

GENERAL NOTES

SPECIFICATIONS:

DELDOT BRIDGE DESIGN MANUAL, MAY 2005, WITH JANUARY 2008 REVISIONS;
 DELDOT STANDARD SPECIFICATIONS, 2001, WITH 2009 REVISIONS; AASHTO,
 LRFD BRIDGE DESIGN SPECIFICATIONS, 4TH EDITION, WITH 2008 AND 2009
 INTERIM; US 301 DESIGN MANUAL.

DESIGN:

LRFD DESIGN METHOD.

LOADING:

HL 93 TRUCK LOADING.

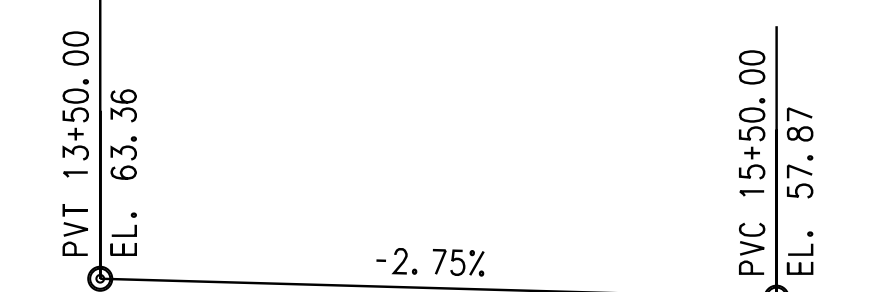
CONCRETE:

ALL CAST IN PLACE CONCRETE SHALL BE CLASS A (4,500 PSI). THE CONCRETE FOR WINGWALL FOOTINGS THAT ARE NOT EXPOSED SHALL BE CLASS B (3,000 PSI). FOOTINGS SHALL BE CAST IN PLACE. WINGWALLS AND HEADWALLS MAY BE CAST IN PLACE. ALL PRECAST CONCRETE SHALL BE $f'c = 5000$ psi.

REINFORCING STEEL:

REINFORCING STEEL SHALL BE AASHTO M31, GRADE 60 UNLESS OTHERWISE NOTED AND SHALL BE PROTECTED WITH FUSION BONDED EPOXY CONFORMING TO AASHTO M284 WHERE INDICATED ON PLANS. ALL REINFORCING STEEL SHALL HAVE A CLEAR COVER OF 2" UNLESS SPECIFIED OTHERWISE ON THE PLANS.

RAMP C VERTICAL DATA



RAMP C HORIZONTAL DATA

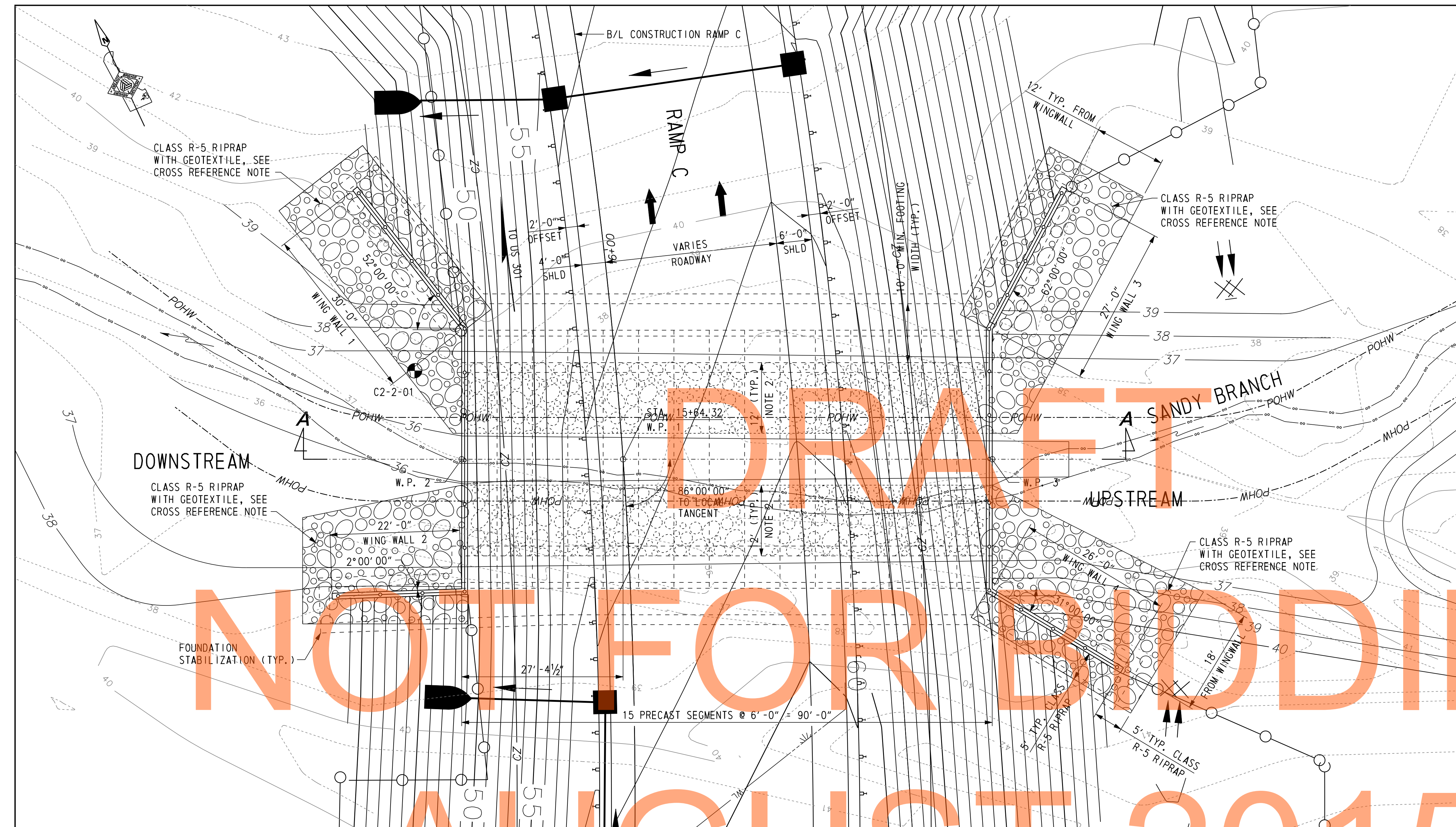
PC STA. 13+35.22
 PI STA. 15+04.36
 PT STA. 16+68.96
 R = 833.00'
 L = 333.75'

