Section 625.
5. Place rolled erosion control product, Type 2.B, 617 square yards in disturbed areas within the limits of disturbance and according to Detail E629-01.



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**DELAWARE WATER GAP
NATIONAL RECREATION AREA**

**LANDSCAPE &
SEEDING PLANS**

**STRUCTURE NO. 4320-022P
CONASHAUGH CREEK CULVERT
ZIMMERMANN ROAD**

NOTES:

- 1. Do not perform lane closures at more than one site at a time without prior approval from the CO.
- 2. Install temporary traffic control in accordance with the MUTCD and local regulations.
- 3. Mount and install all signs according to Detail E635-01.
- 4. Place type 3 barricades at stabilized construction exits when not in use.

SCHEDULE A

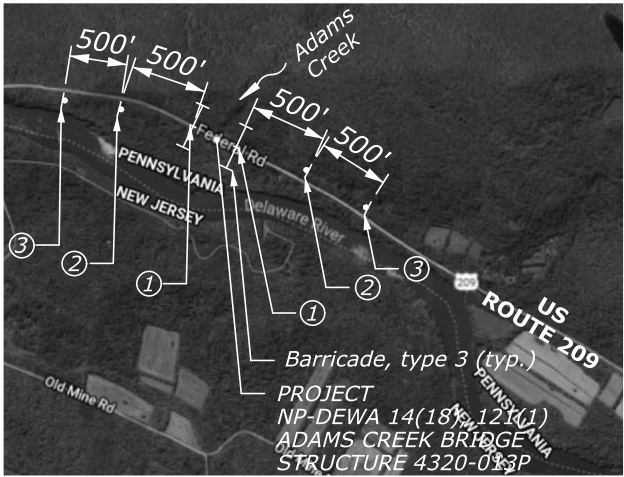
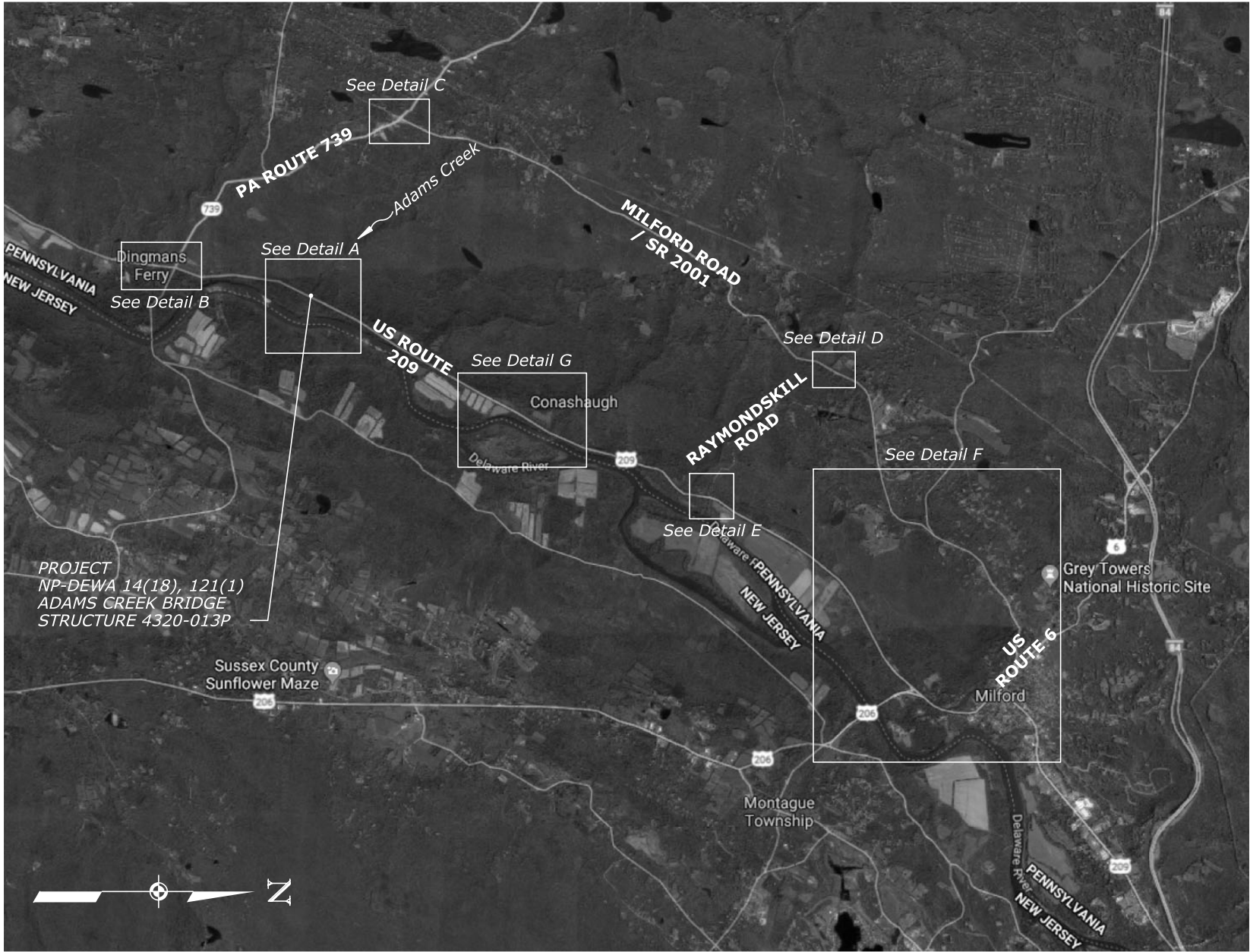
<u>Structure No.</u>	<u>Structure Name</u>	<u>Traffic Control</u>
4320-013P	Adams Creek Bridge (Phase 1)	See Temporary Traffic Control Plans for full closure details.
	Adams Creek Bridge (Phase 2)	Use Detail ET 635-9 for single lane closure.
4320-009P	Bushkill Creek Bridge (Phase 1)	Use Detail ET 635-9 for single lane closure.
	Bushkill Creek Bridge (Phase 2)	Use Detail ET 635-9 for single lane closure.
4320-049P	Toms Creek Bridge (Roadway)	Use Detail ET 635-9 for single lane closure.
	Toms Creek Bridge (Trail)	See Temporary Traffic Control Plans for full closure details.
4320-022P	Conashaugh Creek Culvert	See Temporary Traffic Control Plans for full closure details.

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EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

DELAWARE WATER GAP
NATIONAL RECREATION AREA

TEMPORARY TRAFFIC
CONTROL PLANS

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	N02



DETAIL A
Full closure signage for project site

NOTES:

1. Do not close U.S. Route 209 to traffic during construction except for rockery wall work. Perform single lane closures according to Detail ET 635-9 for all other work.
2. See Sheets N03 and N04 for Details A, B, C, and D.
3. Cover all signs while detour is not in effect.
4. Adjust final location and spacing of temporary traffic control devices to fit field conditions as directed by the CO.



R11-2
Mounted on barricade



W20-3



W20-3

NO SCALE

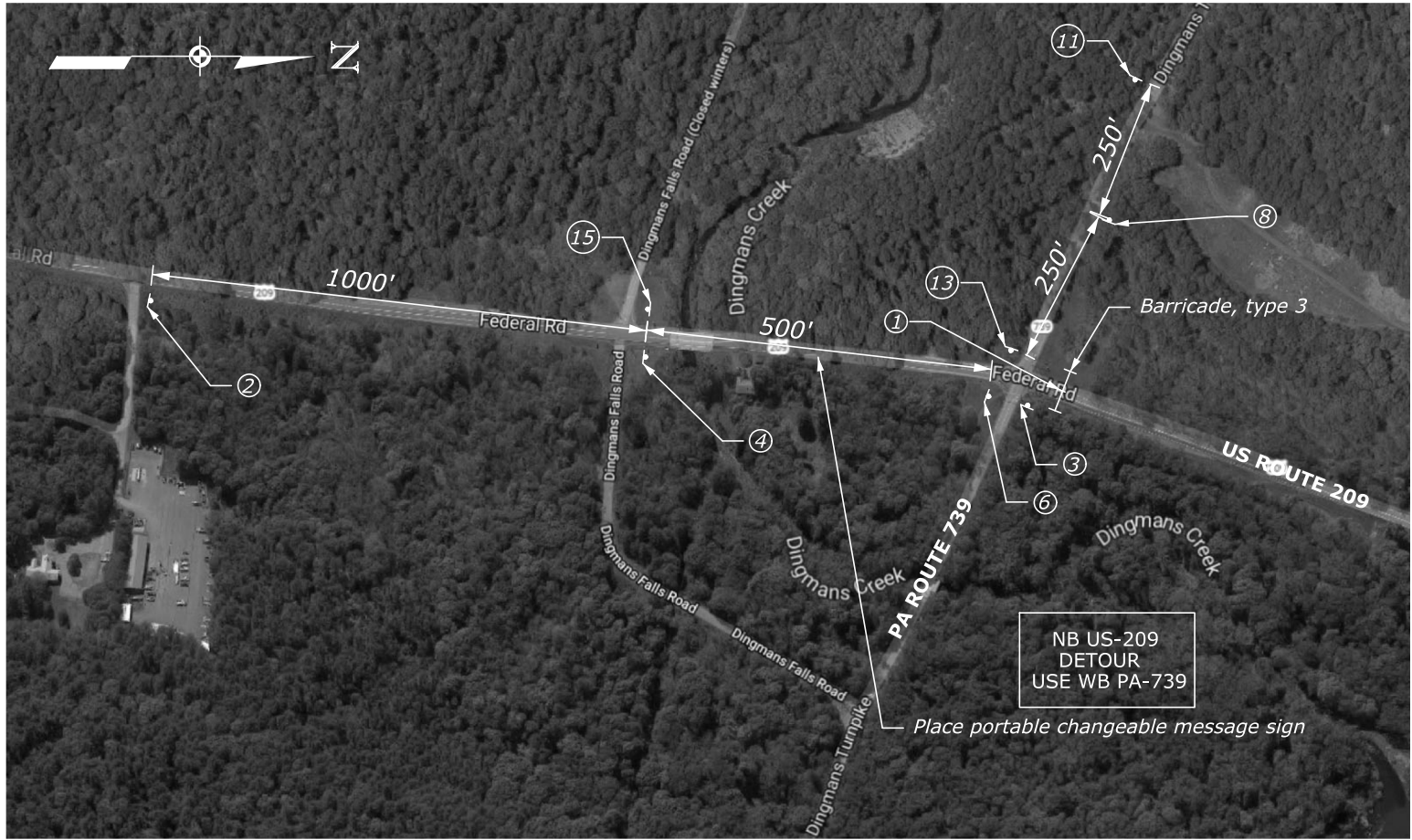
U.S. DEPARTMENT OF TRANSPORTATION
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EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

**DELAWARE WATER GAP
NATIONAL RECREATION AREA**

**TEMPORARY TRAFFIC
CONTROL PLANS**

**STRUCTURE NO. 4320-013P
ADAMS CREEK BRIDGE
US ROUTE 209**

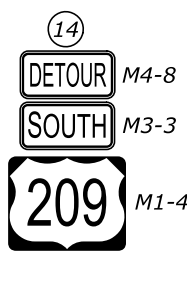
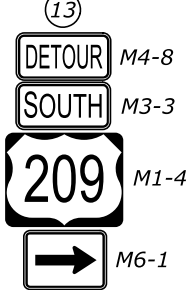
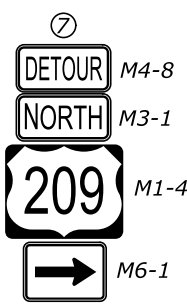
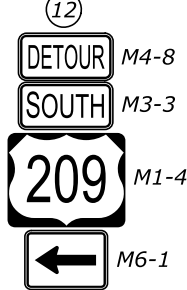
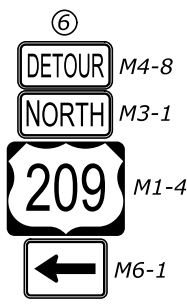
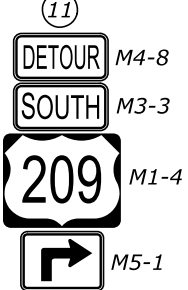
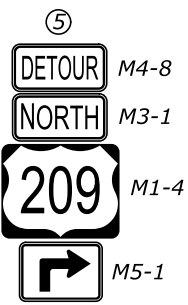
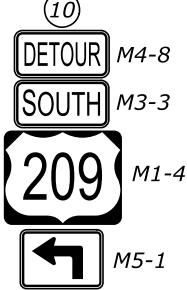
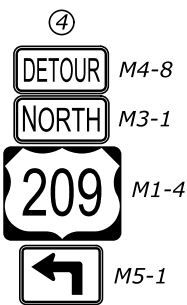
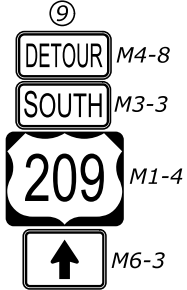
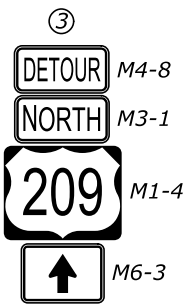
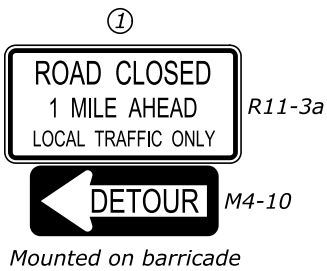
PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	N03



DETAIL B
Full closure detour signage for intersection
of U.S. Route 209 and PA Route 739



DETAIL C
Full closure detour signage for intersection
of PA Route 739 and Milford Road



NOTES:

1. Do not close U.S. Route 209 to traffic during construction except for rockery wall work. Perform single lane closures according to Detail ET 635-9 for all other work.
2. Cover all signs while detour is not in effect.
3. Adjust final location and spacing of temporary traffic control devices to fit field conditions as directed by the CO.



NO SCALE

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FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

DELAWARE WATER GAP
NATIONAL RECREATION AREA

**TEMPORARY TRAFFIC
CONTROL PLANS**

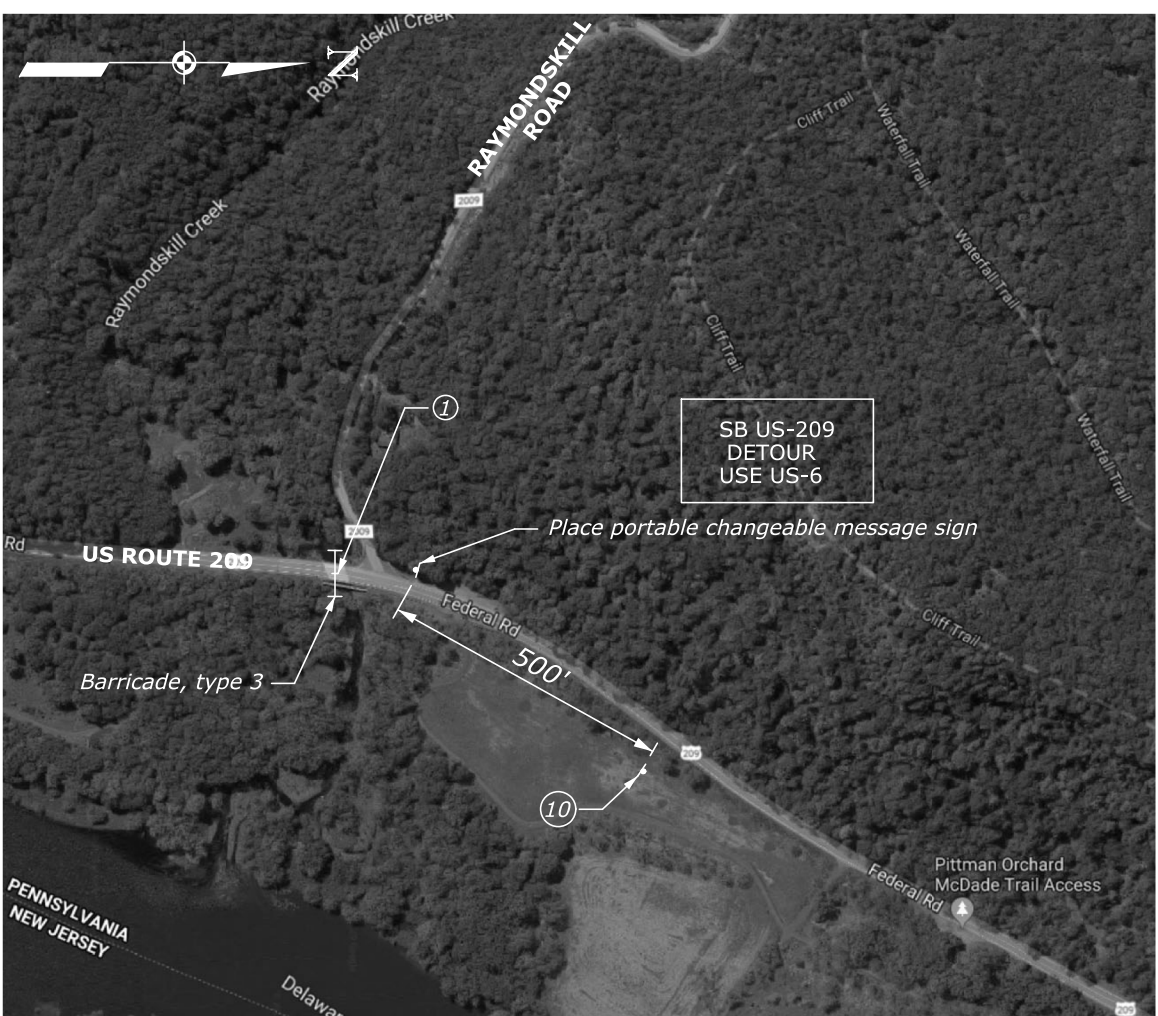
STRUCTURE NO. 4320-013P
ADAMS CREEK BRIDGE
US ROUTE 209

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537, 222539, 222540	620, 140556	PA	NP-DEWA 14(18), 121(1)	N04



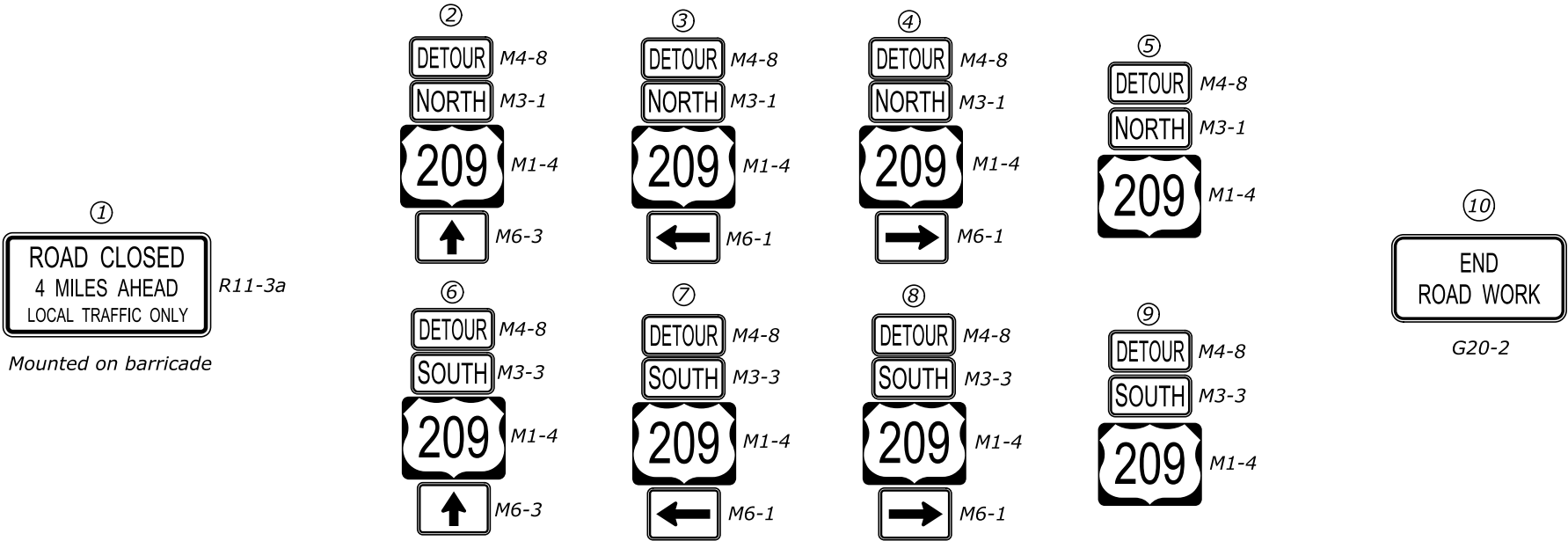
DETAIL D

Full closure detour signage for intersection of Milford Road and Raymondskill Road



DETAIL E

Full closure detour signage for intersection of Raymondskill Road and U.S. Route 209



NOTES:

- 1. Do not close U.S. Route 209 to traffic during construction except for rockery wall work. Perform single lane closures according to Detail ET 635-9 for all other work.
- 2. Cover all signs while detour is not in effect.
- 3. Adjust final location and spacing of temporary traffic control devices to fit field conditions as directed by the CO.

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

DELAWARE WATER GAP
NATIONAL RECREATION AREA

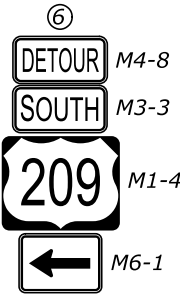
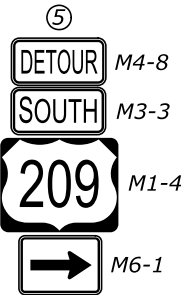
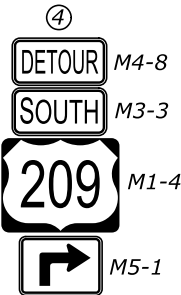
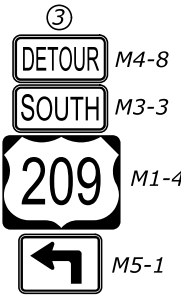
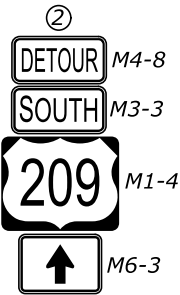
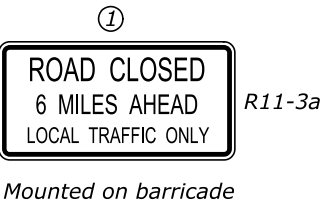
TEMPORARY TRAFFIC
CONTROL PLANS

STRUCTURE NO. 4320-013P
ADAMS CREEK BRIDGE
US ROUTE 209

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	N05

NOTES:

1. Do not close U.S. Route 209 to traffic during construction except for rockery wall work. Perform single lane closures according to Detail ET 635-9 for all other work.
2. Cover all signs while detour is not in effect.
3. Adjust final location and spacing of temporary traffic control devices to fit field conditions as directed by the CO.



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

DELAWARE WATER GAP
NATIONAL RECREATION AREA

TEMPORARY TRAFFIC
CONTROL PLANS

STRUCTURE NO. 4320-013P
ADAMS CREEK BRIDGE
US ROUTE 209

NO SCALE



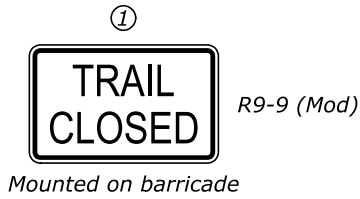
DETAIL F

Full closure detour signage for intersections
of U.S. Route 6 and U.S. Route 209,
U.S. Route 6 and Mill Street, and
U.S. Route 206 and U.S. Route 209

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537, 222539, 222540	620, 140556	PA	NP-DEWA 14(18), 121(1)	N06

NOTE:

1. Adjust final location and spacing of temporary traffic control devices to fit field conditions as directed by the CO.



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

**DELAWARE WATER GAP
NATIONAL RECREATION AREA**

**TEMPORARY TRAFFIC
CONTROL PLANS**

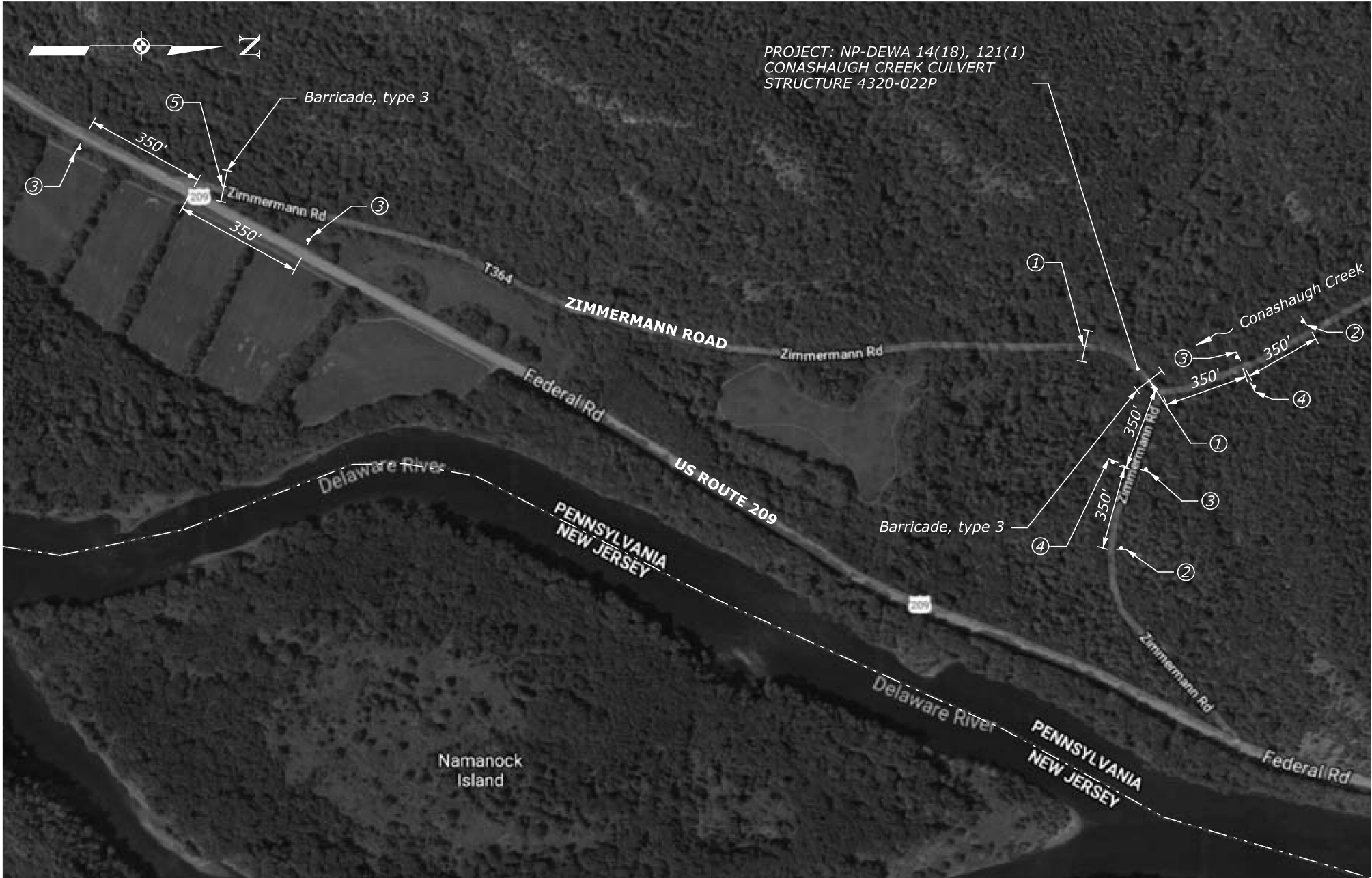
**STRUCTURE NO. 4320-049P
TOMS CREEK BRIDGE
US ROUTE 209**

NO SCALE

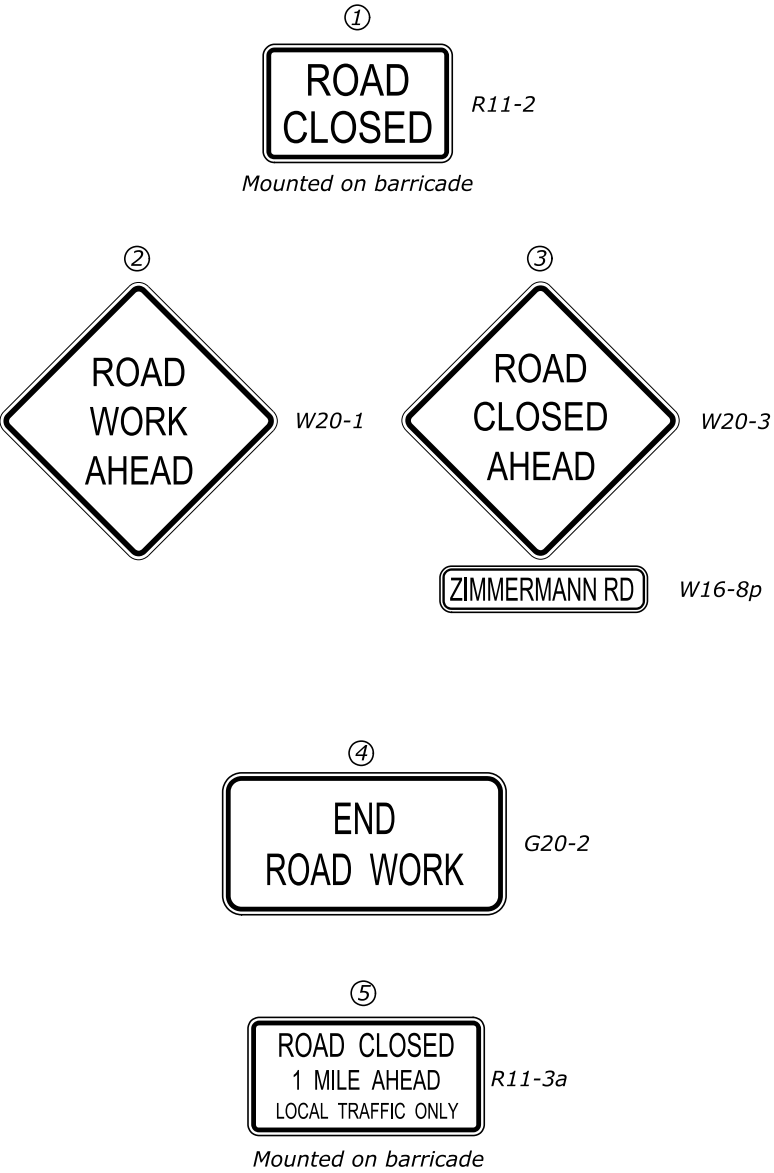
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222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	N07

NOTES:

1. Place "ROAD WORK AHEAD" and "ROAD CLOSED AHEAD" signs at Zimmerman Road entrances according to Detail E635-01.
2. Adjust final location and spacing of temporary traffic control devices to fit field conditions as directed by the CO.



DETAIL G
Closure of Zimmermann Road



NO SCALE

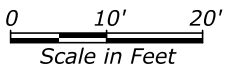
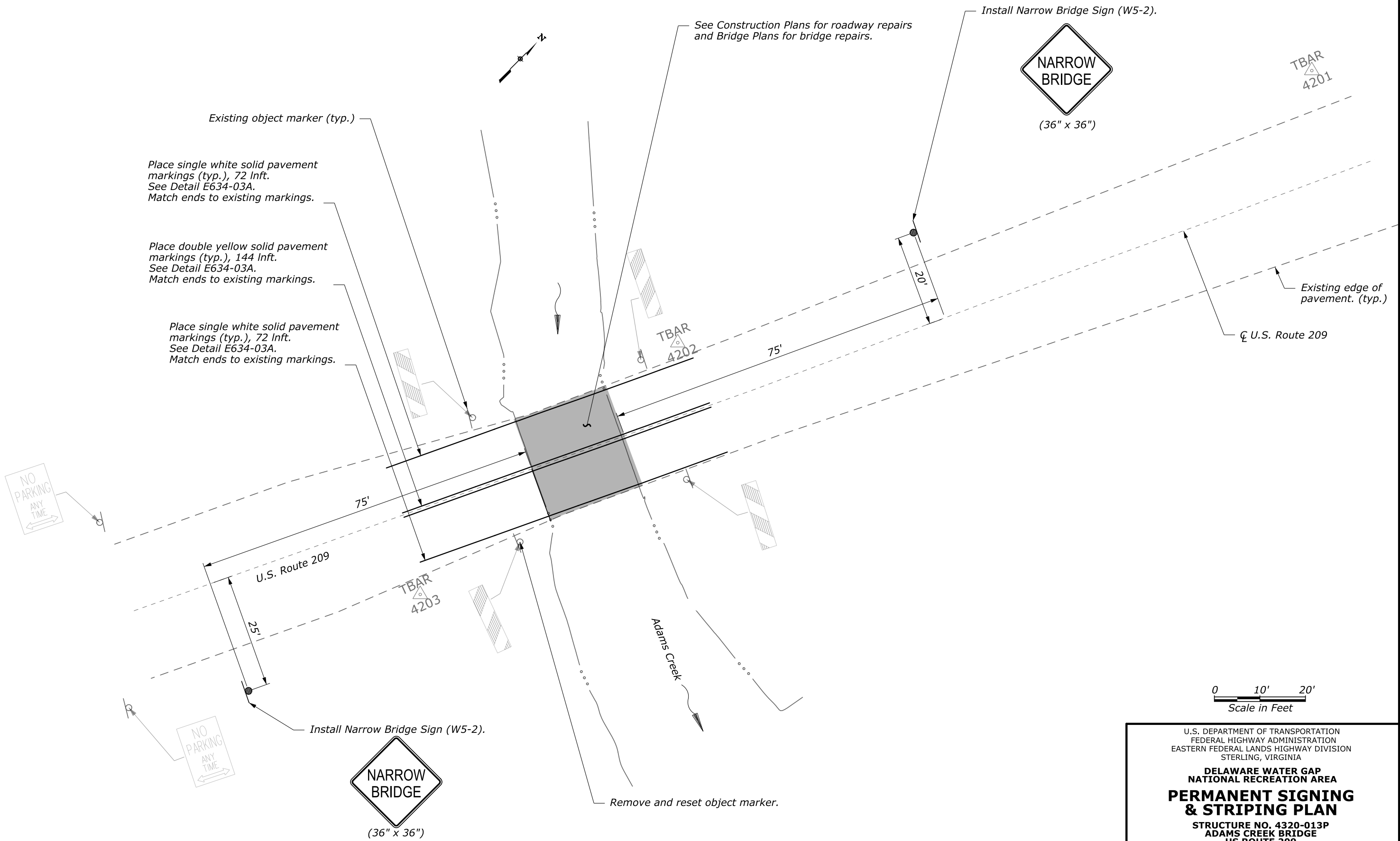
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

DELAWARE WATER GAP
NATIONAL RECREATION AREA

TEMPORARY TRAFFIC
CONTROL PLANS

STRUCTURE NO. 4320-022P
CONASHAUGH CREEK CULVERT
ZIMMERMANN ROAD

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	P01



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

**DELAWARE WATER GAP
NATIONAL RECREATION AREA**
**PERMANENT SIGNING
& STRIPING PLAN**
STRUCTURE NO. 4320-013P
ADAMS CREEK BRIDGE
US ROUTE 209

NOTE:

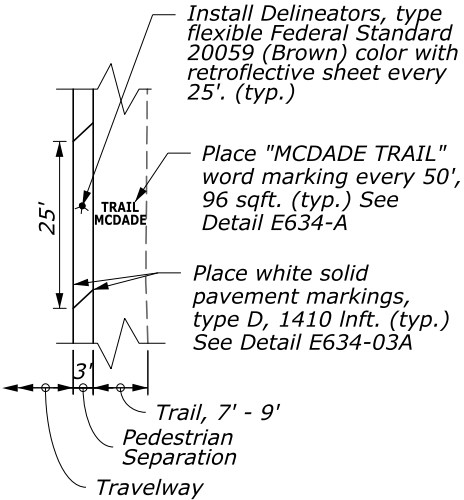
1. The length of the pedestrian separation markings is 400 feet from diagonal to diagonal.

Place double yellow solid pavement markings (typ.), 39 Inft. See Detail E634-03A. Match southern end to existing markings and stop northern end where existing markings stop.

See Construction Plans for roadway repairs and Bridge Plans for bridge repairs.

Remove and reset carsonite trail sign

Remove and reset object marker



Pedestrian Separation and Trail Detail
(See Note 1)

Install Bicycle sign (W11-1) with Share the Road plaque (W16-1P).



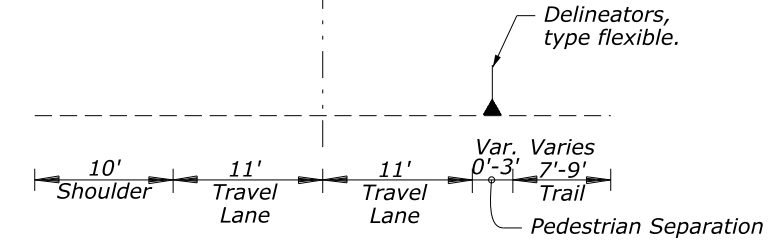
(30" X 30")

(18" X 24")

Existing edge of shoulder. (typ.)

