

STATE OF OHIO  
DEPARTMENT OF TRANSPORTATION

PROJECT DESCRIPTION

REHABILITATION OF SEVERAL CULVERTS IN BUTLER COUNTY. REPLACEMENT OF CULVERT AT PRE-122-07.24.

EARTH DISTURBED AREAS

PROJECT EARTH DISTURBED AREA: \* ACRES  
ESTIMATED CONTRACTOR EARTH DISTURBED AREA: \* ACRES  
NOTICE OF INTENT EARTH DISTURBED AREA: \* ACRES  
\*SEE INDIVIDUAL CULVERT SHEETS.

2019 SPECIFICATIONS

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

I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL NOT REQUIRE THE CLOSING TO TRAFFIC OF THE HIGHWAY EXCEPT AS NOTED ON SHEET 6, AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FORTH ON THE PLANS AND ESTIMATES.

APPROVED Tamy K Campbell  
DATE 7-21-2022 DISTRICT DEPUTY DIRECTOR

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_ DIRECTOR, DEPARTMENT OF TRANSPORTATION

**BUT CULVERTS FY 23**

**WASHINGTON TOWNSHIP IN PREBLE COUNTY  
MORGAN, MILFORD, LIBERTY, FAIRFIELD, AND  
HANOVER TOWNSHIPS IN BUTLER COUNTY**

INDEX OF SHEETS:

TITLE SHEET	1
SCHEMATIC PLAN	2
TYPICAL SECTION	3
GENERAL NOTES	4
MAINTENANCE OF TRAFFIC NOTES	5
DETOUR PLAN	6
GENERAL SUMMARY	7-8
PAVEMENT CALCULATIONS	9
PRE-122-07.24	
CULVERT PLAN AND PROFILE	10
CROSS-SECTIONS	11-12
CULVERT DETAILS	13-16
SHEET NOT USED	17
BUT-744-00.57	
PLAN AND DETAILS	18
BUT-4-13.69	
PLAN AND DETAILS	19
BUT-4-11.61	
PLAN AND DETAILS	20
BUT-27-12.20	
PLAN AND DETAILS	21
BUT-27-11.69	
PLAN AND DETAILS	22
BUT-127-17.12	
PLAN AND DETAILS	23
RIGHT OF WAY PLANS	24-27

SEE SHEET 2 FOR LOCATION MAPS

LOCATION MAP

DESIGN DESIGNATION

\* FOR DESIGN DESIGNATION, SEE SHEET 2.

DESIGN EXCEPTIONS

DESIGN FEATURE	APPROVAL DATES	SHEET NUMBER
PRE-122-07.24		
LANE WIDTH	3/30/2022	3
SHOULDER WIDTH	3/30/2022	3
PAVEMENT CROSS SLOPE	3/30/2022	3

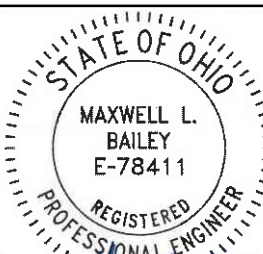
**UNDERGROUND UTILITIES**  
Contact Two Working Days  
Before You Dig



OHIO811.org  
Before You Dig

OHIO811, 8-1-1, or 1-800-362-2764  
(Non-members must be called directly)

PLAN PREPARED BY:  
OHIO DEPARTMENT OF TRANSPORTATION  
DISTRICT 8 - ENGINEERING

ENGINEERS SEAL:	STANDARD CONSTRUCTION DRAWINGS				SUPPLEMENTAL SPECIFICATIONS		SPECIAL PROVISIONS	
	NO.	DATE	NO.	DATE	NO.	DATE	NO.	DATE
 SIGNED: <u>Maxwell L. Bailey</u> DATE: <u>7/21/2022</u>	DM-1.1	7/17/20	MT-105.10	1/17/20				
	DM-4.3	1/15/16				800-2019	1/15/21	WATERWAY
	DM-4.4	1/15/16	TC-61.30	7/19/19		832	10/19/18	SPECIAL
						878	1/17/20	PROVISIONS
	MGS-1.1	7/16/21				899	1/17/20	7/8/2022
	MGS-4.3	1/18/13						
	MGS-5.3	7/15/16						
	RM-1.1	1/15/21						
	HW-2.1	7/20/18						
	MT-95.31	7/19/19						
	MT-95.45	1/17/20						
	MT-97.10	4/19/19						
	MT-101.60	1/17/20						

FEDERAL PROJECT NO. **E191843**  
 PID NO. **100837**  
 CONSTRUCTION PROJECT NO. \_\_\_\_\_  
 RAILROAD INVOLVEMENT **NONE**  
**BUT CULVERTS**  
**FY23**  
 1/27

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GENERAL NOTES

DESIGN SPECIFICATIONS: THIS STANDARD DRAWING CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2002 AND THE ODOT BRIDGE DESIGN MANUAL.

