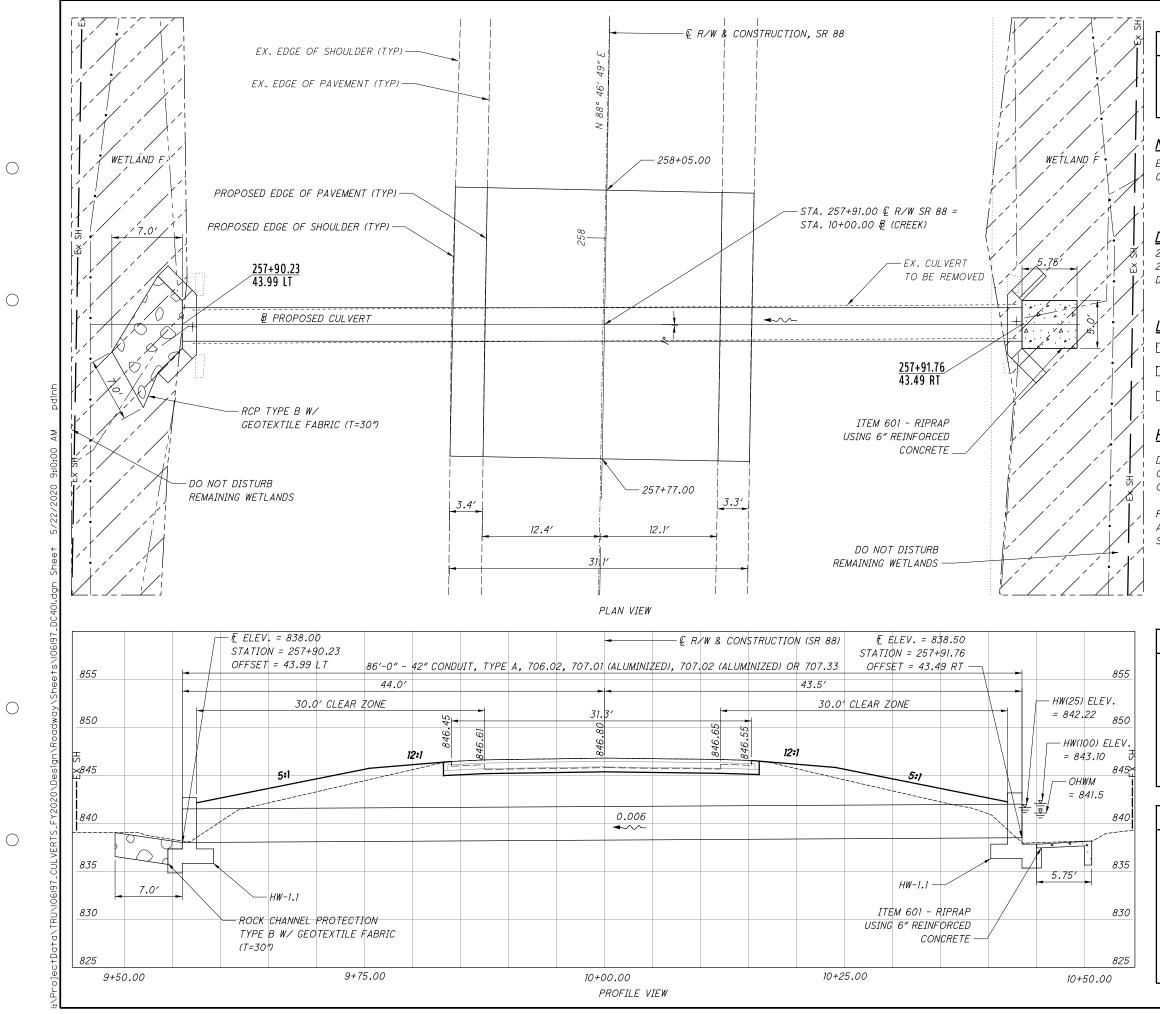
DE	UNIT	GRAND	ITEM	ITEM	PART.		-			-	NUM.	SHEET					
	UNIT	TOTAL	EXT	11214	01/NFP/C V	60	58	50	49	39	34	31	25	6	5	3	
PAVEMENT PLANING, ASPHALT CONCRETE (T=3"	SY	3,243	01000	254	3,243	1,300			388	442	450	337	326				
FULL DEPTH PAVEMENT SAWING		1,053	20000	255	1,053	775			50	64	64	50	50				
ASPHALT CONCRETE BASE, PG64-22		337	46000	301	337	199			32	30	35	22	19				
AGGREGATE BASE		183	20000	304	183	105			20	17	19	12	10				
NON-TRACKING TACK COAT		471	20000	407	471	250			45	49	53	38	36				
	CAL	1.4.1	10001	40.9	141	24			26		24						
PRIME COAT, AS PER PLAN ASPHALT CONCRETE SURFACE COURSE, TYPE 1		141 275	10001 50101	408 441	141 275	24 109			26 33	23 37	24 39	22 29	22 28				
8" NON-REINFORCED CONCRETE PAVEMENT, CLA		275	12010	452	275	25				- 57		23	20				
CURB, TYPE 6		35	26000	609	35	35											
COMPACTED AGGREGATE, AS PER PLAN		22	10101	617	22	4			4	4	4	3	3				
N 12" WATER MAIN DUCTILE IRON PIPE ANSI CLASS	FT	111	02501	638	111		111										
20" STEEL PIPE ENCASEMENT, OPEN CUT, AS PE		11	02301	638	11		11										
12" CUTTING-IN SLEEVE, VALVE AND VALVE BOX,		2	09201	638	2		2										
FIRE HYDRANT REMOVED AND DISPOSED OF		1	10700	638	1		_		1								
CUT AND PLUG EXISTING 12" WATER LINE (CLEVE		2	63820884	SPECIAL	2		2										
RPM TRA	EACH	15	00100	621	15				3	3	3	3	3				
BARRIER REFLECTOR, TYPE 2 (BI-DIRECTIONAL)		26	00100	626	26				3 10	5	5	3 8	3 8				
GROUND MOUNTED SUPPORT, NO. 2 POST		105	02100	630	105	15			15	30	15	15	15				
SIGN, FLAT SHEET, 730.20		14	80100	630	14	2			2	4	2	2	2				
EDGE LINE, 6", TYPE 1		0.26	00104	642	0.26	0.01			0.05	0.05	0.05	0.05	0.05				
LANE LINE, 6", TYPE 1		0.06	00204	642	0.06	0.06											
CENTER LINE, TYPE 1		0.2	00300	642	0.2	0.05			0.03	0.03	0.03	0.03	0.03				
CHANNELIZING LINE, 8", TYPE 1		150	00400	642 642	150	150											
STOP LINE, TYPE 1 TRANSVERSE/DIAGONAL LINE, TYPE 1		40 150	00500 00700	642	40 150	40 150											
		100	00700	042	100	155											
LANE ARROW, TYPE 1	EACH	3	01300	642	3	3											
DOTTED LINE, 6", TYPE 1	FT	50	01510	642	50	50											
RETA COFFERDAMS AND EXCAVATION BRACING (TRU-1		LS	11100	502	LS					LS							
COFFERDAMS AND EXCAVATION BRACING (TRU-T		LS	11100	503 503	LS LS				LS	L5							