U.S. Route 209

Existing edge striping (typ.)



Section A-A

0 25' 50'
Scale in Feet

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FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

**DELAWARE WATER GAP
NATIONAL RECREATION AREA
PERMANENT SIGNING
& STRIPING PLAN**

**STRUCTURE NO. 4320-009P
BUSHKILL CREEK BRIDGE
US ROUTE 209**

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PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537, 222539, 222540	620 140556	PA	NP-DEWA 14(18) 121(1)	R01

GENERAL NOTES:

SPECIFICATIONS:

Design:
AASHTO LRFD Bridge Design Specifications, Seventh Edition, 2014, 2016 Interim Revision

Construction:
Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-14.
Field verify all dimensions.

DESIGN LOADS:

Dead Load:
Weight of Materials

Live Load:
H20 Truck (Structure 4320-013P)
HS20 Truck (Structure 4320-009P)
HL-93 Truck (Structure 4320-049P)

MATERIALS:

Concrete:
Furnish Class A(AE) for concrete repairs f'c = 4,500 psi at 28 days.
Furnish High Early Strength (HES) concrete for concrete deck reapiers.
Chamfer exposed edges of all concrete to match existing unless otherwise noted.

Strutural Steel:
Use galvanized steel, unless otherwise noted.

SCOPE OF WORK

Structure Number 4320-009P - Bushkill Creek Bridge

- Repair deteriorated areas of concrete on top of deck and on pier nosing.
- Seal concrete rail surfaces.
- Clean and reseal bridge joints.
- Remove and replace expansion joint strip seal.
- Install rail.
- Install riprap.

Structure Number 4320-013P - Adams Creek Bridge

- Clean scuppers.
- Repair deteriorated area of concrete on girders and abutment/wingwall.
- Grout under both abutments.
- Install rockery wall

Structure Number 4320-049P - Toms Creek Bridge

- Clean and reseal bridge joints.
- Seal concrete rails surfaces.
- Remove all anchor bolts washers and replace.

INDEX OF BRIDGE PLAN SHEETS

SHEET NO.	SHEET TITLE
1	General Notes and Index
2	Summary of Quantities
3	Plan and Elevation (4320-009P)
4	Concrete Repair (4320-009P)
5	Miscellaneous Details (4320-009P)
6	Rail Details (4320-009P)
7	Plan and Elevation (4320-013P)
8	Plan and Elevation (4320-049P)
9	Miscellaneous Details (4320-049P)
10	Concrete Repair Details

Structure Number 4320-009P
Structure Number 4320-013P
Structure Number 4320-049P

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION

DELAWARE WATER GAP
NATIONAL RECREATION AREA

GENERAL NOTES AND INDEX

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE PLAN SHEET	DATE	BRP NO.
								ANM	ANM	DW	No scale	George Choubah	1 of 10	September 2019	BRP-1253

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PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537, 222539, 222540	620 140556	PA	NP-DEWA 14(18) 121(1)	R02

ESTIMATED QUANTITIES						
PAY ITEM NUMBER	PAY ITEM DESCRIPTION	UNITS	STRUCTURE NUMBER			TOTAL
			4320-009P	4320-013P	4320-049P	
25102-0600	Placed riprap, method A, Class 6	TON	1250			1250
25210-0000	Rockery (Wall)	SQFT		80		80
55201-1200	Structural concrete, class S (seal)	CUYD		5		5
55220-0000	Repair concrete	SQYD	80	40		120
55224-0000	Seal concrete surface	SQYD	335		225	560
55225-0000	Clean and reseal joints	LNFT	130		380	510
55235-0000	Expansion joints (Strip seal)	LNFT	100			100
55506-0000	Miscellaneous steel (Anchor bolt washer)	EACH			28	28
55601-1000	Bridge railing, steel, one rail	LNFT	190			190
60706-0000	Cleaning drainage structure (Scupper)	EACH		4		4

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION

DELAWARE WATER GAP
NATIONAL RECREATION AREA

SUMMARY OF QUANTITIES

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE PLAN SHEET	DATE	BRP NO.
								ANM	ANM	DW	No scale	George Choubah	2 of 10	September 2019	BRP-1253

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE PLAN SHEET	DATE	BRP NO.
								ANM	ANM	DW	$\frac{3}{32}'' = 1'-0''$	George Choubah	3 of 10	September 2019	BRP-1253

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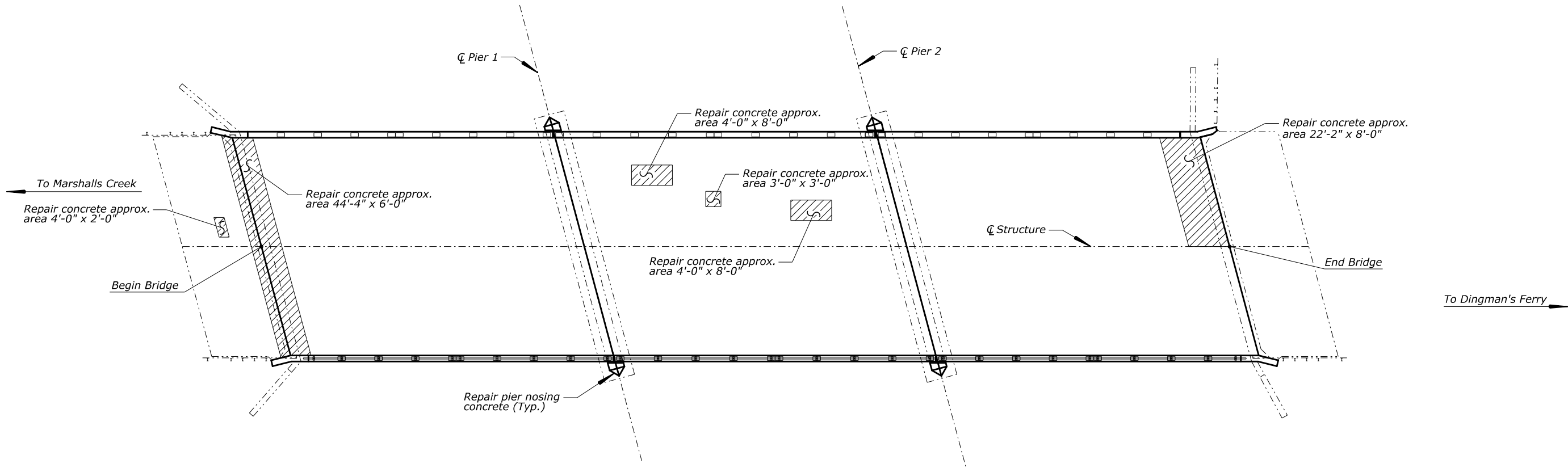
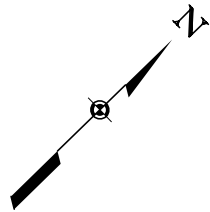
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PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537, 222539, 222540	620 140556	PA	NP-DEWA 14(18) 121(1)	R04

- Notes:
1. Remove and repair unsound and deteriorated concrete on topside of deck and on pier nosing as directed by the CO.
 2. See "MISCELLANEOUS DETAILS (4320-009P)" sheet for additional information on pier nosing.
 3. See "CONCRETE REPAIR DETAILS" for additional information.

Bridge length: 189'-6" ±



PLAN

ESTIMATED REPAIR QUANTITIES		
DESCRIPTION OF WORK	UNITS	APPROX. QUANTITY
Repair Concrete	Sq.Yd.	80

Structure Number 4320-009P

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION

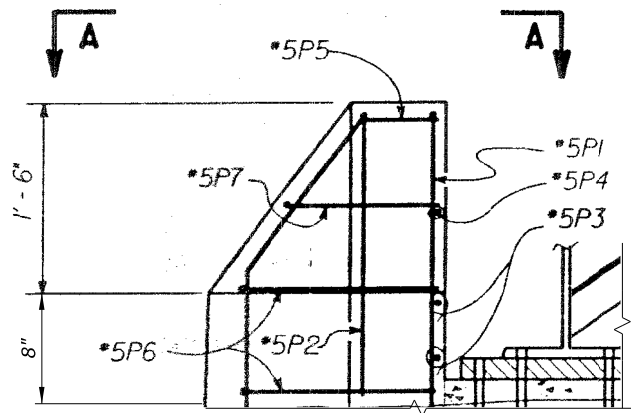
DELAWARE WATER GAP
NATIONAL RECREATION AREA

BRIDGE OVER BUSHKILL CREEK

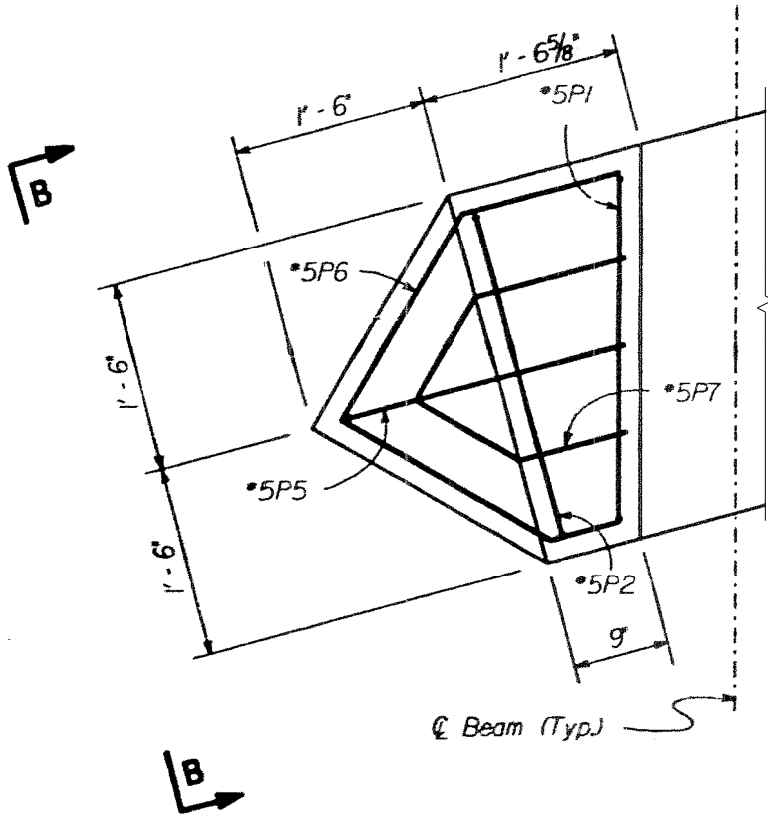
CONCRETE REPAIR
(4320-009P)

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE PLAN SHEET	DATE	BRP NO.
								ANM	ANM	DW	3/32" = 1'-0"	George Choubah	4 of 10	September 2019	BRP-1253

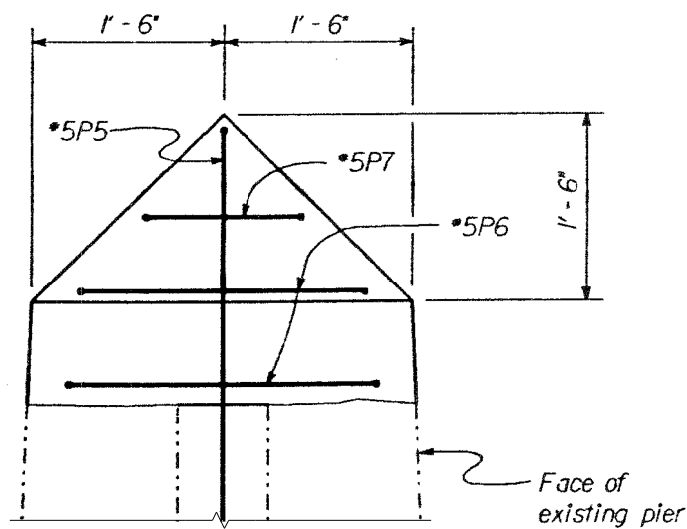
PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537, 222539, 222540	620 140556	PA	NP-DEWA 14(18) 121(1)	R05



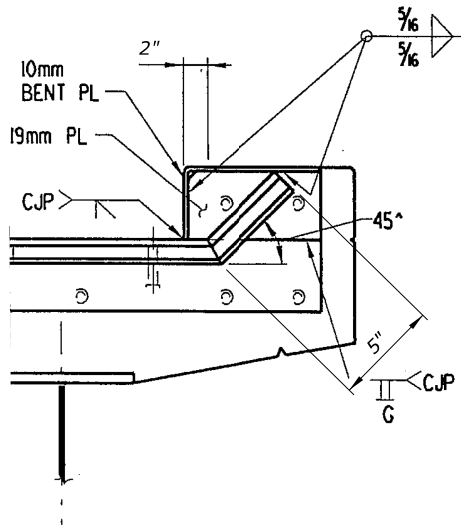
TOP OF PIER NOSING DETAIL



VIEW A-A

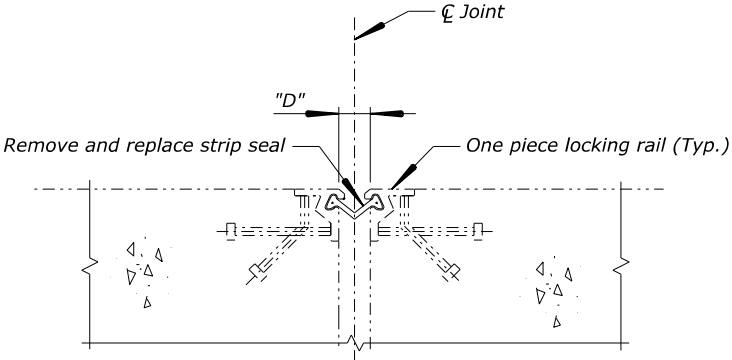


VIEW B-B

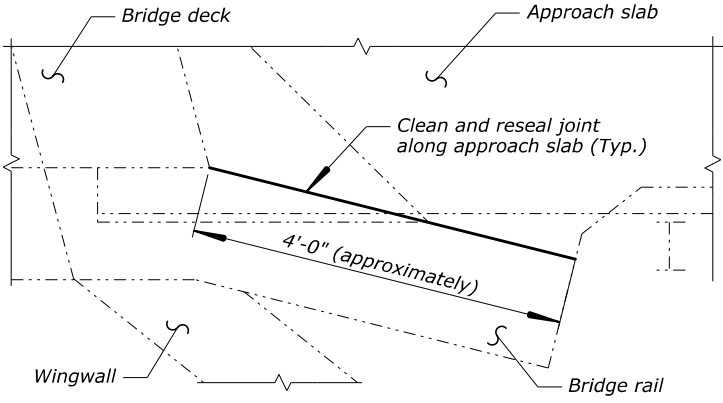


EXPANSION JOINT AT CURB DETAIL

- Notes:
1. Determine and provide strip seal dimension base upon joint opening size and expected movement. Submit shop drawings and supporting documents to the CO for approval before ordering seal.
 2. See "MISCELLANEOUS DETAILS (4320-049P)" sheet for additional joint details.



EXPANSION JOINT DETAIL (STRIP SEAL)



JOINT DETAIL (APPROACH SLAB)
(Northeast approach shown, other approaches similar)

Structure Number 4320-009P

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION

DELAWARE WATER GAP
NATIONAL RECREATION AREA

BRIDGE OVER BUSHKILL CREEK

MISCELLANEOUS DETAILS
(4320-009P)

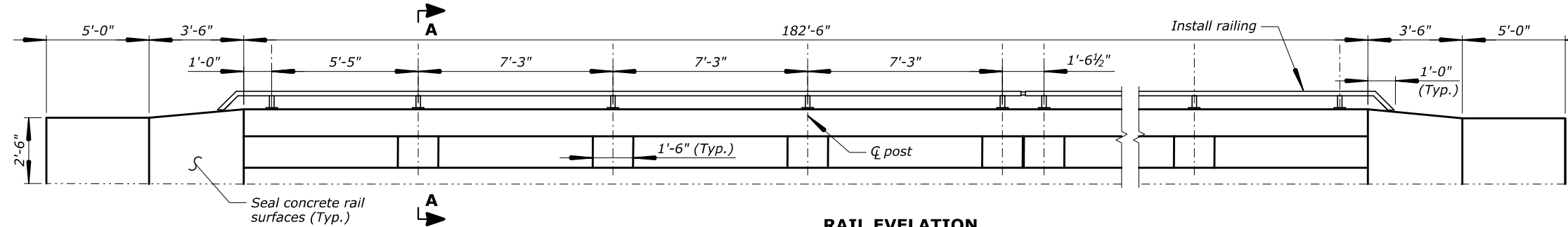
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								ANM	ANM	DW	No scale	George Choubah	5 of 10	September 2019	BRP-1253

ACTUAL FILE: R05_DEWA_DEWA_14(18)_121(1)_Rail_009.DGN

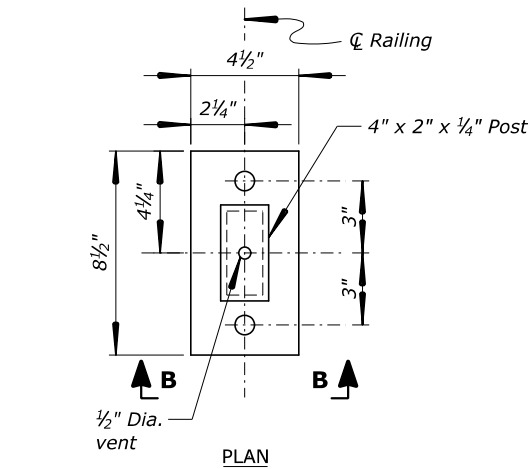
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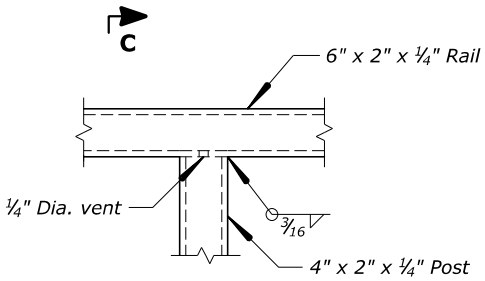
PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537, 222539, 222540	620 140556	PA	NP-DEWA 14(18) 121(1)	R06



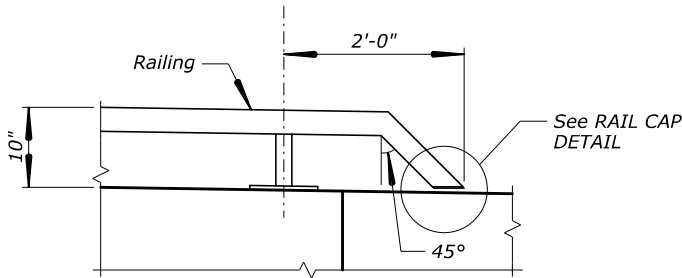
RAIL ELEVATION



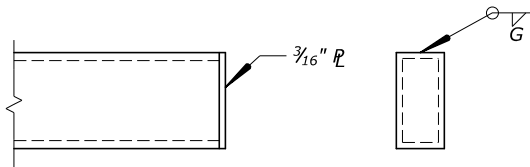
PLAN



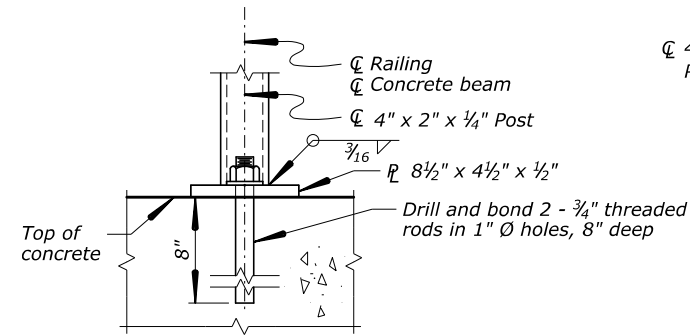
ELEVATION



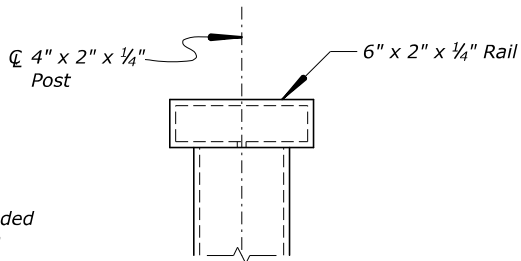
RAIL END DETAIL



RAIL CAP DETAIL

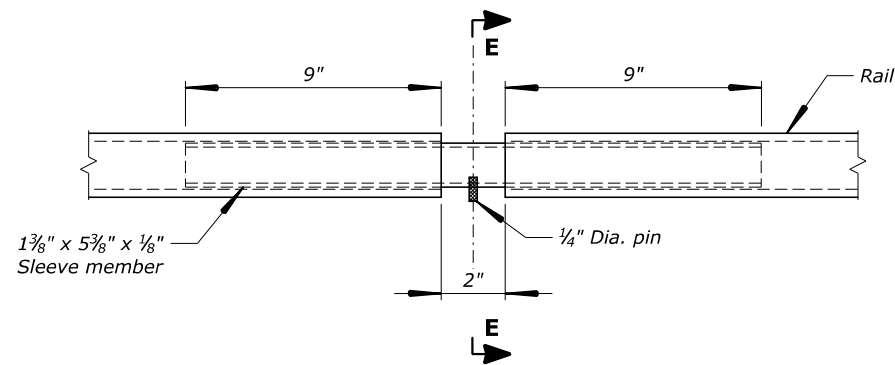


SECTION B-B

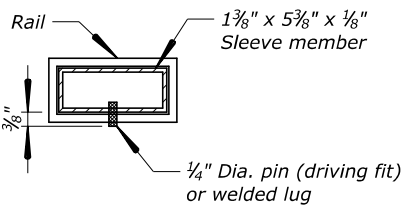


SECTION C-C

STEEL RAIL CONNECTION



AT CONSTRUCTION OR EXPANSION JOINTS

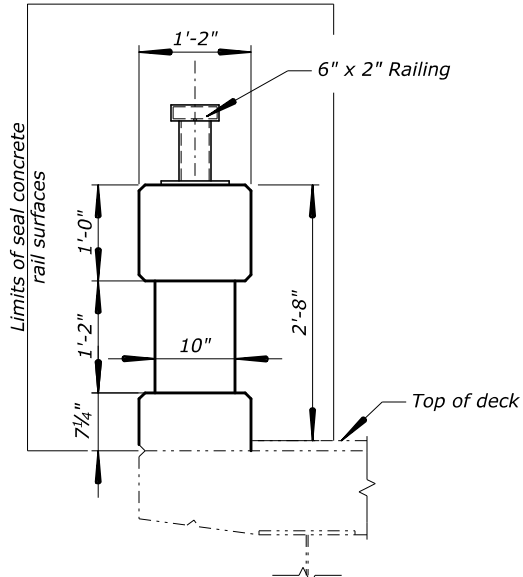


SECTION E-E

SPLICE DETAILS

Notes:

1. Install post normal to concrete railing.
2. Submit shop drawings for rail, post spacing, and hardware to the CO for approval.
3. Place rail splice in the rails spanning deck joints. Increase joint width in rails to match joint width and increase sleeve length accordingly.
4. Provide PMS Black #4 paint finish for railing.



SECTION A-A

Structure Number 4320-009P

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION

DELAWARE WATER GAP
NATIONAL RECREATION AREA

BRIDGE OVER BUSHKILL CREEK

RAIL DETAILS
(4320-009P)

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE PLAN SHEET	DATE	BRP NO.
								ANM	ANM	DW	No scale	George Choubah	6 of 10	September 2019	BRP-1253

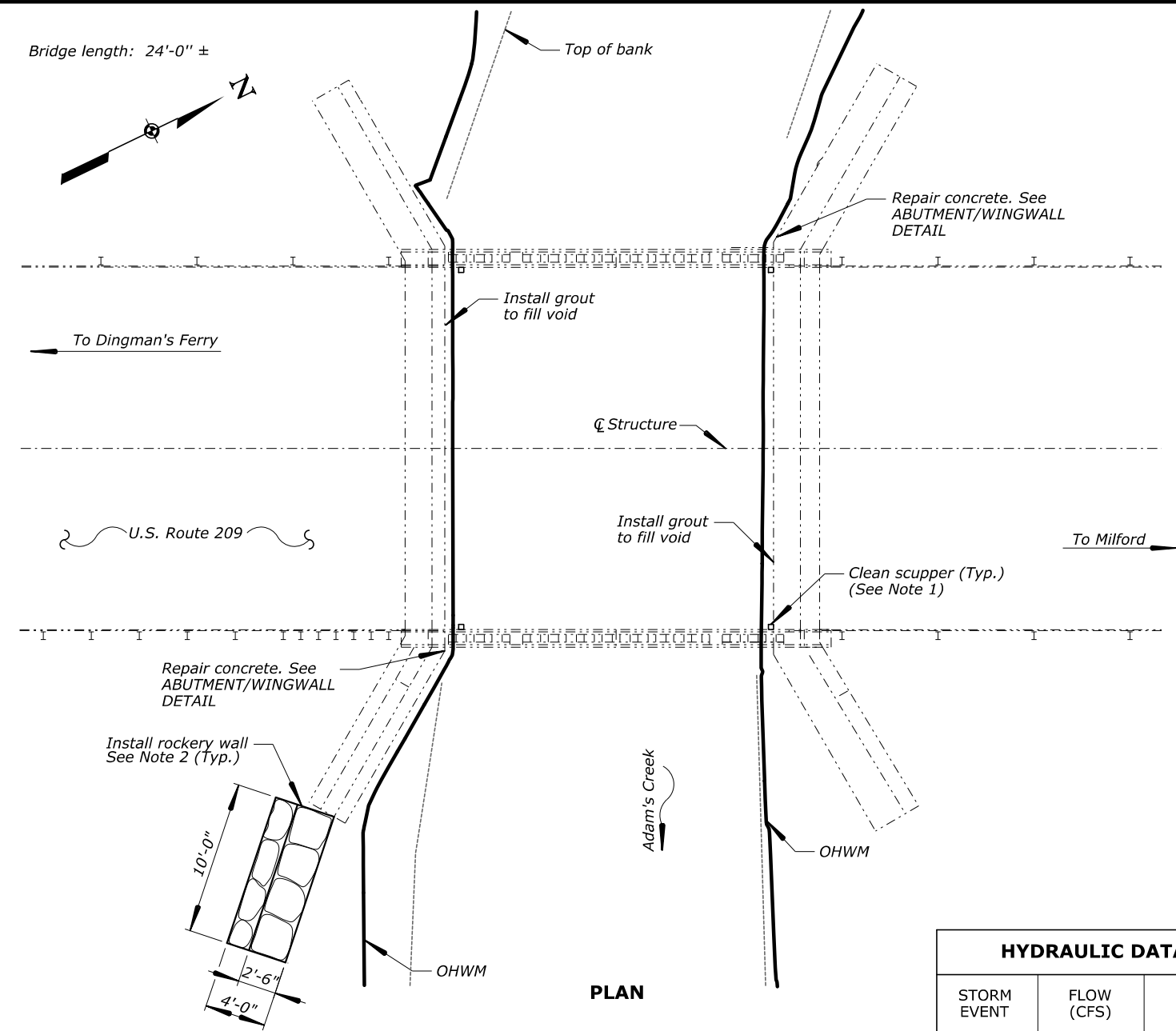
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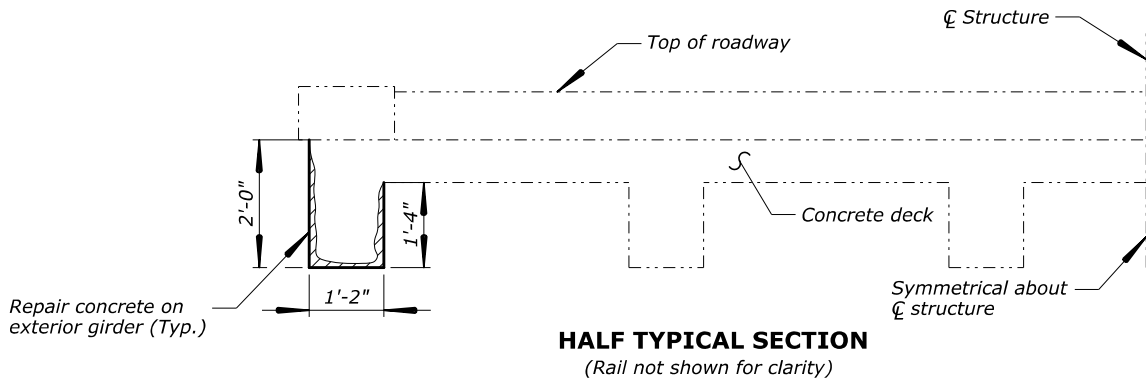
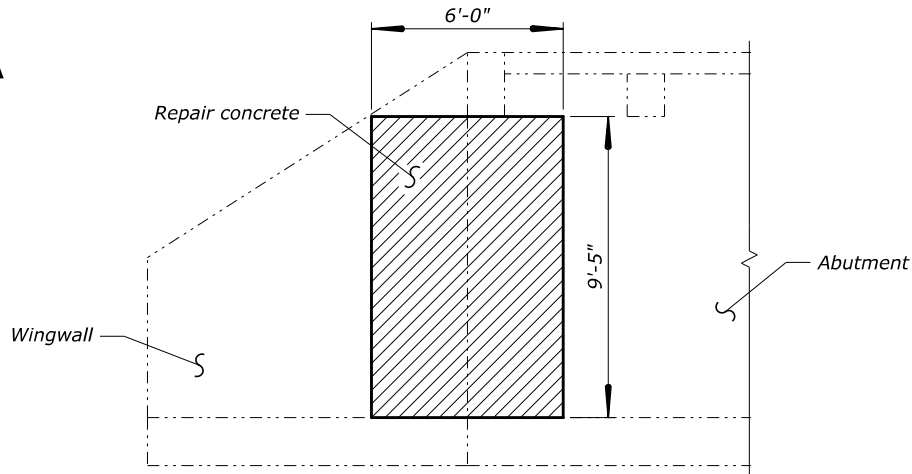
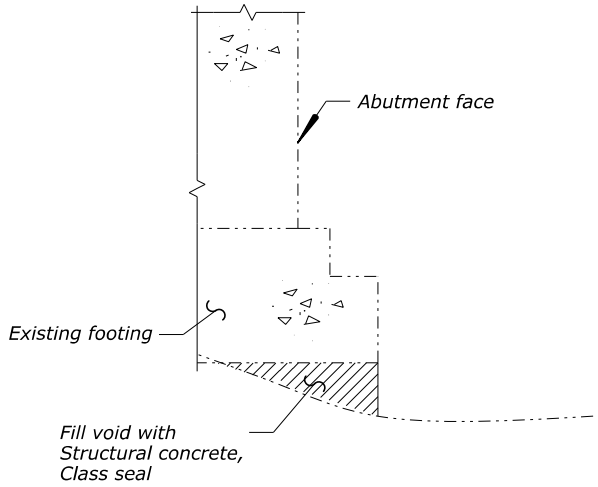
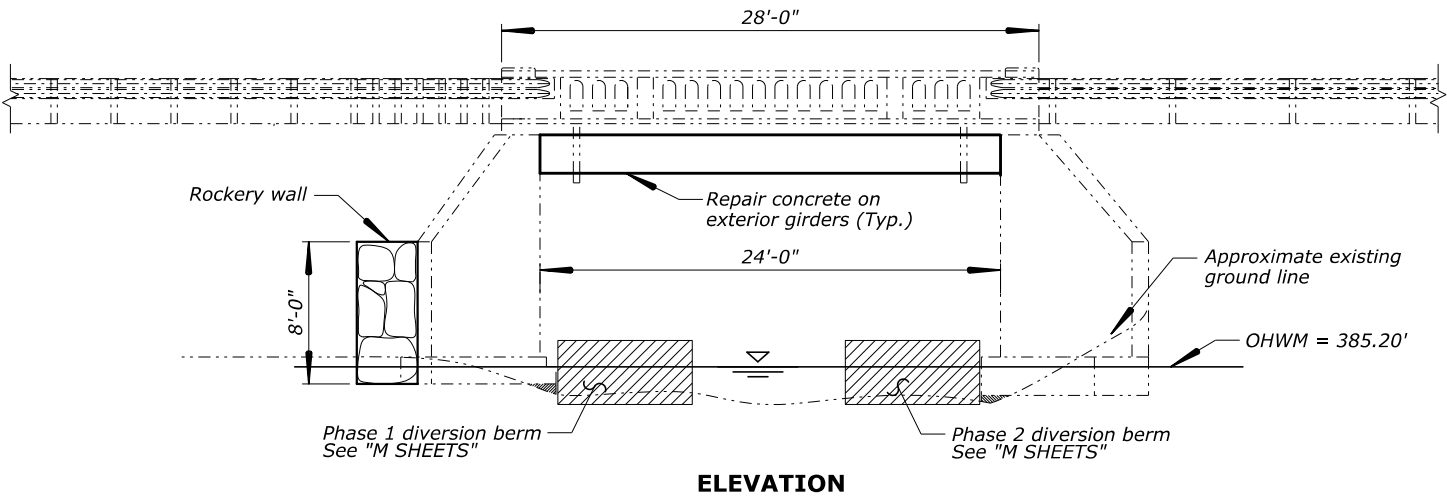
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PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537, 222539, 222540	620 140556	PA	NP-DEWA 14(18) 121(1)	R07

- Notes:
1. Remove asphalt and debris from scupper.
 2. See "DETAIL E252-A" sheet for rockery wall detail.
 3. Match rockery wall height to end height of southeast wingwall.
 4. See "CONCRETE REPAIR DETAILS" for additional information.
 5. See M SHEETS and S SHEETS for additional information on diversion berms.



