

DESIGN SPECIFICATIONS:

THIS STRUCTURE CONFORMS TO THE "LRFD BRIDGE DESIGN SPECIFICATIONS" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2017, AND THE ODOT BRIDGE DESIGN MANUAL, 2007.

DESIGN DATA: THE FOLLOWING DESIGN DATA IS ASSUMED:

INTERNAL ANGLE OF FRICTION OF BACKFILL SOIL, $\phi_{bf} = 30^\circ$
 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, $S_{uf} = 1500$ PSF
 UNIT WEIGHT OF CONCRETE = 150 PCF
 SLOPE OF BACKFILL = 2:1

CONCRETE CLASS OC1 - COMPRESSIVE STRENGTH 4000 PSI (FOOTING, WINGWALL AND FORESLOPE WALL)

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

FORESLOPE WALL ANCHOR DOWELS:

ANCHOR PER C&MS 510 WITH NONSHRINK, NONMETALLIC GROUT CONFORMING TO C&MS 705.20 AND TO A DEPTH OF 9". PAYMENT FOR DOWEL HOLES, GROUT AND INSTALLATION SHALL BE INCLUDED WITH ITEM 511.

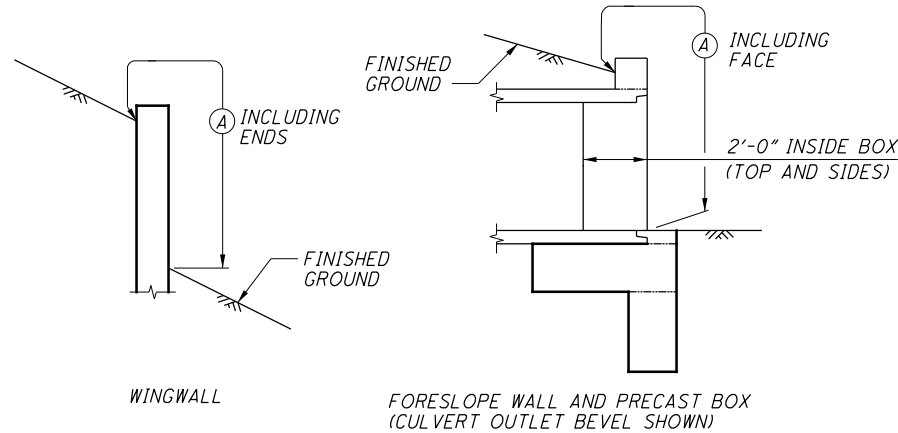
THREADED INSERTS OR NON-PROTRUDING MECHANICAL CONNECTORS CAPABLE OF DEVELOPING AT LEAST 125 PERCENT OF THE SPECIFIED YIELD STRENGTH OF THE REINFORCEMENT SHOWN ARE AN ACCEPTABLE ALTERNATIVE TO RESIN BONDING. MAINTAIN A MINIMUM COVER OF 3 INCHES AT THE BOTTOM OF THE CULVERT SLAB. MECHANICAL CONNECTORS 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, 12' X 4' CONDUIT, TYPE A, 706.05.

PREFORMED EXPANSION JOINT FILLER:

PREFORMED EXPANSION JOINT FILLER (PEJF) CONFORMING TO C&MS 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 204, GRANULAR MATERIAL, TYPE C, AS PER PLAN

EXCAVATION SHALL BE DONE AS PER C&MS ITEM 611 EXCEPT AS NOTED HERE. ODOT DISTRICT 7 CONSTRUCTION STAFF SHALL INSPECT THE BOTTOM OF EXCAVATION. IF EXPOSED MATERIAL IS DEEMED UNSUITABLE, CONTRACTOR WILL REMOVE UNSUITABLE MATERIAL AS DIRECTED BY THE ENGINEER. THE FOLLOWING ITEMS AND CONTINGENCY QUANTITIES SHALL BE USED TO REPLACE UNSUITABLE MATERIAL:

ITEM 204 GRANULAR MATERIAL, TYPE C, AS PER PLAN 60 CY
 ITEM 204 GEOTEXTILE FABRIC, AS PER PLAN 90 SY

THE ABOVE QUANTITIES ARE INCLUDED IN THE ESTIMATED QUANTITIES.

ITEM 204, GEOTEXTILE FABRIC, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF C&MS ITEM 204, THIS ITEM SHALL BE 712.09 TYPE D FABRIC.

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT PRICE BID ITEM 204, GEOTEXTILE FABRIC, AS PER PLAN AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO INSTALL THE FABRIC.

