NPS NO.	REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
620 / 41,918	NE	PA	PRA-DEWA 14(12)	A1	35

U.S. DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

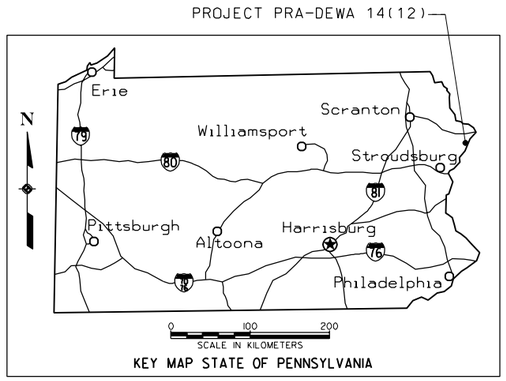
DELAWARE WATER GAP NATIONAL RECREATION AREA

PLANS FOR PROPOSED

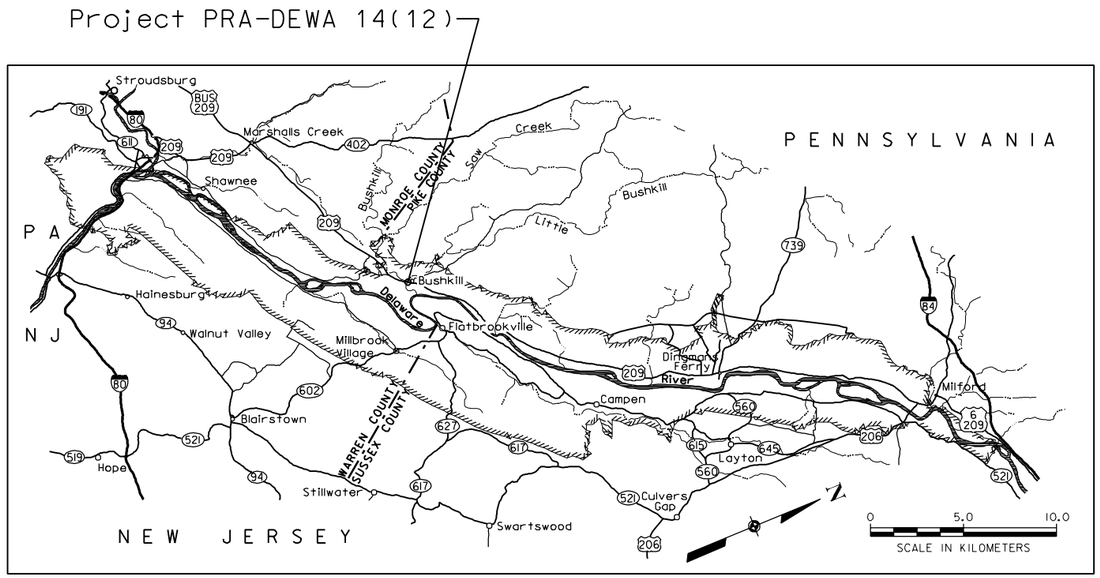
PROJECT PRA-DEWA 14(12)

REHABILITATION OF U.S. ROUTE 209 BRIDGE OVER BUSHKILL CREEK

MIDDLE SMITHFIELD TOWNSHIP & LEHMAN TOWNSHIP
MONROE COUNTY & PIKE COUNTY
COMMONWEALTH OF PENNSYLVANIA



KEY MAP STATE OF PENNSYLVANIA



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DESCRIPTION OF WORK

ROAD:
No road work is proposed.

BRIDGE:
Abutment and pier repairs, bearing and expansion joint replacement, and deck overlay.

U.S. Route 209 Bridge Over Bushkill Creek:
Structure No. 4320-009P
Structure Length: 57.9m (190.0 FT)
Span Length: 18.9m (62.0 FT)

DESIGN DESIGNATION: U.S. Route 209
ADT(2007)____ 4,180
ADT(2027)____ 6,210
DHV_____ 1,001
D_____ 57/43
Trucks_____ 4%
V (design)___ 80 km/h (50 MPH)
e(max)_____ 8%
C/A_____ None

POSTED SPEEDS
U.S. Route 209: 35 MPH

FEDERAL LANDS HIGHWAY
Metric
COMMITMENT TO EXCELLENCE

PLANS PREPARED BY

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA
FEBRUARY 2008

SPECIFICATIONS:
"Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects", FP-03 Metric Units and Special Contract Requirements.

NOTE: Unless otherwise noted, all dimensions shown without units are meters.

PENNSYLVANIA ONE CALL SYSTEM, INC.
1-800-242-1776
STOP - CALL BEFORE YOU DIG!

POCS Serial No.: 2556728 & 2556741

Date: 09/12/2007

Project Manager	Highway Engineer	Bridge Team Leader
Jeff Slater	Mark Hoover	Hong Chen

NPS Package No. (PMIS): DEWA - 79598

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Abutment	abut.	Longitudinal	long.	Magnetic	mag.	Negative	neg.
Aggregate	aggr.	Low water	LW	Maintenance	maint.	North	N
Ahead	AH	Lump sum	LS	Material	matl.	Number	no.
Alternate	alt.			Maximum	max.		
And	&			McDade Recreational Trail	MRT	Original ground	OG
And others	et al			Meter (measurement)	m	Out to out	o. to o.
And wife	et ux			Millimeter	mm	Outside diameter	OD
And so forth (et cetera)	etc.			Mile	mi		
Approach	appr.			Mile per hour	mph	Pavement	pvmt.
Approximate	approx.			Mile post	M.P.	Percent	pct. or %
Asphalt	asph.			Minute(s) (angular)	'	Perforate	perf.
Average daily traffic	ADT			Minimum	min.	Plate	pl.
				Miscellaneous	misc.	Point of compound curve	PCC
Back	BK			Monument	mon.	Point of curve	PC
Back to back	b. to b.			Mountain(s)	mtn(s).	Point on curve	POC
Balance point	BP					Point of intersection	PI
Batter	btr.					Point of spiral to curve	PSC or SC
Beam	bm.					Point of curve to spiral	PCS or CS
Bearing	brg.					Point on spiral	POS
Beginning	beg.					Point of spiral to tangent	PST or ST
Bench mark	BM					Point on tangent	POT
Bridge	br.					Point of tangent to spiral	PS or TS
						Point of tangent	PT
Centerline	℄					Pound	lb
Center to center	cc or c.to c.					Pounds per square inch	psi
Centers	ctrs.					Pounds per square foot	psf
Channel change	ch. ch.					Pounds per cubic foot	pcf
Clear	clr.					Project	proj.
Column	col.						
Concrete	conc.					Quantities	quant.
Connection	conn.						
Construction	constr.					Radius	R
Construction joint	constr. jt.					Range	R.
Contingent sum	CTSM					Reconstruction	reconst.
Continuous	cont.					Reinforcement	reinf.
Corrugated	corr.					Required	reqd.
Corrugated metal pipe	CMP					Reservoir or Reservation	res.
County	co.					Retaining wall	ret. wall
Countersink	ctsk.					Right	rt.
Creek	cr.					Right-of-way	R/W
Cubic inch(es)	cu in(s)					Road	rd.
Cubic foot(feet)	cu ft					Roadway	rdwy.
Cubic yard(s)	cu yd(s)					Route	rte.
Cubic yard mile	cym						
Culvert	culv.					School	sch.
Curve delta	△					South Contact Station	SCS
Curve left	CL					Section	sec.
Curve right	CR					Slope protection	sl. prot.
						Slurry unit	slry unit
Degree	°, deg.					South	S
Degree of curve	D					Spacing, Spaces or Spaced	spa.
Design hour volume	DHV					Specification	spec.
Diagonal	diag.					Square	sq
Diameter	dia. or D					Square foot	sq ft
Diaphragm	diaph.					Square yard	sq yd
District	Dist.					Standard	std.
Donation land claim	DLC					Station	sta.
Drawing(s)	drwg(s).					Stiffener	stiff.
						Straight	str.
East	E					Street	st.
Edge of pavement	EP					Stringer	stgr.
Edge of water	EW					Structural	struc.
Edge of road	ER					Superelevation rate	e
Elevation	elev.					Symmetrical	sym.
Elevation with number	El. 94.0						
Embankment	emb.					Tangent	tan.
Engineer(s)	engr(s).					Tangent length	T
Equation	EQ or eq.					Temporary bench mark	TBM
Excavation	exc.					Thousand	M
Expansion joint	exp. jt.					Thousand feet board measure	MFBM
						Thousand gallon	M-gal
Federal	Fed.					Thousand square feet	M-sq ft
Finish	fin.					That Is	i.e.
Flange	flg.					Thread	thd.
Foot	ft					Township	T.
Footing	ftg.					Typical	typ.
Foot kips	ft kips						
Foot pounds	ft lbs					Vehicles per hour	vph
For example	e.g.						
						Vertical point of intersection	VPI
Gallon	gal					Warehouse	whs.
Galvanized	galv.					West	W
Gage (Gauge)	ga.						
Headwall	hdwl.						
Hexagon	hex.						
High water	HW						
Highway	hwy.						
House	hse.						
Homestead Entry Survey	HES						
Identification	iden.						
Inch	in or "						
Inches per linear foot	in/ln ft						
Inclusive	incl.						
Inside diameter	ID						
Joint	jt.						
Lamination	lam.						
Latitude	lat.						
Left	lt.						
Length of curve	L						
Linear foot (feet)	ln ft						

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 — P/L

RIGHT-OF-WAY LINE — EXISTING — R/W

RIGHT-OF-WAY LINE — PROPOSED — R/W

RIGHT-OF-WAY LINE with MONUMENT — EXISTING — R/W

RIGHT-OF-WAY LINE with MONUMENT — PROPOSED — R/W

PARTIAL CONTROL OF ACCESS — EXISTING

PARTIAL CONTROL OF ACCESS — PROPOSED

FULL CONTROL OF ACCESS — EXISTING

FULL CONTROL OF ACCESS — PROPOSED

EASEMENT (Permanent - Construction) — P/E — C/E

SLOPE STAKE — TOP OF CUT

SLOPE STAKE — TOE OF FILL

TRANSITION BETWEEN CUT/FILL

ROADWAY, EXISTING

RAILROAD — SINGLE TRACK

RAILROAD — MULTIPLE TRACK

TRAIL

INTERMITTENT DRAINAGE and SMALL CREEK

LARGE CREEK

RIVER

LAKE, POND or RESERVOIR; MARSHLAND

SPRING

TREELINE; TREE

MATERIAL SOURCE

	FOUND	PROJECTED
SECTION CORNER	36 31 / 1 6	36 31 / 1 6
1/4 SECTION CORNER	15 / 22	15 / 22
1/16 SECTION		
PROPERTY CORNER	No Symbol	No Symbol
PARCEL NUMBER		400

NORTH ARROW — N

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
NE	PA	PRA-DEWA 14(12)	A2	-

		EXISTING	PROPOSED
FENCE		X — X	XX — XX
GATE		No Symbol	
GUARDRAIL			
MEDIAN & SIDE BARRIER			
SIGNS	POST MOUNTED		
	PORTABLE	No Symbol	
RETAINING WALL			wall face
POWER POLE with UTILITY LINE		P	P
TELEPHONE POLE with UTILITY LINE		T	T
JOINT USE POLE with UTILITY LINES		P&T	P&T
SUPPORT POLE with ANCHOR			
TELEPHONE BOOTH or PEDESTAL		TB or TP	TB or TP
STREET LIGHT		or	or
UNDERGROUND UTILITIES G=gas, O=oil, P=power, SA=sanitary sewer, SS=storm sewer, T=telephone, W=water		W	W
BRIDGE			
PIPE CULVERT (arrow shows flow)			
PIPE CULVERT with END SECTION			
PIPE CULVERT with HEADWALL			
BOX CULVERT			
CULVERT with DROP INLET			
UNDERDRAIN		UD	UD
TRAVERSE POINT (Horizontal & Vertical) Top of Triangle Points North		T-45 2,645.9	No Symbol
TRAVERSE POINT (Horizontal)		T-3	No Symbol
BRASS CAP			No Symbol
STEEL PIN			No Symbol
HUB & TACK			No Symbol
SPOT ELEVATION		x 99.9	No Symbol
COORDINATE GRID TICK			No Symbol
BUILDING			
BORING LOCATION			No Symbol
RIPRAP		No Symbol	

NOTE:
Other symbols used in the plans will be shown in a legend on the appropriate plan sheet.

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

DELAWARE WATER GAP
NATIONAL RECREATION AREA

SYMBOLS & ABBREVIATIONS

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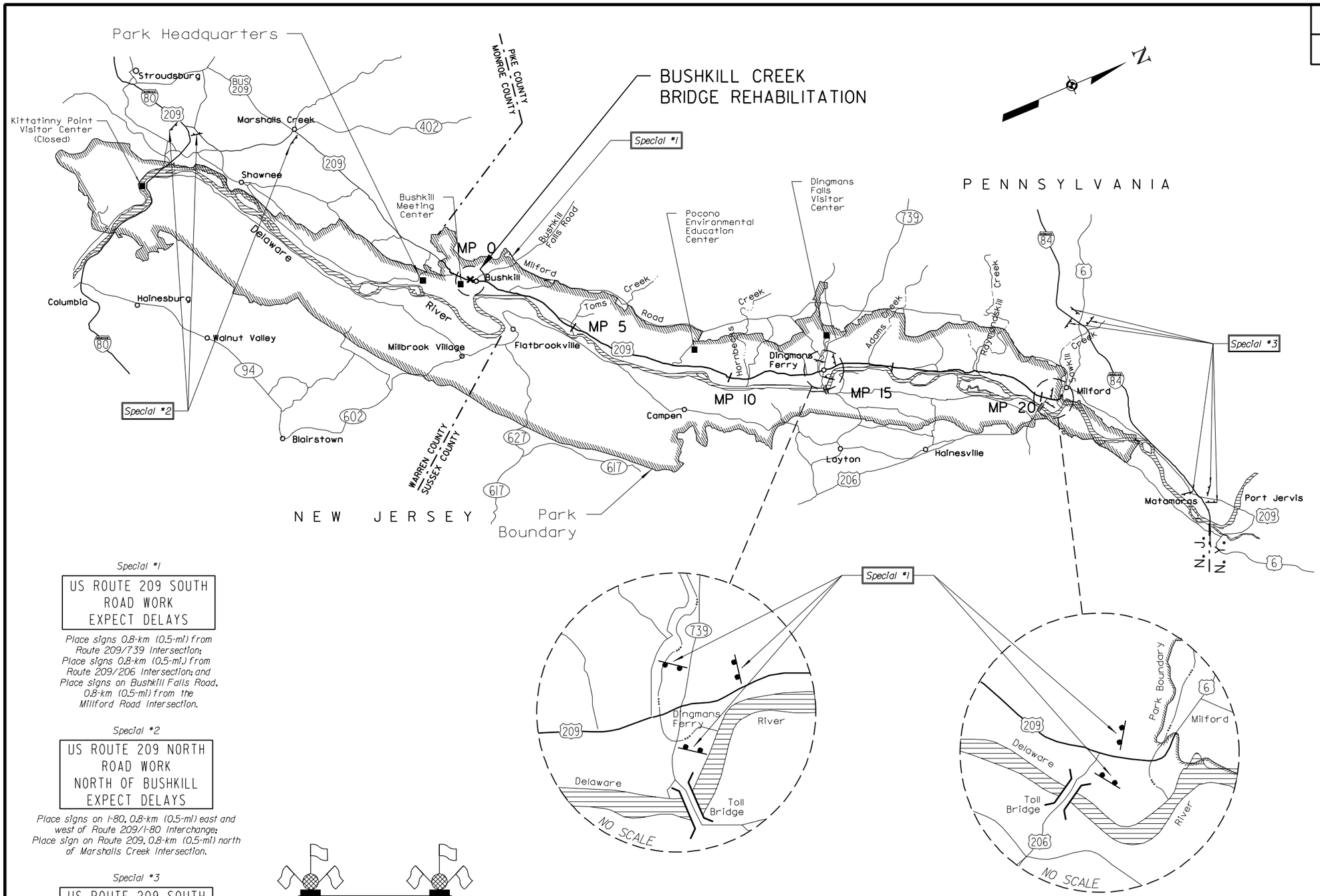
REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
NE	PA	PRA-DEWA 14(12)	A3	-



Special #1

US ROUTE 209 SOUTH
ROAD WORK
EXPECT DELAYS

Place signs 0.8-km (0.5-mi) from Route 209/739 intersection; Place signs 0.8-km (0.5-mi.) from Route 209/206 intersection; and Place signs on Bushkill Falls Road, 0.8-km (0.5-mi) from the Milford Road intersection.

Special #2

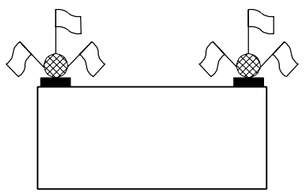
US ROUTE 209 NORTH
ROAD WORK
NORTH OF BUSHKILL
EXPECT DELAYS

Place signs on I-80, 0.8-km (0.5-mi) east and west of Route 209/I-80 interchange; Place sign on Route 209, 0.8-km (0.5-mi) north of Marshalls Creek intersection.

Special #3

US ROUTE 209 SOUTH
ROAD WORK
SOUTH OF DINGMANS
EXPECT DELAYS

Place signs on I-84, 0.8-km (0.5-mi) east and west of Route 6/I-84 and Route 209/I-84 interchanges; and Place signs on Route 6 and Route 209, 0.8-km (0.5-mi) north of I-84.



Detail A

Type B warning lights with high level warning flags

NOTES:

1. *The signs shown here are to be installed for the duration of the project, unless otherwise directed by the CO. See Detour Signing Plan for additional sign setups.*
2. *Refer to the latest editions of the "Manual on Uniform Traffic Control Devices (MUTCD)" and "Standard Highway Signs" for proper sign dimensions. See Construction Sign Schedule for additional information.*
3. *Erect all advance warning signs before starting construction work. Placement of advance warning signs as shown is approximate. For construction signing that interfere with permanent signs, locate the warning signs as determined by the CO for best results. Vary messages as required. Refer to Table 6H-3 of the MUTCD for proper sign spacing.*
4. *Not all details shown on the temporary traffic control sheets may be applicable to this project. The Contractor may adjust information and details in the Construction and Traffic Control Plan, Standards, and Details as necessary to accommodate actual operations, so long as the proposed adjustments comply with the MUTCD and approved by the CO.*
5. *Use Type III or higher type retroreflective sheeting on all signs and channelizing devices. Install high level warning flags and Type B warning lights as shown in Detail A or Chapter 6F of the MUTCD on Special Signs #1, #2, and #3.*
6. *Ensure all sign supports exposed to traffic meet the requirements of NCHRP-350 for crash worthiness. For signs that will be in place for more than 72 consecutive hours, use ground-mounted post per Detail EM635-A for more information on construction sign mounting.*
7. *Do not store traffic control devices along the roadway when not in use. Cover post-mounted signs when not applicable to the ongoing construction operation.*
8. *Install additional signing as directed by the CO.*

0 1 2 3 4 5
SCALE IN KILOMETERS

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

DELAWARE WATER GAP
NATIONAL RECREATION AREA

LOCATION MAP AND ADVANCED CONSTRUCTION SIGNING PLAN

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REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
NE	PA	PRA-DEWA 14(12)	BI	--

PLAN SHEET SECTION -------->>			ESTIMATED QUANTITIES	
ITEM	DESCRIPTION	UNIT	PLAN	BID SCHEDULE
15101-0000	Mobilization	LPSM	ALL	ALL
15201-0000	Construction survey and staking	LPSM	ALL	ALL
15401-0000	Contractor testing	LPSM	ALL	ALL
15705-0100	Soil erosion control, silt fence	m	140	150
15706-1600	Soil erosion control, stabilized construction entrance	Each	1	1
20302-2600	Removal of pavement markings	m	360	380
20305-1000	Removal of concrete	m3	25	25
41301-0300	Asphalt pavement milling, 32mm depth (Micromilling Bridge Deck and Approach Slabs)	m2	875	875
55201-0800	Structural concrete, class D (AE)	m3	13	13
55210-0000	Seal concrete surface	m2	281	281
55211-0000	Clean and reseal joints	m	34	34
55401-2000	Reinforcing steel, epoxy coated	kg	2612	2,612
55503-0000	Bridge expansion joints	m	29	29
56101-0000	Structural concrete bonding	m	25	25
56202-0000	Temporary support structure	LPSM	ALL	ALL
56302-2000	Painting, steel structure	m2	384	384
56401-0000	Bearing device	Each	30	30
57801-0000	High performance concrete	m3	12	12
57901-0000	Latex modified concrete overlay	m2	906	906
61905-0000	Tree planking (temporary fence for tree protection)	m	50	50
62401-0100	Furnishing and placing topsoil, 50mm depth	m2	200	220
62502-0000	Turf establishment	m2	200	220
63401-0300	Pavement markings, type B, solid	m	360	380
63502-0600	Temporary traffic control, barricade type 3	Each	12	12
63502-1300	Temporary traffic control, drum	Each	30	30
63502-1600	Temporary traffic control, warning light type B	Each	4	4
63502-2000	Temporary traffic control, portable changeable message sign	Each	4	4

PLAN SHEET SECTION -------->>			ESTIMATED QUANTITIES	
ITEM	DESCRIPTION	UNIT	PLAN	BID SCHEDULE
63502-2100	Temporary traffic control, crash cushion	Each	2	2
63502-2600	Temporary traffic control, moving temporary crash cushion	Each	2	2
63502-3100	Temporary traffic control, traffic signal system	Each	1	1
63503-0400	Temporary traffic control, concrete barrier	m	130	150
63503-0500	Temporary traffic control, moving concrete barrier	m	130	150
63503-0700	Temporary traffic control, pavement markings	m	208	230
63503-0800	Temporary traffic control, pavement marking removal	m	208	230
63504-1000	Temporary traffic control, construction sign	m2	96.89	100.00
63701-0000	Field office	Each	1	1

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

DELAWARE WATER GAP
NATIONAL RECREATION AREA

TABULATION OF QUANTITIES

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REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
NE	PA	PRA-DEWA 14(12)	C1	--

Advanced Construction Signs

US ROUTE 209 SOUTH
ROAD WORK
EXPECT DELAYS

Sign: Special-1
Sign Dimensions: 2400x900
Text Size: 150mm Uppercase
Margin Width: 62.5mm
Text Font: C
Corner Radius: 75mm
Border Thickness: 30mm
Black on Orange

US ROUTE 209 NORTH
ROAD WORK
NORTH OF BUSHKILL
EXPECT DELAYS

Sign: Special-2
Sign Dimensions: 2400x1200
Text Size: 150mm Uppercase
Margin Width: 62.5mm
Text Font: C
Corner Radius: 75mm
Border Thickness: 30mm
Black on Orange

US ROUTE 209 SOUTH
ROAD WORK
SOUTH OF DINGMANS
EXPECT DELAYS

Sign: Special-3
Sign Dimensions: 2400x1200
Text Size: 150mm Uppercase
Margin Width: 62.5mm
Text Font: C
Corner Radius: 75mm
Border Thickness: 30mm
Black on Orange

TTC OPERATION	NO.	SIGN DESIGN.	SIGN TEXT DESCRIPTION	WIDTH [MM]	HEIGHT [MM]	AREA [SQ M]	COLOR COMBINATION	SIGN SUPPORT TYPE	QTY [EACH]	TOTAL AREA [SQ M]	MIN. POST LENGTH EACH, [MM]	SIGN SUPPORT TOTAL LENGTH NO PAY, [M]
ADVANCED SIGNING	1	SPECIAL-1	SEE DETAIL THIS PAGE	2400	900	2.16	BLACK ON ORANGE	MOUNT ON DOUBLE WOOD POST (2x100x150)	6	12.96	3,600	2 x 6 x 3.600 = 43.2 M
	2	SPECIAL-2	SEE DETAIL THIS PAGE	2400	1200	2.88	BLACK ON ORANGE	MOUNT ON DOUBLE WOOD POST (2x100x150)	3	8.64	3,900	2 x 3 x 3.900 = 23.4 M
	3	SPECIAL-3	SEE DETAIL THIS PAGE	2400	1200	2.88	BLACK ON ORANGE	MOUNT ON DOUBLE WOOD POST (2x100x150)	6	17.28	3,900	2 x 6 x 3.900 = 46.8 M
								SUB-TOTAL =	15	38.88	–	113.4
SINGLE LANE CLOSURE LAYOUT	4	G20-2	END ROAD WORK	900	450	0.41	BLACK ON ORANGE	MOUNT ON SINGLE WOOD POST (1x100x100)	2	0.81	2,850	1 x 2 x 2.850 = 5.7 M
	5	R10-6	STOP HERE ON RED	600	900	0.54	BLACK ON WHITE	MOUNT ON SINGLE WOOD POST (1x100x100)	3	1.62	3,300	1 x 3 x 3.300 = 9.9 M
	6	W1-4R	REVERSE CURVE RIGHT	900	900	0.81	BLACK ON ORANGE	MOUNT ON SINGLE WOOD POST (1x100x100)	1	0.81	3,700	1 x 1 x 3.700 = 3.7 M
	7	W3-3	SIGNAL AHEAD	900	900	0.81	BLACK ON ORANGE	MOUNT ON SINGLE WOOD POST (1x100x100)	2	1.62	3,700	1 x 2 x 3.700 = 7.4 M
	8	W13-1	ADVISORY SPPED 20 MPH	600	600	0.36	BLACK ON ORANGE	SUPPLEMENTS SIGN PANEL W20-4	2	0.72	–	–
	9	W20-1	ROAD WORK AHEAD	1200	1200	1.44	BLACK ON ORANGE	MOUNT ON DOUBLE WOOD POST (2x100x100)	2	2.88	4,100	2 x 2 x 4.100 = 16.4 M
	10	W20-4	ONE LANE ROAD AHEAD	1200	1200	1.44	BLACK ON ORANGE	MOUNT ON DOUBLE WOOD POST (2x100x100)	2	2.88	4,850	2 x 2 x 4.850 = 19.4 M
								SUB-TOTAL =	14	11.34	–	62.5
DETOUR SIGNING	11	M1-4	U.S. ROUTE 209 MARKER, 3 DIGIT	750	600	0.45	WHITE ON BLACK	MOUNT ON SINGLE WOOD POST (1x100x100)	21	9.45	4,875	1 x 21 x 4.875 = 102.4 M
	12	M3-1	NORTH DIRECTION AUXILIARY	600	300	0.18	BLACK ON WHITE	SUPPLEMENTS SIGN PANEL M1-4	13	2.34	–	–
	13	M3-3	SOUTH DIRECTION AUXILIARY	600	300	0.18	BLACK ON WHITE	SUPPLEMENTS SIGN PANEL M1-4	8	1.44	–	–
	14	M4-8	DETOUR	600	300	0.18	BLACK ON ORANGE	SUPPLEMENTS SIGN PANEL M1-4	19	3.42	–	–
	15	M4-8a	END DETOUR	600	450	0.27	BLACK ON ORANGE	SUPPLEMENTS SIGN PANEL M1-4	2	0.54	–	–
	16	M4-10L	DETOUR LEFT (INSIDE ARROW)	1,200	450	0.54	ORANGE ON BLACK	SUPPLEMENTS SIGN PANEL R11-3a	1	0.54	–	–
	17	M4-10R	DETOUR RIGHT (INSIDE ARROW)	1,200	450	0.54	ORANGE ON BLACK	MOUNT ON TYPE III BARRICADE	1	0.54	–	–
	18	M5-1L	LEFT AHEAD DIRECTIONAL ARROW AUXILIARY	525	375	0.20	BLACK ON WHITE	SUPPLEMENTS SIGN PANEL M1-4	4	0.79	–	–
	19	M5-1R	RIGHT AHEAD DIRECTIONAL ARROW AUXILIARY	525	375	0.20	BLACK ON WHITE	SUPPLEMENTS SIGN PANEL M1-4	4	0.79	–	–
	20	M6-1L	LEFT DIRECTIONAL ARROW AUXILIARY	525	375	0.20	BLACK ON WHITE	SUPPLEMENTS SIGN PANEL M1-4	5	0.98	–	–
	21	M6-1R	RIGHT DIRECTIONAL ARROW AUXILIARY	525	375	0.20	BLACK ON WHITE	SUPPLEMENTS SIGN PANEL M1-4	5	0.98	–	–
	22	M6-3	FORWARD DIRECTIONAL ARROW AUXILIARY	525	375	0.20	BLACK ON WHITE	SUPPLEMENTS SIGN PANEL M1-4	1	0.20	–	–
	23	R11-2	ROAD CLOSED	1,200	750	0.90	BLACK ON WHITE	MOUNT ON TYPE III BARRICADE	2	1.80	–	–
	24	R11-3a	ROAD CLOSED-LOCAL TRAFFIC ONLY	1,500	750	1.13	BLACK ON WHITE	MOUNT ON DOUBLE WOOD POST (2x100x100)	1	1.13	4,050	2 x 1 x 4.050 = 8.1 M
	25	R11-4	ROAD CLOSED TO THRU TRAFFIC	1,500	750	1.13	BLACK ON WHITE	MOUNT ON TYPE III BARRICADE	1	1.13	–	–
	26	W20-2_1	DETOUR 1/2 MILE	1,200	1,200	1.44	BLACK ON ORANGE	MOUNT ON DOUBLE WOOD POST (2x100x100)	3	4.32	4,700	2 x 3 x 4.700 = 28.2 M
	27	W20-2_2	DETOUR 1500 FT	1,200	1,200	1.44	BLACK ON ORANGE	MOUNT ON DOUBLE WOOD POST (2x100x100)	3	4.32	4,700	2 x 3 x 4.700 = 28.2 M
	28	W20-3_1	ROAD CLOSED 1/2 MILE	1,200	1,200	1.44	BLACK ON ORANGE	MOUNT ON DOUBLE WOOD POST (2x100x100)	1	1.44	4,400	2 x 1 x 4.400 = 8.8 M
	29	W20-3_2	ROAD CLOSED 1000 FT	1,200	1,200	1.44	BLACK ON ORANGE	MOUNT ON DOUBLE WOOD POST (2x100x100)	1	1.44	4,400	2 x 1 x 4.400 = 8.8 M
	30	W20-3_3	ROAD CLOSED 500 FT	1,200	1,200	1.44	BLACK ON ORANGE	MOUNT ON DOUBLE WOOD POST (2x100x100)	1	1.44	4,400	2 x 1 x 4.400 = 8.8 M
TRUCK DETOUR SIGNING	31	M4-4	TRUCK AUXILIARY	600	300	0.18	BLACK ON WHITE	SUPPLEMENTS SIGN PANEL M1-4	21	3.78	–	–
	32	R11-4_Mod	ROAD CLOSED TO TRUCK TRAFFIC	1500	750	1.13	BLACK ON WHITE	MOUNT ON DOUBLE WOOD POST (2x100x100)	2	2.25	4,050	2 x 2 x 4.050 = 16.2 M
	33	R14-1	TRUCK ROUTE	600	450	0.27	BLACK ON WHITE	SUPPLEMENTS SIGN PANELS W20-2_1, W20-2_2	6	1.62	–	–
								SUB-TOTAL =	126	46.67	–	209.5