HYDRAULIC DATA		
STORM EVENT	FLOW (CFS)	WSEL (FT)
Q ₁₀	815	388.17
Q ₅₀	1390	390.83
Q ₁₀₀	1680	391.77



ESTIMATED REPAIR QUANTITIES		
DESCRIPTION OF WORK	UNITS	APPROX. QUANTITY
Repair Concrete	Sq. Yd.	40
Grout	Cu. Yd.	5

Structure Number 4320-013P

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION

DELAWARE WATER GAP
NATIONAL RECREATION AREA

BRIDGE OVER ADAMS CREEK

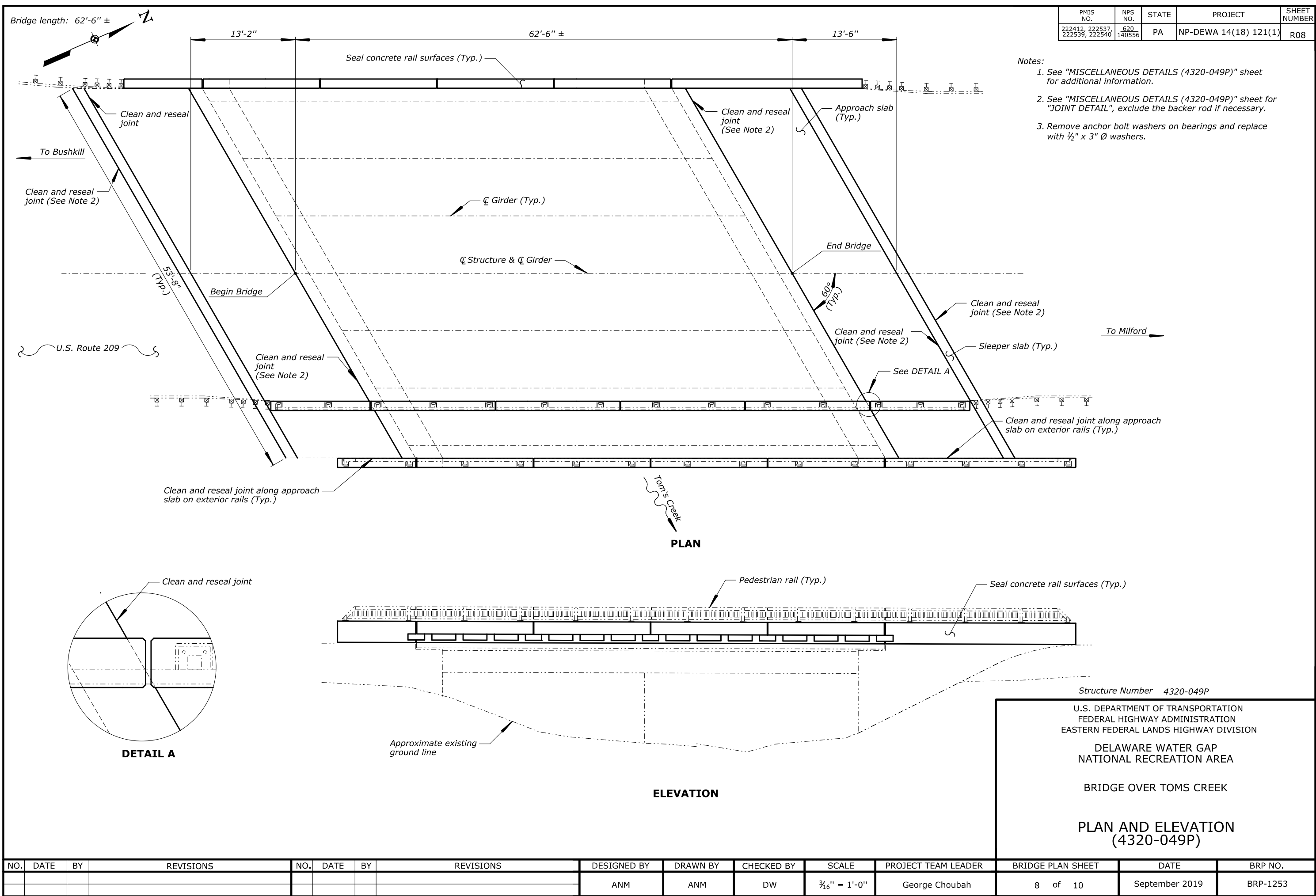
PLAN AND ELEVATION
(4320-013P)

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE PLAN SHEET	DATE	BRP NO.
								ANM	ANM	DW	No scale	George Choubah	7 of 10	September 2019	BRP-1253

ACTUAL FILE:R07_DEWA_14(18)_121(1)_P&E_049.DGN

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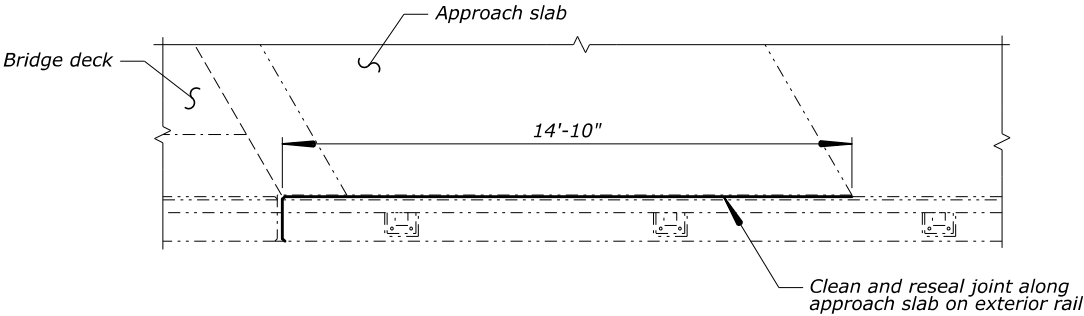
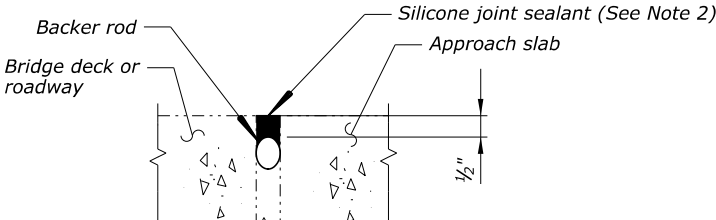
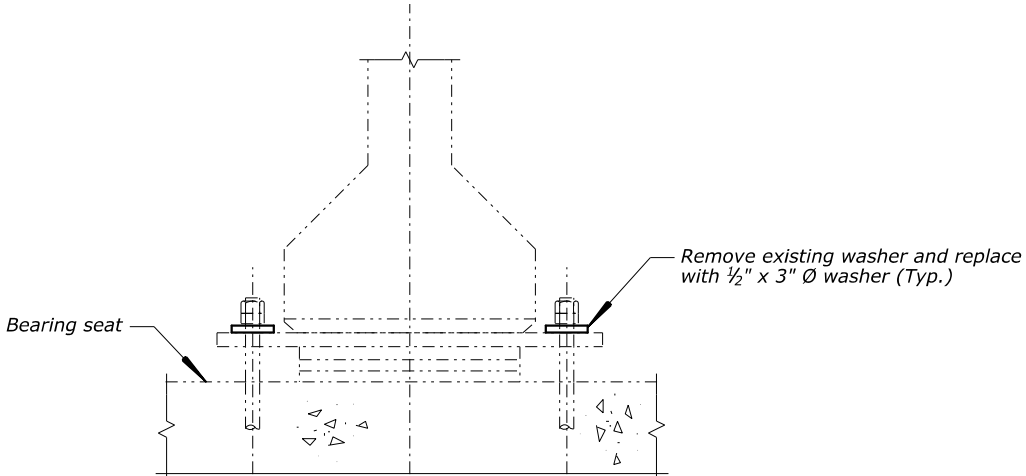
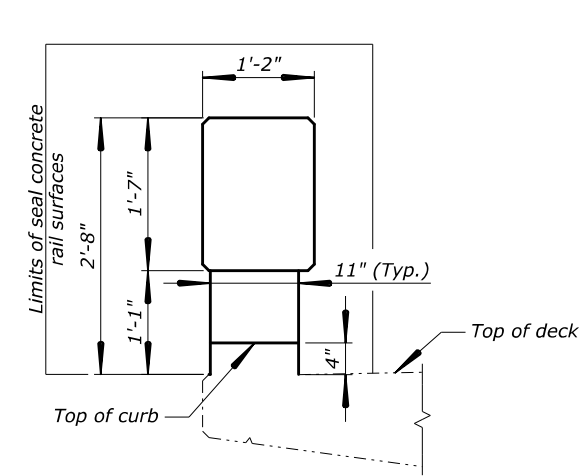
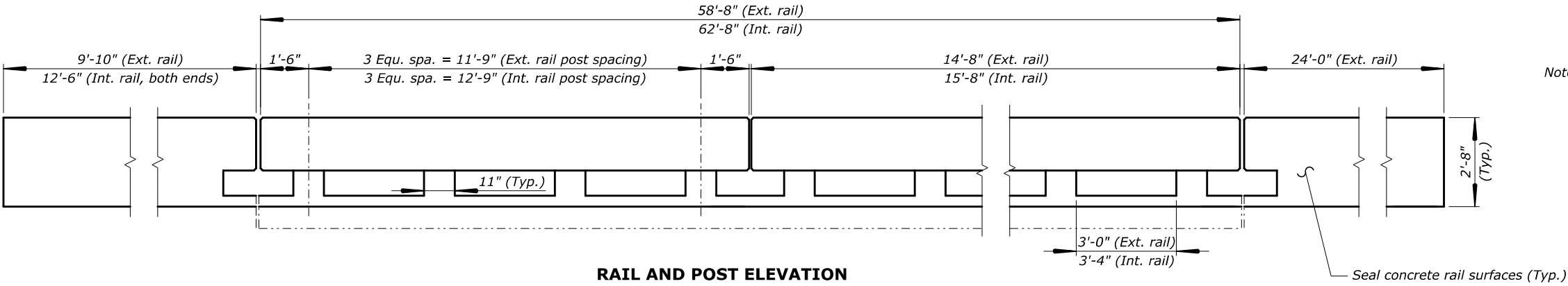
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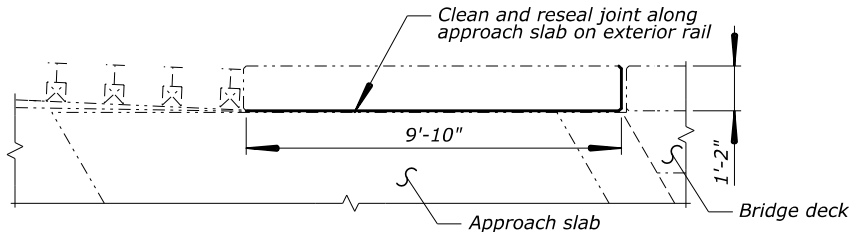
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PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537, 222539, 222540	620 140556	PA	NP-DEWA 14(18) 121(1)	R09

- Notes:
1. Verify all dimensions in the field prior to ordering material and approve by the CO.
 2. Furnish silicone joint sealant conforming to Subsection 712.01(i). Note location and skew of existing expansion joint.
 3. Provide washers conforming to ASTM F436.



NORTH APPROACH SLAB JOINT REPAIR
(East side shown, West side similar)



SOUTH APPROACH SLAB JOINT REPAIR
(West side shown, East side similar)

Structure Number 4320-049P

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION

DELAWARE WATER GAP
NATIONAL RECREATION AREA

BRIDGE OVER TOMS CREEK

MISCELLANEOUS DETAILS
(4320-049P)

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE PLAN SHEET	DATE	BRP NO.
								ANM	ANM	DW	No scale	George Choubah	9 of 10	September 2019	BRP-1253

ACTUAL FILE:R10_DEWA_14(18)_121(1)_CONC_REP_DT_2.DGN

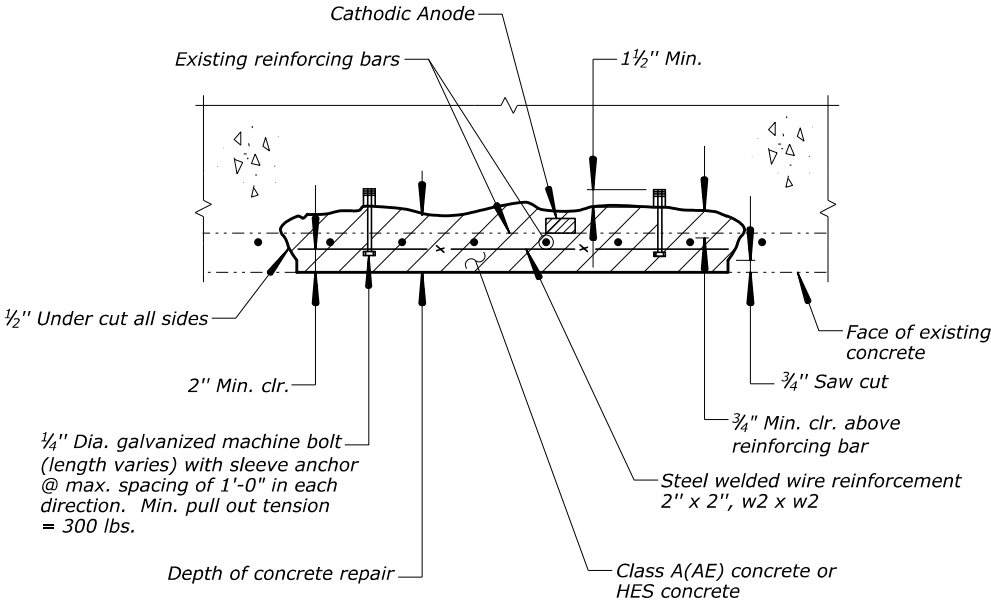
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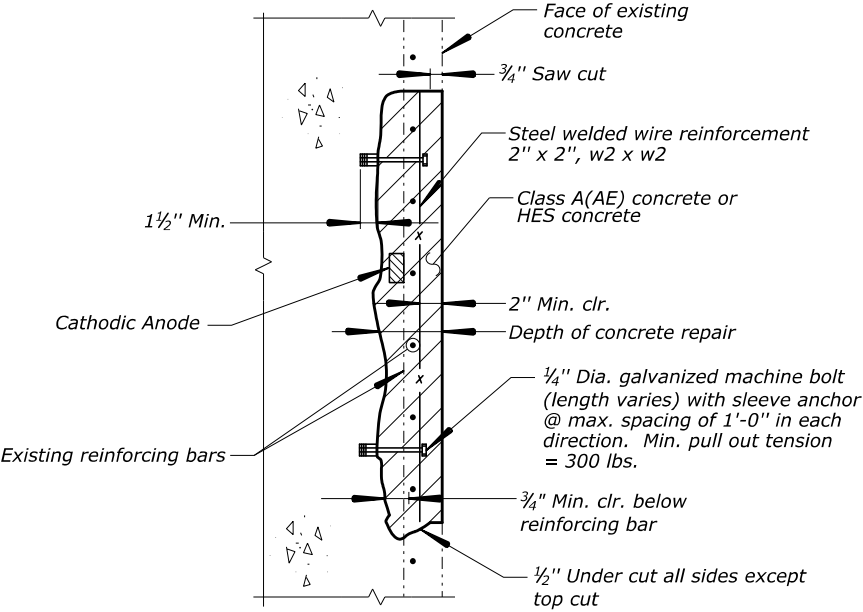
PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537, 222539, 222540	620 140556	PA	NP-DEWA 14(18) 121(1)	R10

Notes:

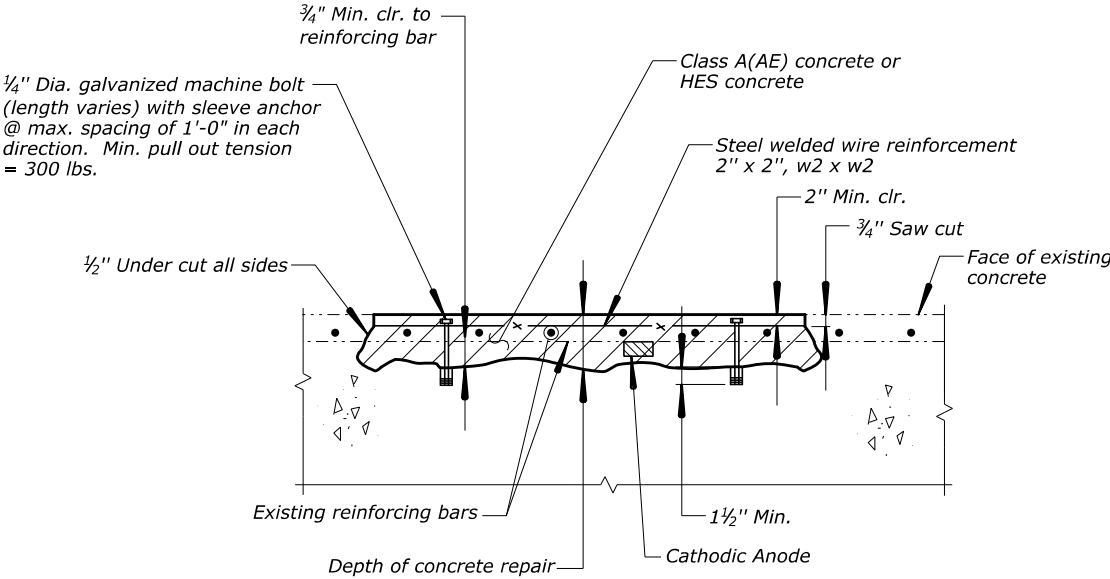
1. Locations of concrete repair areas are approximate and depth of reinforcing steel may vary.
2. Install cathodic anodes for corrosion protection on repair areas according to manufacturer's recommendations, as approved by the CO.
3. Saw cut $\frac{3}{4}$ -inch deep along a square or rectangular perimeter around the designated repair area, as approved by the CO.
4. Remove loose and deteriorated concrete to a depth as shown on concrete repair details to clear existing reinforcement, without incurring any damage to existing steel reinforcement.
5. Clean existing reinforcing steel and concrete by wire brush, abrasive blasting, or water jetting according to Section 203.
6. Replace reinforcing steel with more than 15% section loss. Match existing reinforcing steel diameter and coating.
7. Fasten steel welded wire reinforcement to existing reinforcement/concrete with machine bolts.



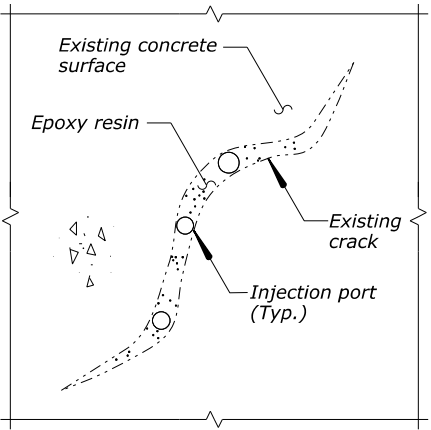
OVERHEAD CONCRETE REPAIR



VERTICAL CONCRETE REPAIR



HORIZONTAL CONCRETE REPAIR



CONCRETE CRACK REPAIR

Note: Repair concrete cracks according to Section 561- Structural Concrete Injection and Crack Repair.

Structure Number 4320-009P
Structure Number 4320-013P

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION

DELAWARE WATER GAP
NATIONAL RECREATION AREA

CONCRETE REPAIR DETAILS

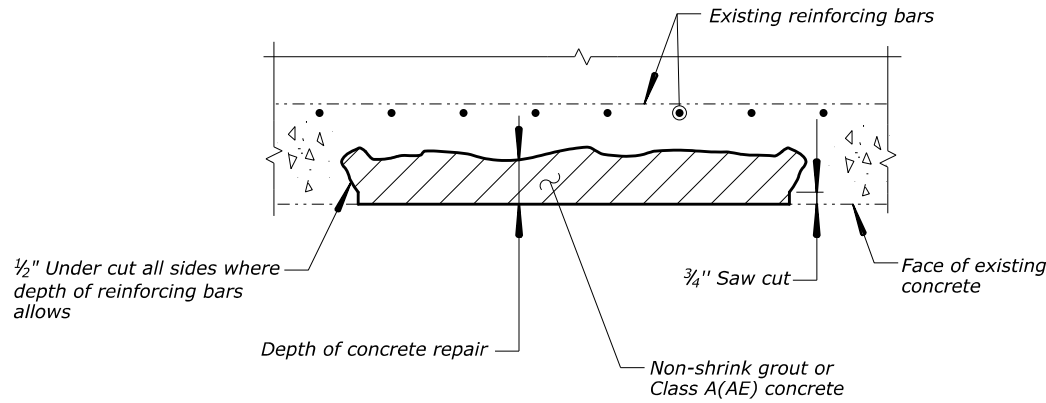
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								ANM	ANM	DW	No scale	George Choubah	10 of 10	September 2019	BRP-1253

ACTUAL FILE:R09_DEWA_14(18)_121(1)_CONC_REP_DT_1.DGN

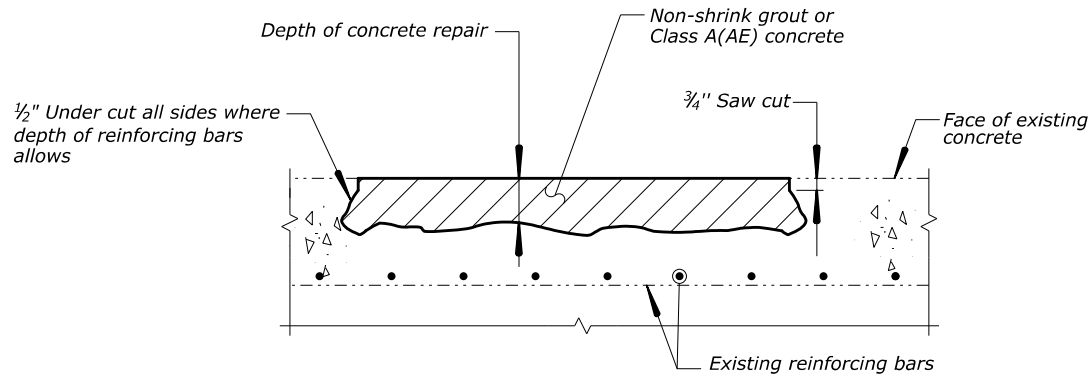
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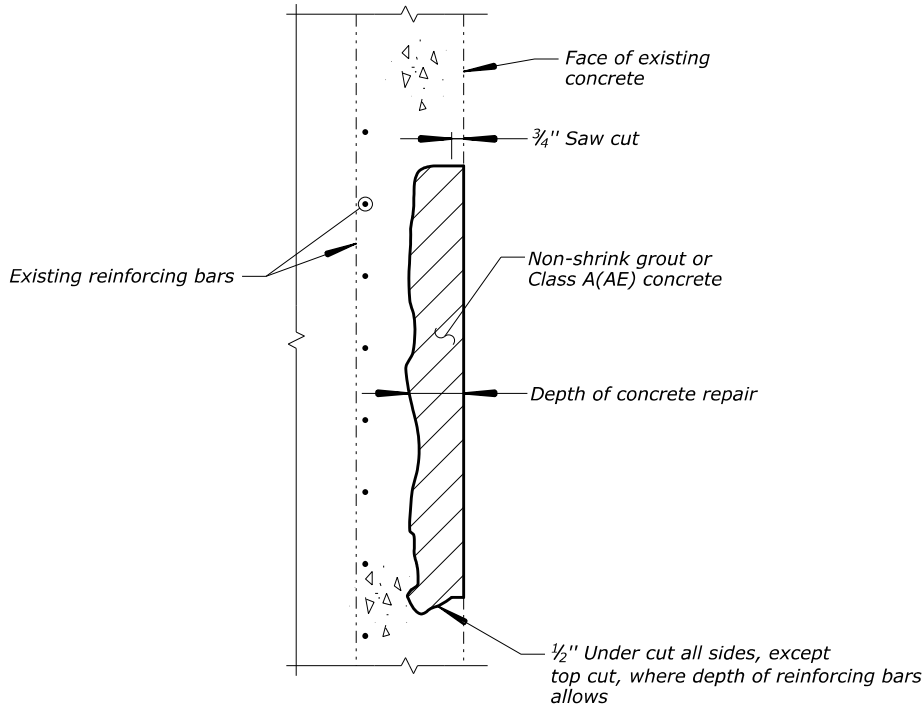
PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537, 222539, 222540	620 140556	PA	NP-DEWA 14(18) 121(1)	R11



OVERHEAD CONCRETE REPAIR



HORIZONTAL CONCRETE REPAIR



VERTICAL CONCRETE REPAIR

- Notes:
1. Locations of concrete repair areas are approximate. Depth of concrete reinforcing bars may vary. Removal areas will be determined in the field by the CO.
 2. If bond between existing concrete and reinforcing steel is destroyed, see "CONCRETE REPAIR DETAILS - 2" sheet for repair method.

Structure Number 4320-009P
Structure Number 4320-013P

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION

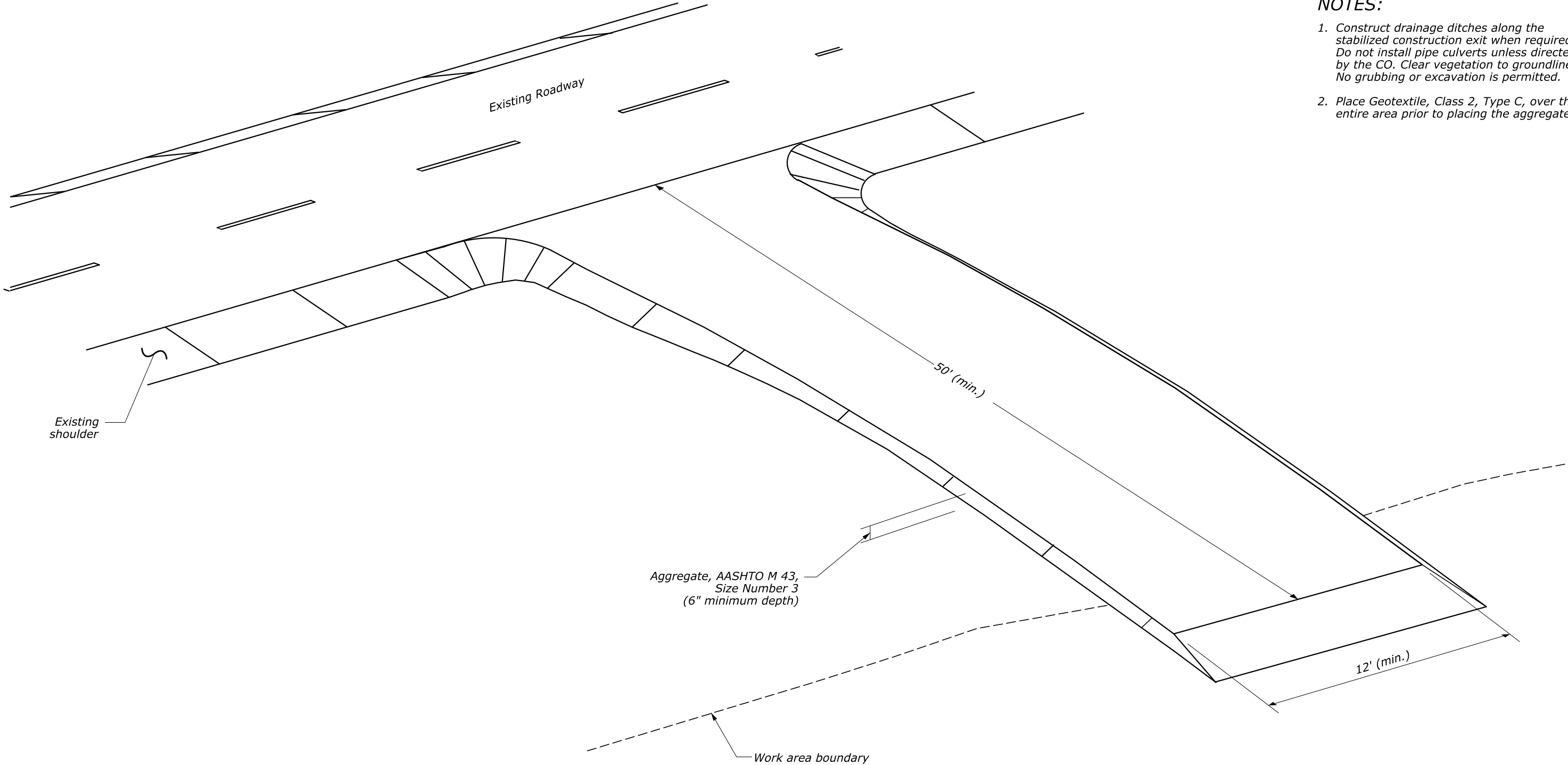
DELAWARE WATER GAP
NATIONAL RECREATION AREA

CONCRETE REPAIR DETAILS - 1

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE PLAN SHEET	DATE	BRP NO.
								ANM	ANM	DW	No scale	George Choubah	11 of 10	September 2019	BRP-1253

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	S01

- NOTES:**
- 1. Construct drainage ditches along the stabilized construction exit when required. Do not install pipe culverts unless directed by the CO. Clear vegetation to groundline. No grubbing or excavation is permitted.
 - 2. Place Geotextile, Class 2, Type C, over the entire area prior to placing the aggregate.



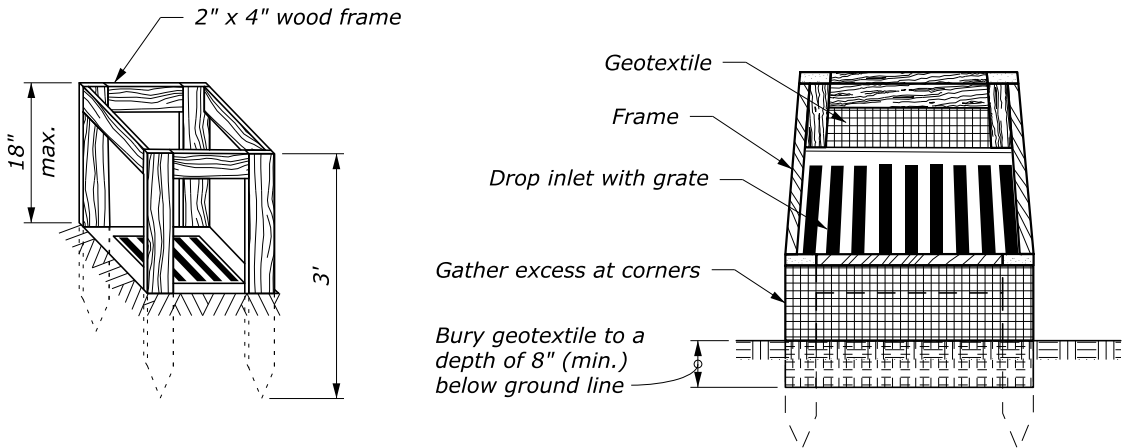
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION EASTERN FEDERAL LANDS HIGHWAY DIVISION	
U.S. CUSTOMARY DETAIL	
STABILIZED CONSTRUCTION EXIT	
	DETAIL
	E157-01A

NO SCALE

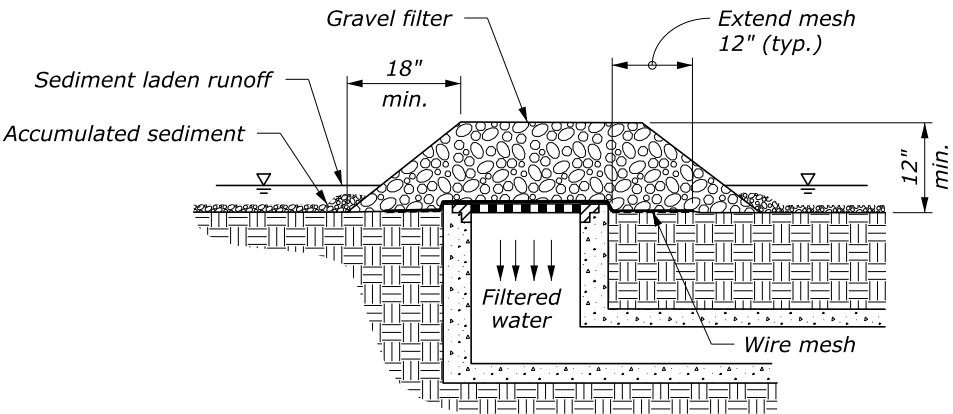
PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537, 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	S02

NOTE:

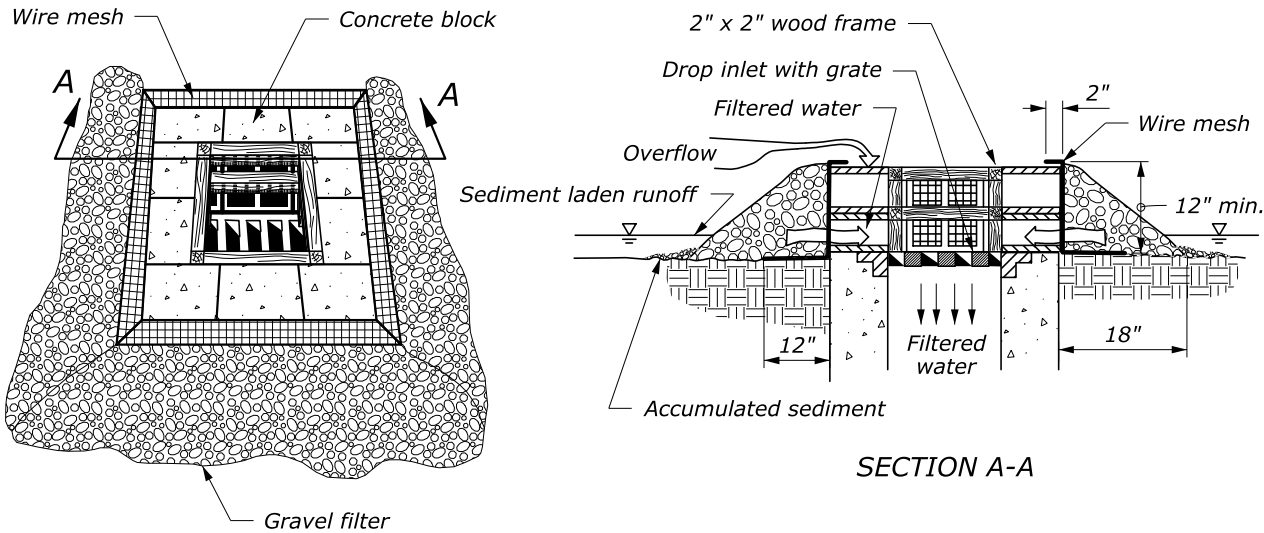
- 1. For gravel filters use 2"- 3" diameter coarse aggregate.
- 2. Use wire mesh with 1/2" x 1/2" openings.
- 3. Use type A inlet protection in sump locations only.
- 4. Use type B inlet protection only in sump locations where heavy concentrated flows are not expected. Do not use where ponding around the structure might cause inconvenience or damage.



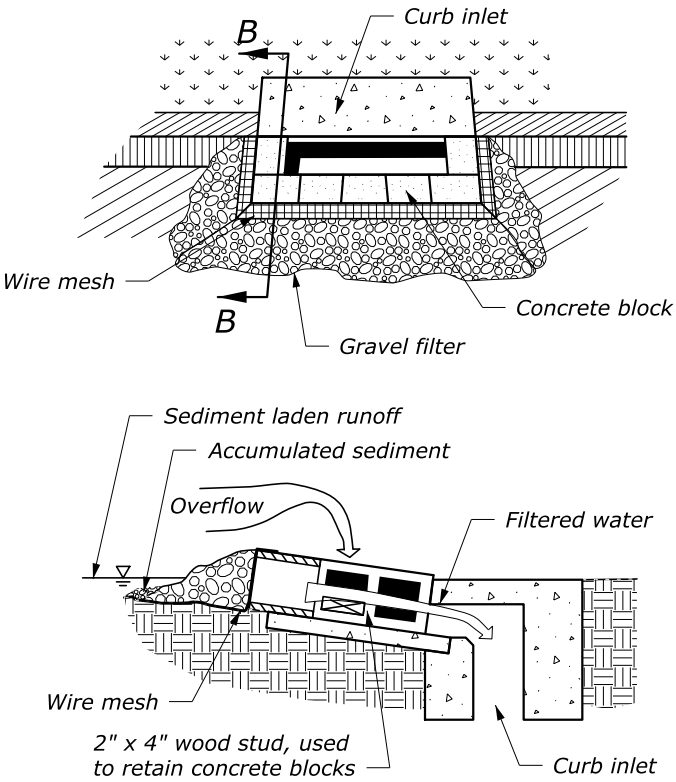
SILT FENCE DROP INLET PROTECTION (TYPE A)



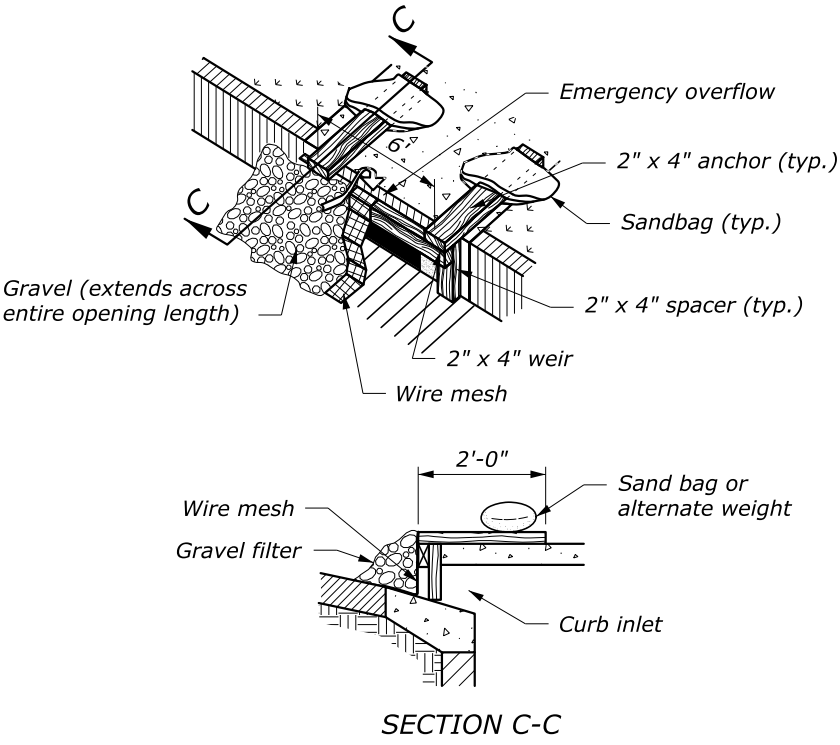
GRAVEL AND WIRE MESH DROP INLET PROTECTION (TYPE B)



BLOCK AND GRAVEL DROP INLET PROTECTION (TYPE C)



CURB INLET PROTECTION, BLOCK AND GRAVEL (TYPE D)



CURB INLET PROTECTION, WOODEN WEIR (TYPE E)

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION EASTERN FEDERAL LANDS HIGHWAY DIVISION	
U.S. CUSTOMARY DETAIL	
TEMPORARY INLET PROTECTION	
STANDARD APPROVED FOR USE 6/2005 REVISED: 3/2014 3/2016	DETAIL ET 157-2

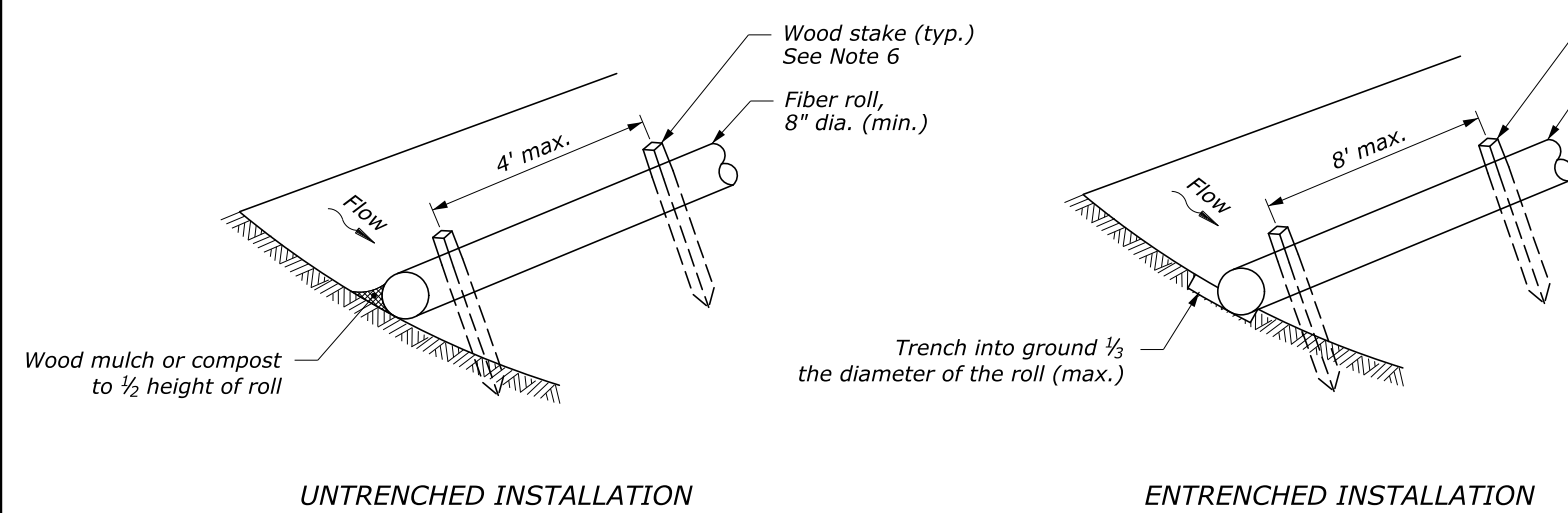
NO SCALE

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	S03

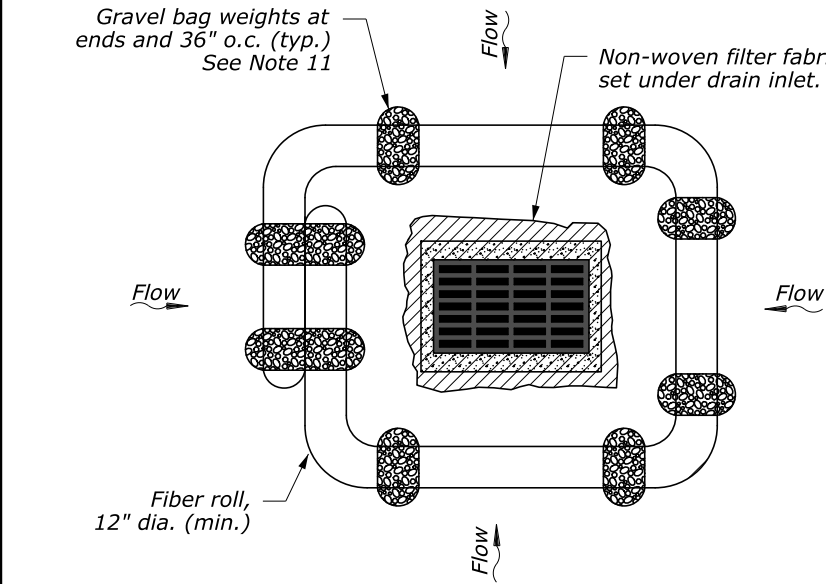
NOTES:

1. Provide fiber rolls meeting the requirements of Subsection 713.12.
2. Use fiber rolls with a minimum 8-inch diameter. For drain inlet protection, use fiber rolls with a minimum 12-inch diameter.
3. Prior to installation, clear all obstructions including rocks, clods, and debris greater than 1-inch that may interfere with proper function of the fiber roll.
4. For untrenched installation, blow or hand place mulch or compost on uphill side of the slope along the fiber roll.
5. Place fiber rolls on level grade and parallel to contours. Extend both ends of the fiber roll at least 8 feet upslope at 45 degrees to the main alignment.
6. Use wood stakes with a minimum nominal cross section of 2-inch x 2-inch and of sufficient length to attain a minimum of 12 inches into the ground and 3 inches protruding above the roll. Furnish wood stakes meeting the requirements of Subsection 713.08(a).
7. When more than one fiber roll is needed, overlap ends 12 inches minimum and stake.
8. Remove sediment deposits when accumulation is one-half the height of the exposed fiber roll.
9. Replace biodegradable fiber rolls 6 months after installation and photodegradable fiber rolls 12 months after installation.
10. When fiber rolls are required on paved surfaces, use gravel bags to support them as shown on the inlet protection detail.
11. Provide gravel bag weights meeting the requirements of Subsection 713.13.

