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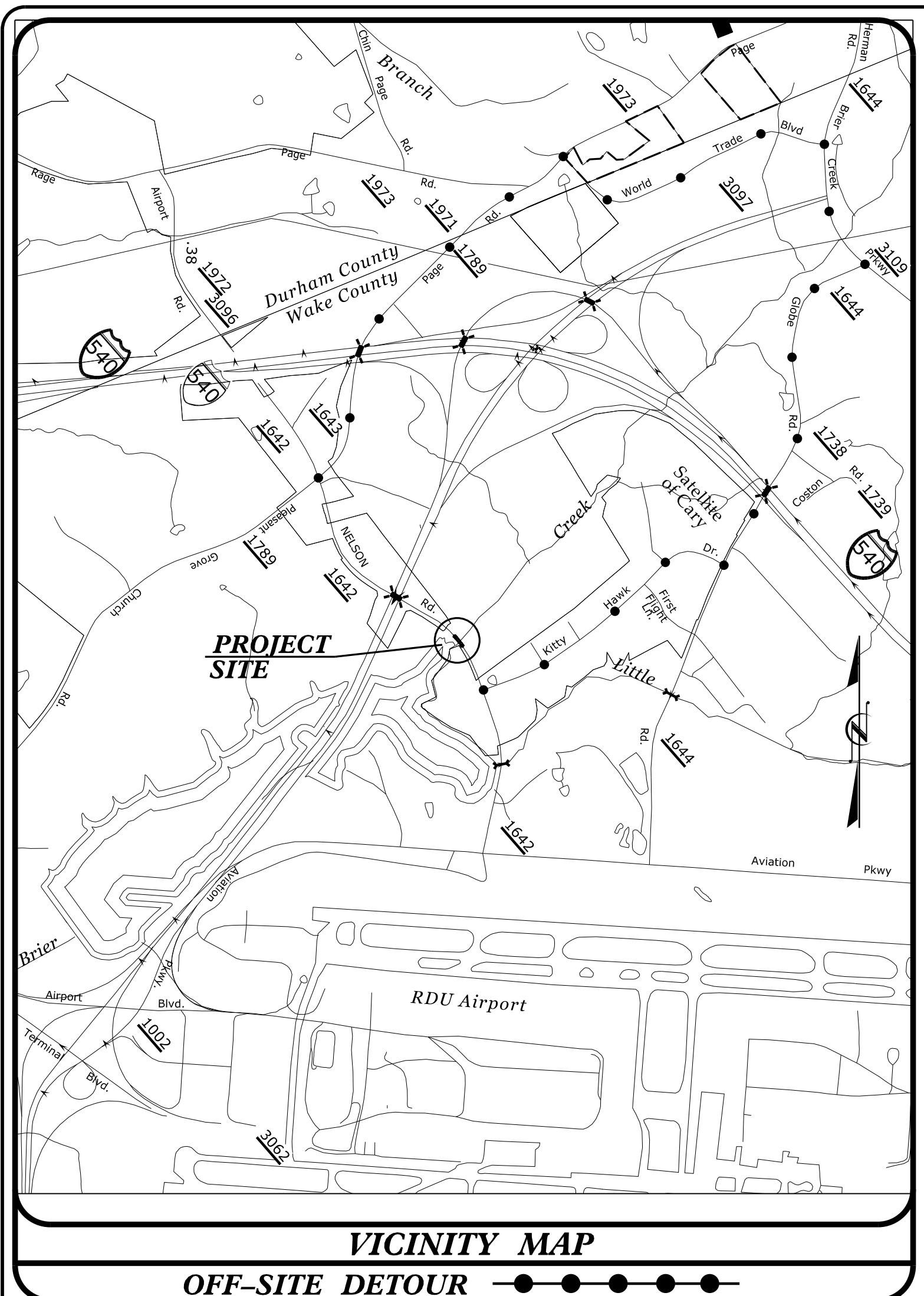
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09\_2025/219

