

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
HIGHWAY DIVISION 6

# PLANS

**CONTRACT ID:** **DF00131**

**WBS ELEMENT NO.:** **45336.3.4 & 17BP.6.R.53**

**FEDERAL AID NO.:** **STP-0072(006)**

**COUNTY:** **Robeson County**

**TIP NO.:** **W-5206D**

**MILES:** **0.05 MILES**

**ROUTE NO.:** **NC 72**

**LOCATION:** **0.5 Miles North of SR 2305**

**TYPE OF WORK:** **Structure, Grading and Paving**



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

PAT MCCRORY  
GOVERNOR

ANTHONY J. TATA  
SECRETARY

December 17, 2014

COUNTY: Robeson

MEMORANDUM TO: Mr. Brice Bell, PE  
Division Bridge Program Manager

FROM: *for* J. L. Lindsey, PE *JLM*  
Hydraulics Project Manager OPS-East

SUBJECT: Drainage Structure Recommendation on NC 72  
0.5 Miles North of SR-2305

Pursuant to your request of October 31, 2014, for pipe size recommendation at the subject site, the following is offered:

Drainage Area: +/- 365 acres  
Existing Pipe Size: 5 @ 6'-0" x 4'-9" Reinforced Concrete Box Culvert  
Recommended Pipe Size: 1 @ 30'-6" x 7'-7" Aluminum Box Culvert w/Headwall

This site is located in a FEMA regulated flood hazard zone with a Detailed Study, therefore the existing grade must be maintained at this site.

This recommendation is made from an office review only. Specific site conditions or limitations may dictate the use of an alternate structure. If such conditions are noted, please contact this office for further analysis.

JLL/jlm

CC: Darren Pittman

MAILING ADDRESS:  
NC DEPARTMENT OF TRANSPORTATION  
HYDRAULICS UNIT  
1590 MAIL SERVICE CENTER  
RALEIGH NC 27699-1590

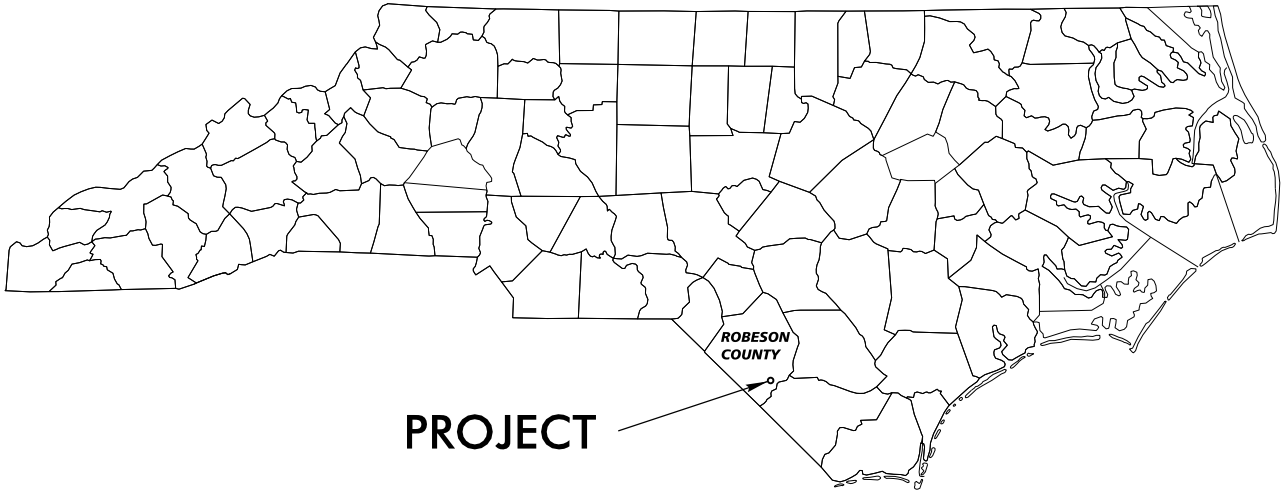
TELEPHONE: 919-707-6700  
FAX: 919-250-4108

WEBSITE: [WWW.NCDOT.ORG/DOH/](http://WWW.NCDOT.ORG/DOH/)