WORKING POINTS

W. P. NO.	STATION	OFFSET	COORDINATES	
			NORTHING	EASTING
1	15+64.32	0.00'	526,630.8788	562,169.0583
2	15+66.30	37.31' LT.	526,642.6515	562,144.3408
3	15+60.26	62.48' RT.	526,603.9511	562,225.5952

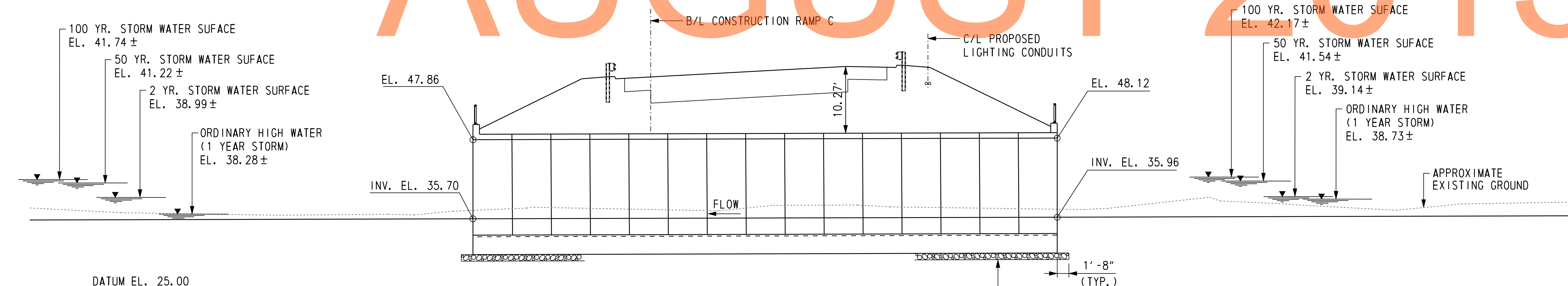
CROSS REFERENCE NOTES:

1. RECESS AND CHOKO RIPRAP IN ACCORDANCE WITH THE STREAM RESTORATION AND SLOPE RIPRAP TREATMENT NOTES FOUND ON EC-05.
2. EXTEND RIPRAP TWELVE (12) FEET FROM EDGE OF FOOTING.
3. FOR NOTES FOR PRECAST ELEMENTS, SEE DWG. 1-508B PN-1.