DESIGN DATA: THE FOLLOWING DESIGN DATA IS ASSUMED:

INTERNAL ANGLE OF FRICTION ( $\phi_b f$ ) = 30 DEGREES  
 COEFFICIENT OF FRICTION ( $\phi_f$ ) = 0.30  
 UNIT WEIGHT OF SOIL = 120 PCF  
 UNIT WEIGHT OF CONCRETE = 150 PCF  
 SLOPE OF BACKFILL = 2:1 (TYPE A & B HEADWALLS)  
 HEIGHT OF LIVE LOAD SURCHARGE = 2 FT (TYPE C HEADWALLS)  
 MAXIMUM FOUNDATION BEARING PRESSURE = 2000 P.S.F.

CONCRETE - COMPRESSIVE STRENGTH 4000 PSI  
 (FOOTING, WINGWALL AND FORESLOPE WALL)

REINFORCING STEEL - ASTM A615, A616, OR A617  
 GRADE 60 MINIMUM YIELD STRENGTH  
 60,000 PSI (ALL REINFORCING SHALL BE  
 EPOXY COATED)

BACKFILL LIMITATION: WHEN THE DESIGN HEIGHT IS GREATER THAN 10 FT, THE BACKFILL BEHIND THE WINGWALLS SHALL NOT BE PLACED HIGHER THAN THE ELEVATION OF THE SOIL ABOVE THE TOE. WHEN THE SOIL ABOVE THE TOE IS AT ITS FINISHED ELEVATION, THE REMAINDER OF THE BACKFILL MAY BE PLACED.

POROUS BACKFILL WITH FILTER 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.

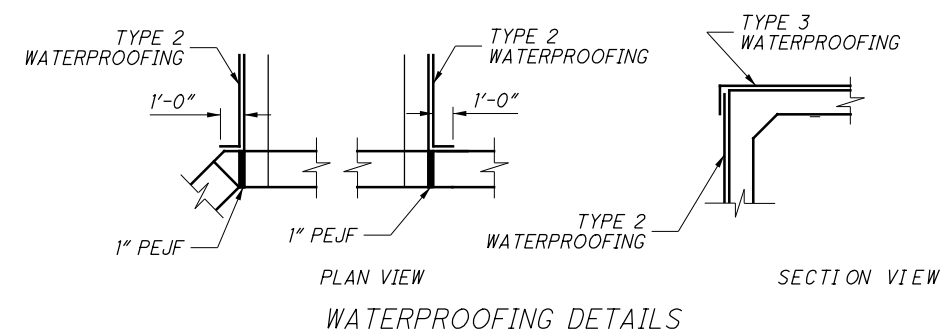
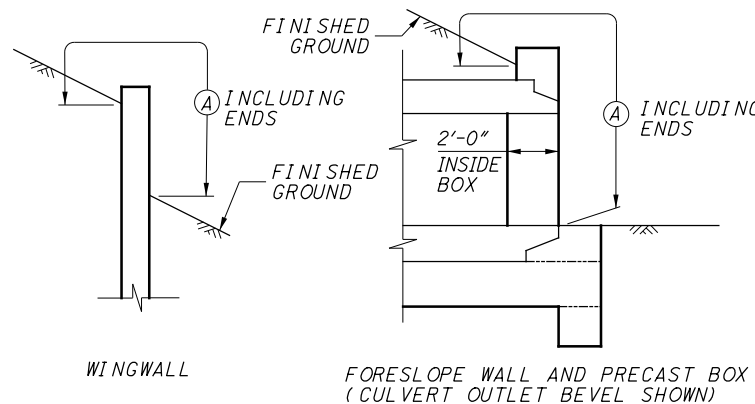
WEEPHOLES SHALL BE PLACED 6" TO 12" ABOVE THE NORMAL WATER ELEVATION OR GROUND LINE AND SHALL HAVE A MAXIMUM SPACING OF 10'-0". A MINIMUM OF ONE WEEPHOLE SHALL BE PROVIDED PER WINGWALL.

