

I:\ProjectData\TRU\06197_CULVERTS_FY2020\Design\Roadway\Sheets\06197_GG001.dgn Sheet 2 5/22/2020 9:20:30 AM pdm

SHEET NUM.												PART.	ITEM	ITEM	GRAND	UNIT	DESCRIPTION	SEE SHEET NO.
3	5	6	25	31	34	39	49	50	58	60	01/NFP/C V	EXT	TOTAL					
PAVEMENT																		
			326	337	450	442	388			1,300	3,243	254	01000	3,243	SY	PAVEMENT PLANING, ASPHALT CONCRETE (T=3")		
			50	50	64	64	50			775	1,053	255	20000	1,053	FT	FULL DEPTH PAVEMENT SAWING		
			19	22	35	30	32			199	337	301	46000	337	CY	ASPHALT CONCRETE BASE, PG64-22		
			10	12	19	17	20			105	183	304	20000	183	CY	AGGREGATE BASE		
			36	38	53	49	45			250	471	407	20000	471	GAL	NON-TRACKING TACK COAT		
			22	22	24	23	26			24	141	408	10001	141	GAL	PRIME COAT, AS PER PLAN	3	
			28	29	39	37	33			109	275	441	50101	275	CY	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), AS PER PLAN (T=3")	3	
										25	25	452	12010	25	SY	8" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC 1P		
										35	35	609	26000	35	FT	CURB, TYPE 6		
			3	3	4	4	4			4	22	617	10101	22	CY	COMPACTED AGGREGATE, AS PER PLAN	3	
WATER WORK																		
										111	111	638	02501	111	FT	12" WATER MAIN DUCTILE IRON PIPE ANSI CLASS 52, MECHANICAL JOINTS AND FITTINGS, AS PER PLAN	61	
										11	11	638	06705	11	FT	20" STEEL PIPE ENCASEMENT, OPEN CUT, AS PER PLAN	61	
										2	2	638	09201	2	EACH	12" CUTTING-IN SLEEVE, VALVE AND VALVE BOX, AS PER PLAN	61	
							1			1	1	638	10700	1	EACH	FIRE HYDRANT REMOVED AND DISPOSED OF		
										2	2	SPECIAL	63820884	2	EACH	CUT AND PLUG EXISTING 12" WATER LINE (CLEVELAND)	61	
TRAFFIC CONTROL																		
			3	3	3	3	3				15	621	00100	15	EACH	RPM		
			8	8			10				26	626	00110	26	EACH	BARRIER REFLECTOR, TYPE 2 (BI-DIRECTIONAL)		
			15	15	15	30	15			15	105	630	02100	105	FT	GROUND MOUNTED SUPPORT, NO. 2 POST		
			2	2	2	4	2			2	14	630	80100	14	SF	SIGN, FLAT SHEET, 730.20		
			0.05	0.05	0.05	0.05	0.05			0.01	0.26	642	00104	0.26	MILE	EDGE LINE, 6", TYPE 1		
										0.06	0.06	642	00204	0.06	MILE	LANE LINE, 6", TYPE 1		
			0.03	0.03	0.03	0.03	0.03			0.05	0.2	642	00300	0.2	MILE	CENTER LINE, TYPE 1		
										150	150	642	00400	150	FT	CHANNELIZING LINE, 8", TYPE 1		
										40	40	642	00500	40	FT	STOP LINE, TYPE 1		
										150	150	642	00700	150	FT	TRANSVERSE/DIAGONAL LINE, TYPE 1		
										3	3	642	01300	3	EACH	LANE ARROW, TYPE 1		
										50	50	642	01510	50	FT	DOTTED LINE, 6", TYPE 1		
RETAINING WALLS																		
						LS					LS	503	11100	LS		COFFERDAMS AND EXCAVATION BRACING (TRU-193-6.06)		
							LS				LS	503	11100	LS		COFFERDAMS AND EXCAVATION BRACING (TRU-305-20.16)		
				LS							LS	503	11100	LS		COFFERDAMS AND EXCAVATION BRACING (TRU-87-12.46)		
						LS					LS	503	11100	LS		COFFERDAMS AND EXCAVATION BRACING (TRU-87-8.64)		
							LS				LS	503	11100	LS		COFFERDAMS AND EXCAVATION BRACING (TRU-88-3.68)		
											LS	503	11100	LS		COFFERDAMS AND EXCAVATION BRACING (TRU-88-4.89)		
											LS	503	11100	LS		COFFERDAMS AND EXCAVATION BRACING (SUM-91-19.14)		
							2,684				2,684	509	10000	2,684	LB	EPOXY COATED REINFORCING STEEL		
							34				34	511	46510	34	CY	CLASS QC1 CONCRETE, FOOTING		
							68				68	511	46001	68	SY	CLASS QC1 CONCRETE, RETAINING/WINGWALL NOT INCLUDING FOOTING, AS PER PLAN	52	
								LS			LS	518	21230	LS		POROUS BACKFILL WITH GEOTEXTILE FABRIC		
STRUCTURE REPAIR																		
										85	85	512	10000	85	SY	SEALING OF CONCRETE SURFACES		
										134	134	512	33000	134	SY	TYPE 2 WATERPROOFING		
										36	36	516	13600	36	SF	1" PREFORMED EXPANSION JOINT FILLER		
MAINTENANCE OF TRAFFIC																		
			48								48	614	11110	48	HOURLY	LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE		
		3									3	614	12338	3	EACH	WORK ZONE IMPACT ATTENUATOR (BIDIRECTIONAL)		
		LS									LS	614	12420	LS		DETOUR SIGNING		
		30									30	614	13000	30	CY	ASPHALT CONCRETE FOR MAINTAINING TRAFFIC		
		13									13	614	13310	13	EACH	BARRIER REFLECTOR, TYPE 1, TWO-WAY		
		13									13	614	13360	13	EACH	OBJECT MARKER, TWO WAY		
			13								13	614	18600	13	SNMT	PORTABLE CHANGEABLE MESSAGE SIGN		
		0.15									0.15	614	22010	0.15	MILE	WORK ZONE EDGE LINE, CLASS I, 6"		
		550									550	614	23000	550	FT	WORK ZONE CHANNELIZING LINE, CLASS I, 8"		
INCIDENTALS																		
											LS	614	11000	LS		MAINTAINING TRAFFIC		
											6	619	16010	6	MNTH	FIELD OFFICE, TYPE B		
											LS	623	10000	LS		CONSTRUCTION LAYOUT STAKES AND SURVEYING		
											LS	624	10000	LS		MOBILIZATION		