**PROJECT: 51215.01AA**

**CONTRACT: D5POCI35**



**VICINITY MAP**  
OFF-SITE DETOUR

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**WAKE COUNTY**

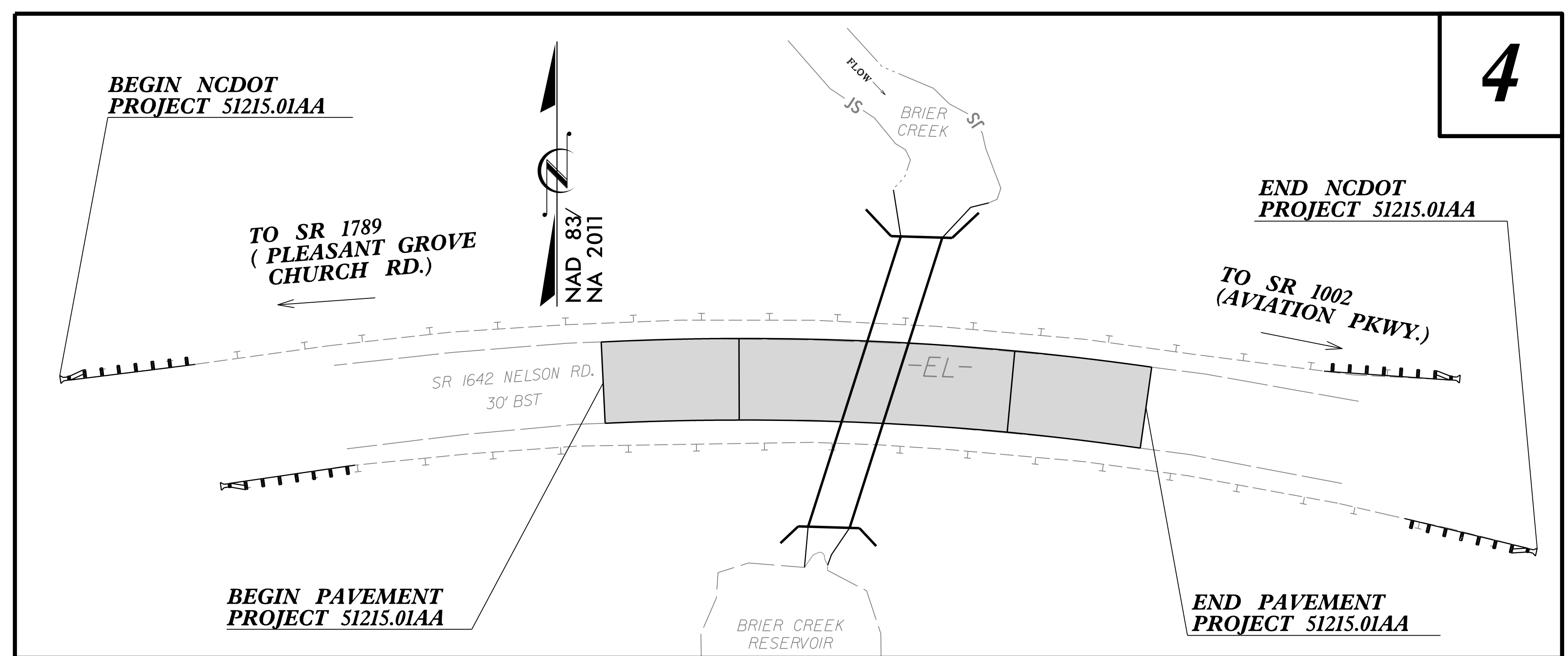
**LOCATION: PIPE CROSSING ON SR 1642 (NELSON ROAD)**  
**TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE & GUARDAIL**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	51215.01AA	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
51215.01AA		PE, UTIL., RW	
51215.01AA		CONST.	

**WETHERILL ENGINEERING**  
1223 Jones Franklin Rd.  
Raleigh, N.C. 27606  
License No. F-0377  
Bus: 919 851 8077  
Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

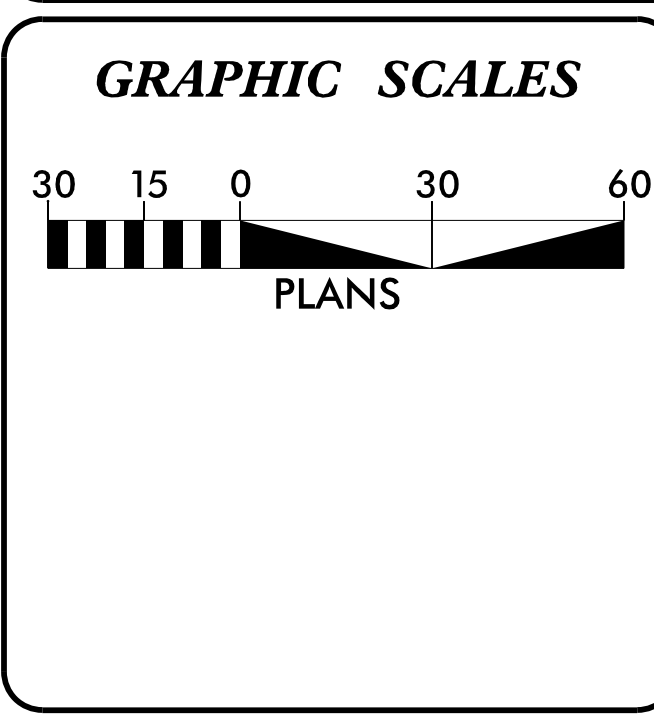
**FINAL PLANS**



**INDEX OF SHEETS**

SHEET NUMBER	SHEET
1	TITLE SHEET
1-B	CONVENTIONAL SYMBOLS
2	TYPICAL SECTIONS, PAVEMENT SCHEDULE, & MISCELLANEOUS DETAILS
2B-1	METHOD OF PIPE INSTALLATION DETAIL
4	PLAN SHEET
5 THRU 7	PROFILE AND HEADWALL DETAILS
PMP-01	PAVEMENT MARKING DETAIL
EC-1 THRU EC-4	EROSION CONTROL TITLE SHEET, SOIL STABILIZATION TIME FRAMES, PUMP AROUND DETAIL AND PLAN SHEET
UC-3 THRU UC-4	UTILITY CONSTRUCTION PLAN AND DETAILS
UO2	UTILITY BY OTHERS PLAN