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.

WATERPROOFING: TYPE 2 WATERPROOFING, PER CMS 512.09 AND 711.25, SHALL EXTEND VERTICALLY DOWN THE ENTIRE SIDES OF THE PRECAST CULVERT SECTIONS 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 512.10 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.



BASIS OF PAYMENT: ALL LABOR, EQUIPMENT AND INCIDENTALS REQUIRED TO CONSTRUCT THE FOOTING, CUTOFF WALL, WINGWALLS AND FORESLOPE WALL SHALL BE INCLUDED WITH ITEM 511 - CLASS C CONCRETE (RET-WALL/WINGWALL- INCLUDING FOOTING). PAYMENT FOR REINFORCING STEEL SHALL BE INCLUDED WITH ITEM 509 - EPOXY COATED REINFORCING STEEL.

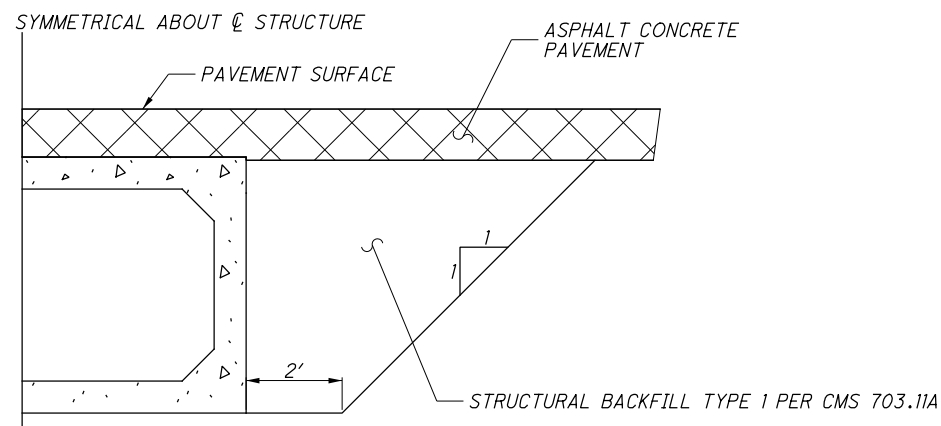
LIMITS OF ITEM 512-SEALING CONCRETE SURFACES

(A) - SEAL ENTIRE CONCRETE SURFACE AREA

ITEM 611 - 8'x4' CONDUIT, TYPE A, 706.05 (PRE-122-07.24)

FOLLOW ALL REQUIREMENTS OF CMS 611 AND 706.05.

STRUCTURAL BACKFILL TYPE 1 CONSISTING OF CRUSHED CARBONATE STONE, THAT MEETS THE GRADATIONS OF ITEM 304 SHALL BE PLACED AS SHOWN IN THE DETAIL BELOW. QUANTITY SHALL BE BASED ON A TRENCH LENGTH OF 44 FEET MEASURED ALONG THE CENTERLINE OF THE CULVERT. PAYMENT FOR STRUCTURAL BACKFILL TYPE 1 AND THE EXCAVATION REQUIRED FOR THE PLACEMENT OF THE STRUCTURAL BACKFILL SHALL BE INCLUDED IN ITEM 611 FOR PAYMENT.



ESTIMATED QUANTITIES				
ITEM	ITEM EXT	TOTAL	UNIT	DESCRIPTION
503	21300	LUMP		UNCLASSIFIED EXCAVATION (WINGWALL FOOTING)
509	10000	3,114	LB.	EPOXY COATED REINFORCING STEEL
511	46010	9.8	CU. YD.	CLASS QC1 CONCRETE, RETAINING WALL OR WINGWALL, NOT INCLUDING FOOTING
511	46510	26.0	CU. YD.	CLASS QC1 CONCRETE, FOOTING
511	46610	1.0	CU. YD.	CLASS QC1 CONCRETE, HEADWALLS
512	10100	39	SQ. YD.	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)
512	33000	90	SQ. YD.	TYPE 2 WATERPROOFING
512	33010	91	SQ. YD.	TYPE 3 WATERPROOFING
516	13600	26	SQ. FT.	1" PREFORMED EXPANSION JOINT FILLER
518	21230	LUMP		POROUS BACKFILL WITH FILTER FABRIC