TOTAL =	155	96.89	–	385.4
ALLOWANCE =	–	3.11	–	4.6
ROUNDED TOTAL =	155	100	–	390

NOTE:
1. *Provide temporary traffic control signing and devices conforming to Section 635 and the latest edition of the "Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways".*
2. *See the latest edition of the "Standard Highway Signs" manual for sign dimensions, legend and colors.*
3. *Locations and lengths of posts are approximate. Determine exact lengths, sizes and locations to match field conditions. Space and position all devices according to the Traffic Control Plans and the MUTCD. Adjust as necessary to fit field conditions per approval from the CO.*
4. *Install sign supports per Detail EM635-A and Section 635, unless noted otherwise.*

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 CONSTRUCTION SIGN SCHEDULE

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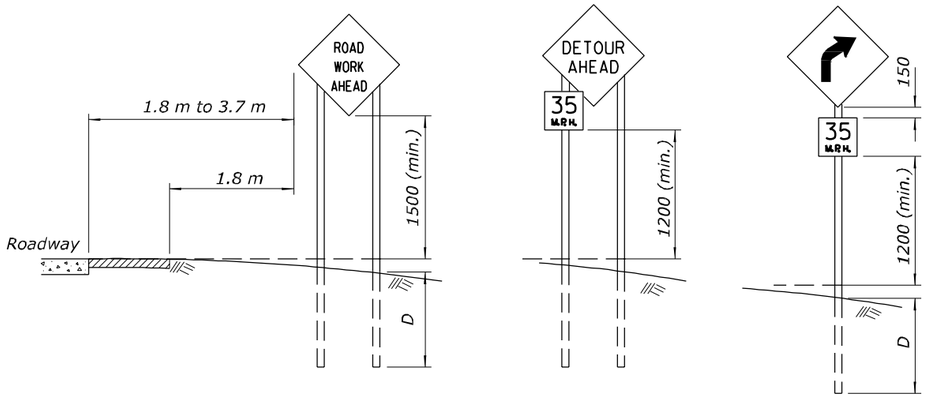
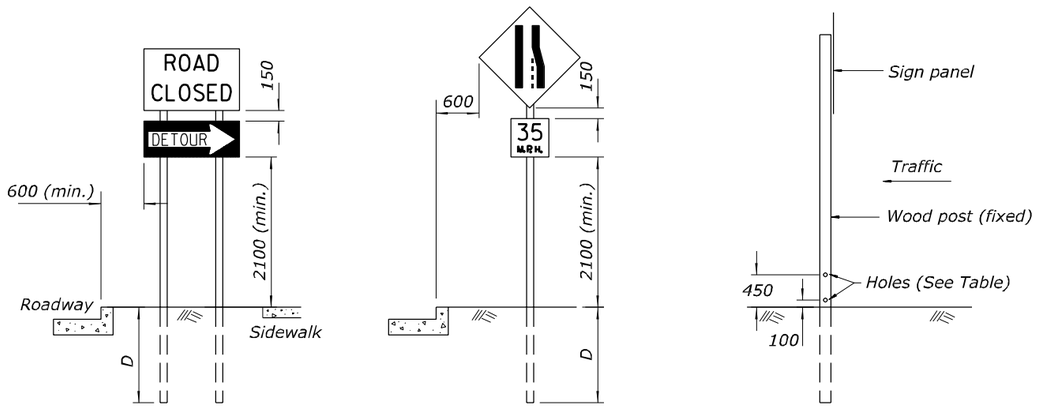
REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
NE	PA	PRA-DEWA 14(12)	C2	-

POST SELECTION TABLE						
Post size	D	Hole Dia.	Maximum Sign Area -square meters			
			1 Post	2 Posts	3 Posts	4 Posts
100 x 100	1200	None Req'd	1	2		
100 x 150	1200	40		3	4.5	6.5
150 x 150	1500	50		4.5	7	9
150 x 200	1500	75		8	11.5	15



RURAL AREA



URBAN AREA

BREAKAWAY SUPPORT DETAIL (FIXED SIGNS - 100 x 100 mm AND GREATER POSTS)

FIXED ROADWAY SIGNS

NOTES:

1. *Unless otherwise shown, dimensions are in millimeters.*
2. *Mount signs that are wider than 900 mm or larger than 1 square meter on two or more posts. See Table.*
3. *All lumber dimensions are nominal.*
4. *Portable signs are acceptable provided the sign mounts hold the sign face in a vertical plane. For methods of mounting signs other than on posts refer to Part 6F.03 of the 2003 MUTCD. Submit certification that portable sign devices have been successfully crash tested to meet the requirements of NCHRP 350 and/or have been accepted by the Federal Highway Administration (FHWA).*
5. *When parking is permitted within 60 meters of the sign, mount the sign a minimum of 2.1 meters above the pavement surface.*
6. *When approved by the CO and the Utility Company, utility poles may be used for sign mounting.*
7. *For posts greater than 100 x 100 mm, see the Breakaway Support Detail. If breakaway design cannot be used, due to post spacing, the sign should be placed outside the clear zone or be shielded by barrier.*
8. *For signs requiring posts 150 x 150 mm and greater, signs are considered to be non-breakaway if multiple posts are required and posts cannot be spaced a minimum of 2 meters apart. Do not place holes in posts of non-breakaway signs.*

NO SCALE

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

METRIC DETAIL

TEMPORARY TRAFFIC CONTROL SIGN INSTALLATION

DETAIL APPROVED FOR USE –/–/—

REVISED: 09/95 07/98 08/00 05/02

DETAIL EM635-A

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
NE	PA	PRA-DEWA 14(12)	C3	--

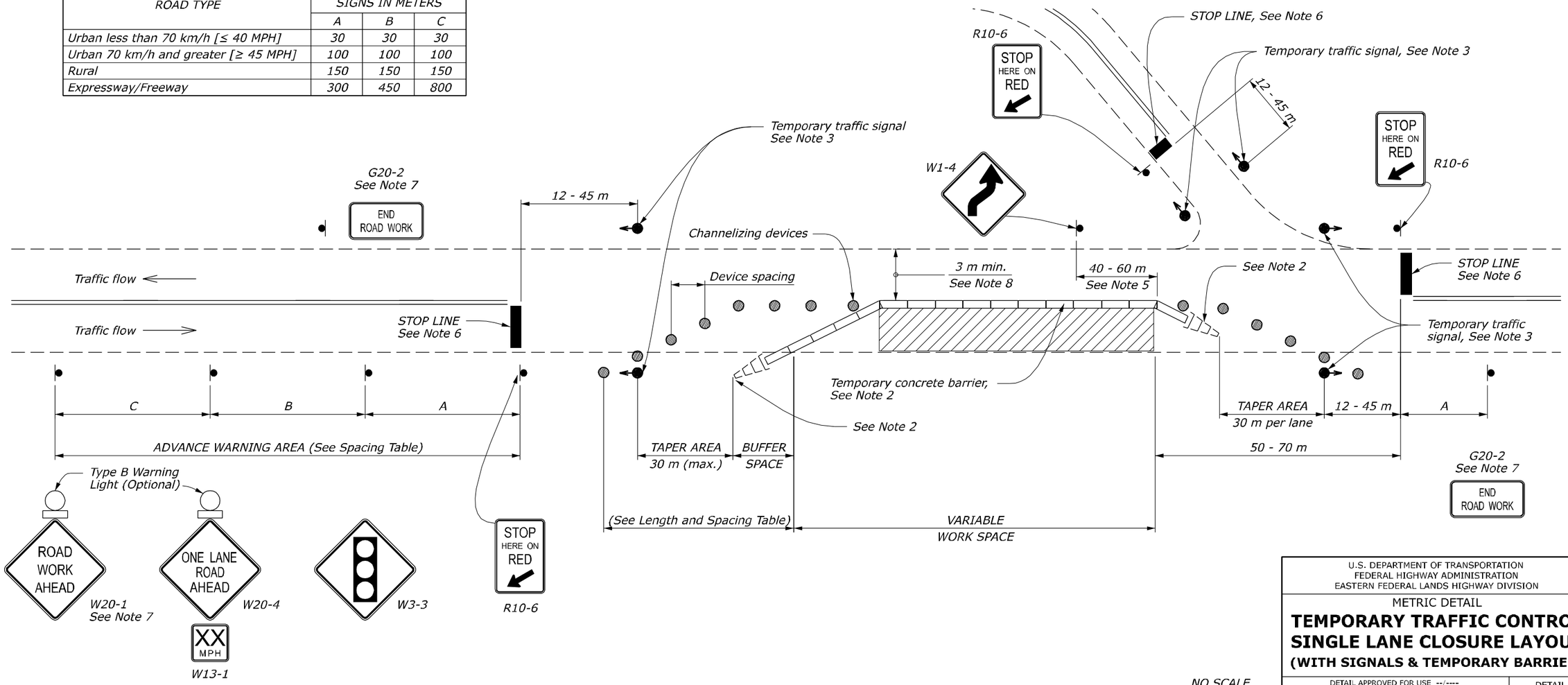
LENGTH AND SPACING TABLE						
APPROACH SPEED*		LENGTH OF BUFFER SPACE	CHANNELIZING DEVICE			CONCRETE BARRIER FLARE RATE
			TAPER AREA	BUFFER SPACE	WORK SPACE	
MPH	km/h	METER	SPACING IN METERS			
25	40	50	6	15	15	1:8
30	50	65	6	18	18	1:8
35	55	75	6	21	21	1:9
40	65	95	6	24	24	1:10
45	70	105	6	27	27	1:12
50	80	130	6	30	30	1:14
55	90	160	6	33	33	1:16

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

SIGN SPACING TABLE			
ROAD TYPE	DISTANCE BETWEEN SIGNS IN METERS		
	A	B	C
Urban less than 70 km/h [≤ 40 MPH]	30	30	30
Urban 70 km/h and greater [≥ 45 MPH]	100	100	100
Rural	150	150	150
Expressway/Freeway	300	450	800

NOTE:

1. Advance Warning Area signs are shown for one direction of travel only. Place devices for opposite direction of travel.
2. Place barrier according to the Roadside Design Guide published by the American Association of State Highway and Transportation Officials (AASHTO). Terminate barrier ends outside the clear zone or protect the ends of the barrier with a crash cushion.
3. A single signal installation is acceptable, on the right-hand side of the road, if it has two signal faces that are at least 2.4 m apart and meets the other requirements of Part 4 of the MUTCD.
4. 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.
5. 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.
6. 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. If necessary, add no-passing lines in advance of the stop line.
7. If lane closure is completely within the project limits, eliminate the "ROAD WORK AHEAD" (W20-1) and "END ROAD WORK" (G20-2) signs.
8. Obtain approval from the CO for widths less than 3 meters.
9. Do not allow equipment, materials, or vehicles to be parked or stored in the buffer space.
10. If signs will be in place more than 72 consecutive hours, use ground-mounted post.
11. Place channelizing devices at downstream taper during non-work hours or when access is not needed.
12. Reduce or eliminate drums and barrier in downstream taper if necessary to provide access to work space.



NO SCALE

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

METRIC DETAIL

TEMPORARY TRAFFIC CONTROL SINGLE LANE CLOSURE LAYOUT (WITH SIGNALS & TEMPORARY BARRIER)

DETAIL APPROVED FOR USE --/----

REVISED: Based on FLH Standards M635-9, M635-13

DETAIL EM635-B

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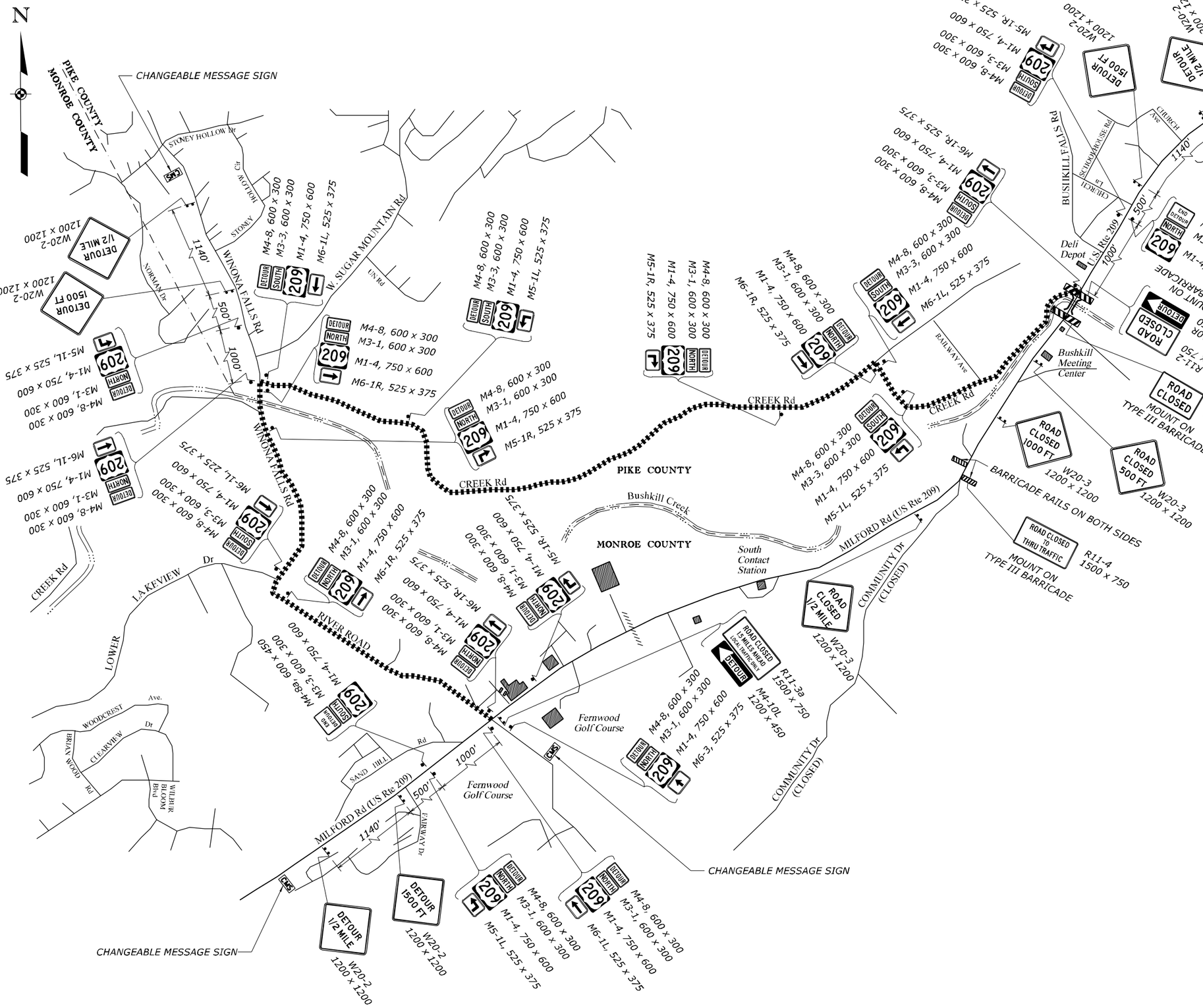
REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
NE	PA	PRA-DEWA 14(12)	C4	--



TRAFFIC CONTROL NOTES:

1. *ALL TRAFFIC CONTROL DEVICES ARE REQUIRED TO MEET THE SPECIFICATIONS OF THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).*
2. *SIGN LOCATIONS SHOWN HERE ARE APPROXIMATE. SIGN LOCATIONS MAY BE ADJUSTED TO FIT FIELD CONDITIONS, AS APPROVED BY THE CO.*
3. *PLACE PORTABLE CHANGEABLE MESSAGE SIGNS AS SHOWN AT LEAST FIVE (5) DAYS IN ADVANCE OF THE PROPOSED U.S. ROUTE 209 CLOSURE TO NOTIFY THE PUBLIC OF PENDING CLOSURES. PORTABLE CHANGEABLE MESSAGE SIGN MESSAGES SHOULD CONVEY THE FOLLOWING, BUT MAY BE ALTERED, AS APPROVED BY THE CO:*

PANEL A	PANEL B	PANEL C
US 209 WILL BE CLOSED	STARTING THUR 6PM BETWEEN	COMMUNI-TY DR TO CREEK RD

4. *FOR THE DURATION OF THE ROAD CLOSURE ON U.S. ROUTE 209, UTILIZE THE PORTABLE CHANGEABLE MESSAGE SIGNS AS SHOWN. PORTABLE CHANGEABLE MESSAGE SIGN MESSAGES SHOULD CONVEY THE FOLLOWING, BUT MAY BE ALTERED, AS APPROVED BY THE CO:*

PANEL A	PANEL B	PANEL C
US 209 CLOSED BETWEEN	COMMUNI-TY DR TO CREEK RD	FOLLOW DETOUR

5. *BEGIN THE OVERLAY FOR THE BUSHKILL CREEK BRIDGE DECK ONCE THE CLOSURE AND DETOUR FOR U.S. ROUTE 209 IS IN PLACE AND OPERATING. ALTERATIONS TO THE DETOUR ARE SUBJECT TO PRIOR APPROVAL OF THE CO.*

   THE BRIDGE CLOSURE IS APPLICABLE TO ALL VEHICLE TRAFFIC DURING A SINGLE 96 HOUR WINDOW BETWEEN 6:00 PM THURSDAY THROUGH 6:00 PM THE FOLLOWING MONDAY.

   DO NOT PERMIT COMMERCIAL TRUCK TRAFFIC TO DRIVE ON THE NEW OVERLAY UNTIL 14 DAYS AFTER THE END OF THE SPECIFIED 96 HOUR WINDOW.

6. *TEN (10) DAYS PRIOR TO CLOSING U.S. ROUTE 209, NOTIFY THE LOCAL EMERGENCY RESPONSE AUTHORITIES OF THE PROPOSED CLOSURE AND DETOUR.*

LEGEND

- *SIGN & SUPPORT*
- *TYPE III BARRICADE*
- *PORTABLE CHANGEABLE MESSAGE SIGN*
- *DETOUR ROUTE (LENGTH 3.3 MILES)*

NOT TO 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 DETOUR SIGNING PLAN

BUSHKILL CREEK BRIDGE CLOSURE

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REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
NE	PA	PRA-DEWA 14(12)	C5	--

N

PIKE COUNTY
MONROE COUNTY

CHANGEABLE MESSAGE SIGN #1

CHANGEABLE MESSAGE SIGN, #2

CHANGEABLE MESSAGE SIGN, #1

CHANGEABLE MESSAGE SIGN, #2

PIKE COUNTY

MONROE COUNTY

CREEK Rd

Bushkill Creek

MILFORD Rd (US Rte 209)

BUSHKILL FALLS RD

WINONA FALLS Rd

W. SUGAR MOUNTAIN Rd

RIVER ROAD

LAKEVIEW Dr

LOWER WOODCREST Ave.

BRYAN WOOD Rd

CLEARVIEW Dr

WILBUR BLOOM Blvd

SAND HILL Rd

COMMUNITY Dr (CLOSED)

RAILWAY Ave

CHURCH Ave

SCHOOLHOUSE Rd (T-387)

STONEY HOLLOW Dr

NORMAN Dr

MOTION Cir

STOMEY Dr

UN Rd

FAIRWAY Dr

Bushkill Meeting Center

Deli Depot

South Contact Station

Fernwood Golf Course

Fernwood Golf Course

U.S. Rte 209

1140'

500'

1000'

DETOUR 1/2 MILE
TRUCK ROUTE
W20-2 1200 x 1200
R14-1 600 x 450

DETOUR 1500 FT
TRUCK ROUTE
W20-2 1200 x 1200
R14-1 600 x 450

TRUCK DETOUR SOUTH 209
M4-4, 600 X 300
M4-8, 600 x 300
M3-3, 600 x 300
M1-4, 750 x 600
M6-1L, 525 x 375

TRUCK DETOUR NORTH 209
M4-4, 600 X 300
M4-8, 600 x 300
M3-1, 600 x 300
M1-4, 750 x 600
M6-1R, 525 x 375

TRUCK DETOUR SOUTH 209
M4-4, 600 X 300
M4-8, 600 x 300
M3-3, 600 x 300
M1-4, 750 x 600
M6-1L, 525 x 375

TRUCK DETOUR NORTH 209
M4-4, 600 X 300
M4-8, 600 x 300
M3-1, 600 x 300
M1-4, 750 x 600
M5-1R, 525 x 375

TRUCK END DETOUR NORTH 209
M4-4, 600 X 300
M4-8a, 600 x 450
M3-1, 600 x 300
M1-4, 750 x 600

ROAD CLOSED TO TRUCK TRAFFIC
DETOUR
M4-10R 1200 x 450
R11-4 (Mod.) 1500 x 750

ROAD CLOSED TRUCK TRAFFIC
DETOUR
M4-10L 1200 x 450
R11-4 (Mod.) 1500 x 750

TRAFFIC CONTROL NOTES:

1. ALL TRAFFIC CONTROL DEVICES ARE REQUIRED TO MEET THE SPECIFICATIONS OF THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
2. SIGN LOCATIONS SHOWN HERE ARE APPROXIMATE. SIGN LOCATIONS MAY BE ADJUSTED TO FIT FIELD CONDITIONS, AS APPROVED BY THE CO.
3. FOR THE DURATION OF THE COMMERCIAL TRUCK RESTRICTION ON U.S. ROUTE 209, UTILIZE THE PORTABLE CHANGEABLE MESSAGE SIGNS AS SHOWN. PORTABLE CHANGEABLE MESSAGE SIGN MESSAGES SHOULD CONVEY THE FOLLOWING, BUT MAY BE ALTERED, AS APPROVED BY THE CO:

	PANEL A	PANEL B	PANEL C
CMS #1	US 209 NORTH CLOSED	TO TRUCK TRAFFIC	FOLLOW TRUCK DETOUR
CMS #2	US 209 CLOSED AHEAD	TO TRUCK TRAFFIC	FOLLOW TRUCK DETOUR

4. COMMERCIAL TRUCK TRAFFIC IS NOT PERMIITED TO DRIVE ON THE NEW BRIDGE DECK OVERLAY UNTIL 14 DAYS AFTER THE END OF THE ALL VEHICLE RESTRICTION. BEGIN THE TRUCK RESTRICTION IMMEDIATELY ONCE THE 96 HOUR ALL VEHICLE RESTRICTION IS LIFTED.
5. ALL ADDITIONAL SIGNAGE, SIGN MESSAGES, ETC. SHOULD BE IN PLACE PRIOR TO THE START OF THE TRUCK RESTRICTION.
6. EMERGENCY RESPONSE VEHCILES ARE NOT SUBJECT TO THE COMMERCIAL TRUCK RESTRICTION.

LEGEND

- SIGN & SUPPORT
- TYPE III BARRICADE
- CMS PORTABLE CHANGEABLE MESSAGE SIGN
- DETOUR ROUTE (LENGTH 3.3 MILES)

NOT TO 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 TRUCK DETOUR SIGNING PLAN

BUSHKILL CREEK BRIDGE CLOSURE

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REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
NE	PA	PRA-DEWA 14(12)	01	-

EROSION AND SEDIMENT CONTROL NARRATIVE

I. GENERAL GUIDELINES

The Erosion and Sediment Control (ESC) Plans are meant as a guideline for preventing erosion and controlling sediment. The work outlined in this narrative consists of applying measures throughout the life of the project to control erosion and minimize the sedimentation of rivers, streams, and impoundments such as lakes, reservoirs, bays, and coastal waters. The measures consist of stabilization and structural practices, stormwater controls, and other miscellaneous pollution prevention controls. Soil erosion control and turf establishment measures listed and referenced in this narrative are also defined and outlined in the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-03, and the Special Contract Requirements.

Coordinate the installation, use, and removal of erosion and sediment control measures with roadway construction activities to assure economical, effective, and continuous erosion and sediment control. Employ temporary stabilization practices in incremental stages as construction proceeds.

Install all erosion and sediment control measures as shown in the ESC Plan or as directed by the Contracting Officer (CO). Do not modify the type, size, or location of any control or practice without approval from the CO.

Preventing initial soil erosion is much more effective than trying to control eroded sediment. Therefore, stabilize all disturbed areas immediately after construction activity has temporarily or permanently ceased.

Control only sediment-laden runoff generated by the project site.

Do not drive construction equipment across flowing waterways.

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

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

In general, preserve existing vegetation, trees, and shrubs when possible, and where specifically shown in the plan drawings or as directed by the CO.