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UNLESS ALL SIGNATURES COMPLETED



**PROJECT LENGTH**

LENGTH ROADWAY PROJECT 51215.01AA =	0.038 MILES
LENGTH STRUCTURE PROJECT 51215.01AA =	0.000 MILES
<b>TOTAL LENGTH PROJECT 51215.01AA =</b>	<b>0.038 MILES</b>

**NCDOT CONTACT:** DIV. 5 BRIDGE MAINTENANCE SUPERVISOR

Prepared for:  
**DIVISION OF HIGHWAYS**  
**DIVISION FIVE**  
2612 N. Duke Street, Durham NC, 27704

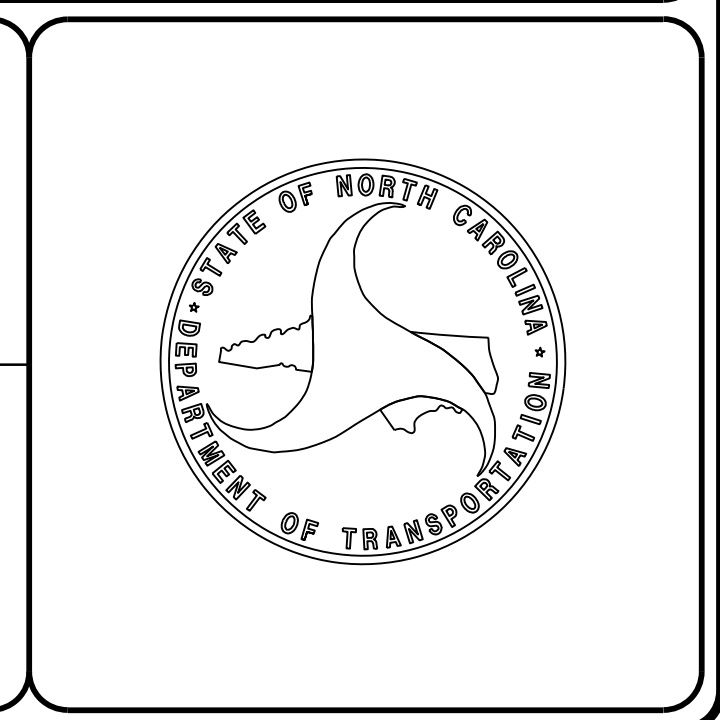
2018 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:** EDWARD G. WETHERILL, PE  
PROJECT ENGINEER

**LETTING DATE:** MARCH 23, 2022  
R.K. MURPHY, JR., PE  
PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**  
2/8/2022  
SEAL 15833  
JERRY L. LINDSEY  
P.E.  
SIGNATURE: *Jerry L. Lindsey*

**ROADWAY DESIGN ENGINEER**  
2/8/2022  
SEAL 018981  
R.K. MURPHY, JR.  
P.E.  
SIGNATURE: *R.K. Murphy, Jr.*



# STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

## CONVENTIONAL PLAN SHEET SYMBOLS

*Note: Not to Scale*      \*S.U.E. = Subsurface Utility Engineering

04/06/15

### BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EIP
Property Corner	-----
Property Monument	□ ECM
Parcel/Sequence Number	① 23
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	--- WLB ---
Proposed Wetland Boundary	--- WLB ---
Existing Endangered Animal Boundary	--- EAB ---
Existing Endangered Plant Boundary	--- EPB ---
Existing Historic Property Boundary	--- HPB ---
Known Contamination Area: Soil	☠ S ☠
Potential Contamination Area: Soil	☠ S ☠
Known Contamination Area: Water	☠ W ☠
Potential Contamination Area: Water	☠ W ☠
Contaminated Site: Known or Potential	☠ ?

### BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○ S
Well	○ W
Small Mine	⋈
Foundation	□
Area Outline	□
Cemetery	□
Building	□
School	□
Church	□
Dam	▬

### HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	-----
Jurisdictional Stream	--- JS ---
Buffer Zone 1	--- BZ 1 ---
Buffer Zone 2	--- BZ 2 ---
Flow Arrow	←
Disappearing Stream	→
Spring	○
Wetland	▽
Proposed Lateral, Tail, Head Ditch	▬
False Sump	▽

### RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○ MILEPOST 35
Switch	□ SWITCH
RR Abandoned	-----
RR Dismantled	-----

### RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	○ R/W
Proposed Right of Way Line with Iron Pin and Cap Marker	○ R/W ▲
Proposed Right of Way Line with Concrete or Granite RW Marker	▲ R/W
Proposed Control of Access Line with Concrete C/A Marker	○ C/A
Existing Control of Access	○ C/A
Proposed Control of Access	○ C/A
Existing Easement Line	--- E ---
Proposed Temporary Construction Easement	--- E ---
Proposed Temporary Drainage Easement	--- TDE ---
Proposed Permanent Drainage Easement	--- PDE ---
Proposed Permanent Drainage / Utility Easement	--- DUE ---
Proposed Permanent Utility Easement	--- PUE ---
Proposed Temporary Utility Easement	--- TUE ---
Proposed Aerial Utility Easement	--- AUE ---
Proposed Permanent Construction Easement	--- PCE ---
Proposed Permanent Easement with Iron Pin and Cap Marker	◆

### ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	--- C ---
Proposed Slope Stakes Fill	--- F ---
Proposed Curb Ramp	○ CR
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	⊕
Pavement Removal	▨

### VEGETATION:

Single Tree	☀
Single Shrub	☀
Hedge	-----
Woods Line	-----

Orchard	☀ ☀ ☀ ☀
Vineyard	□ Vineyard

### EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	CONC
Bridge Wing Wall, Head Wall and End Wall	CONC WW
MINOR:	
Head and End Wall	CONC HW
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	□ CB
Paved Ditch Gutter	-----
Storm Sewer Manhole	○ S
Storm Sewer	--- S ---

### UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	○ P
Power Line Tower	□
Power Transformer	▣
U/G Power Cable Hand Hole	□ PH
H-Frame Pole	●
U/G Power Line LOS B (S.U.E.*)	--- P ---
U/G Power Line LOS C (S.U.E.*)	--- P ---
U/G Power Line LOS D (S.U.E.*)	--- P ---

### TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	○ T
Telephone Pedestal	□ T
Telephone Cell Tower	⌋
U/G Telephone Cable Hand Hole	□ PH
U/G Telephone Cable LOS B (S.U.E.*)	--- T ---
U/G Telephone Cable LOS C (S.U.E.*)	--- T ---
U/G Telephone Cable LOS D (S.U.E.*)	--- T ---
U/G Telephone Conduit LOS B (S.U.E.*)	--- TC ---
U/G Telephone Conduit LOS C (S.U.E.*)	--- TC ---
U/G Telephone Conduit LOS D (S.U.E.*)	--- TC ---
U/G Fiber Optics Cable LOS B (S.U.E.*)	--- T FO ---
U/G Fiber Optics Cable LOS C (S.U.E.*)	--- T FO ---
U/G Fiber Optics Cable LOS D (S.U.E.*)	--- T FO ---

### WATER:

Water Manhole	○ W
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
U/G Water Line LOS B (S.U.E.*)	--- W ---
U/G Water Line LOS C (S.U.E.*)	--- W ---
U/G Water Line LOS D (S.U.E.*)	--- W ---
Above Ground Water Line	--- A/G Water ---

### TV:

TV Pedestal	□
TV Tower	⊗
U/G TV Cable Hand Hole	□ PH
U/G TV Cable LOS B (S.U.E.*)	--- TV ---
U/G TV Cable LOS C (S.U.E.*)	--- TV ---
U/G TV Cable LOS D (S.U.E.*)	--- TV ---
U/G Fiber Optic Cable LOS B (S.U.E.*)	--- TV FO ---
U/G Fiber Optic Cable LOS C (S.U.E.*)	--- TV FO ---
U/G Fiber Optic Cable LOS D (S.U.E.*)	--- TV FO ---

### GAS:

Gas Valve	◇
Gas Meter	⊕
U/G Gas Line LOS B (S.U.E.*)	--- G ---
U/G Gas Line LOS C (S.U.E.*)	--- G ---
U/G Gas Line LOS D (S.U.E.*)	--- G ---
Above Ground Gas Line	--- A/G Gas ---

### SANITARY SEWER:

Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	--- SS ---
Above Ground Sanitary Sewer	--- A/G Sanitary Sewer ---
SS Forced Main Line LOS B (S.U.E.*)	--- FSS ---
SS Forced Main Line LOS C (S.U.E.*)	--- FSS ---
SS Forced Main Line LOS D (S.U.E.*)	--- FSS ---

### MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	□
Utility Unknown U/G Line LOS B (S.U.E.*)	--- TUL ---
U/G Tank; Water, Gas, Oil	□
Underground Storage Tank, Approx. Loc.	□ UST
A/G Tank; Water, Gas, Oil	□
Geoenvironmental Boring	⊕
U/G Test Hole LOS A (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