NOTE: TOTALS CARRIED TO GENERAL SUMMARY SHEET

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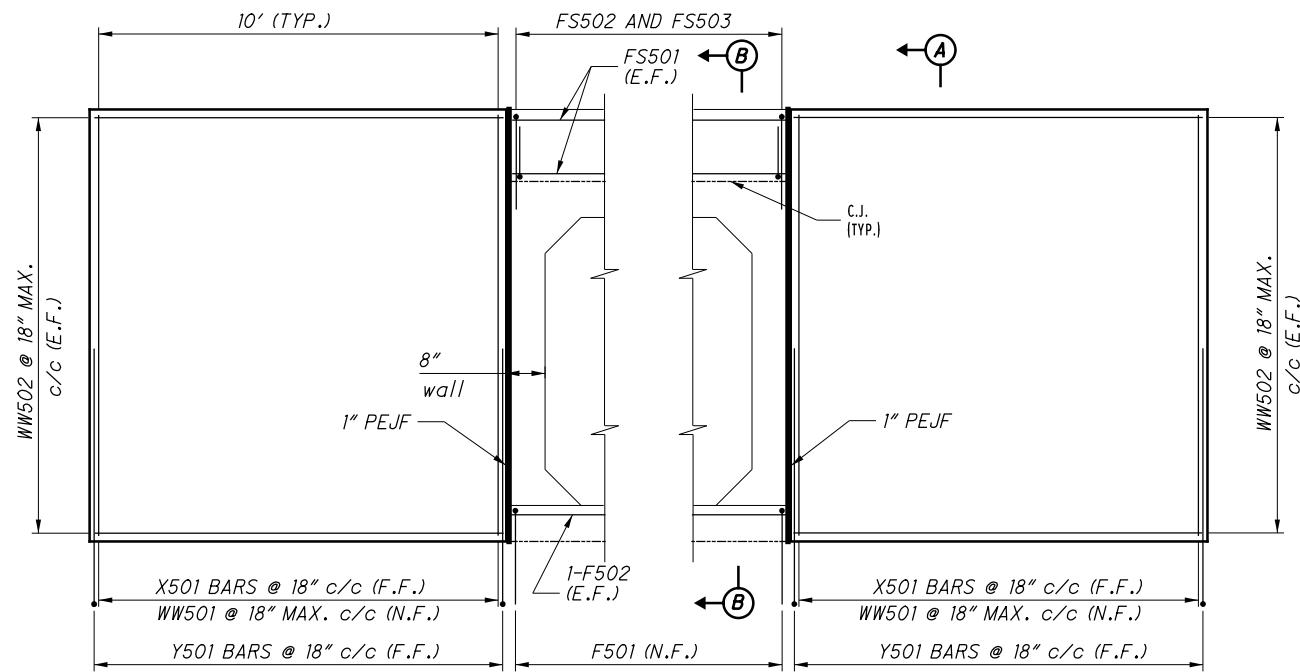
PLAN INSERT SHEET  
CULVERT PRE-122-07.24