II. SITE DESCRIPTION

A. NATURE OF ACTIVITY

Project PRA-DEWA 14(12) consists of the repair of the existing bridge for U.S. Route 209 over Bushkill Creek. U.S. Route 209 is a major through road in the Delaware Water Gap National Recreation Area. The work consists of repair of the bridge abutments, reconstruction of portions of the bridge piers, replacement of bridge expansion bearings, replacement of deck joints, removal and reconstruction of portions of the bridge deck, curb, and parapets, and replacement of the bridge deck overlay system. No new ground is expected to be disturbed during construction activities.

No new ground will be disturbed for the Contractor's staging area as it will be located at the existing parking area of the abandoned gas station located approximately 100 meters (330 feet) south of the bridge site. The staging area is limited to the boundaries of the existing parking area.

A temporary support system is required to support the superstructure in order to complete the pier seat repairs and bearing replacement. Areas for the tower foundations for the temporary support system are delineated on the ESC Plan. An In-Stream Cofferdam Diversion will be installed around each tower foundation area. The Contractor will gain access to underneath the bridge as shown on the ESC Plan via an existing NPS maintenance access road. The maintenance access road is delineated with gravel, which the Park barricades to prevent unauthorized public access.

B. SEQUENCE OF CONSTRUCTION

Unless otherwise noted, sequence of construction phasing applies to all areas of work.

* PHASE I (ESTABLISH PERIMETER CONTROLS):

A pre-construction meeting is required with the Contractor, the CO, and the Pike County Conservation District, including any pertinent field personnel. This meeting must occur at least one week prior to the start of any site activity. Notify the local municipality of the meeting.

Construct perimeter controls to ensure that any disturbed sediment does not leave the project site. Perimeter controls include silt fence.

* PHASE II (INTERMEDIATE CONTROLS/STABILIZATION):

Obtain CO's approval before installing any controls not specified in the ESC Plan. The CO may direct the installation of certain controls in order to forestall or mitigate potential or existing erosion problems.

Apply temporary turf establishment on uncompleted disturbed areas that will remain exposed for more than 14 calendar days or as directed by the CO.

Immediately apply permanent turf establishment to the finished slopes and ditches according to Sections 624 and 625.

Apply temporary mulch in lieu of turf establishment during the time period between seeding seasons as listed in the table or according to Section 625 of the Special Contract Requirements.

At the end of each day's grading operations, shape earthwork to minimize and control erosion from storm runoff. Apply temporary mulch to all disturbed slopes.

Provide silt fence around any stockpiled roadway material. Apply temporary mulch or temporary turf establishment to stockpiles remaining in place longer than 14 days or when directed by the CO.

* PHASE III (FINAL CONTROLS/STABILIZATION):

After completion of structure repair work, do the following as directed by the CO:

Maintain temporary erosion control until a uniform 70% vegetative cover of erosion resistant perennial species has been achieved.

Where necessary, replace eroded topsoil and reapply permanent turf establishment to disturbed areas where vegetation has not established.

Remove perimeter controls only after all upslope areas are stabilized and vegetation is well established or when directed by the CO.

Stabilize all areas that are disturbed due to the removal of erosion and sediment control devices.

C. SITE INFORMATION

* NAME OF RECEIVING WATERS:

Runoff travels through the project area and discharges into the adjacent Bushkill Creek which drains directly into the Delaware River. Bushkill Creek has a PADEP Chapter 93 Classification of HQ (High Quality).

III. LOCATION OF SPECIAL RESOURCES OR PROBLEM AREAS

Bushkill Creek is a flowing trout stream with work stream restrictions in effect from March 1 through June 15 and from October 1 through December 31. Prior to any construction activities, install silt fence downslope of the proposed disturbed area to protect the stream, as shown on the ESC Plan, and as directed by the CO. Follow the sequence of construction for erosion and sediment control measures outlined in 2.B. above. Installation of in-stream diversion berms cannot occur when stream restrictions are in effect, however, once installed, work can occur behind the diversion during the restricted period.

IV. LIST OF STABILIZATION PRACTICES

A. TEMPORARY

Temporary stabilization practices used on this project include mulching, temporary seeding, preservation of existing vegetation, and other approved measures. Apply temporary turf establishment at the application rates shown in the table or according to Section 157 of the Special Contract Requirements.

B. PERMANENT

Permanent stabilization practices used on this project include preserving existing vegetation, placing topsoil, permanent seeding, mulching, and other approved measures. Apply permanent turf establishment at the application rates shown in the table or according to Section 625 of the Special Contract Requirements. Anchor mulch with an approved stabilizing emulsion tackifier containing no solvents or other diluting agents toxic to plant or animal life. Apply tackifier at a rate of 1,400 L/hectare (150 gal/acre). Refer to Section 713 of the FP-03 Standard Specifications for a list of approved tackifiers.

V. LIST OF STRUCTURAL PRACTICES

Structural practices used on this project include silt fence, and other approved measures.

VI. INSPECTION AND MAINTENANCE PROCEDURES FOR CONTROLS

Inspect, maintain, and clean all erosion and sediment control measures according to Section 157. Check erosion and sediment control measures at least weekly, but also within 24 hours after a rain of 12 millimeters (0.5-inch) or more, and daily during wet weather. Clean erosion and sediment control measures when half full of sediment. Repair measures as necessary. Replace erosion and sediment control measures that cannot be maintained and those that are damaged by construction operations. If visible sedimentation is found off-site, take immediate measures to clean up the site. Maintain written records of inspection and repairs. Provide the CO with copies every month and the entire record at the completion of the project.

VII. SEQUENCE OF CONSTRUCTION FOR BRIDGE REHABILITATION WORK

This sequence applies to construction operations requiring access to underneath the bridge to install an in-stream cofferdam diversion for the temporary support system in order to complete the repair work as described in the Bridge Plans. This sequence applies to work at the following locations:

>> Bushkill Creek Bridge Rehabilitation and Repair near MP 1.3 of U.S. Route 209

PHASE I (ESTABLISH STABILIZED ROCK ENTRANCE)

1. Prior to the start of any construction or staging, install silt fence to protect the stream as indicated on the ESC Plan and install perimeter controls to insure that any disturbed sediment does not leave the construction site, as directed by the CO.

2. Place additional gravel to stabilize the existing NPS maintenance access road as directed by the CO.

PHASE II (INSTALL IN-STREAM COFFERDAM DIVERSION)

3. Install water filtration bags (for in-stream cofferdam diversion) as indicated on the ESC Plan. Replace bags that become damaged, half full, or per manufacture's guidelines. Dispose of bags legally off Government property per Section 107 of the FP-03 Standard Specifications and per local ordinances.

4. Install temporary in-stream diversion berms as indicated on the ESC Plans. Only one in-stream diversion berm may be in place at a time. In-stream diversion berms will be installed around each tower foundation area. The in-stream diversion berm height is based on the 2.33-year event.

5. Perform bridge rehabilitation and repair as specified on the Bridge Plans.

6. Protect all sediment control measures from damage during construction activities. Repair all damage to sediment control measures immediately (whether from construction activity or storm damage). Clean sediment from structures and silt fence as required in Part VI of the Erosion Control Narrative. Replace water filtration bags as described above.

PHASE III (RESTORE DISTURBED AREAS AND REMOVAL OF CONTROLS)

7. Upon completion of bridge rehabilitation and repair work remove temporary support system, in-stream cofferdam diversion (including diversion berms and water filtration bags).

8. Remove sediment control measures only after all upslope areas that have been disturbed have been stabilized with acceptable vegetative cover.

VIII. CHANGES TO THE APPROVED PLAN

Any revisions, major or minor, to the approved ESC Plan must be submitted to the Pike County Conservation District for review and approval. Revisions must be in compliance with the PADEP Erosion and Sediment Pollution Control Program Manual, dated March 2000.

Revisions to the listed seed mixtures and application rates are subject to the approval of the CO and the National Park Service - Delaware Water Gap National Recreation Area. Refer to Section 625 of the Special Contract Requirements for more information.

-CONTINUED NEXT PAGE-

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

DELAWARE WATER GAP
NATIONAL RECREATION AREA

EROSION AND SEDIMENT CONTROL NARRATIVE

Sheet 1 of 2

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
NE	PA	PRA-DEWA 14(12)	02	-

TEMPORARY STABILIZATION

Apply seed during the following dates: March 15 - October 15

Material	Application Rate	
	lbs/acre	kg/hectare
Seed [Annual Ryegrass (Lolium multiflorum)]	40.0	45.0
Agricultural Limestone (85% CaCO3)	1,000	1,120
Fertilizer (10-20-20)	300	335
Mulch, 40±10 mm depth [clean, weed-free straw]	6,000	6,725

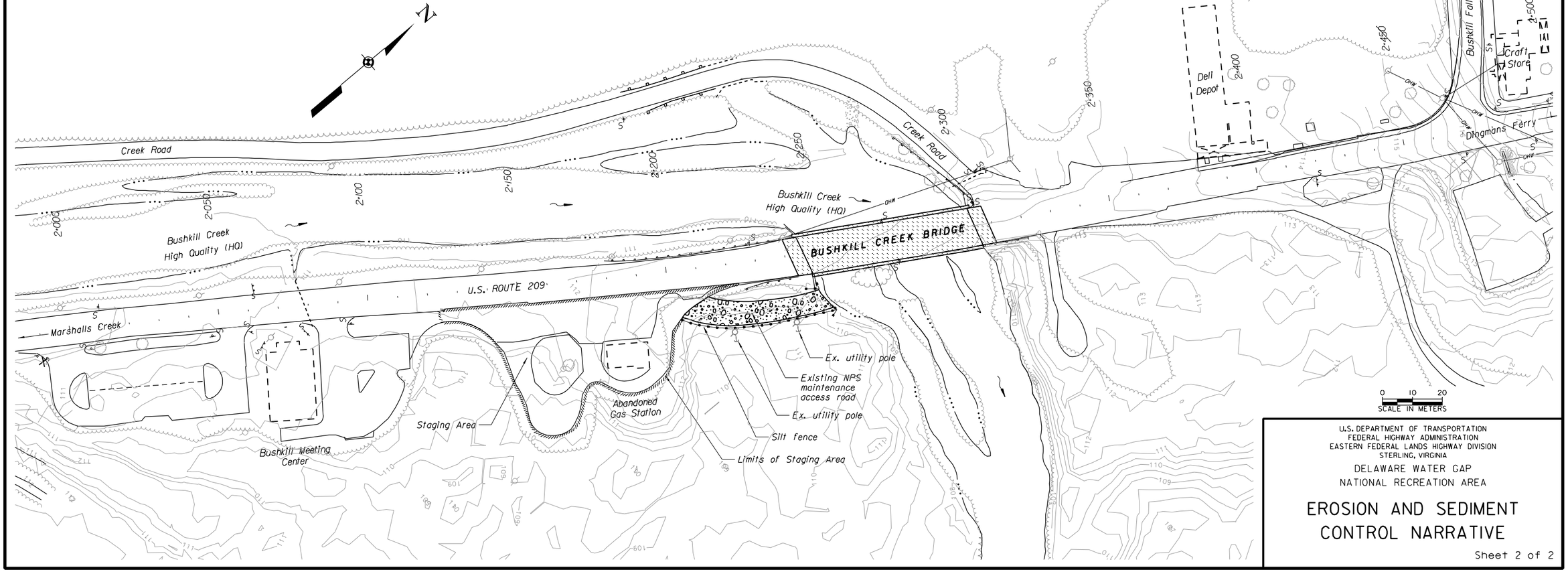
PERMANENT STABILIZATION

Apply seed during the following dates: March 15 - June 1 and August 1 - October 15

Roadside Turf Area Soil Supplements	lbs/acre	kg/hectare
Agricultural Limestone (85% CaCO3)	3,880	4,350
Fertilizer (10-20-20)	710	800
Mulch [clean, weed-free straw]	6,000	6,725
Roadside Turf Area Seeding Rates Name of Seed	lbs/acre	kg/hectare
Fine Fescues Mix (combination of hard fescue, chewings fescue, and creeping red fescue, with no one variety exceeding 50% of the total Fine Fescues component.)	75.0	84.1
Redtop (Agrostis alba)	3.0	3.4
Total =	78.0	87.5

NOTES

1. *Refer to Detail EM157-A for Silt Fence with Rock Filter Outlet.*
2. *Utilize the existing NPS maintenance access road to gain entry to underneath the bridge to install the temporary support system. The maintenance access road is delineated with gravel and is currently barricaded to prevent unauthorized public access. As directed by the CO, place additional gravel to stabilize the maintenance access road.*
3. *Take care to protect exisitng vegetation from damage during construction activities.*



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STERLING, VIRGINIA

DELAWARE WATER GAP
NATIONAL RECREATION AREA

EROSION AND SEDIMENT CONTROL NARRATIVE

Sheet 2 of 2

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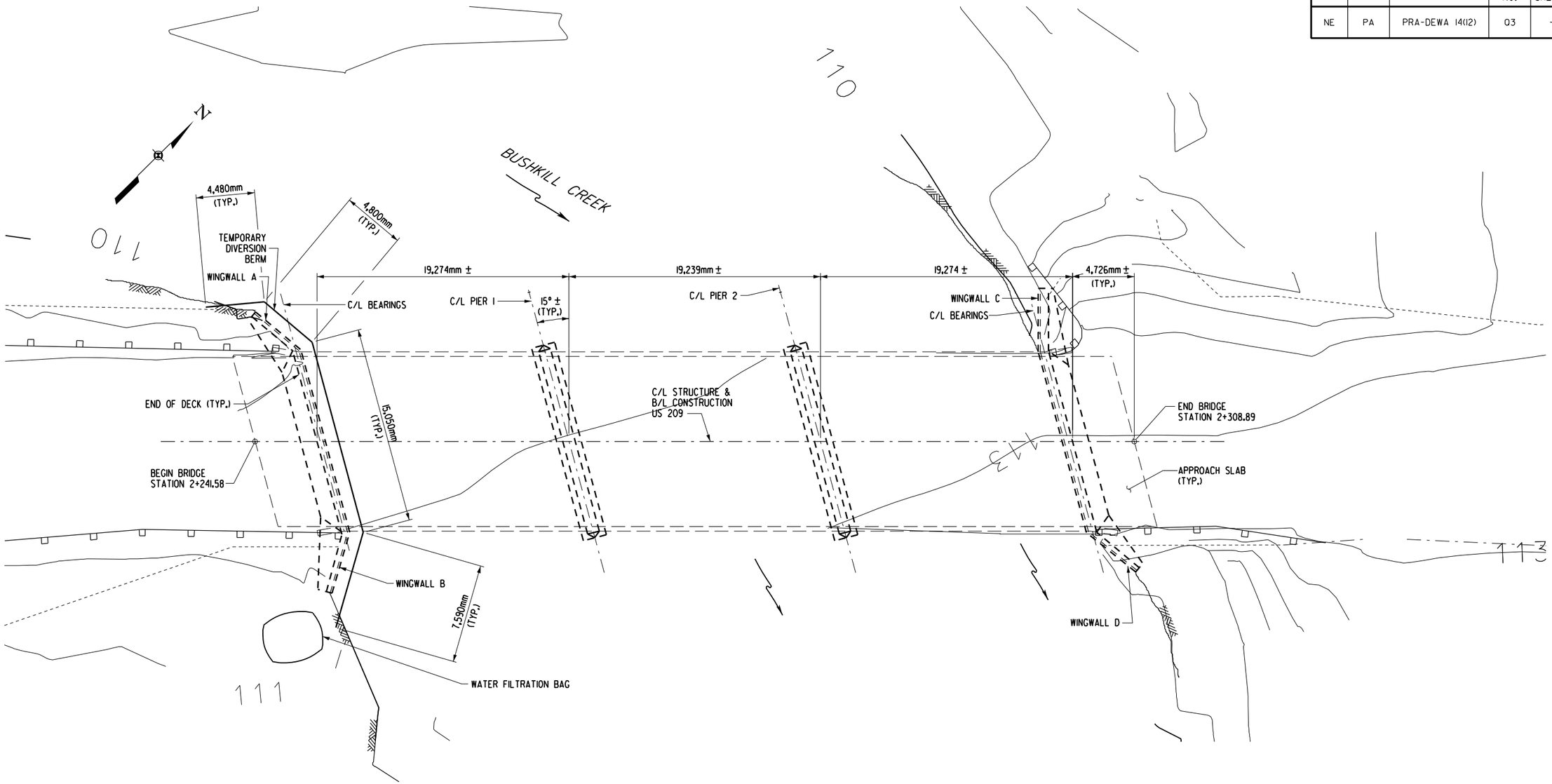

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DELAWARE WATER GAP
NATIONAL RECREATION AREA

EROSION AND SEDIMENT CONTROL PLAN

Phase I

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REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
NE	PA	PRA-DEWA 14(12)	04	-

N

BUSHKILL CREEK

WINGWALL A
C/L BEARINGS
C/L PIER 1
15° ± (TYP.)
C/L PIER 2
WINGWALL C
C/L BEARINGS
19,274mm ±
19,239mm ±
19,274 ±
4,726mm ± (TYP.)
TEMPORARY DIVERSION BERM
C/L STRUCTURE & B/L CONSTRUCTION US 209
END OF DECK (TYP.)
BEGIN BRIDGE STATION 2+241.58
END BRIDGE STATION 2+308.89
APPROACH SLAB (TYP.)
4,500mm (TYP.)
20,000mm (TYP.)
PLAN AREA OF PROPOSED TOWER FOUNDATION
WINGWALL B
WINGWALL D
WATER FILTRATION BAG
1,000mm (TYP.)
1,000mm (TYP.)
12,500 (TYP.)

SCALE IN METERS
0 4 8

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DELAWARE WATER GAP
NATIONAL RECREATION AREA

EROSION AND SEDIMENT CONTROL PLAN
Phase II

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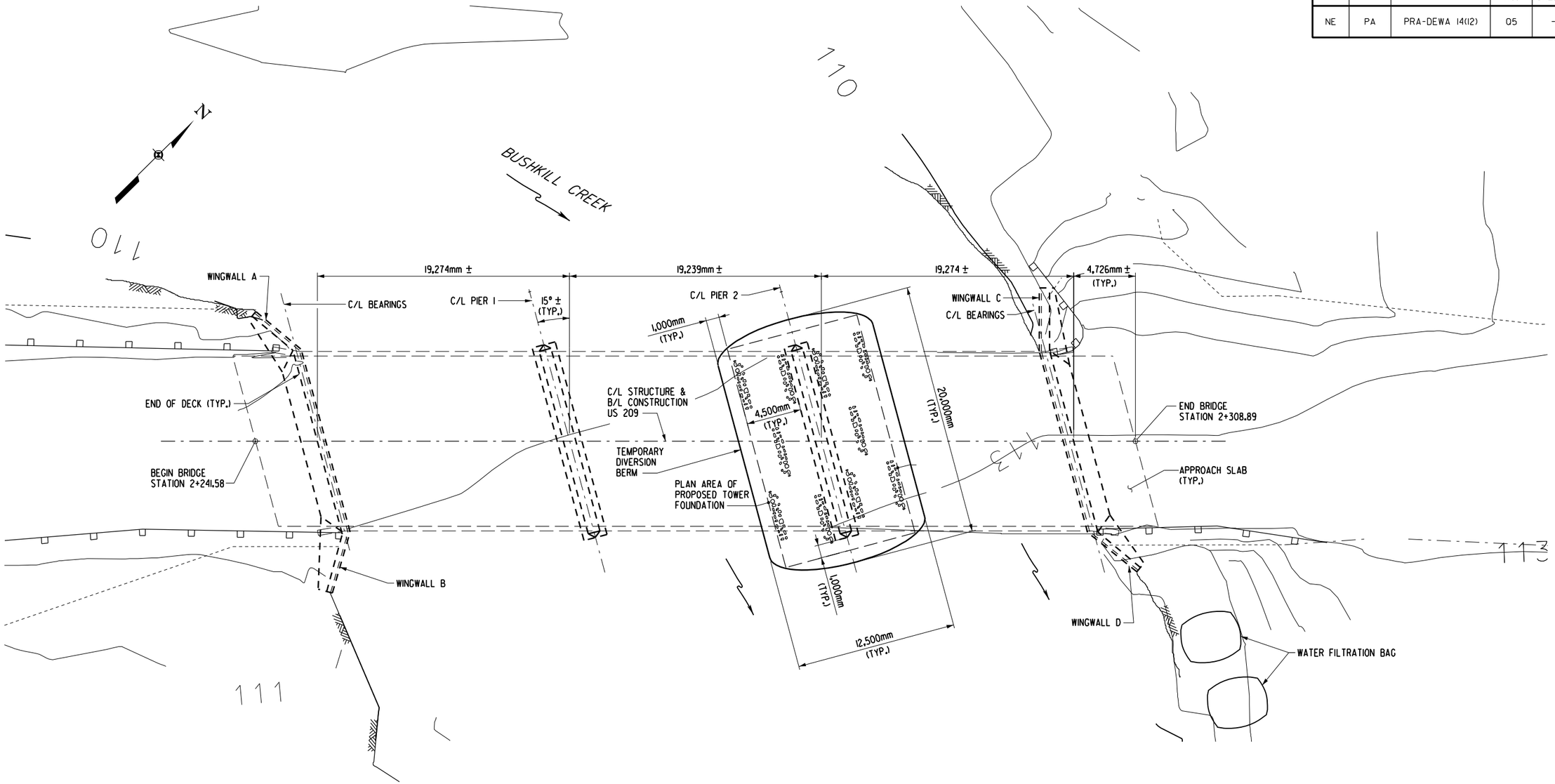

0 4 8
SCALE IN METERS

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DELAWARE WATER GAP
NATIONAL RECREATION AREA

EROSION AND SEDIMENT CONTROL PLAN
Phase III

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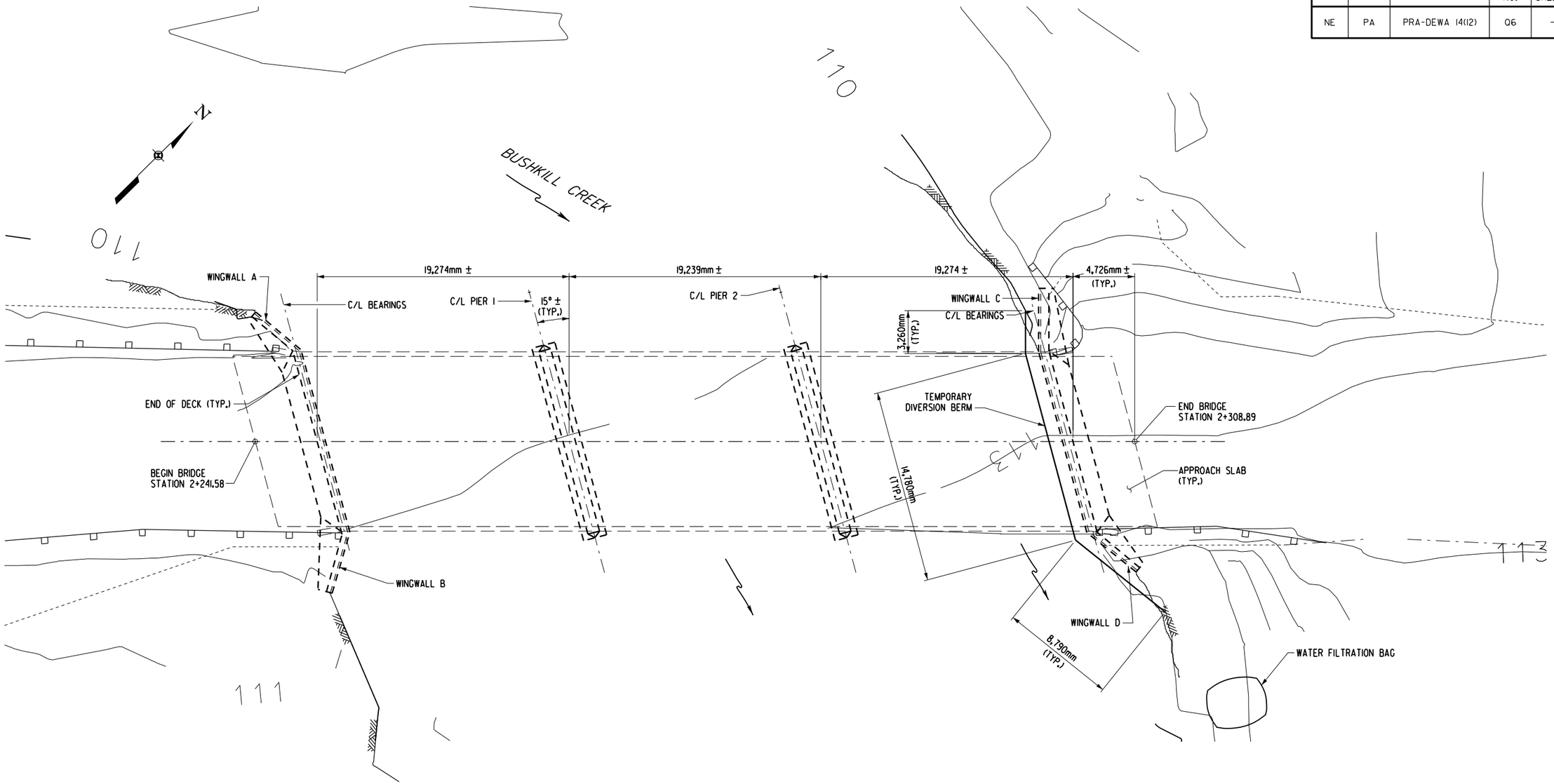

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SCALE IN METERS

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STERLING, VIRGINIA

DELAWARE WATER GAP
NATIONAL RECREATION AREA

EROSION AND SEDIMENT CONTROL PLAN
Phase IV

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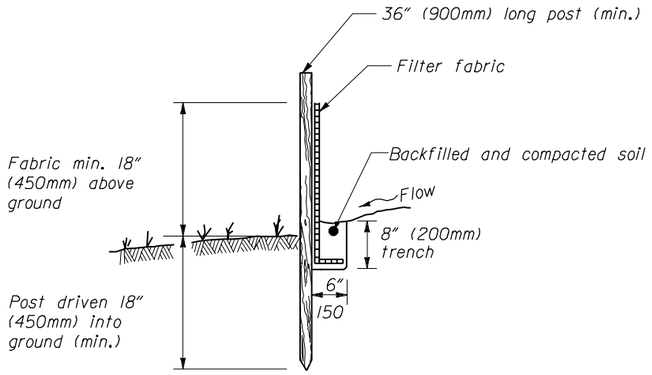
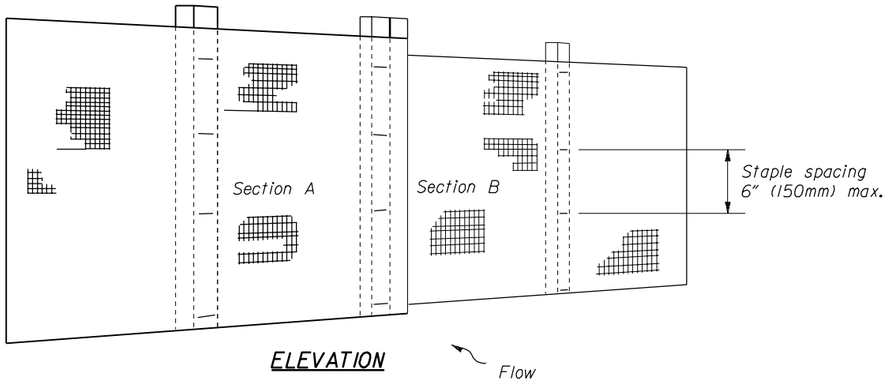


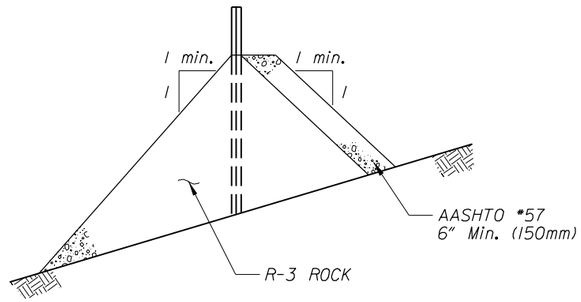
SILT FENCE INSTALLATION



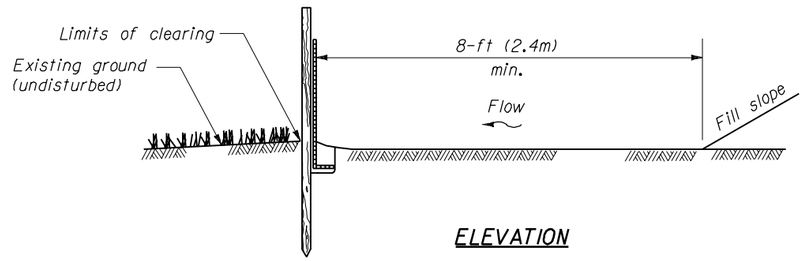
ELEVATION

PLAN

JOINING TWO ADJACENT SILT FENCE SECTIONS



OUTLET CROSS-SECTION



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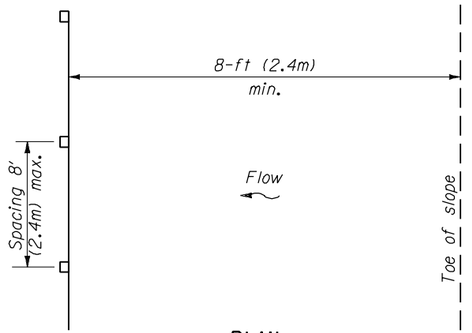
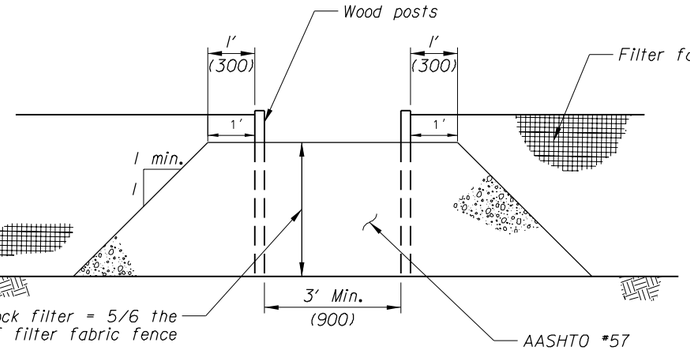


PLAN

SILT FENCE INSTALLATION AT TOE OF FILL



UP-SLOPE FACE

ROCK FILTER OUTLET

(See Note 5)

NOTES:

1. Unless otherwise shown, dimensions are in millimeters.
2. Place fence at least 2.4m from toe of fill slopes. At the end of each silt fence section extend silt fence 2.4m upslope at 45 degrees to allow for pooling of water.
3. Alternate pre-assembled silt fence options will be allowed as long as specified minimums are satisfied. Follow manufacture's information for installation procedures.
4. Sediment must be removed when accumulations reach one-half the above ground height of the fence.
5. Replace any section of silt fence which has been undermined or topped with a rock filter outlet.
6. Sediment must be removed when accumulations reach one-third the height of the rock filter outlet.