PRECAST ARCH CULVERT PLAN

SCALE: 1" = 10'-0"



SECTION A-A

SCALE: 1" = 10'-0"

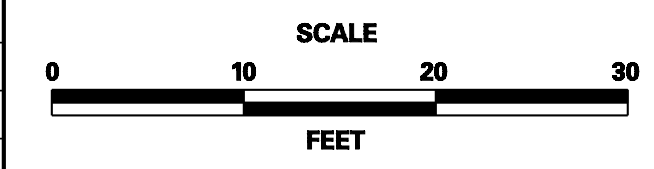
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11/8/2012

Steve Lambert



ADDENDUMS / REVISIONS



**US 301
 LEVELS ROAD
 TO SUMMIT BRIDGE ROAD**

CONTRACT	T200511301
COUNTY	NEW CASTLE
BRIDGE NO.	1-508B
DESIGNED BY:	D.D. DIEHL
CHECKED BY:	T. W. FEROLI

**RAMP C OVER SANDY BRANCH
 PRECAST ARCH CULVERT
 PLAN AND SECTION**

1-508B PE-1
SHEET NO. 682
TOTAL SHTS. 1256

NOTES FOR PRECAST ELEMENTS

1. DESIGN PLANS AND WORKING DRAWINGS

THE INFORMATION SHOWN ON THESE PLANS FOR THE PRECAST CONCRETE ARCH CULVERT AND THE WINGWALL SECTIONS DEMONSTRATES THE TYPE OF CONSTRUCTION THAT IS ACCEPTABLE FOR USE ON THIS PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION OF THE PRECAST ARCH CULVERT AND WINGWALLS TO THE LINES, GRADES AND DIMENSIONS SHOWN ON THE PLANS. THE CONTRACTOR SHALL VERIFY ALL ELEVATIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR IS REQUIRED TO SUBMIT SHOP DRAWINGS OF THE CULVERT AND WINGWALL UNITS FOR APPROVAL PRIOR TO CONSTRUCTION. THE SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING:

- A. AN OVERALL PLAN SHOWING ALL UNITS IN ONE VIEW, AS WELL AS DETAILS OF EACH UNIT.
- B. A PLAN VIEW OF THE REINFORCEMENT LAYOUT FOR ANY IRREGULAR SHAPED (CURVED, SKEWED, ETC...) PORTION OF THE STRUCTURE.
- C. A REINFORCEMENT BAR SCHEDULE.
- D. A BILL OF MATERIALS INCLUDING ALL ACCESSORIES.
- E. THE METHOD AND SEQUENCE OF POST-TENSIONING.

2. PAYMENT FOR PRECAST ELEMENTS, ACCESSORIES AND INSTALLATION
PAYMENT FOR ITEM 602506 - "PRECAST CONCRETE ARCH" SHALL INCLUDE:

- A. ALL PRECAST ELEMENTS.
- B. ALL REINFORCEMENT IN PRECAST ELEMENTS.
- C. ALL ACCESSORIES (INCLUDING, BUT NOT LIMITED TO, DRAINAGE SYSTEM, CONCRETE FINISH, CONNECTION PLATES, POST-TENSIONING TENDONS, GROUT, JOINT WRAP, THREADED INSERTS) THAT IS MENTIONED IN THE FOLLOWING NOTES UNLESS NOTED OTHERWISE.
- D. DELIVERY AND INSTALLATION OF ALL PRECAST ELEMENTS AND ACCESSORIES.

3. MISCELLANEOUS CONCRETE NOTES

- A. ALL EXPOSED SURFACES SHALL BE PROTECTED WITH A WATER MISCIBLE, PENETRATING SILANE SEALER SUCH AS ENVIROSEAL 20 BY BASF SUPERIOR OR APPROVED EQUAL.
- B. ALL EXPOSED EDGES SHALL BE CHAMFERED 3/4" UNLESS OTHERWISE NOTED.

4. ARCH POST-TENSIONING

THE PRECAST ARCH SECTIONS SHALL BE POST-TENSIONED TOGETHER WITH A MINIMUM OF FOUR POST-TENSIONING TENDONS. THE SECTIONS SHALL BE POST-TENSIONED SUCH THAT THE NEOPRENE GASKETS ARE COMPRESSED ALL AROUND AND THERE IS A 1/2" MAXIMUM GAP BETWEEN SECTIONS. THE MAXIMUM POST-TENSIONING FORCE PER TENDON SHALL BE 28,900 LBS. POST-TENSIONING DETAILS (PLACEMENT, SEQUENCE OF TENSIONING, ETC...) SHALL BE SHOWN ON THE SHOP DRAWINGS. ALL POCKETS FOR POST-TENSIONING DUCTS SHALL BE FILLED WITH NON-SHRINK GROUT.

