

I:\ProjectData\WIL\94334\_WIL-49-2.5LRSF\Design\Roadway\Sheets\94334\_CG002.dgn Sheet 4/20/2020 10:40:15 AM jerford

SHEET NUM.									PART.				ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.	
3	4	5	8	9	26	30	31		01/STR/PV	02/STR/CV	03/BRO/B R	04/NHS/PV							
					120					120				203	20000	120	CY	EMBANKMENT	
					780					780				204	13000	780	CY	EXCAVATION OF SUBGRADE	
					73					73				204	30010	73	CY	GRANULAR MATERIAL, TYPE B	
					293					293				204	30020	293	CY	GRANULAR MATERIAL, TYPE C	
					293					293				204	30030	293	CY	GRANULAR MATERIAL, TYPE D	
					440					440				204	50000	440	SY	GEOTEXTILE FABRIC	
					440					440				204	51001	440	SY	GEOGRID, AS PER PLAN	26
					LS					LS				503	11100	LS		COFFERDAMS AND EXCAVATION BRACING	
					3,920					3,920				503	21101	3,920	CY	UNCLASSIFIED EXCAVATION, AS PER PLAN	26
					2,544					2,544				509	10000	2,544	LB	EPOXY COATED REINFORCING STEEL	
					21					21				511	46010	21	CY	CLASS QC1 CONCRETE, RETAINING/WINGWALL NOT INCLUDING FOOTING	
					41					41				511	46510	41	CY	CLASS QC1 CONCRETE, FOOTING	
					1					1				511	46610	1	CY	CLASS QC1 CONCRETE, HEADWALL	
					61					61				512	10050	61	SY	SEALING OF CONCRETE SURFACES (NON-EPOXY)	
					275					275				512	33000	275	SY	TYPE 2 WATERPROOFING	
					53					53				516	13600	53	SF	1" PREFORMED EXPANSION JOINT FILLER	
					LS					LS				518	21230	LS		POROUS BACKFILL WITH GEOTEXTILE FABRIC	
					46					46				601	32200	46	CY	ROCK CHANNEL PROTECTION, TYPE C WITH FILTER	
					80					80				611	97400	80	FT	CONDUIT, MISC.:8'-0" SPAN X 8'-0" RISE, TYPE A	26
																		MAINTENANCE OF TRAFFIC	
		28								28				614	12460	28	EACH	WORK ZONE MARKING SIGN	
	5									5				614	12500	5	EACH	REPLACEMENT SIGN	
	5									5				614	12600	5	EACH	REPLACEMENT DRUM	
		19.9								19.9				614	21400	19.9	MILE	WORK ZONE CENTER LINE, CLASS II	
		39.8								39.8				614	22000	39.8	MILE	WORK ZONE EDGE LINE, CLASS I, 4"	
		6								6				614	32000	6	EACH	WORK ZONE RAILROAD SYMBOL MARKING, CLASS I	
																		INCIDENTALS	
										LS				614	11000	LS		MAINTAINING TRAFFIC	
										LS				623	10000	LS		CONSTRUCTION LAYOUT STAKES AND SURVEYING	
										LS				624	10000	LS		MOBILIZATION	

**GENERAL SUMMARY**

**WIL - 6 / 49 - 3.54 / 2.62**

GENERAL NOTES

**DESIGN SPECIFICATIONS:** THIS STANDARD DRAWING CONFORMS TO THE "LRFD BRIDGE DESIGN SPECIFICATIONS" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2014, INCLUDING THE 2015 & 2016 INTERIM SPECIFICATIONS AND THE ODOT BRIDGE DESIGN MANUAL, 2007.

**DESIGN DATA:** THE FOLLOWING DESIGN DATA IS ASSUMED:

INTERNAL ANGLE OF FRICTION OF BACKFILL SOIL,  $\phi_{br} = 30^\circ$   
 TOTAL UNIT WEIGHT OF BACKFILL SOIL = 120 PCF  
 INTERNAL ANGLE OF FRICTION (DRAINED), FOUNDATION SOIL,  $\phi_f = 28^\circ$   
 UNDRAINED SHEAR STRENGTH (COHESIVE), FOUNDATION SOIL,  $S_{ur} = 1500$  PSF  
 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)

CONCRETE CLASS QC1 - 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)

**FORESLOPE WALL ANCHOR DOWELS:** ANCHOR PER CMS 510 WITH NONSHRINK, NONMETALLIC GROUT CONFORMING TO CMS 705.20 AND TO A DEPTH SPECIFIED ON SHEET 6/6. PAYMENT FOR DOWEL HOLES, GROUT AND INSTALLATION SHALL BE INCLUDED WITH ITEM 511.