COFFERDAMS AND EXCAVATION BRACING (TRU-S		LS	11100	503	LS							LS					
COFFERDAMS AND EXCAVATION BRACING (TRU-8		LS	11100	503	LS								LS				
COFFERDAMS AND EXCAVATION BRACING (TRU-8		LS	11100	503	LS						LS						
COFFERDAMS AND EXCAVATION BRACING (TRUE		LS	11100	503	LS					LS							
COFFERDAMS AND EXCAVATION BRACING (SUM-9 EPOXY COATED REINFORCING STEEL		2,684	10000	503 509	2,684	~~~~	$\sim$	$\sim$	2,684								
		2,084	46510	509	2,004				.34	—							
CLASS OCT CONCRETE, RETAINING/WINGWALL N			46001	JAN A		$\mathcal{L}$	$\mathcal{L}$	$\mathcal{N}$		Y							
POROUS BACKFILL WITH GEOTEXTILE FABRIC		LS	21230	518	LS			LS									
STRU																	
SEALING OF CONCRETE SURFACES	SY	85	10000	512	85			85									
TYPE 2 WATERPROOFING	SY	134	33000	512	134			134									
1" PREFORMED EXPANSION JOINT FILLER	SF	36	13600	516	36			36									
MAINTER LAW ENFORCEMENT OFFICER WITH PATROL CAR	HOUR	48	11110	614	48									48			
WORK ZONE IMPACT ATTENUATOR (BIDIRECTION/		40	12338	614	40									40	3		
DETOUR SIGNING		LS	12420	614	LS										LS		
ASPHALT CONCRETE FOR MAINTAINING TRAFFIC		30	13000	614	30										30		
	EACH	13	13310	614	13										13		
BARRIER REFLECTOR, TYPE 1, TWO-WAY	EACH	13	13360	614	13										13		
OBJECT MARKER, TWO WAY		13	18600	614	13 0.15									13	0.45		
OBJECT MARKER, TWO WAY PORTABLE CHANGEABLE MESSAGE SIGN				~	0.15										0.15		
OBJECT MARKER, TWO WAY PORTABLE CHANGEABLE MESSAGE SIGN WORK ZONE EDGE LINE, CLASS I, 6"	MILE	0.15	22010	614 614													
OBJECT MARKER, TWO WAY PORTABLE CHANGEABLE MESSAGE SIGN	MILE			614 614	550										550		
OBJECT MARKER, TWO WAY PORTABLE CHANGEABLE MESSAGE SIGN WORK ZONE EDGE LINE, CLASS I, 6" WORK ZONE CHANNELIZING LINE, CLASS I, 8"	MILE FT	0.15 550	22010 23000	614	550										550		
OBJECT MARKER, TWO WAY PORTABLE CHANGEABLE MESSAGE SIGN WORK ZONE EDGE LINE, CLASS I, 6" WORK ZONE CHANNELIZING LINE, CLASS I, 8" MAINTAINING TRAFFIC	MILE FT	0.15 550 LS	22010 23000 11000	614 614	550 										550		
OBJECT MARKER, TWO WAY PORTABLE CHANGEABLE MESSAGE SIGN WORK ZONE EDGE LINE, CLASS I, 6" WORK ZONE CHANNELIZING LINE, CLASS I, 8"	MILE FT MNTH	0.15 550	22010 23000	614	550										550		

