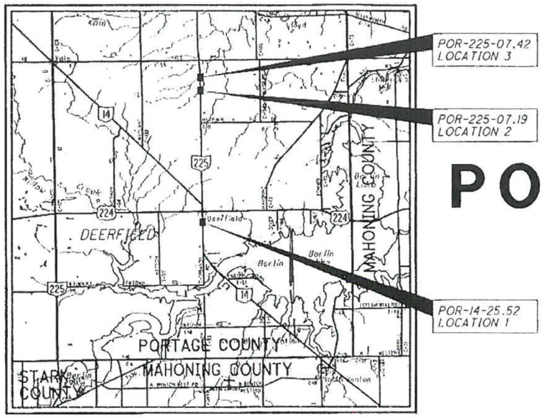

LOCATION MAP

SCALE IN MILES

0 1 2 3 4

PORTION TO BE IMPROVED	
INTERSTATE HIGHWAY	
FEDERAL ROUTES	
STATE ROUTES	
COUNTY & TOWNSHIP ROADS	
OTHER ROADS	

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION

POR-CULVERTS-FY2017

DEERFIELD TOWNSHIP
PORTAGE COUNTY

PROJECT DESCRIPTION

REPLACEMENT OF 2 CULVERTS IN PORTAGE COUNTY: POR-14-25.52 AND POR-225-07.19. ALSO THE REPLACEMENT OF 1 STRUCTURE IN PORTAGE COUNTY: POR-225-07.42.

EARTH DISTURBED AREAS - POR-14-25.52

PROJECT EARTH DISTURBED AREA: 0.2 ACRES
ESTIMATED CONTRACTOR EARTH DISTURBED AREA: 0.25 ACRES
NOTICE OF INTENT EARTH DISTURBED AREA: N/A (NOI NOT REQUIRED)

EARTH DISTURBED AREAS - POR-225-7.19

PROJECT EARTH DISTURBED AREA: 0.32 ACRES
NOTICE OF INTENT EARTH DISTURBED AREA: N/A (NOI NOT REQUIRED)

EARTH DISTURBED AREAS - POR-225-7.42

PROJECT EARTH DISTURBED AREA: 0.31 ACRES
NOTICE OF INTENT EARTH DISTURBED AREA: N/A (NOI NOT REQUIRED)

DESIGN DESIGNATION

	POR-14-25.52	POR-225-7.19 POR-225-7.42
CURRENT ADT (2017)	4200	3600
DESIGN YEAR ADT (2037)	4400	4300
DESIGN HOURLY VOLUME (2037)	440	390
DIRECTIONAL DISTRIBUTION	0.61	0.51
TRUCKS (24 HOUR B&C)	8%	11%
DESIGN SPEED	50 MPH	60 MPH
LEGAL SPEED	45 MPH	55 MPH
DESIGN FUNCTIONAL CLASSIFICATION:		
04 - MINOR ARTERIAL (RURAL) - S.R. 14		
05 - MAJOR COLLECTOR (RURAL) - S.R. 225		
NHS PROJECT	NO	NO

DESIGN EXCEPTIONS

DESIGN FEATURE	APPROVAL DATES	SHEET NUMBERS
POR-14-25.52		
LANE WIDTH	3/17/16	13
POR-225-7.19		
GRADED SHOULDER WIDTH	3/17/16	18
POR-225-7.42		
GRADED SHOULDER WIDTH	3/17/16	32

INDEX OF SHEETS:

LOCATION	LATITUDE	LONGITUDE
1	41°01'22"	81°03'01"
2	41°03'17"	81°03'01"
3	41°03'28"	81°03'01"

2016 SPECIFICATIONS

THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, INCLUDING CHANGES AND SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PROPOSAL SHALL GOVERN THIS IMPROVEMENT.

I HEREBY APPROVE THESE PLANS AND DECLARE THATTHE MAKING OF THIS IMPROVEMENT WILL REQUIRE THE CLOSING TO TRAFFIC OF THE HIGHWAY AND THAT DETOURS WILL BE PROVIDED AS INDICATED ON SHEETS 5-9.

STANDARD CONSTRUCTION DRAWINGS						SUPPLEMENTAL SPECIFICATIONS		SPECIAL PROVISIONS
BP-3.1	7/18/14	MT-97.10	7/18/14			800	1/20/17	WATERWAY
		MT-101.60	7/19/13			832	1/17/14	PERMIT
CB-1.3	1/15/16	MT-105.10	7/19/13			902	12/31/12	CONDITION
								8/4/2016
HW-2.1	1/15/16	TC-41.20	10/18/13					
HW-2.2	1/15/16	TC-42.20	10/18/13					
		TC-52.10	10/18/13					
DM-1.1	1/15/16	TC-52.20	7/15/16					
DM-4.2	7/20/12	TC-81.30	7/18/14					
DM-4.3	1/15/16	TC-65.10	1/17/14					
DM-4.4	1/15/16	TC-65.11	7/15/16					
MGS-1.1	7/19/13							
MGS-2.1	7/19/13							
MGS-2.3	7/18/14							
MGS-4.2	7/19/13							

ENGINEERS SEAL:

SHEETS 12-16

STATE OF OHIO JOSEPH L. MELLMAN E-71911 REGISTERED PROFESSIONAL ENGINEER

SIGNED: Joe Mellman
DATE: 9/19/2016

ENGINEERS SEAL:

SHEETS 1-11 & 17-44

STATE OF OHIO TONY W. GRIESHOP 70196 REGISTERED PROFESSIONAL ENGINEER

SIGNED: Tony Grieshop
DATE: 9/19/2016

APPROVED
DATE 11-10-16 DISTRICT DEPUTY DIRECTOR

APPROVED
DATE DIRECTOR, DEPARTMENT OF TRANSPORTATION

UNDERGROUND UTILITIES

CONTACT BOTH SERVICES TWO WORKING DAYS BEFORE YOU DIG.

OHIO Utilities Protection SERVICE
Call Before You Dig
1-800-362-2764
(Non-members must be called directly)

OIL & GAS PRODUCERS UNDERGROUND PROTECTION SERVICE
1-800-925-0988

PLAN PREPARED BY:
CARPENTER MARTY transportation
6612 SINGLETREE DRIVE COLUMBUS, OH 43229
614.568.2424 WWW.CMTRAN.COM

FEDERAL PROJECT NO. NON-FEDERAL

PID NO. 97482

CONSTRUCTION PROJECT NO.

RAILROAD INVOLVEMENT NONE

POR-CULVERTS-FY2017

CULVERT SUBSUMMARY
POR-225-7.42

REF. NO.	SHEET NO.	LOCATION	STATION FROM	STATION TO	SIDE	202 GUARDRAIL REMOVED	202 FENCE REMOVED	606 GUARDRAIL, TYPE MGS	606 GUARDRAIL, TYPE MGS, 18'-9" LONG-SPAN	606 ANCHOR ASSEMBLY, MGS TYPE E	626 BARRIER REFLECTOR (TYPE A2)	630 REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL	630 REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	670 DITCH EROSION PROTECTION MAT, TYPE A
						FT	FT	FT	FT	EACH	EACH	EACH	EACH	SY
R-1	32	S.R. 225	118+03.80	120+67.20	RT.	263								
R-2	32	S.R. 225	118+10.10	120+72.80	LT.	263								
R-3	32	S.R. 225	118+18.00	119+26.70	LT.		120							
E-1	32	S.R. 225	118+74.85	119+14.08	LT.									30.6
E-2	32	S.R. 225	118+74.85	119+14.08	RT.									30.6
E-3	32	S.R. 225	119+59.92	120+00.00	LT.									31.2
E-4	32	S.R. 225	119+59.92	120+00.00	RT.									31.2
GR-1	32	S.R. 225	117+87.00	120+62.00	RT.			131.25	43.75	2	4			
GR-2	32	S.R. 225	117+99.50	120+87.00	LT.			143.75	43.75	2	4			
S-1	32	S.R. 225	119+25.30		LT.							1	1	
S-2	32	S.R. 225	119+27.50		RT.							1	1	
S-3	32	S.R. 225	119+64.30		RT.							1	1	
S-4	32	S.R. 225	119+64.70		LT.							1	1	
TOTALS CARRIED TO GENERAL SUMMARY						526	120	275	87.5	4	8	4	4	124