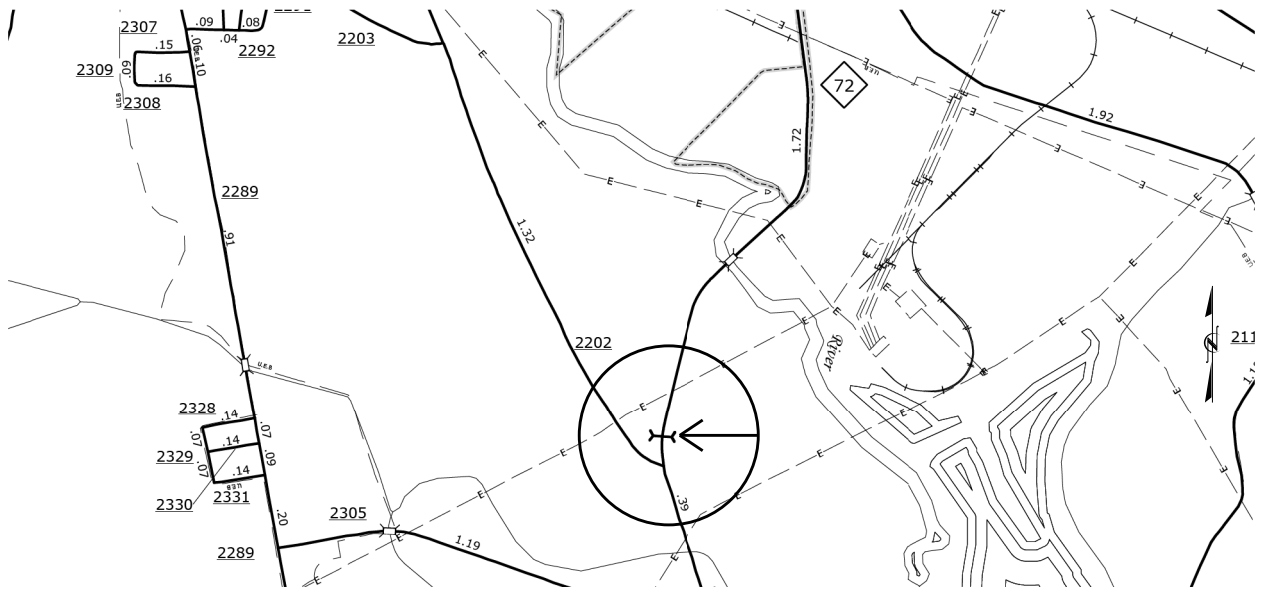
LOCATION:  
CENTURY CENTER COMPLEX  
BUILDING B  
1020 BIRCH RIDGE DRIVE  
RALEIGH NC