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
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METRIC DETAIL

SILT FENCE

DETAIL APPROVED FOR USE --/----

REVISED Standard 157-1 09/05, 07/07 (PaDEP req.)

DETAIL EMI57-A

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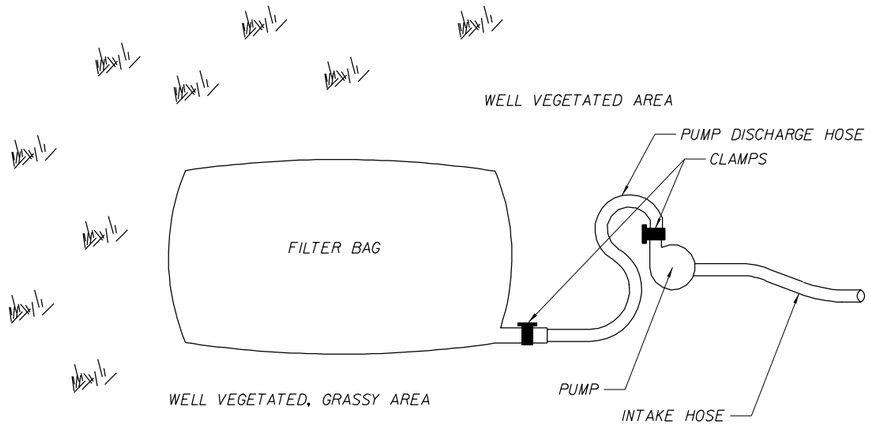
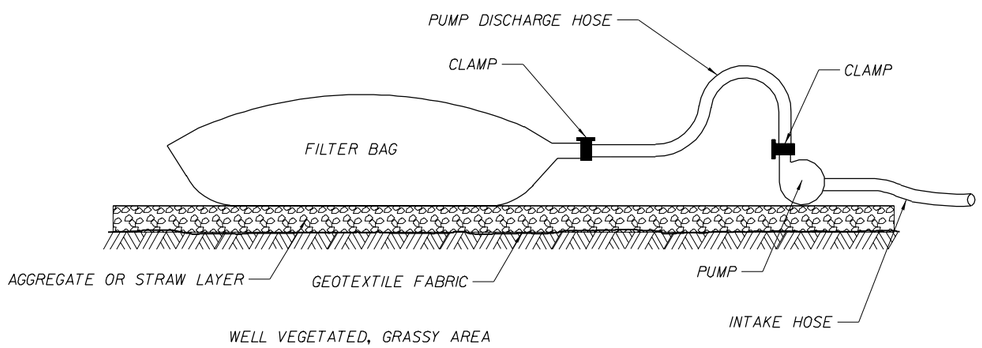


PLAN VIEW



ELEVATION VIEW

WATER FILTRATION BAGS:

Filter or dewatering bags are used to filter water pumped from disturbed areas prior to discharging to waters as indicated in the plans or as directed by the CO. They may also be used to filter water pumped from the sediment storage areas of sediment basins.

Filter bags are made from non-woven geotextile material sewn with high strength, double stitched "J" type seams. The bags should be capable of trapping particles larger than 150 microns.

A suitable means of accessing the bag with machinery required for disposal purposes must be provided and approved by the CO. Replace filter bags when they become half full or per manufacturer guidelines. Have spare bags available on site for replacement of those that have failed or are filled. Dispose bags legally off Government property per local ordinances.

Locate bags in well-vegetated (grassy) area, and discharge onto stable, erosion resistant areas. Where this is not possible, provide a aggregate or straw flow path. Do not place bags on slopes greater than 5%. Filter bags may not be placed in the stream or any location where a bag failure would result in sediment being released into the stream waters.

Insert the pump discharge hose into the bags as specified by the manufacturer and securely clamped.

The maximum pumping rate should be set at no greater than 750 gallons (2840 liters) per minute or half the maximum as specified by the manufacturer, whichever is less. Pumping rates will vary depending on the size of the filter bag, and the type and amount of sediment discharged to the bag. The pump intake should be floating and screened.

Inspect filter bags daily. If any problem is detected, cease pumping immediately and do not resume until the problem is corrected or as directed by the CO.

SITE CONDITIONS AND ASSUMPTIONS:

The area to be pumped from Phase I measures approximately 27 square meters. It is assumed that the depth of water in Bushkill Creek in this area equals 0 meters, which equates to a volume of 0 cubic meters of water.

The area to be pumped from Phase II measures approximately 235 square meters. It is assumed that the depth of water in Bushkill Creek in this area equals 0.2 meters, which equates to a volume of 47 cubic meters of water.

It is assumed that half of this volume of water will remain around the bridge abutment once the sandbags are setup and will require pumping and dewatering, thus 24 cubic meters of water.

The area to be pumped from Phase III measures approximately 235 square meters. It is assumed that the depth of water in Bushkill Creek in this area equals 0.6 meters, which equates to a volume of 141 cubic meters of water.

It is assumed that half of this volume of water will remain around the bridge abutment once the sandbags are setup and will require pumping and dewatering, thus 70 cubic meters of water.

The area to be pumped from Phase IV measures approximately 22 square meters. It is assumed that the depth of water in Bushkill Creek in this area equals 0.4 meters, which equates to a volume of 9 cubic meters of water.

It is assumed that half of this volume of water will remain around the bridge abutment once the sandbags are setup and will require pumping and dewatering, thus 5 cubic meters of water.

Unless otherwise directed by the CO, size and number the amount of filter bags based on the assumptions listed above.

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DETAIL

WATER FILTRATION BAG

DETAIL APPROVED FOR USE XX/XX	DETAIL
REVISED: XX/XX	EMI57-C

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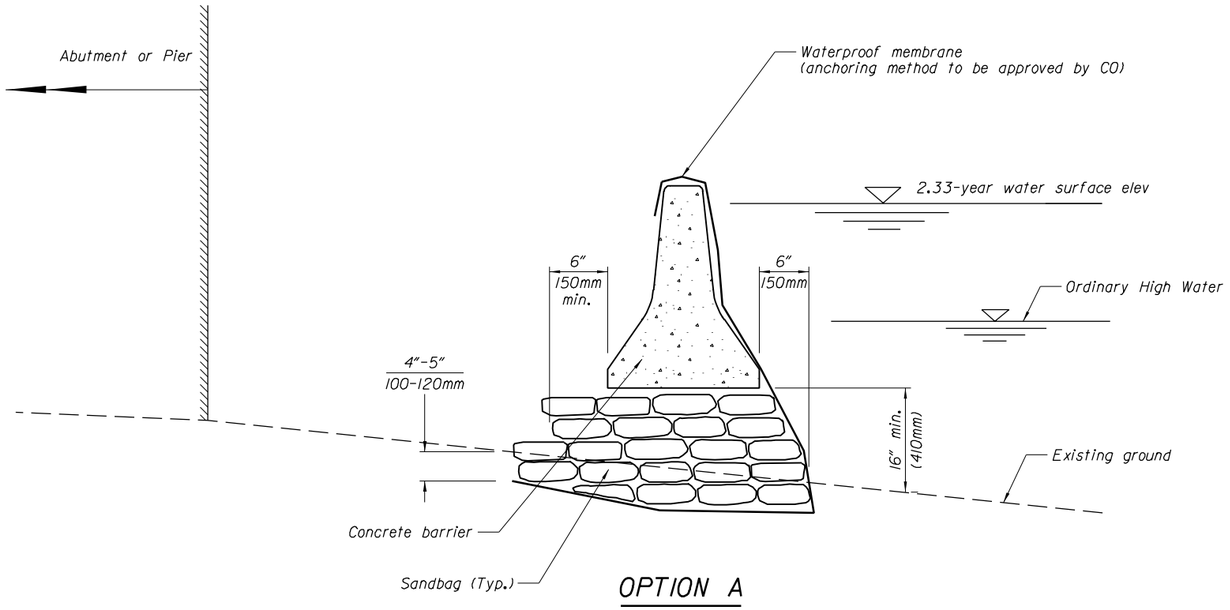


OPTION A

NOTES

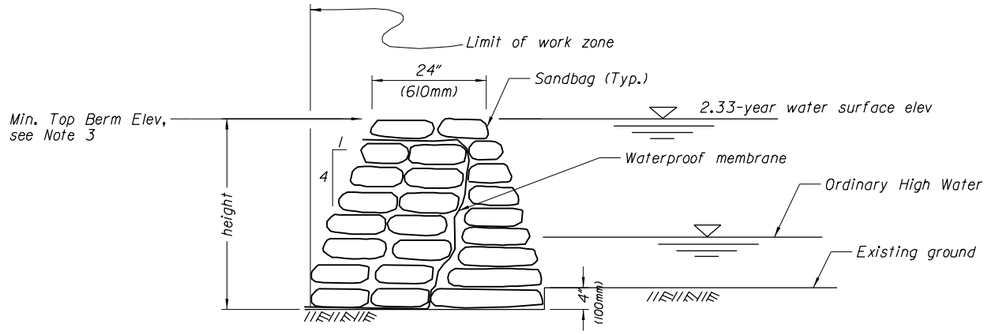
1. The options shown are suggested configurations for diverting the stream during construction operations. The Contractor may chose an alternate means of diverting the stream (including any approved prefabricated or portable diversion berms, dams, etc.). As a minimum, the Contractor must provide a temporary diversion berm with a minimum height equivalent to the 2.33-year flow elevation. The 2.33-year flow is the flow having a 43% chance of being equaled or exceeded in a year. Submit plans for temporary stream diversion to the CO for approval prior to installation.

2. Inspect the temporary diversion berm daily and maintain while in use: repairing as needed after rainfall events or as directed by the CO.

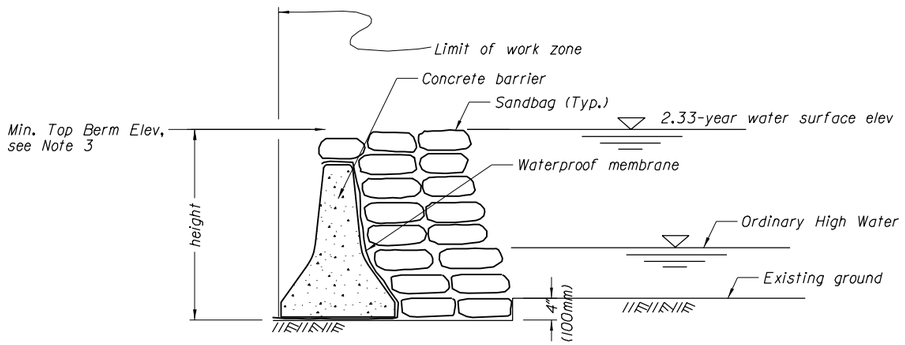
3. See the table below for Bushkill Creek flow information:

Ordinary High Water (OHW)	
Flowrate	17.8 m3/s
WSEL Upstream	110.2m
WSEL Downstream	109.5m

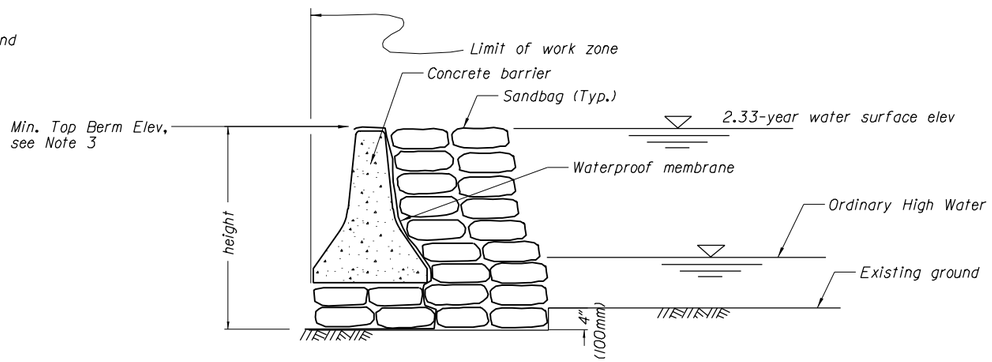
Temporary Diversion Berm Minimum Elevation (Q2.33 WSEL)	
Upstream End	111.5m
Downstream End	111.1m



OPTION B



OPTION C



OPTION D

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DETAIL

TEMPORARY IN-STREAM DIVERSION METHODS

DETAIL APPROVED FOR USE XX/XX	DETAIL
REVISED: XX/XX	EMI57-D

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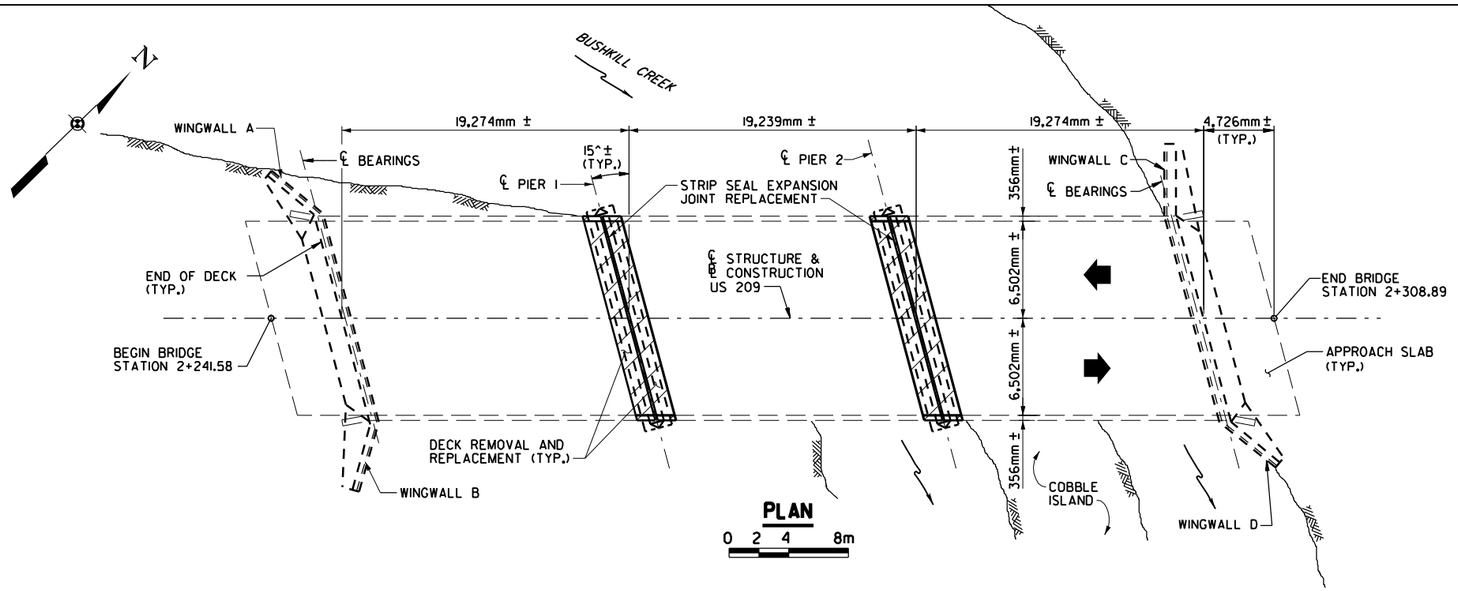

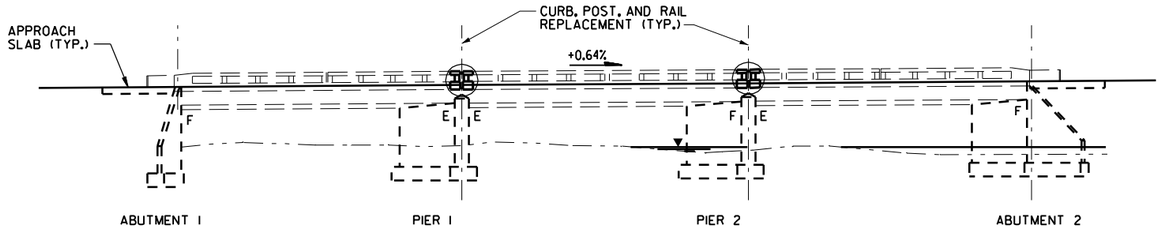

ELEVATION
0 2 4 8m

(GROUND PROFILE BASED ON 2003 INSPECTION REPORT)

FOR SEQUENCE OF CONSTRUCTION FOR PROPOSED WORK, SEE SHEET "CONSTRUCTION SEQUENCE".

JACKING NOTES (FOR BEARING REPLACEMENT)

1. JACKS USED FOR JACKING OPERATIONS AT PIERS SHALL HAVE THE RATE CAPACITY SHOWN CLEARLY ON THE MANUFACTURER'S NAME PLATE ATTACHED TO EACH JACK.
2. NO VEHICULAR TRAFFIC OR PEDESTRIANS WILL BE PERMITTED ON THE STRUCTURE DURING ACTUAL JACKING OPERATIONS OR WHILE THE DEAD LOAD OF THE SPAN IS STILL SUPPORTED BY JACKS.
3. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO ENSURE THAT HE USES THE CORRECT SCHEME AND JACK CAPACITY. ANY DAMAGE RESULTING FROM THE CONTRACTOR'S MISUSE OF THE JACKING SCHEME TO ANY PORTION OF OTHER EXISTING STRUCTURE THAT IS TO REMAIN IN PLACE SHALL BE REPAIRED BY HIM TO THE COMPLETE SATISFACTION OF THE "CO", ALL AT THE CONTRACTOR'S SOLE EXPENSE.
4. WHEN NO LONGER REQUIRED, AS DETERMINED BY THE "CO", ALL MATERIALS USED FOR THE TEMPORARY SUPPORTS SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF BY HIM CLEAR OF THE SITE.
5. THE "CO" OR HIS REPRESENTATIVE SHALL BE PRESENT DURING ALL JACKING OPERATIONS AND SHALL CHECK ALL PERTINENT DIMENSIONS AND REQUIREMENTS AS SET FORTH ON THE PLANS AND/OR SHOP DRAWINGS AND HEREIN TO INSURE THAT ALL PERTINENT STIPULATIONS ARE MET BEFORE COMMENCEMENT OF THE ACTUAL JACKING.
6. THE JACK SYSTEM SHALL BE EQUIPPED WITH A GAGE TO DIRECTLY READ THE JACK FORCE IN KN OR SHALL BE ACCOMPANIED BY A CHART WITH WHICH THE DIAL READING CAN BE CONVERTED INTO KN.
7. AN EXISTING BEAM MAY NOT BE RAISED MORE THAN 3 mm HIGHER THAN ITS AS-BUILT ELEVATION AT THE CONCLUSION OF THE PROJECT, UNLESS OTHERWISE INDICATED ON THE PLANS.
8. THE JACK HYDRAULICS MAY NOT BE USED TO SUPPORT THE LOAD AFTER JACKING. ALL LOAD MUST BE TRANSFERRED TO THE JACKING BEAM AND STOOL SUPPORTS AFTER JACKING.

GENERAL NOTES

SPECIFICATIONS:

CONSTRUCTION AND DESIGN:

STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS, FP-03, METRIC UNITS.

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, THIRD EDITION 2004.

DESIGN STRESSES:

CLASS D (AE) CONCRETE f'c = 27.5 MPa
CLASS E (AE) CONCRETE f'c = 27.5 MPa
CLASS HPC CONCRETE f'c = 27.5 MPa

CONCRETE:

CONCRETE OVERLAY SHALL BE CLASS E (AE) (LATEX MODIFIED).

CONCRETE SPALLS, DELAMINATIONS AND PIER REPAIR CONCRETE AT BEARINGS SHALL BE REPAIRED USING CLASS D (AE) CONCRETE.

FULL DEPTH DECK AND CURB AND PARAPET CONSTRUCTION AT EXPANSION JOINTS SHALL BE CONSTRUCTED USING CLASS HPC CONCRETE.

EXPOSED CORNERS SHALL BE CHAMFERED 20 mm UNLESS OTHERWISE DIMENSIONED.

CONCRETE REMOVAL:

REMOVAL OF CONCRETE SHALL CONSIST OF REMOVING CONCRETE OVERLAY, PORTIONS OF PIERS, CURBS, PARAPETS AND FULL-DEPTH DECK AT EXPANSION JOINTS AS INDICATED ON THE PLANS AND AS DIRECTED BY THE "CO". THE METHOD OF REMOVAL MUST MEET THE APPROVAL OF THE "CO" AND NOT BE DETRIMENTAL TO THE REMAINING STRUCTURE.

THE CONTRACTOR SHALL CONSTRUCT STRUCTURALLY ADEQUATE DEBRIS SHIELDS AND/OR FALSEWORK TO PREVENT DEBRIS FALLING FROM WORK AREAS ONTO THE GROUND OR INTO THE CREEK BELOW.

ALL REMOVED MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE AND DISPOSED OF ON SPOIL AREAS APPROVED BY THE "CO".

ALL BAR REINFORCEMENT EXPOSED DURING THE REMOVAL OF THE CONCRETE AND INTENDED FOR RE-USE SHALL BE THOROUGHLY CLEANED OF RUST AND OTHER FOREIGN MATERIAL BY SHOT OR GRIT BLASTING TO THE SATISFACTION OF THE "CO". THERE SHALL BE NO SEPARATE PAYMENT FOR SUCH WORK, AND THE COST SHALL BE INCLUDED IN THE REMOVAL OF CONCRETE ITEM. AFTER REMOVAL OF ALL CONCRETE AS REQUIRED, THE REMAINING CONCRETE SURFACE SHALL BE THOROUGHLY CLEANED WITH OIL-FREE COMPRESSED AIR.

REINFORCING STEEL:

REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 420. SPLICES SHALL BE LAPPED 30 DIAMETERS UNLESS OTHERWISE SHOWN OR DIMENSIONED. COVER FOR REINFORCEMENT SHALL BE 50 mm UNLESS OTHERWISE NOTED.

ALL REINFORCING STEEL SHALL BE EPOXY COATED. THE COATING SHALL CONFORM TO THE REQUIREMENTS OF AASHTO 284M OR ASTM D3963.

COAT ALL EXPOSED REINFORCING STEEL WITH AN APPROVED EPOXY RESIN PRIOR TO PLACEMENT OF NEW CONCRETE. FOLLOW MANUFACTURER'S RECOMMENDED PROCEDURES FOR APPLICATION AND USE.

DIMENSIONS:

ALL DIMENSIONS IN MILLIMETERS (mm), UNLESS OTHERWISE NOTED.

CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD BEFORE ORDERING ANY MATERIALS. ERRORS RESULTING FROM NOT VERIFYING FIELD DIMENSIONS SHALL BE CORRECTED BY THE CONTRACTOR AT NO EXPENSE TO THE GOVERNMENT.

EXISTING CONTRACT DRAWINGS:

THE EXISTING CONTRACT PLANS ARE NOT AVAILABLE FOR THIS STRUCTURE.

SCOPE OF WORK

1. SUBMIT FOR APPROVAL PLANS FOR JACKING METHOD AND PROCEDURE INCLUDING TEMPORARY SUPPORTS.
2. SUBMIT FOR APPROVAL PLANS FOR METHOD OF ABUTMENT AND PIER REPAIRS AND BEARING REPLACEMENT. INCLUDE ALL TEMPORARY SUPPORTS AND DEWATERING PLANS AND METHODS.
3. REPAIR SPALLS AND DELAMINATIONS AT ABUTMENTS, PIERS, DECK OVERHANGS AND WINGWALLS.
4. REPAIR CRACKS IN ABUTMENTS AND PIERS BY EPOXY INJECTION AND SURFACE SEALING.
5. REMOVE EXISTING EXPANSION JOINTS AT PIERS AND REPLACE WITH NEW STRIP SEAL TYPE EXPANSION JOINTS.
6. REMOVE AND REPLACE EXISTING OVERLAY WITH NEW LATEX MODIFIED CONCRETE OVERLAY ON BRIDGE DECK AND APPROACH SLABS.
7. SEAL SURFACES OF CONCRETE CURBS AND PARAPETS.
8. REPAIR OR REPLACE BEARINGS AS SHOWN.
9. SPOT CLEAN AND PAINT STRUCTURAL STEEL AS NECESSARY.