CALCULATED MGM
CHECKED TWG

POR-CULVERTS-FY2017

1 / 14

31 / 55

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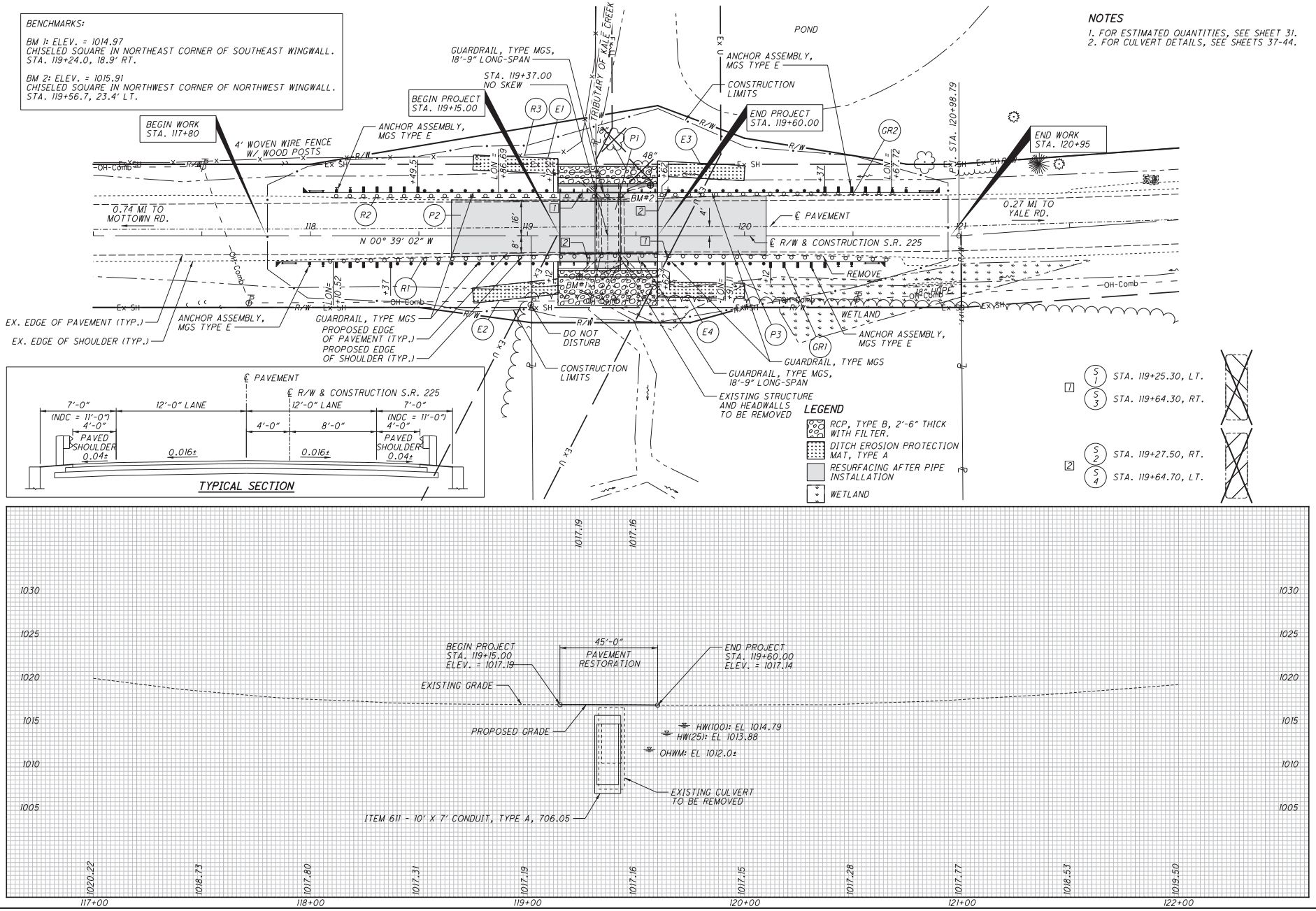