# NORTH CAROLINA



**PROJECT**



**PROJECT SITE**

VICINITY  
MAPS

**NCDOT**

DIVISION OF HIGHWAYS

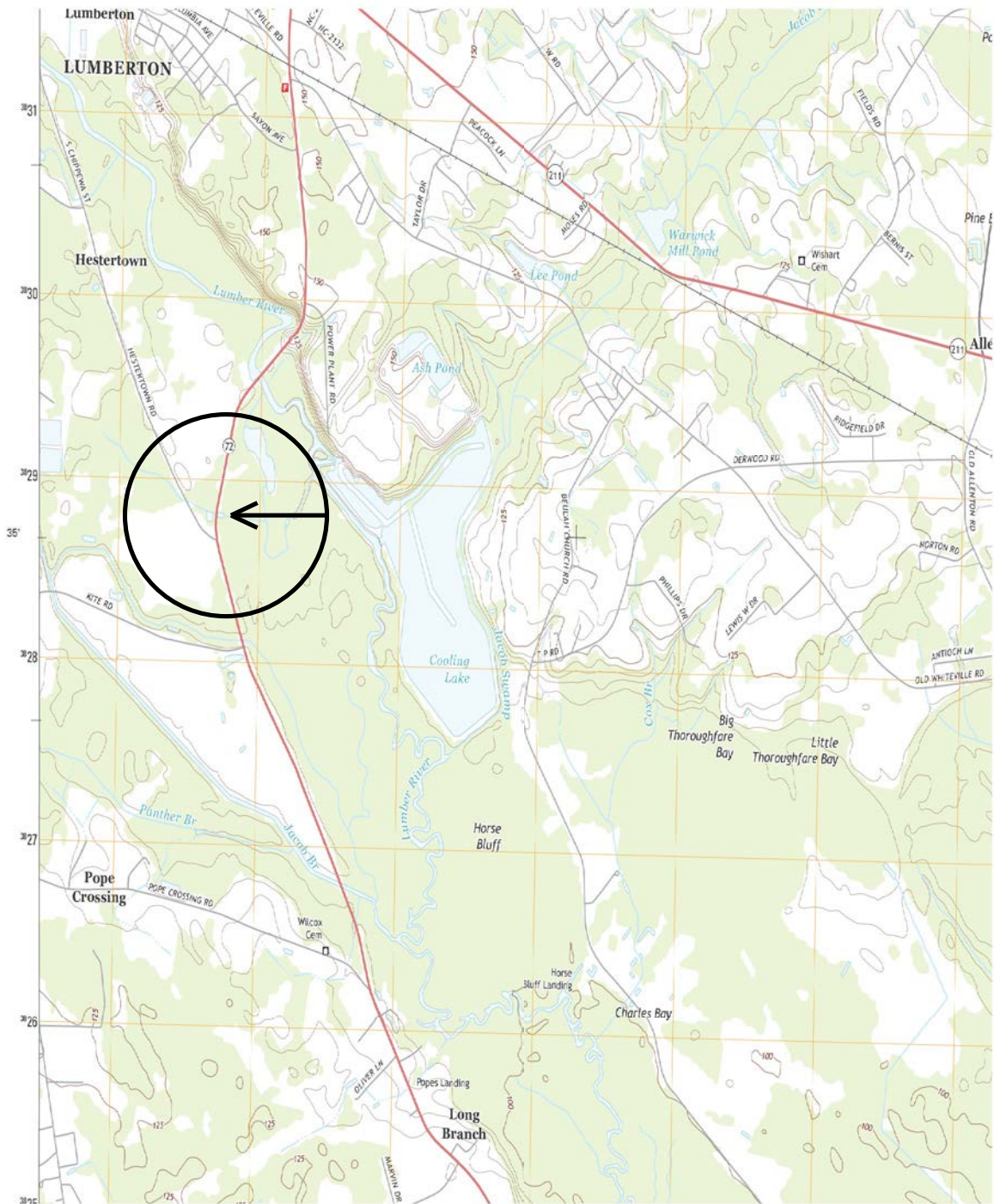
ROBESON COUNTY

PROJECT: 45336.3.4 (W-5206D)

CULVERT REPLACEMENT

STRUCTURE C459

NC 72 EAST



# SITE MAP

**NCDOT**  
 DIVISION OF HIGHWAYS  
 ROBESON COUNTY  
 PROJECT: 45336.3.4 (W-5206D)  
 CULVERT REPLACEMENT  
 STRUCTURE C459  
 NC 72 EAST  
 SHEET 2 OF 5      19 MAY 2016

J. H. M. INVESTMENTS, LLC.  
1214/120

WOODS

WOODS

CAROLINA POWER & LIGHT  
AKA PROGRESS ENERGY  
AKA DUKE ENERGY PROGRESS  
No Reference



EP  
112+00  
EP  
R/W

NC 72

.06  
CUT LINE  
113  
54'

REMOVE EXISTING 5(6'x4.75'x34'L)  
CONCRETE BOX CULVERTS

30.50'

REPLACE WITH ALUMINUM BOX CULVERT  
54' (L) - 30.5' (Span) - 7' 7" (Rise)  
WITH FULL ALUMINUM INVERT  
FULLY WELDED TO ALUMINUM HEADWALL