THREADED INSERTS OR NON-PROTRUDING MECHANICAL CONNECTORS CAPABLE OF DEVELOPING AT LEAST 125 PERCENT OF THE SPECIFIED YIELD STRENGTH OF THE REINFORCEMENT SHOWN ARE AN ACCEPTABLE ALTERNATIVE TO RESIN BONDING. MAINTAIN A MINIMUM COVER OF 3 INCHES AT THE BOTTOM OF THE CULVERT SLAB. MECHANICAL CONNECTORS SHALL HAVE AN "L-SHAPED" BAR INSIDE THE CULVERT WITH A MINIMUM HORIZONTAL LENGTH OF 12 INCHES. THE DEPARTMENT WILL CONSIDER PAYMENT FOR INSERTS OR MECHANICAL CONNECTORS AS INCIDENTAL TO ITEM 611.

**ITEM 204 GEOGRID, AS PER PLAN:** SHALL FOLLOW THE SPECIFICATIONS FOR THE 204 ITEM AND THE REQUIREMENTS FOR CMS 712.15 EXCEPT THE MINIMUM AND MAXIMUM OPENING SIZES SHALL BE 1.0 INCHES AND 1.5 INCHES RESPECTFULLY.

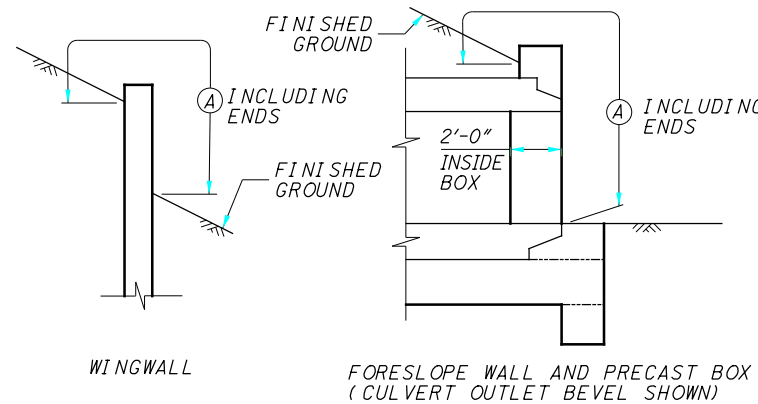
**ITEM 503: UNCLASSIFIED EXCAVATION, AS PER PLAN:** SHALL BE ACCORDANCE WITH 503 EXCEPT THAT THE BACKFILL MATERIAL PLACED SHALL FOLLOW THE SPECIFICATIONS FOR ITEM 613 LOW MORTAR STRUCTURAL BACKFILL, TYPE 1 OR TYPE 2, UNLESS ODOT ENGINEER APPROVED CONTRACTOR CULVERT INSTALLATION PLAN SPECIFIES OTHERWISE.

**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.

**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 NON-EPOXY SEALER. THE LIMITS SHALL BE AS SHOWN IN THE DIAGRAMS BELOW. PAYMENT FOR THE NON-EPOXY SEALER SHALL BE PER ITEM 512 - SEALING OF CONCRETE SURFACES.