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	SEE	CALCULATED PD CHECKED MAC
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PAVEMENT		
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1, (448), AS PER PLAN (T=3")	3	
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WATER WORK		
S 52, MECHANICAL JOINTS AND FITTINGS, AS PER PLAN	61	
PER PLAN	61	
X, AS PER PLAN	61	
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AFFIC CONTROL		SUMMARY
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-305-20.16)		
-87-12.46)		
-87-8.64) -88-3.68) ADDED		
-88-4.89)		
-91-19.14)		
NOT INCLUDING FOOTING, AS PER PLAN	52	
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BENCHMARK DATA       BM #I 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	S RIZONTAL LE IN FEET
<b>NOTES</b> EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.	CALCULATED 0 PD 2.5 CHECKED HOR MAC SCALL
DESIGN TRAFFIC 2020 ADT = 3200 2020 ADTT = 224 2040 ADT = 3300 2040 ADTT = 231 DIRECTIONAL DISTRIBUTION = 0.55	
LEGEND COMPANY OF CONTRACTION COMPANY OF CONTRACTION COMPANY OF CONTRACTION COMPANY OF CONTRACTION COMPANY OF CONTRACTOR PHY OF CONTRACTOR CONT	CULVERT DETAIL TRU-88-4.89
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	ر 2020
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"	69 β β CULVERT-FY