5. WINGWALL POST-TENSIONING

THE PRECAST WINGWALL SECTIONS SHALL BE POST-TENSIONED TOGETHER WITH A MINIMUM OF TWO POST-TENSIONING TENDONS, USING THE SAME REQUIREMENTS AS NOTE 4, AND SHALL ALSO BE POSITIVELY CONNECTED TO THE CULVERT. A BOLTED CONNECTION TO THE CULVERT MAY BE USED, WITH THE DETAILS SHOWN IN THE SUBMITTED SHOP DRAWINGS.

6. BOLTED CONNECTIONS

THE BOLTED CONNECTIONS SHALL CONSIST OF AT LEAST TWO SETS OF STEEL PLATES WITH AT LEAST TWO BOLTS OR THREADED RODS ON EACH SIDE OF EACH CONNECTION. SLOTTED HOLES IN THE PLATE SHALL NOT BE PERMITTED. HOLES FOR BOLTS OR THREADED RODS MAY BE FIELD DRILLED.

7. JOINTS BETWEEN PRECAST SECTIONS

- A. NEOPRENE GASKETS SHALL BE PROVIDED AT THE JOINTS BETWEEN ALL PRECAST UNITS IN ORDER TO MAKE THE JOINTS WATERTIGHT.
- B. JOINTS BETWEEN PRECAST CULVERT SECTIONS SHALL BE TONGUE AND GROOVE. JOINTS BETWEEN RIGID FRAME SECTIONS SHALL HAVE A SHEAR KEY ALL AROUND.
- C. THE LOCATION OF THE JOINTS IN THE PRECAST CULVERT SHALL BE DETERMINED BY THE MANUFACTURER AND SHALL BE SUBMITTED WITH THE SHOP DRAWINGS FOR APPROVAL.
- D. THE EXTERIOR OF ALL JOINTS SHALL BE COVERED WITH A MINIMUM OF 9" WIDE JOINT WRAP CENTERED ON THE JOINT.

8. BEARING RESISTANCE

ARCH CULVERT BEARING RESISTANCE = 7.0 PSF.
WINGWALL BEARING RESISTANCE = 4.0 PSF.

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
207000	EXCAVATION AND BACKFILL FOR STRUCTURES	CY	1090
302007	GRADED AGGREGATE BASE COURSE, TYPE B (FOR FOUNDATION STABILIZATION; WINGWALLS AND CULVERT STRUCTURE)	TON	210
602002	PORTLAND CEMENT CONCRETE MASONRY, CLASS B (CULVERT FOOTING)	CY	200
602002	PORTLAND CEMENT CONCRETE MASONRY, CLASS B (WINGWALL FOOTING)	CY	70
602556	PRECAST CONCRETE ARCH	LS	1
604000	BAR REINFORCEMENT, EPOXY COATED (CULVERT AND WINGWALL FOOTINGS)	LB	22,500
712021	RIPRAP; R-5 (FOR CULVERT STRUCTURE CHANNEL SCOUR PROTECTION)	TON	620
712531	CHANNEL BED FILL	CY	288
713001	GEOTEXTILE, GRADED AGGREGATE BASE	SY	385
713003	GEOTEXTILE, RIPRAP	SY	460
727003	CHAIN LINK FENCE	LF	195

INDEX OF DRAWINGS		
SHEET NO.	DRAWING NO.	TITLE
682	1-508B PE-1	PLAN AND SECTION
683	1-508B PN-1	INDEX OF DRAWINGS
684	1-508B CU-1	ELEVATIONS AND SECTIONS
685	1-508B BO-1	BORINGS