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DELAWARE WATER GAP
NATIONAL RECREATION AREA

ROUTE 209 OVER BUSHKILL CREEK

PLAN AND ELEVATION

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REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
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CONSTRUCTION SEQUENCE FOR PIER SEAT REPAIRS AND BEARING REPLACEMENT

1. INSTALL TEMPORARY DIVERSION BERMS AND DEWATER WORK AREA AS REQUIRED AND DIRECTED BY ENVIRONMENTAL PERMITS.
2. INSTALL TEMPORARY SHORING UNDER THE BEAMS AT EACH BENT. THE TEMPORARY SHORING WILL BE DESIGNED TO CARRY BOTH DEADLOAD AND LIVELOAD REACTIONS.
3. TEMPORARILY CLOSE THE BRIDGE TO TRAFFIC. JACK THE BEAMS OFF OF THE PIER BEARINGS.
4. AFTER THE BEAM HAVE BEEN JACKED AND LOCKED OFF WITH LOCKING COLLARS OR BLOCKING, OPEN THE BRIDGE TO TRAFFIC.
5. PERFORM TOP OF PIER REPAIRS (BEARING AREA RECONSTRUCTION) AND INSTALL NEW ELASTOMERIC BEARINGS.
6. AFTER PIER REPAIR CONCRETE HAS OBTAINED THE REQUIRED 28-DAY COMPRESSIVE DESIGN STRENGTH f'c, TEMPORARILY CLOSE THE BRIDGE, REMOVE ANY BLOCKING, AND UNLOAD THE JACKS. AFTER, LOAD IS TRANSFERRED TO THE NEW BEARINGS, REOPEN THE BRIDGE TO TRAFFIC.
7. REMOVE THE TEMPORARY SHORING.
8. REMOVE THE TEMPORARY DIVERSION BERMS.

CONSTRUCTION SEQUENCE FOR EXPANSION JOINT REPLACEMENT

1. CLOSE THE EAST SIDE OF THE BRIDGE AND PROVIDE ONE-LANE MAINTENANCE-OF-TRAFFIC. FOR DETAILS OF TRAFFIC CONTROL AND MAINTENANCE OF TRAFFIC, SEE SHEET "TEMPORARY TRAFFIC CONTROL SINGLE LANE CLOSURE LAYOUT (WITH SIGNALS AND TEMPORARY BARRIER)".
2. REMOVE EAST HALF OF DECK SLAB, EAST CURB, AND EAST BRIDGE RAILING ADJACENT TO THE EXPANSION JOINTS AT PIERS 1 AND 2, AND REMOVE THE EAST HALF OF THE EXISTING EXPANSION JOINTS.
3. INSTALL NEW STRIP SEAL EXPANSION JOINT, AND RECONSTRUCT PORTIONS OF THE EXISTING DECK SLAB, EAST CURB, AND EAST RAILING ADJACENT TO EXPANSION JOINTS OVER THE EAST HALF OF THE BRIDGE.
4. AFTER, THE REQUIRED 7-DAY CONCRETE CURE TIME AND UNTIL A COMPRESSIVE STRENGTH OF 70 PERCENT f'c IS REACHED, REOPEN THE LANE TO TRAFFIC.
5. CLOSE THE WEST SIDE OF THE BRIDGE AND PROVIDE ONE-LANE MOT.
6. REMOVE WEST HALF OF DECK SLAB, WEST CURB, AND WEST BRIDGE RAILING ADJACENT TO THE EXPANSION JOINTS AT PIERS 1 AND 2, AND REMOVE THE WEST HALF OF THE EXISTING EXPANSION JOINTS.
7. INSTALL THE REMAINING PORTION OF THE NEW STRIP SEAL EXPANSION JOINT ACROSS THE WEST HALF OF THE BRIDGE, RECONSTRUCT PORTIONS OF THE EXISTING DECK SLAB, WEST CURB, AND WEST RAILING ADJACENT TO EXPANSION JOINTS.
8. AFTER, THE REQUIRED 7-DAY CONCRETE CURE TIME AND UNTIL A COMPRESSIVE STRENGTH OF 70 PERCENT f'c IS REACHED, REOPEN THE BRIDGE TO TWO WAY TRAFFIC.
9. THE SEQUENCE OF CONSTRUCTION WITH ADDITIONAL DETAILS IS SHOWN SCHEMATICALLY ON SHEET "CONSTRUCTION SEQUENCE FOR EXPANSION JOINT REPAIR".

CONSTRUCTION SEQUENCE FOR DECK OVERLAY

THE 96-HOUR CONSTRUCTION WINDOW FOR REPLACEMENT OF THE OVERLAY, WHEN THE BRIDGE WILL BE COMPLETELY CLOSED TO ALL TRAFFIC, WILL BE SCHEDULED AFTER THE EXPANSION JOINT REPLACEMENT AND THE ASSOCIATED SLAB, CURB, AND RAILING RECONSTRUCTION ARE COMPLETED. FOR THE SEQUENCE OF CONSTRUCTION AND CONSTRUCTION REQUIREMENTS, SEE THE SPECIAL CONTRACTION REQUIREMENTS AND THE NOTES ON SHEET "SUPERSTRUCTURE REPAIRS".

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STERLING, VIRGINIA

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NATIONAL RECREATION AREA

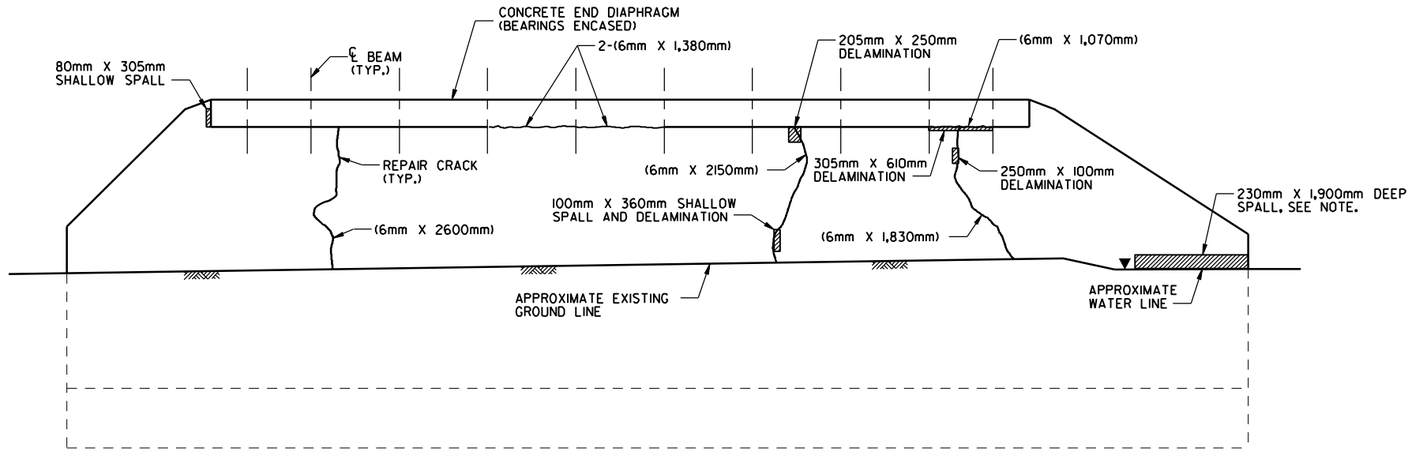
ROUTE 209 OVER BUSHKILL CREEK

CONSTRUCTION SEQUENCE

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
NE	PA	PRA-DEWA 14(12)	R03	R17

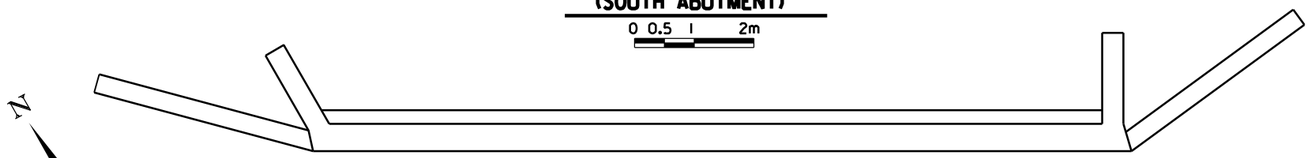
PLAN

0 0.5 1 2m



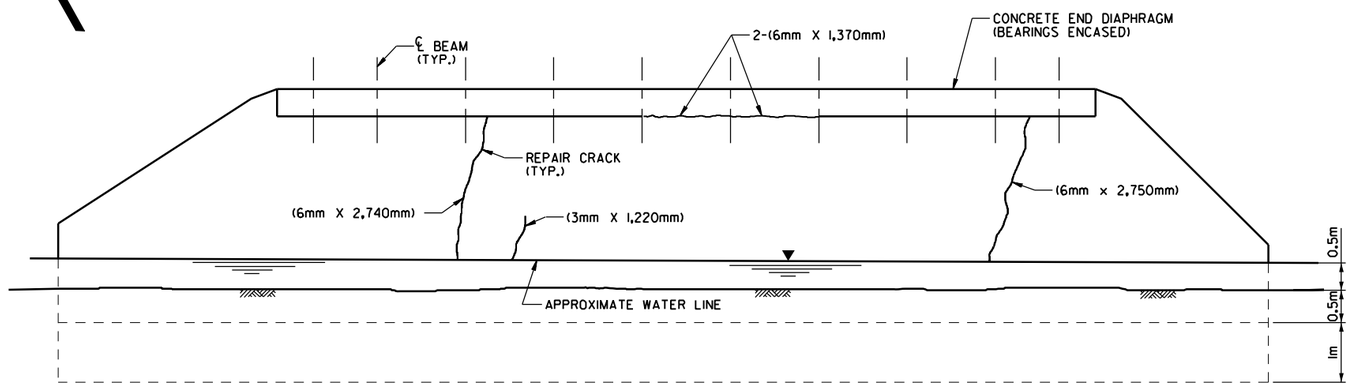
ELEVATION - ABUTMENT 1
(SOUTH ABUTMENT)

0 0.5 1 2m



PLAN

0 0.5 1 2m



ELEVATION - ABUTMENT 2
(NORTH ABUTMENT)

0 0.5 1 2m

WORK REQUIRED:

1. REPAIR SPALLS AND DELAMINATIONS ON STRUCTURE.
2. REPAIR CRACKS ON STRUCTURE BY EPOXY INJECTION OR SURFACE SEALING.

LEGEND:

SPALLED OR DELAMINATED AREA TO BE REPAIRED.

(CRACK WIDTH x CRACK LENGTH) TO BE REPAIRED.

NOTES:

1. THE DEEP SPALL IN THE SOUTHWEST WINGWALL IS LOCATED AT THE WATERLINE. DEPENDING ON THE WATER LEVEL AT THE TIME OF REHABILITATION, DEWATERING OF THE AREA IMMEDIATELY ADJACENT TO THE SPALL MAY BE REQUIRED. THE COST OF DEWATERING AT THIS LOCATION SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
2. ALL CRACKS SHOWN SHALL BE REPAIRED BY EPOXY INJECTION UNLESS OTHERWISE NOTED OR OTHERWISE DIRECTED BY THE "CO".
3. FOR CRACK AND SPALL REPAIR DETAILS AND PROCEDURES, SEE SHEET "CRACK AND SPALL REPAIR DETAILS".
4. CRACKS SHALL BE SEALED A MINIMUM OF 300mm BELOW EXISTING GROUND.
5. DEWATER AREA AROUND CRACKS TO BE SEALED BELOW WATER AS REQUIRED.

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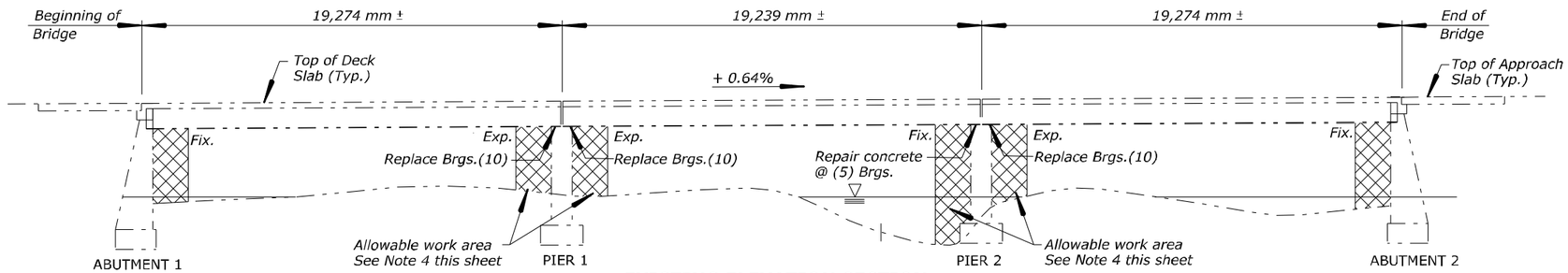
ROUTE 209 OVER BUSHKILL CREEK

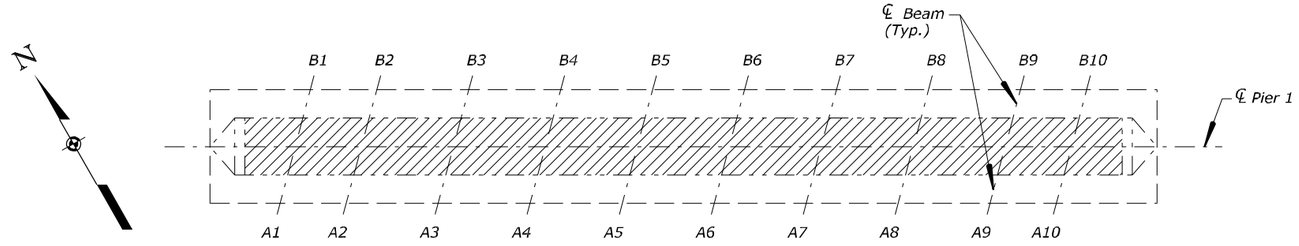
ABUTMENTS 1 AND 2 REPAIRS

REGION	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
NE	PA	PRA-DEWA 14(12)	R04	R17

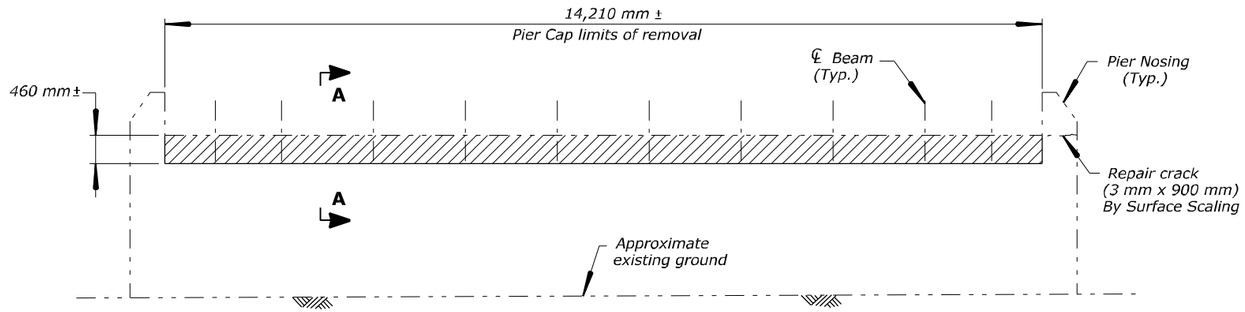


EXISTING ELEVATION SECTION

Along ℄ Structure



PLAN



ELEVATION - SOUTH FACE

(Elevation - North Face is similar)

WORK REQUIRED

1. *Erect temporary supports at Pier 1, to support beam ends A1 thru A10 & B1 thru B10 for bearing replacement.*
2. *Repair cracks on substructure by epoxy injection or surface sealing.*
3. *Remove existing bearings (20 expansion Brgs.), including anchor bolts, clamp plates, masonry plates and approximately top 460 mm of concrete pier cap.*
4. *Rebuild pier concrete seats and install new bearings (20 expansion Brgs), including sole plates, anchor bolts and expansion elastomeric bearings.*
5. *For other details of bearing replacement, see sheets "ELASTOMERIC BEARINGS" and ""PIER 1 REPAIR DETAILS - 2".*

LEGEND:

Allowable work area

Limits of removal

(Crack width x crack length) to be repaired

Notes:

1. *For crack repair procedures, see sheet "CRACK AND SPALL REPAIR DETAILS".*
2. *Verify all dimensions in the field before ordering any materials. Errors resulting from not verifying field dimensions, shall be corrected by the Contractor at no expense to the government.*
3. *Erect temporary supports at piers 1 and 2 to support the beam ends during the existing expansion bearing replacement (20 bearings at Pier 1, and 10 bearings at Pier 2), and the concrete repair at five fixed bearings Pier 2 (seats at beams B6 thru B10). Design the jacking and temporary support system for a Service Load Reaction = 315 KN per beam, and submit the shop drawings to be approved by the "CO". Only one temporary support will be allowed in the creek bed at one time.*
4. *The allowable work area around the pier shall be limited to 4.5 m from the faces of each pier and 1.0 m from the end. At the abutments the allowable work area will be limited to 1.0 m in front of the face of abutment and wingwalls.*
5. *The submission of the jacking and temporary support system shall also include design calculations, signed and sealed by a Professional Engineer in the State of Pennsylvania. No additional payment will be made for this item of work regardless of type of jacking and temporary support system used.*
6. *Approval of the "CO" shall in no way relieve the contractor of his/her responsibility to ensure the safety and adequacy of the jacking and temporary supports.*
7. *For Jacking Notes pertaining to the Pier 1 and Pier 2 bearing replacement and concrete repair, see "PLAN AND ELEVATION" sheet.*

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PIER 1 REPAIR DETAILS - 1

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE DRAWING	DATE	DRAWING NO.
								NHG	JEG	YM	No Scale	Hratch Pahkchanian	Nov. 2005		

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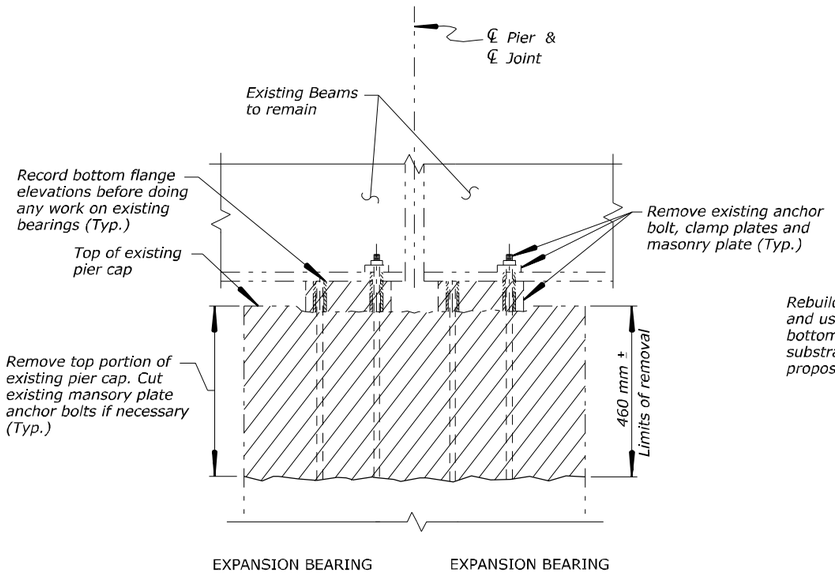
REGION	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
NE	PA	PRA-DEWA 14(12)	R05	R17



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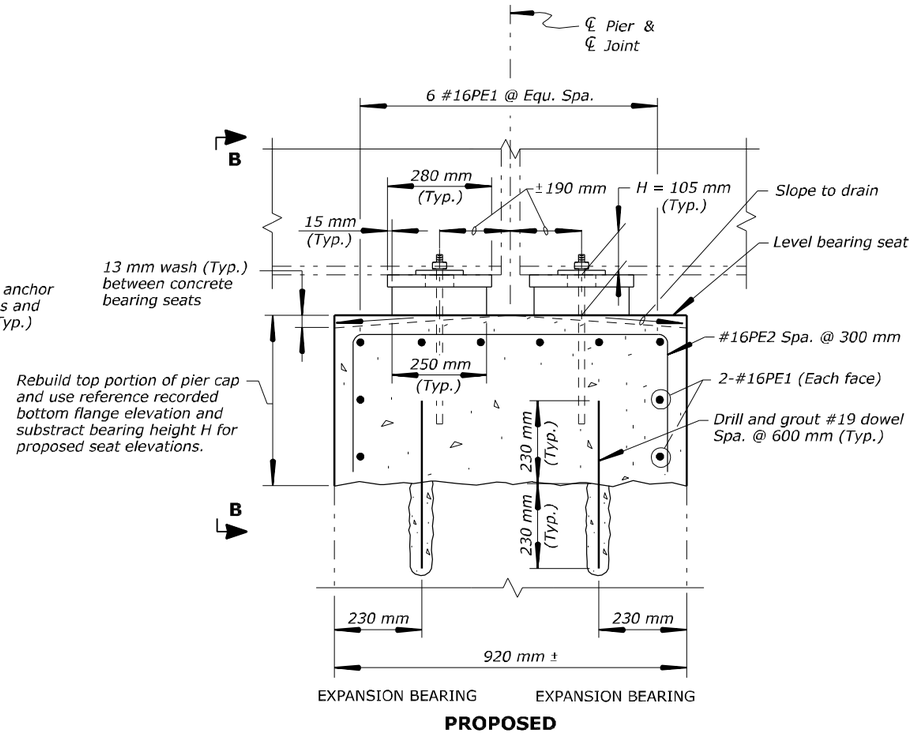


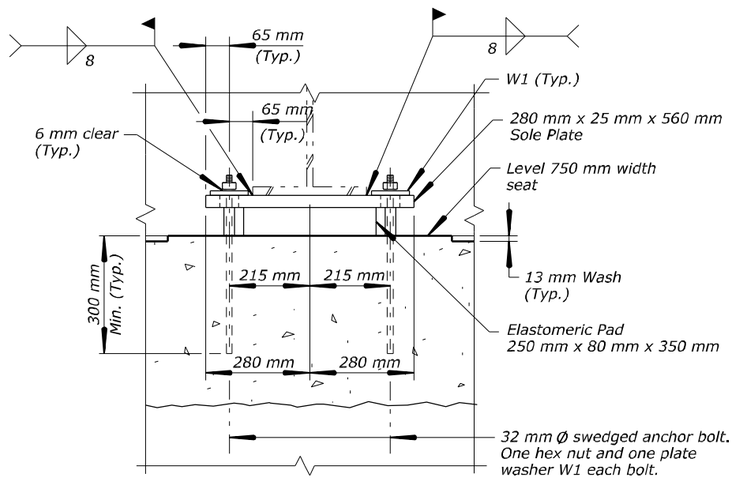
PROPOSED

SECTION A-A

LEGEND:

Limits of removal

New concrete



SECTION B-B, C-C, D-D

Note: Rebars not shown for clarity

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PIER I REPAIR DETAILS - 2

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE DRAWING	DATE	DRAWING NO.
								NHG	JEG	YM	No scale	Hratch Pakhchanian		Nov. 2005	

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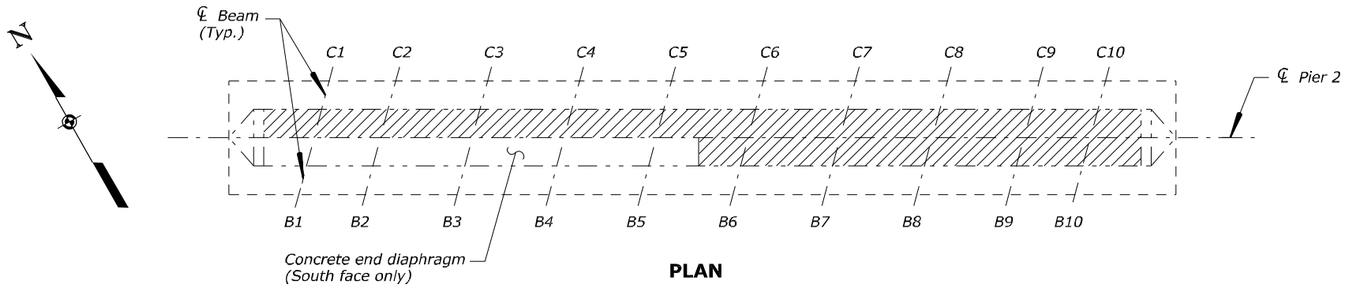
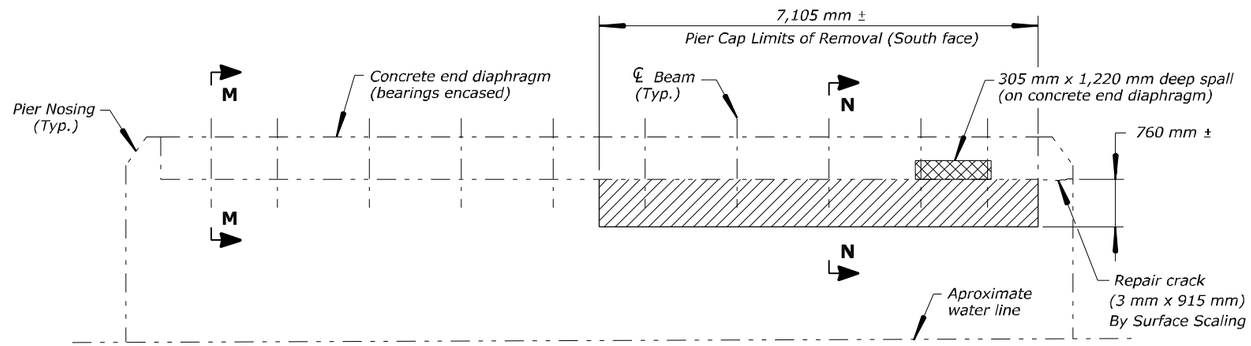
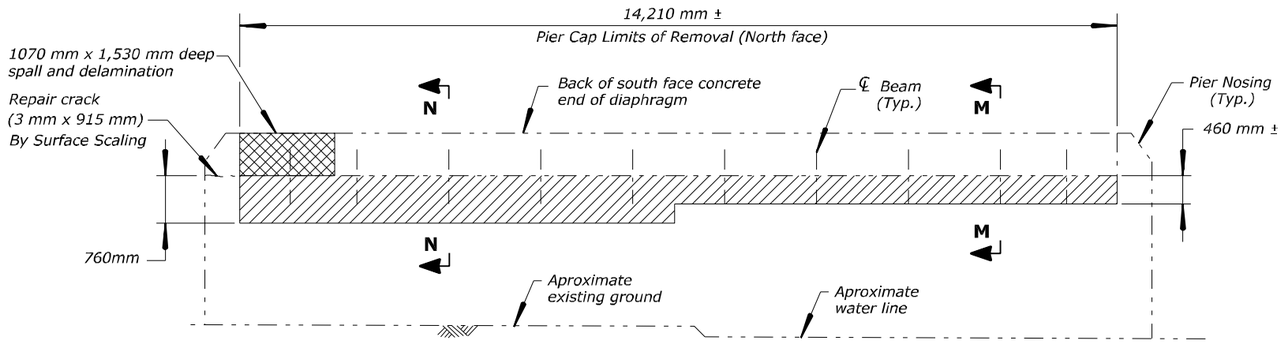
REGION	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
NE	PA	PRA-DEWA 14(12)	R06	R17



PLAN



ELEVATION - SOUTH FACE



ELEVATION - NORTH FACE

WORK REQUIRED

1. *Erect temporary supports at Pier 2, to support beam ends B6 thru B10 for concrete seat repair (five Brgs.) and to support beam ends C1 thru C10 for bearing replacement, see this Sheet.*
2. *Repair cracks on substructure by epoxy injection or surface sealing.*
3. *Repair spalls and delaminations on substructure.*
4. *Remove approximately 760 mm deep of existing concrete seat at beams B6 thru B10 (sole plate & anchor bolts to remain) and remove approximately 460 mm deep of existing concrete seats at beams C1 thru C5, and 760 mm deep of existing concrete seats at beams C6 thru C10, including masonry anchor bolts, clamp plates and masonry plates.*
5. *Rebuild pier concrete seats at beams B6 thru B10 (five Brgs, south face) and pier concrete seats at beams C1 thru C10 (10 Brgs, north face), including installation of new sole plates, anchor bolts and expansion elastomeric bearings.*
6. *For other details of bearings replacement, see sheets "ELASTOMERIC BEARINGS" and "PIER 2 REPAIR DETAILS - 2".*