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CALCULATED MGM
CHECKED TWG

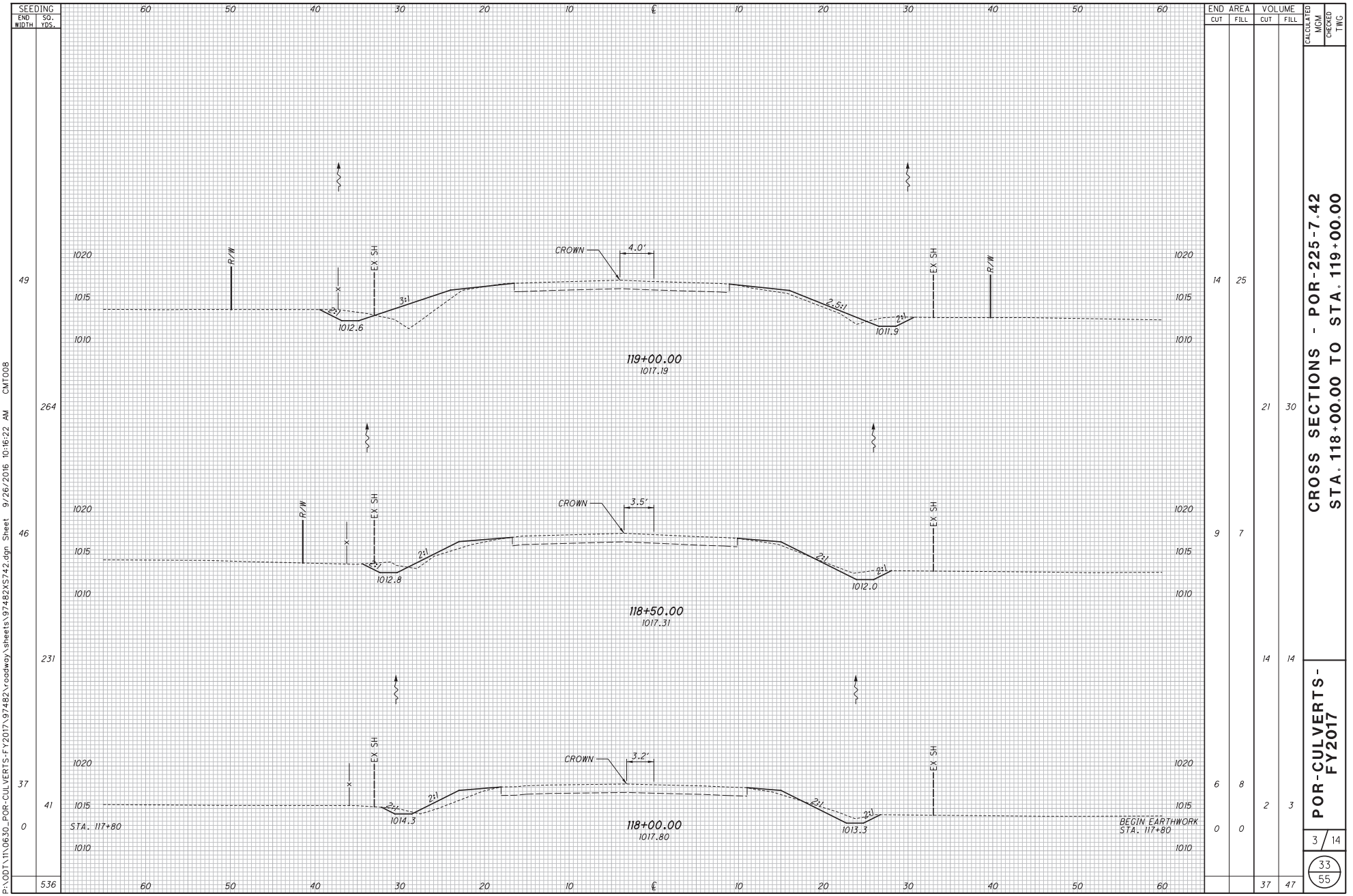
HORIZONTAL SCALE IN FEET 0 10 20 40

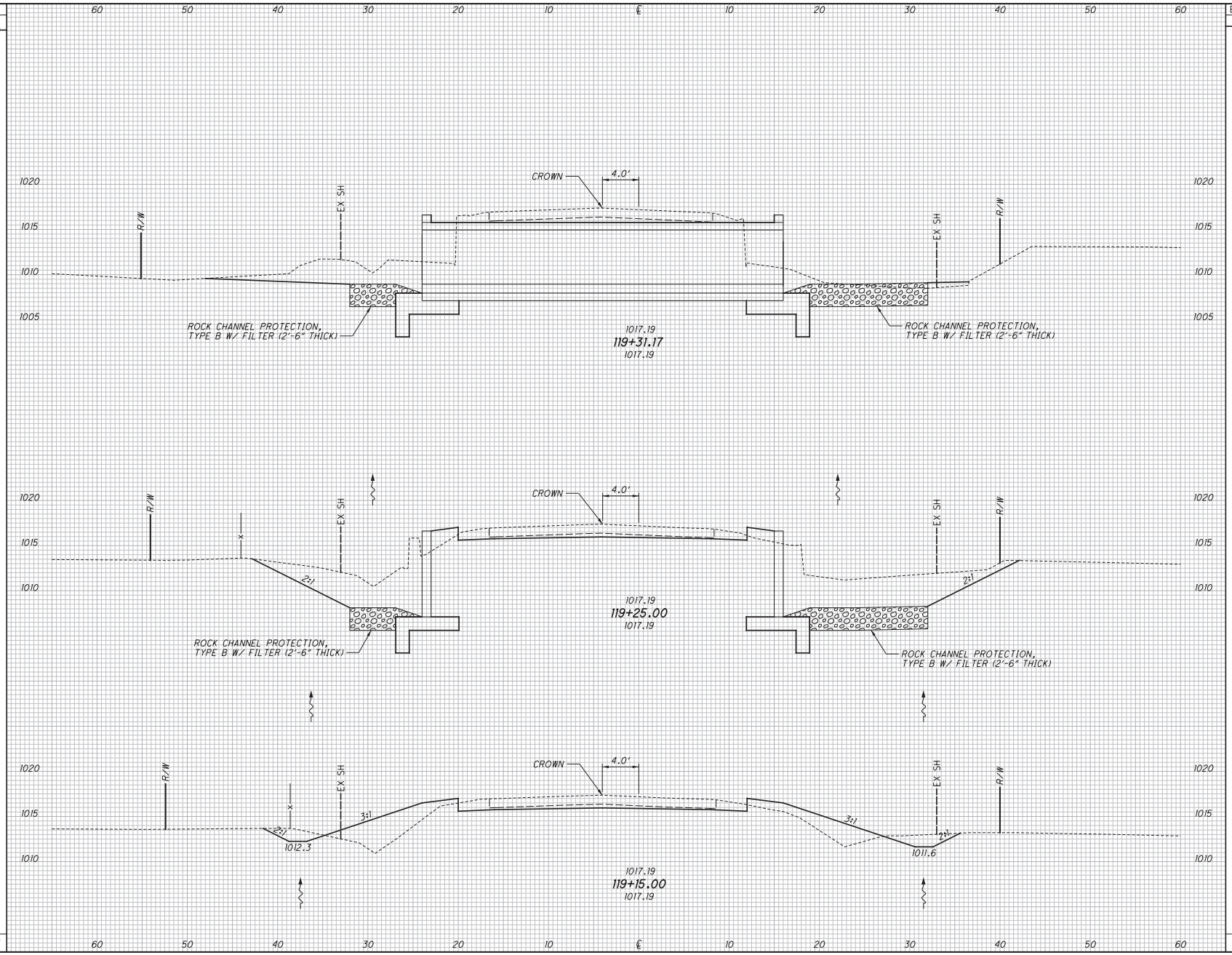
PLAN AND PROFILE
POR-225-7.42

POR-CULVERTS-FY2017

2 / 14

32 / 55




SEEDING
END WIDTH
SQ. YDS.
31
21
31
48
55
87
156
60 50 40 30 20 10 ℄ 10 20 30 40 50 60
1020
1015
1010
1005
R/W
EX SH
CROWN
4.0'
ROCK CHANNEL PROTECTION, TYPE B W/ FILTER (2'-6" THICK)
1017.19
119+31.17
1017.19
2:1
3:1
1012.3
1011.6
119+25.00
119+15.00
END AREA
CUT
FILL
59
2
142
8
20
48
VOLUME
CUT
FILL
23
2
30
11
10
20
63
33
CALCULATED MGM
CHECKED TWG
CROSS SECTIONS - POR-225-7.42
STA. 119+15.00 TO STA. 119+31.17
POR-CULVERTS-FY2017
4 / 14
34
55
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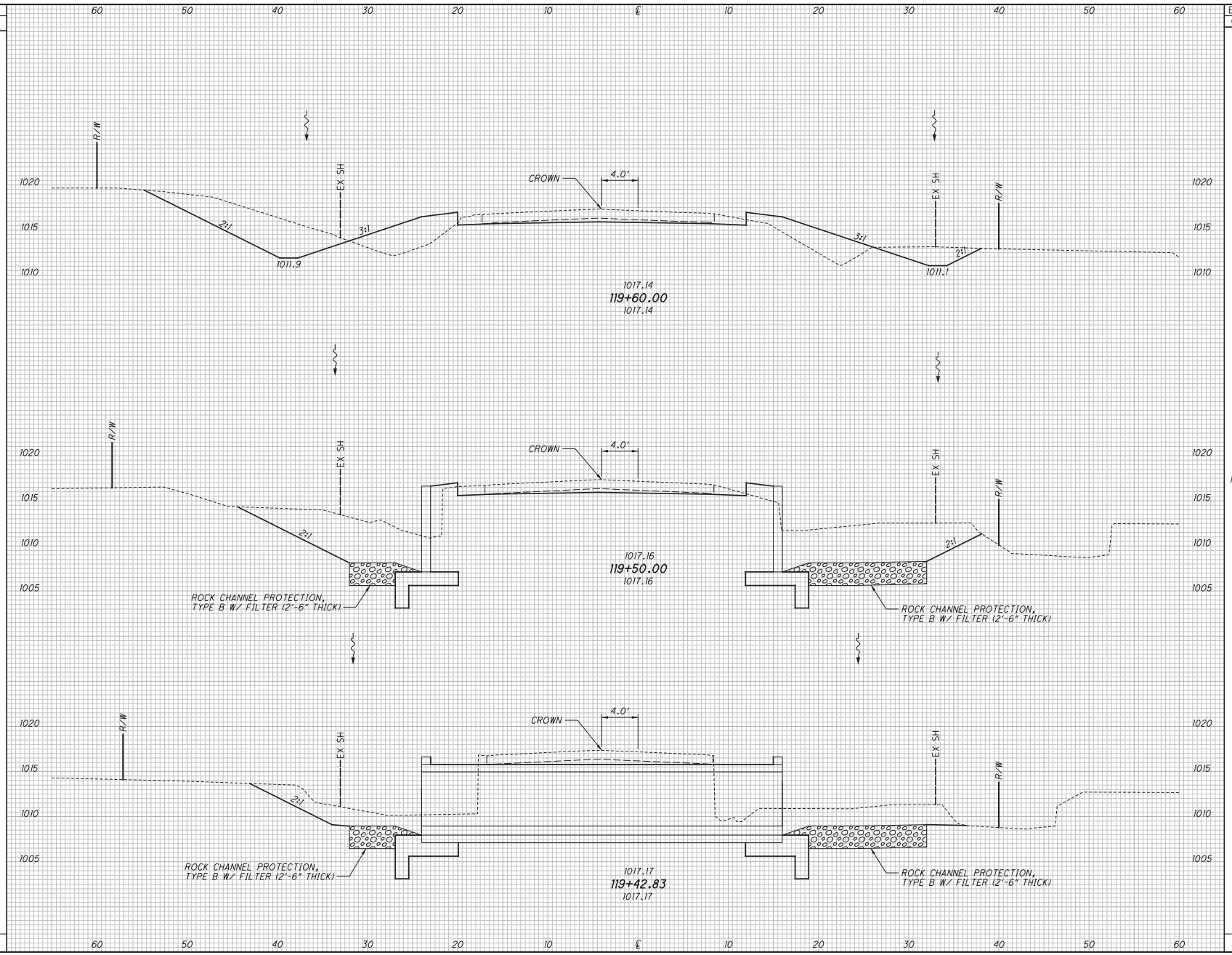

SEEDING END WIDTH	SEEDING SQ. YDS.
71	
	56
29	
	22
26	
	37
	115

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
79	55		
		44	13
157	14		
		32	2
80	0		
		30	1
		106	16