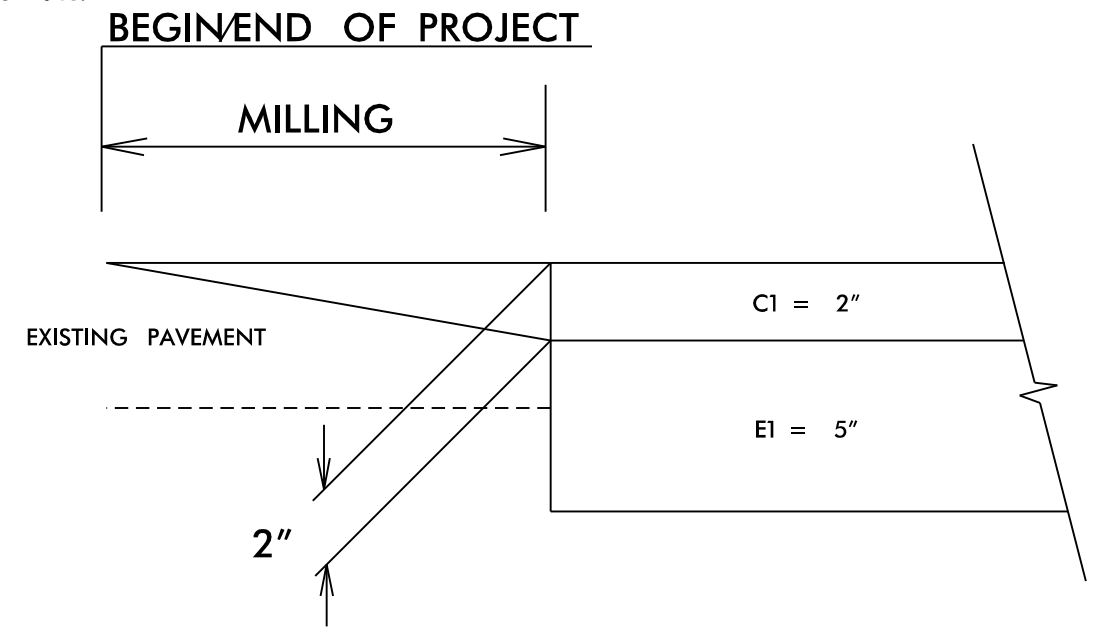
8/17/99

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 220 LBS. PER SQ. YD.
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
L	AGGREGATE SHOULDER BORROW.
N	GEOTEXTILE FOR PAVEMENT STABILIZATION
U	EXISTING PAVEMENT.
V	MILLING BITUMINOUS PAVEMENT. (SEE MILLING DETAIL)

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

**NOTES TO CONTRACTOR**

Perform the work in accordance with Section 607 of the January 2018 North Carolina Department of Transportation Standard Specifications for Roads and Structures. Resurfacing will be accomplished at the same time as the milling operation.