CUT LINE

114

WOODS

WOODS

NASH L. MUSSELWHITE  
2033/363

CAROLINA POWER & LIGHT  
AKA PROGRESS ENERGY  
AKA DUKE ENERGY PROGRESS  
No Reference

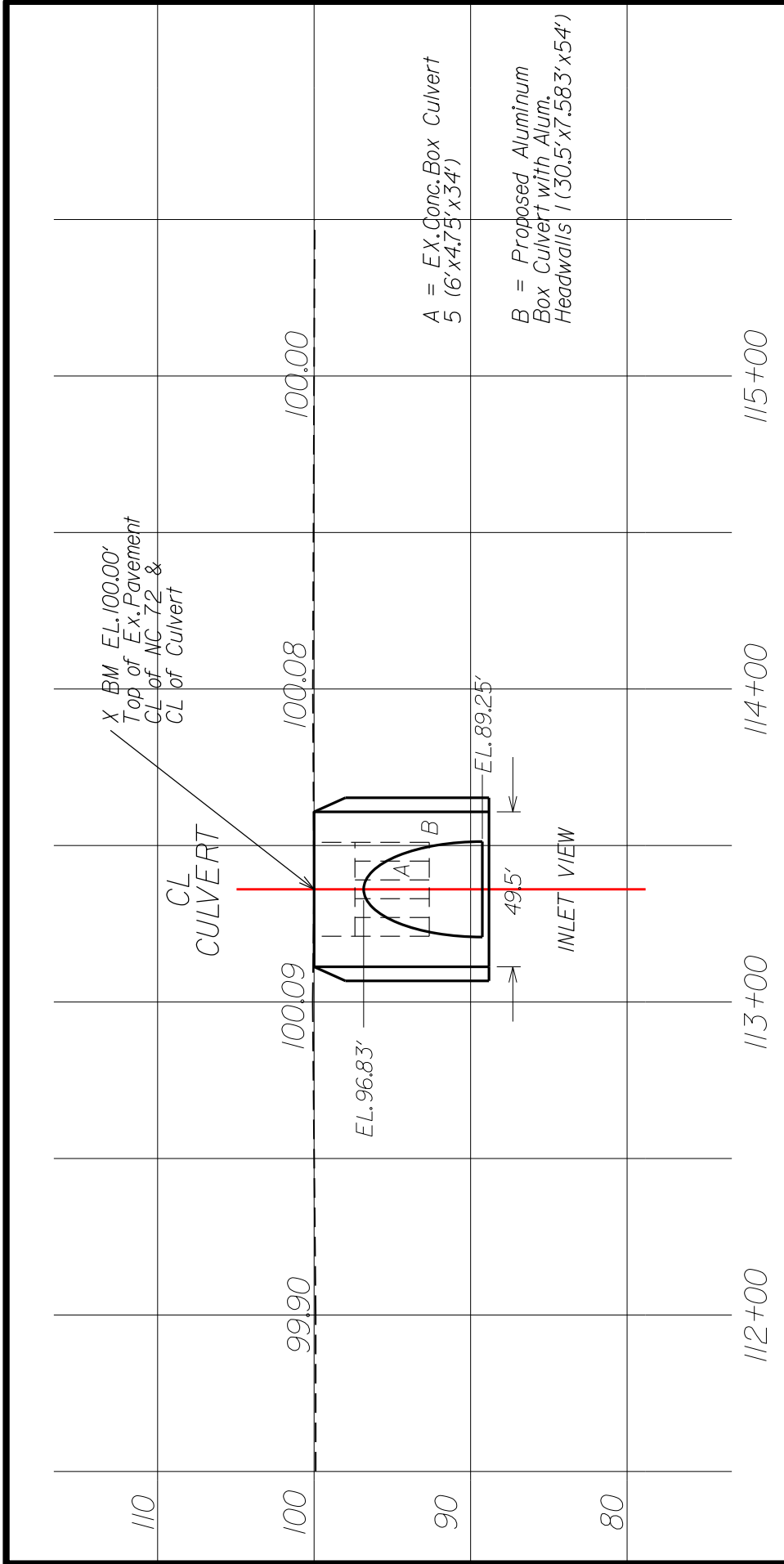
POND

R/W

.06  
28.00'  
115

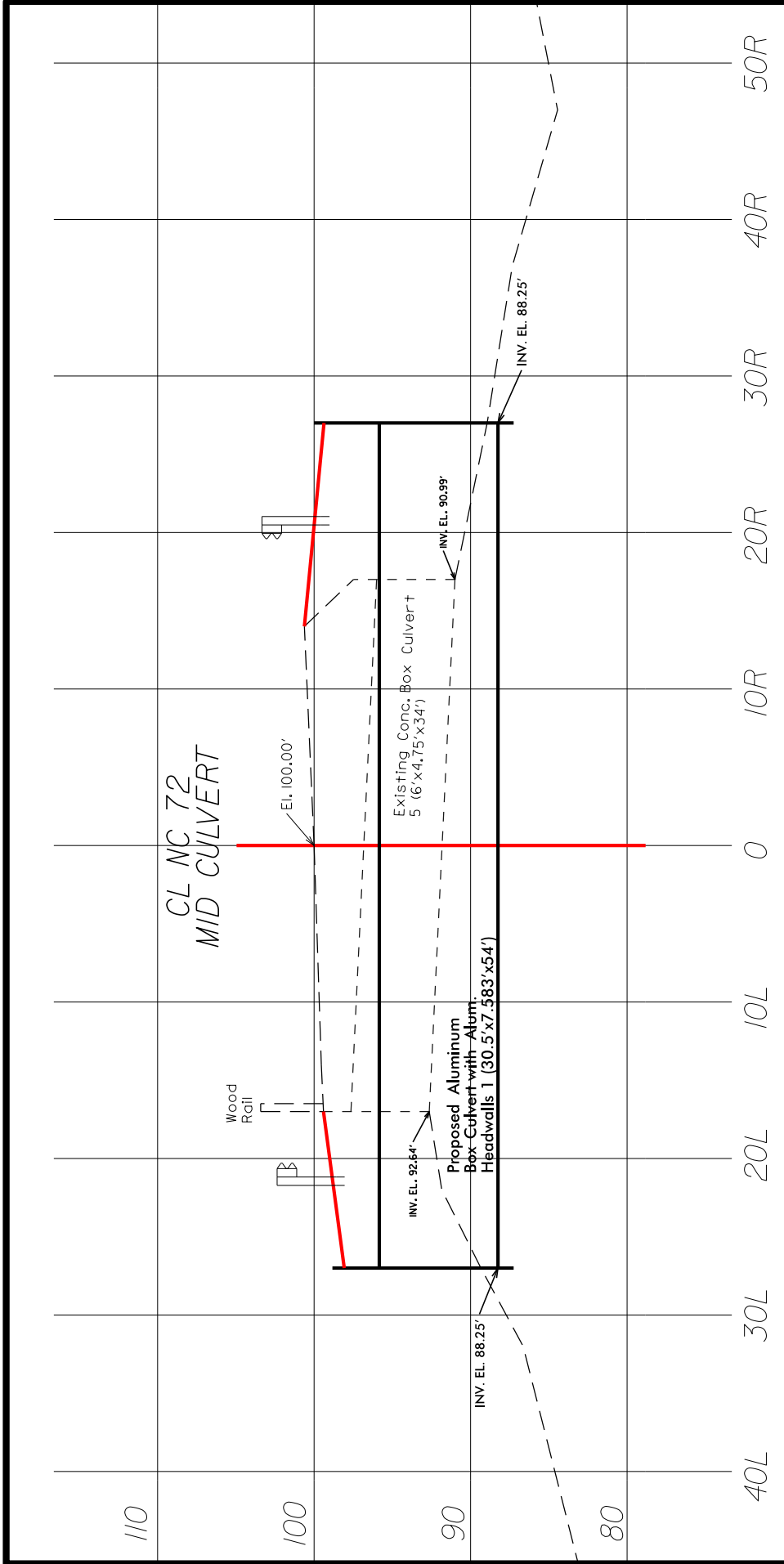


**NCDOT**  
**DIVISION OF HIGHWAYS**  
**ROBESON COUNTY**  
**PROJECT: 45336.3.4**  
**TIP: W-5206D**  
**NC 