GENERAL SUMMARY

SUM / TRU
CULVERT - FY 2020

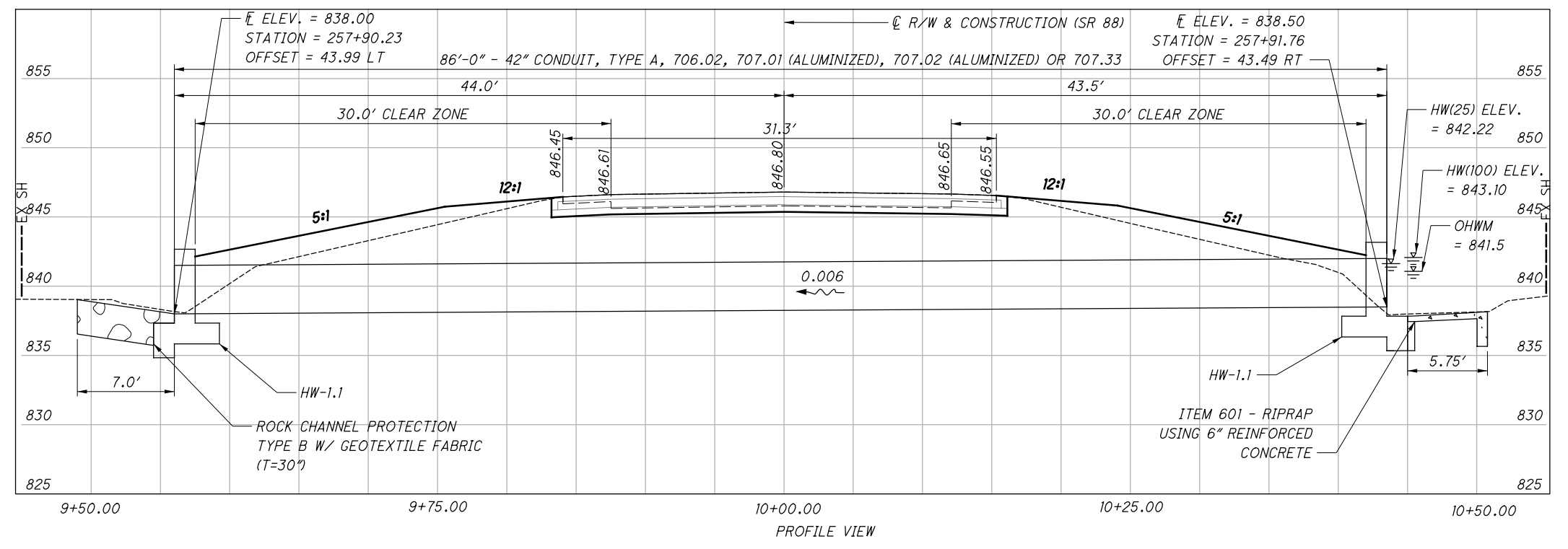
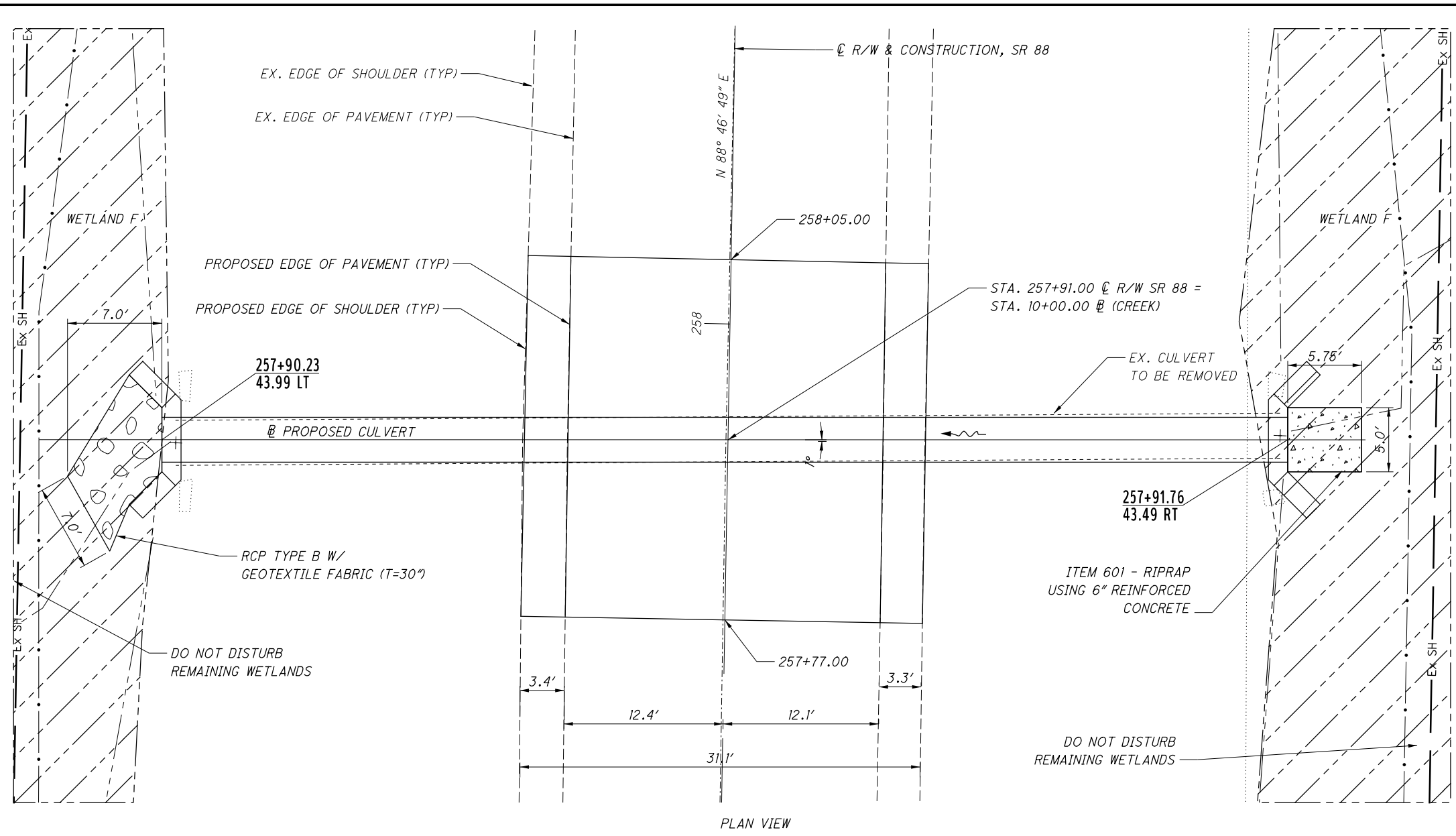
BENCHMARK DATA				
BM #1 STA. 261+42.76	ELEV. 851.05	OFFSET 41.31	RT	
BM #2 STA. 251+13.46	ELEV. 846.94	OFFSET 21.03	RT	
BM #3 STA. 258+70.59	ELEV. 846.26	OFFSET 20.74	LT	
BM #4 STA. 265+23.77	ELEV. 849.96	OFFSET 21.44	RT	