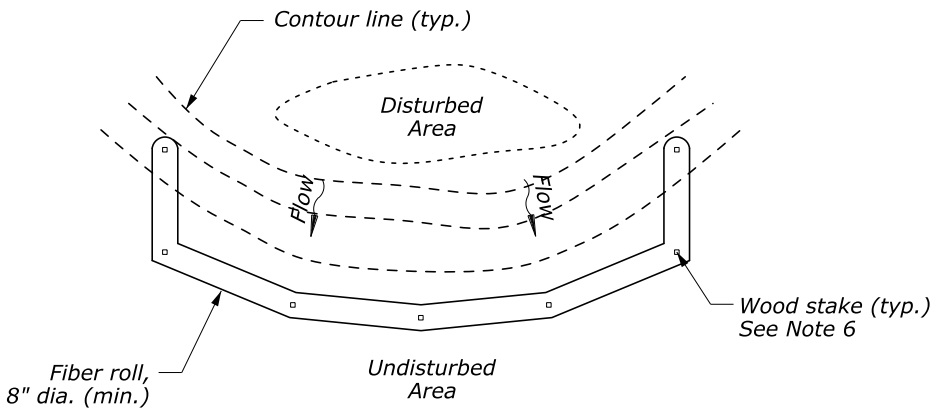
MAXIMUM ALLOWABLE SLOPE LENGTH ABOVE FIBER ROLLS	
SLOPE	MAX INTERVAL
1V:4H or Flatter	20 ft
1V:4H - 1V:2H	15 ft
1V:2H or Steeper	10 ft



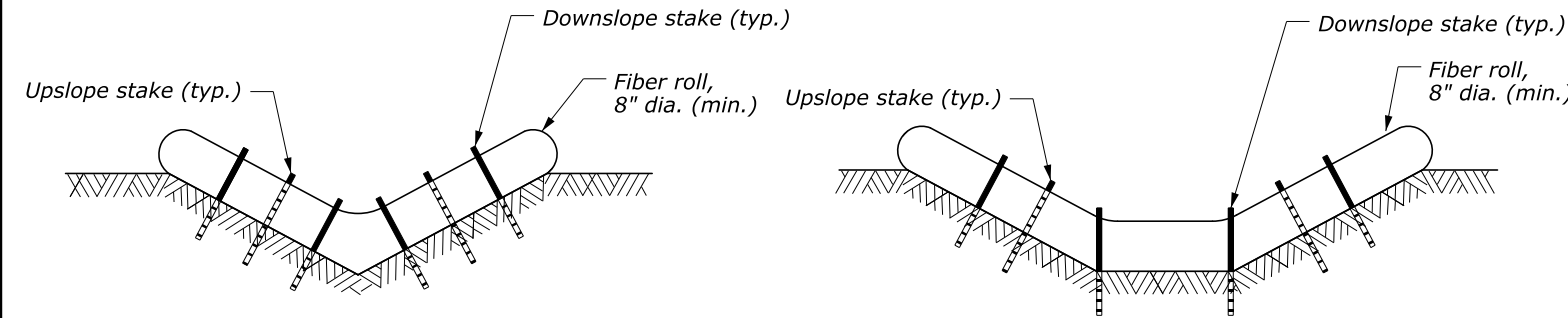
FIBER ROLL ISOMETRIC VIEW



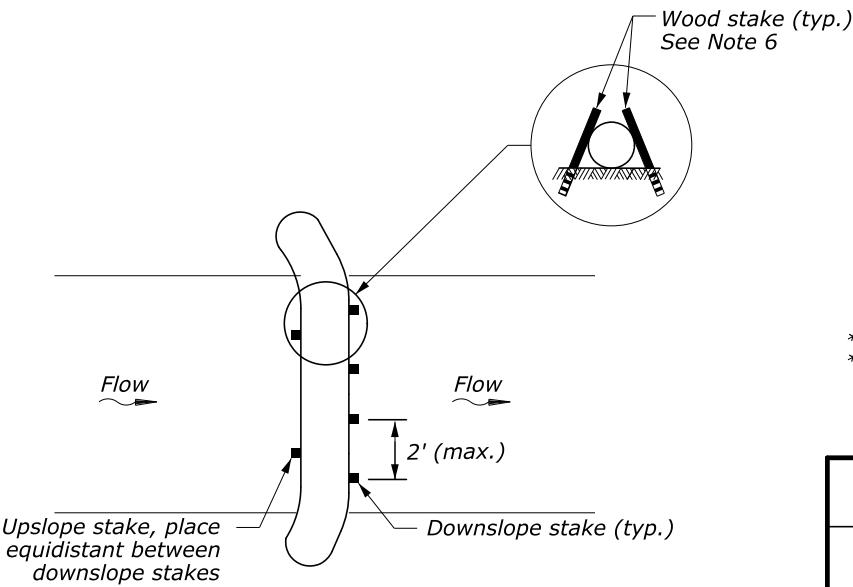
INLET PROTECTION



PLAN VIEW



FIBER ROLL CHECK DAM CROSS SECTIONS



FIBER ROLL CHECK DAM PLAN VIEW

FIBER ROLL CHECK DAM SPACING TABLE		
DITCH GRADE *	CHECK DAM SPACING (S)**	
	8" HIGH	12" HIGH
2%	33 ft	50 ft
3%	22 ft	33 ft
4%	16 ft	25 ft
5%	13 ft	20 ft

* Do not install check dams on grades below 2%
** Adjust spacing as approved based on site conditions

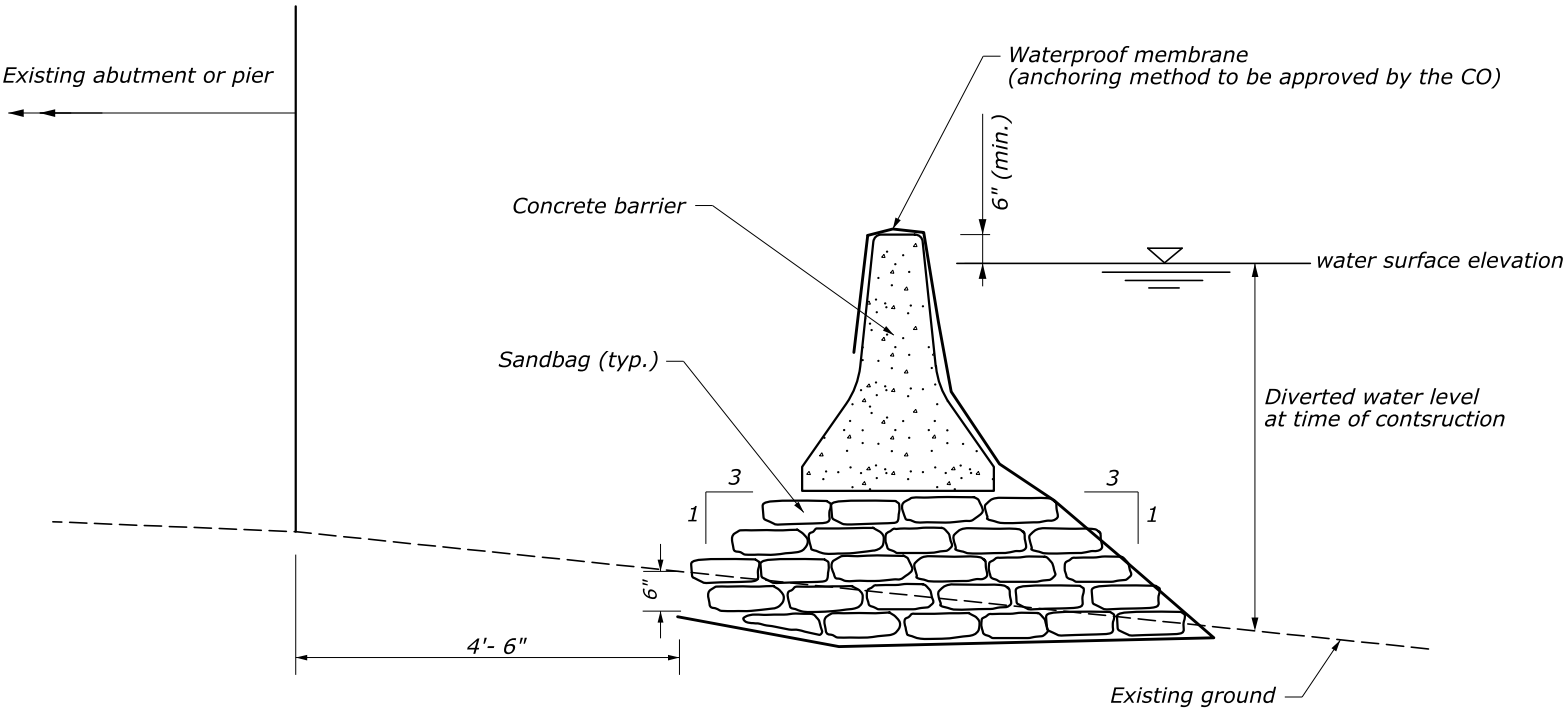
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION EASTERN FEDERAL LANDS HIGHWAY DIVISION	
U.S. CUSTOMARY DETAIL	
FIBER ROLL	
DETAIL APPROVED FOR USE APPROVED: MAY 2016 REVISED: MARCH 2018	DETAIL E157-04

NO SCALE

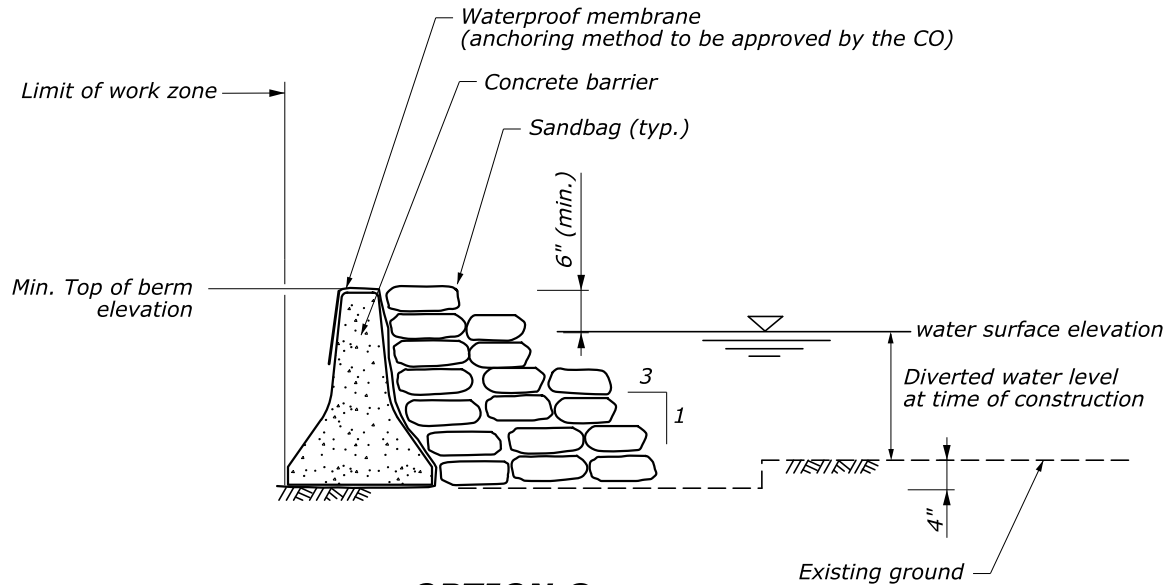
PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	S04

NOTES:

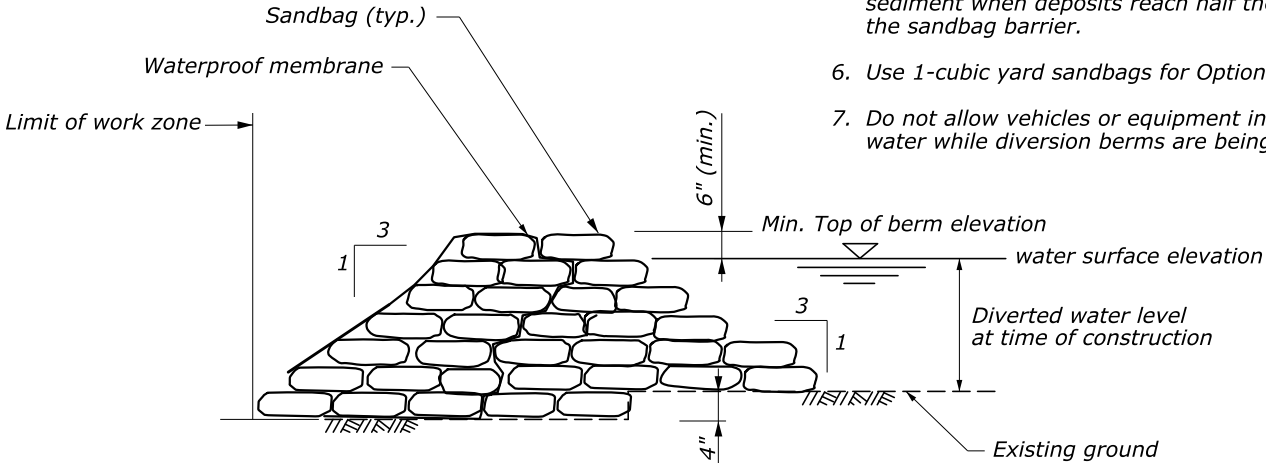
1. The options shown are suggested configurations for diverting the stream during construction operations. The Contractor may choose an alternate means of diverting the stream (including any approved prefabricated or portable diversion berms, dams, etc.). As a minimum, provide a temporary diversion berm with a minimum height equivalent to the water surface elevation with 6" minimum freeboard. Submit plans for temporary stream diversion to the CO for approval prior to installation.
2. Construct temporary diversion according to Subsection 157.10.
3. Place sandbags to form a pyramid by laying equal numbers of rows on the bottom as there are vertical course. Upper rows of sandbags should overlap the joints in lower rows.
4. Place a maximum of one diversion in the stream at any given time.
5. While in use, inspect and maintain the temporary diversion berm daily. Repair as needed after rainfall events or as directed by the CO. Remove sediment when deposits reach half the height of the sandbag barrier.
6. Use 1-cubic yard sandbags for Option D.
7. Do not allow vehicles or equipment inside the water while diversion berms are being constructed.



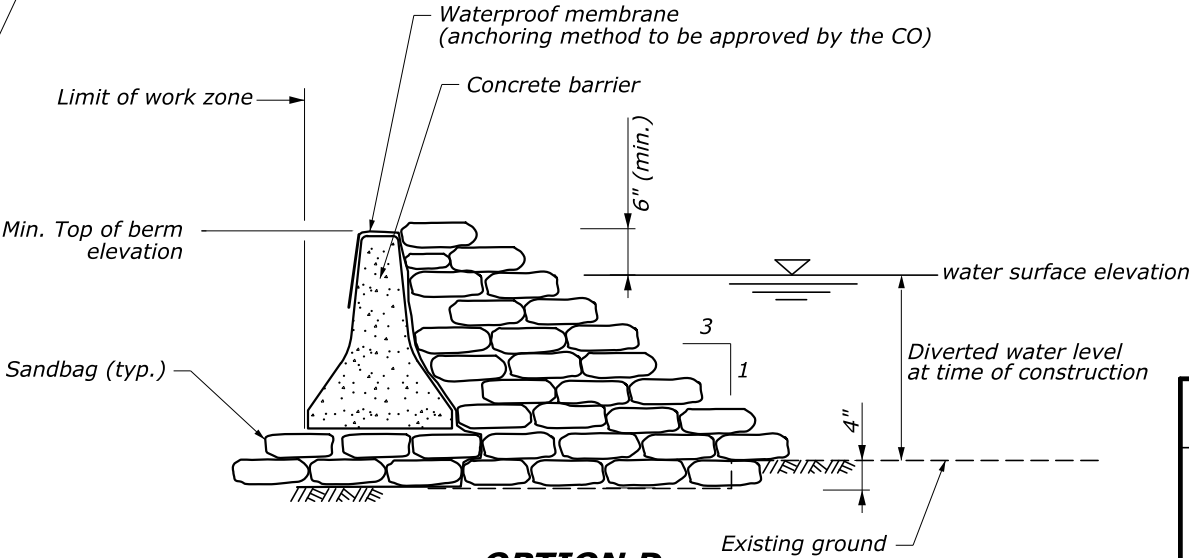
OPTION A



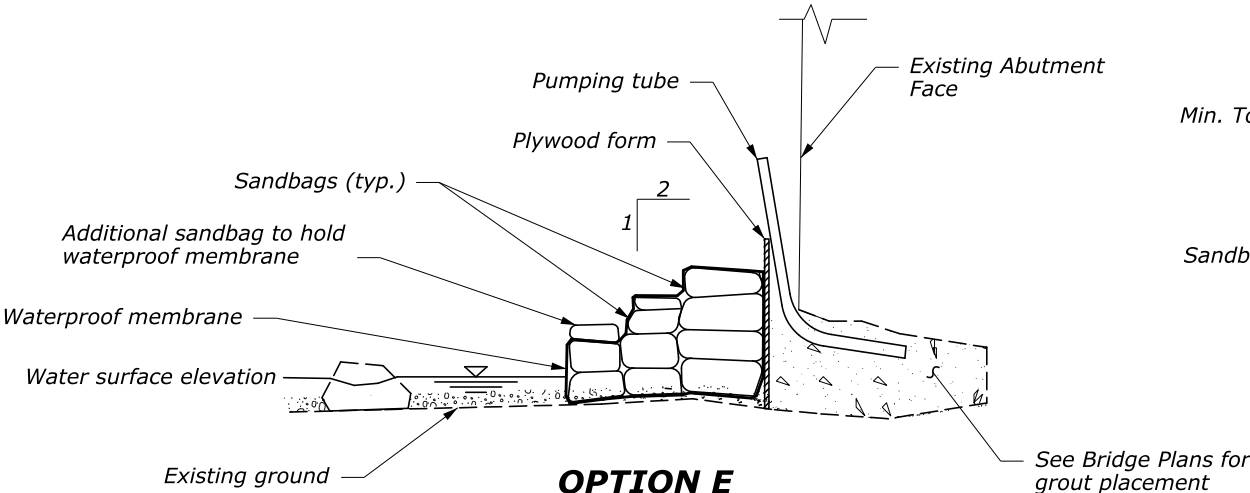
OPTION C



OPTION B



OPTION D



OPTION E

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION

U.S. CUSTOMARY DETAIL

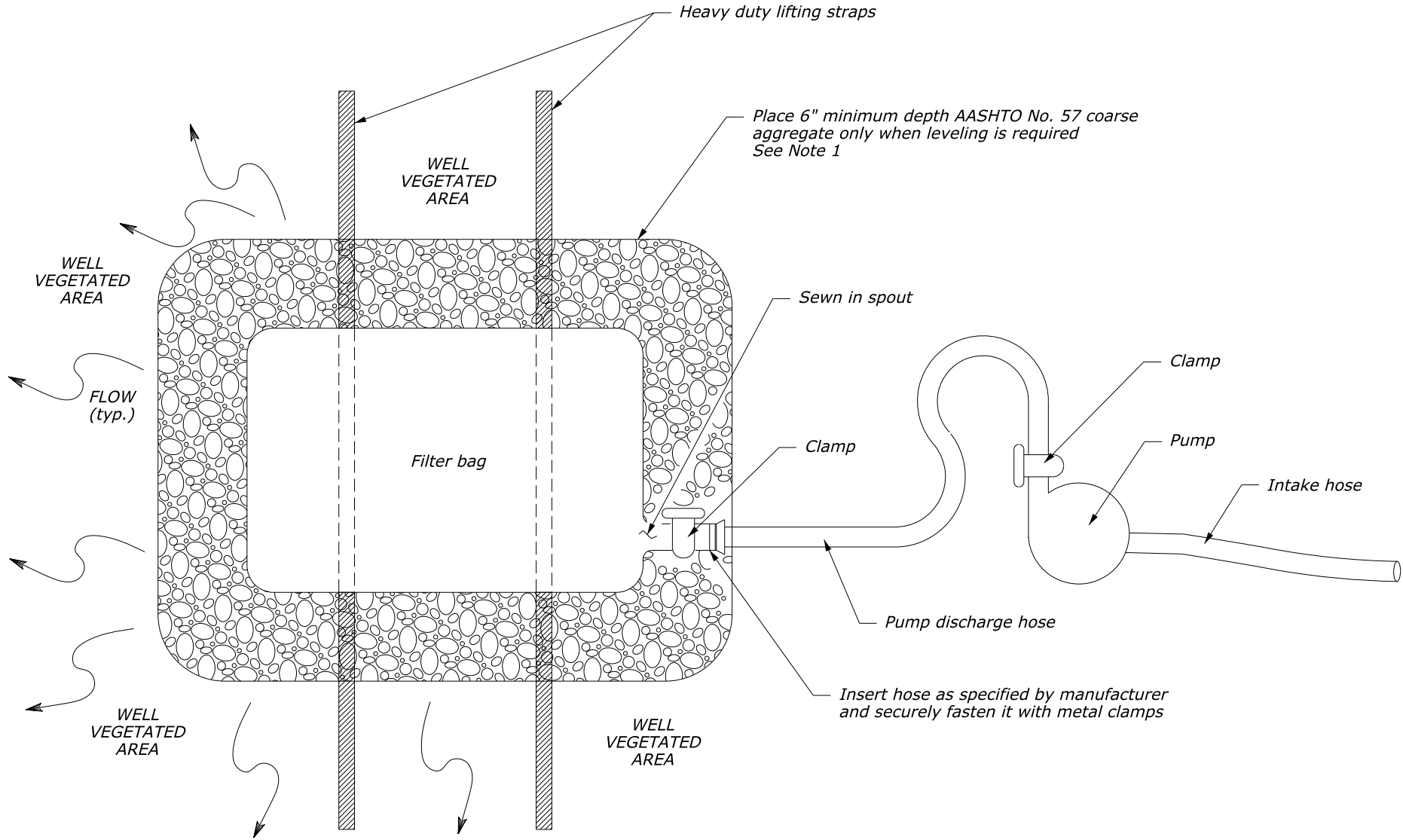
TEMPORARY IN-STREAM
DIVERSION BERM METHODS

DETAIL
E157-08A

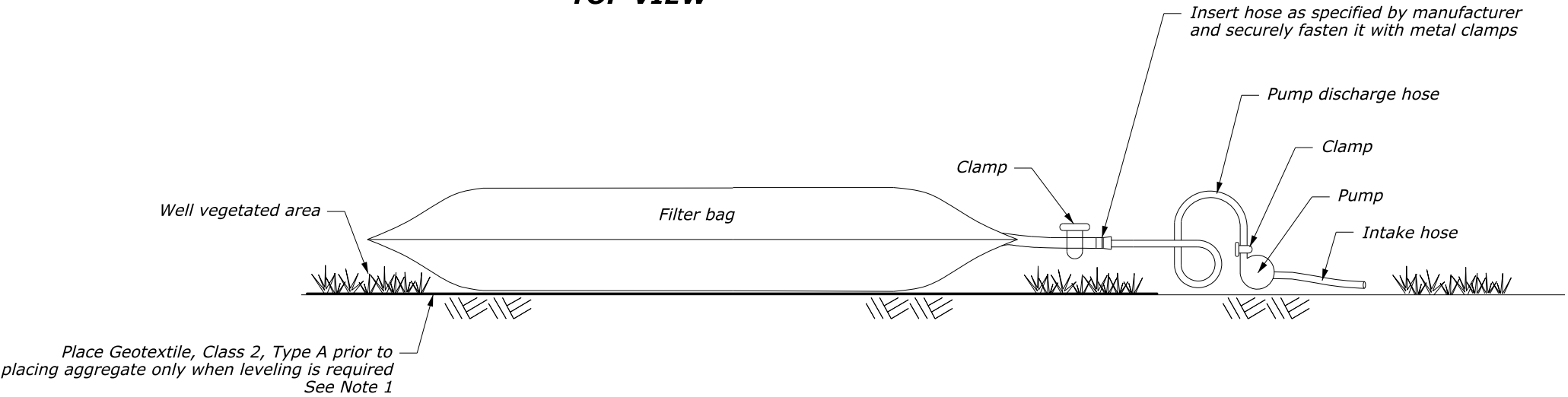
PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	S05

NOTES:

1. Locate filter bags in level areas (less than 5% grade) or as approved by the CO. When level areas are not available, place geotextile and coarse aggregate to level the filter bags.
2. Locate filter bags in areas accessible by equipment for maintenance and removal.
3. Insert a maximum of one hose in each filter bag at any given time.
4. Inspect filter bags daily. Replace filter bags when 50% of the sediment capacity has been reached or when there is a failure. Have spare filter bags on site for replacement.
5. Do not permit discharge from the filter bags to drain back into work or access areas of the project. Discharge onto stable and erosion resistant areas.
6. Do not cut or empty filter bags on site. Restore the area according to Subsection 157.15.



TOP VIEW



SIDE VIEW

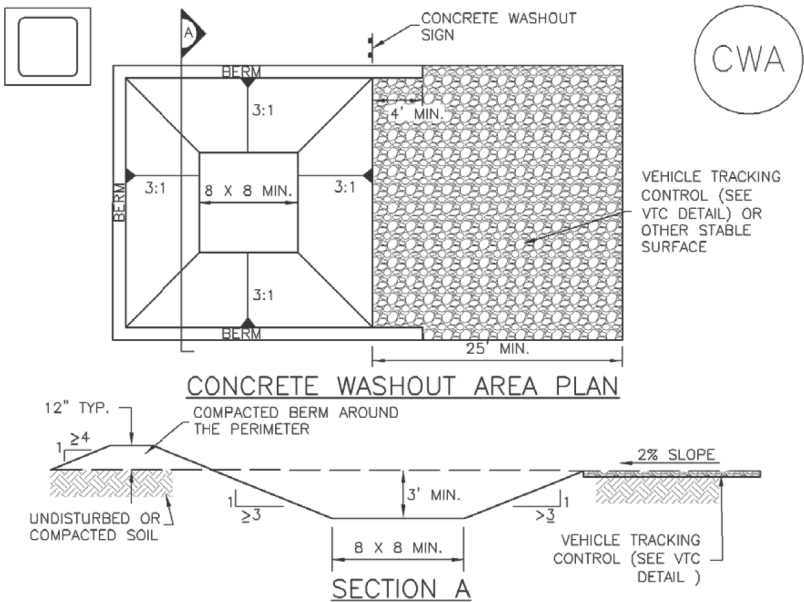
NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION EASTERN FEDERAL LANDS HIGHWAY DIVISION	
U.S. CUSTOMARY DETAIL	
FILTER BAG	
DETAIL APPROVED FOR USE	DETAIL
APPROVED: FEBRUARY 2013 REVISED: MARCH 2018	E157-10

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	S06

NOTE:

1. Adopted from Environmental Protection Agency, Urban Drainage and Flood Control District, Urban Storm Drainage Criteria Volume 3, 2010



CWA-1. CONCRETE WASHOUT AREA

CWA INSTALLATION NOTES

- SEE PLAN VIEW FOR:
-CWA INSTALLATION LOCATION.
- DO NOT LOCATE AN UNLINED CWA WITHIN 400' OF ANY NATURAL DRAINAGE PATHWAY OR WATERBODY. DO NOT LOCATE WITHIN 1,000' OF ANY WELLS OR DRINKING WATER SOURCES. IF SITE CONSTRAINTS MAKE THIS INFEASIBLE, OR IF HIGHLY PERMEABLE SOILS EXIST ON SITE, THE CWA MUST BE INSTALLED WITH AN IMPERMEABLE LINER (16 MIL MIN. THICKNESS) OR SURFACE STORAGE ALTERNATIVES USING PREFABRICATED CONCRETE WASHOUT DEVICES OR A LINED ABOVE GROUND STORAGE ARE SHOULD BE USED.
- THE CWA SHALL BE INSTALLED PRIOR TO CONCRETE PLACEMENT ON SITE.
- CWA SHALL INCLUDE A FLAT SUBSURFACE PIT THAT IS AT LEAST 8' BY 8' SLOPES LEADING OUT OF THE SUBSURFACE PIT SHALL BE 3:1 OR FLATTER. THE PIT SHALL BE AT LEAST 3' DEEP.
- BERM SURROUNDING SIDES AND BACK OF THE CWA SHALL HAVE MINIMUM HEIGHT OF 1'.
- VEHICLE TRACKING PAD SHALL BE SLOPED 2% TOWARDS THE CWA.
- SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE CWA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CWA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.
- USE EXCAVATED MATERIAL FOR PERIMETER BERM CONSTRUCTION.

CWA MAINTENANCE NOTES

- INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
- FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
- WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
- THE CWA SHALL BE REPAIRED, CLEANED, OR ENLARGED AS NECESSARY TO MAINTAIN CAPACITY FOR CONCRETE WASTE. CONCRETE MATERIALS, ACCUMULATED IN PIT, SHALL BE REMOVED ONCE THE MATERIALS HAVE REACHED A DEPTH OF 2'.
- CONCRETE WASHOUT WATER, WASTED PIECES OF CONCRETE AND ALL OTHER DEBRIS IN THE SUBSURFACE PIT SHALL BE TRANSPORTED FROM THE JOB SITE IN A WATER-TIGHT CONTAINER AND DISPOSED OF PROPERLY.
- THE CWA SHALL REMAIN IN PLACE UNTIL ALL CONCRETE FOR THE PROJECT IS PLACED.
- WHEN THE CWA IS REMOVED, COVER THE DISTURBED AREA WITH TOP SOIL, SEED AND MULCH OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAIL ADAPTED FROM DOUGLAS COUNTY, COLORADO AND THE CITY OF PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD).