72 CULVERT**  
**Str. C459**



**NCDOT**  
 DIVISION OF HIGHWAYS  
 ROBESON COUNTY  
 PROJECT: 4536.3.4 (W-5206D)  
 CULVERT REPLACEMENT  
 STRUCTURE C459  
 NC 72 EAST

## ROADWAY PROFILE



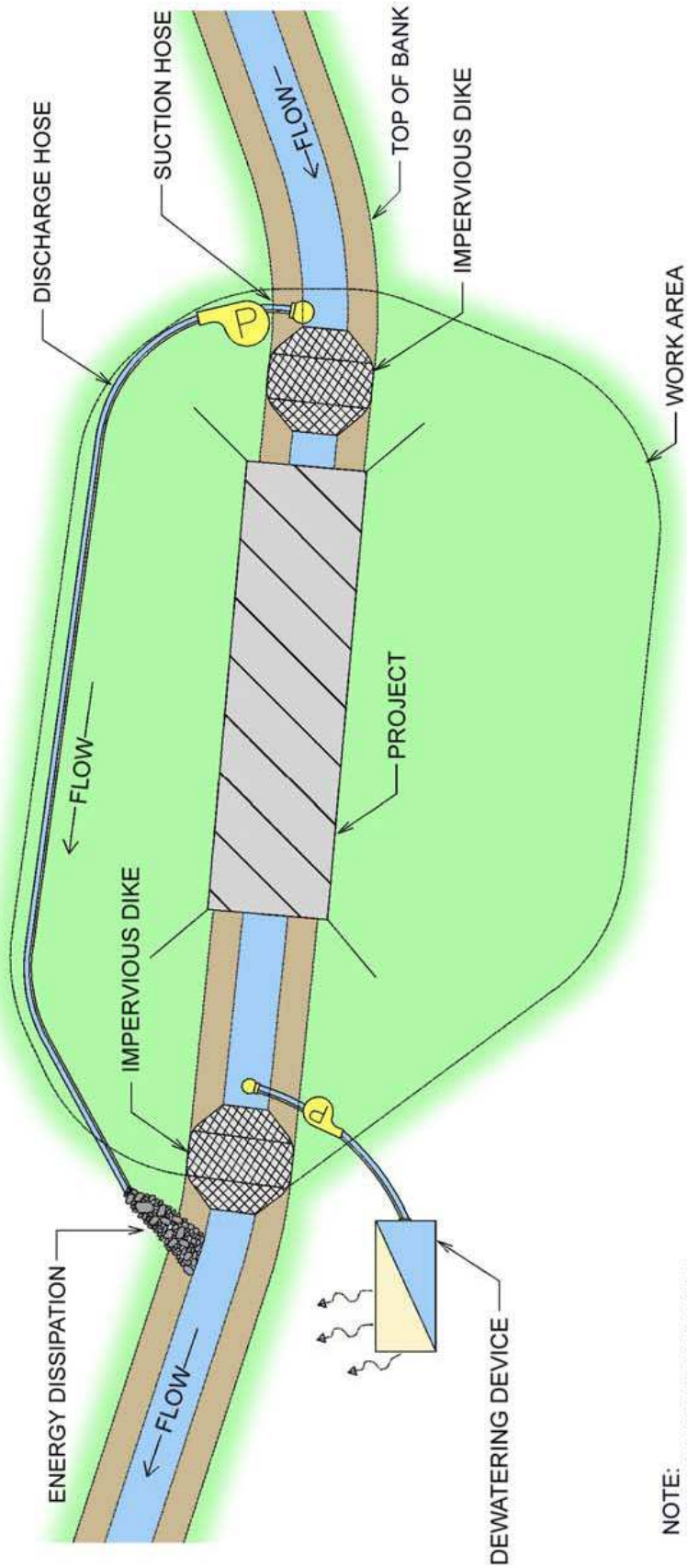
**NCDOT**  
 DIVISION OF HIGHWAYS  
 ROBESON COUNTY  
 PROJECT: 4536.3.4 (W-5206D)  
 CULVERT REPLACEMENT  
 STRUCTURE C459  
 NC 72 EAST