DRAFT


NOT FOR BIDDING

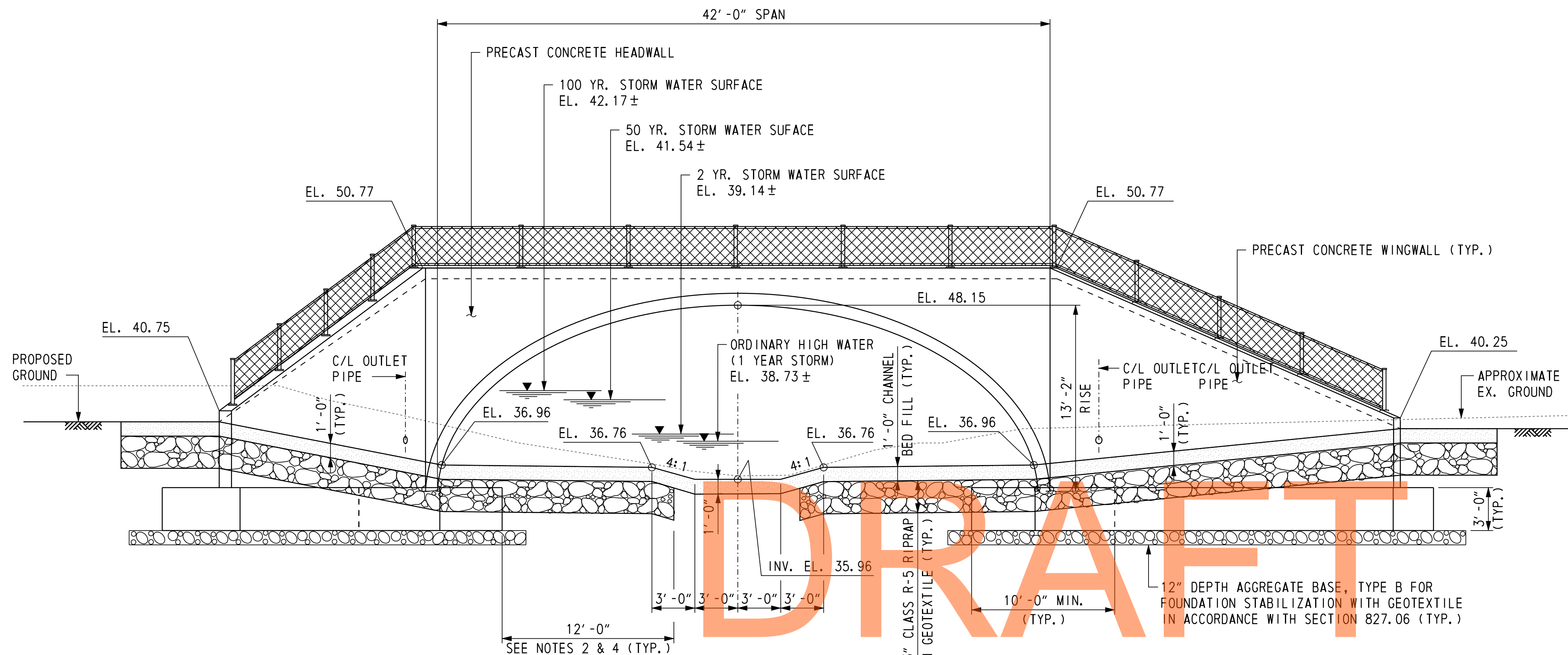
AUGUST 2015

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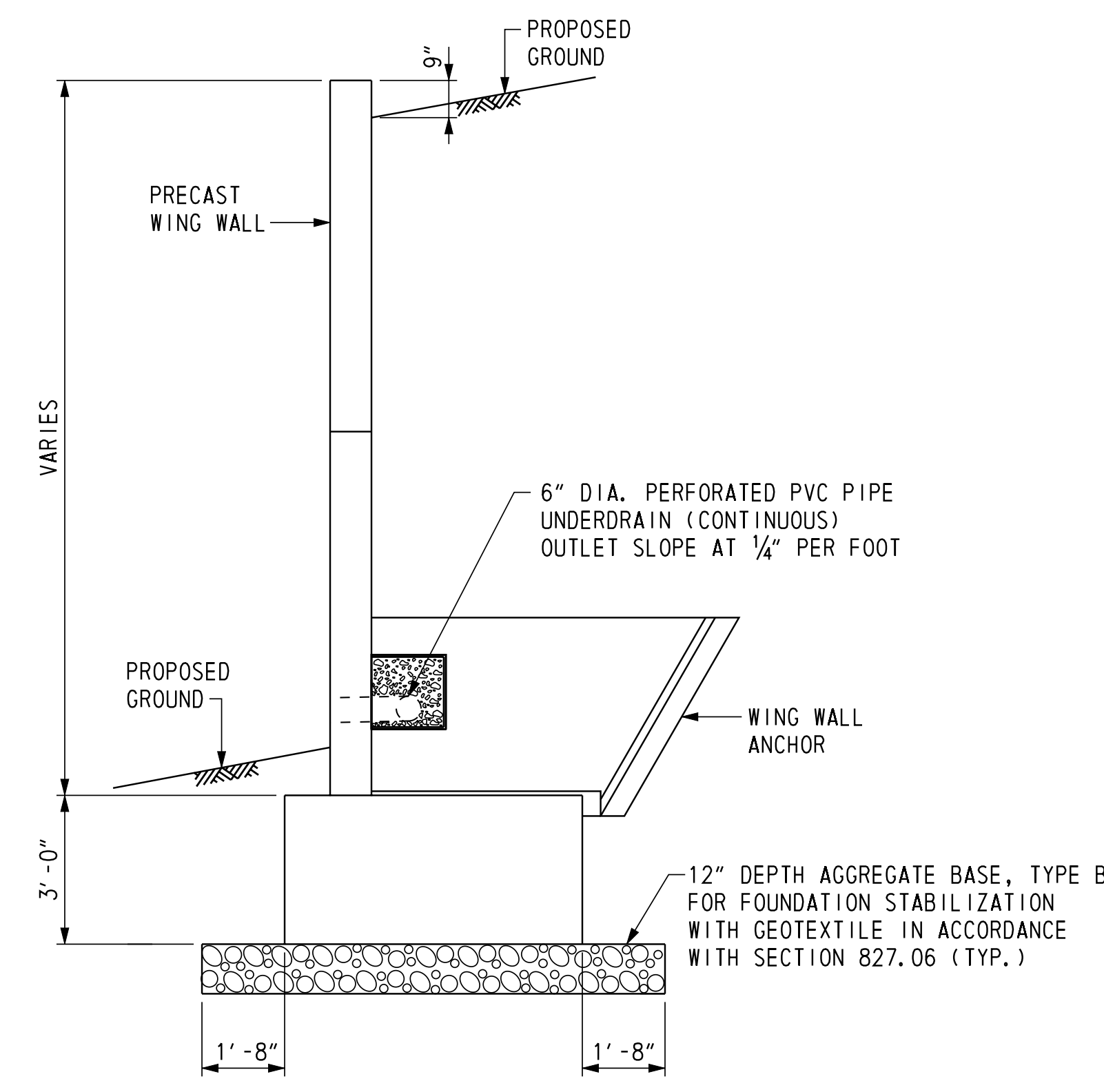
11/9/2012