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

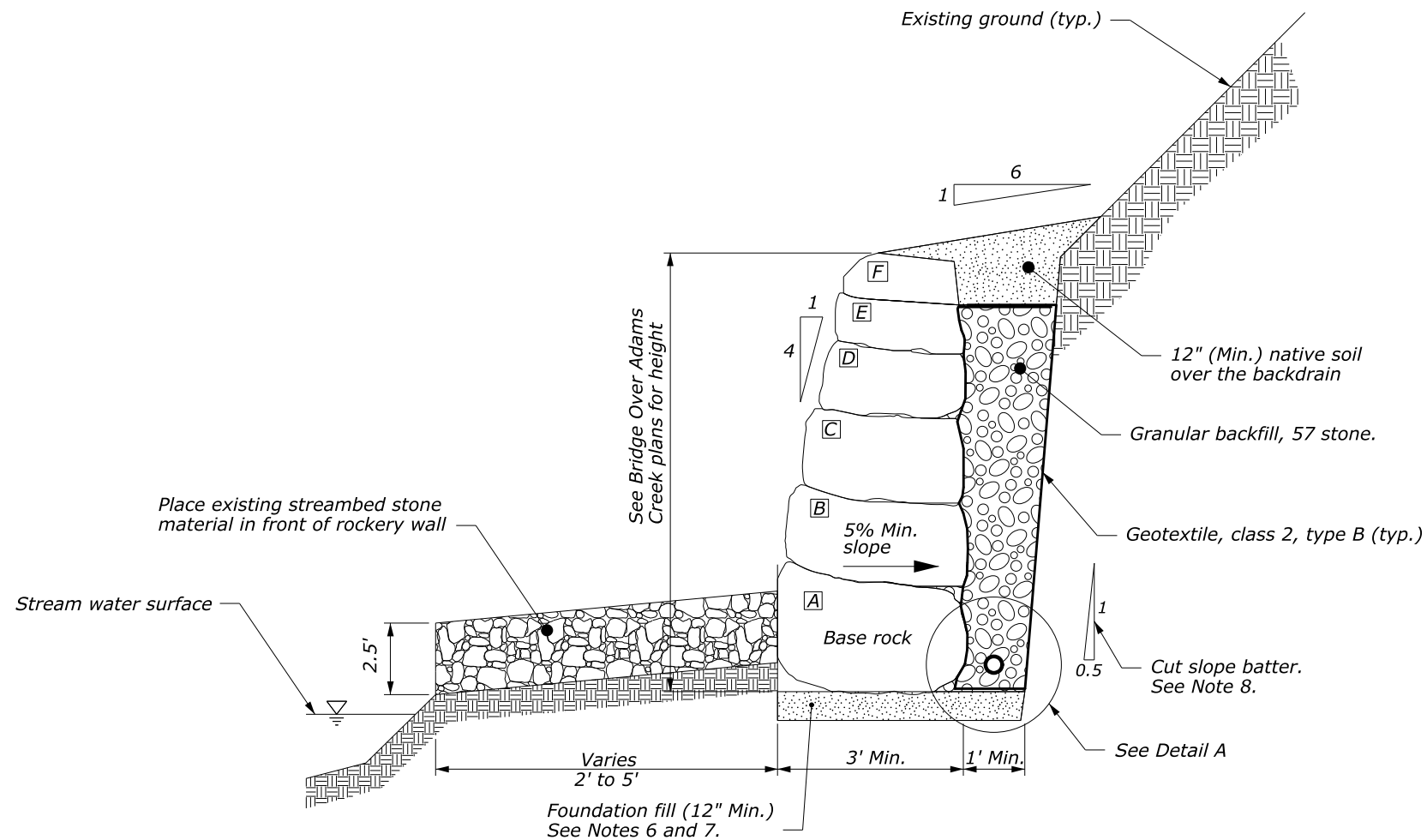
NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION EASTERN FEDERAL LANDS HIGHWAY DIVISION	
U.S. CUSTOMARY DETAIL	
ON-SITE CONCRETE WASHOUT STRUCTURE	
	DETAIL E157-A

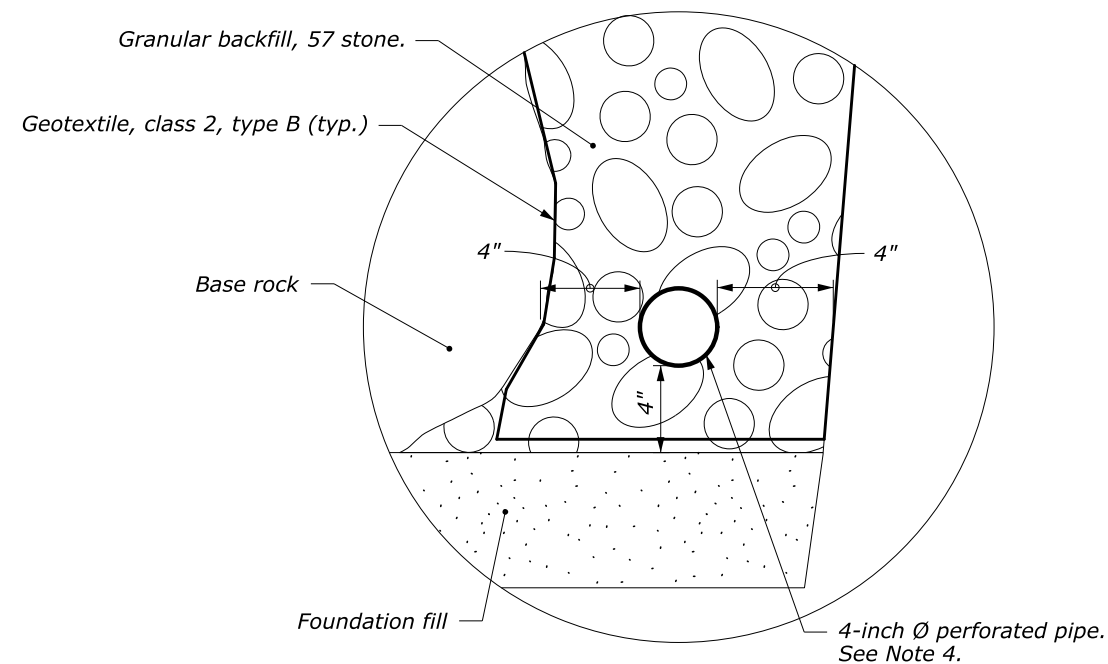
PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	S07

NOTES:

1. *Construct rockery and place rocks according to Section 252. Place each rock individually by equipment suitable for lifting, manipulating, and placing rocks of the size and shape specified. Ensure that each rock is firmly set and supported by underlying materials and adjacent rocks. Reposition or replace loose rocks.*
2. *Place rocks so that their height dimension is not greater than their width. Ensure the longest dimension of the rocks is parallel to the face of rockery.*
3. *Where loose, soft, or otherwise unsuitable foundation soil conditions are encountered, contact the CO for supplemental recommendations.*
4. *Place the perforated pipe a minimum of 4 inches away from all surfaces. Discharge outlet pipes to a protected outlet or other permanent drainage structure at low points in the rockery and at a maximum 100-foot spacing.*
5. *Do not construct rockeries or slopes exceeding the heights shown on the Rockery Typical Section without prior written approval by the CO.*
6. *Verify the bearing capacity of the subgrade soils immediately prior to placing foundation fill.*
7. *Place foundation fill prior to placing the base rock as approved by the CO.*
8. *Cut slope batter for design purposes only. Adjust cut slope batter as approved by the CO.*



ROCKERY TYPICAL SECTION



DETAIL A

APPROXIMATE ROCK SIZE DESIGNATION

Wall Height	A	B	C	D	E	F
≤ 3.3'	3	2	-	-	-	-
≤ 6.6'	4	3	2	-	-	-
≤ 9.9'	4	4	3	2	-	-
≤ 11.5'	5	4	3	3	2	2

Number in table is equal to Rock Size. See Approximate Rock Size table for dimensions.

APPROXIMATE ROCK SIZE

Rock Size	Average Dimension (feet)
1	1.0' to 1.5'
2	1.5' to 2.3'
3	2.3' to 3.0'
4	3.0' to 3.9'
5	3.9' to 4.4'
6	4.4' to 4.9'

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION

U.S. CUSTOMARY DETAIL

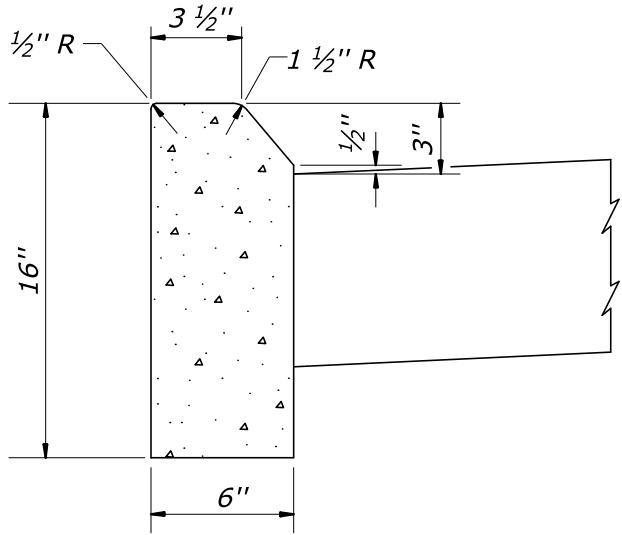
ROCKERY WALL

DETAIL
E252-A

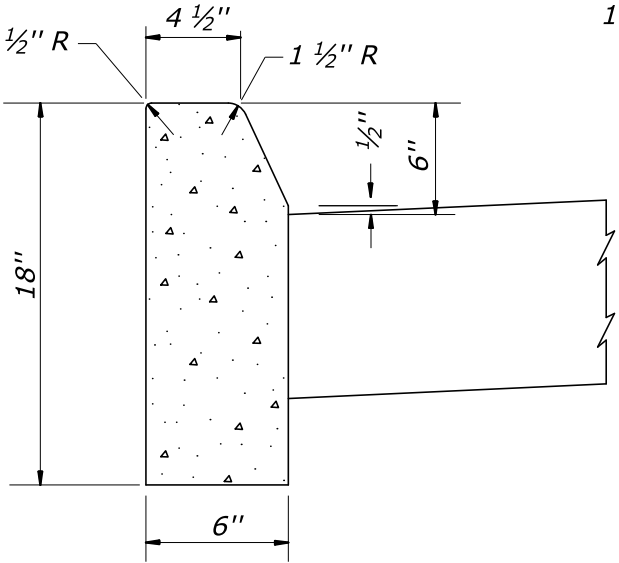
PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	S08

Note:

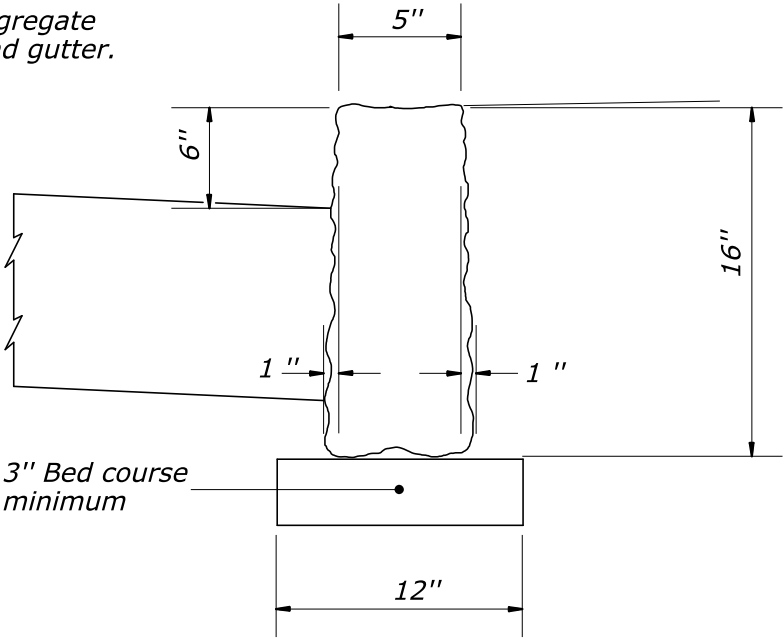
1. Place 3 inches, minimum aggregate bed course under all curb and gutter.



16-INCH DEPTH
(MOUNTABLE)



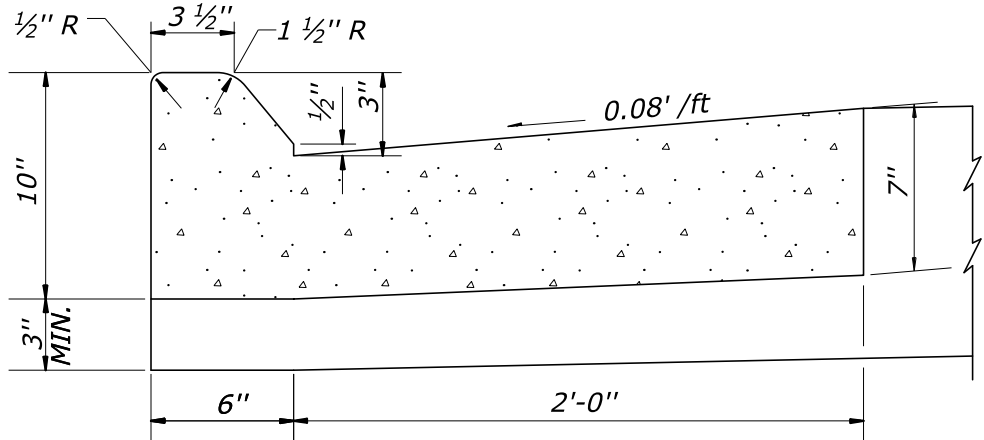
18-INCH DEPTH
(NON- MOUNTABLE)



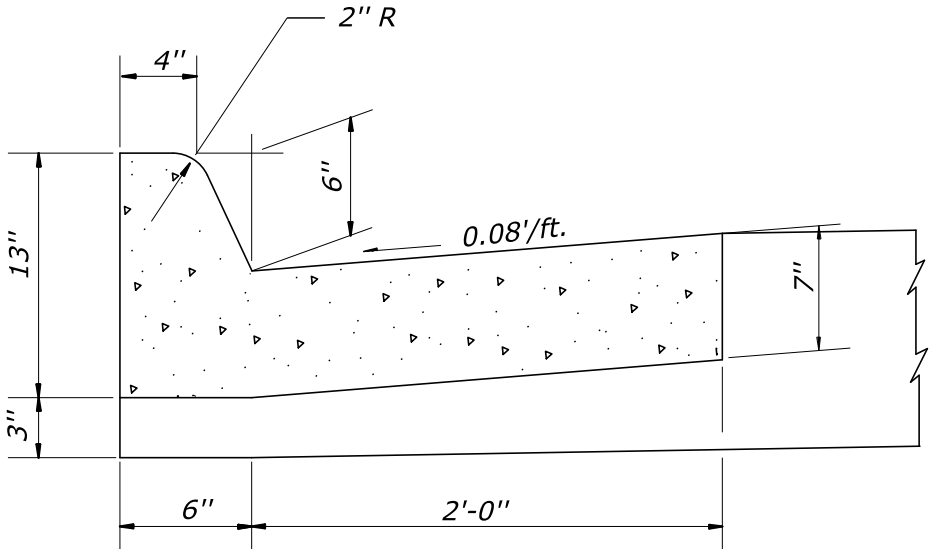
STONE CURB

16-INCH DEPTH
(NON-MOUNTABLE)

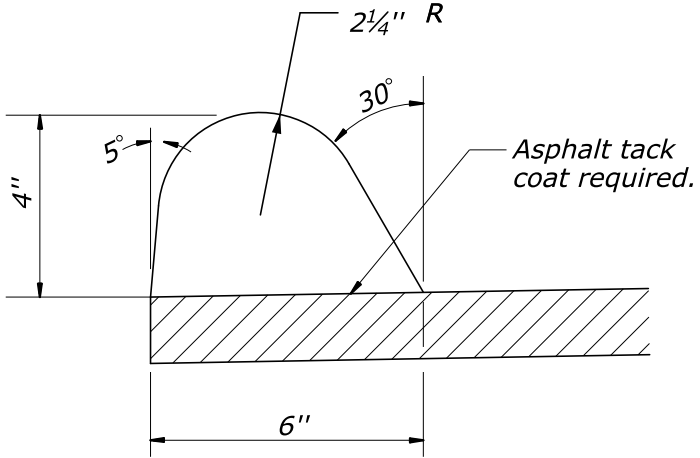
PORTLAND CEMENT CONCRETE CURB



10-INCH DEPTH
(MOUNTABLE)



13-INCH DEPTH
(NON- MOUNTABLE)



ASPHALT CONCRETE CURB

4-INCH DEPTH
(NON-MOUNTABLE)

Asphalt tack coat may be rapid curing liquid asphalt or emulsified asphalt.

PORTLAND CEMENT CONCRETE CURB AND GUTTER

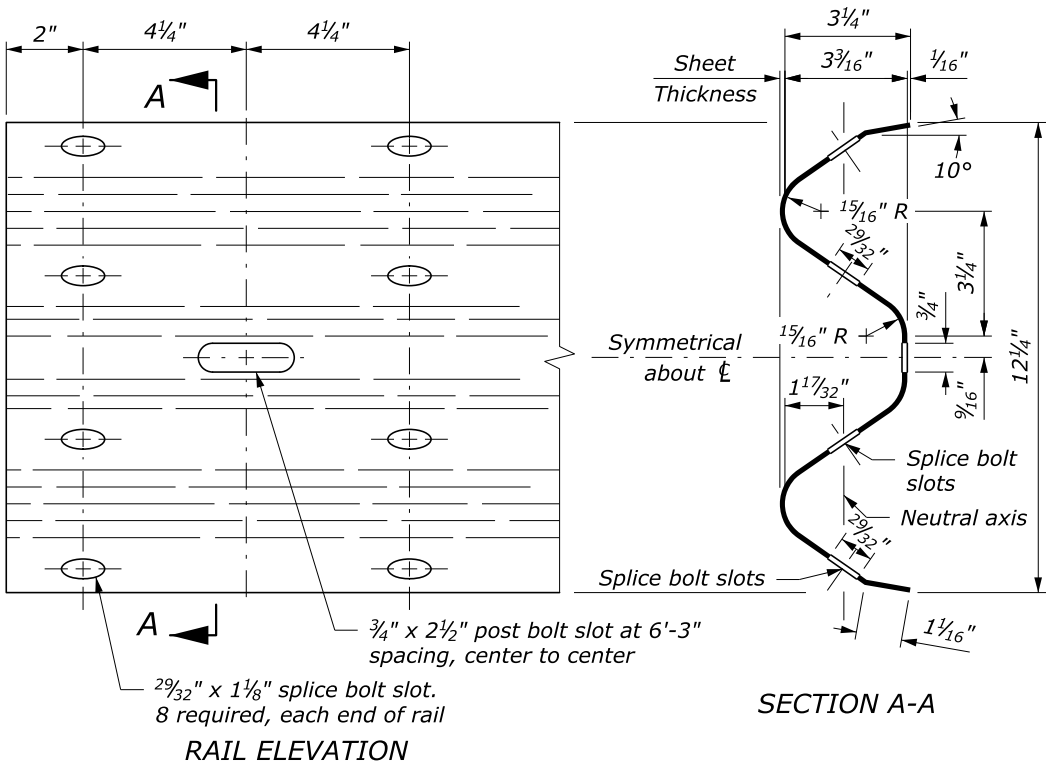
NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION EASTERN FEDERAL LANDS HIGHWAY DIVISION	
U.S. CUSTOMARY DETAIL	
CURBS	
DETAIL APPROVED FOR USE APPROVED : MAY 2011 REVISED: SEPTEMBER 2014	DETAIL E609-01

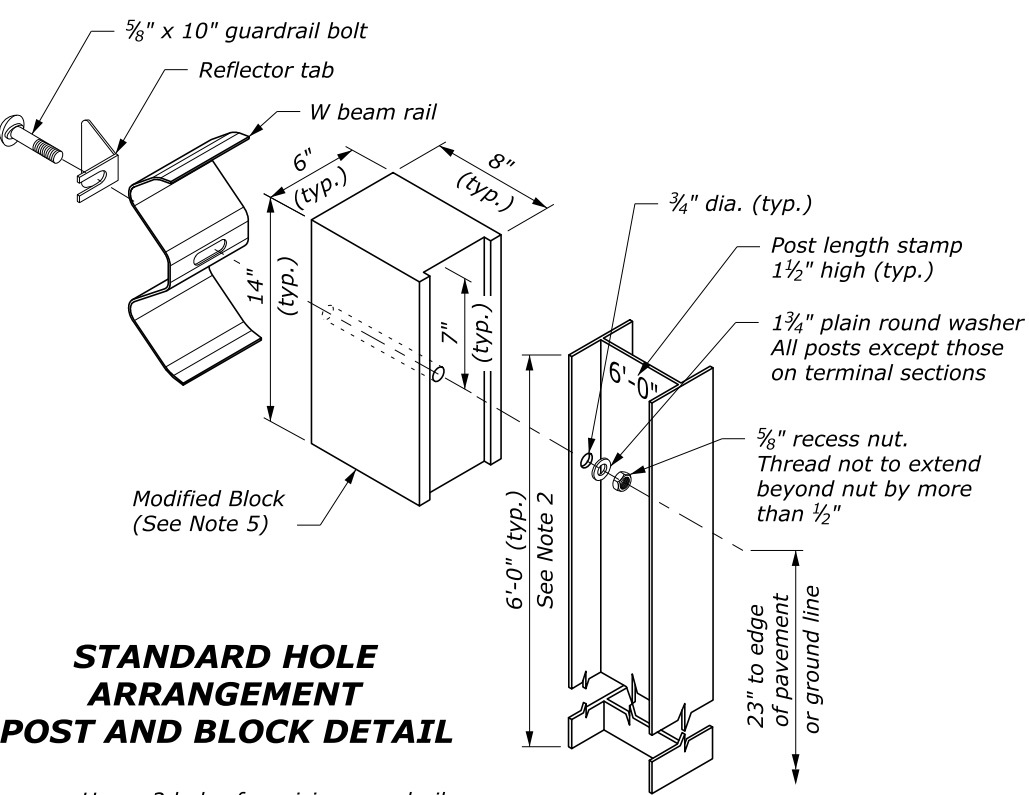
PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	S09

NOTE:

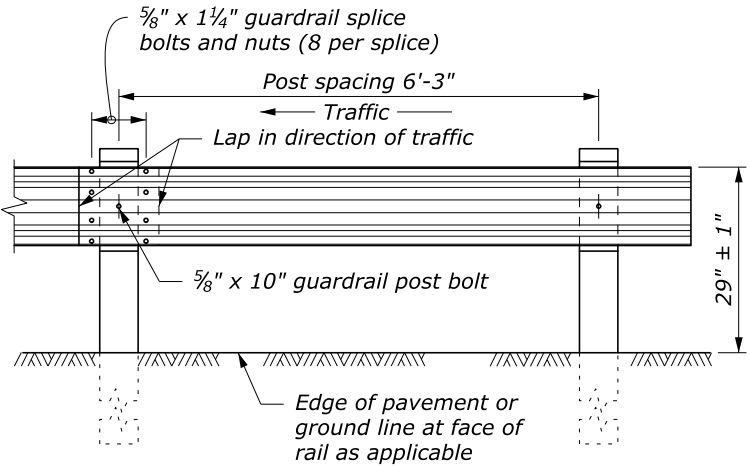
- When encountering impenetrable material, see ET Details 617-13 or 617-24.
- See Special Contract Requirements when 7 foot or longer posts are specified.
- See Special Contract Requirements when the alternative hole arrangement is specified.
- Install delineator every fourth post. Fasten delineator to post using two galvanized 2" x 3/8" bolts with a washer on both sides, a lock washer, and nut; or fasten as specified by the manufacturer.
- Modified block may be wood, plastic, or composite material. Use consistent material throughout the length of guardrail run.
- Dimensional tolerances not shown or implied are intended to be those consistent with the proper functioning of the part, including its appearance, and accepted manufacturing practices.



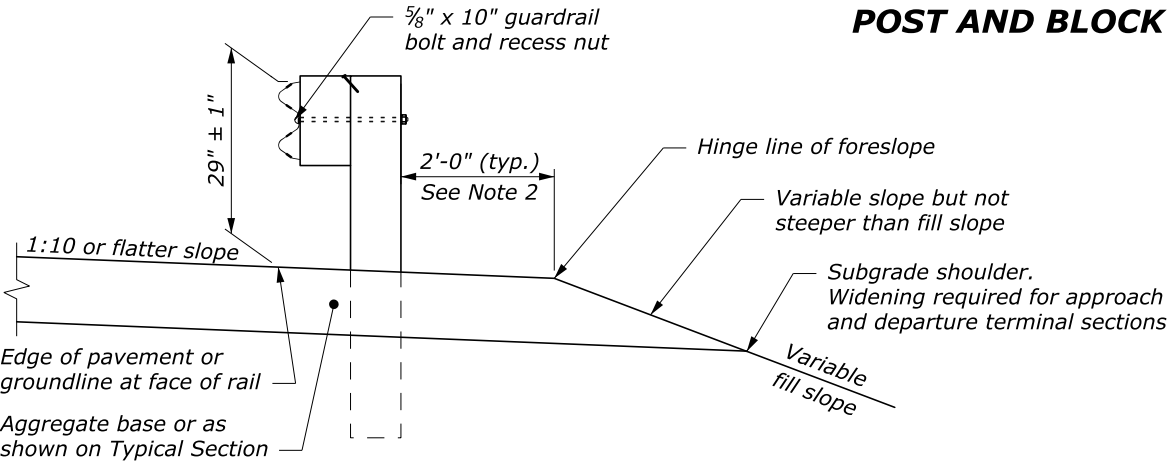
STANDARD HOLE
ARRANGEMENT
POST AND BLOCK DETAIL



W BEAM RAIL

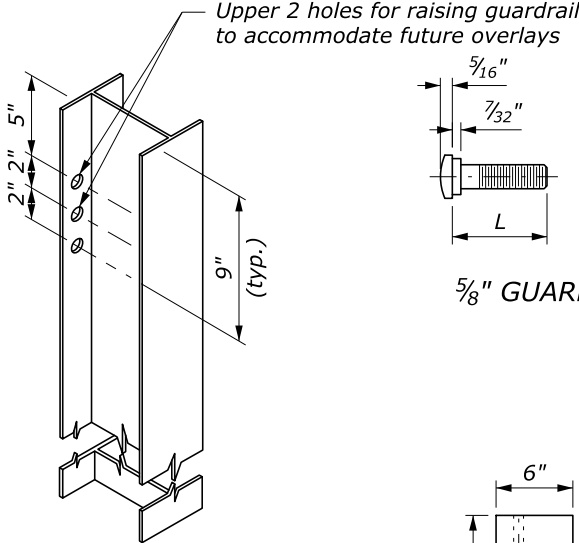


POST SPACING
STANDARD POST SECTION



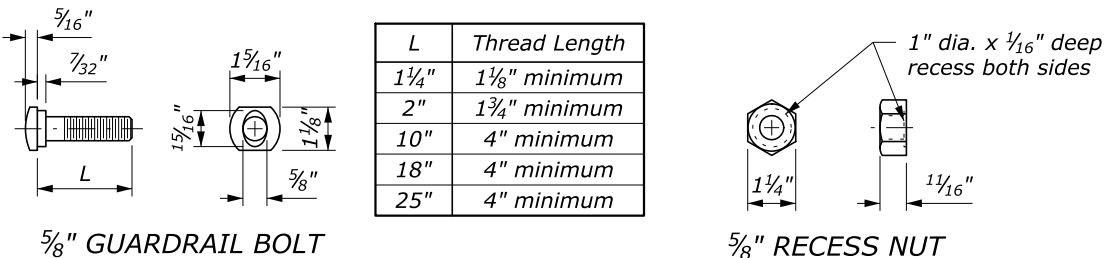
TYPICAL GUARDRAIL CROSS SECTION

ALTERNATE HOLE
ARRANGEMENT
POST AND BLOCK DETAIL



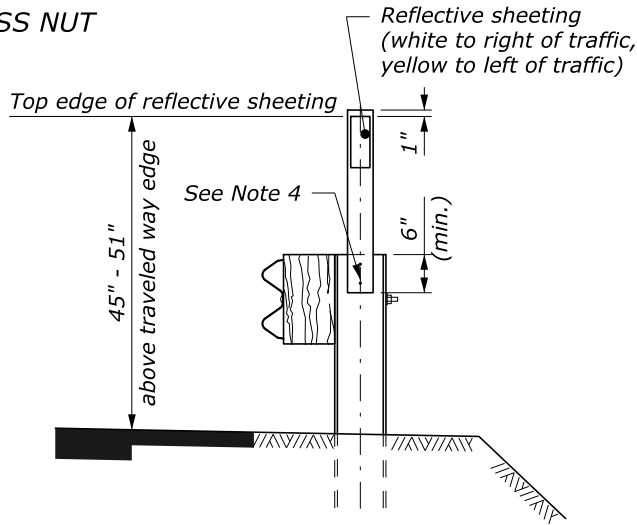
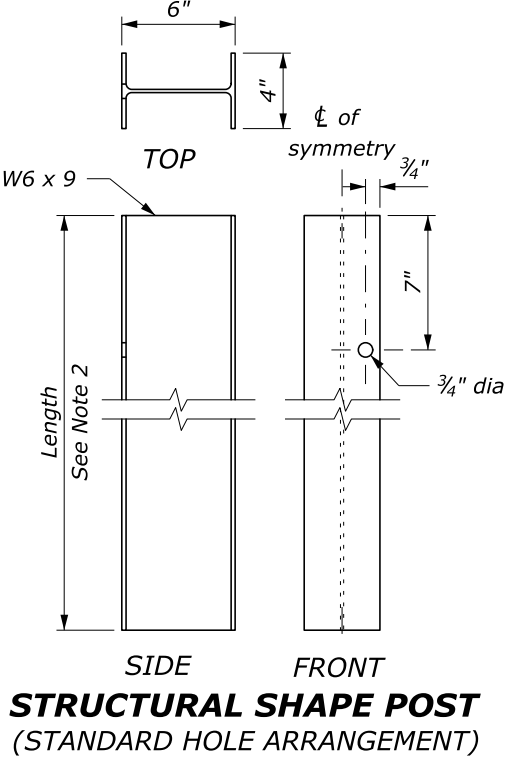
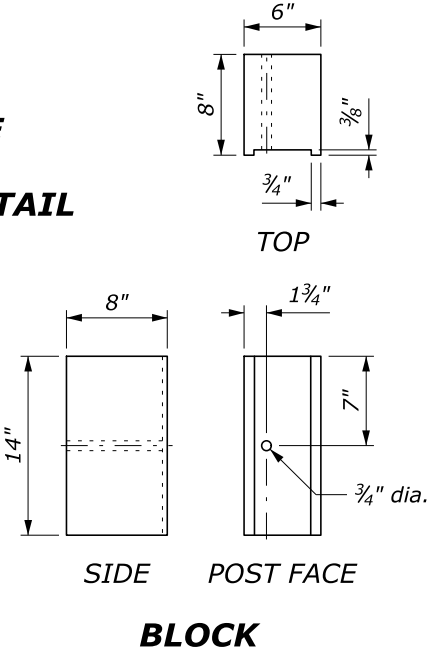
5/8" GUARDRAIL BOLT

GUARDRAIL BOLT AND RECESS NUT



5/8" RECESS NUT

ALTERNATE HOLE
ARRANGEMENT
POST AND BLOCK DETAIL



FLEXIBLE GUIDE POST
GUARDRAIL MOUNT

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION

U.S. CUSTOMARY DETAIL

G4 W-BEAM GUARDRAIL
STEEL POSTS

STANDARD APPROVED FOR USE 1/1994
REVISED: 4/1994 6/2005 9/2017 1/2018 12/2018

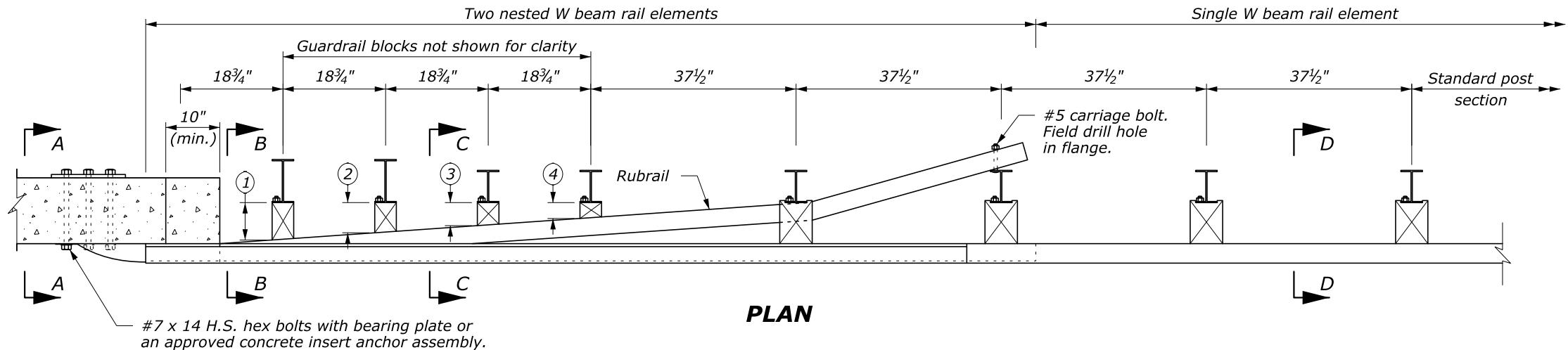
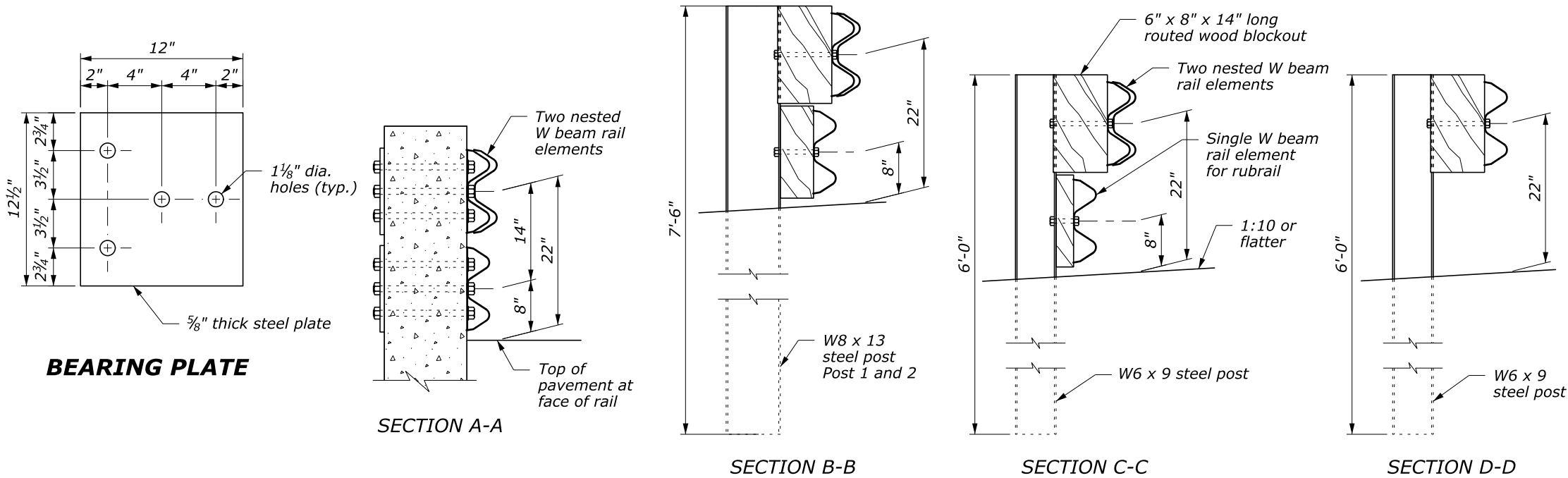
DETAIL
ET 617-11

NO SCALE

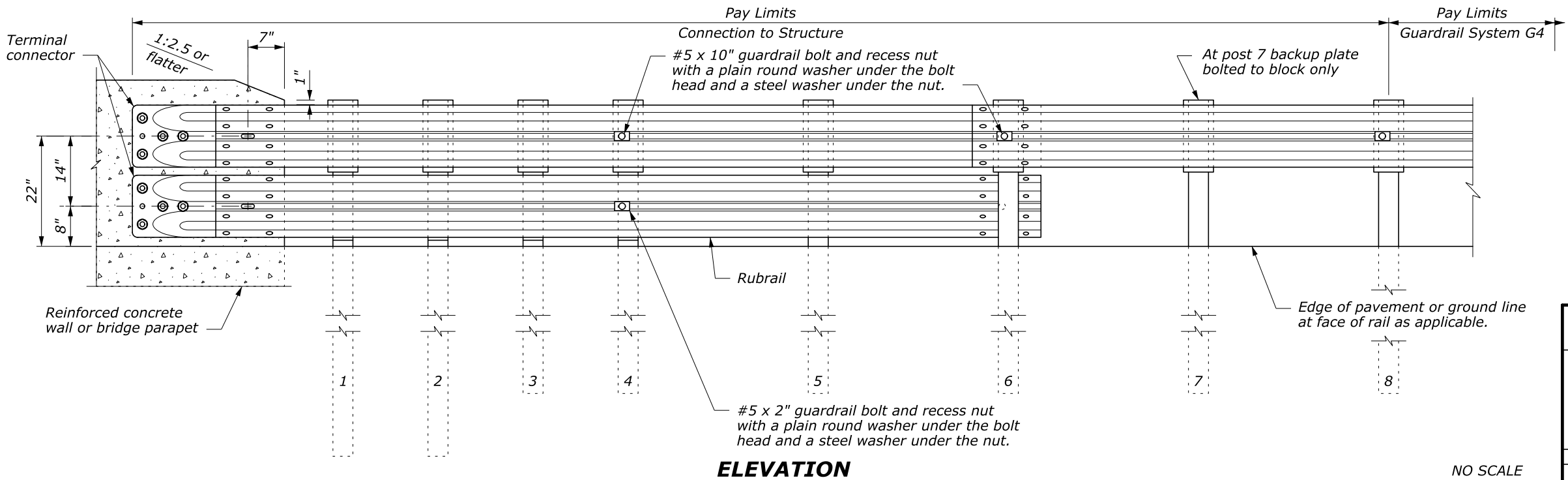
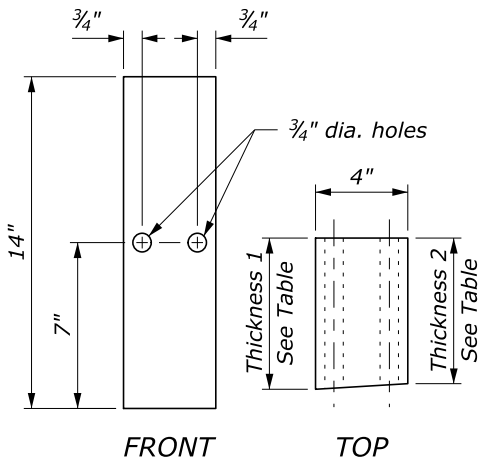
PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	S10

NOTE:

1. The rubrail may be shop bent in the last 37½" to facilitate installation.
2. Offset drill wood blocks for rubrail to sit squarely on the post flange posts 1 through 4. Secure blocks to post 1 through 3 with #5 carriage bolts.
3. Posts 1, 2, 3, 4 and 6 require an additional hole to attach lower wood blocks and/or the rubrail.
4. Do not bolt nested W beam or rubrail W beam to posts and blocks on posts 1, 2, 3 and 5. Bolt blocks directly to posts.
5. Reinforced concrete wall or bridge parapet must be capable of developing a 59.6 kip pull out strength.