## SURVEYING PARAMETERS

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

VERTICAL POSITIONING

ORTHOMETRIC HEIGHT DATUM: NAVD 88 GEOID: GEOID12B

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

PAVEMENT RESTORATION	OR PIPE INSTALLATIONS AND/OR
REMOVALS	

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

(P) 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<sup>o</sup>) 20 CY ITEM 301 - ASPHALT CONCRETE BASE, PG64-22 (T=10<sup>o</sup>) 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.

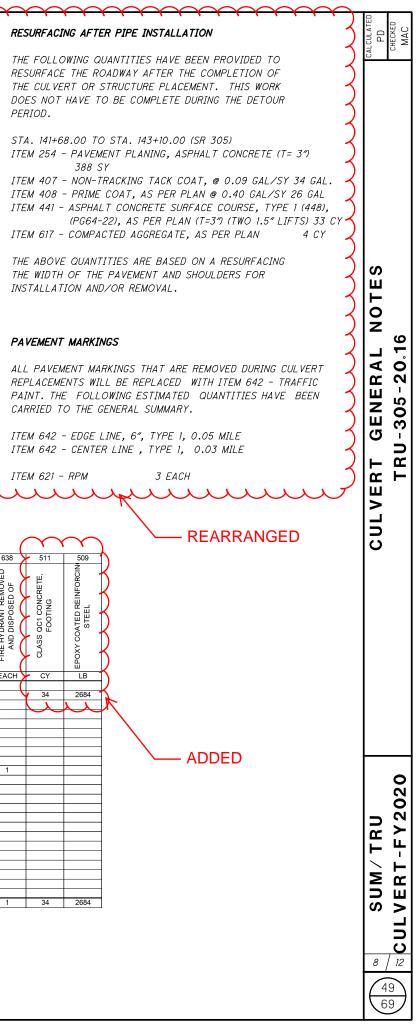
							202	202	202	503	511	601	606	606	606	606	611	626	638	
REF NO.						GUARDRAIL REMOVED	HEADWALL REMOVED	STRUCTURE REMOVED (TRU-305-20.16)	COFFERDAMS AND EXCAVATION BRACING (TRU-305-20.16)	CLASS QC1 CONCRETE, RETAINING/WINGWALL NOT INCLUDING FOOTING, AS PEF PLAN	ROCK CHANNEL PROTECTION TYPE B WITH GEOTEXTILE 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 ; (BI-DIRECTIONAL)	FIRE HYDRANT REMOVED		
								FT	EACH			SY	CY	FT	FT	EACH	EACH	FT	EACH	EAC
<b>D</b> 4		440+00-00	LT/DT									05					40			
D1	1	142+39.00	LT/RT							LUMP	68	95					40			
R1	1	142+39.00	LT/RT					2	LUMP	-										
								-												
R2	1	140+94.76	LT	то	143+94.79	LT	289													
R3	1	139+45.72	RT	то	143+77.43	RT	449													
<b>D</b> 4		440,00.00	DT																	
R4	1	142+29.00	RT							-									1	
GR1	1	140+94.76	LT	то	143+94.79	LT							175	50	2			4		
GR2	1	139+45.72	RT	то	143+77.43	RT							325	50	1	1		6		
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		O GENERAL S					738	2	LS	LS	68	95	500	100	3	1	40	10	1	

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## BACKFILL LIMITATION

POROUS BACKFILL WITH FILTER FABRIC

PROVIDED PER WINGWALL.

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

REPLACED EXCAVATION ADJACENT TO THE STRUCTURE. IT

SHALL TURN UNDER THE BOTTOM OF THE POROUS BACKFILL

WEEPHOLES SHALL BE PLACED 6" TO 12" ABOVE THE NORMAL

SPACING OF 10'-O". A MINIMUM OF ONE WEEPHOLE SHALL BE

TYPE A SHALL BE PLACED BETWEEN THE POROUS BACKFILL AND

AND RETURN 6" ABOVE THE TOP ELEVATION OF THE WEEPHOLE.

WATER ELEVATION OR GROUND LINE AND SHALL HAVE A MAXIMUM

### 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

#### 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.

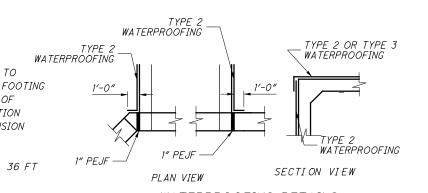
> IF PAVEMENT IS TO BE USED DIRECTLY ON TOP OF THE CULVERT, TYPE 3 WATERPROOFING, PER CMS 512 AND 711.29 SHALL BE APPLIED TO THE ENTIRE TOP SURFACE OF THE PRECAST CULVERT SECTIONS AND SHALL EXTEND ONE FOOT VERTICALLY DOWN THE SIDES FOR ALL PORTIONS OF THE CULVERT WHICH SHALL BE IN CONTACT WITH THE BACKFILL. 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

## 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 F



WATERPROOFING DETAILS

FINISHED A INCLUDING ENDS FINISHED GROUND WINGWALL WINGWALL FORESLOPE WALL AND PRECAST BOX (CULVERT OUTLET BEVEL SHOWN)

LIMITS OF ITEM 512-SEALING CONCRETE SURFACES (A) - SEAL ENTIRE CONCRETE SURFACE AREA

ITEM 518 - POROUS BACKFILL WITH GEOTEXTILE FABRIC LS ITEM 511, CLASS QCI CONCRETE, RETAINING/WINGWALL NOT INCLUDING FOOTING, AS PER PLAN: THE DEPARTMENT WILL BERMIT THE USE OF DEFOACT CONSECTS

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

OUANTITY 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

- REVISED

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CALCULATED	CHECKED MAC	
CULVERT DETAILS	TRU-305-20,16	
SUM/TRU		