NOTE: UTILIZE MILLING TO MAKE PAVEMENT TIE-INS

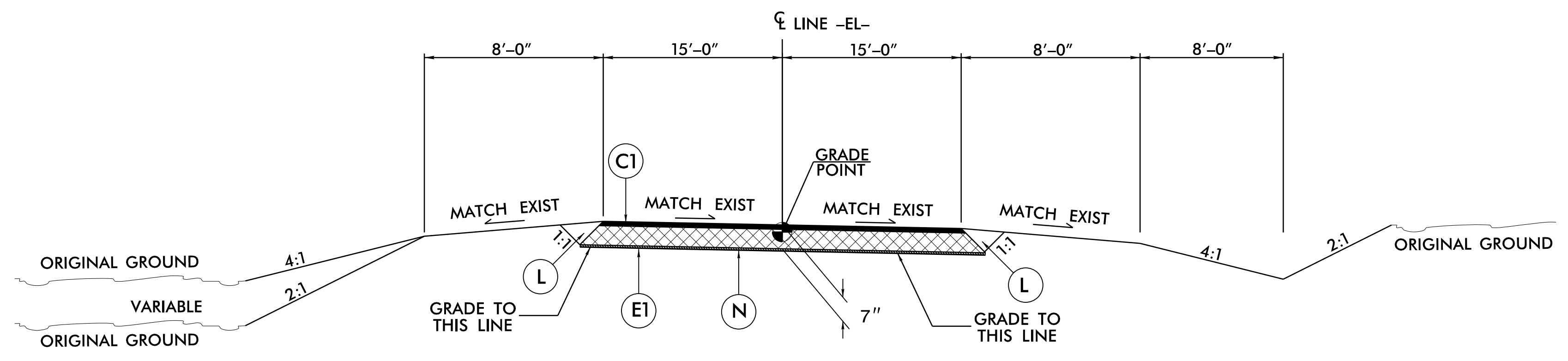


TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

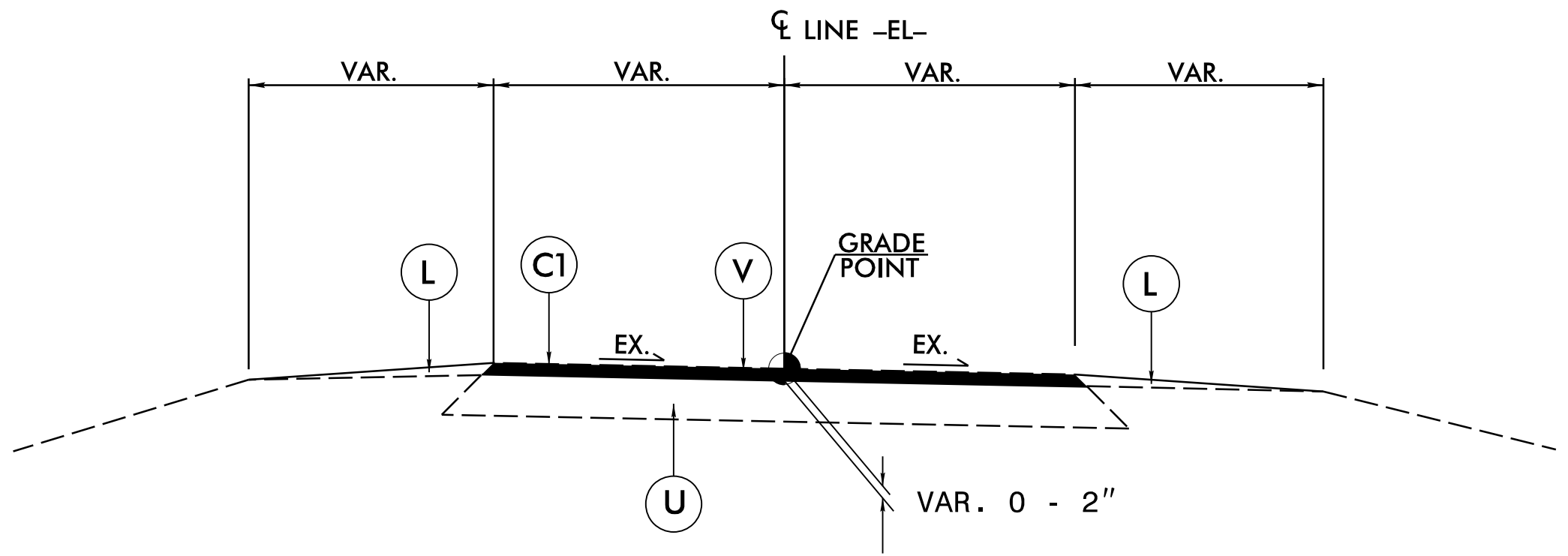
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PROJECT REFERENCE NO. 5/215.01AA	SHEET NO. 2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 8/11/2021	
SEAL 018981 ENGINEER K. K. MURPHY	

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**TYPICAL SECTION WITHIN EXCAVATION**



**V: MILLING DETAIL**

**SUMMARY OF EARTHWORK**

STATION	STATION	UNCL. EXCAV.	SELECT CLASS III	SELECT CLASS II TYPE I
BEGIN 50.07' FM CL OF PIPE	END 50.07' FM CL OF PIPE	5,160	9,285	485
PROJECT SUBTOTALS:		5,190	9,285	485
GRAND TOTALS:		5,190	9,285	485
SAY:		5,200	9,298	490