WOOD BLOCKS FOR RUBRAIL		
POST	THICKNESS 1	THICKNESS 2
①	6½"	6¼"
②	5⅜"	5"
③	4"	3⅝"
④	2⅝"	2⅞"
⑤	NO BLOCK	NO BLOCK



WOOD BLOCK FOR RUBRAIL

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION

U.S. CUSTOMARY DETAIL
**G4 W-BEAM GUARDRAIL
CONNECTION TO
VERTICAL FACE STRUCTURE
STEEL POSTS**

DETAIL
617-26A

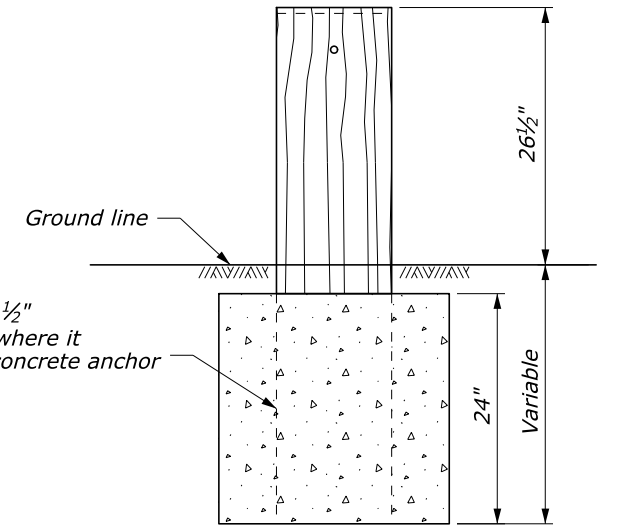
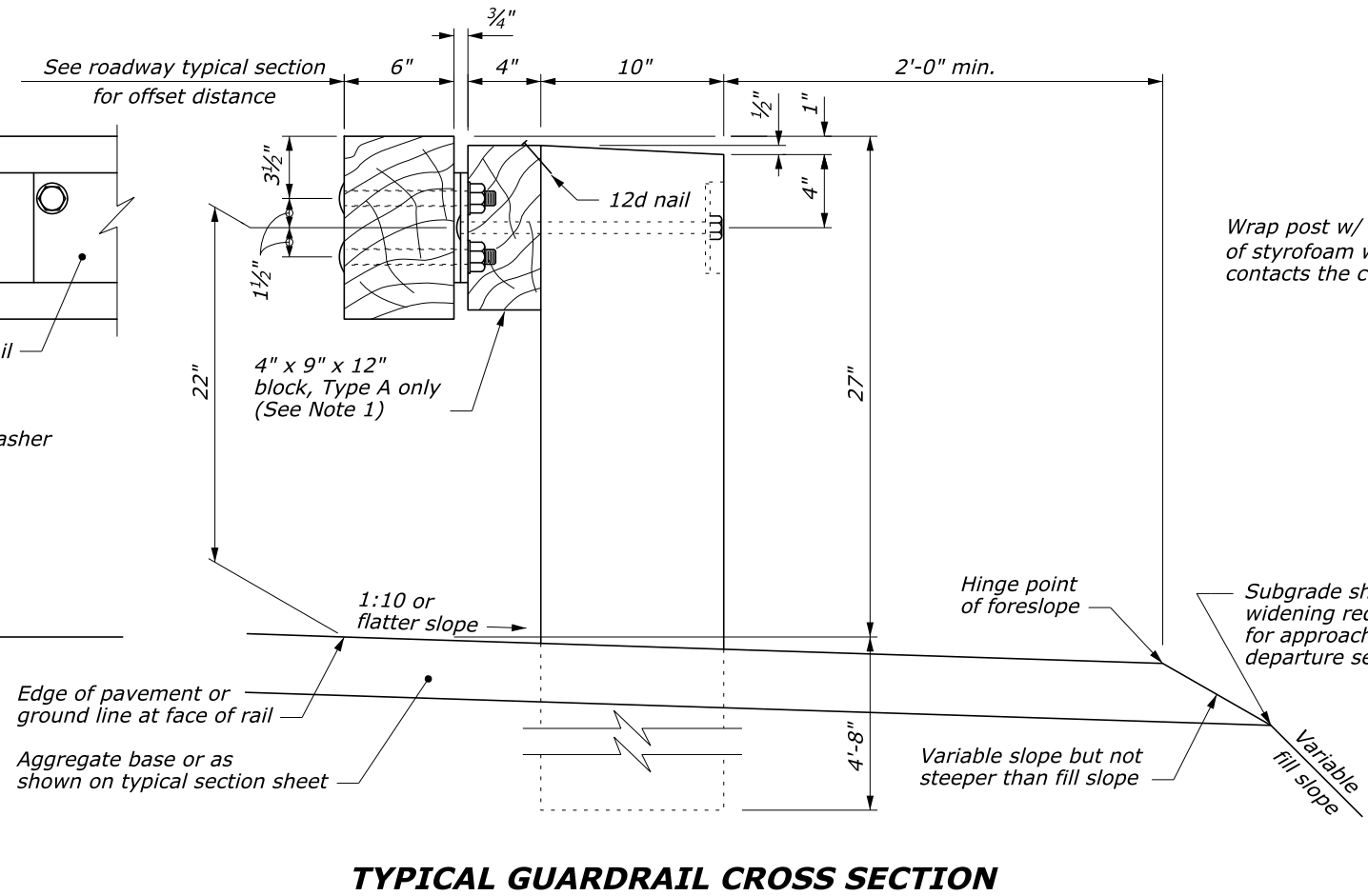
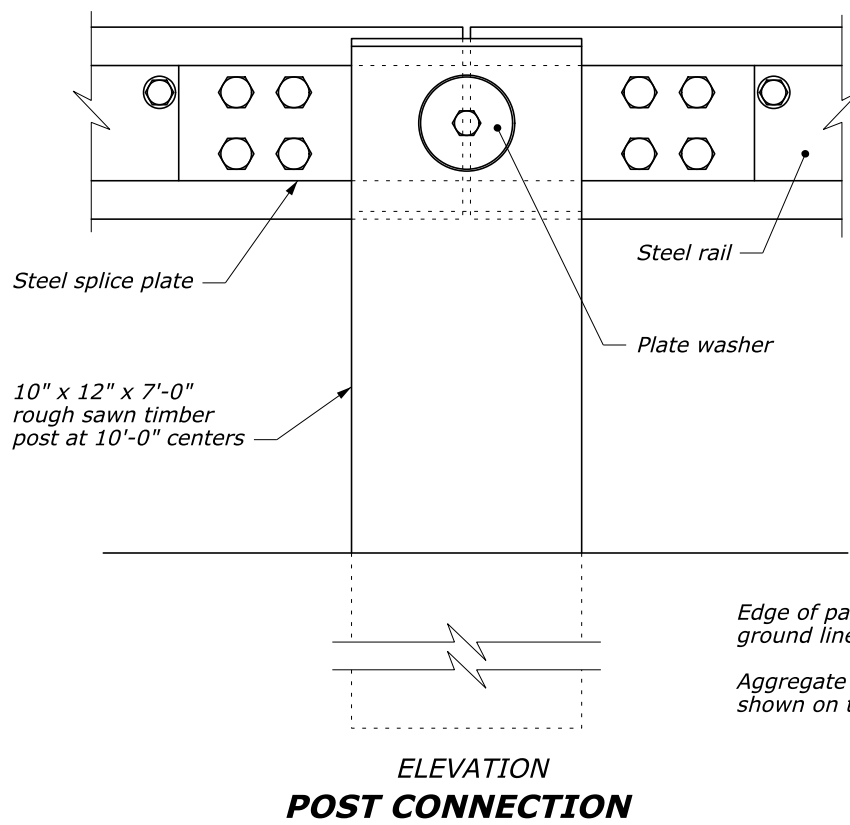
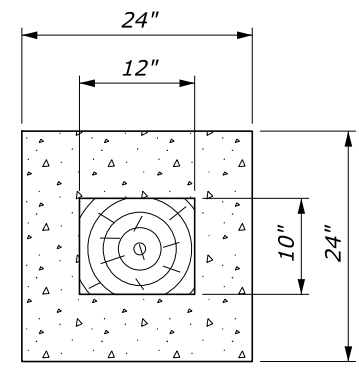
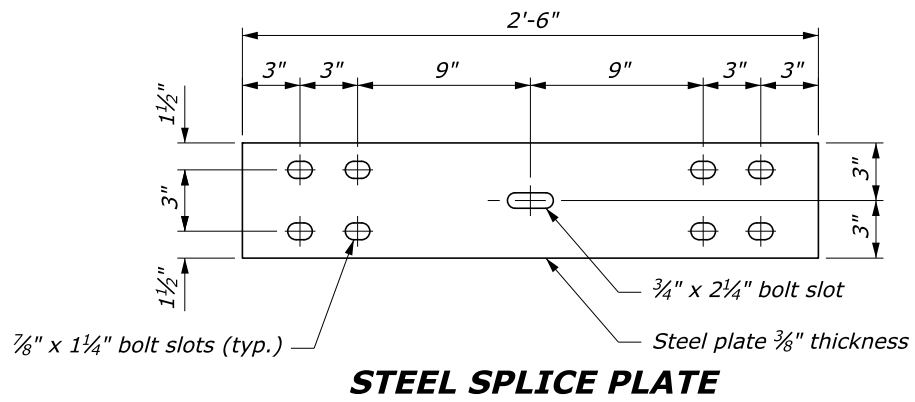
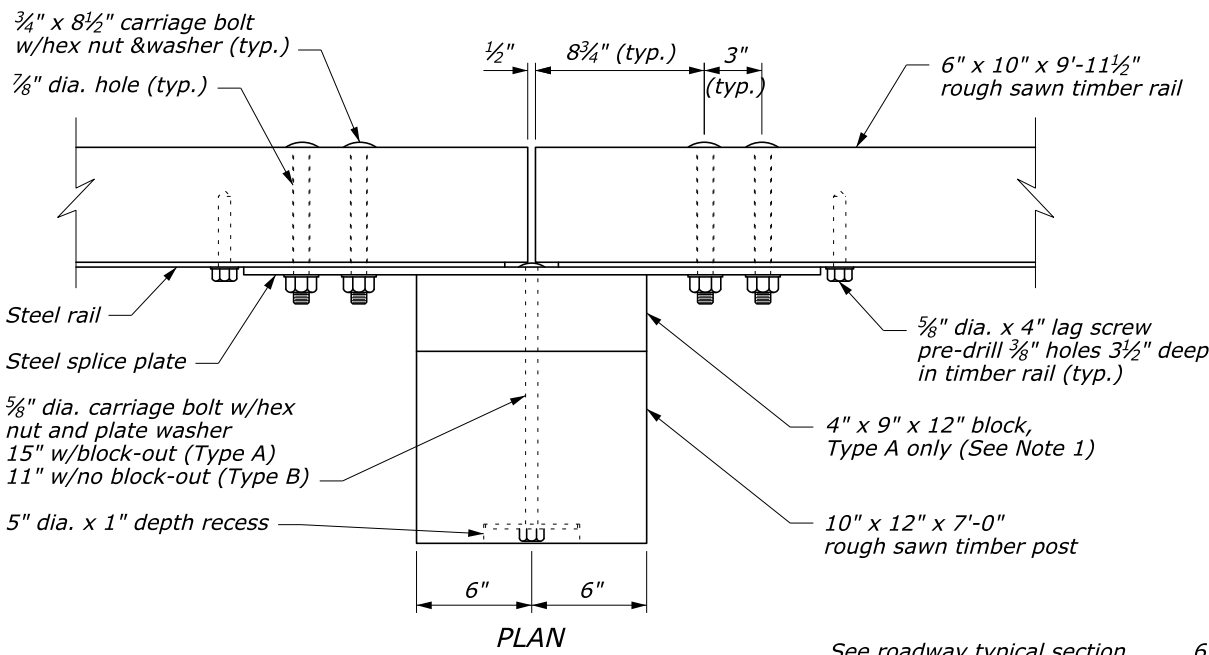
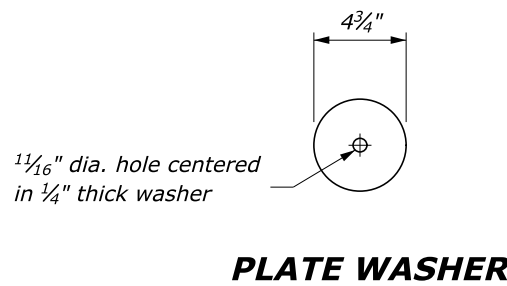
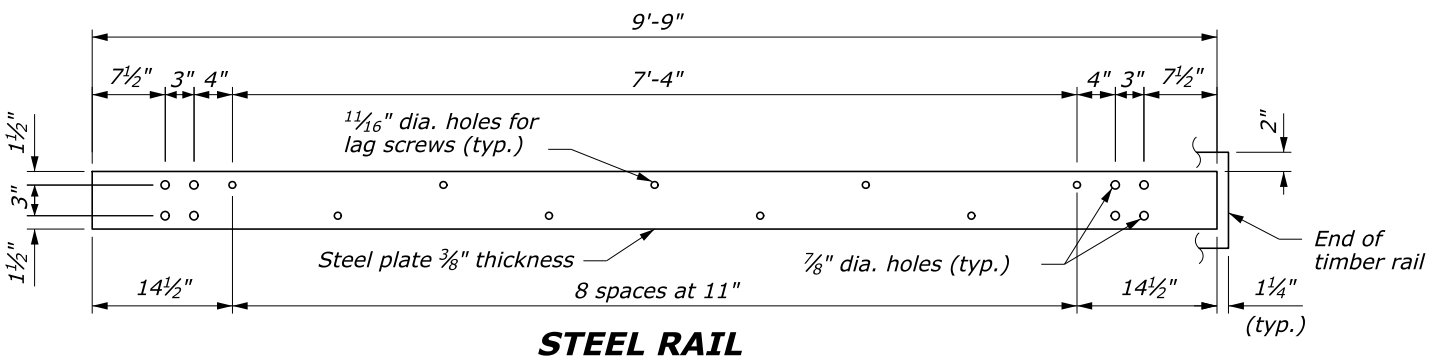
NO SCALE

ELEVATION

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	S11

NOTE:

1. Use the Type A, blocked-out, system or the Type B, non-blocked-out, system as specified in the plans.
2. Use weathering steel for all structural steel and fastener hardware as specified.
3. Place a terminal section (See Details ET 617-61A and 617-62A) on both approach and trailing ends of barrier installations.



24" dia. round anchor is an acceptable alternative. Reduced size acceptable in solid rock.

CONCRETE ANCHOR FOR SHORT GUARDRAIL POST

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION EASTERN FEDERAL LANDS HIGHWAY DIVISION	
U.S. CUSTOMARY DETAIL	
STEEL-BACKED TIMBER GUARDRAIL TYPE A & TYPE B	
	DETAIL 617-60A

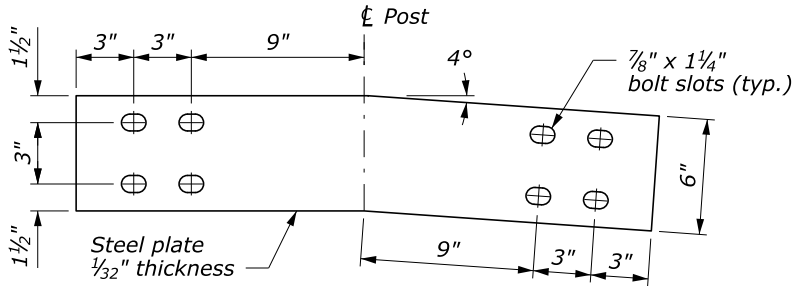
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PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	S12

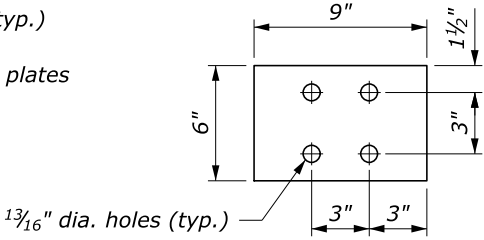
NOTES:

1. Extend the fill widening a minimum of 5 feet behind the guardrail, unless otherwise directed by the CO.
2. The guardrail flare shown in the plan view is the minimum length and rate required. As directed by the CO, flare the guardrail so that the terminal section is outside the clear zone. If the terminal section cannot be located outside the clear zone, it should be flared as far as practical from the road at the maximum rate indicated on the Guardrail Flare Rates table.
3. See Detail 617-60A, Steel-Backed Timber Guardrail, Type SBTA and SBTB, for timber, structural steel, and hardware details.
4. On the Type A, blocked-out guardrail, include the blocks in terminal section, except on the concrete anchor. For the Type B, non-blocked-out guardrail, no blocks are included.

GUARDRAIL FLARE RATE TABLE			
Design Speed (mph)	Shy line offset (ft)	Flare rate inside shy line (a:b)	Flare rate outside shy line (a:b)
60	8.0	26:1	14:1
50	6.5	21:1	11:1
40	5.0	16:1	8:1
30 and less	4.0	13:1	7:1



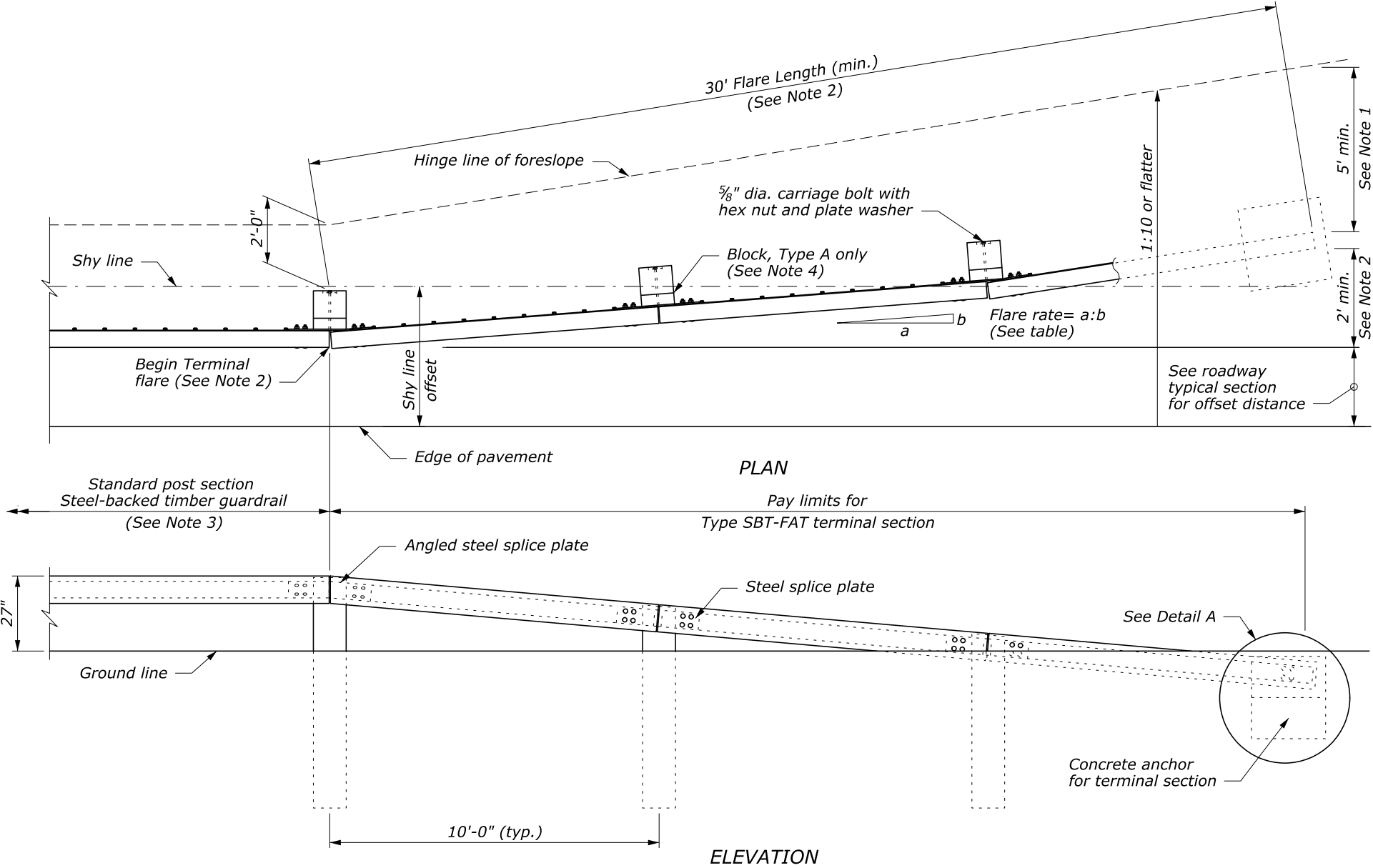
ANGLED STEEL SPLICE PLATE



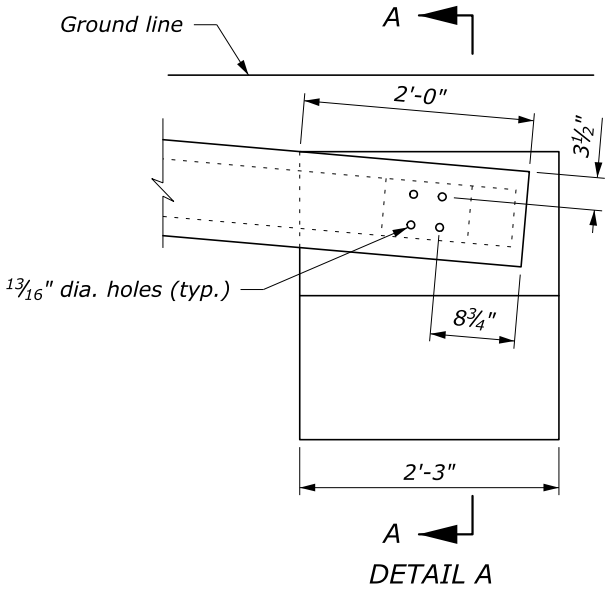
STEEL BEARING PLATE

NO SCALE

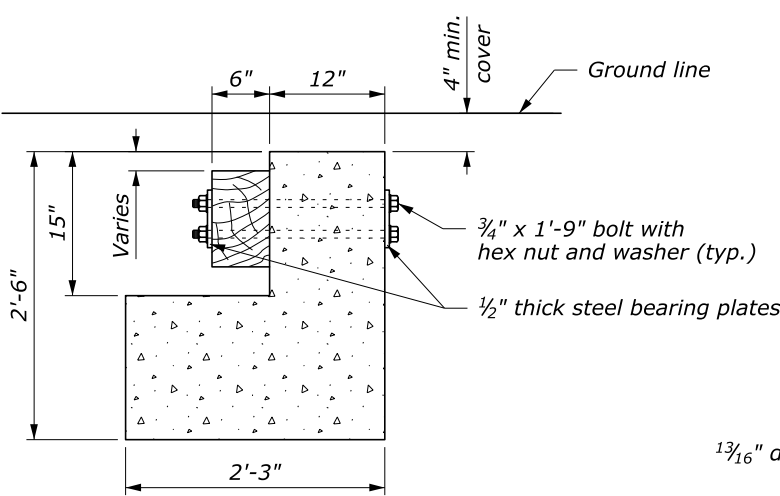
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION EASTERN FEDERAL LANDS HIGHWAY DIVISION	
U.S. CUSTOMARY DETAIL STEEL-BACKED TIMBER GUARDRAIL TERMINAL SECTION TYPE SBT-FAT	
	DETAIL ET 617-61A



APPROACH & DEPARTURE FLARE WITH FLARED ANCHOR TERMINAL (FAT)



CONCRETE ANCHOR

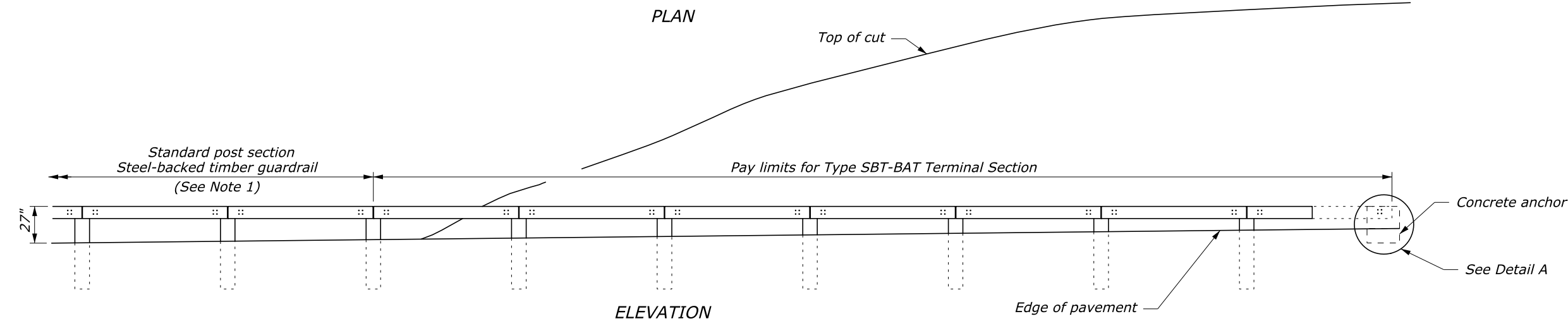
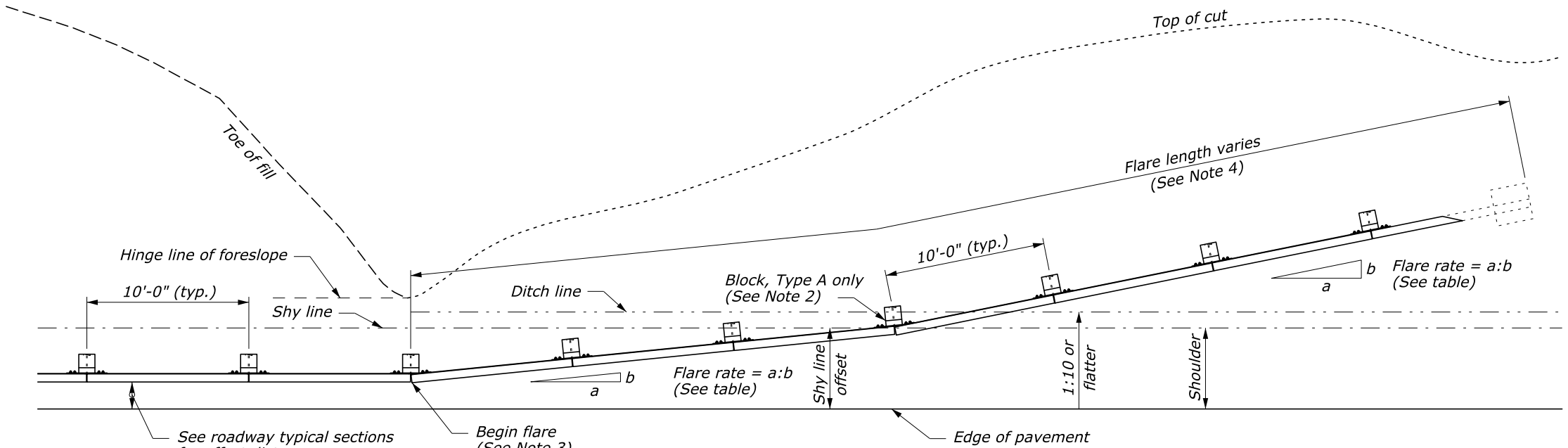


SECTION A-A

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	S13

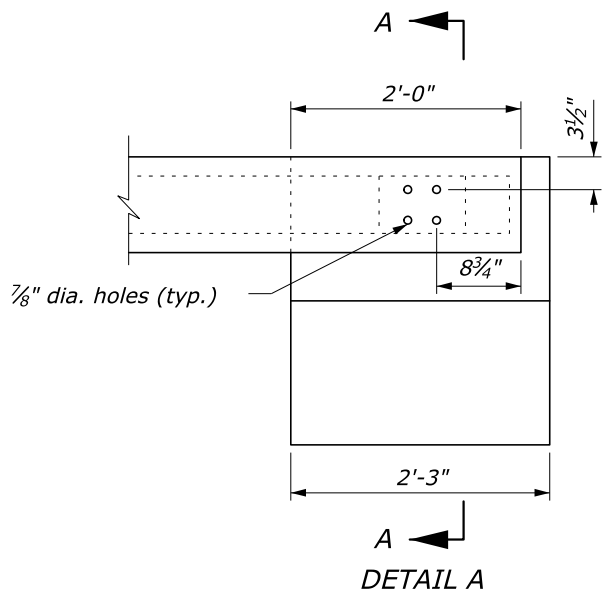
NOTE:

- See Detail 617-60A, SBTA and SBTB for timber, structural steel, and hardware details.
- On the Type A, blocked-out guardrail, include the blocks in the terminal section, except on the concrete anchor. For the Type B, non-blocked-out guardrail, no blocks are included.
- Begin the cut flares at the nearest post to a transition point between fill and cut as directed by the CO.
- Extend the flare into the cut until a minimum 1-foot cover is obtained over the guardrail end.

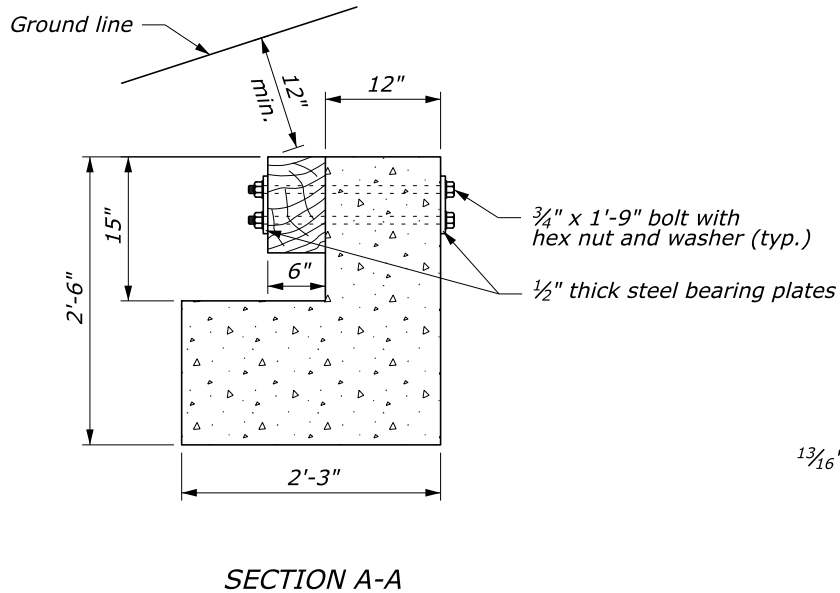


APPROACH & DEPARTURE FLARE WITH BACK SLOPE ANCHOR TERMINAL (BAT)

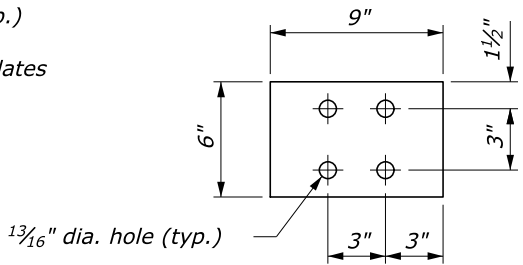
GUARDRAIL FLARE RATE TABLE			
Design Speed (mph)	Shy line offset (ft)	Flare rate inside shy line (a:b)	Flare rate outside shy line (a:b)
60	8.0	26:1	14:1
50	6.5	21:1	11:1
40	5.0	16:1	8:1
30 and less	3.5	13:1	7:1



CONCRETE ANCHOR



SECTION A-A



STEEL BEARING PLATE

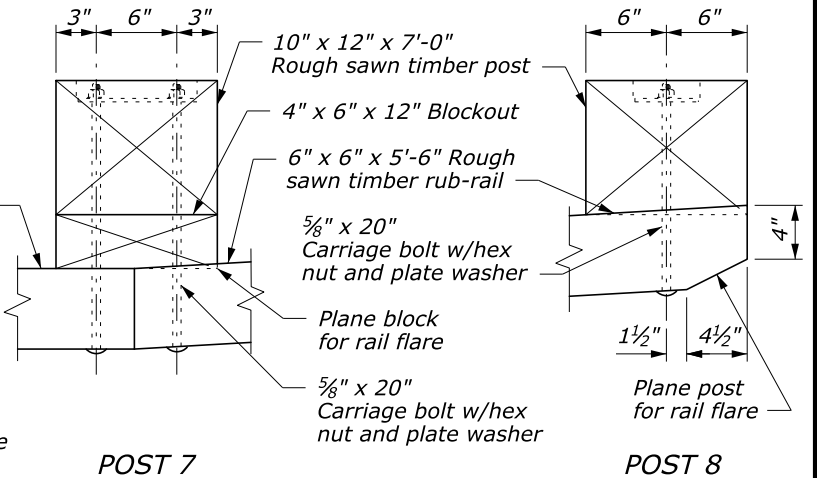
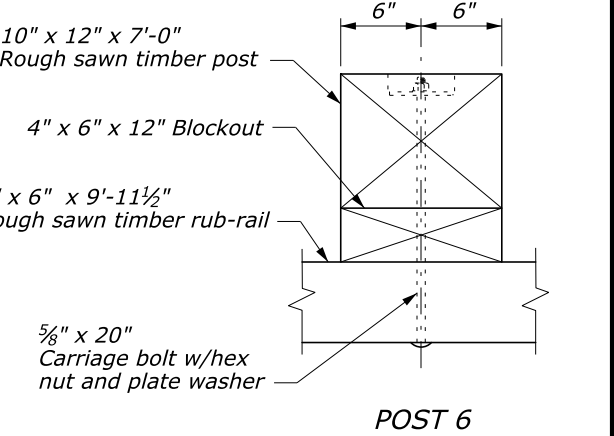
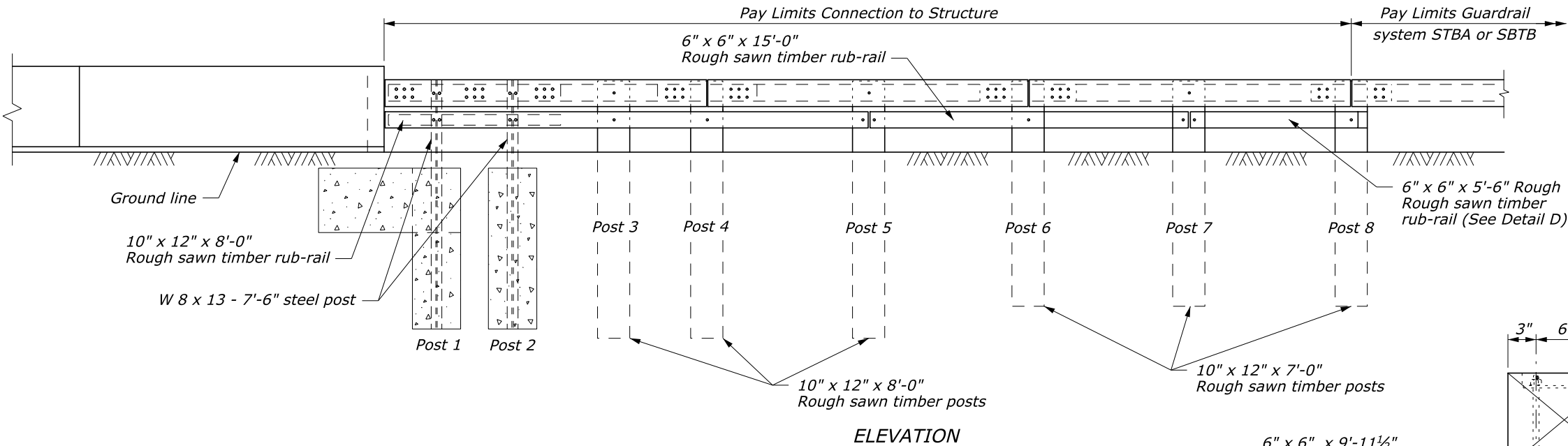
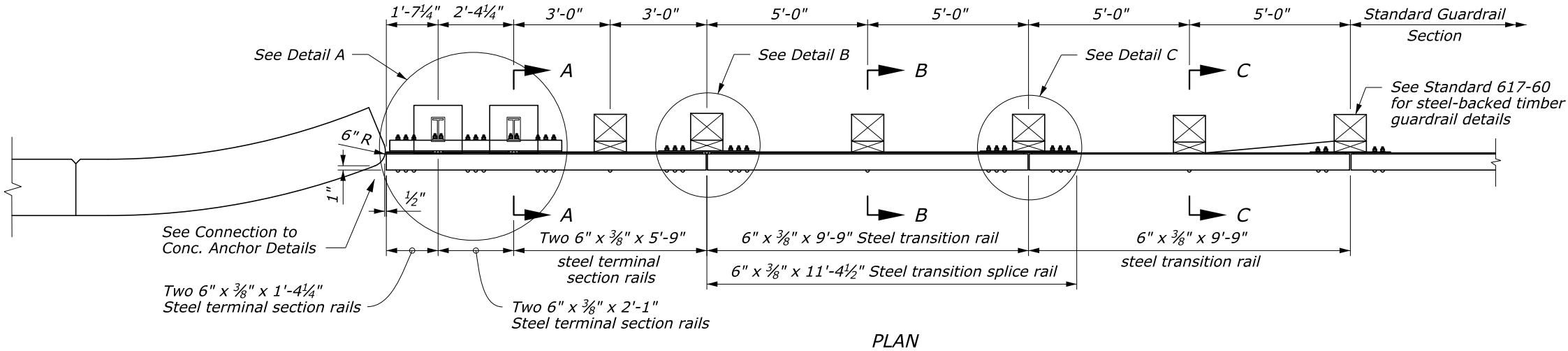
NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION EASTERN FEDERAL LANDS HIGHWAY DIVISION	
U.S. CUSTOMARY DETAIL STEEL-BACKED TIMBER GUARDRAIL TERMINAL SECTION TYPE SBT-BAT	
	DETAIL 617-62A

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	S14

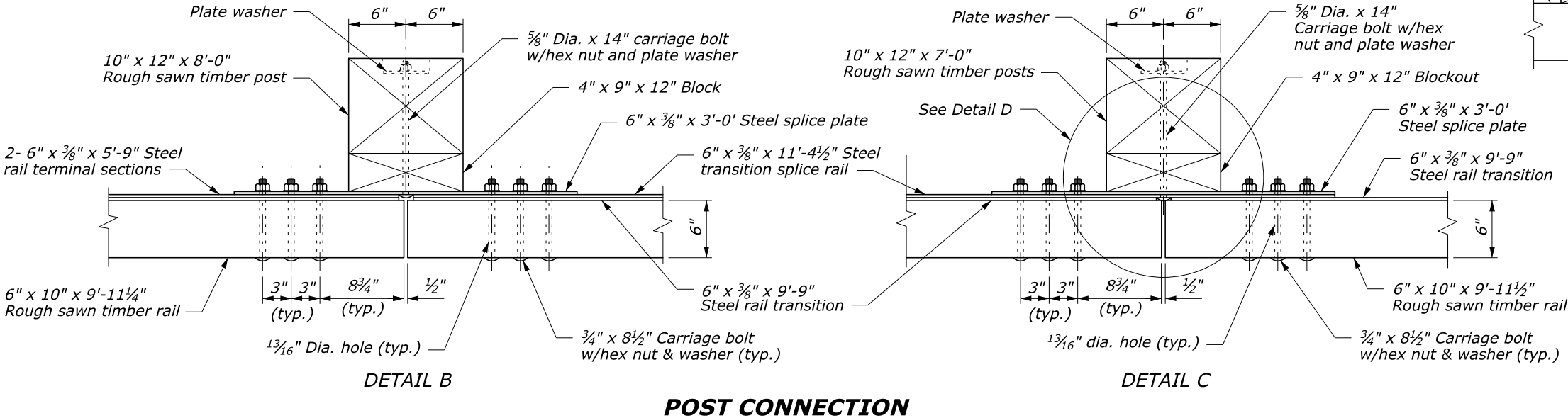
NOTES:

1. See the following sheets for Sections A-A through C-C, steel rail layouts, and other details.
2. Use weathering steel for all structural steel and fastener hardware.
3. Transition shown for curved end structure. For transition to a straight parapet end, install the timber rail so that the face of the timber rail is offset 1 inch towards the roadway.