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

DESIGN TRAFFIC
 2020 ADT = 3200 2020 ADTT = 224
 2040 ADT = 3300 2040 ADTT = 231
 DIRECTIONAL DISTRIBUTION = 0.55

- LEGEND**
 - ROCK CHANNEL PROTECTION
 - WETLAND
 RIPRAP

HYDRAULIC DATA
 DRAINAGE AREA = 0.24 SQ. MILES
 Q (25) = 49.9 CFS V (25) = 7.82 FT/S
 Q (100) = 63.7 CFS V (100) = 8.67 FT/S
 PH = 7
 ABRASION = 2
 SERVICE LIFE = 75 YEARS



EXISTING CULVERT
 TYPE: 42" CORRUGATED METAL PIPE
 LENGTH: 85'-10"
 ROADWAY: 31'-1" EOS/EOS
 SKEW: 1°22'09" RF
 ALIGNMENT: NONE
 CULVERT FILE NUMBER: 1847143
 DISPOSITION: TO BE REMOVED AND REPLACED

PROPOSED CULVERT
 TYPE: 42" CONDUIT, TYPE A, 706.02, 707.01 (ALUMINIZED) 707.02 (ALUMINIZED) OR 707.33
 SPANS: 87'-6"
 ROADWAY: 31'-1" EOS/EOS
 SKEW: 1° RF
 HEADWALLS: FULL HEIGHT, PER SCD HW-1.1
 COORDINATES: LATITUDE N41°23'26" LONGITUDE W80°54'35"

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SURVEYING PARAMETERS

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

VERTICAL POSITIONING

ORTHOMETRIC HEIGHT DATUM: NAVD 88
 GEOID: GEODI2B

HORIZONTAL POSITIONING

REFERENCE FRAME: NAD 83 (2011)
 ELLIPSOID: GRS80
 MAP PROJECTION: LAMBERT CONFORMAL CONIC
 COORDINATE SYSTEM: OHIO NORTH ZONE (3401)
 COMBINED SCALE FACTOR: 0.99990288
 ORIGIN OF SCALE (X,Y): EASTING (X): 0, NORTHING (Y): 0

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

CLEARING AND GRUBBING

ALTHOUGH THERE ARE NO TREES OR STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE LIMITS OF THE PROJECT, A LUMP SUM QUANTITY IS INCLUDED IN THE GENERAL SUMMARY FOR ITEM 201, CLEARING AND GRUBBING. ALL PROVISIONS AS SET FORTH IN THE SPECIFICATIONS UNDER THIS ITEM ARE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 201, CLEARING AND GRUBBING.

EARTHWORK

THE FOLLOWING QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY FOR THE CULVERT IMPROVEMENT

ITEM 203, EXCAVATION 103 CY
 ITEM 203, EMBANKMENT 231 CY

SEEDING AND MULCHING

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

- 659, TOPSOIL 231 CY
- 659, SEEDING AND MULCHING 2081 SY
- 659, REPAIR SEEDING AND MULCHING 104 SY
- 659, COMMERCIAL FERTILIZER 0.28 TON
- 659, LIME 0.43 ACRES
- 659, WATER 11 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.

CULVERT IDENTIFICATION SIGNS

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

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

INSTALL SIGNS FOR THE FOLLOWING STRUCTURE:
 TRU-305-20.16

THE FOLLOWING QUANTITIES HAVE BEEN INCLUDED FOR EACH APPROACH:

- ITEM 630 - GROUND MOUNTED SUPPORT, NO. 2 POST, 15 FT
- ITEM 630 - SIGN, FLAT SHEET, 730.20, 2 SQ FT

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, 40 CU YD
- ITEM 203 - GRANULAR MATERIAL, TYPE C (703.16), 40 CU YD
- ITEM 204 - GEOTEXTILE FABRIC, TYPE D, 60 SQ YD