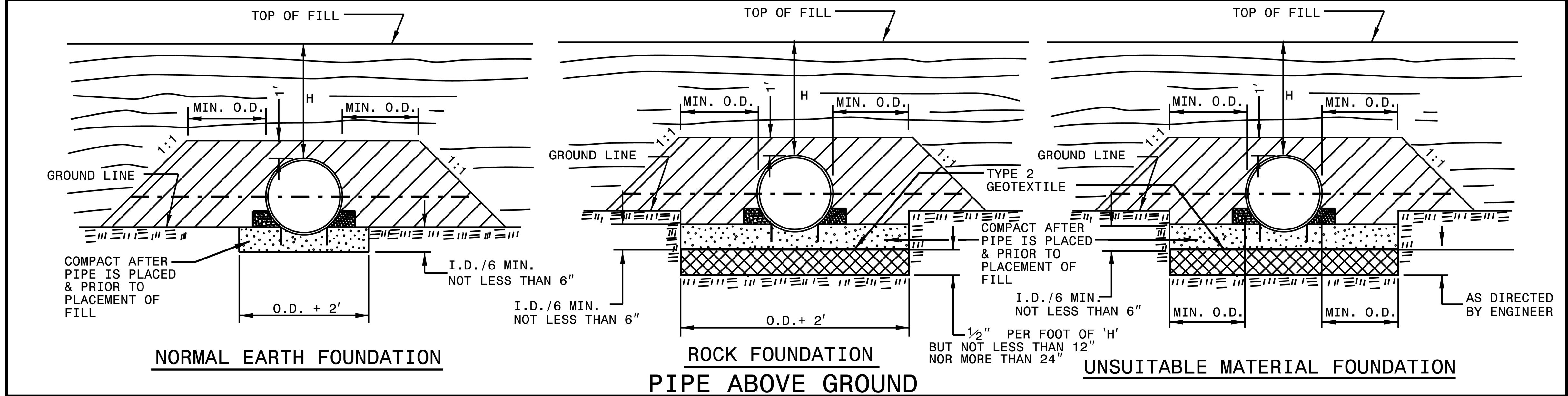
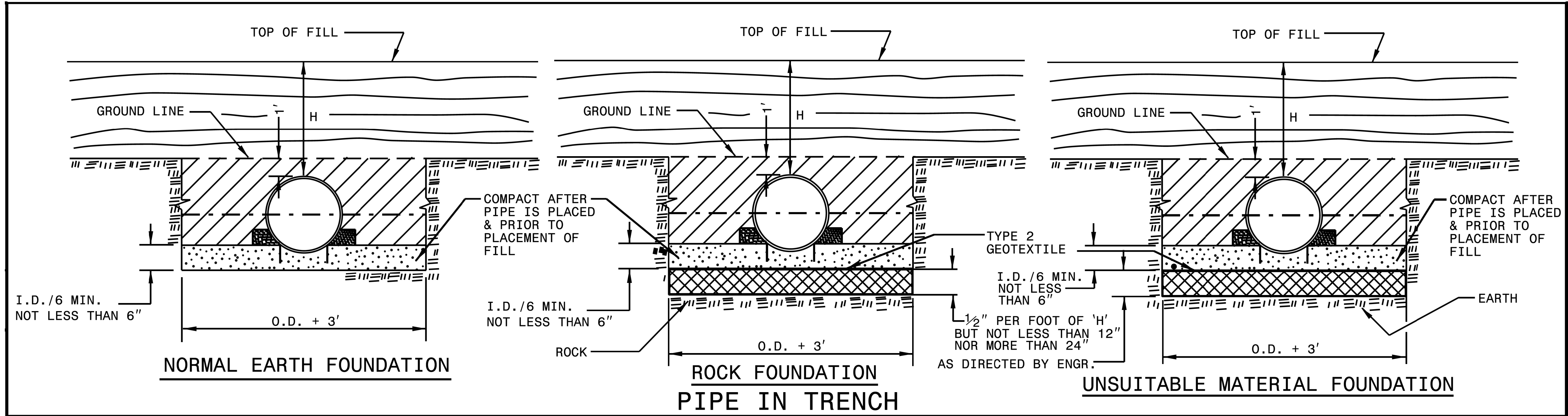
Note: Approximate quantities only.

REVISIONS

8/10/2021  
15:01AA\_Nelson Rd.-rdy-psh 2.dgn  
JSE

8/17/99  
8/25/2021  
5/215.01AA\_Nelson Rd.-rdy-psh 2B-1.dgn  
R18F18K000001

REVISIONS



**GENERAL NOTES:**

- I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.
- O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.
- H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.
- TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.
- LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.


DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

- SPRINGLINE OF PIPE
- SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.
- APPROVED SUITABLE LOCAL MATERIAL.
- UNDISTURBED EARTH MATERIAL
- SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE 2 GEOTEXTILE AS DIRECTED BY THE ENGINEER.

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

1-18  
ROADWAY STANDARD DRAWING FOR  
**METHOD OF PIPE INSTALLATION**  
FLEXIBLE PIPE

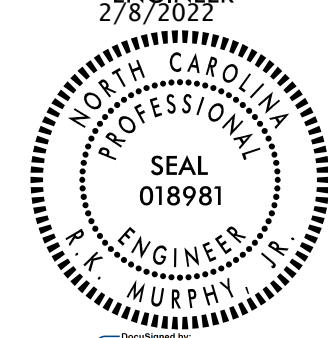
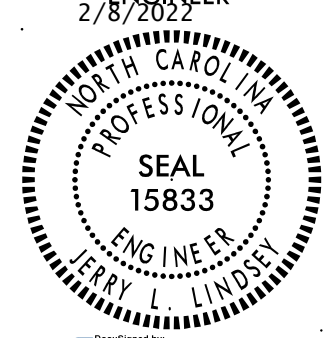
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**WETHERILL  
ENGINEERING**