Steve Lambert

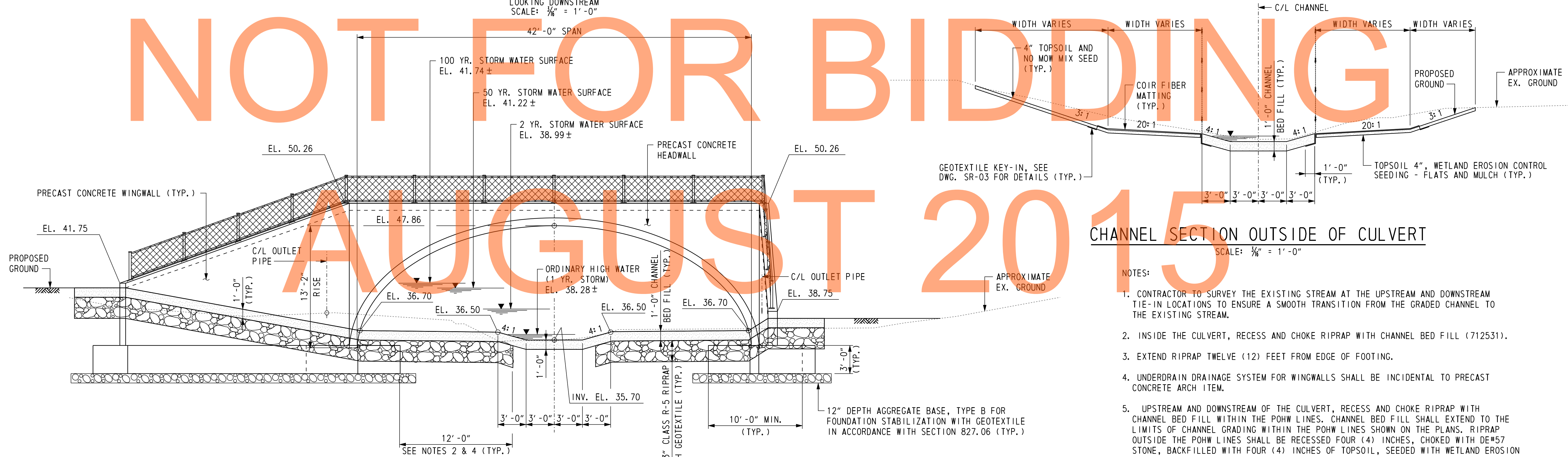
 DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS		US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD	CONTRACT	BRIDGE NO.	1-508B	RAMP C OVER SANDY BRANCH INDEX OF DRAWINGS	SHEET NO.	1-508B PN-1
				T200511301	DESIGNED BY: K. D. BEAVER	683			
				COUNTY	CHECKED BY: J. S. LI	TOTAL SHTS.		1256	
				NEW CASTLE					