CALCULATED MGM
CHECKED TWG

CROSS SECTIONS - POR-225-7.42
STA. 119+42.83 TO STA. 119+60.00

POR-CULVERTS-FY2017

5 / 14

35 / 55

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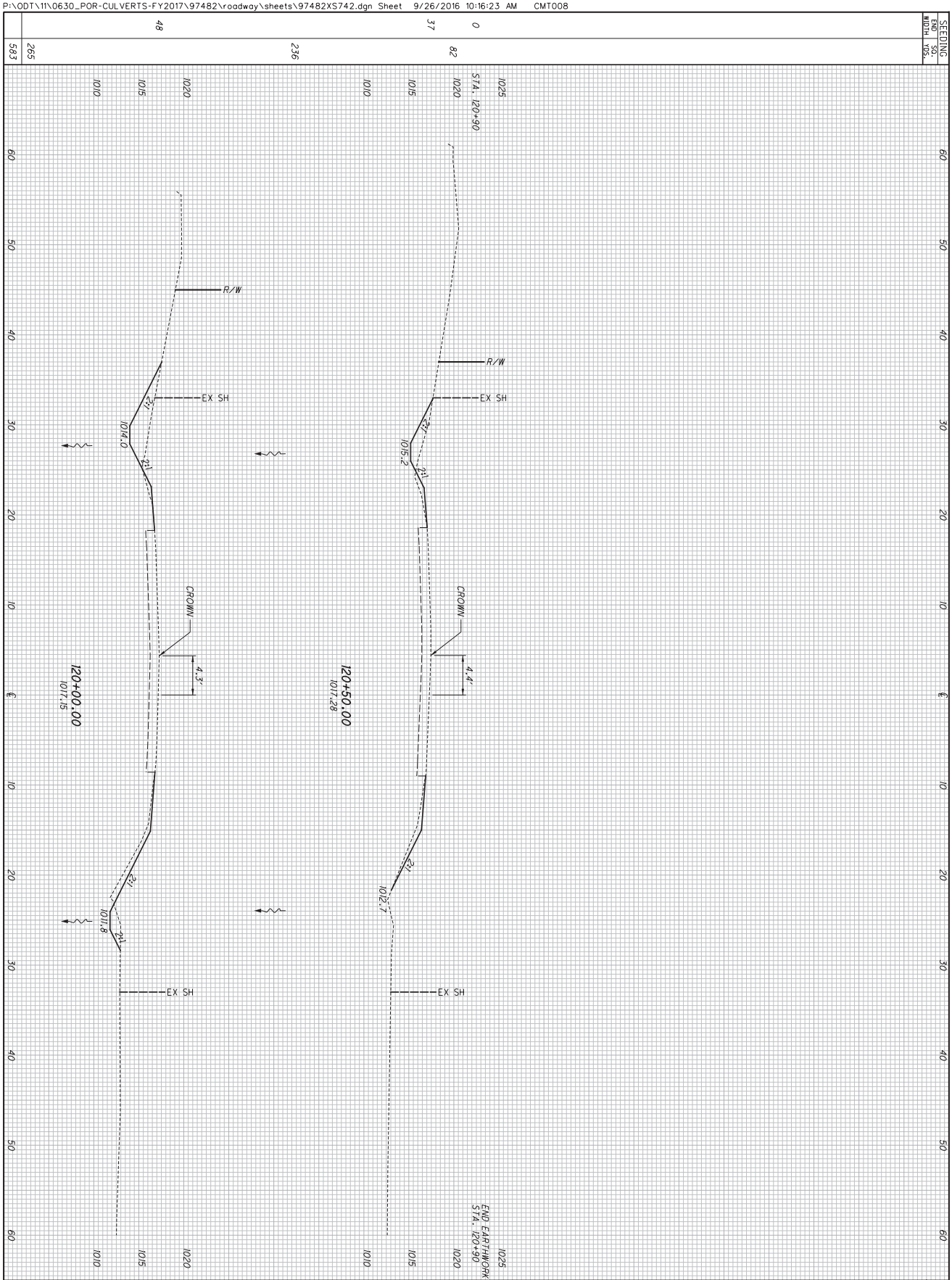
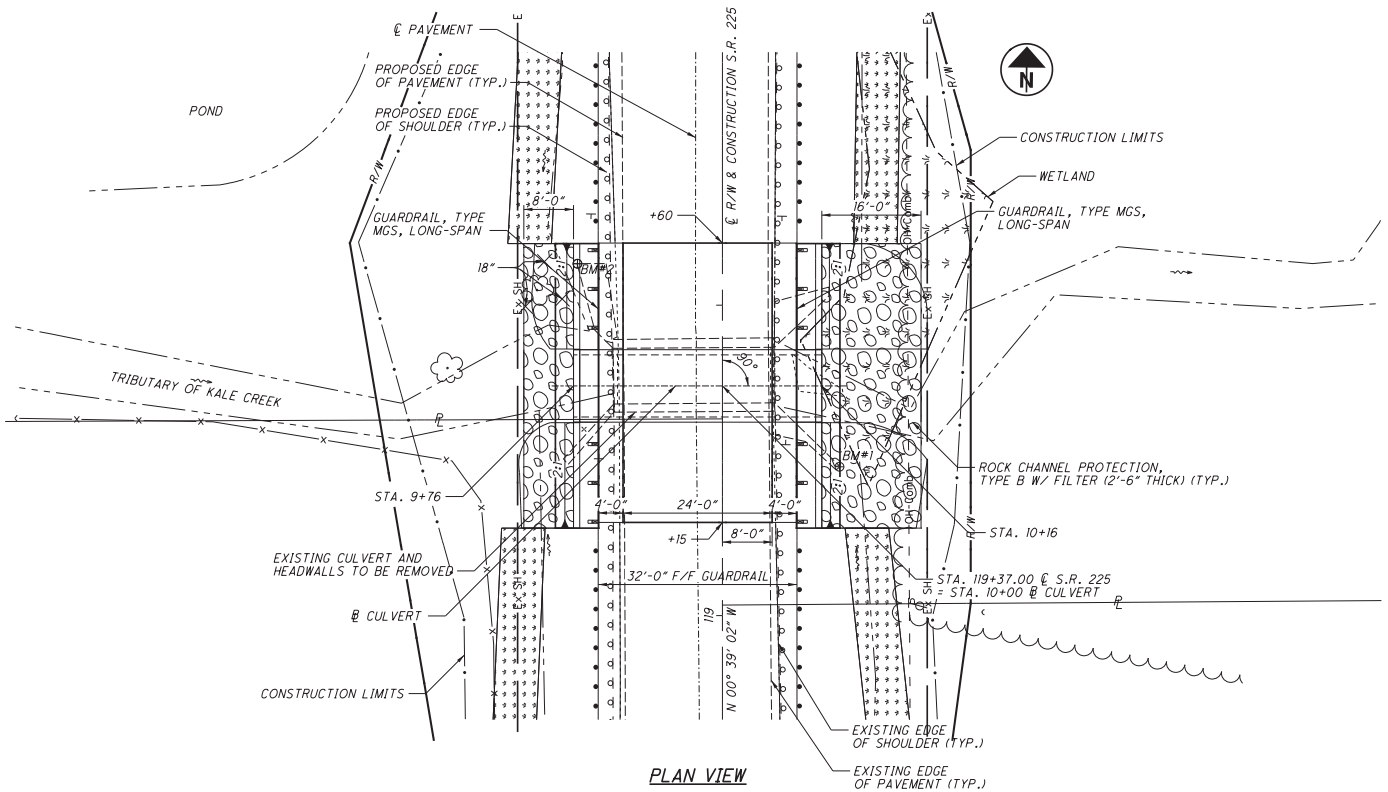


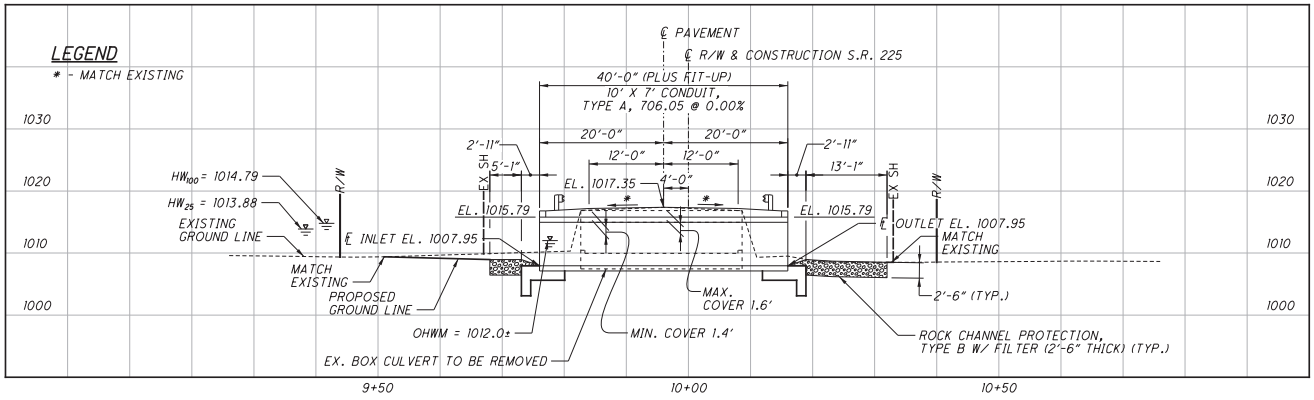
SEEDING		AREA		VOLUME	
END WIDTH	SQ. YDS.	END CUT	END FILL	CUT	FILL
48	265	18	7	72	46
0	37	0	0	22	12
0	82	6	6	5	5
	583			99	63

36/55	6/14	POR-CULVERTS-FY2017	CROSS SECTIONS - POR-225-7.42 STA. 120+00.00 TO STA. 120+50.00

CALCULATED MGM
CHECKED TWG



PLAN VIEW



PROFILE ALONG ℄ CULVERT

BENCHMARK DATA

BM #1 STA. 119+24.0, EL. 1014.97', OFFSET 18.9', RT.
BM #2 STA. 119+56.7, EL. 1015.91', OFFSET 23.4', LT.

