

**DESIGN SPECIFICATIONS:**

THIS STRUCTURE CONFORMS TO THE "LRFD BRIDGE DESIGN SPECIFICATIONS" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 9TH EDITION AND THE ODOT BRIDGE DESIGN MANUAL.

**DESIGN LOADING:**

HL-93 WITH AN ALLOWANCE OF 0.06 KSF FUTURE WEARING SURFACE.

**DESIGN STRESSES:**

CAST-IN-PLACE STRUCTURES  
CONCRETE CLASS "QC MISC." -  $f'c = 4,000$  psi SUBSTRUCTURE  
REINFORCING STEEL - ASTM A615, A616, OR A617  
 $F_y = 60,000$  psi.

**REMOVAL OF EXISTING STRUCTURE:**

PORTIONS OF THE EXISTING STRUCTURE SHALL BE REMOVED AS INDICATED.

**FOUNDATION BEARING RESISTANCE:**

WINGWALL AND CULVERT FOOTINGS, AS DESIGNED, PRODUCE A MAXIMUM SERVICE LIMIT STATE BEARING PRESSURE OF 3.0 KIPS PER SQUARE FOOT AND A MAXIMUM STRENGTH LIMIT STATE BEARING PRESSURE OF 4.5 KIPS PER SQUARE FOOT. THE FACTORED BEARING RESISTANCE IS 4.8 KIPS PER SQUARE FOOT.

**THREE-SIDED CULVERT WALL AND TOP SLAB THICKNESS:**

THE WALL AND TOP SLAB THICKNESSES SHOWN ON THE PLANS WERE OBTAINED FROM THE MANUFACTURERS AT THE TIME THE PLANS WERE PREPARED. IF THE WALL AND/OR TOP SLAB THICKNESS OF THE CULVERT PROPOSED ARE DIFFERENT FROM WHAT IS SHOWN IN THE PLANS, A MARKED COPY OF THE PROJECT PLANS, INCLUDING ALL PLAN NOTES AND DETAILS SHOWING ALL ITEMS AFFECTED BY THE DIFFERENT CULVERT DIMENSIONS, SHALL BE SUBMITTED FOR APPROVAL WITH THE SHOP DRAWINGS. ALL WORK REQUIRED TO ACCOMODATE ANY REVISED DIMENSIONS SHALL BE AT NO EXTRA COST TO THE STATE.