UPSTREAM ELEVATION
 LOOKING DOWNSTREAM
 SCALE: 3/16" = 1'-0"



TYPICAL PRECAST WING WALL SECTION
 SCALE: 3/8" = 1'-0"



DOWNSTREAM ELEVATION
 LOOKING UPSTREAM
 SCALE: 3/16" = 1'-0"

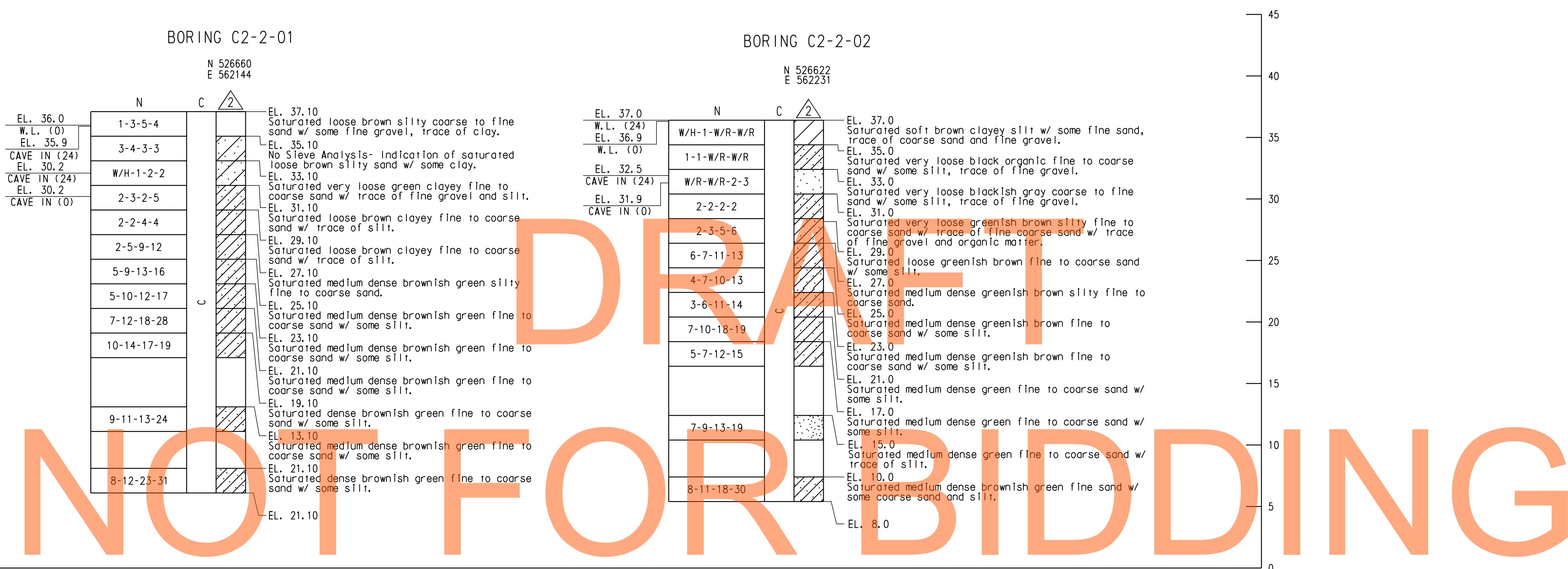
CHANNEL SECTION OUTSIDE OF CULVERT
 SCALE: 3/16" = 1'-0"

- NOTES:
1. CONTRACTOR TO SURVEY THE EXISTING STREAM AT THE UPSTREAM AND DOWNSTREAM TIE-IN LOCATIONS TO ENSURE A SMOOTH TRANSITION FROM THE GRADED CHANNEL TO THE EXISTING STREAM.
 2. INSIDE THE CULVERT, RECESS AND CHOKE RIPRAP WITH CHANNEL BED FILL (712531).
 3. EXTEND RIPRAP TWELVE (12) FEET FROM EDGE OF FOOTING.
 4. UNDERDRAIN DRAINAGE SYSTEM FOR WINGWALLS SHALL BE INCIDENTAL TO PRECAST CONCRETE ARCH ITEM.
 5. UPSTREAM AND DOWNSTREAM OF THE CULVERT, RECESS AND CHOKE RIPRAP WITH CHANNEL BED FILL WITHIN THE POHW LINES. CHANNEL BED FILL SHALL EXTEND TO THE LIMITS OF CHANNEL GRADING WITHIN THE POHW LINES SHOWN ON THE PLANS. RIPRAP OUTSIDE THE POHW LINES SHALL BE RECESSED FOUR (4) INCHES, CHOKED WITH DE#57 STONE, BACKFILLED WITH FOUR (4) INCHES OF TOPSOIL, SEEDED WITH WETLAND EROSION CONTROL SEEDING - FLATS AND MULCHED.
 6. STREAMBANK OUTSIDE OF THE CULVERT SHALL BE LIVE STAKED WITH DOGWOOD AND DISTURBED AREAS SHALL BE TOPSOILED, SEEDED WITH WETLAND EROSION CONTROL SEEDING - FLATS AND PLANTED WITH ALDER TEN (10) FEET ON CENTER.