BUT CULVERTS FY23  
PID 100837

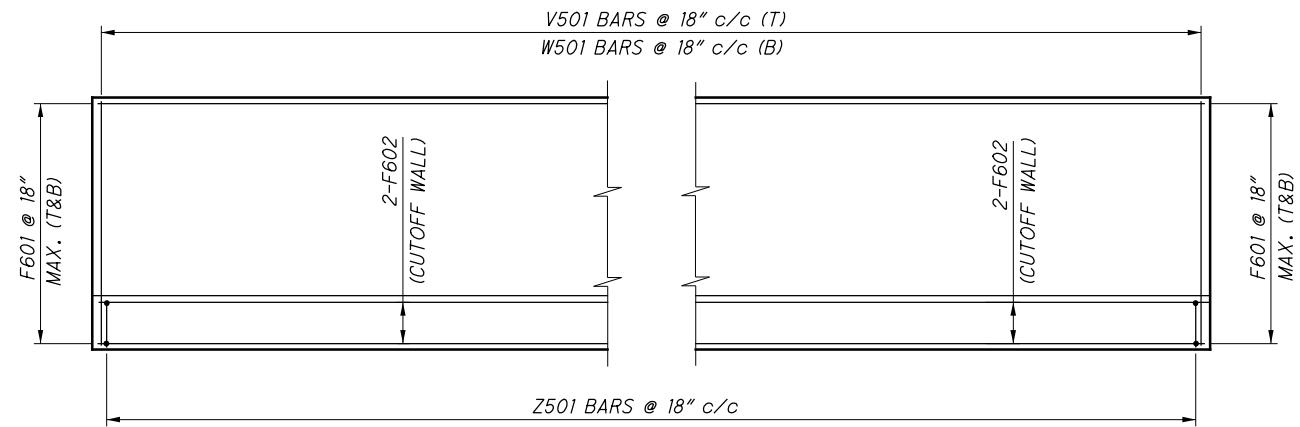
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**WINGWALL ELEVATION**  
(FOOTING NOT SHOWN)