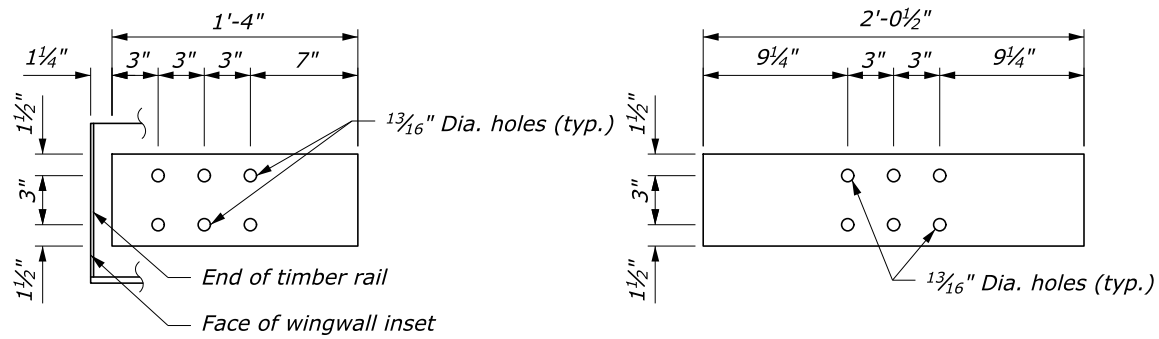
DETAIL D
RUBRAIL CONNECTION PLAN

NO SCALE

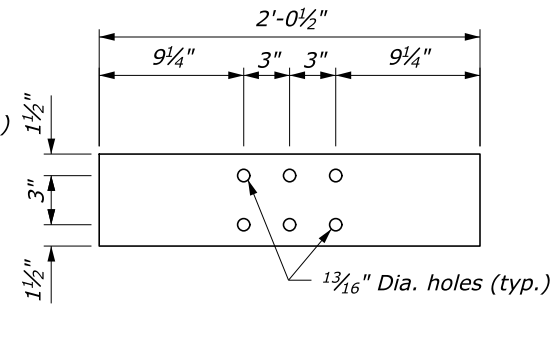


U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION EASTERN FEDERAL LANDS HIGHWAY DIVISION	
U.S. CUSTOMARY DETAIL STEEL-BACKED TIMBER GUARDRAIL TL-2 TRANSITION TO STRAIGHT OR CURVED-END STRUCTURE Sheet 1 of 3	
DETAIL APPROVED FOR USE REVISED: 3/2008 5/2016	DETAIL ET 617-67

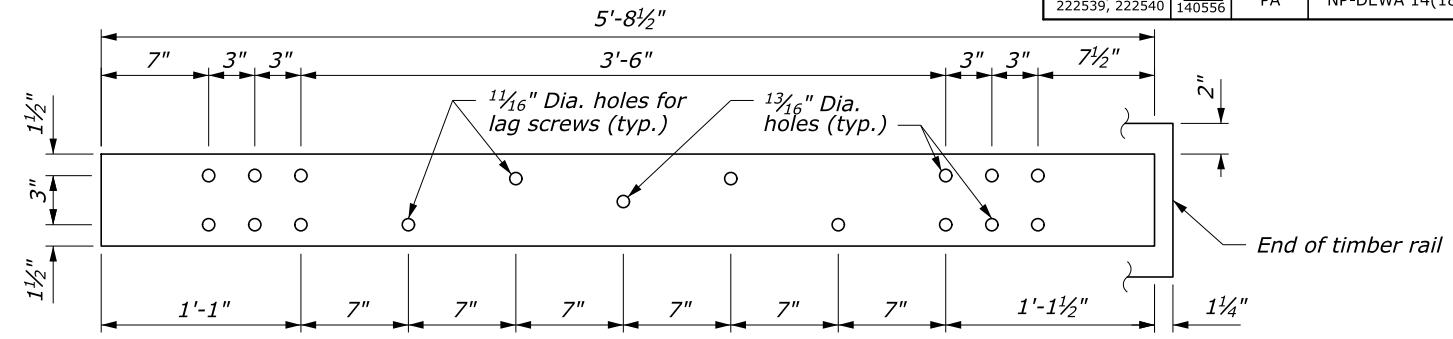
PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	S16



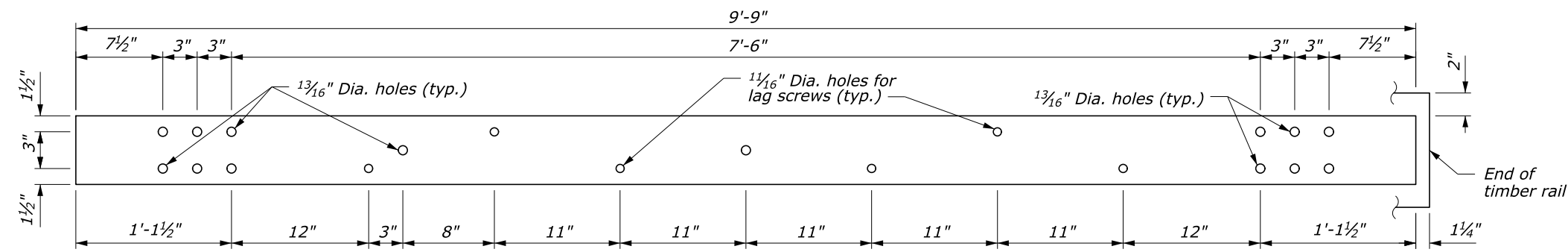
TERMINAL SECTION
6" x 3/8" x 1'-4"



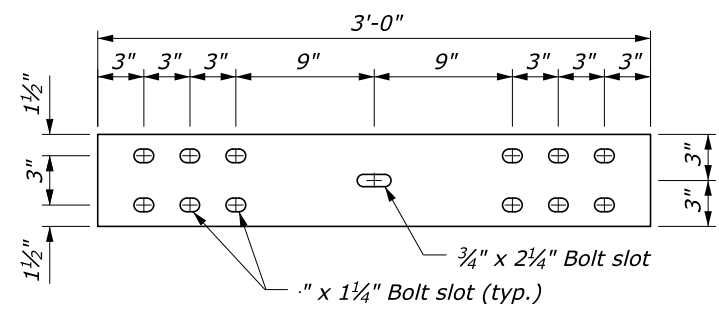
TERMINAL SECTION
6" x 3/8" x 2'-0 1/2"



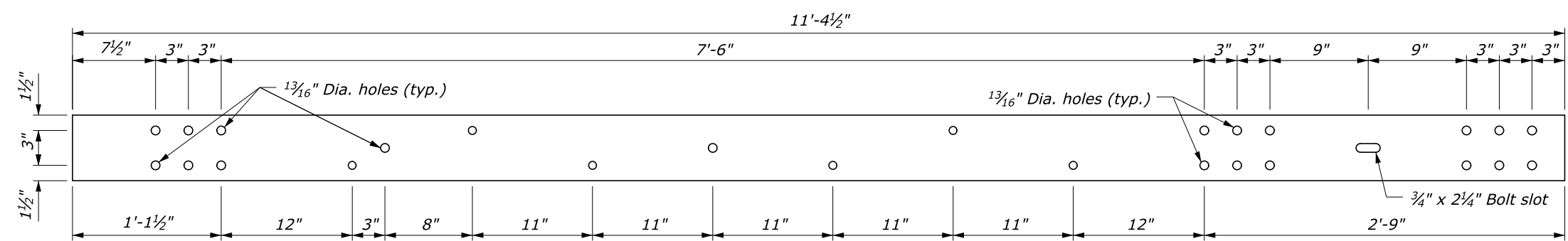
TERMINAL SECTION
6" x 3/8" x 5'-8 1/2"



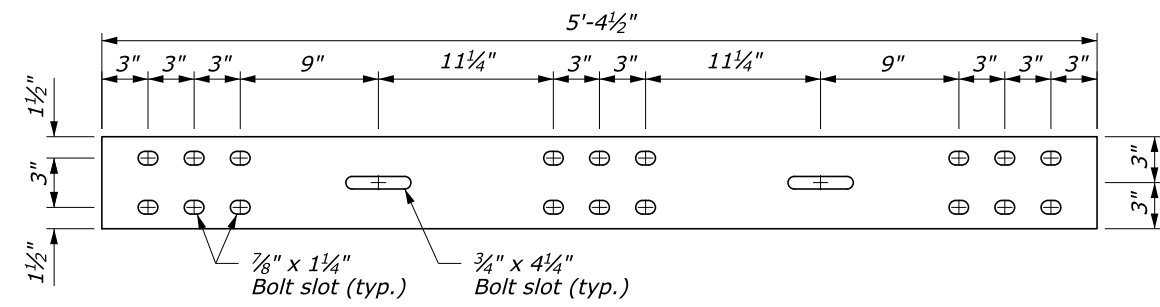
TRANSITION SECTION
6" x 3/8" x 9'-9"



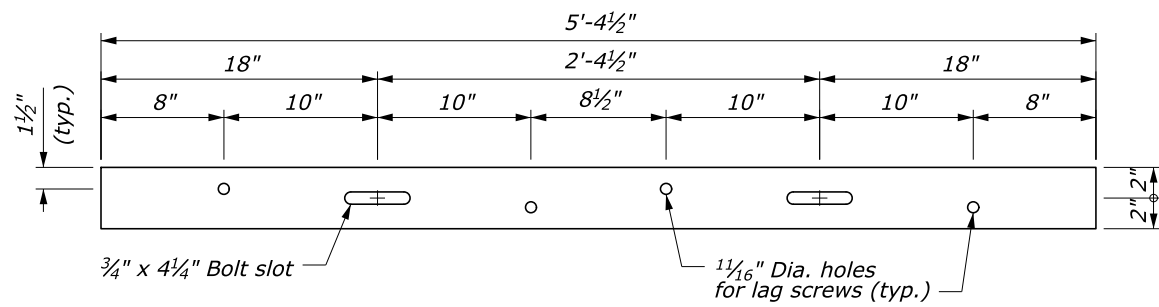
STEEL SPLICE PLATE
6" x 3/8" x 3'-0"



TRANSITION SECTION
6" x 3/8" x 11'-4 1/2"



STEEL SPLICE PLATE
6" x 3/8" x 5'-4 1/2"



RUB-RAIL TRANSITION SECTION
4" x 3/8" x 5'-4 1/2"

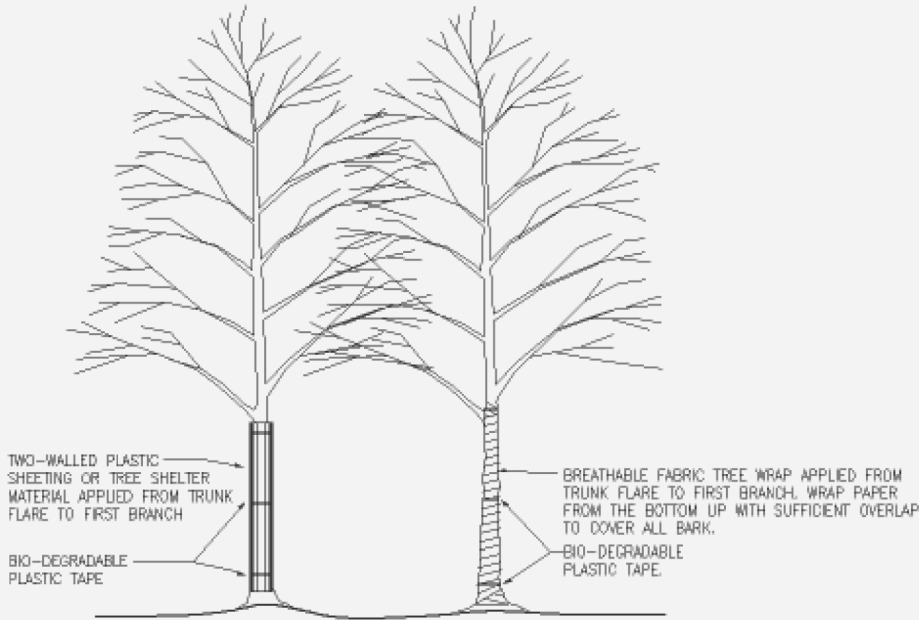
NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION EASTERN FEDERAL LANDS HIGHWAY DIVISION	
U.S. CUSTOMARY DETAIL STEEL-BACKED TIMBER GUARDRAIL TL-2 TRANSITION TO STRAIGHT OR CURVED-END STRUCTURE Sheet 3 of 3	
DETAIL APPROVED FOR USE REVISED: 3/2008 5/2016	DETAIL ET 617-67

13-Jan-2020 01:48 PM M:\PROJECTS\dewa\418\121\INProj_Dev\CADD\Sta-Det\4-S16-s6767_EFL_TEMP.dgn

INTERNATIONAL SOCIETY
OF ARBORICULTURE

INTERNATIONAL SOCIETY OF ARBORICULTURE
1400 WEST ANTHONY DRIVE
CHAMPAIGN, IL 61821
(217) 355-9411
(217) 355-9516 FAX



APPLY THE PLASTIC SHEETING LOOSELY AROUND THE TRUNK TO LEAVE A 12 MM (0.5 IN.) GAP BETWEEN THE TRUNK AND THE SHEETING.

OPTION 1

OPTION 2

TREE WRAP SHOULD BE INSTALLED AT TIME OF PLANTING AND BE REMOVED WHEN DIRECTED BY THE LANDSCAPE ARCHITECT, BUT NO LATER THAN 12 MONTHS AFTER PLANTING.

TREES WHOSE NORTH ORIENTATION IS NOT CHANGED FROM THE NURSERY DO NOT NEED TO BE WRAPPED EXCEPT TREES WITH VERY THIN BARK, SUCH AS RED MAPLE, SHOULD BE WRAPPED IF APPROVED BY THE LANDSCAPE ARCHITECT.

NOTES

1. PLEASE REFER TO INTRODUCTION AND USE CRITERIA PRIOR TO USING THIS DETAIL.



TREE WRAPPING DETAIL

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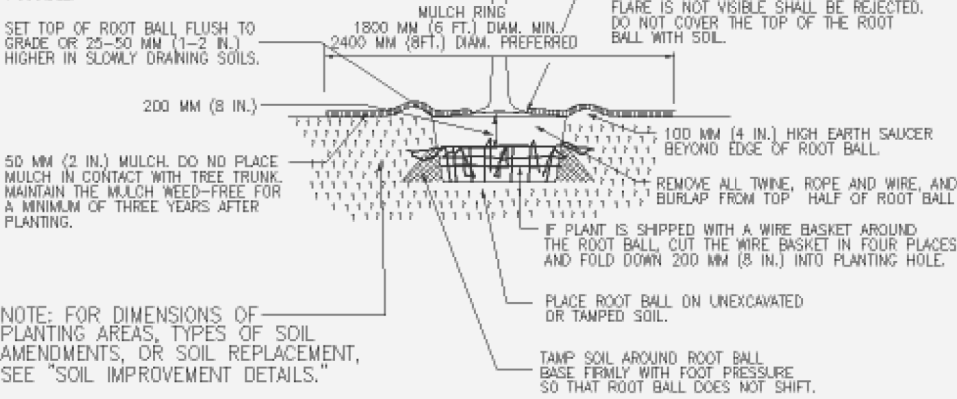
DO NOT HEAVILY PRUNE THE TREE AT PLANTING. PRUNE ONLY CROSSOVER LIMBS, CO-DOMINANT LEADERS, AND BROKEN OR DEAD BRANCHES. SOME INTERIOR TWIGS AND LATERAL BRANCHES MAY BE PRUNED; HOWEVER, DO NOT REMOVE THE TERMINAL BUDS OF BRANCHES THAT EXTEND TO THE EDGE OF THE CROWN.

STAKE TREES ONLY UPON THE APPROVAL OF THE LANDSCAPE ARCHITECT. SEE STAKING DETAIL.

WRAP TREE TRUNKS ONLY UPON THE APPROVAL OF THE LANDSCAPE ARCHITECT. SEE WRAPPING DETAIL.

MARK THE NORTH SIDE OF THE TREE IN THE NURSERY, AND ROTATE TREE TO FACE NORTH AT THE SITE WHEN EVER POSSIBLE.

SET TOP OF ROOT BALL FLUSH TO GRADE OR 25-50 MM (1-2 IN.) HIGHER IN SLOWLY DRAINING SOILS.



NOTE: FOR DIMENSIONS OF PLANTING AREAS, TYPES OF SOIL AMENDMENTS, OR SOIL REPLACEMENT, SEE "SOIL IMPROVEMENT DETAILS."

NOTES

1. PLEASE REFER TO INTRODUCTION AND USE CRITERIA PRIOR TO USING THIS DETAIL.



TREE PLANTING DETAIL - B&B TREES IN ALL SOIL TYPES

NOTE: THIS DETAIL ASSUMES THAT THE PLANTING SPACE IS LARGER THAN 2400 MM (8 FT.) SQUARE, OPEN TO THE SKY, AND NOT COVERED BY ANY PAVING OR GRATING.

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NOTE:

1. Adopted from International Society of Arboriculture, 2003

U.S. DEPARTMENT OF TRANSPORTATION
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EASTERN FEDERAL LANDS HIGHWAY DIVISION

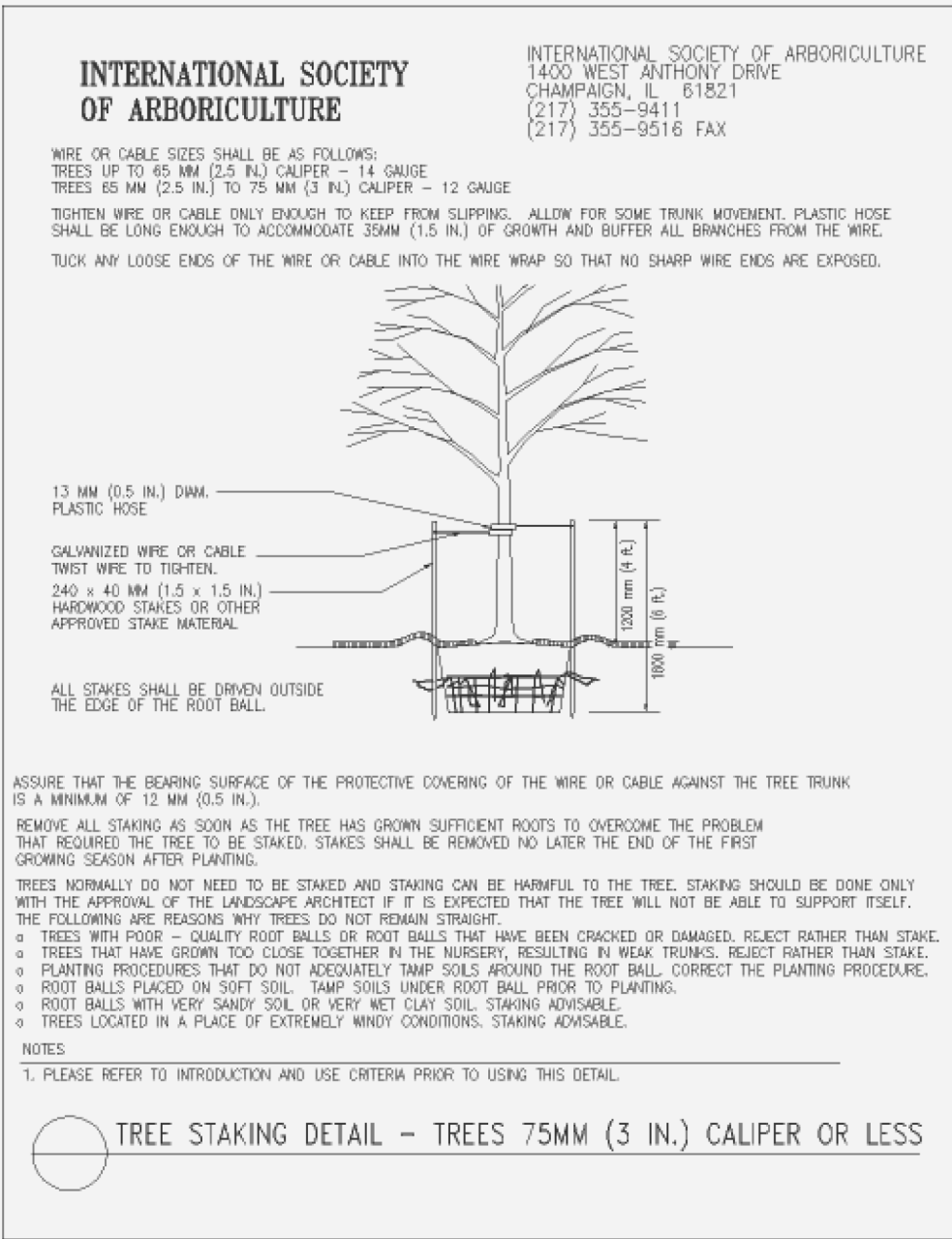
U.S. CUSTOMARY DETAIL

TREES AND SHRUBS
PLANTING METHODS

Sheet 1 of 2

DETAIL
E626-A

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	S18

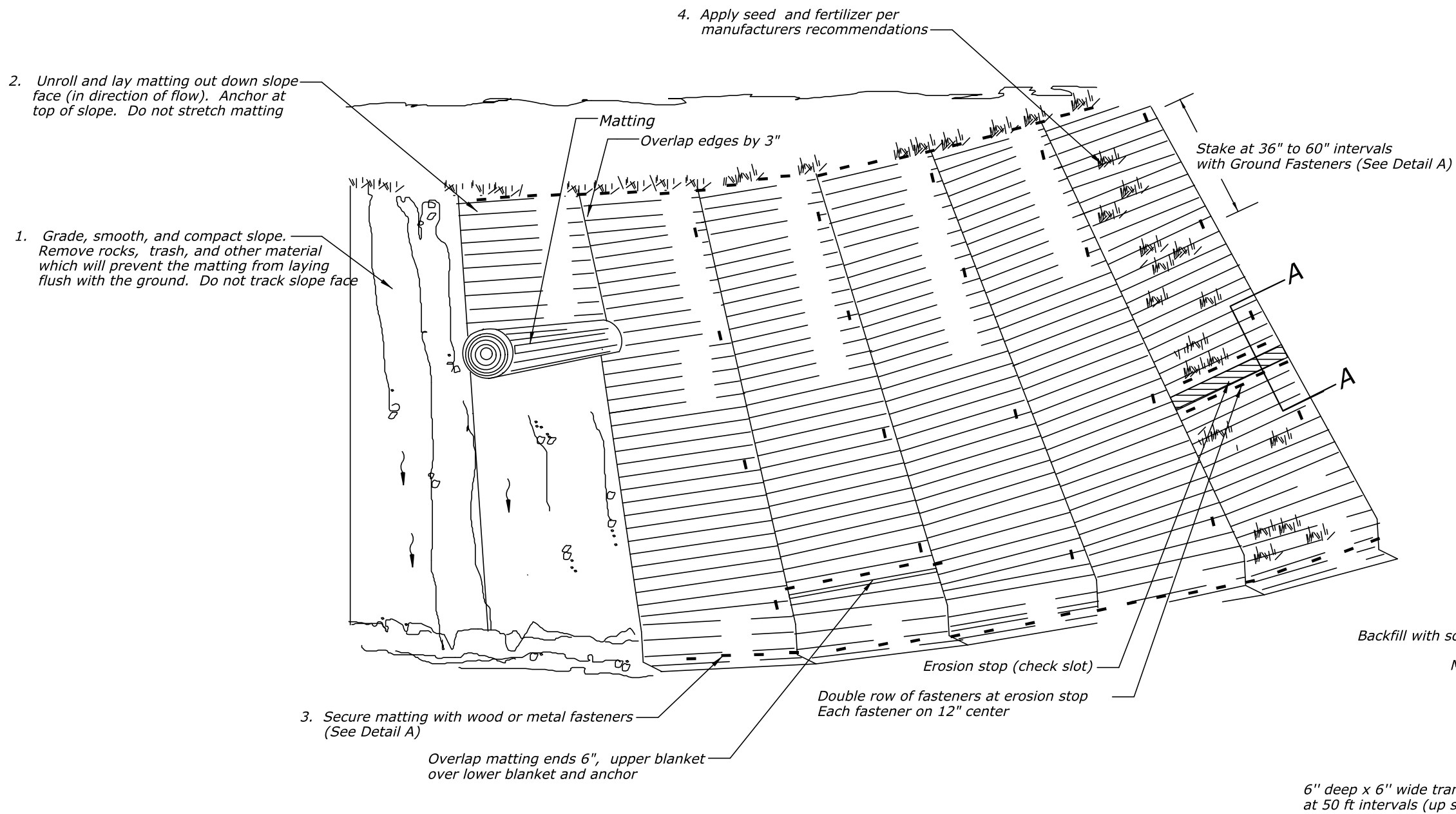


NOTE:

1. *Adopted from International Society of Arboriculture, 2003*

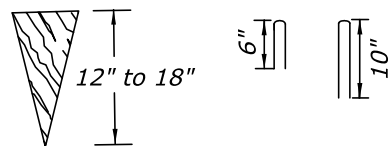
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION EASTERN FEDERAL LANDS HIGHWAY DIVISION	
U.S. CUSTOMARY DETAIL TREES AND SHRUBS PLANTING METHODS	
Sheet 2 of 2	
	DETAIL F626-A

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	S19



Wood Stakes
1" X 3" stock cut
into triangular shape

Typical staples
No. 11 gauge wire



DETAIL A
Typical Ground Fasteners

DETAIL FOR STABILIZING SLOPES WITH MATTING

SECTION A-A
Erosion Stop (Check Slot) Detail

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION

U.S. CUSTOMARY DETAIL

**SLOPE STABILIZATION
WITH MATTING**

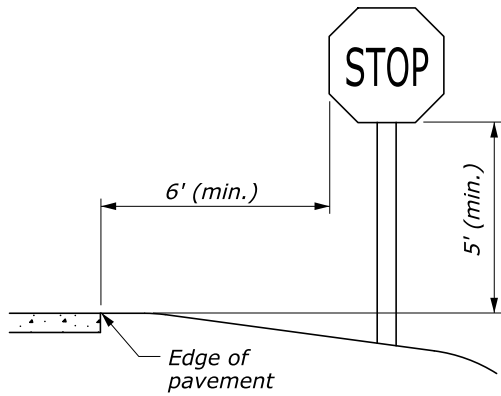
DETAIL APPROVED FOR USE

APPROVED : MAY 2011
REVISED: SEPTEMBER 2014

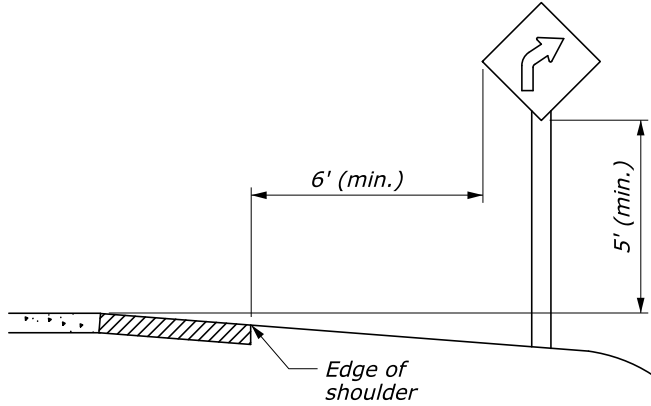
DETAIL

E629-01

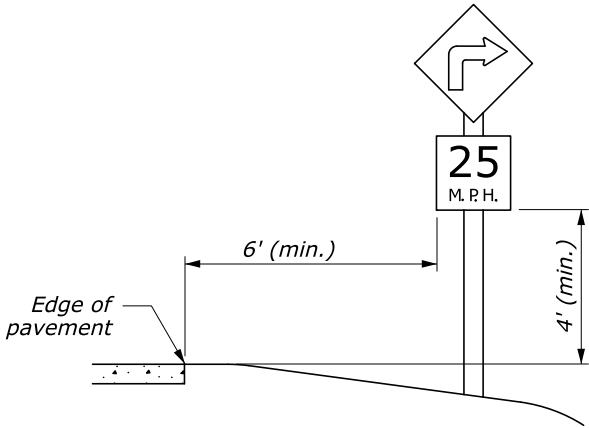
PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	S20



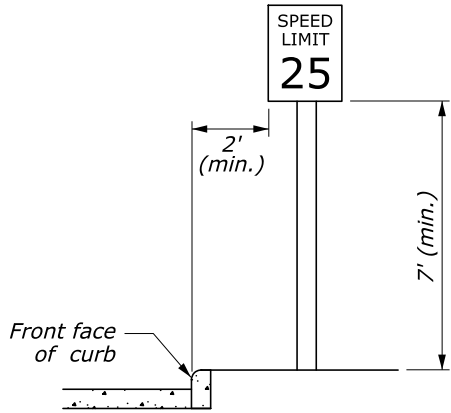
WITHOUT SHOULDER



WITH SHOULDER

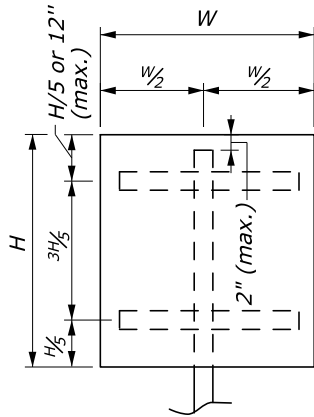


WITH ADVISORY SPEED PLAQUE

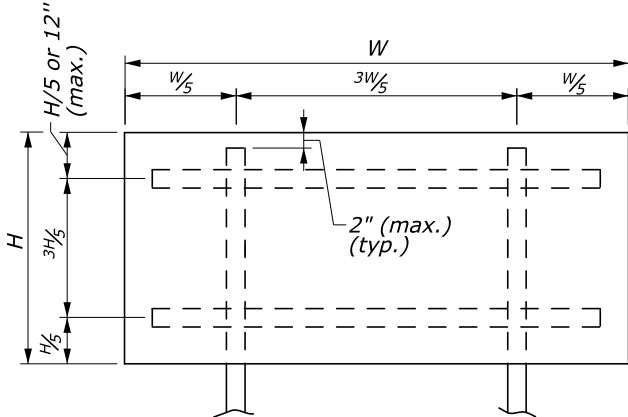


ROADSIDE SIGN IN BUSINESS
OR RESIDENTIAL DISTRICT

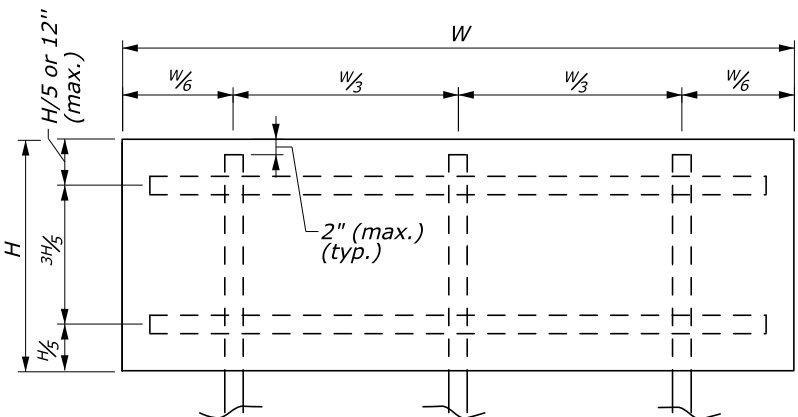
ROADSIDE SIGN IN RURAL DISTRICT



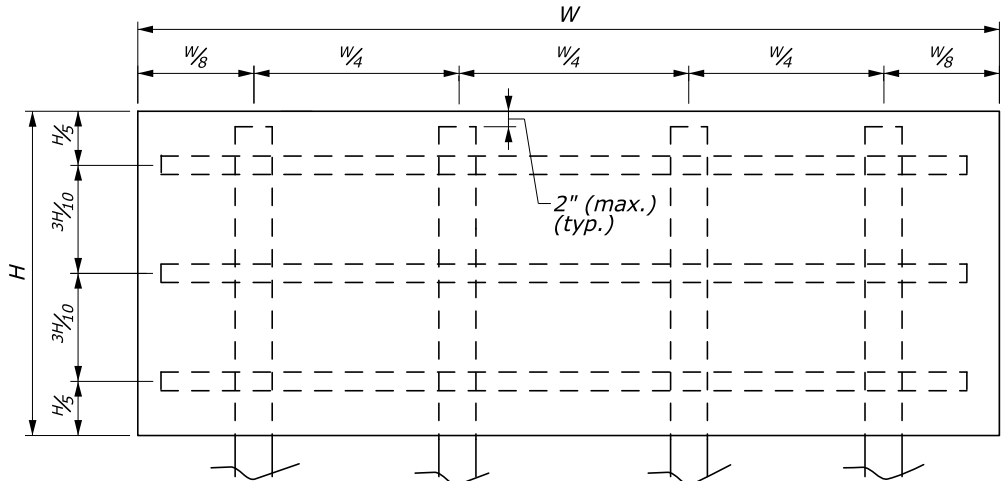
SINGLE POST



DOUBLE POST



TRIPLE POST



QUADRUPLE POST

POST SIZE TABLE					
POST TYPE	POST SIZE	MAXIMUM SIGN AREA (SQFT)			
		SINGLE POST	DOUBLE POST	TRIPLE POST	QUADRUPLE POST
Wood	4" x 4"	10	20		
	4" x 6"	15	35	45	60
	6" x 6"	20	50	75	100
U-Channel Steel	3 lb/ft	10*	24	30	
Square Tubular Steel	2" 12 ga.	10*	16		
	2" 12 ga.	10*	24**		
Corrosion Resistant Steel	2" x 2" 10 ga. Class B	10*	24		

* See Note 2
** See Note 3

NOTES:

1. Locate and set sign height according to the "Manual on Uniform Traffic Control Devices for Streets and Highways" (MUTCD), latest edition.
2. For U-channel, square tubular, and corrosion resistant steel posts for which the sign panel area is 10 square feet or less but W is over 4 feet, use double posts.
3. For square tabular steel double posts for which the sign panel areas is equal to 24 square feet, use slip base according to manufacturer's recommendations.
4. Refer to Detail E633-02 for breakaway support details for corrosion resistant steel posts.
5. Refer to Detail E633-03 for breakaway support details for wood, U-channel steel and square tubular steel posts.
6. Refer to Detail E633-04 for bracing details for wood, U-channel steel and square tubular steel posts.
7. Refer to Section 2A.21 of the MUTCD, latest edition, for additional information.