LEGEND:

Limits of removal

Spalled or delaminated area to be repaired

(Crack width x crack length) to be repaired

Notes:

1. *For crack and spall repair details and procedures, see sheet "CRACK AND SPALL REPAIR DETAILS".*
2. *Verify all dimensions in the field before ordering any materials. Errors resulting from not verifying field dimensions, shall be corrected at no expense to the government.*

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PIER 2 REPAIR DETAILS - 1

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE DRAWING	DATE	DRAWING NO.
								NHG	JEG	YM	No Scale	Hratch Pakhchanian		Nov. 2005	

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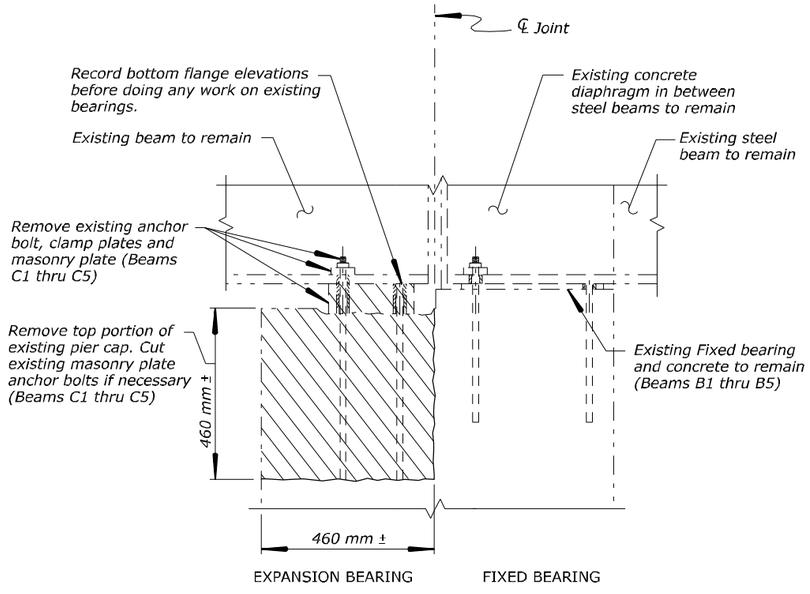
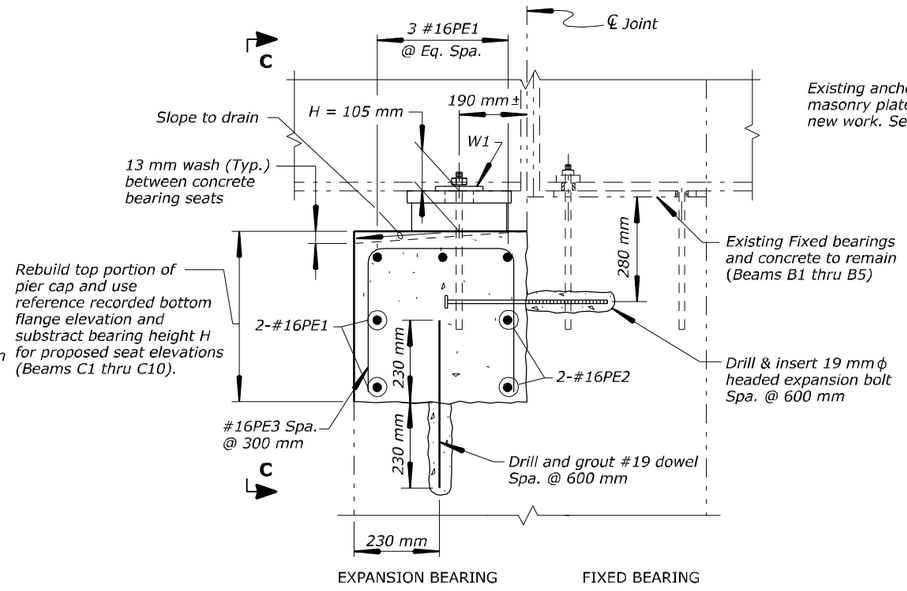
REGION	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
NE	PA	PRA-DEWA 14(12)	R07	R17

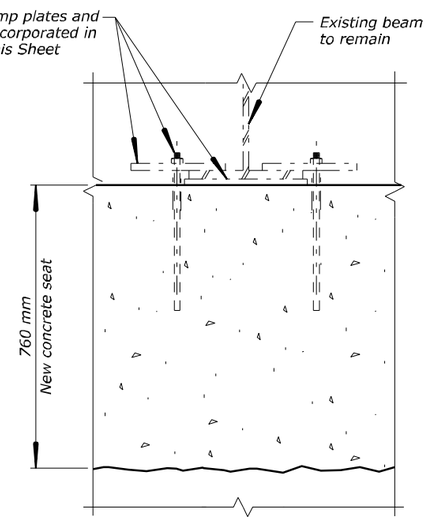


EXISTING



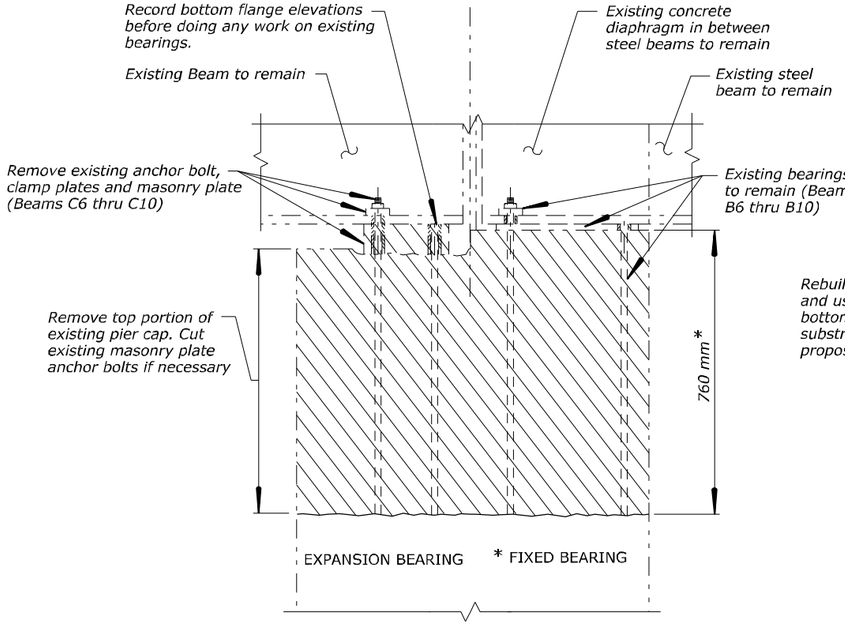
PROPOSED

SECTION M-M



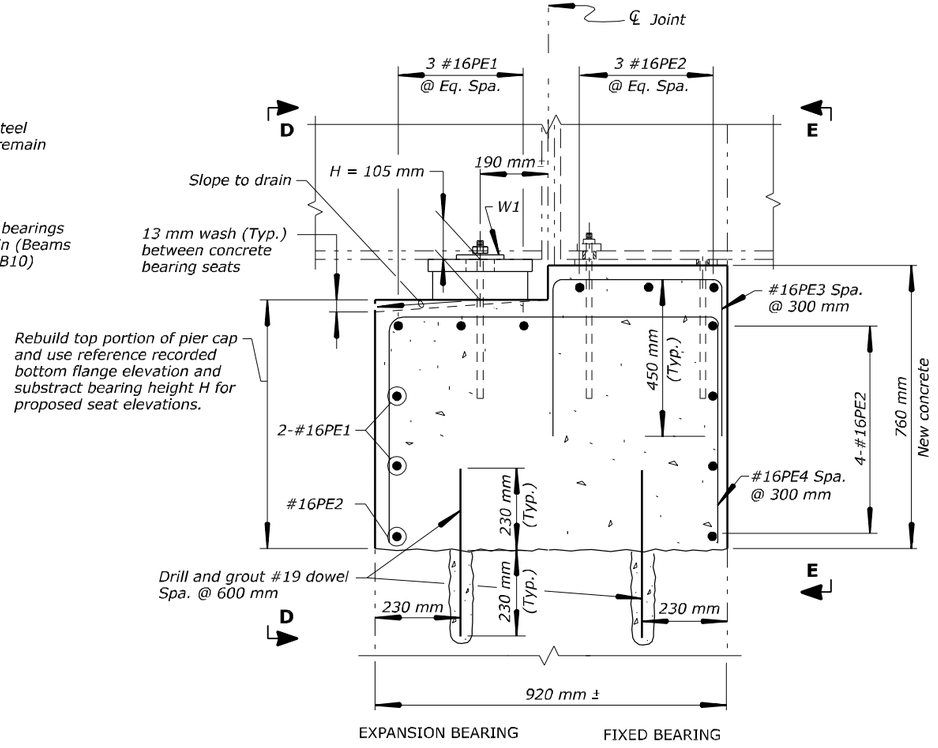
SECTION E-E

Note: rebars not shown for clarity



EXISTING

* *Remove this portion of pier cap concrete, existing bearings (Beams B6 thru B10) to be reincorporated in new work, see Note 1 this Sheet.*



PROPOSED

SECTION N-N

LEGEND:

Limits of removal

New concrete

NOTE:

1. *Clean and not damage anchor bolts, clamp plate and masonry plate before pouring new concrete seat. In case of damage, replace damaged parts at no expense to the goverment.*
2. *See sheet "PIER 1 REPAIR DETAILS - 2" for section C - C and D - D.*

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PIER 2 REPAIR DETAILS - 2

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE DRAWING	DATE	DRAWING NO.
								NHG	JEG	YM	No scale	Hratch Pakhchanian		Nov. 2005	

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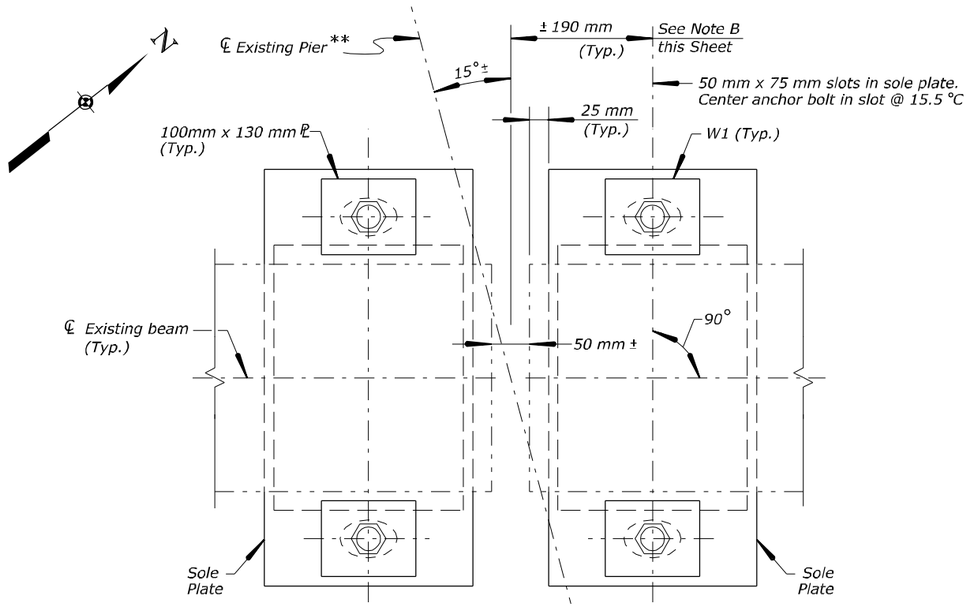
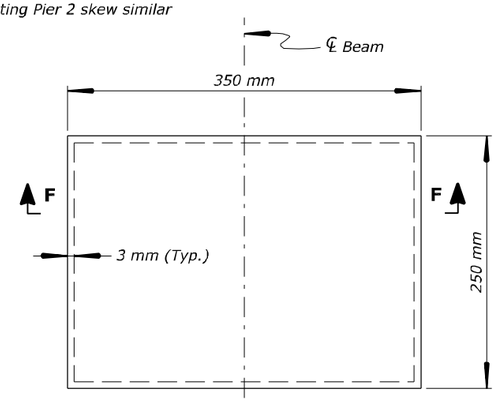
REGION	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
NE	PA	PRA-DEWA 14(12)	R08	R17



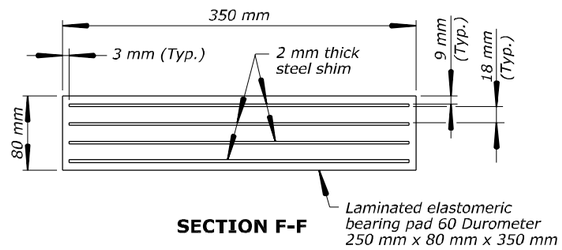
PART PLAN
SKEWED PIER 1 BEARING DETAIL *

* *For Pier 2 new Elastomeric Bearing Detail is applicable only to north face bearings. Clip Sole Plate if required, not to interfere with south face concrete end diaphragm.*

** *Existing Pier 2 skew similar*

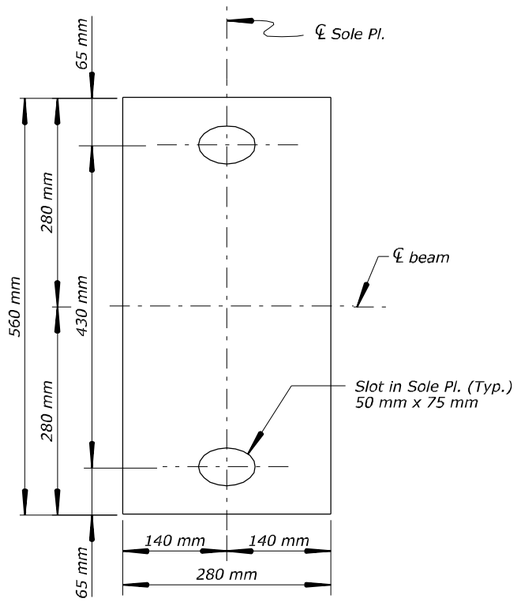


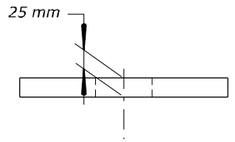
PLAN



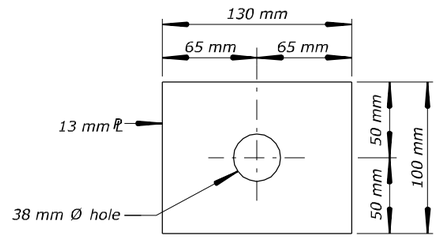
SECTION F-F

ELASTOMERIC BEARING PAD





SOLE PLATE DETAILS



WASHER W1

BEARINGS REPLACEMENT PROCEDURE

(Construction to be performed in two construction stages)

1. *Erect temporary supports at Piers 1 and 2 to support existing beam ends for bearings replacement and bearings concrete repair work, see "PIER 1 REPAIR DETAILS-1" sheet.*
2. *Record existing bottom flange beam elevations of expansion bearings at Piers 1 and 2 to be matched after bearings replacement.*
3. *Jack-up existing expansion beam ends at Piers 1 and 2 for bearings replacement. Jack-up loads are to be of magnitude sufficient to free-up bearings loads on pier and be able to do repair work.*
4. *Remove existing anchor bolts, clamp plates and masonry plates of expansion bearings of Piers 1 and 2. Remove portions of existing concrete cap of Piers 1 and 2 as detailed in Pier Repair sheets. Rebuild top portions of pier caps 1 and 2 to recorded elevations minus the bearings elevations H to determine proposed bearing seat elevations.*
5. *Incorporate existing rebars into new work if encountered, and do not damage and lap to new construction. Drill and grout dowels for a monolithic concrete behavior. Epoxy reinforcing steel is to be used as detailed in the plans. Provide a lap of 660 mm minimum or equivalent where required.*
6. *Sole plate shall be welded to existing beam ends and centered to ±190 mm distance from ℄ joint, see Note A below. Clean and prepare bottom flange prior to attachment of new sole plate.*
7. *Install bearings to ensure full contact with bearings surfaces. Center bearings respect to sole plate, if full contact is not achieved after beams are in place, field adjustments or modifications will be made by the Contractor to ensure full contact and is subject to the approval of the "CO".*
8. *Lower expansion beam ends to their original elevations and remove temporary supports.*

ADDITIONAL BEARING NOTES

A. *Anchor bolts and nuts to be galvanized AASHTO M232. Sole plates and washers to be M270 grade 36 painted. Two 32 mm Ø anchor bolts shall be installed at each expansion bearing and shall be located by measuring a distance ±190 mm from ℄ joint.*

B. *Anchor bolt distance ±190 mm was determined by assuming beam end joint 50mm wide; notify the Engineer if field measurements are different.*

C. *Provide Grade 3, 60-Durometer Elastomer in accordance with AASHTO, Division II, Section 18.2.3.*

D. *Removal of existing bearing plates from existing stringers shall not damage stringers to remain.*

E. *Portions of bottom flanges of the existing stringers to recieve new bearings shall be cleaned prior to welding.*

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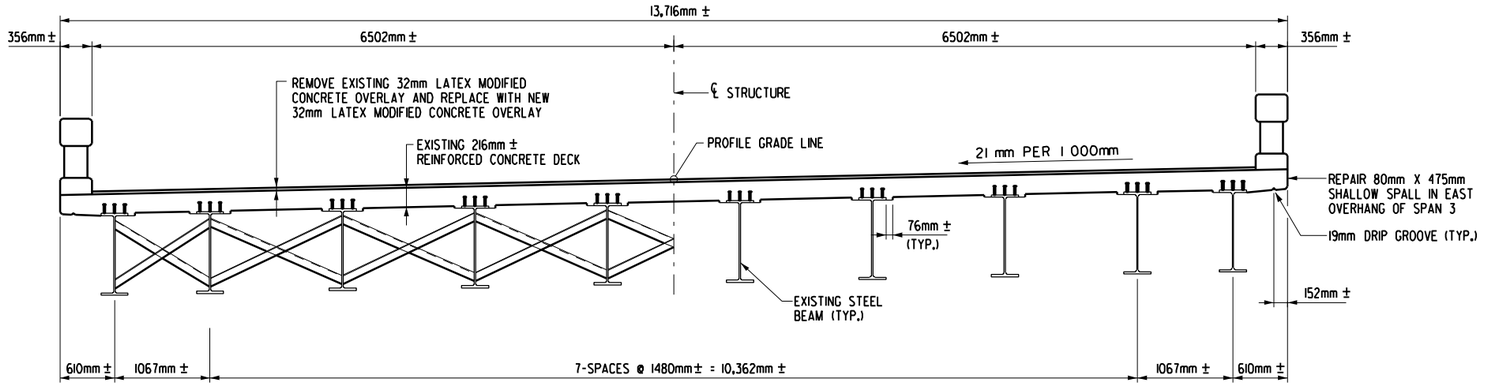
ELASTOMERIC BEARINGS

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE DRAWING	DATE	DRAWING NO.
								NHG	JEG	YM	No scale	Hratch Pakhchanian		Nov. 2005	

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
NE	PA	PRA-DEWA 14(12)	R09	R17



AT CROSS BRACING **AT MIDSPAN**

NOTE:

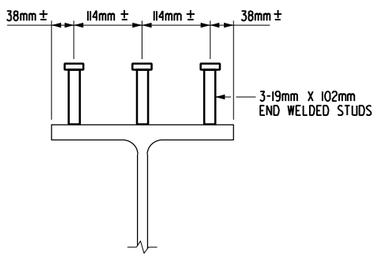
DECK REINFORCEMENT NOT SHOWN.

CLEAR COVER TO EXISTING REINFORCEMENT:

TOP - 50mm ±
BOTTOM - 25mm ±

TYPICAL SECTION

0 0.5m 1m



SHEAR CONNECTOR DETAIL

0 0.15m 0.3m

WORK REQUIRED:

1. REMOVE AND REPLACE EXISTING LATEX MODIFIED CONCRETE OVERLAY WITH NEW LATEX MODIFIED CONCRETE OVERLAY.
2. SPOT CLEAN AND PAINT STEEL SUPERSTRUCTURE.
3. REPAIR SPALL IN SPAN 3 DECK OVERHANG.

NOTES:

1. MATERIAL FOR OVERLAYING THE DECK AND APPROACH SLABS SHALL BE CLASS E (AE) LATEX MODIFIED CONCRETE.
2. FINAL PAVEMENT ELEVATIONS FOR THE APPROACH SLAB AND DECK OVERLAY TO MATCH THE EXISTING ELEVATIONS AND PROVIDE SMOOTH TRANSITION TO ADJACENT SURFACES.
3. PLACEMENT OF OVERLAY SHALL NOT OCCUR UNTIL EXPANSION JOINT REPLACEMENT IS COMPLETE.
4. REMOVAL OF THE EXISTING OVERLAY SHALL BE DONE BY MICROMILLING.
5. REMOVAL OF THE EXISTING OVERLAY SHALL BE PERFORMED IN SUCH A MANNER THAN UNDERLYING SOUND CONCRETE WILL BE PREPARED TO RECEIVE ANY REQUIRED SUBSEQUENT TREATMENT. SOUND CONCRETE DAMAGED AS A RESULT OF THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
6. REMOVAL OF THE EXISTING LATEX MODIFIED CONCRETE OVERLAY AND CONSTRUCTION OF NEW LATEX MODIFIED CONCRETE OVERLAY ON DECK AND APPROACH SLABS SHALL BE PERFORMED UNDER FULL BRIDGE CLOSURE AND WITHIN A SINGLE 96 HOUR CONSTRUCTION WINDOW BETWEEN 6:00 PM THURSDAY AND 6:00 PM MONDAY.
7. PRIOR TO PLACEMENT OF THE NEW OVERLAY, THE MILLED CONCRETE SURFACE SHALL BE WATER-SOAKED FOR A PERIOD OF 24 HOURS. THE 24-HOUR SOAKING SHALL OCCUR WITHIN THE 96-HOUR CONSTRUCTION WINDOW.
8. TRUCK TRAFFIC SHALL NOT BE PERMITTED ON THE NEW OVERLAY UNTIL 14 DAYS AFTER THE END OF THE SPECIFIED CONSTRUCTION WINDOW.
9. SPOT CLEAN AND PAINT AS REQUIRED ALL COMPONENTS OF THE STEEL SUPERSTRUCTURE, EXCEPT BEARINGS, INCLUDING BUT NOT LIMITED TO THE STRINGERS, STIFFENERS, DIAPHRAGMS AND MISCELLANEOUS MEMBERS.
10. FOR CAR DETOUR DURING 96-HOUR CONSTRUCTION WINDOW, AND TRUCK DETOUR FOR THE EXTENDED 14 DAY PERIOD BEYOND THE SPECIFIED 96-HOUR CONSTRUCTION WINDOW, SEE SHEETS 'TEMPORARY TRAFFIC CONTROL DETOUR SIGNING PLAN" AND "TEMPORARY TRAFFIC CONTROL TRUCK DETOUR SIGNING PLAN".

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

DELAWARE WATER GAP
NATIONAL RECREATION AREA

ROUTE 209 OVER BUSHKILL CREEK

SUPERSTRUCTURE REPAIRS

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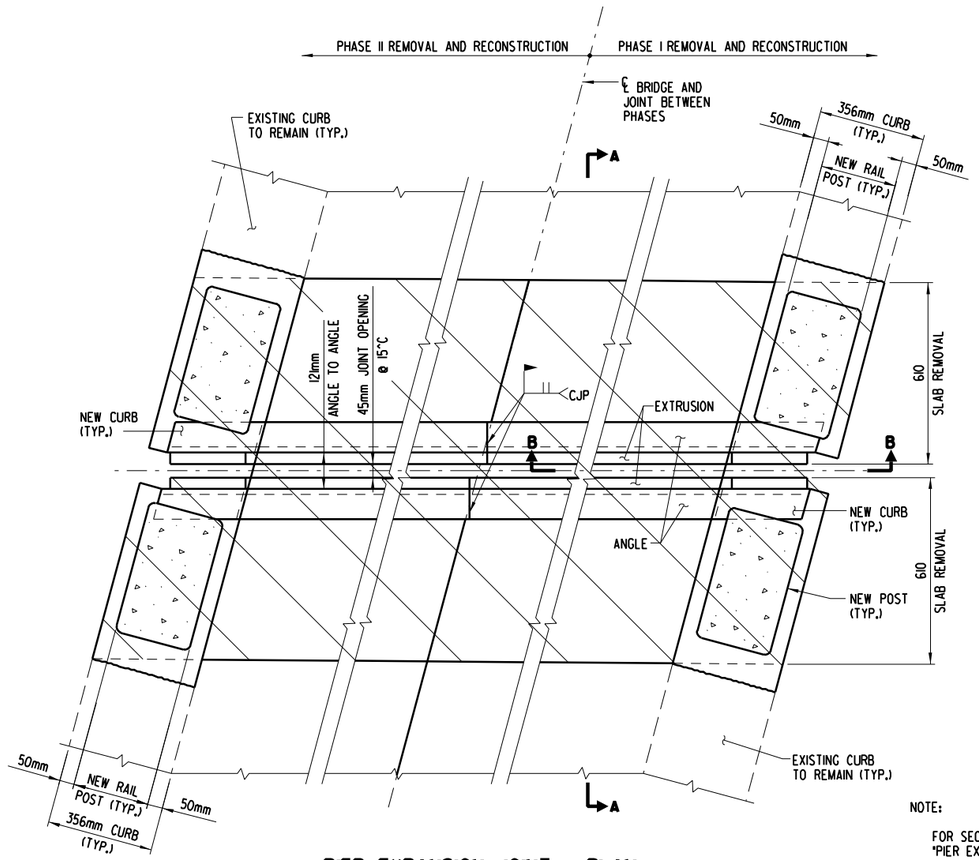
REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
NE	PA	PRA-DEWA 14(12)	R10	R17



PIER EXPANSION JOINT - PLAN

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(PROPOSED EXPANSION JOINT IS SHOWN)

WORK REQUIRED:

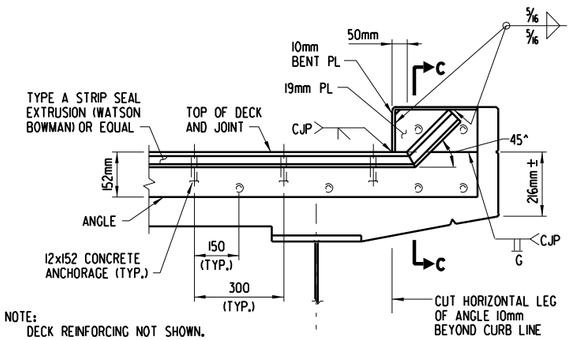
1. REMOVE EXISTING EXPANSION JOINT SYSTEM AT PIERS AND REPLACE WITH NEW PREFABRICATED STRIP SEAL EXPANSION JOINT SYSTEM.
2. REMOVE AND REPLACE FULL-DEPTH CONCRETE DECK ADJACENT TO PIER EXPANSION JOINTS.
3. REMOVE AND REPLACE PORTIONS OF THE EXISTING CURB AND PARAPET AT PIER EXPANSION JOINTS.
4. FOR CONSTRUCTION SEQUENCE SEE SHEET "CONSTRUCTION SEQUENCE FOR EXPANSION JOINT REPAIR".
5. THE CONTRACTOR IS RESPONSIBLE FOR DEVELOPING THE METHOD OF ANCHORAGE OF THE EXPANSION JOINT ASSEMBLIES PRIOR TO CONCRETE PLACEMENT. THE ANCHORAGE ASSEMBLIES WILL ALSO HAVE PROVISIONS FOR ADJUSTMENT DUE TO TEMPERATURE VARIATIONS. ANCHORAGE DETAILS WILL BE INCLUDED IN THE SHOP DRAWING AND SUBMITTED TO THE "CO" FOR APPROVAL.

KEY:

STRUCTURAL REMOVAL.