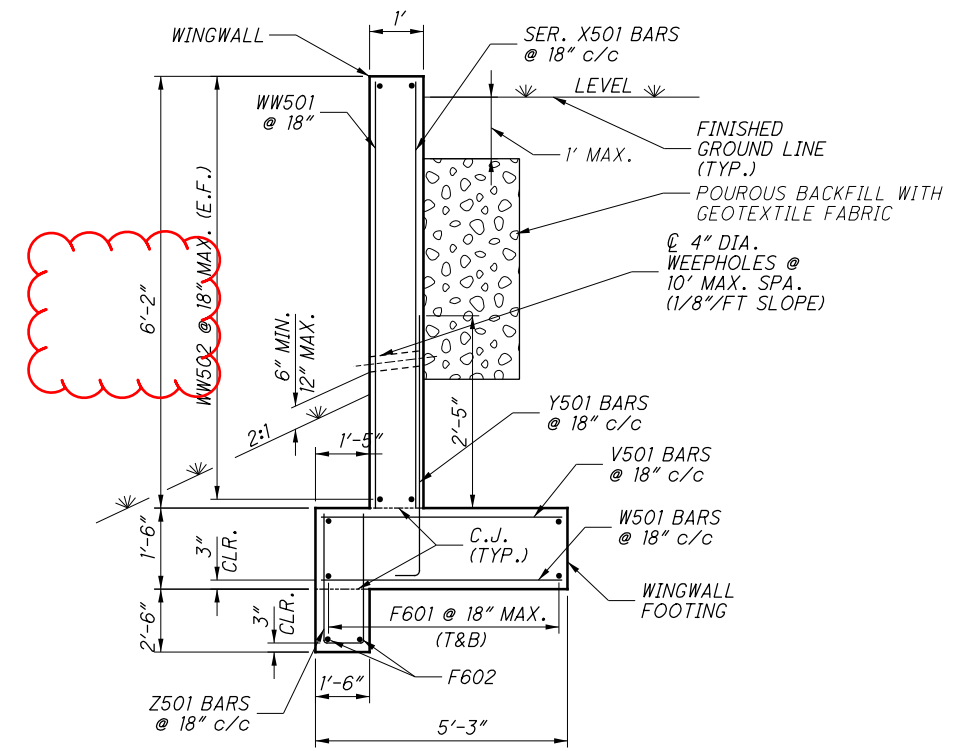
**FOOTING PLAN**

**NOTES**

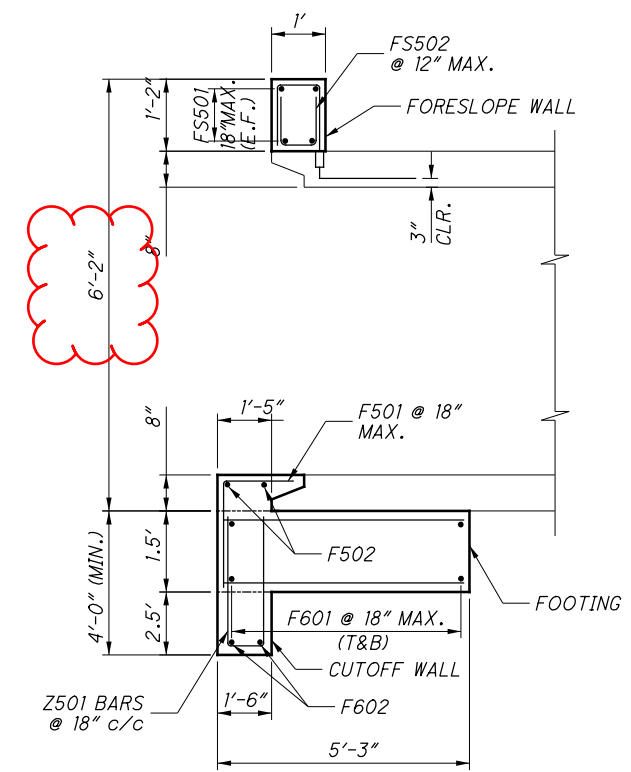
- FOR CULVERT LOCATION PLAN, SEE SHEET 10/27.
- THE BAR SIZE NUMBER IS SPECIFIED ON THE PLANS IN THE BAR MARK COLUMN. THE FIRST DIGIT INDICATES THE BAR SIZE NUMBER. FOR EXAMPLE, WW501 IS A NO.5 BAR. BAR DIMENSIONS SHOWN ARE OUT TO OUT. ALL REINFORCING STEEL SHALL BE EPOXY COATED.
- THE LAP SPLICE LENGTHS USED IN THESE DETAILS ARE AS FOLLOWS: 2'-5" FOR #5 BARS; 2'-11" FOR #6 BARS.

**LEGEND:**

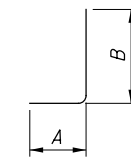
C.J.	CONSTRUCTION JOINT	N.F.	NEAR FACE
CLR.	CLEAR	SER.	SERIES
DIA.	DIAMETER	STR.	STRAIGHT
E.F.	EACH FACE	(T)	TOP
F.F.	FAR FACE	(B)	BOTTOM
MAX.	MAXIMUM	T&B	TOP AND BOTTOM
MIN.	MINIMUM	TYP.	TYPICAL
PEJF	PREFORMED EXPANSION JOINT FILLER	INC.	INCREMENT



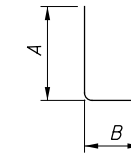
**SECTION A-A**



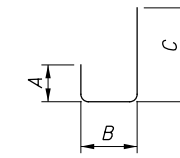
**SECTION B-B**  
(CULVERT INLET BEVEL SHOWN)



TYPE-1



TYPE-5



TYPE-7

TYPE C HEADWALL REINFORCING SCHEDULE							
BAR MARK	NUMBER	LENGTH	WEIGHT (LBS.)	TYPE	BAR TYPE DIMENSIONS		
					A	B	C
<b>WINGWALLS</b>							
X501	16	6'- 0"	101	STR.			
Y501	16	4'- 1"	68	1	0'- 6"	3'- 8"	
WW501	16	6'- 0"	101	STR.			
WW502	20	9'- 8"	202	STR.			
<b>FOOTING &amp; CUTOFF WALL</b>							
V501	21	4'- 11"	108	STR.			
W501	21	4'- 11"	108	STR.			
Z501	21	8'- 2"	179	5	3'- 7"	1'- 2"	
F501	7	3'- 3"	24	1	1'- 6"	1'- 10"	
F502	2	9'- 0"	19	STR.			
F601	20	15'- 9"	474	STR.			
F602	4	15'- 9"	95	STR.			
<b>FORESLOPE WALL</b>							
FS501	4	9'- 0"	38	STR.			
FS502	10	1'- 7"	17	5	0'- 7"	0'- 8"	
FS503	10	2'- 2"	23	7	0'- 7"	0'- 8"	1'- 2"
<b>TOTAL</b>			<b>1,557</b>				
<b>TOTAL x 2 HEADWALLS =</b>			<b>3,114</b>				



PROJECT EARTH DISTURBED AREA: 0.3 ACRES  
 ESTIMATED CONTRACTOR EARTH DISTURBED AREA: 0.1 ACRES  
 NOTICE OF INTENT EARTH DISTURBED AREA: NO NOI REQUIRED