FOR ADDITIONAL BENCHMARK INFORMATION, SEE ROADWAY PLAN SHEET 2/14

NOTES

EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.

DESIGN TRAFFIC

2017 ADT = 3600 2017 ADTT = 396
2037 ADT = 4300 2037 ADTT = 473
DIRECTIONAL DISTRIBUTION = 0.51

LEGEND

⊕ BENCHMARK LOCATION

RCP, TYPE B, 2'-6" THICK WITH FILTER.

DITCH EROSION PROTECTION MAT, TYPE A

WETLAND

HYDRAULIC DATA

DRAINAGE AREA = 0.51 SQ. MILES
Q (25) = 198 CFS V (25) = 3.96 FT/S
Q (100) = 270 CFS V (100) = 5.40 FT/S
pH = 7.9 DESIGN SERVICE LIFE = 75 YEARS
ABRASIVE = NO OHWM = 1012.0±

STRUCTURE CLEARS THE 25 YEAR DESIGN HW BY 1.07 FEET.

EXISTING STRUCTURE

TYPE: 108" X 60" CONCRETE BOX CULVERT
LENGTH: 26'-0"±
ROADWAY: 26'-0"± F/F GUARDRAIL
SKEW: NONE
ALIGNMENT: TANGENT
CULVERT FILE NUMBER: 672250130
DISPOSITION: TO BE REMOVED AND REPLACED

PROPOSED STRUCTURE

TYPE: 10' X 7' PRECAST REINFORCED CONCRETE BOX CULVERT
LENGTH: 40'-0"
ROADWAY: 32'-0" F/F GUARDRAIL
LOADING: HL93 WITH FUTURE WEARING SURFACE (FWS) OF 0.060 KIPS/SQ. FT.
SKEW: NONE
APPROACH SLABS: NONE
ALIGNMENT: TANGENT
STRUCTURE FILE NUMBER: 6704205
COORDINATES: LATITUDE 41°03'28" N
LONGITUDE 81°03'01" W

DESIGN AGENCY
CARPENTER MARTY transportation
DESIGNED MGM
DRAWN MGM
REVIEWED GDJ
DATE 10-26-15
CHECKED STK
REVISED
STRUCTURE FILE NUMBER 6704205

STRUCTURE SITE PLAN
BRIDGE NO. POR-225-0742
OVER TRIBUTARY OF KALE CREEK

POR-CULVERTS-FY2017
PID No. 97482

7 / 14
37 / 55

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CLEARING AND GRUBBING (POR-225-0742)

REMOVE ALL TREES AND STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE CONSTRUCTION LIMITS UNDER THE LUMP SUM BID FOR ITEM 201, CLEARING AND GRUBBING. THE FOLLOWING IS AN APPROXIMATE ESTIMATE OF THE NUMBER OF TREES AND STUMPS TO BE REMOVED.

SIZES	NO. TREES	NO. STUMPS	TOTAL
18"	1	1	
48"	1	1	

PAVEMENT RESTORATION FOR PIPE INSTALLATIONS AND/OR REMOVALS

THE FOLLOWING QUANTITIES HAVE BEEN PROVIDED FOR PAVEMENT RESTORATION FOLLOWING INSTALLATION AND/OR REMOVAL OF PIPES.

(P1)

ITEM 202 - PAVEMENT REMOVED	126 SY
ITEM 204 - SUBGRADE COMPACTION	130 SY
ITEM 304 - AGGREGATE BASE, AS PER PLAN (T=6")	21 CY
ITEM 301 - ASPHALT CONCRETE BASE, PG64-22, (T=11")	37 CY
ITEM 301 - ASPHALT CONCRETE BASE, PG64-22, (T=16.5")	23 CY

THE EXISTING PAVEMENT BUILD-UP CONSISTS OF ASPHALT BASE MATERIALS WITH AN ASPHALT SURFACE.

THE ABOVE QUANTITY IS BASED ON PAVEMENT RESTORATION WIDTH FROM STA 119+15.00 TO STA 119+60.00.

PROVIDE ANY MATERIALS USED OUTSIDE THE LIMITS STATED ABOVE AT NO ADDITIONAL COST.

SURVEYING PARAMETERS

USE THE FOLLOWING VERTICAL POSITIONING AND HORIZONTAL POSITIONING PARAMETERS FOR ALL SURVEYING:

VERTICAL POSITIONING

ORTHOMETRIC HEIGHT DATUM: NAVD88
GEOID: GEOID12B

HORIZONTAL POSITIONING

REFERENCE FRAME: NAD83 (2011)
ELLIPSOID: GRS80
MAP PROJECTION: LAMBERT CONFORMAL CONIC
COORDINATE SYSTEM: OHIO STATE PLAN, NORTH ZONE (3401)
ORIGIN OF COORDINATE SYSTEM: 0,0
COMBINED SCALE FACTOR: 0.9998541

UNITS ARE IN U.S. SURVEY FEET. USE THE FOLLOWING CONVERSION FACTOR: 1 METER = 3.280833333 U.S. SURVEY FEET.

EARTHWORK

THE FOLLOWING QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY FOR CULVERT IMPROVEMENTS:

ITEM 203, EXCAVATION	305 CY
ITEM 203, EMBANKMENT	159 CY

RESURFACING AFTER PIPE INSTALLATION

THE FOLLOWING QUANTITIES HAVE BEEN PROVIDED TO RESURFACE THE ROADWAY AFTER THE COMPLETION OF THE CULVERT OR STRUCTURE PLACEMENT. THIS WORK DOES NOT HAVE TO BE COMPLETE DURING THE DETOUR PERIOD.

(P1) (P2) (P3)

STA. 118+65.00 TO STA. 120+10.00

ITEM 254 - PAVEMENT PLANING (T=1¼")	459 SY
ITEM 407 - NON-TRACKING TACK COAT @0.085 GAL/SY	39 GAL.
ITEM 441 - ASPHALT CONCRETE SURFACE COURSE, TYPE 1 (448), AS PER PLAN, PG64-22 (T=1¼")	16 CY

THE ABOVE QUANTITIES ARE BASED ON A RESURFACING THE WIDTH OF THE PAVEMENT AND SHOULDERS.

STRUCTURE IDENTIFICATION SIGN

STRUCTURE IDENTIFICATION SIGNS, I-H25b, WILL BE PLACED ON EACH APPROACH OFF THE RIGHT SHOULDER, FACING TRAFFIC, AND BEHIND GUARDRAIL IF APPLICABLE. A QUANTITY OF ONE SIGN PER APPROACH WILL BE INSTALLED. THE SIGNS WILL HAVE A NON-REFLECTIVE WHITE SHEETING BACKGROUND AND ONLY THE SLM OF THE STRUCTURE.

THE SIGNS WILL BE MOUNTED ON NEW NO. 2 POSTS AND WILL BE INSTALLED AS PER STANDARD CONSTRUCTION DRAWING TC-41.20, MOST CURRENT VERSION. EACH POST WILL BE 7.5' IN LENGTH.

THE FOLLOWING QUANTITIES HAVE BEEN INCLUDED FOR EACH APPROACH:

ITEM 630 - SIGN, FLAT SHEET, 730.02	0.75 SF
ITEM 630 - GROUND MOUNTED SUPPORT, NO. 2 POST	7.5 FT

PAVEMENT MARKINGS

ALL PAVEMENT MARKINGS WILL BE REPLACED TO MATCH THE EXISTING ADJACENT PAVEMENT MARKINGS.

THE FOLLOWING QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY:

642, EDGE LINE, 6"	0.06 MI
642, CENTER LINE	0.03 MI

RAISED PAVEMENT MARKERS REMOVAL

THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY:

ITEM 621, RAISED PAVEMENT MARKER REMOVED	2 EACH

SEEDING AND MULCHING

THE FOLLOWING QUANTITIES ARE PROVIDED TO PROMOTE GROWTH AND CARE OF PERMANENT SEEDE AREAS:

659, SOIL ANALYSIS TEST	2 EACH
659, TOPSOIL	154 CY
659, SEEDING AND MULCHING	1390 SY
659, REPAIR SEEDING AND MULCHING	70 SY
659, COMMERCIAL FERTILIZER	0.19 TON
659, LIME	0.29 ACRES
659, WATER	8 M GAL.

SEEDING AND MULCHING SHALL BE APPLIED TO ALL AREAS OF EXPOSED SOIL BETWEEN THE RIGHT-OF-WAY LINES, AND WITHIN THE CONSTRUCTION LIMITS FOR AREAS OUTSIDE THE RIGHT-OF-WAY LINES COVERED BY WORK AGREEMENT OR SLOPE EASEMENT. QUANTITY CALCULATIONS FOR SEEDING AND MULCHING ARE BASED ON THESE LIMITS.