NOTE:

FOR SECTION A-A SEE SHEET "PIER EXPANSION JOINT REPAIRS - 2".



SECTION B-B

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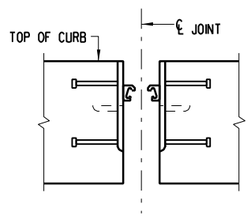

SECTION C-C

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NOTES:

1. THE NEW PREFABRICATED JOINTS SHALL BE MANUFACTURED AND INSTALLED TO CONFORM TO THE EXISTING GRADES AND CROSS SLOPES.
2. THE EXPANSION JOINT SHALL BE CAPABLE OF SEALING THE DECK TO PREVENT MOISTURE AND OTHER CONTAMINANTS FROM DESCENDING THROUGH THE JOINT.
3. THE TOP SURFACE OF THE STEEL EXTRUSION SHALL BE INSTALLED FLUSH WITH THE TOP SURFACE OF THE DECK.
4. CONTRACTOR TO SURVEY DECK PRIOR TO FABRICATING THE JOINT IN ORDER TO VERIFY THE ORIGINAL DESIGN GEOMETRY. THE COST OF SURVEYING SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE EXPANSION JOINT REPLACEMENT WORK.
5. THE CONTRACTOR SHALL VERIFY ALL PERTINENT FIELD DIMENSIONS BEFORE FABRICATION OF EXPANSION JOINT.
6. STRIP SEAL JOINT SYSTEM SHALL BE MANUFACTURED BY WATSON BOWMAN ACME CORPORATION, 95 PINEVIEW DRIVE. AMHERST. NY 14228, (716) 691-7566; THE D.S. BROWN COMPANY, 300 E. CHERRY STREET, NORTH BALTIMORE, OH 45872-0158, (419) 257-3561; OR AN APPROVED EQUAL.
7. MATERIAL FOR STEEL EXTRUSIONS SHALL CONFORM TO THE PROPERTIES OF ASTM A36 OR A588. ALL STEEL OF THE JOINT SYSTEM SHALL HAVE FUSION BONDED EPOXY COATING WITH THICKNESS OF 122 MILS., AND ALL SCREWS SHALL BE STAINLESS STEEL ASTM A276, TYPE 304.
8. THE ELASTOMERIC MATERIAL SHALL BE 100% VIRGIN PLYCHLOROPRENE (NEOPRENE). THE STRIP SEAL SHALL BE AN EXTRUDED NEOPRENE MATERIAL MEETING THE REQUIREMENTS OF ASTM D 2628 MODIFIED TO OMIT THE RECOVERY TEST.
9. THE ELASTOMERIC MATERIAL SHALL HAVE THE PHYSICAL PROPERTIES SPECIFIED IN THE MANUFACTURER'S SPECIFICATIONS AS DETERMINED BY APPLICABLE ASTM TESTS.
10. INSTALLATION OF THE STRIP SEAL JOINT SYSTEMS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
11. THE STRIP SEAL SHALL BE SUPPLIED AND INSTALLED IN ONE CONTINUOUS PIECE AFTER THE STEEL EXTRUSIONS ARE INSTALLED ACROSS ALL LANES.
12. THE DECK JOINT OPENING INDICATED HAS BEEN COMPUTED BASED ON THE 1992 BRIDGE REHABILITATION PLANS. THE ACTUAL OPENING AFTER INSTALLATION MAY BE DIFFERENT BECAUSE OF TEMPERATURE VARIANCES AND OTHER RELATED STRUCTURE MOVEMENTS SINCE THE REHABILITATION.
13. SHOP PAINT ENTIRE ASSEMBLY PRIOR TO SHIPPING.
14. SECTIONS OF STEEL EXTRUSIONS SHALL BE WELDED AS PER MANUFACTURER'S RECOMMENDATIONS.
15. DURING REMOVAL OF THE PORTION OF THE EXISTING DECK AND EXPANSION JOINT SYSTEM, THE CONTRACTOR SHALL EXERCISE CARE SO AS NOT TO CUT INTO OR DAMAGE THE EXISTING REINFORCING BARS WHICH ARE REQUIRED TO BE EXPOSED, CLEANED, COATED, AND INCORPORATED INTO THE NEW CONSTRUCTION.
16. CONSTRUCT A LONGITUDINAL CONSTRUCTION JOINT IN FULL-DEPTH DECK REPLACEMENT AT BRIDGE CENTERLINE. FOR LONGITUDINAL CONSTRUCTION JOINT DETAILS, SEE SHEET "CONSTRUCTION SEQUENCE FOR EXPANSION JOINT REPAIR".
17. WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 501 AND 555 OF THE STANDARD SPECIFICATIONS.
18. FOR ADDITIONAL PARAPET AND CURB DETAILS AT EXPANSION JOINTS, SEE SHEETS "CURB AND PARAPET DETAILS - 1" AND "CURB AND PARAPET DETAILS - 2".

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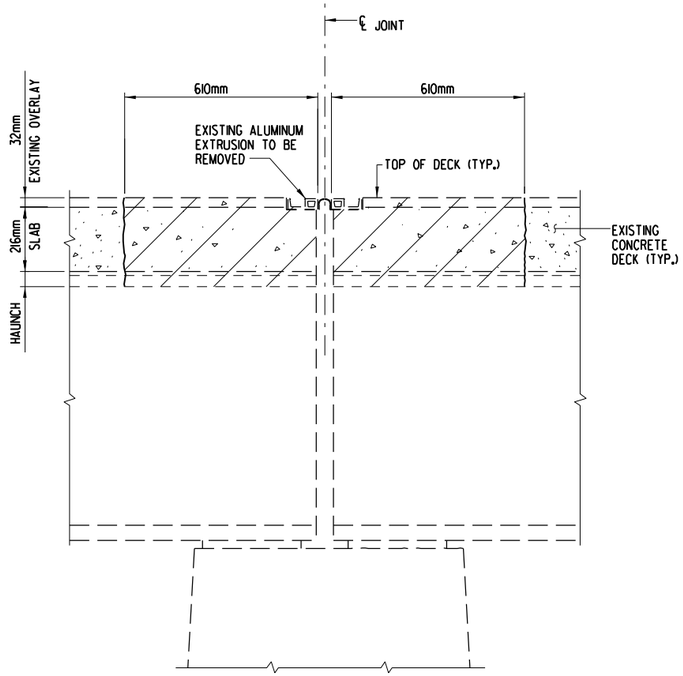
DELAWARE WATER GAP
NATIONAL RECREATION AREA

ROUTE 209 OVER BUSHKILL CREEK

PIER EXPANSION JOINT REPAIRS - 1

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
NE	PA	PRA-DEWA 14(12)	RII	RI7



EXISTING SECTION A-A AT PIER 1

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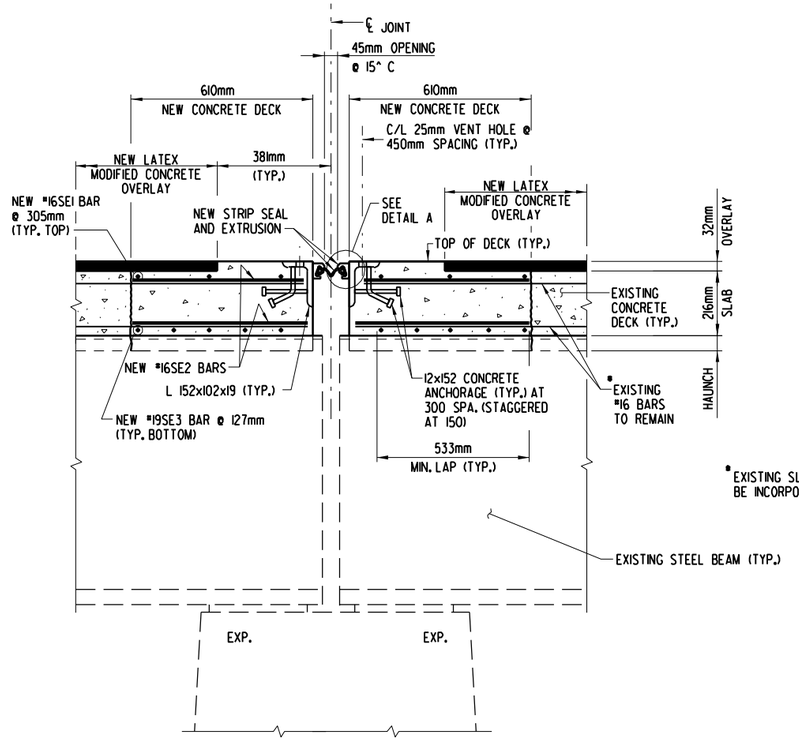

PROPOSED SECTION A-A AT PIER 1

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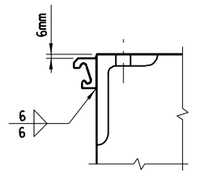
* EXISTING SLAB LONGITUDINAL BARS TO BE INCORPORATED INTO NEW SLAB (TYP.).



DETAIL A

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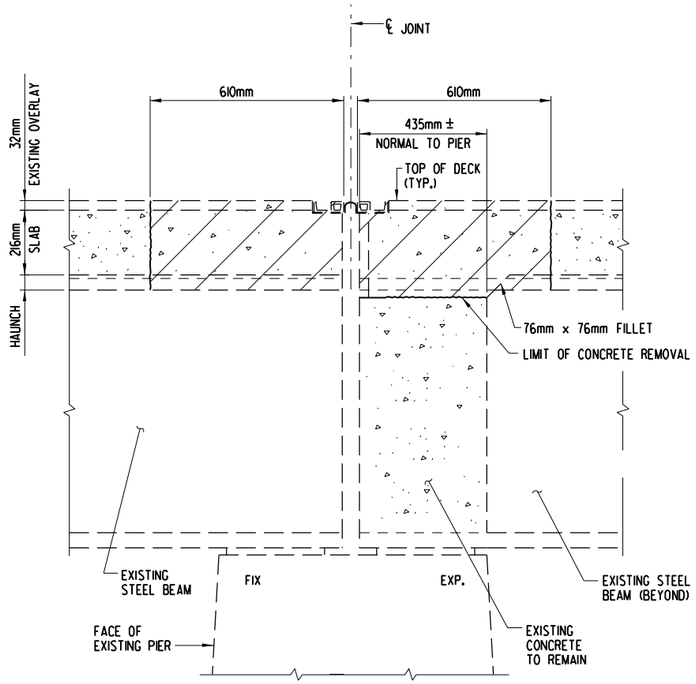

EXISTING SECTION A-A AT PIER 2

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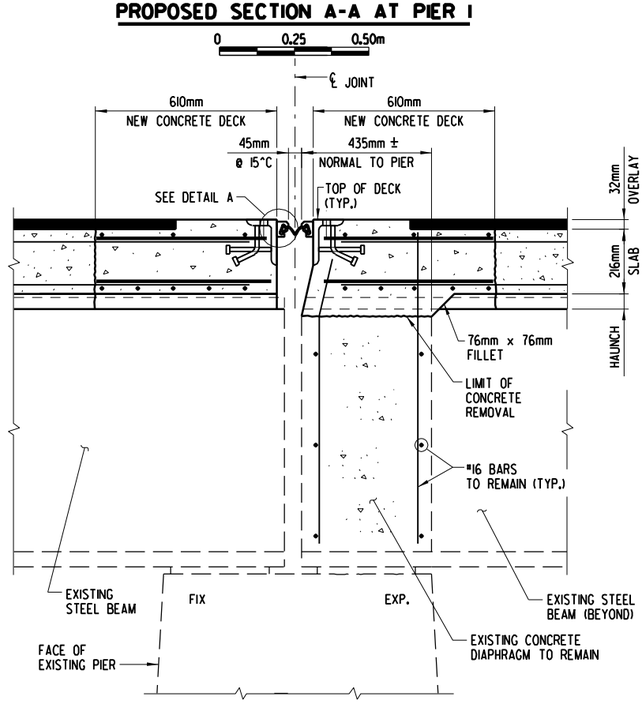

PROPOSED SECTION A-A AT PIER 2

0 0.25 0.50m

NOTES:

1. FOR PIER EXPANSION JOINT PLAN AND NOTES, SEE SHEET "PIER EXPANSION JOINT REPAIRS - 1".

KEY:

DECK, CURB, AND RAIL REMOVAL AREA.

U.S. DEPARTMENT OF TRANSPORTATION
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NATIONAL RECREATION AREA

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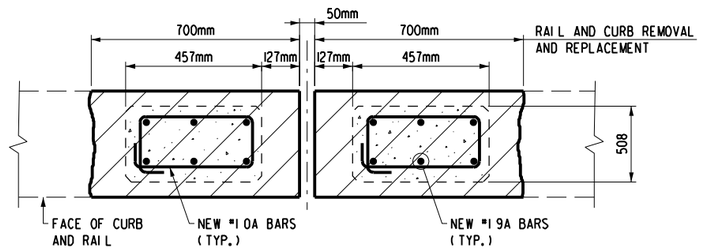
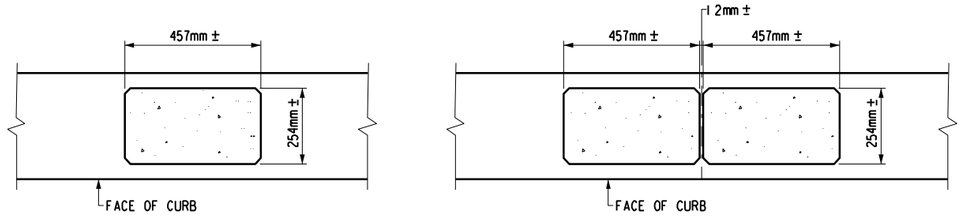
PIER EXPANSION JOINT REPAIRS - 2

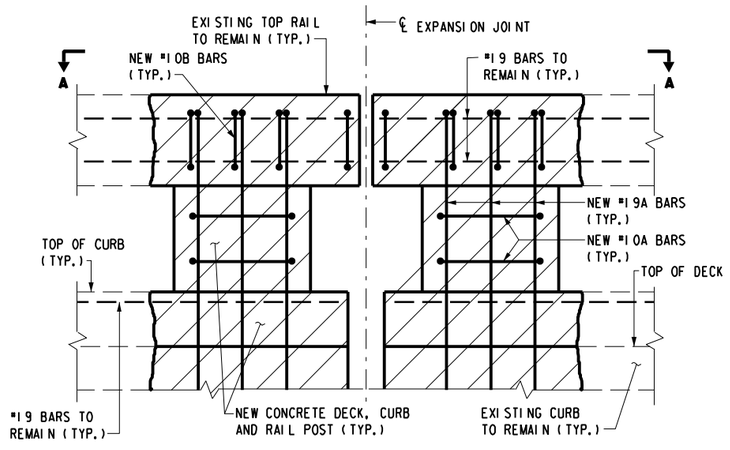
REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
NE	PA	PRA-DEWA 14(12)	RI2	RI7



VIEW A-A

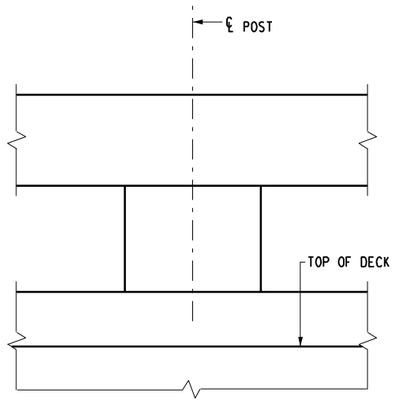


PLAN SECTION THRU POSTS

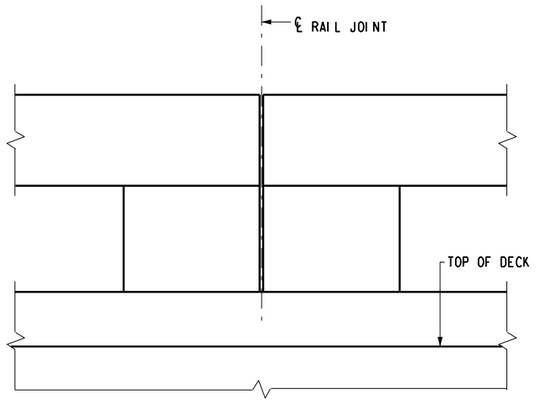


AT EXPANSION JOINT

NOTE:
EXPANSION JOINT NOT SHOWN.



INTERIOR



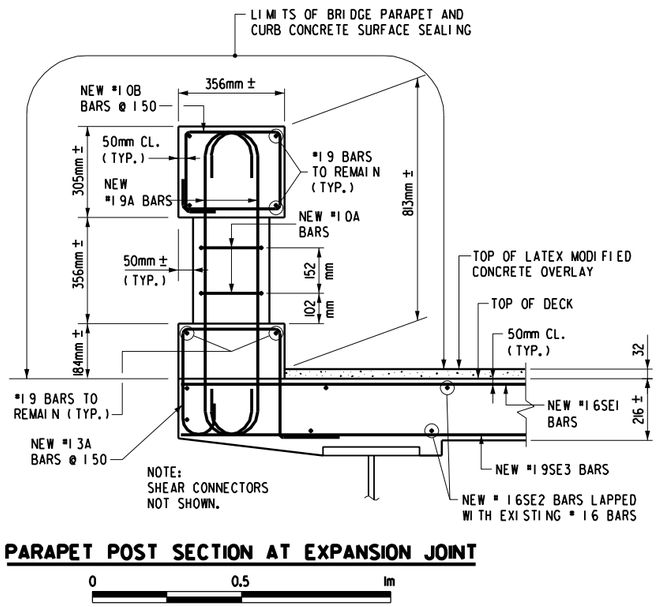
AT RAIL JOINT

WORK REQUIRED:

1. SEAL SURFACES OF CONCRETE CURBS AND PARAPETS.
2. REMOVE AND REPLACE DESIGNATED PORTIONS OF THE EXISTING PARAPET AND CURB AT PIER EXPANSION JOINTS.

NOTES:

1. DECK REINFORCEMENT AND REINFORCEMENT AT INTERIOR AND RAIL JOINT POSTS NOT SHOWN IN DETAILS.
2. THE SEALER MATERIAL SHALL BE SIKAGARD 70IW AS MANUFACTURED BY SIKA CORPORATION, OR APPROVED EQUAL.
3. THE CONTRACTOR SHALL CLEAN THE ENTIRE SURFACE TO RECEIVE THE SEALER OF PAINTS, GREASE, OILS, DIRT, LAITANCE AND OTHER CONTAMINANTS BY SANDBLASTING OR WATERBLASTING PRIOR TO THE APPLICATION OF THE SEALER AND ACCORDING TO MANUFACTURERS RECOMMENDATION.
4. THE CONTRACTOR SHALL FOLLOW THE MANUFACTURER'S RECOMMENDATION FOR MIXING, APPLICATION PROCEDURE AND OTHER LIMITATIONS.
5. THIS WORK CONSISTS OF FURNISHING ALL MATERIALS AND APPLYING CONCRETE SEALER COATING TO THE CONCRETE BRIDGE PARAPETS AND CURBS.
6. DURING REMOVAL OF PORTIONS OF THE EXISTING CURB AND PARAPET, THE CONTRACTOR SHALL EXERCISE CARE SO AS NOT TO DAMAGE THE EXISTING REINFORCING BARS THAT ARE REQUIRED TO BE EXPOSED, CLEANED, COATED AND INCORPORATED INTO THE NEW CONSTRUCTION.



PARAPET POST SECTION AT EXPANSION JOINT

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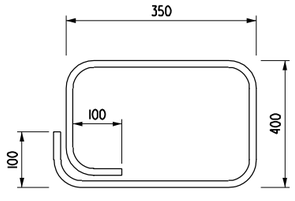
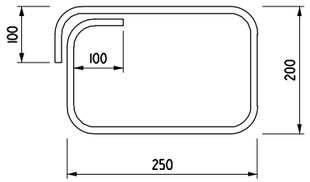
CURB AND PARAPET DETAILS

0 0.5 1m

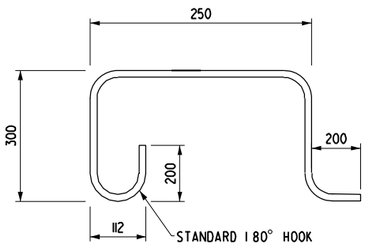
KEY:
STRUCTURAL REMOVAL.



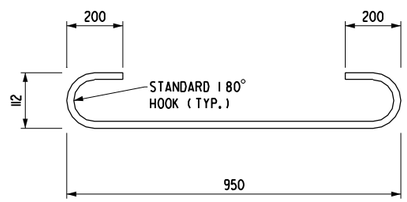
#10A BARS
(16 BARS)



#10B BARS
(32 BARS)



#13A BARS
(32 BARS)



#19A BARS
(48 BARS)

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STERLING, VIRGINIA

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NATIONAL RECREATION AREA

ROUTE 209 OVER BUSHKILL CREEK
CURB AND PARAPET DETAILS - 1

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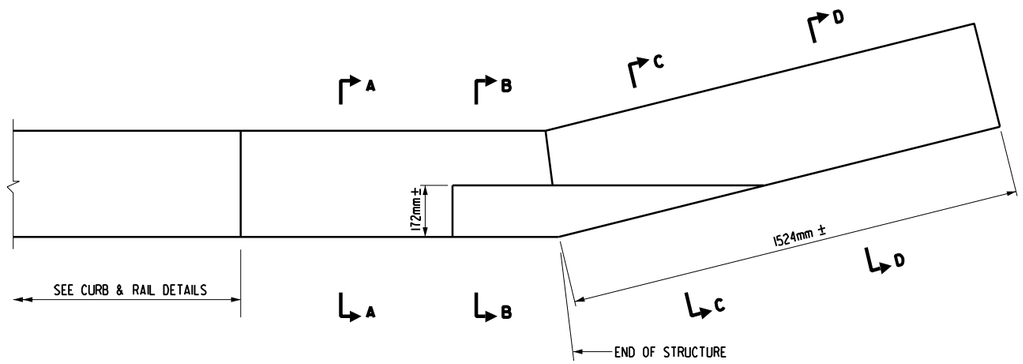
REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
NE	PA	PRA-DEWA 14(12)	RI3	RI7



PLAN

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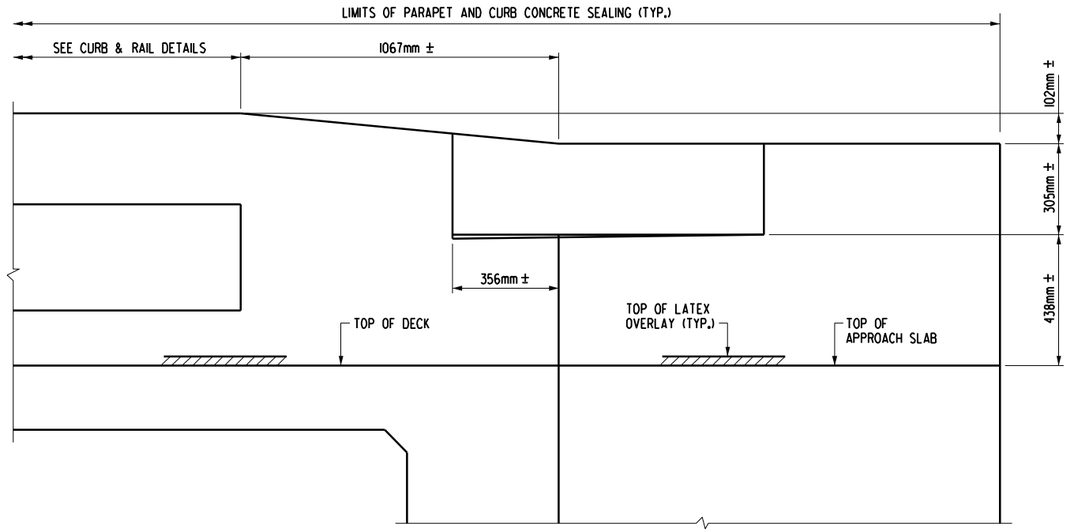
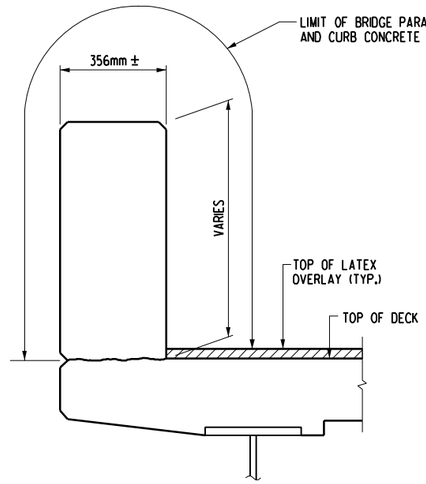
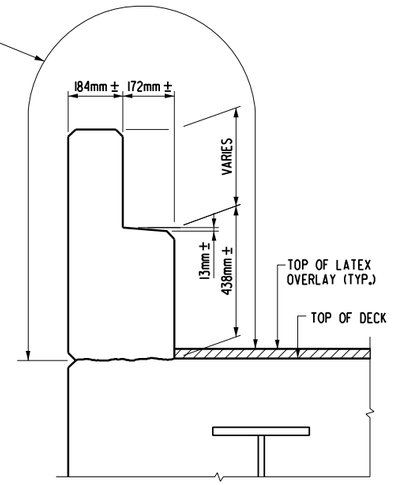


ELEVATION

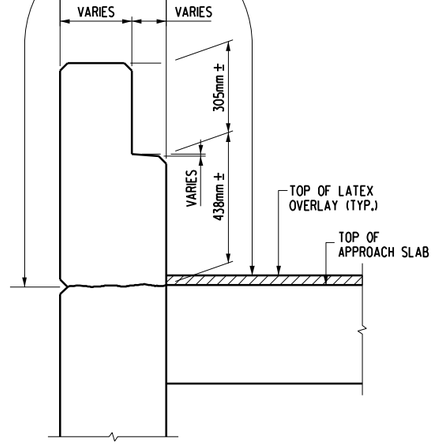
0 0.25 0.5 1m



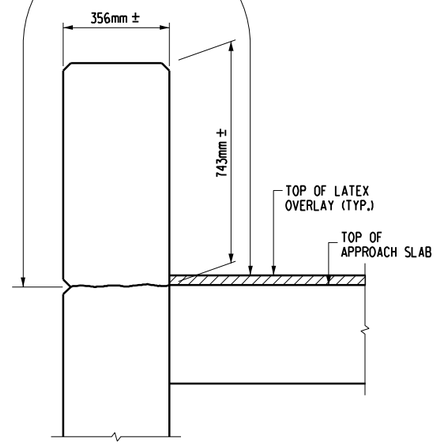
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

0 0.25 0.5 1m

WORK REQUIRED:

1. SEAL SURFACES OF CONCRETE CURBS AND PARAPETS.

NOTES:

1. SECTIONS A-A THROUGH D-D APPLY TO WINGWALLS A, B, AND D. ONLY SECTIONS A-A AND D-D APPLY TO WINGWALL C.
2. FOR ADDITIONAL NOTES ON SEALING THE CURB AND PARAPET SURFACES, SEE SHEET "CURB AND PARAPET - DETAILS 1".