**EXISTING STRUCTURE**

CFN: 1835930  
 TYPE: CMP  
 SIZE: 60", 196' LONG  
 SKEW: 15°  
 ALIGNMENT: TANGENT  
 DATE BUILT: 1956  
 CONDITION: FAIR  
 LATITUDE: 39.412753  
 LONGITUDE: -84.487733  
 STREAM: UNT-2  
 OHWM: 714.0

**REHABILITATE CULVERT BUT-4-11.61 BY PERFORMING THE FOLLOWING WORK:**

1. CLEAN CULVERT OF SEDIMENT AND DEBRIS.
2. FIELD PAVE INVERT OF THE STRUCTURE.
3. PAINT RUSTED AREAS ABOVE THE NEWLY PAVED INVERT WITH ZINC RICH PAINT.
4. FILL SCOUR HOLE WITH ROCK CHANNEL PROTECTION.

**FIELD PAVING OF EXISTING PIPE**

FIELD PAVE THE EXISTING PIPE PER THE REQUIREMENTS OF 611.11. PROVIDE A 2:1 SLOPE AT THE TOP OF THE PAVED INVERT TO PREVENT WATER FROM SITTING ON THE TOP EDGE AS SHOWN IN THE PLAN DETAIL.

DUE TO THE EXCESSIVE SEDIMENT AND DEBRIS AT THIS LOCATION, THE PIPE CLEANOUT PRIOR TO FIELD PAVING OF THE EXISTING PIPE IS ITEMIZED SEPARATELY AND SHALL BE PAID FOR USING THE PAY ITEM PIPE CLEANOUT. SEE NOTE ON THIS SHEET FOR ADDITIONAL INFORMATION.

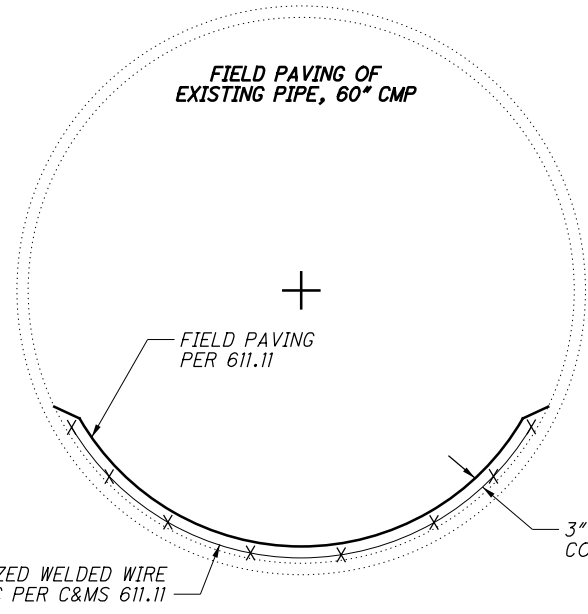
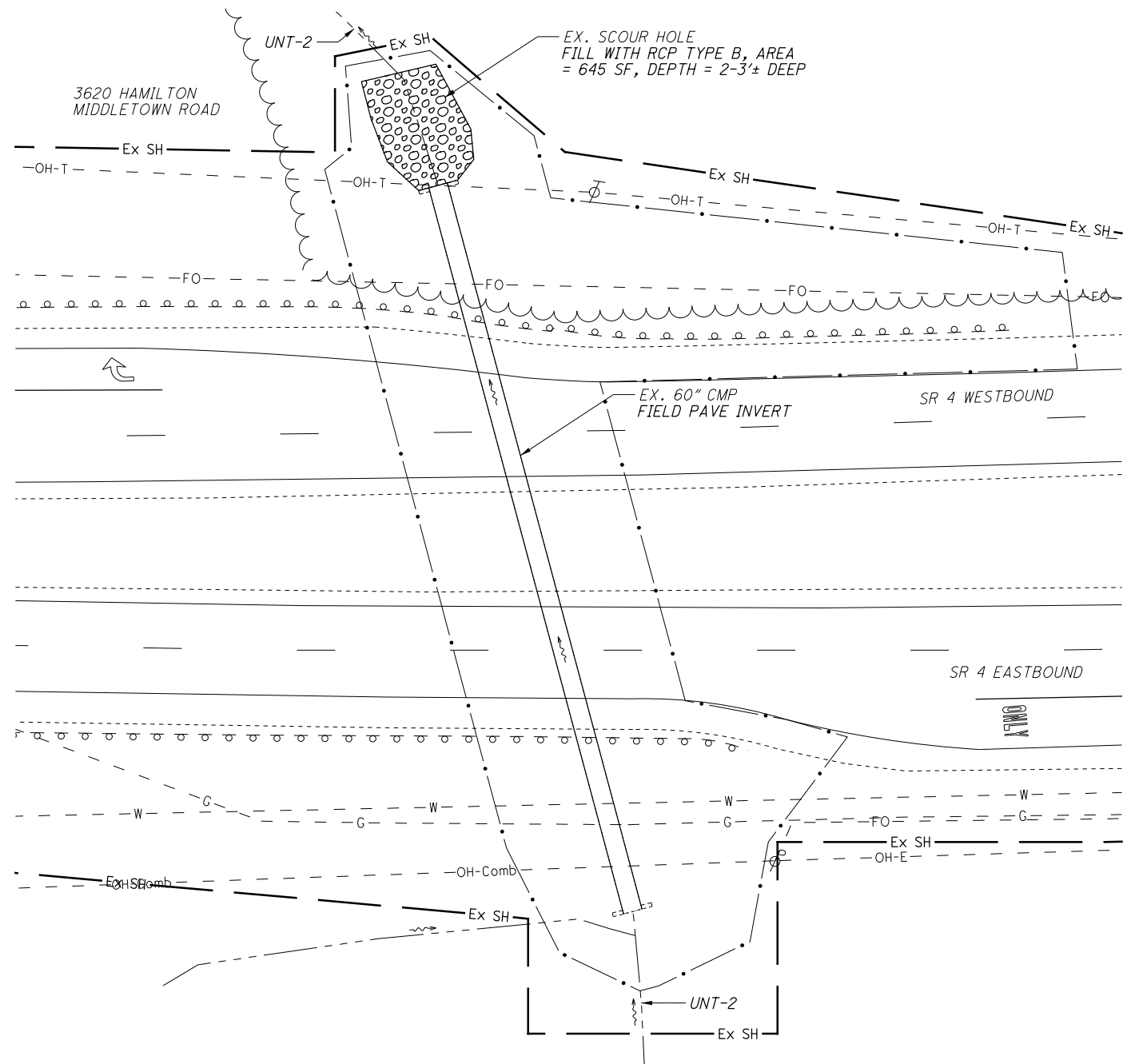
**PIPE CLEANOUT**