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DESIGN AGENCY
CARPENTER MARTY Transportation
ENGINEERS & CONSULTANTS

DESIGNED	DRAWN	REVIEWED	DATE
AMR	AMR	TWG	10-26-15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
STK		6704205	

GENERAL NOTES
BRIDGE NO. POR-225-0742
OVER TRIBUTARY OF KALE CREEK

POR-CULVERTS-FY2017
PID No. 97482

DESIGN SPECIFICATIONS

THIS STRUCTURE CONFORMS TO THE "LRFD BRIDGE DESIGN SPECIFICATIONS" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2014, INCLUDING THE INTERIM SPECIFICATIONS AND THE ODOT BRIDGE DESIGN MANUAL, 2007.

DESIGN DATA: THE FOLLOWING DESIGN DATA IS ASSUMED:

INTERNAL ANGLE OF FRICTION (Φ) = 30 DEGREES
COEFFICIENT OF FRICTION (μ) = 0.30
UNIT WEIGHT OF SOIL = 120 PCF
UNIT WEIGHT OF CONCRETE = 150 PCF
SLOPE OF BACKFILL = 2:1
MAXIMUM FOUNDATION BEARING PRESSURE = 2000 PSF

CONCRETE CLASS QC1 - COMPRESSIVE STRENGTH 4.0 KSI (FOOTING, WINGWALL AND FORESLOPE WALL)

REINFORCING STEEL - MINIMUM YIELD STRENGTH 60 KSI

DESIGN LOADING

HL-93 WITH FUTURE WEARING SURFACE (FWS) OF 0.060 KIPS/FT²

FORESLOPE WALL ANCHOR DOWELS

ANCHOR PER CMS 510 WITH NONSHRINK, NONMETALLIC GROUT CONFORMING TO CMS 705.20 AND TO A DEPTH OF 7". PAYMENT FOR DOWEL HOLES, GROUT AND INSTALLATION SHALL BE INCLUDED WITH ITEM 511.

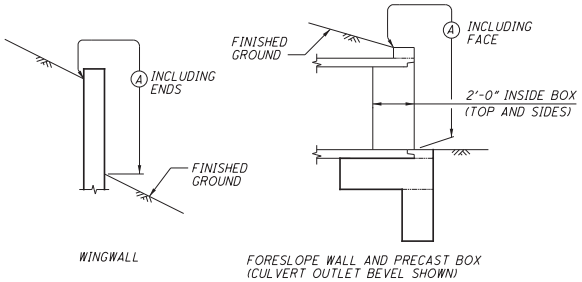
RESIN BONDING, THREADED INSERTS OR NONPROTRUDING MECHANICAL CONNECTORS CAST INTO THE CULVERT BY THE MANUFACTURER MAY BE USED AS AN ALTERNATIVE TO USING NONSHRINK, NONMETALLIC GROUT, PROVIDED THEY CAN RESIST A SERVICE PULL-OUT STRENGTH OF 12 KIPS AND MAINTAIN A MINIMUM COVER OF 3 INCHES AT THE BOTTOM OF THE CULVERT SLAB. MECHANICAL CONNECTORS MUST PROVIDE AN "L-SHAPED" BAR INSIDE THE CULVERT WITH A MINIMUM HORIZONTAL LENGTH OF 12 INCHES. PAYMENT FOR INSERTS OR MECHANICAL CONNECTORS SHALL BE INCLUDED WITH ITEM 611, 10' X 7' CONDUIT, TYPE A, 706.05.

PREFORMED EXPANSION JOINT FILLER

PREFORMED EXPANSION JOINT FILLER (PEJF) CONFORMING TO CMS 705.03, 1 INCH THICK, SHALL BE PLACED ABOVE THE FOOTING BETWEEN THE SIDES OF THE BOX CULVERT AND THE ENDS OF THE WINGWALLS. PAYMENT FOR MATERIALS AND INSTALLATION SHALL BE INCLUDED WITH ITEM 516, 1" PREFORMED EXPANSION JOINT FILLER.

SEALING OF FORESLOPE WALL AND WINGWALLS

ALL EXPOSED FORESLOPE WALL AND WINGWALL CONCRETE SHALL BE SEALED WITH EPOXY-URETHANE SEALER. THE LIMITS SHALL BE AS SHOWN IN THE DIAGRAMS BELOW. PAYMENT FOR THE EPOXY-URETHANE SEALER SHALL BE PER ITEM 512, SEALING OF CONCRETE SURFACES (EPOXY-URETHANE).



Ⓐ - SEAL ENTIRE CONCRETE SURFACE AREA

ITEM 511 WINGWALLS OR HEADWALLS FOR 611 ITEMS

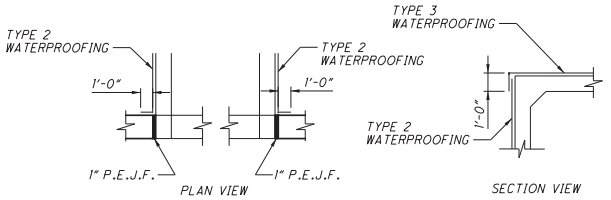
FOR ITEM 706.05 WITH A CAST-IN-PLACE WINGWALL OR HEADWALL A PRECAST ALTERNATIVE MAY BE FURNISHED PER 611.03. THE PRECAST ALTERNATIVE WILL MEET THE CAST-IN-PLACE STRUCTURAL DESIGN LOADINGS, DESIGN HEIGHT, AND DESIGN LENGTH DIMENSIONS.

FULL COMPENSATION FOR THE PRECAST WINGWALL OR HEADWALL IS THE NUMBER OF CUBIC YARDS OF ITEM 511 AND POUNDS OF ITEM 509 FOR THE CORRESPONDING CAST-IN-PLACE STRUCTURE.

WATERPROOFING

TYPE 2 WATERPROOFING, PER CMS 512.08 AND 711.25, SHALL EXTEND VERTICALLY DOWN THE ENTIRE SIDES OF THE PRECAST CULVERT SECTION FOR ALL PORTIONS OF THE CULVERT WHICH SHALL BE IN CONTACT WITH THE BACKFILL. PAYMENT FOR THE MEMBRANE WATERPROOFING SHALL BE AT THE CONTRACT PRICE BID PER SQUARE YARD FOR ITEM 512, TYPE 2 WATERPROOFING.

TYPE 3 WATERPROOFING, PER CMS 512.08 AND 711.29 SHALL BE APPLIED TO THE ENTIRE TOP SURFACE OF THE PRECAST CULVERT SECTIONS AND SHALL EXTEND ONE FOOT VERTICALLY DOWN THE SIDES FOR ALL PORTIONS OF THE CULVERT WHICH SHALL BE IN CONTACT WITH THE BACKFILL. PAYMENT FOR THE MEMBRANE WATERPROOFING SHALL BE AT THE CONTRACT PRICE BID PER SQUARE YARD FOR ITEM 512, TYPE 3 WATERPROOFING.



POROUS BACKFILL

POROUS BACKFILL WITH GEOTEXTILE FABRIC 1'-6" THICK SHALL BE PLACED BEHIND THE WINGWALLS ONLY AND SHALL EXTEND TO 12" BELOW THE EMBANKMENT SURFACE. GEOTEXTILE FABRIC SHALL BE PLACED BETWEEN THE POROUS BACKFILL AND REPLACED EXCAVATION ADJACENT TO THE STRUCTURE. IT SHALL TURN UNDER THE BOTTOM OF THE POROUS BACKFILL AND RETURN 6" ABOVE THE TOP ELEVATION OF THE WEEPHOLE. WEEPHOLES SHALL BE PLACED 6" TO 12" ABOVE THE NORMAL WATER ELEVATION OR GROUND LINE AND SHALL HAVE A MAXIMUM SPACING OF 10'-0". A MINIMUM OF ONE WEEPHOLE SHALL BE PROVIDED PER WINGWALL.

UNSUITABLE SOILS

THE FOLLOWING ITEMS AND QUANTITIES ARE TO BE USED AS DIRECTED BY THE ENGINEER TO ADDRESS UNSUITABLE SOILS ENCOUNTERED IN THE AREA UNDER THE PROPOSED BOX CULVERT.