PRECAST CONCRETE:

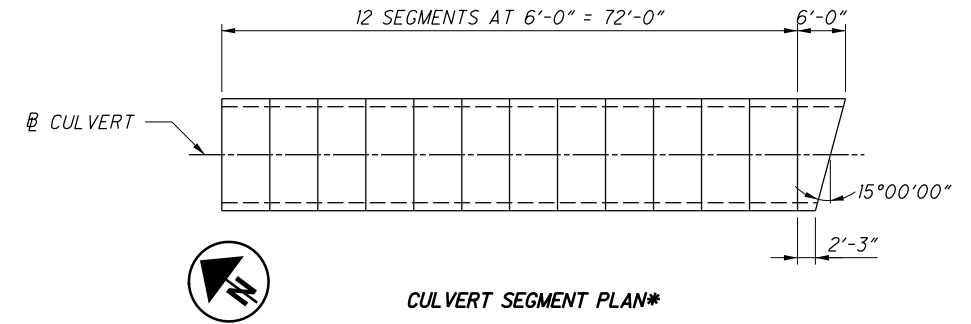
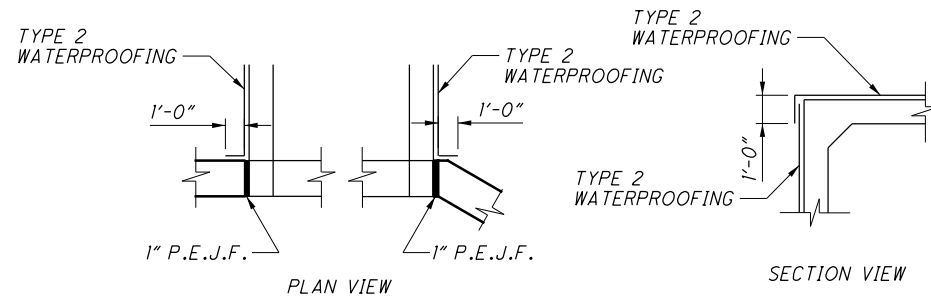
AT THE OPTION OF THE CONTRACTOR, PRECAST FOOTINGS, WINGWALLS AND HEADWALLS MAY BE USED PROVIDED THEY ARE SIZED TO MEET THE SOIL PARAMETERS AND MEET OR EXCEED THE MATERIAL STRENGTHS SPECIFIED HEREIN. THE CONTRACTOR SHALL SUBMIT DESIGNS AND SHOP DRAWINGS TO THE OFFICE OF STRUCTURAL ENGINEERING FOR APPROVAL.

FULL COMPENSATION FOR THE PRECAST FOOTING, 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 C&MS 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 2 WATERPROOFING, PER C&MS 512.08 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.



CULVERT SEGMENT PLAN*

* - THIS IS ONE REPRESENTED DESIGN THAT MAY BE USED TO CONSTRUCT THE PROJECT. NO ADDITIONAL PAYMENT WILL BE MADE FOR PROVIDING AN ALTERNATE DESIGN.

PRECAST BOX SHOP DRAWINGS AND LOAD RATING:

SUBMIT SHOP DRAWINGS TO THE ENGINEER AS DETAILED IN C&MS. UPON RECEIPT THE ENGINEER SHALL FORWARD THE SHOP DRAWINGS TO THE DISTRICT BRIDGE DESIGN ENGINEER IN ORDER TO GENERATE A LOAD RATING FOR THE STRUCTURE.

REVISIONS	NUMBER	DATE	DESCRIPTION
1	1	5/1/20	NOTE AND QUANTITY UPDATED

ESTIMATED QUANTITIES					DESIGNED: AMR DATE: 5-15-19	CHECKED: STK DATE: 5-15-19
ITEM	EXTENSION	TOTAL	UNIT	DESCRIPTION	SEE SHEET	
202	11000	LS	-	STRUCTURE REMOVED		
204	30021	170	CY	GRANULAR MATERIAL, TYPE C, AS PER PLAN	2	
204	50001	254	SY	GEOTEXTILE FABRIC, AS PER PLAN	2	
503	11100	LS	-	COFFERDAMS AND EXCAVATION BRACING		
503	21300	LS	-	UNCLASSIFIED EXCAVATION		
509	10000	3936	LB	EPOXY COATED REINFORCING STEEL		
511	46010	11	CY	CLASS OC1 CONCRETE, RETAINING/WINGWALL NOT INCLUDING FOOTING		
511	46510	32	CY	CLASS OC1 CONCRETE, FOOTING		
512	10100	47	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)		
512	33000	234	SY	TYPE 2 WATERPROOFING		
516	13600	30	SF	1" PREFORMED EXPANSION JOINT FILLER		
518	21200	7	CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC		
611	95600	77	FT	12' X 4' CONDUIT, TYPE A, 706.05 (2 FT. COVER)		

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