## STREAM PROFILE

STA. 115 + 34 -L-

**BYPASS PUMPING**

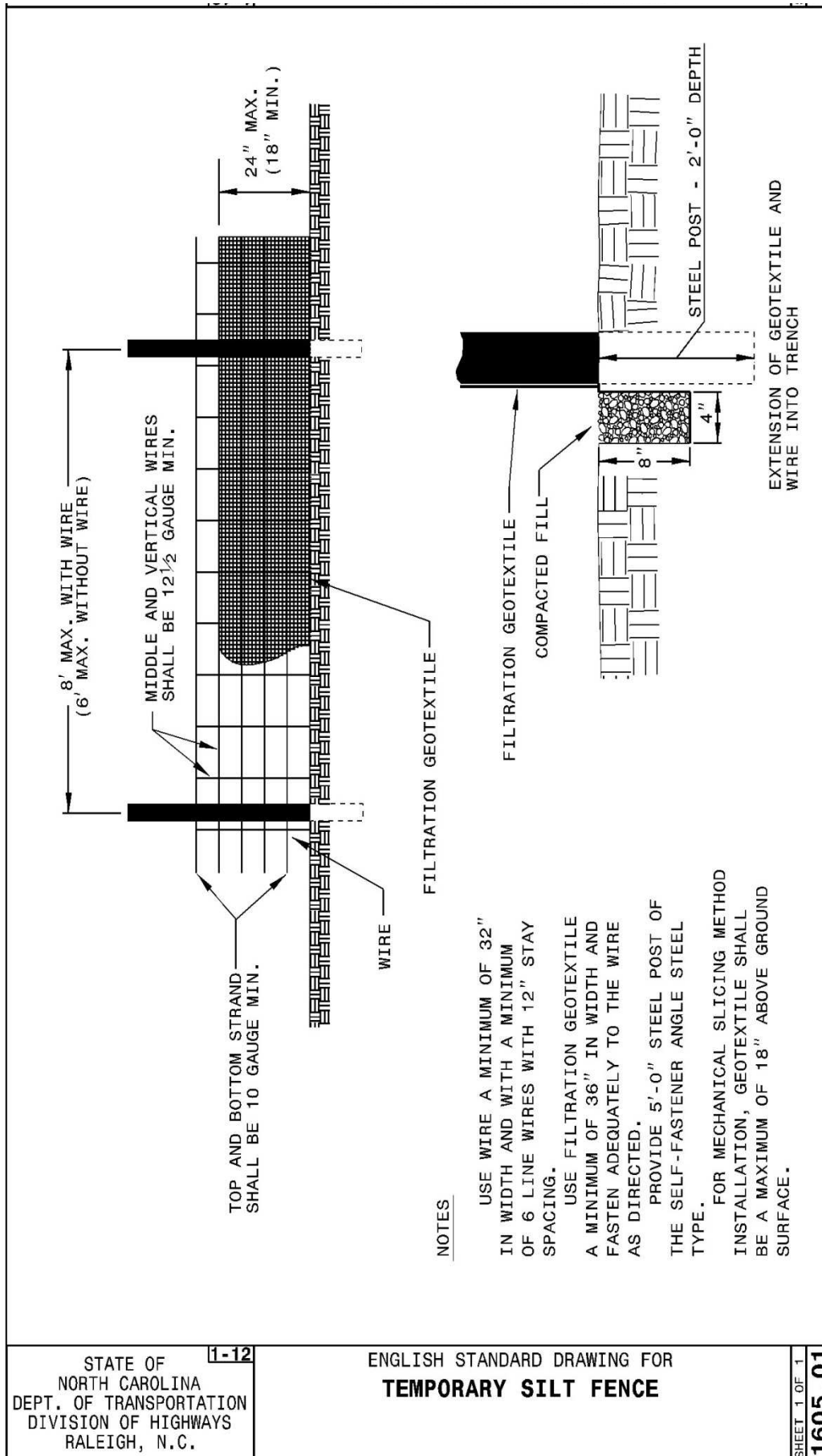
**MANAGING THE WATERCOURSE:  
BYPASS PUMPING**



NOTE:  
ENSURE TO ANCHOR ALL  
PUMPS AND PIPES SECURELY.