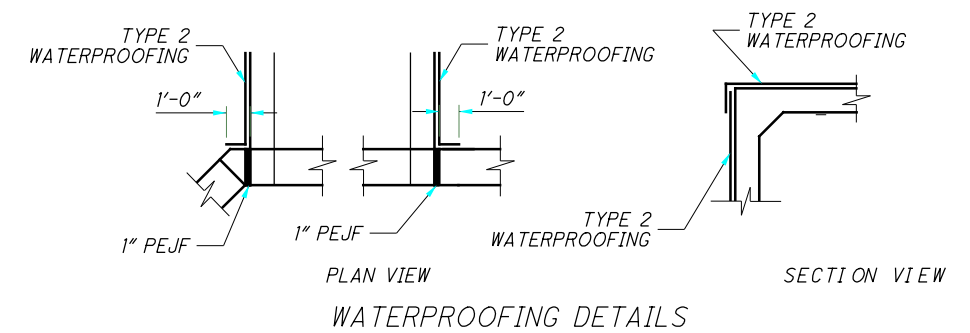


LIMITS OF ITEM 512-SEALING CONCRETE SURFACES

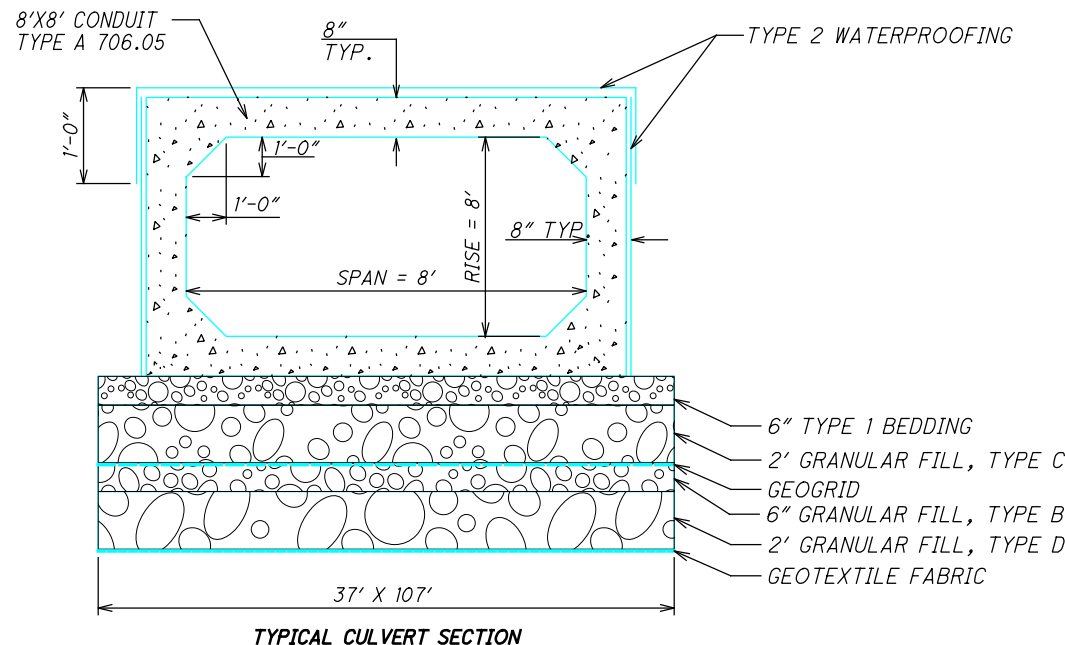
(A) - SEAL ENTIRE CONCRETE SURFACE AREA

**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.



**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 QC1 CONCRETE, RETAINING/WINGWALL INCLUDING FOOTING. PAYMENT FOR REINFORCING STEEL SHALL BE INCLUDED WITH ITEM 509 - EPOXY COATED REINFORCING STEEL.



ESTIMATED QUANTITIES (02/STR/CV)				
ITEM	ITEM EXT	TOTAL	UNIT	DESCRIPTION
202	11000	LUMP		STRUCTURE REMOVED
202	34900	200	LIN. FT.	PIPE REMOVED
203	20000	120	CU. YD.	EMBANKMENT
204	13000	780	CU. YD.	EXCAVATION OF SUBGRADE
204	30010	73	CU. YD.	GRANULAR MATERIAL, TYPE B
204	30020	293	CU. YD.	GRANULAR MATERIAL, TYPE C
204	30030	293	CU. YD.	GRANULAR MATERIAL, TYPE D
204	50000	440	SQ. YD.	GEOTEXTILE FABRIC
204	51001	440	SQ. YD.	GEOGRID, AS PER PLAN
503	11100	LUMP		COFFERDAMS AND EXCAVATION BRACING
503	21100	3920	CU. YD.	UNCLASSIFIED EXCAVATION, AS PER PLAN
509	10000	2544	LB.	EPOXY COATED REINFORCING STEEL
511	46010	21	CU. YD.	CLASS QC1 CONCRETE, RETAINING/WINGWALL NOT INCLUDING
511	46510	41	CU. YD.	CLASS QC1 CONCRETE, FOOTING
511	46610	1	CU. YD.	CLASS QC1 CONCRETE, HEADWALL
512	10100	61	SQ. YD.	SEALING OF CONCRETE SURFACES (NON-EPOXY)
512	33000	275	SQ. YD.	TYPE 2 MEMBRANE WATERPROOFING
516	13600	53	SQ. FT.	1" PREFORMED EXPANSION JOINT FILLER
518	21230	LUMP		POROUS BACKFILL WITH GEOTEXTILE FABRIC
601	32200	46	CU. YD.	ROCK CHANNEL PROTECTION, TYPE C WITH FILTER
611	97400	80	LIN. FT.	CONDUIT, MISC.: 8'-0" SPAN X 8'-0" RISE, TYPE A

NOTE: TOTALS CARRIED TO GENERAL SUMMARY SHEET

I:\ProjectData\WIL-49-2.5LRSF\Design\Structures\WIL049\_408C\Sheets\94334\_DN001.dgn Sheet 4/20/2020 10:40:42 AM jerrford

DESIGN AGENCY

DATE

REVIEWED XXX MM/DD/YY  
 CULVERT FILE NUMBER 1847263

DRAWN MAS  
 REVISIONS XXX

DESIGNED MAS  
 CHECKED DJG

WILLIAMS COUNTY  
 STA. 213+10  
 STA. 217+10

GENERAL NOTES  
 CULVERT WIL-49-4.08  
 OVER BRATTON DITCH

WIL-6/49  
 -3.54/2.62  
 PID No. 94334

3/6

26  
 36