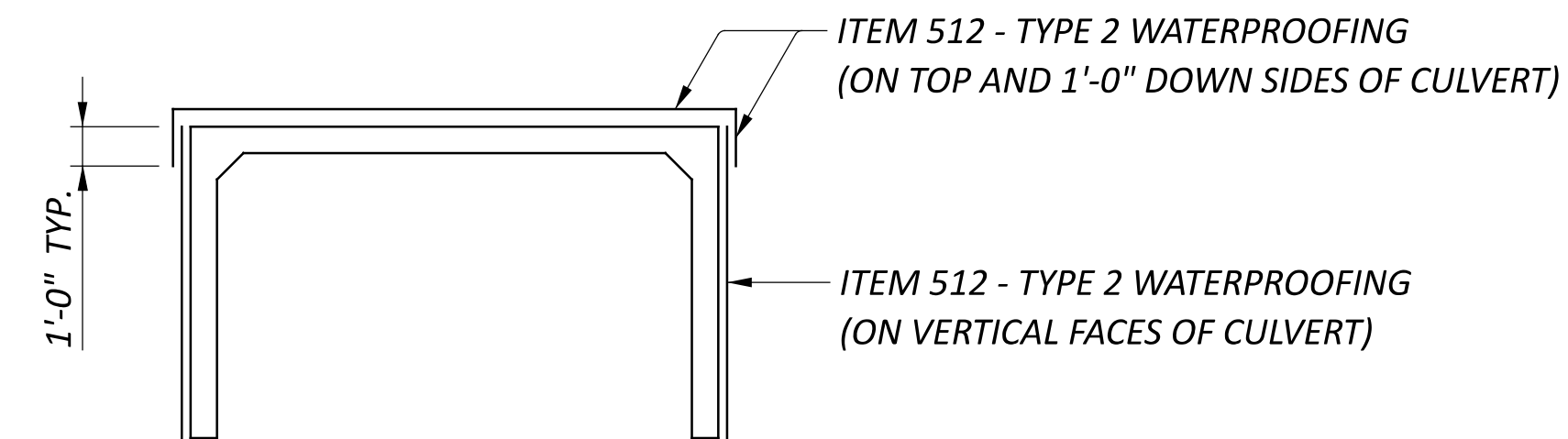
**ITEM 512, TYPE 2 WATERPROOFING:**

MEMBRANE WATERPROOFING (SHEET TYPE 2) SHALL BE APPLIED TO THE TOP SURFACE OF THE PRECAST CULVERT SECTIONS AND SHALL EXTEND VERTICALLY DOWN ALL SIDES FORTH PORTIONS OF THE CULVERT WHICH SHALL BE IN CONTACT WITH THE BACKFILL. THE EXTERIOR JOINT GAP ON THE TOP AND SIDES BETWEEN THE PRECAST CULVERT SECTIONS SHALL BE FILLED WITH PORTLAND CEMENT MORTAR PRIOR TO INSTALLING THE MEMBRANE WATERPROOFING. JOINT WRAP AS SPECIFIED IN 611.08 AND CONCRETE SEALING AS SPECIFIED IN 611.09 ARE NOT REQUIRED UNDER THE LIMITS OF THE MEMBRANE WATERPROOFING. PAYMENT FOR THE MEMBRANE WATERPROOFING SHALL BE AT THE CONTRACT PRICE BID PER SQUARE YARD FOR ITEM 512, TYPE 2 WATERPROOFING.

**ITEM 511 - CLASS QC1 CONCRETE, HEADWALL:**

THE QUANTITY SHOWN FOR THIS PAY ITEM REPRESENTS THE FORESLOPE WALL LOCATED ATOP EACH END OF THE CONDUIT.

WHEN SEALING OF CONCRETE SURFACES (EPOXY) IS SPECIFIED ON THE HEADWALLS OF A PRECAST CONCRETE BOX CULVERT, ANY PRECAST CULVERT SECTIONS BEYOND THE LIMIT OF THE MEMBRANE WATERPROOFING SHALL BE SEALED USING EPOXY SEALER. PAYMENT FOR THE SEALING OF THE PRECAST CONCRETE BOX SURFACES SHALL BE MADE AT THE CONTRACT PRICE BID PER SQUARE YARD FOR ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY URETHANE).



**GENERAL SUMMARY (GUE - 660 - 2.52)**

ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION
202	11000	LS	LUMP	STRUCTURE REMOVED
503	21100	67	CY	UNCLASSIFIED EXCAVATION
509	10000	6015	LB	EPOXY COATED REINFORCING STEEL
511	46010	12	CY	CLASS QC1 CONCRETE, RETAINING/WINGWALL NOT INCLUDING FOOTING
511	46510	54	CY	CLASS QC1 CONCRETE, FOOTING
511	46610	1	CY	CLASS QC1 CONCRETE, HEADWALL
512	33000	128	SY	TYPE 2 WATERPROOFING
512	10100	34	SY	SEALING OF CONCRETE SURFACES (EPOXY URETHANE)
516	13600	27	SF	1" PREFORMED EXPANSION JOINT FILLER
518	21200	16	CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC
601	32100	57	CY	ROCK CHANNEL PROTECTION, TYPE B WITH FILTER
601	34200	43	CY	ROCK CHANNEL PROTECTION, TYPE C WITHOUT FILTER
611	70000	40	FT	CONDUIT, TYPE A, PRECAST REINFORCED CONCRETE
				THREE SIDED FLAT TOPPED CULVERT (14'-0" SPAN X 6'-0" RISE)

CULVERT ESTIMATED QUANTITIES  
STA. 133+13.00

GUE-660-2.52

MODEL: SP1312-6b PAPER SIZE: 34x22 (in.) DATE: 1/17/2025 TIME: 8:00:00 AM  
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DESIGN AGENCY



DESIGNER  
KEW

REVIEWER  
JOH 01/17/25

PROJECT ID  
131206

SUBSET	TOTAL
2	8

SHEET	TOTAL
P.101	125