### TEMPORARY SILT FENCE DETAIL



**NOTES**

- USE WIRE A MINIMUM OF 32" IN WIDTH AND WITH A MINIMUM OF 6 LINE WIRES WITH 12" STAY SPACING.
- USE FILTRATION GEOTEXTILE A MINIMUM OF 36" IN WIDTH AND FASTEN ADEQUATELY TO THE WIRE AS DIRECTED.
- PROVIDE 5'-0" STEEL POST OF THE SELF-FASTENER ANGLE STEEL TYPE.
- FOR MECHANICAL SLICING METHOD INSTALLATION, GEOTEXTILE SHALL BE A MAXIMUM OF 18" ABOVE GROUND SURFACE.

STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

1-12

ENGLISH STANDARD DRAWING FOR  
**TEMPORARY SILT FENCE**

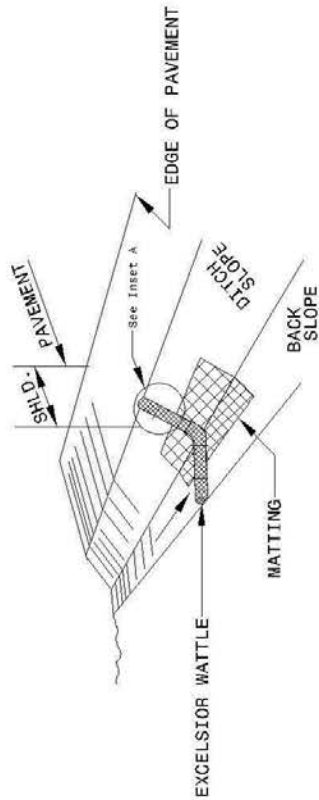
SHEET 1 OF 1  
**1605.01**

**WATTLE DETAIL**

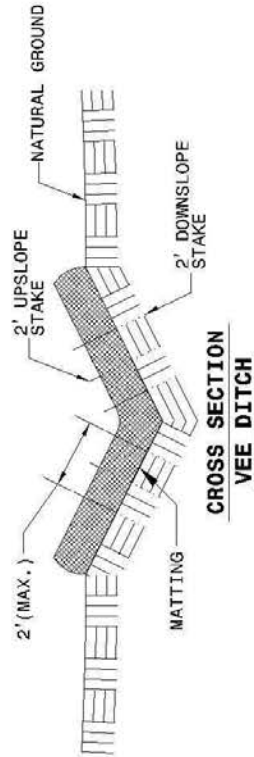
**WATTLE DETAIL**

PROJECT REFERENCE NO. A-2-1111	SHEET NO. F-1-36
DATE 10/20/11	PROJECT ROBESON COUNTY
DESIGNED BY [Name]	CHECKED BY [Name]

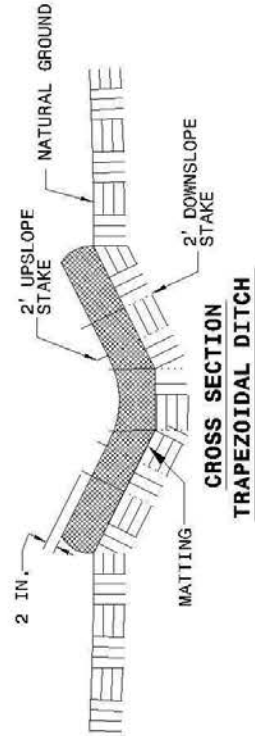
- NOTES:**
- USE MINIMUM 1/2 IN. DIAMETER EXCELSIOR WATTLE.
  - USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.
  - ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.
  - INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.
  - PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.
  - INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.
  - INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.