ESTIMATED QUANTITIES FOR TRU-305-20.16

REF NO.	SHEET NO.	STATION TO STATION	202	202	202	503	511	601	606	606	606	606	611	626	638	511	509
			GUARDRAIL REMOVED	HEADWALL REMOVED	STRUCTURE REMOVED (TRU-305-20.16)	COFFERDAMS AND EXCAVATION BRACING (TRU-305-20.16)	CLASS QC1 CONCRETE, RETAINING/WINGWALL NOT INCLUDING FOOTING, AS PER PLAN	ROCK CHANNEL PROTECTION TYPE B WITH GEOTEXTILE FABRIC	GUARDRAIL, TYPE MGS WITH LONG POSTS	GUARDRAIL, TYPE MGS, LONG SPAN	ANCHOR ASSEMBLY, MGS TYPE E (MASH 2016)	ANCHOR ASSEMBLY, MGS TYPE T	8' X 6' CONDUIT, TYPE A, 706.05	BARRIER REFLECTOR, TYPE (BIDIRECTIONAL)	FIRE HYDRANT REMOVED AND DISPOSED OF	CLASS QC1 CONCRETE, FOOTING	EPOXY COATED REINFORCING STEEL
			FT	EACH		SY	CY	FT	FT	EACH	EACH	FT	EACH	EACH	CY	LB	
D1	1	142+39.00 LT/RT				LUMP	68	95					40			34	2684
R1	1	142+39.00 LT/RT		2	LUMP												
R2	1	140+94.76 LT TO 143+94.79 LT	289														
R3	1	139+45.72 RT TO 143+77.43 RT	449														
R4	1	142+29.00 RT													1		
GR1	1	140+94.76 LT TO 143+94.79 LT						175	50	2			4				
GR2	1	139+45.72 RT TO 143+77.43 RT						325	50	1	1		6				
TOTALS CARRIED TO GENERAL SUMMARY			738	2	LS	LS	68	95	500	100	3	1	40	10	1	34	2684

PAVEMENT RESTORATION FOR PIPE INSTALLATIONS AND/OR REMOVALS

THE FOLLOWING QUANTITY HAS BEEN PROVIDED FOR PAVEMENT RESTORATION FOLLOWING INSTALLATION AND/OR REMOVAL OF PIPES.

- (P1) STA. 142+18.00 TO STA. 142+60.00 (SR 305)
- ITEM 202 - PAVEMENT REMOVED 115 SY
- ITEM 204 - SUBGRADE COMPACTION 115 SY
- ITEM 255 - FULL DEPTH PAVEMENT SAWING, 50 FT
- ITEM 304 - AGGREGATE BASE, AS PER PLAN (T=6") 20 CY
- ITEM 301 - ASPHALT CONCRETE BASE, PG64-22 (T=10") 32 CY
- ITEM 407 - NON-TRACKING TACK COAT @ 0.09 GAL/SY 11 GAL.

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

THE ABOVE QUANTITIES ARE BASED ON THE PAVEMENT RESTORATION WIDTHS GIVEN ABOVE.

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

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.

- STA. 141+68.00 TO STA. 143+10.00 (SR 305)
- ITEM 254 - PAVEMENT PLANING, ASPHALT CONCRETE (T= 3") 388 SY
- ITEM 407 - NON-TRACKING TACK COAT, @ 0.09 GAL/SY 34 GAL.
- ITEM 408 - PRIME COAT, AS PER PLAN @ 0.40 GAL/SY 26 GAL
- ITEM 441 - ASPHALT CONCRETE SURFACE COURSE, TYPE 1 (448), (PG64-22), AS PER PLAN (T=3") (TWO 1.5" LIFTS) 33 CY
- ITEM 617 - COMPACTED AGGREGATE, AS PER PLAN 4 CY

THE ABOVE QUANTITIES ARE BASED ON A RESURFACING THE WIDTH OF THE PAVEMENT AND SHOULDERS FOR INSTALLATION AND/OR REMOVAL.

PAVEMENT MARKINGS

ALL PAVEMENT MARKINGS THAT ARE REMOVED DURING CULVERT REPLACEMENTS WILL BE REPLACED WITH ITEM 642 - TRAFFIC PAINT. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY.

- ITEM 642 - EDGE LINE, 6", TYPE 1, 0.05 MILE
- ITEM 642 - CENTER LINE, TYPE 1, 0.03 MILE

ITEM 621 - RPM 3 EACH

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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

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 TYPE A 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.