THIS ITEM SHALL BE PAID FOR AT THE UNIT PRICE BID FOR ITEM SPECIAL - PIPE CLEANOUT. THIS PRICE SHALL INCLUDE THE COST FOR MATERIAL, EQUIPMENT, LABOR, AND ALL INCIDENTALS REQUIRED TO COMPLETE THE CLEANOUT.

THIS WORK SHALL CONSIST OF REMOVING SEDIMENT AND DEBRIS FROM THE EXISTING DRAINAGE CONDUITS SPECIFIED IN THE PLANS. ALL MATERIAL REMOVED SHALL BE DISPOSED OF AS PER 105.16 AND 105.17. ALL SEWERS SHALL BE CLEANED OUT TO THE SATISFACTION OF THE ENGINEER.

**EXISTING STRUCTURE VERIFICATION**

DETAILS AND DIMENSIONS SHOWN ON THESE PROPOSED PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, SUCH DETAILS AND DIMENSIONS ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK, BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO CMS SECTIONS 102.05, 105.02 AND 513.04. BASE THE CONTRACT BID PRICES UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PREBID EXAMINATION OF THE EXISTING STRUCTURE. HOWEVER, THE DEPARTMENT WILL PAY FOR ALL PROJECT WORK BASED UPON ACTUAL DETAILS AND DIMENSIONS THAT HAVE BEEN VERIFIED IN THE FIELD.



ESTIMATED QUANTITIES (CARRIED TO GENERAL SUMMARY)			
ITEM	QUANTITY	UNIT	DESCRIPTION
202	196	FT	PIPE CLEANOUT OVER 48"
601	60	CY	ROCK CHANNEL PROTECTION, TYPE B
611	196	FT	FIELD PAVE EXISTING CONDUIT, 60" CMP
611	20	SF	CONDUIT, MISC.: ZINC RICH PAINT



BUT-4-11.61  
PLAN AND DETAIL

BUT CULVERTS  
FY23

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