U.S. DEPARTMENT OF TRANSPORTATION
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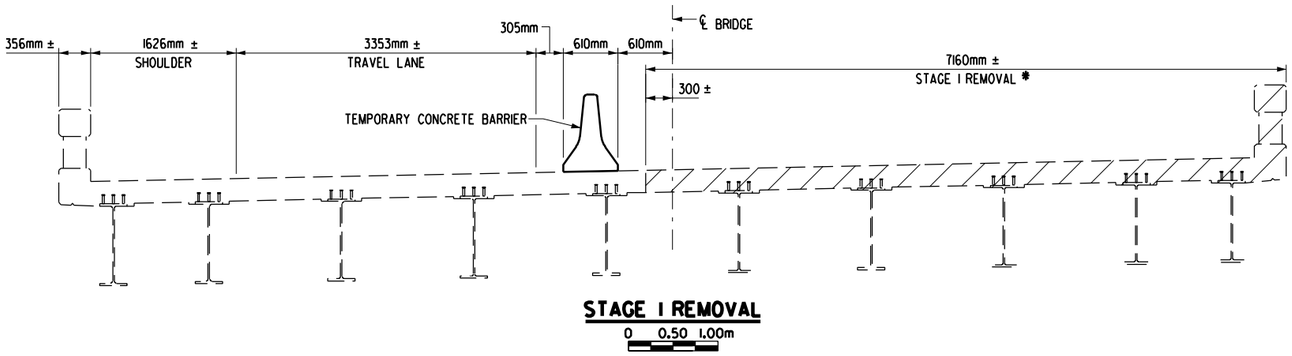
STERLING, VIRGINIA

DELAWARE WATER GAP
NATIONAL RECREATION AREA

ROUTE 209 OVER BUSHKILL CREEK

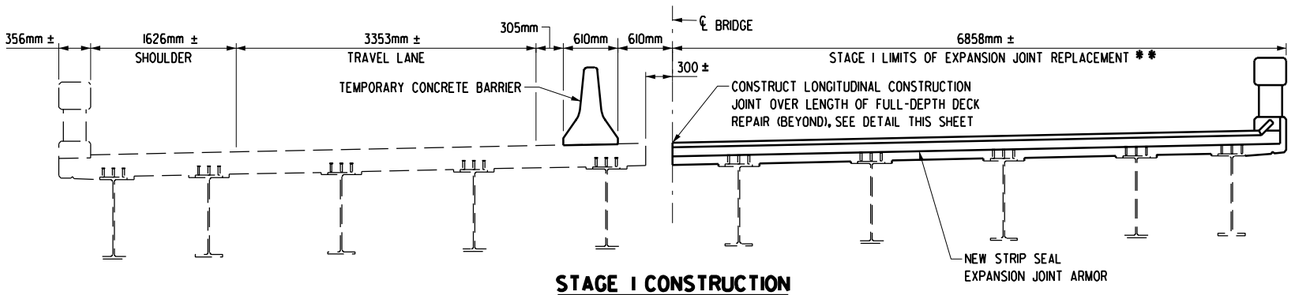
CURB AND PARAPET DETAILS - 2

REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
NE	PA	PRA-DEWA 14(12)	RI4	RI7



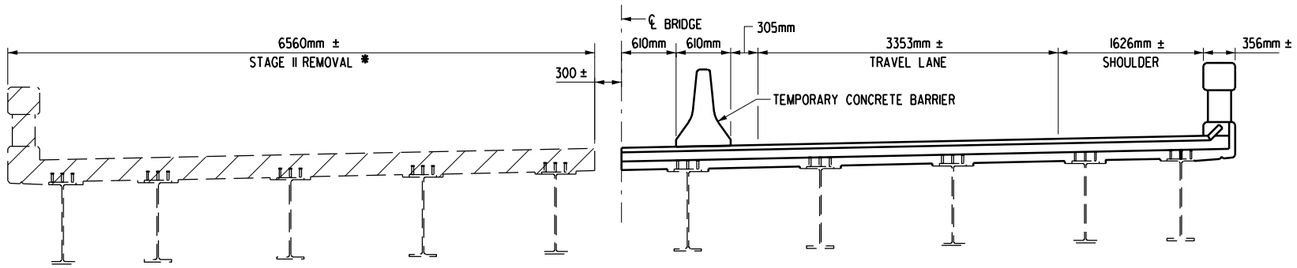
STAGE I REMOVAL

0 0.50 1.00m



STAGE I CONSTRUCTION

0 0.50 1.00m



STAGE II REMOVAL

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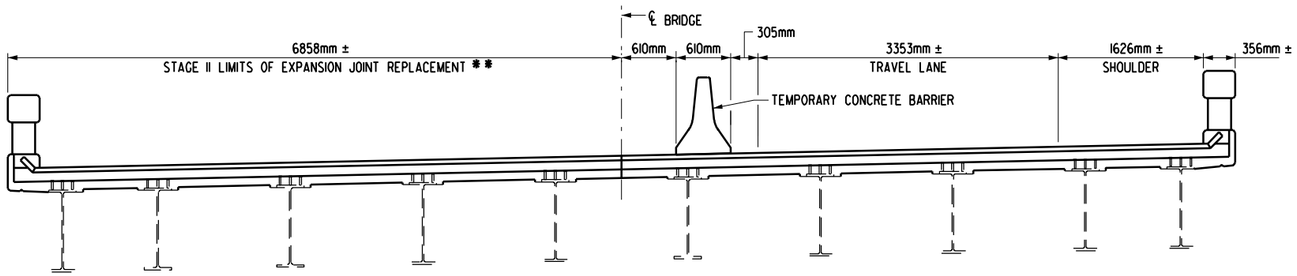

STAGE II CONSTRUCTION

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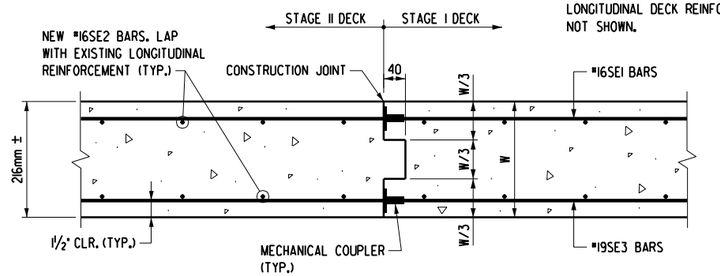
LEGEND:

STRUCTURE REMOVAL

* SEE SHEETS "PIER EXPANSION JOINT REPAIRS - 1" AND "PIER EXPANSION JOINT REPAIRS - 2" FOR LIMITS OF DECK REMOVAL ADJACENT TO EXPANSION JOINTS AND SHEET "CURB AND PARAPET DETAILS - 1" FOR LIMITS OF REMOVAL OF CURB AND PARAPET.

** EXPANSION JOINT REPLACEMENT INCLUDES REPLACEMENT OF PORTION OF DECK SLAB, CURB, RAIL POST, AND RAIL ADJACENT TO EXPANSION JOINTS. FOR DETAILS, SEE SHEETS "PIER EXPANSION JOINT REPAIRS - 1" AND "CURB AND PARAPET DETAILS - 1".

NOTE:
OVERLAY AND TRANSVERSE AND LONGITUDINAL DECK REINFORCING NOT SHOWN.



LONGITUDINAL CONSTRUCTION JOINT

0 0.125 .25m

NOTES:

1. FOR EXPANSION JOINT REPAIR DETAILS AND ADDITIONAL FULL-DEPTH DECK REPAIR DETAILS, SEE SHEET "PIER EXPANSION JOINT REPAIRS - 1".
2. FOR CURB AND PARAPET REPAIR DETAILS, SEE SHEETS "CURB AND PARAPET DETAILS - 1" AND "CURB AND PARAPET DETAILS - 2".

SUGGESTED SEQUENCE FOR EXPANSION JOINT REPLACEMENT:

1. CLOSE THE EAST SIDE OF THE BRIDGE TO TRAFFIC USING A TEMPORARY CONCRETE BARRIER (STAGE I).
2. REMOVE THE EXISTING EXPANSION JOINT SYSTEM, PORTIONS OF THE CURB AND PARAPET AND FULL-DEPTH CONCRETE DECK SLAB ON BOTH SIDES OF THE PIER 1 AND PIER 2 EXPANSION JOINTS WITHIN THE PROTECTED WORK ZONE.
3. CLEAN AND COAT ALL EXPOSED EXISTING REINFORCING BARS THAT ARE TO REMAIN IN PLACE. ALL REINFORCING BARS DAMAGED DURING CONCRETE REMOVAL SHALL BE REPLACED IN KIND AT THE CONTRACTOR'S EXPENSE.
4. INSTALL NEW STRIP SEAL JOINT SYSTEM AND CONSTRUCT NEW PORTIONS OF CURB AND PARAPET AND FULL-DEPTH CONCRETE DECK WITHIN THE PROTECTED WORK ZONE.
5. AFTER THE REQUIRED MINIMUM 7-DAY CURE PERIOD FOR CONCRETE, AND UNTIL A COMPRESSIVE STRENGTH OF 70% f'c IS REACHED, RE-OPEN THE EAST SIDE OF THE BRIDGE TO TRAFFIC. INSTALL PARTIAL JOINT SEAL PRIOR TO OPENING LANE TO TRAFFIC TO PREVENT DEBRIS FROM FALLING INTO NEW JOINT.
6. CLOSE THE WEST SIDE OF THE BRIDGE TO TRAFFIC AS SHOWN USING A TEMPORARY CONCRETE BARRIER (STAGE II).
7. REPEAT STEPS 2 THROUGH 4 WITHIN THE NEW WORK ZONE.
8. REMOVE TEMPORARY CONCRETE BARRIER FROM BRIDGE.
9. AFTER THE REQUIRED MINIMUM 7-DAY CURE PERIOS FOR CONCRETE, AND UNTIL A COMPRESSIVE STRENGTH OF 70% f'c IS REACHED, RE-OPEN THE BRIDGE TO TRAFFIC. INSTALL PARTIAL JOINT SEAL PRIOR TO OPENING BRIDGE TO TRAFFIC TO PREVENT DEBRIS FROM FALLING INTO NEW JOINT..
10. TEMPORARILY CLOSE BOTH LANES TO TRAFFIC AND INSTALL NEW NEOPRENE STRIP SEAL OVER FULL BRIDGE WIDTH (ONE PIECE) DURING 96-HOUR CLOSURE FOR OVERLAY.

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DELAWARE WATER GAP
NATIONAL RECREATION AREA

ROUTE 209 OVER BUSHKILL CREEK
CONSTRUCTION SEQUENCE FOR EXPANSION JOINT REPAIR

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REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
NE	PA	PRA-DEWA 14(12)	RI5	RI7

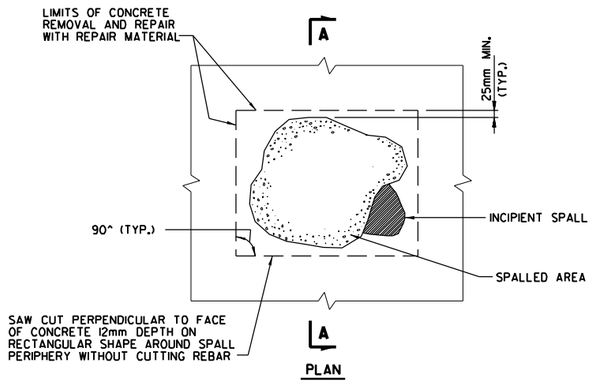
NOTES:

SPALL AND DELAMINATION REPAIR:

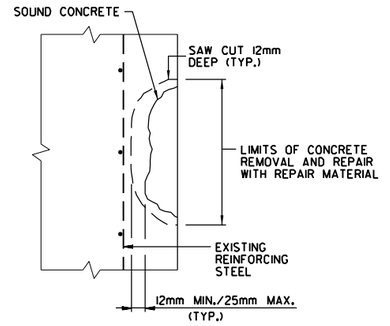
1. THE CONCRETE REPAIR WORK SHALL BE AS SHOWN ON THE PLANS AND AS DESCRIBED IN THE SPECIFICATIONS AND AS DIRECTED BY THE "CO" AND SHALL INCLUDE, BUT NOT BE LIMITED TO THE AREAS SHOWN ON THE PLANS.
2. ALL DETERIORATED, LOOSE AND HONEYCOMBED CONCRETE AS DETERMINED BY THE "CO" SHALL BE REMOVED FROM THE SURFACE AREAS TO BE REPAIRED.
3. SAW-CUT THE EDGES OF THE REPAIR AREA 12 MM DEEP INTO SQUARES OR RECTANGLES. SAW CUTS SHALL BE STOPPED AT THE CORNERS TO PREVENT OVERCUTTING. THE CORNERS AND REMOVAL OF ANY CONCRETE WITHIN THE SAW-CUT AREA MUST BE HAND CHIPPED.
4. IF STEEL IS EXPOSED, CHIP AWAY CONCRETE TO A DEPTH OF AT LEAST 25 MM BEHIND THE REINFORCING STEEL OR TO SOUND CONCRETE, WHICHEVER IS GREATER.
5. IN THE CASE OF A DAMAGED BAR, IT SHALL BE CUT AND MECHANICALLY SPLICED OR REPLACED WITH A NEW BAR OF THE SAME SIZE AND LAPPED OR FIELD-WELDED TO THE ENDS OF THE EXISTING BAR TO THE SATISFACTION OF THE "CO".
6. SPALLS AND DELAMINATIONS SHALL BE REPAIRED USING CLASS D (AE) CONCRETE. THE CONCRETE REPAIR MATERIAL SHALL BE APPLIED IN LIFTS OF NO MORE THAN 50 MM OR AS RECOMMENDED BY THE MANUFACTURER. AFTER THE TOP APPLICATION OF REPAIR MATERIAL, THE MATERIAL SHALL BE HAND TROWELED TO OBTAIN A SMOOTH FINAL SURFACE.
7. THE CONTRACTOR SHALL FOLLOW THE MANUFACTURER'S RECOMMENDATIONS FOR SURFACE PREPARATION, MIXING OF REPAIR MATERIAL, APPLICATIONS, AND TIME LIMITATIONS.
8. IF A CONFLICT EXISTS BETWEEN THESE PROCEDURES AND THE MANUFACTURER'S RECOMMENDATIONS, THE LATTER WILL PREVAIL.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE QUALITY OF THE CONCRETE PLACED IN ANY WEATHER OR ATMOSPHERIC CONDITIONS.
10. ALL CONCRETE REPAIRS TO THE BRIDGE DECK AND APPROACH SLABS SHALL BE PERFORMED PRIOR TO PLACEMENT OF THE NEW OVERLAY.
11. THE ACCEPTED QUANTITY OF DELAMINATION AND SPALL REPAIR SHALL INCLUDE FURNISHING AND PLACING ALL MATERIALS INCLUDING CONCRETE, ABRASIVE GRIT BLAST CLEANING OF REINFORCING BARS, SPLICING AND/OR REPLACEMENT OF EXISTING REINFORCING BARS, REMOVAL AND DISPOSAL OF DETERIORATED CONCRETE, PLACEMENT AND REMOVAL OF FORMINGS, SURFACE PREPARATION AND APPLICATION OF EPOXY RESIN ON EXPOSED REINFORCING BARS.
12. THE COST OF SPALL AND DELAMINATION REPAIR SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.

CRACK REPAIR:

1. CRACKS RANGING IN WIDTH FROM 3 MM TO 6 MM SHALL BE REPAIRED BY EPOXY INJECTION.
2. CRACKS WITH WIDTHS LESS THAN 3 MM SHALL BE SURFACE SEALED.
3. THE EPOXY INJECTION SYSTEM SHALL CONSIST OF A NON-SAG EPOXY BONDER TO SEAL THE SURFACE CRACKS, AND AN INJECTION EPOXY USED UNDER LOW PRESSURE TO PENETRATE AND FILL THE CRACKS, AND BOND THE SURFACES TOGETHER.
4. THE EPOXY INJECTION SYSTEM SHALL BE MARK-8 NON-SAG EPOXY BONDER AND MARK-10 INJECTION EPOXY MANUFACTURED BY POLY-CARB, OR NO. 22 EPOXY PASTE AND NO. 4 EVA-POX MANUFACTURED BY E-POXY INDUSTRIES, INC., OR SIKADUR 31 HI-MOD GEL AND SIKADUR 35 HI-MOD LV INJECTION EPOXY, MANUFACTURED BY SIKA CORPORATION, OR APPROVED EQUAL.
5. THE CONTRACTOR SHALL FURNISH A COPY OF THE COMPREHENSIVE PREPARATION AND APPLICATION INSTRUCTIONS PRIOR TO THE ACTUAL APPLICATION, WHICH HAVE BEEN DEVELOPED BY THE MANUFACTURER FOR USE WITH THE PROPOSED EPOXY BONDER AND EPOXY INJECTION SYSTEM.
6. FOR CRACK REPAIR BY EPOXY INJECTION, THE CONTRACTOR SHALL FOLLOW THE MANUFACTURER'S RECOMMENDATIONS FOR SURFACE PREPARATION, MIXING OF THE COMPONENTS OF THE BONDER EPOXY AND INJECTION EPOXY SYSTEM, SURFACE SEALING AND APPLICATIONS AND ALL OTHER WORKS.
7. SIKAGARD 70IW AS MANUFACTURED BY SIKA CORPORATION OR APPROVED EQUAL SHALL BE USED FOR SURFACE SEALING OF CRACKS.
8. THE "CO" SHALL DESIGNATE THE LOCATION AND LIMITS OF CRACKS TO BE SURFACE SEALED. THE CRACK SURFACE SHALL BE CLEANED BY WIRE BRUSHING AND MADE FREE OF DUST PRIOR TO APPLYING THE SEALANT. THE SEALANT SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
9. IF THERE IS CONFLICT BETWEEN THE PLANS AND THE MANUFACTURER'S RECOMMENDATIONS, THE LATTER WILL PREVAIL.



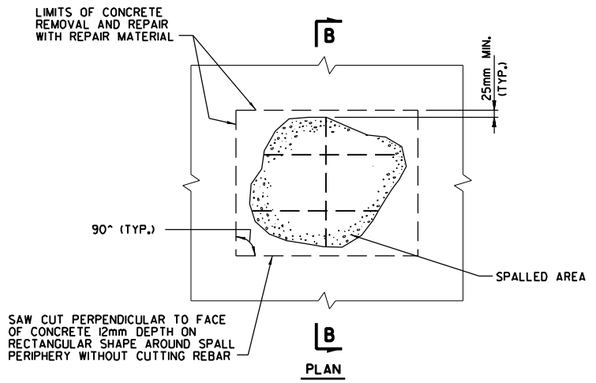
PLAN



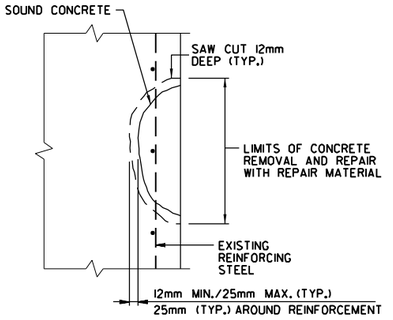
SECTION A-A

NOTE: SOUND REPAIRS AFTER CURING TO ENSURE BOND.

SHALLOW SPALL REPAIR
NOT TO SCALE



PLAN



SECTION B-B

NOTE: SOUND REPAIRS AFTER CURING TO ENSURE BOND.

DEEP SPALL REPAIR
NOT TO SCALE

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NATIONAL RECREATION AREA

ROUTE 209 OVER BUSHKILL CREEK

CRACK AND SPALL REPAIR DETAILS

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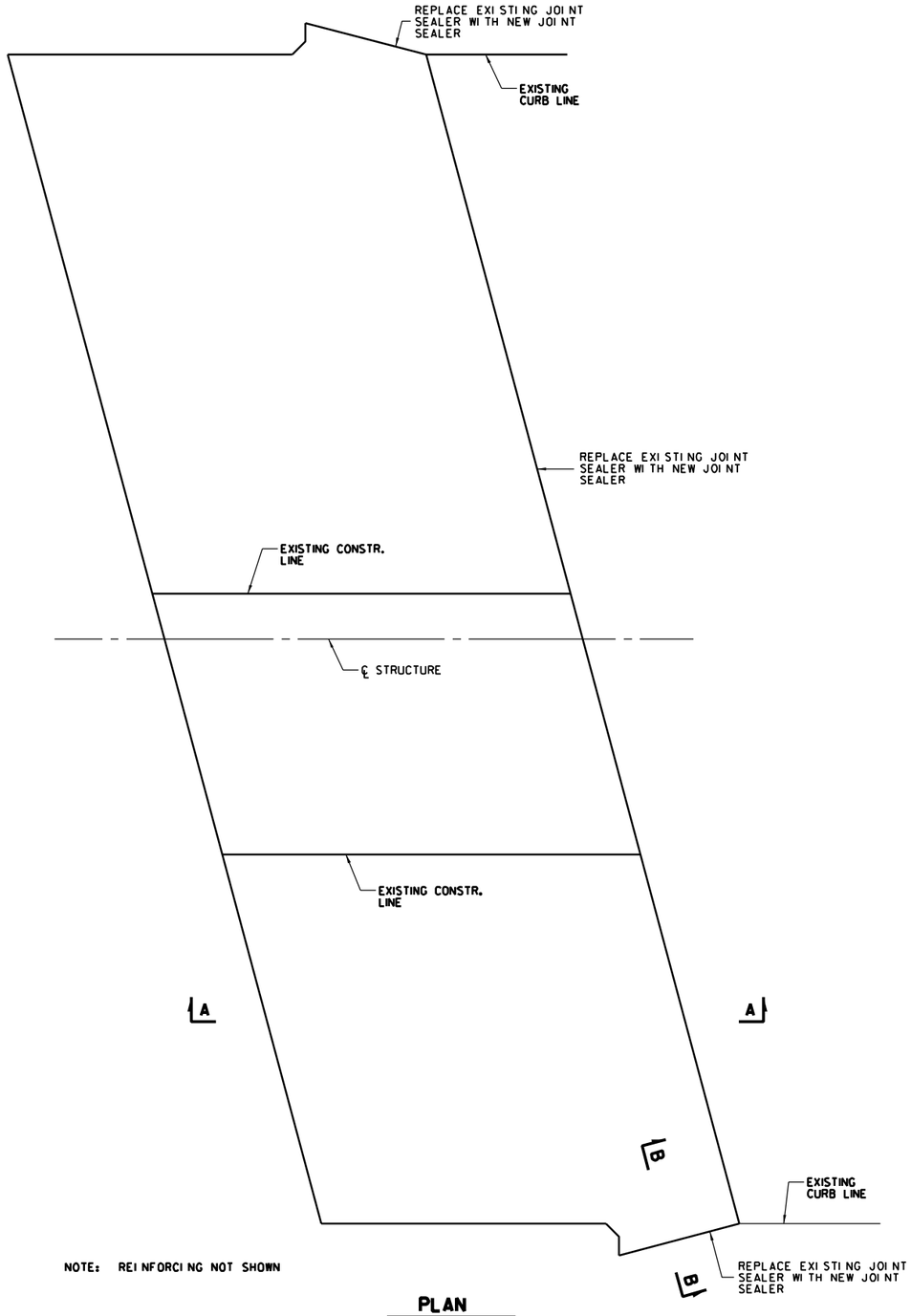
REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
NE	PA	PRA-DEWA 14(12)	R16	R17

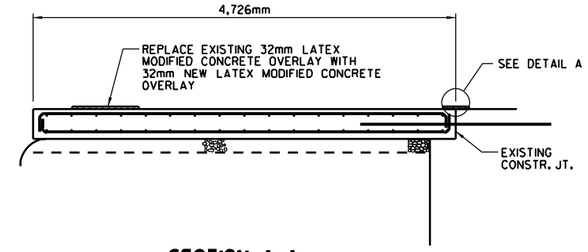


NOTE: REINFORCING NOT SHOWN

PLAN

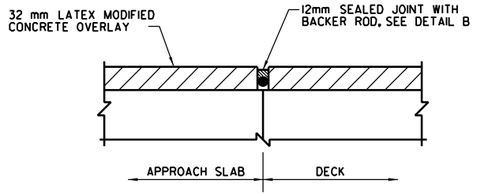
0 0.3 0.6 1.2m

(ABUTMENT 1 APPROACH SLAB SHOWN, ABUTMENT 2 APPROACH SLAB SIMILAR)



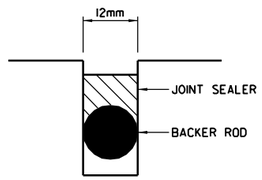
SECTION A-A

0 0.3 0.6 1.2m



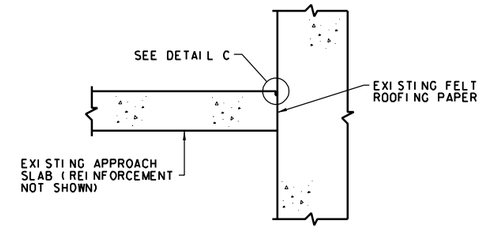
DETAIL A

NOT TO SCALE



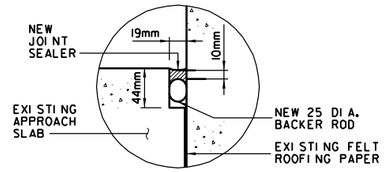
DETAIL B

NOT TO SCALE



SECTION B-B

NOT TO SCALE



DETAIL C

NOT TO SCALE

WORK REQUIRED

1. REMOVE AND REPLACE EXISTING LATEX MODIFIED CONCRETE OVERLAY WITH NEW LATEX MODIFIED CONCRETE OVERLAY.
2. REMOVE AND REPLACE EXISTING JOINT SEALER WITH NEW JOINT SEALER.

NOTES

1. JOINT SEALER MATERIAL SHALL BE SIKAFLEX-1A OR APPROVED EQUAL AND SHALL BE GREY COLOR. IT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
2. FOR ADDITIONAL OVERLAY NOTES, SEE SHEET "SUPERSTRUCTURE REPAIRS".
3. MAINTAIN JOINT SEALANT SHAPE FACTOR OF 1:1 EXCEPT THAT WHEN SILICONE SEALANT IS USED, THE WIDTH TO DEPTH SHAPE FACTOR IS 2:1.

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ROUTE 209 OVER BUSHKILL CREEK

APPROACH SLAB REPAIRS

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REGION	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
NE	PA	PRA-DEWA 14(12)	R17	R17

REINFORCING STEEL SCHEDULE

PIER 1 REINFORCEMENT

BAR MK	SIZE	TYP	PIN SZ	REMARKS	QTY	LENGTH	WEIGHT	A	B	C	D	E	F	G	H	J	K	O
#19	19	STR		DOWELS														
#16PE1	16	STR																
#16PE2	16	17	95															

PIER 2 REINFORCEMENT

BAR MK	SIZE	TYP	PIN SZ	REMARKS	QTY	LENGTH	WEIGHT	A	B	C	D	E	F	G	H	J	K	O
#19	19	STR		DOWELS														
#16PE1	16	STR																
#16PE2	16	STR																
#16PE3	16	17	95															
#16PE4	16	17	95															

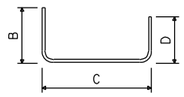
DECK (EXPANSION JOINT REINFORCEMENT) - NEAR PIER 1

BAR MK	SIZE	TYP	PIN SZ	REMARKS	QTY	LENGTH	WEIGHT	A	B	C	D	E	F	G	H	J	K	O
#19SE3	19	STR																
#16SE1	16	STR																
#16SE2	16	STR																

DECK (EXPANSION JOINT REINFORCEMENT) - NEAR PIER 2

BAR MK	SIZE	TYP	PIN SZ	REMARKS	QTY	LENGTH	WEIGHT	A	B	C	D	E	F	G	H	J	K	O
#19SE3	19	STR																
#16SE1	16	STR																
#16SE2	16	STR																

CURB AND PARAPET (SEE DETAILS ON SHEET R12)



TYPE 17

Notes:

Dimensions in bending diagrams are out - to - out of bars.

Reinforcing bar list shall be completed and submitted in accordance with Section 554.03.

The contractor shall use the same respective bar marks for reinforcing steel labeling as shown in the contract plans.

Straight bars have "STR" type designation.

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ROUTE 209 OVER BUSHKILL CREEK

REINFORCING BAR LIST

NO.	DATE	BY	REVISIONS	NO.	DATE	BY	REVISIONS	DESIGNED BY	DRAWN BY	CHECKED BY	SCALE	PROJECT TEAM LEADER	BRIDGE DRAWING	DATE	DRAWING NO.
								NHG	HC	DL	No scale	Hratch Pakhchanianch		Nov. 2007	

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