NOT FOR BIDDING
 AUGUST 2015

<p>DELAWARE DEPARTMENT OF TRANSPORTATION</p>	ADDENDUMS / REVISIONS	<p>US 301 LEVELS ROAD TO SUMMIT BRIDGE ROAD</p>	CONTRACT	BRIDGE NO.	1-508B	<p>RAMP C OVER SANDY BRANCH</p> <p>PRECAST ARCH CULVERT ELEVATIONS AND SECTIONS</p>	SHEET NO.
			T200511301	DESIGNED BY: D.D. DIEHL	684		
			COUNTY	CHECKED BY: T. W. FEROLI	TOTAL SHTS.		
			NEW CASTLE		1256		

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 11/9/2012
 Steve Lambert



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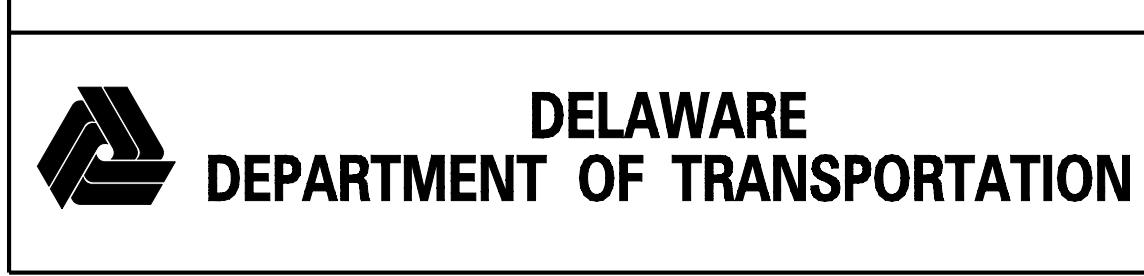
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BORINGS
SCALE: 1" = 5'-0"

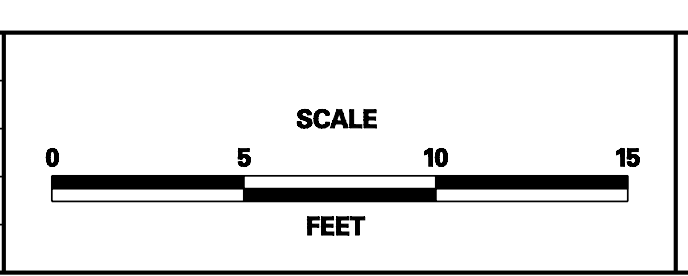
AUGUST 2015

- NOTES:
1. THE BORINGS AND STANDARD PENETRATION TESTS WERE TAKEN IN DECEMBER 2009 BY THE WALTON CORPORATION.
 2. N = BLOWS ON A TWO (2) INCH O.D. SAMPLING SPOON BY 140 LB. DRIVEWEIGHT FALLING 30 INCHES INDICATING SUCCESSIVE SIX (6) INCH INCREMENTS OF PENETRATION IN LIEU OF BLOWS PER FOOT. BLOWS RESULTING IN LESS THAN SIX (6) INCHES OF PENETRATION ARE SO INDICATED.
 3. BORINGS AND SAMPLINGS CONFORM TO AASHTO DESIGNATION T-206.

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11/8/2012
Steve Lambert



ADDENDUMS / REVISIONS	



**US 301
LEVELS ROAD
TO SUMMIT BRIDGE ROAD**

CONTRACT	BRIDGE NO.	1-508B
T200511301	DESIGNED BY:	P. M. DALONI
COUNTY	CHECKED BY:	R. C. KRHOUNEK
NEW CASTLE		

RAMP C OVER SANDY BRANCH

BORINGS

1-508B BO-1
SHEET NO.
685
TOTAL SHTS.
1256