ITEM 203 - EXCAVATION, 50 CY
ITEM 203 - GRANULAR MATERIAL, TYPE C (703.16), 50 CY
ITEM 204 - GEOTEXTILE FABRIC, TYPE D, 100 SY

DESIGN AGENCY
CARPENTER MARTY Transportation
ENGINEERS & CONSULTANTS

DESIGNED	DRAWN	REVIEWED	DATE
AMR	AMR	GDJ	10-26-15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
STK		6704205	

GENERAL NOTES
BRIDGE NO. POR-225-0742
OVER TRIBUTARY OF KALE CREEK

POR-CULVERTS-FY2017
PID No. 97482

ESTIMATED QUANTITIES				DESIGNED: AMR DATE: 06/28/16	CHECKED: STK DATE: 06/28/16
ITEM	EXTENSION	TOTAL	UNIT	DESCRIPTION	
202	11000	-	LS	STRUCTURE REMOVED	
203	10000	50	CY	EXCAVATION	
203	35120	50	CY	GRANULAR MATERIAL, TYPE C	
204	50000	100	SY	GEOTEXTILE FABRIC	
503	11100	-	LS	COFFERDAMS AND EXCAVATION BRACING	
509	10000	5908	LB	EPOXY COATED REINFORCING STEEL	
511	46210	76	CY	CLASS QC1 CONCRETE	
512	10100	67	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	
512	33000	78	SY	TYPE 2 WATERPROOFING	
512	33010	58	SY	TYPE 3 WATERPROOFING	
516	13600	39	SF	1" PREFORMED EXPANSION JOINT FILLER	
518	21200	12	CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC	
601	32100	102	CY	ROCK CHANNEL PROTECTION, TYPE B WITH FILTER	
611	95400	40	FT	10' X 7' CONDUIT, TYPE A, 706.05, DESIGN COVER <= 2'	

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DESIGNED AMR
DRAWN AMR
REVIEWED GDJ
DATE 07-06-16
CHECKED STK
REVISED
STRUCTURE FILE NUMBER 6704205

DESIGN AGENCY
CARPENTER MARTY Transportation
ENGINEERS & CONSULTANTS

ESTIMATED QUANTITIES
BRIDGE NO. POR-225-0742
OVER TRIBUTARY OF KALE CREEK

POR-CULVERTS-FY2017
PID No. 97482

10 / 14

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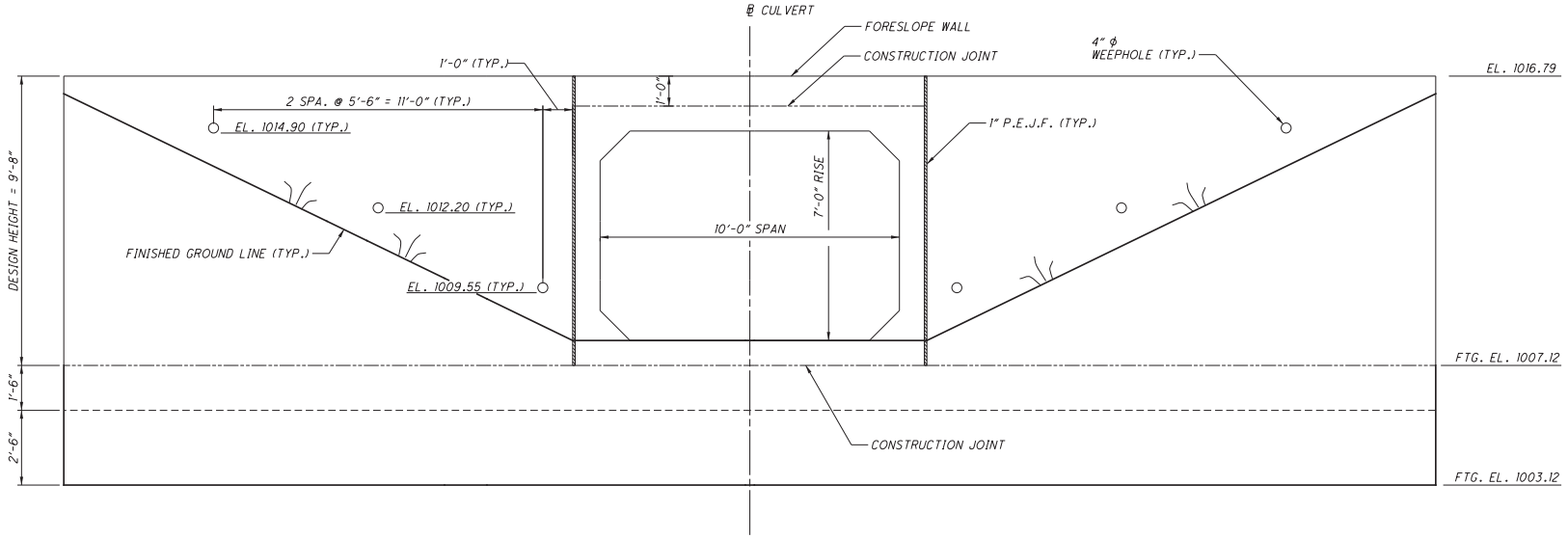

ELEVATION

TYPICAL FOR INLET & OUTLET

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DESIGN AGENCY
CARPENTER MARTY Transportation
ENGINEERS & CONSULTANTS

DESIGNED	DRAWN	REVIEWED	DATE
AMR	AMR	GDJ	10-26-15
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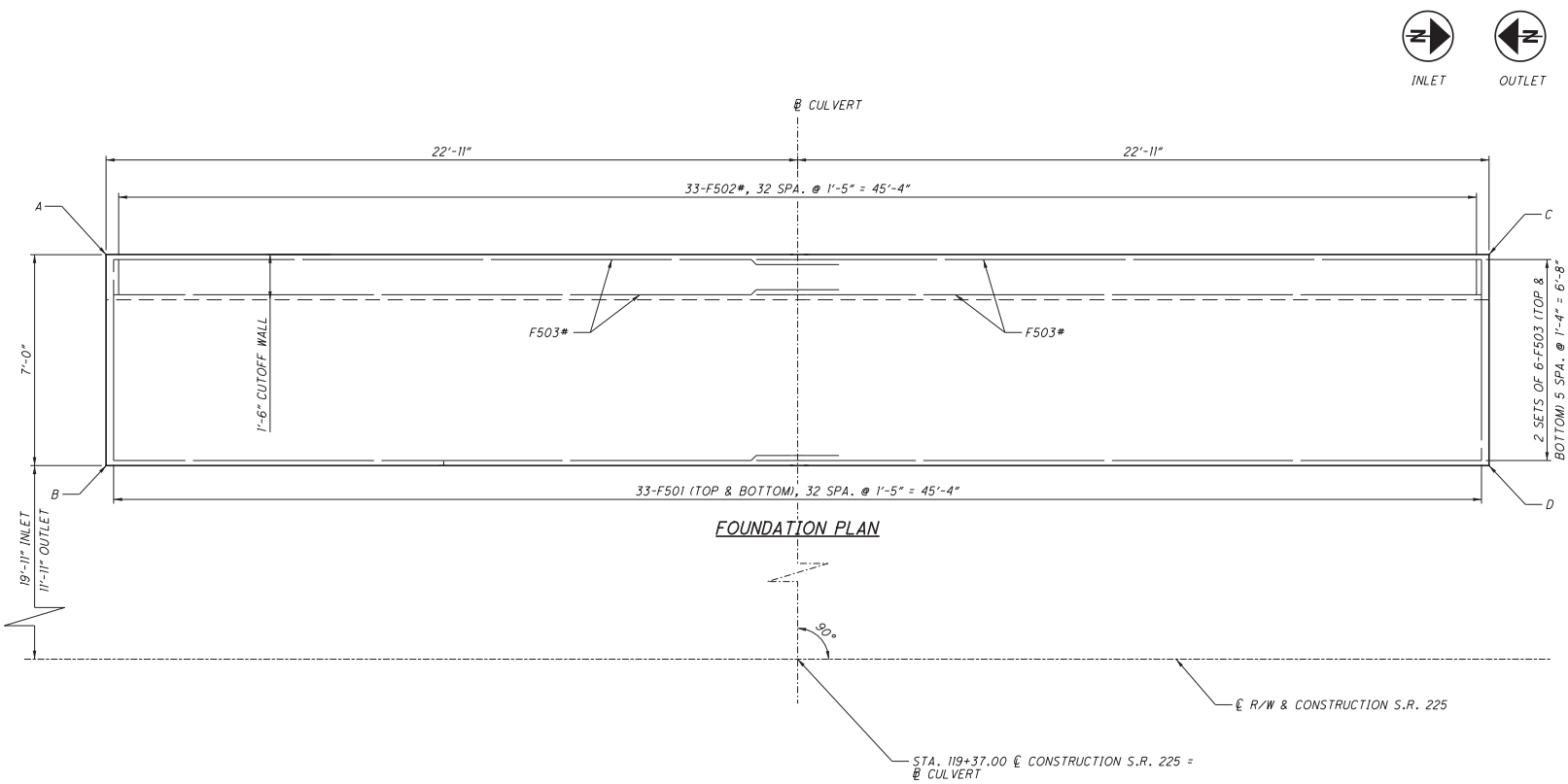
STK		6704205	

CULVERT ELEVATION
BRIDGE NO. POR-225-0742
OVER TRIBUTARY OF KALE CREEK

POR-CULVERTS-FY2017
PID No. 97482

11 / 14

41 / 55



FOUNDATION PLAN

INLET		
POINT	STATION	OFFSET FROM ℄ S.R. 225
A	119+14.09	26.92' LT.
B	119+14.09	19.92' LT.
C	119+59.92	26.92' LT.
D	119+59.92	19.92' LT.