ITEM 518 - POROUS BACKFILL WITH GEOTEXTILE FABRIC LS

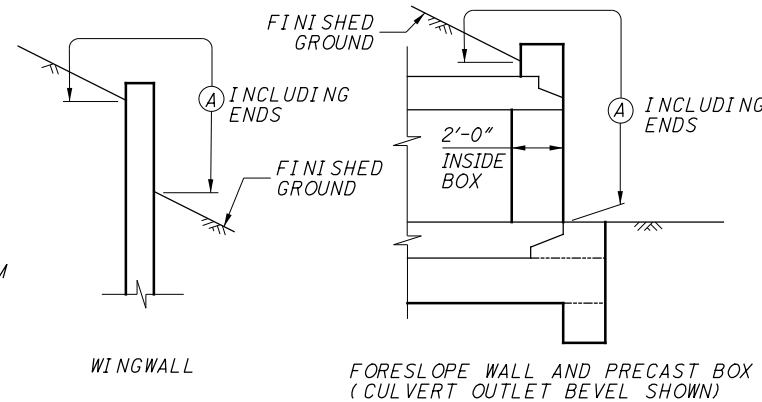
ITEM 511, CLASS QC1 CONCRETE, RETAINING/WINGWALL NOT INCLUDING FOOTING, AS PER PLAN:

THE DEPARTMENT WILL PERMIT THE USE OF PRECAST CONCRETE IN LIEU OF CAST-IN-PLACE CONCRETE FOR HEADWALLS AND WINGWALLS IN ACCORDANCE WITH C&MS 602.03. THE DEPARTMENT WILL PAY FOR THE WINGWALL AND HEADWALL CONCRETE IN SQUARE YARD AS DETERMINED FROM PLAN DIMENSIONS USING THE WALL HEIGHTS ABOVE THE FOOTING AND LENGTH ALONG THE EXTERIOR FACES OF THE WALLS. THE DEPARTMENT WILL CONSIDER THERE INFORCING STEEL IN THE WINGWALLS AND HEADWALLS, INCLUDING THE REINFORCEMENT THAT EXTENDS INTO THE FOOTINGS, AS INCIDENTAL TO THE RETAINING/WINGWALL CONCRETE. THE TOTAL QUANTITY OF CAST-IN-PLACE WINGWALL AND HEADWALL CONCRETE IS 23 CU YD. THE TOTAL QUANTITY OF CAST-IN-PLACE WINGWALL AND HEADWALL REINFORCING STEEL IS 2492 LBS

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.

ITEM 512 - SEALING OF CONCRETE SURFACES 85 SY



LIMITS OF ITEM 512-SEALING CONCRETE SURFACES

(A) - SEAL ENTIRE CONCRETE SURFACE AREA

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.

ITEM 516 - 1" PREFORMED EXPANSION JOINT FILLER 36 FT

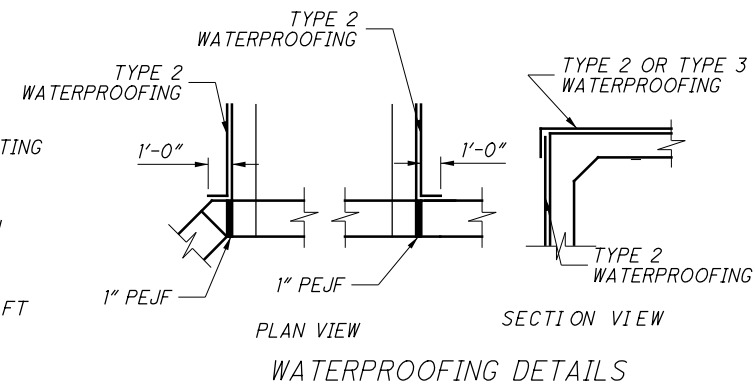
WATERPROOFING

TYPE 2 WATERPROOFING, PER CMS 512 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.

IF PAVEMENT IS NOT PLACED DIRECTLY ON TOP OF THE CULVERT, TYPE 2 WATERPROOFING, PER CMS 512 AND 711.25 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 2 WATERPROOFING.

IF PAVEMENT IS TO BE USED DIRECTLY ON TOP OF THE CULVERT, TYPE 3 WATERPROOFING, PER CMS 512 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.

ITEM 512 - TYPE 2 WATERPROOFING 134 SY



WATERPROOFING DETAILS

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CULVERT DETAILS
TRU-305-20.16

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CULVERT - FY 2020

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