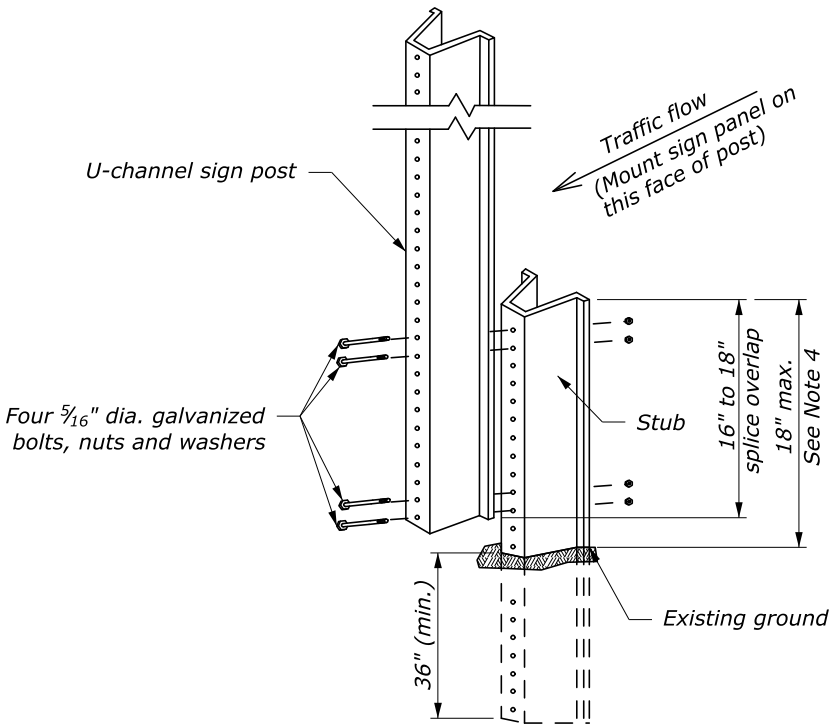
NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION EASTERN FEDERAL LANDS HIGHWAY DIVISION	
U.S. CUSTOMARY DETAIL	
SIGN STRUCTURES	
DETAIL APPROVED FOR USE APPROVED: MAY 2011 REVISED: JANUARY 2019	DETAIL E633-01

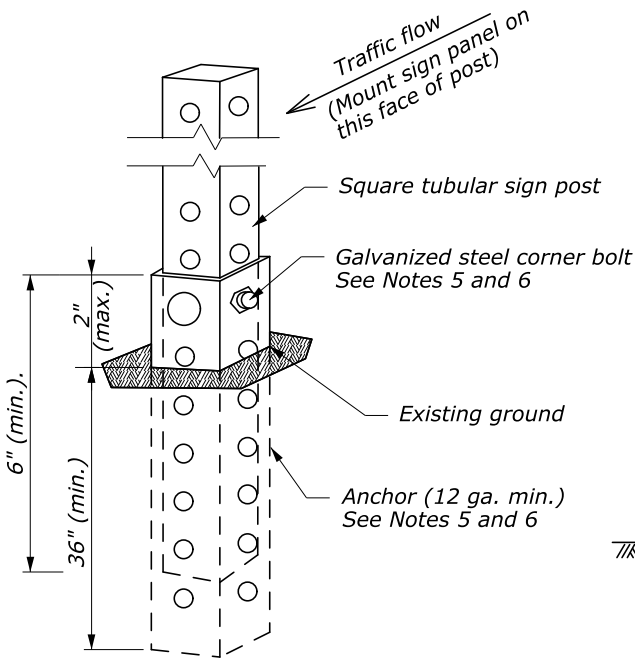
PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	S21

WOOD POST DATA TABLE		
POST SIZE	HOLE DIAMETER	(D) (MIN.)
4" x 4"	Not Required	3'
4" x 6"	1.5"	4'
6" x 6"	2"	4'

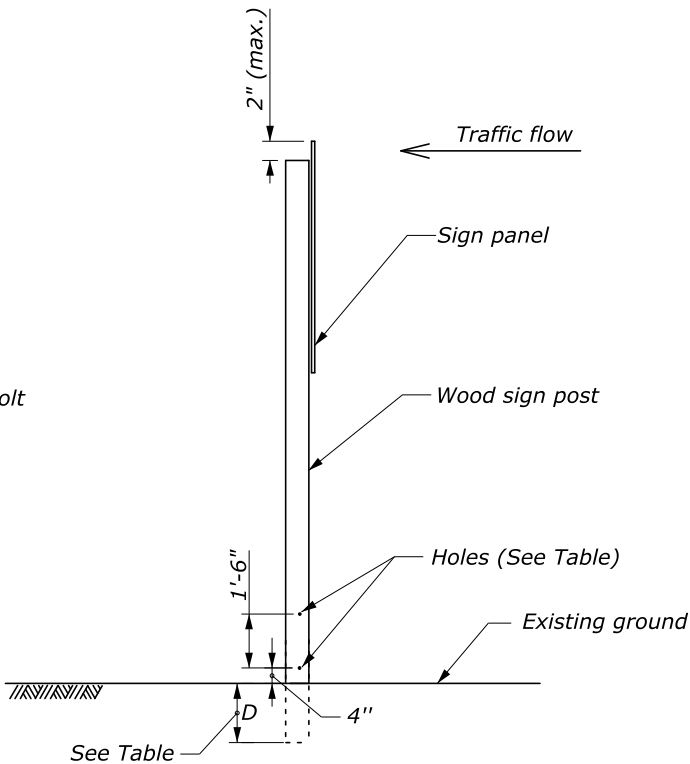
- NOTES:**
- Breakaway sign support is not required for signs placed behind protective barriers.
 - Signs requiring 6-inch by 6-inch wood posts are considered to be non-breakaway if multiple posts are required and posts cannot be spaced a minimum of 7 feet apart.
 - Place non-breakaway signs outside the clear zone or shield with approved barrier. Do not place holes in posts of non-breakaway signs.
 - Position splice overlap on U-channel steel posts entirely between the ground line and 18 inches above the ground line. Do not place more than one splice per post.
 - Attach the square tubular steel post to the anchor with a corner bolt according to manufacturer's recommendations. Size the anchor according to manufacturer's recommendations to accept the post size specified.
 - Maintain the post assembly in a plumb position.
 - For sign punching details, see the blank standards in the "Standard Highway Signs and Markings" as specified in the latest edition of the MUTCD.
 - Refer to Detail E633-01 for sign mounting details.
 - Refer to Detail E633-04 for sign bracing details.
 - Refer to Section 2A.21 of the MUTCD, latest edition, for additional information.



U-CHANNEL STEEL POST



SQUARE TUBULAR STEEL POST



WOOD POST

BREAKAWAY SIGN SUPPORT

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION

U.S. CUSTOMARY DETAIL

**BREAKAWAY SIGN SUPPORT
WOOD AND STEEL POSTS**

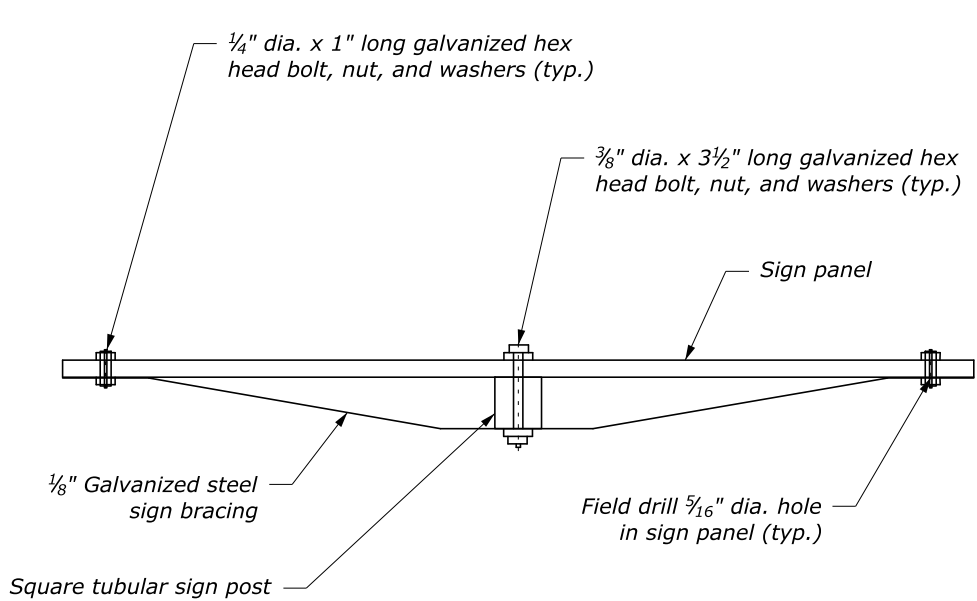
DETAIL APPROVED FOR USE	DETAIL
REVISED: JANUARY 2019	E633-03

NO SCALE

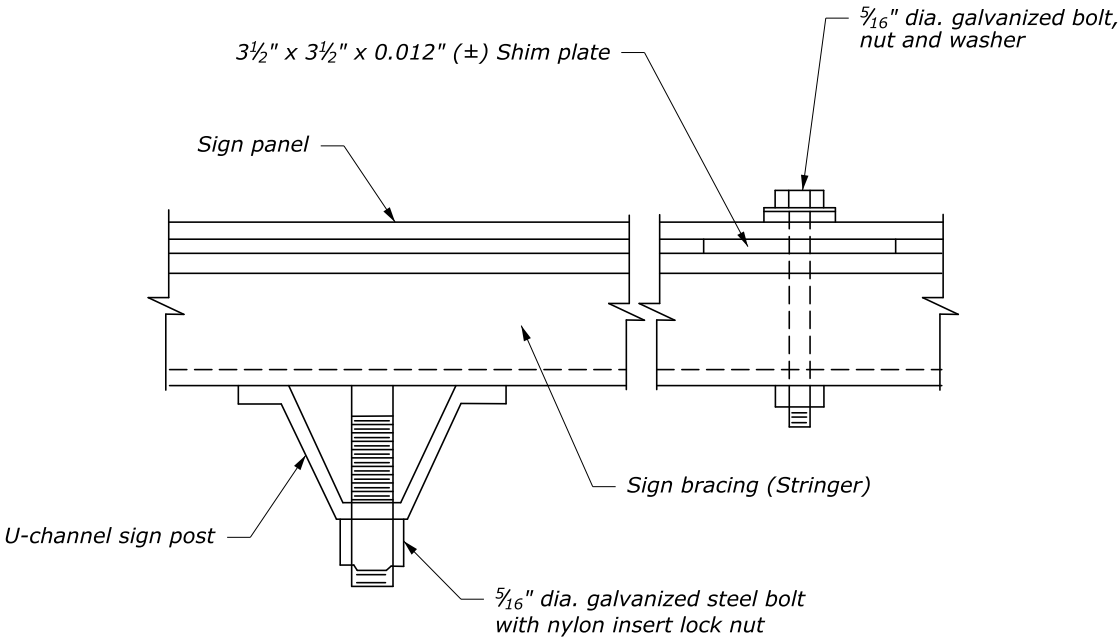
PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	S22

NOTES:

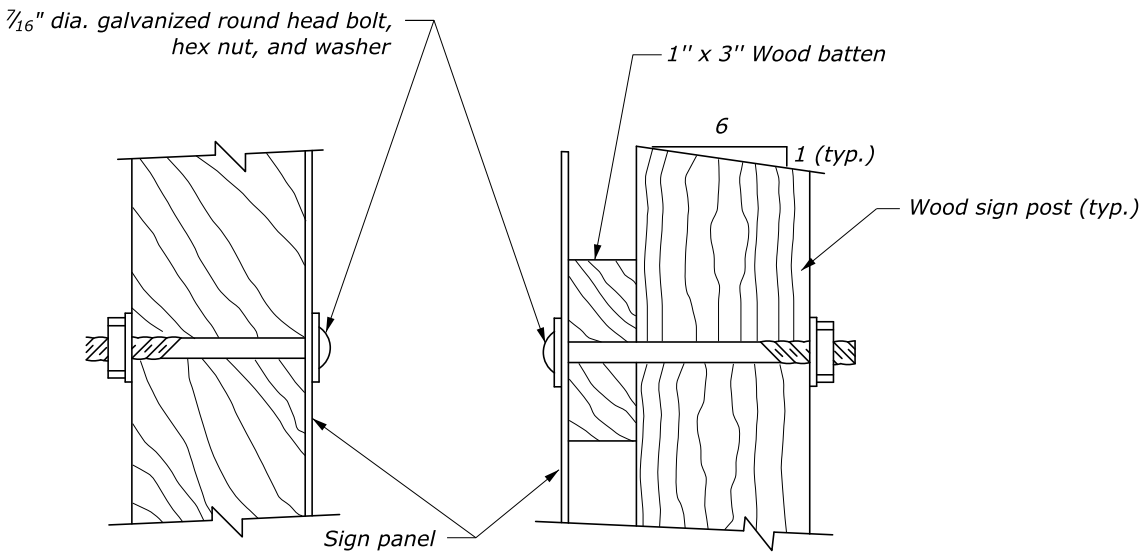
1. Install sign braces on signs with widths of 48 inches or greater. Install sign braces on signs with widths of 36 inches when specified or as directed by the CO.
2. For sign punching details, see the blank standards in the 'Standard Highway Signs and Markings' as specified in the latest edition of the MUTCD.
3. Use wood battens bolted to post at vertical spacings not to exceed 30 inches.
4. Use neoprene or nylon washers between the sign panel's retroreflective sheeting and the steel washer.
5. Refer to Detail E633-01 for sign mounting details.
6. Refer to Section 2A.21 of the MUTCD, latest edition, for additional information.



SQUARE TUBULAR STEEL POST



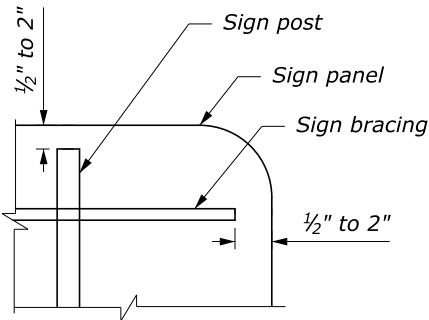
U-CHANNEL STEEL POST



WITHOUT BATTEN

WITH BATTEN

WOOD POST



BRACING INSTALLATION TOLERANCES

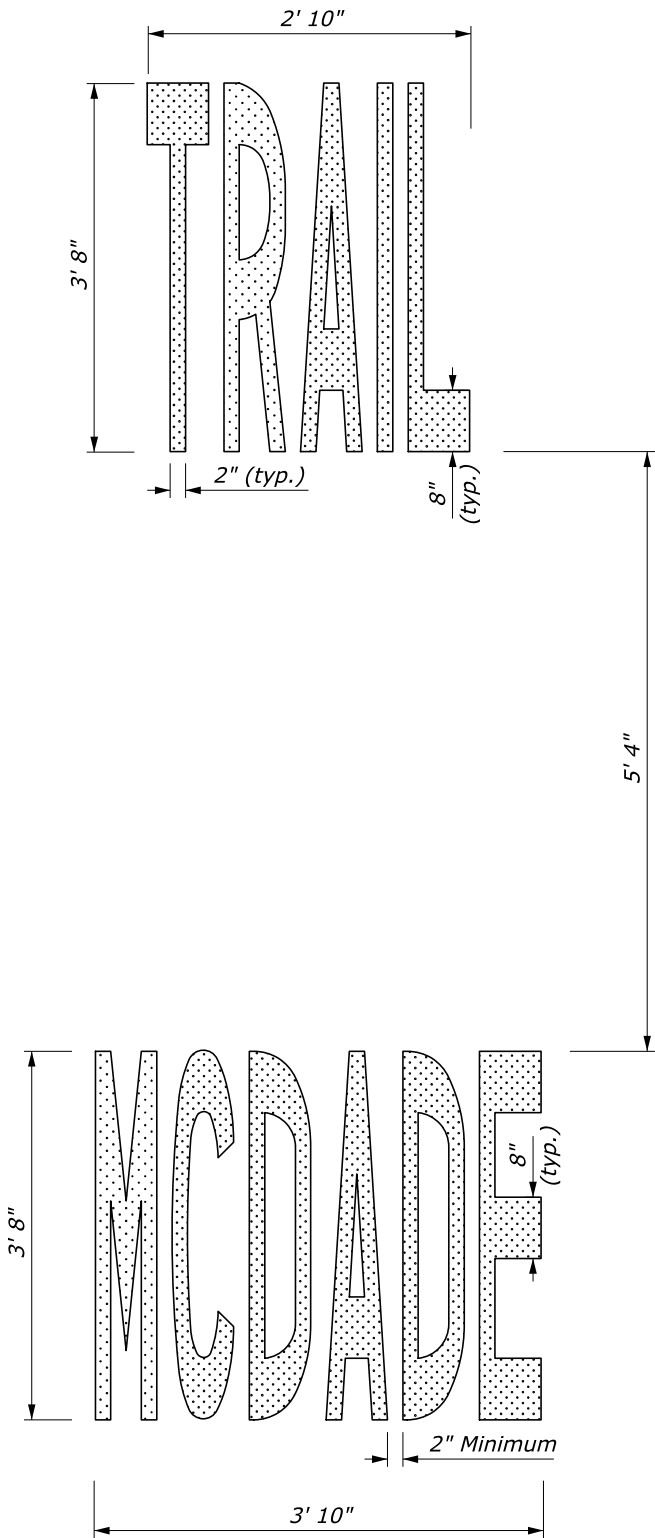
NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION EASTERN FEDERAL LANDS HIGHWAY DIVISION	
U.S. CUSTOMARY DETAIL	
SIGN BRACING	
DETAIL APPROVED FOR USE REVISED: JANUARY 2019	DETAIL E633-04

NOTES:

- 1. Place pavement word and symbol markings in accordance with the "Manual on Uniform Traffic Control Devices" (MUTCD), current edition.
- 2. Place all letters, numerals and symbols according to the "Standard Highway Signs", current edition.

PAVEMENT MARKING AREAS	
TYPE	SQFT
McDade Word Marking	7
Trail Word Marking	5



"MCDADE TRAIL" WORD MARKING

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION

U.S. CUSTOMARY DETAIL

PAVEMENT MARKINGS
SYMBOLS AND WORDS

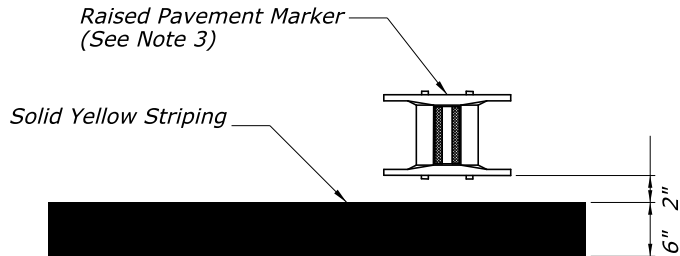
DETAIL
E634-A

NO SCALE

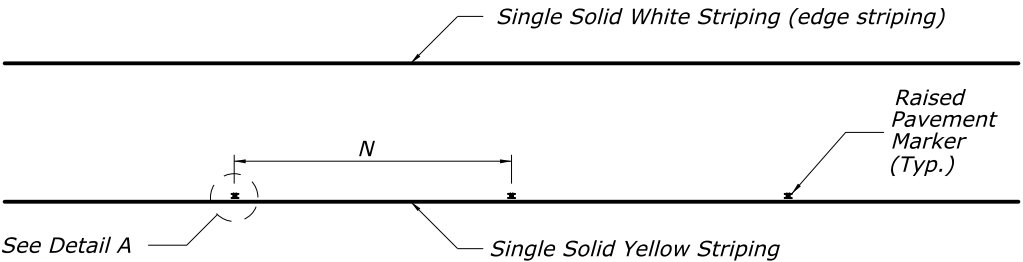
PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	S24

NOTES:

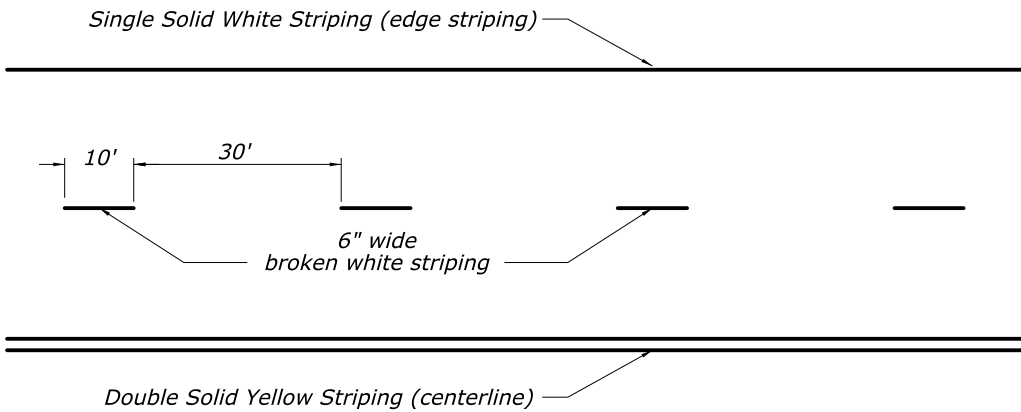
1. Install striping in accordance with the Manual on Uniform Traffic Control Devices (MUTCD), Latest Edition.
2. When raised pavement markers are required, space and install in accordance with the MUTCD and as shown in this detail or as directed by the CO.
3. When raised pavement markers are required, see Detail E634-02.



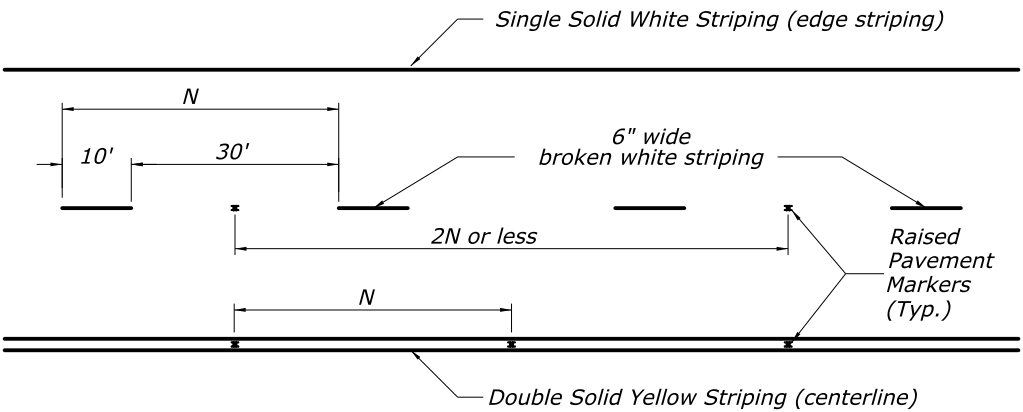
DETAIL A



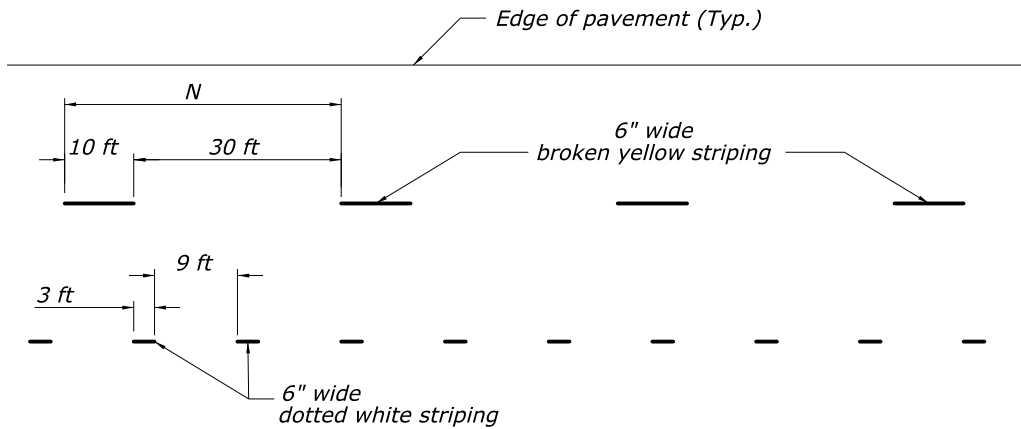
SINGLE SOLID YELLOW STRIPING
WITH RAISED PAVEMENT MARKERS



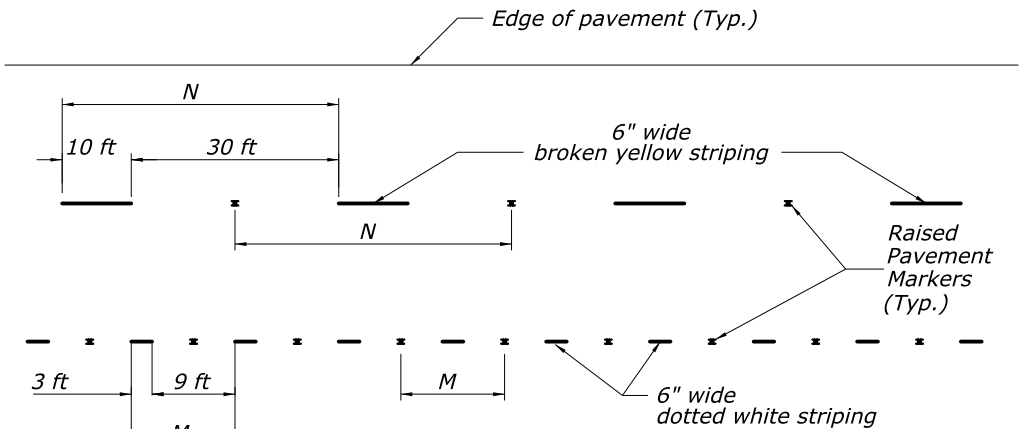
BROKEN SINGLE WHITE AND
DOUBLE SOLID YELLOW STRIPING



BROKEN SINGLE WHITE AND
DOUBLE SOLID YELLOW STRIPING
WITH RAISED PAVEMENT MARKERS



BROKEN SINGLE YELLOW AND
DOTTED WHITE STRIPING



BROKEN SINGLE YELLOW AND
DOTTED WHITE STRIPING
WITH RAISED PAVEMENT MARKERS

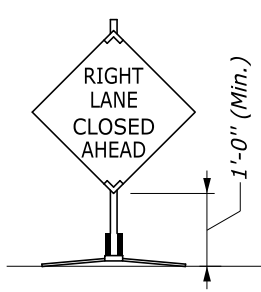
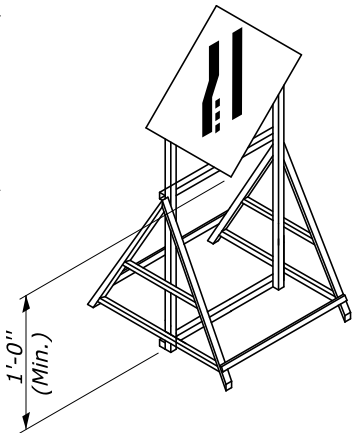
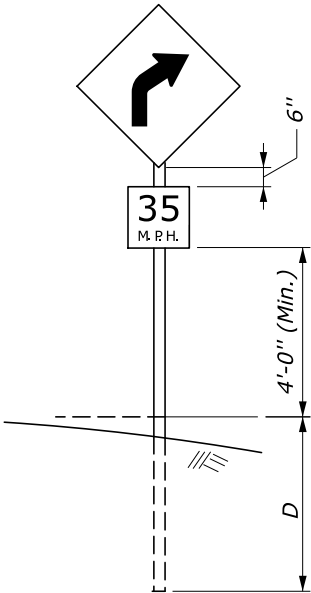
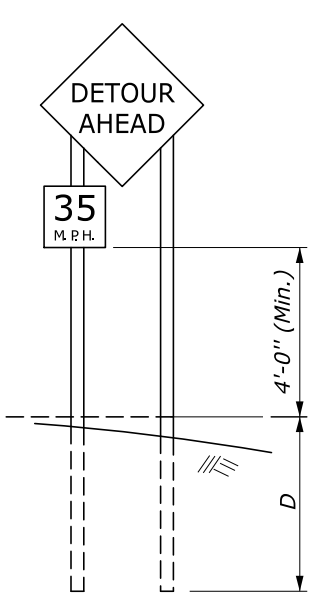
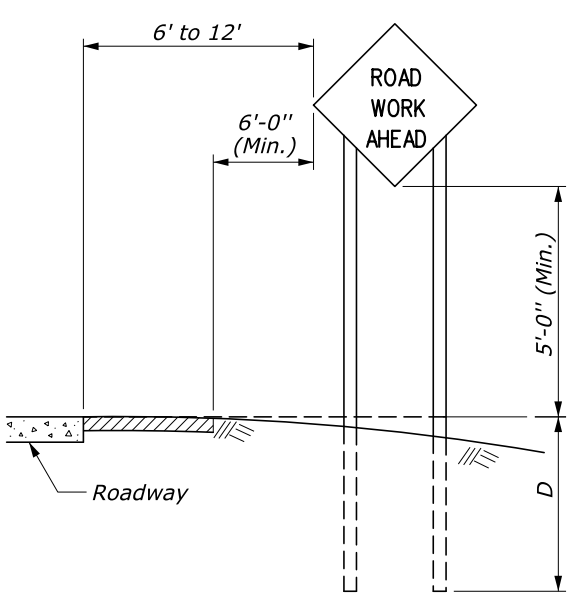
NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION EASTERN FEDERAL LANDS HIGHWAY DIVISION	
U.S. CUSTOMARY DETAIL	
PAVEMENT MARKINGS WITH AND WITHOUT RAISED PAVEMENT MARKERS	
	DETAIL
	E634-03A

PMIS NO.	NPS NO.	STATE	PROJECT	SHEET NUMBER
222412, 222537 222539, 222540	620 140556	PA	NP-DEWA 14(18), 121(1)	S25

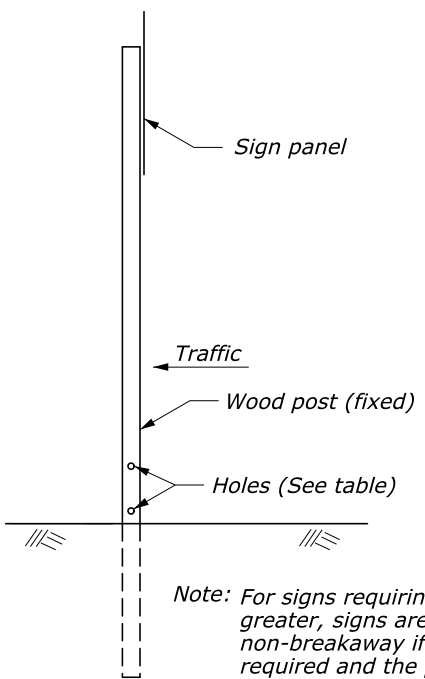
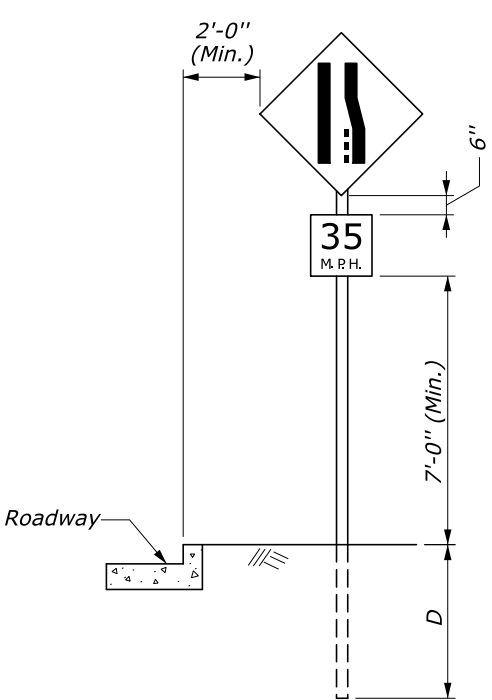
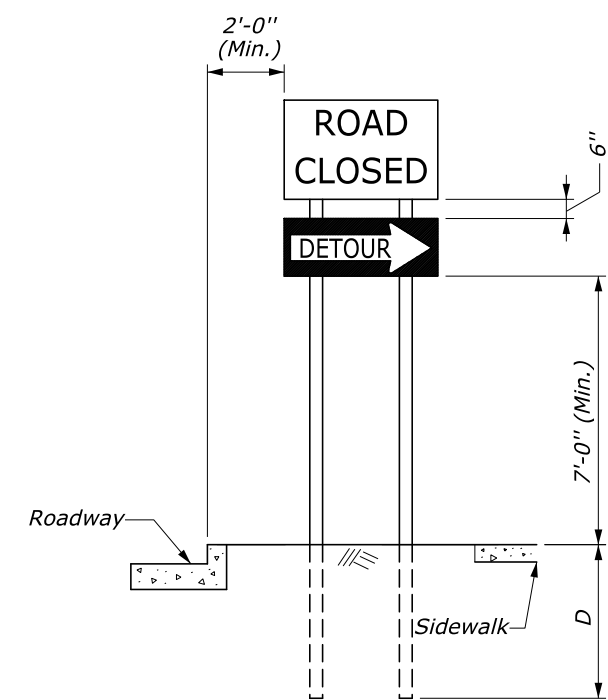
NOTES:

1. Mount signs that are wider than 3 feet or larger than 10 square feet on double posts.
2. All lumber dimensions are nominal.
3. The Contractor may submit alternate details for portable signs. Ensure sign mounts hold the sign face in a vertical plane. Portable signs may be mounted lower than fixed signs when approved by the CO. Ensure all portable sign supports meet the requirements of NCHRP Report 350 for crashworthiness.
4. When parking is permitted within 200 feet of the sign, mount the sign a minimum of 7 feet above the pavement surface.
5. When approved by the CO and the Utility Company, utility poles may be used for sign mounting.
6. For posts 4-inch x 6-inch and greater, see the Breakaway Support Detail. If breakaway design cannot be used due to post spacing, place the sign outside the clearzone or shield with a barrier. Do not place holes in posts of non-breakaway signs.



RURAL AREA

PORTABLE SIGNS
(See Notes 3 and 4)



Note: For signs requiring 6" x 6" posts and greater, signs are considered to be non-breakaway if multiple posts are required and the posts cannot be spaced a minimum of 7 feet apart.

POST SIZE TABLE						
POST SIZE	D	HOLE DIAMETER	MAXIMUM SIGN AREA (Sq. Ft.)			
			1 Post	2 Post	3 Post	4 Post
4" x 4"	4'	None Required	10	20		
4" x 6"	4'	1.5"		35	50	70
6" x 6"	5'	2"		50	75	100
6" x 8"	5'	3"		85	125	165

URBAN AREA

BREAKAWAY SUPPORT DETAIL

(FIXED SIGNS 4" X 6" AND GREATER POSTS)

FIXED ROADWAY SIGNS

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION EASTERN FEDERAL LANDS HIGHWAY DIVISION	
U.S. CUSTOMARY DETAIL	
CONSTRUCTION TRAFFIC CONTROL SIGN MOUNTING	
DETAIL APPROVED FOR USE	DETAIL
APPROVED : MAY 2011 REVISED: JANUARY 2016	E635-01

NO SCALE

LENGTH AND SPACING TABLE				
APPROACH SPEED*	BUFFER SPACE LENGTH	CHANNELIZING DEVICE		
		TAPER AREA	BUFFER SPACE	WORK SPACE
MPH	FEET	SPACING IN FEET		
20	115	20	40	40
25	155	20	50	50
30	200	20	60	60
35	250	20	70	70
40	305	20	80	80
45	360	20	90	90
50	425	20	100	100
55	495	20	110	110
60	570	20	120	120
65	645	20	130	130
70	730	20	140	140

* Approach speed based on the regulatory posted speed, not the advisory speed.

SIGN SPACING TABLE			
ROAD TYPE	DISTANCE BETWEEN SIGNS IN FEET		
	A	B	C
Urban and Rural 30 MPH and less	100	100	100
Urban and Rural 35 MPH to 50 MPH	350	350	350
Rural greater than 50 MPH	500	500	500
Expressway / Freeway	1000	1500	2640

NOTE:

- Signs are shown for one direction of travel only. Place devices similar to those depicted for the opposite direction of travel.
- A single signal installation is acceptable, on the right-hand side of the road, if it has two signal faces that are at least 8 feet apart and meets the other requirements of Part 4 of the MUTCD.
- Install and operate temporary traffic control signals in accordance with the provisions of the MUTCD, Part 4. Signal timing shall be established by a qualified engineer. When the signal is changed to the flashing mode either manually or automatically, ensure red signal indications are flashed to both approaches.
- Final location and spacing of signs and devices may be changed to fit field conditions as approved by the CO. If signals are moved, revised signal timing must be determined by a qualified engineer.
- If the roadway surface is paved, install stop lines that comply with Section 3B.16 of the MUTCD. Remove existing conflicting pavement markings and raised markers between the work space and the stop line. Add no-passing lines in advance of the stop line that comply with Section 3B.02 of the MUTCD. Removeable pavement markings may be used for stop lines and no-passing pavement markings.
- If closure is completely within the project limits, eliminate the "ROAD WORK AHEAD" (W20-1) and "END ROAD WORK" (G20-2) signs.
- For project specific minimum width, refer to Special Contract Requirements, Section 156.
- Do not allow equipment, materials, or vehicles to be parked or stored in the buffer space.