OUTLET		
POINT	STATION	OFFSET FROM ℄ S.R. 225
A	119+59.92	18.92' RT.
B	119+59.92	11.92' RT.
C	119+14.09	18.92' RT.
D	119+14.09	11.92' RT.

LEGEND

- PLACED IN CUTOFF WALL

NOTES

1. SEE SHEET 13/14 FOR ADDITIONAL FOOTING DETAILS.
2. MINIMUM LAP LENGTH #5 BAR = 33 INCHES

DESIGN AGENCY
CARPENTER MARTY Transportation
ENGINEERS & CONSULTANTS

DESIGNED	DRAWN	REVIEWED	DATE
AMR	AMR	GDJ	10-26-15
CHECKED	REVISED	STRUCTURE FILE NUMBER	
STK		6704205	

FOUNDATION PLAN
BRIDGE NO. POR-225-0742
OVER TRIBUTARY OF KALE CREEK

POR-CULVERTS-FY2017
PID No. 97482

12 / 14

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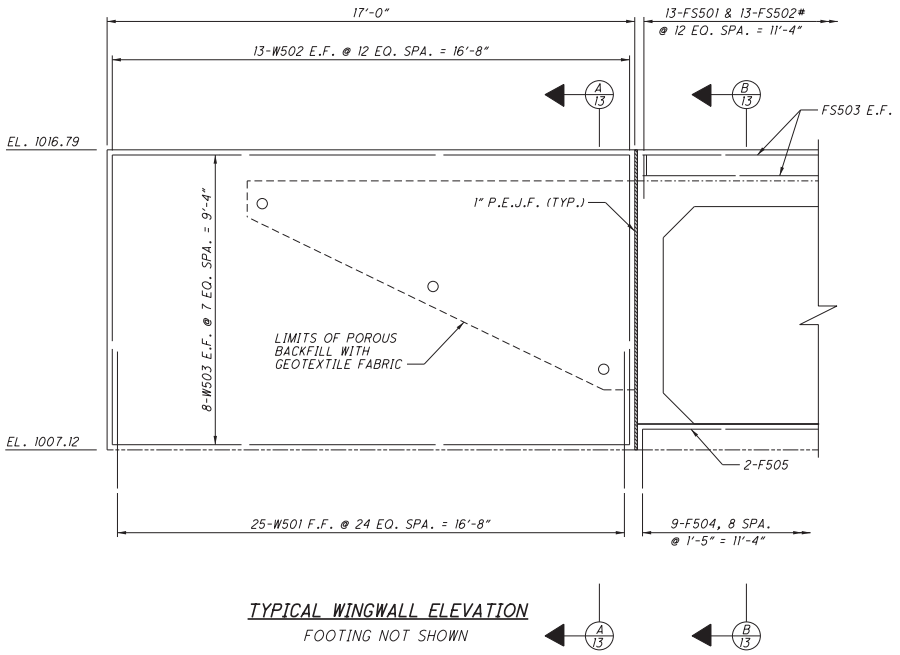
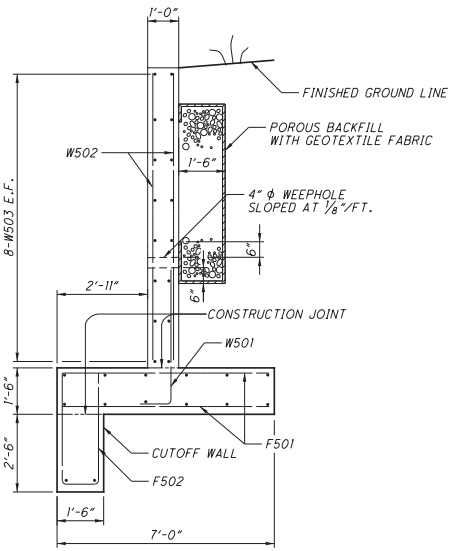


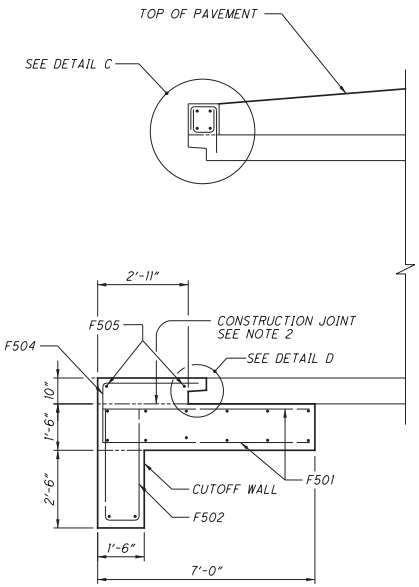
TYPICAL WINGWALL ELEVATION

FOOTING NOT SHOWN



A/13 SECTION

BARS NOT LABELED ARE F503



B/13 SECTION

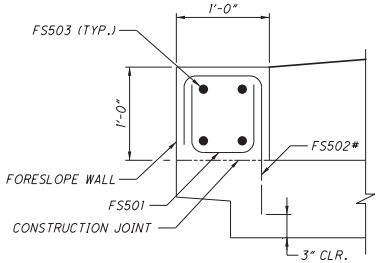
BARS NOT LABELED ARE F503

NOTES

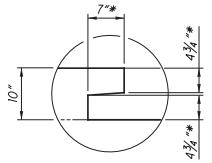
1. ADJUST HORIZONTAL REINFORCEMENT TO AVOID INTERFRENCE WITH WEEPHOLES.
2. THE INTERFACE BETWEEN THE TOP OF FOOTING AND THE BASE OF THE WINGWALL STEM SHALL BE INTENTIONALLY ROUGHENED TO A FULL AMPLITUDE OF APPROXIMATELY 1/4" BY MEANS OF A SERRATED TROWEL.

LEGEND

E.F. - EACH FACE
F.F. - FAR FACE
* - VERIFY WITH MANUFACTURER PRIOR TO CONSTRUCTION
# - BAR TO BE DOWELED INTO PRECAST STRUCTURE



DETAIL C



DETAIL D

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DESIGN AGENCY CARPENTER MARTY Transportation

DESIGNED	DRAWN	REVIEWED	DATE
AMR	AMR	GDJ	10-26-15
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STK		6704205	

WINGWALL DETAILS
BRIDGE NO. POR-225-0742
OVER TRIBUTARY OF KALE CREEK

POR-CULVERTS-FY2017
PID No. 97482

13 / 14

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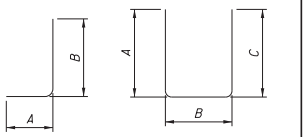
MARK	NUMBER	LENGTH	WEIGHT	TYPE	DIMENSIONS	
					A	B
WINGWALLS						
W501	100	5'-3"	548	1	1'-0"	4'-5"
W502	104	9'-4"	1013	STR		
W503	64	16'-8"	1113	STR		
TOTAL			2674			

MARK	NUMBER	LENGTH	WEIGHT	TYPE	DIMENSIONS		
					A	B	C
FOOTINGS AND CUTOFF WALLS							
F501	132	6'-8"	918	STR			
F502	66	8'-1"	557	2	3'-7"	1'-2"	3'-7"
F503	56	24'-1"	1407	STR			
F504	18	4'-11"	93	1	2'-0"	3'-1"	
F505	4	11'-4"	48	STR			
TOTAL			3023				

MARK	NUMBER	LENGTH	WEIGHT	TYPE	DIMENSIONS		
					A	B	C
FORESLOPE WALLS							
FS501	26	1'-9"	48	2	8"	8"	8"
FS502	26	2'-6"	68	2	8"	8"	1'-5"
FS503	8	11'-4"	95	STR			
TOTAL			211				

BENDING DIAGRAM



NOTES

1. THE BAR SIZE NUMBER IS SPECIFIED ON THE PLANS IN THE BAR MARK COLUMN. THE FIRST DIGIT WHERE THREE DIGITS ARE USED, AND THE FIRST TWO DIGITS WHERE FOUR DIGITS ARE USED, INDICATES THE BAR SIZE NUMBER. FOR EXAMPLE, W501 IS A NO. 5 BAR. BAR DIMENSIONS ARE OUT TO OUT UNLESS OTHERWISE INDICATED.

2. ALL REINFORCING STEEL TO BE EPOXY COATED.

DESIGN AGENCY CARPENTER MARTY Transportation

DESIGNED	DRAWN	REVIEWED	DATE
AMR	AMR	GDJ	10-26-15
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STK		6704205	

REINFORCING STEEL LIST

BRIDGE NO. POR-225-0742
OVER TRIBUTARY OF KALE CREEK

POR-CULVERTS-FY2017
PID No. 97482