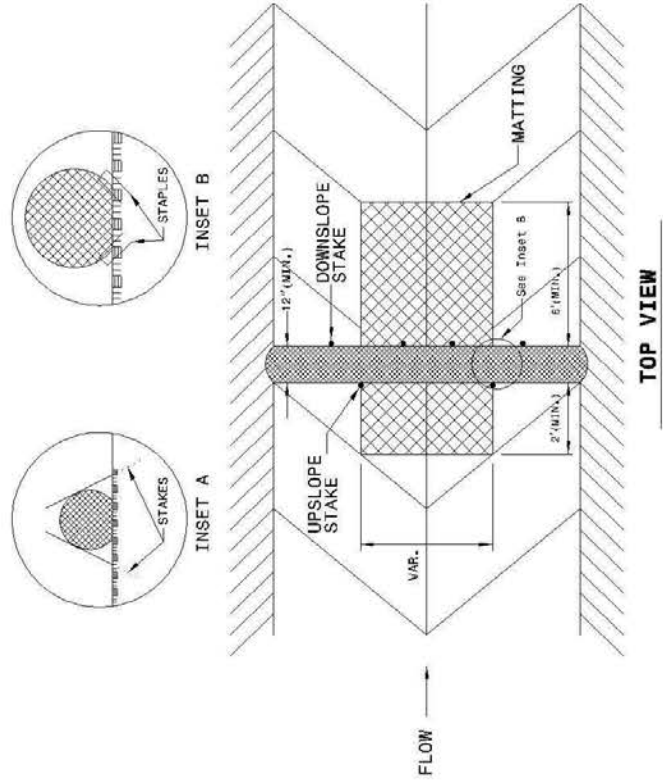
**ISOMETRIC VIEW**



**CROSS SECTION VEE DITCH**



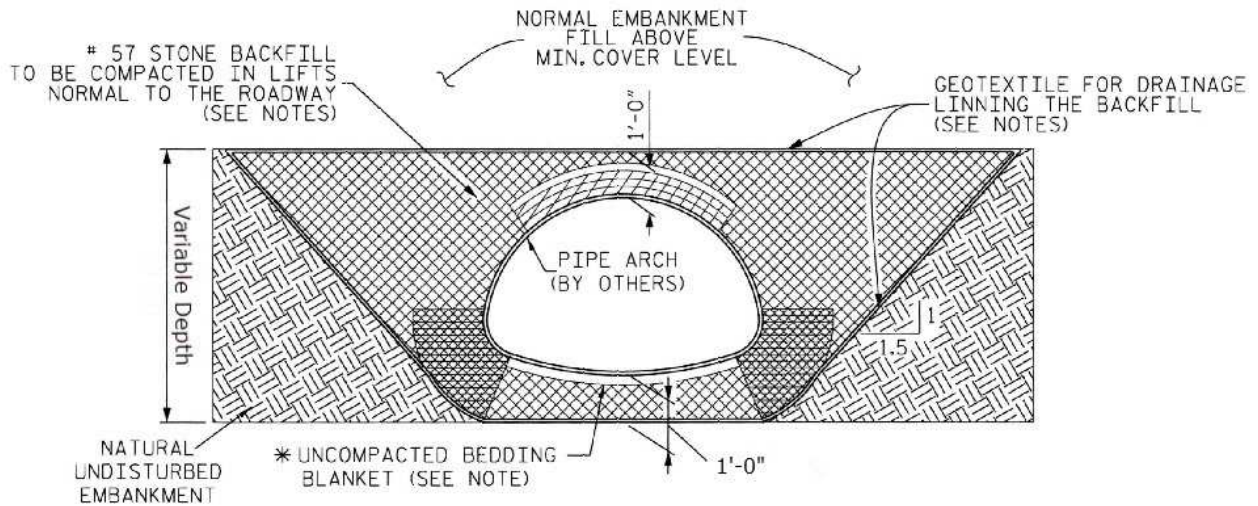
**CROSS SECTION TRAPEZOIDAL DITCH**






**TOP VIEW**

FLOW →

**TYPICAL BACKFILL SECTION**



-  CRITICAL BACKFILL ZONE, PRESSURE ON SOIL GREATEST HERE.
-  INITIAL LIFTS OVER CROWN OF STRUCTURE AS INDICATED BY SHADED AREA TO BE COMPACTED TO REQUIRED DENSITY WITH HAND OPERATED EQUIPMENT
-  # 57 STONE BACKFILL LIMITS.

**NOTES:**

ALL BACKFILL TO BE PLACED IN A BALANCED FASHION IN THIN LIFTS (6"-8" LOOSE TYPICALLY) AND COMPACTED TO 90 PERCENT DENSITY PER AASHTO T-180.

GEOTEXTILE FOR DRAINAGE IN FOUNDATION BEDDING AND BACKFILL IS INCIDENTAL TO COST OF PIPE ARCH.

COMPLETE AND REGULAR MONITORING OF THE CSP ARCH SHAPE IS NECESSARY DURING ALL BACKFILLING OF THE STRUCTURE.

PREVENT EXCESSIVE DISTORTION OF SHAPE AS NECESSARY BY VARYING COMPACTION METHODS AND EQUIPMENT.

\* SHAPED BED FOR A MINIMUM WIDTH OF SPAN/2. MINIMUM BEDDING THICKNESS IS TWICE THE CORRUGATION DEPTH.

EMBANKMENT SLOPE TO BE 1.5:1 MINIMUM SUCH THAT A STABLE EMBANKMENT CAPABLE OF RESISTING SIDE PRESSURES FROM CSP PIPE-ARCH SHAPE WILL BE MAINTAINED THROUGHOUT THE LIFE OF INSTALLATION.

**TYPICAL BACKFILL SECTION ALONG PIPE**

NTS