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

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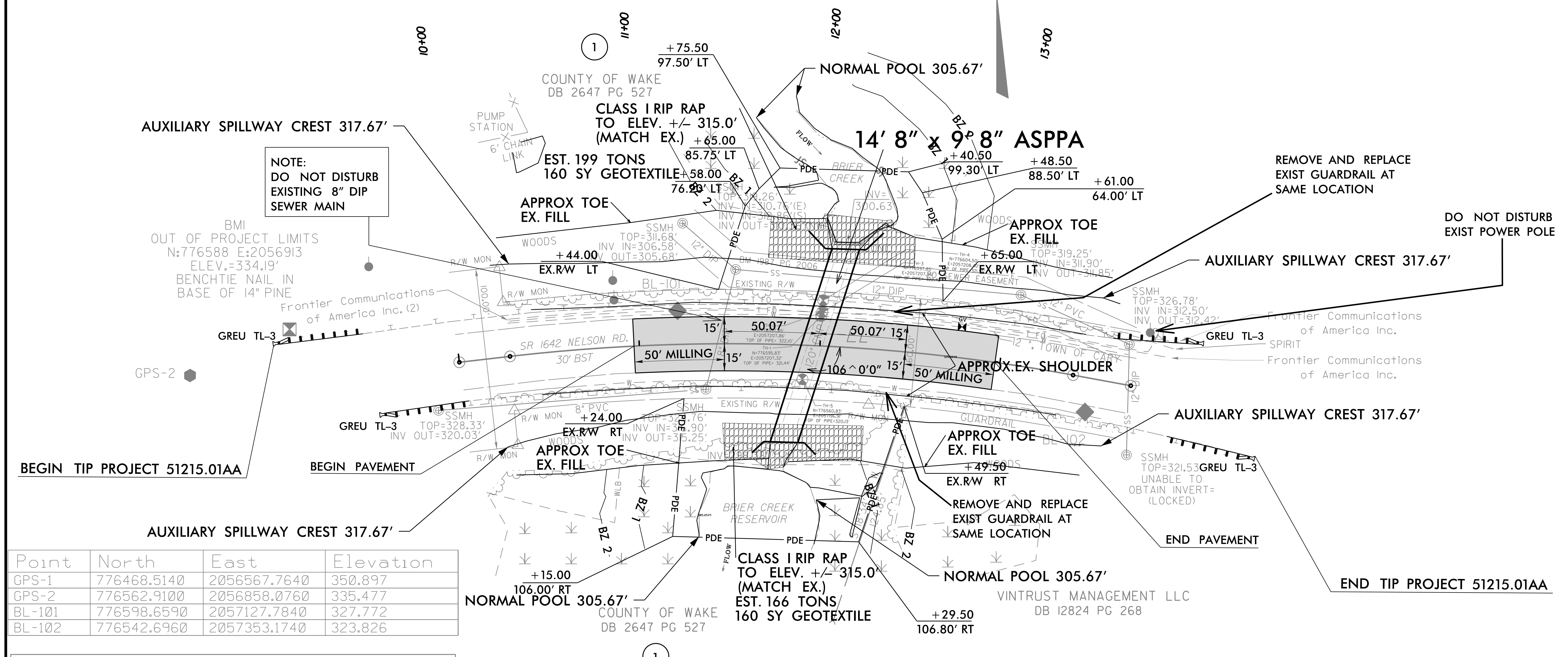
PROJECT REFERENCE NO. <b>51215.01AA</b>	SHEET NO. <b>4</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 2/8/2022 	HYDRAULICS ENGINEER 2/8/2022 

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UNLESS ALL SIGNATURES COMPLETED**

**NELSON ROAD  
(SR 1642)**

SCALE 1" = 30'

NC GRID  
NAD 83 NA 2011



Point	North	East	Elevation
GPS-1	776468.5140	2056567.7640	350.897
GPS-2	776562.9100	2056858.0760	335.477
BL-101	776598.6590	2057127.7840	327.772
BL-102	776542.6960	2057353.1740	323.826

**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY OTHERS FOR MONUMENT "GPS-1" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 776468.514(++) EASTING: 2056567.764(++) ELEVATION: 350.897(++)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999921870

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

**NORMAL POOL 305.67'**  
**AUXILIARY SPILLWAY CREST 317.67'**  
**TOP OF DAM 329.67'**  
**(TOP OF FLOOD POOL FOR BRIER CREEK RESERVOIR)**

**NOTE:**  
 THE PROJECT HAS BEEN IDENTIFIED AS HAVING SOILS AND WATERS CONTAMINATED WITH PCB. THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION HAS TESTED THE SOIL AND WATER AND THEY HAVE BEEN FOUND TO BE NON-DETECT FOR TOTAL PCBs. MATERIALS CAN BE WASTED AT APPROVED WASTE FACILITIES WITH NO ADDED SPECIAL CONDITIONS.

**NOTE:**  
 INSTALL SAFETY FENCE ALONG  
 -PDE- EXCLUDING OPEN WATER

REVISIONS

2/7/2022 51215.01AA Nelson Rd. rdy\_psh04.dgn

8/17/99

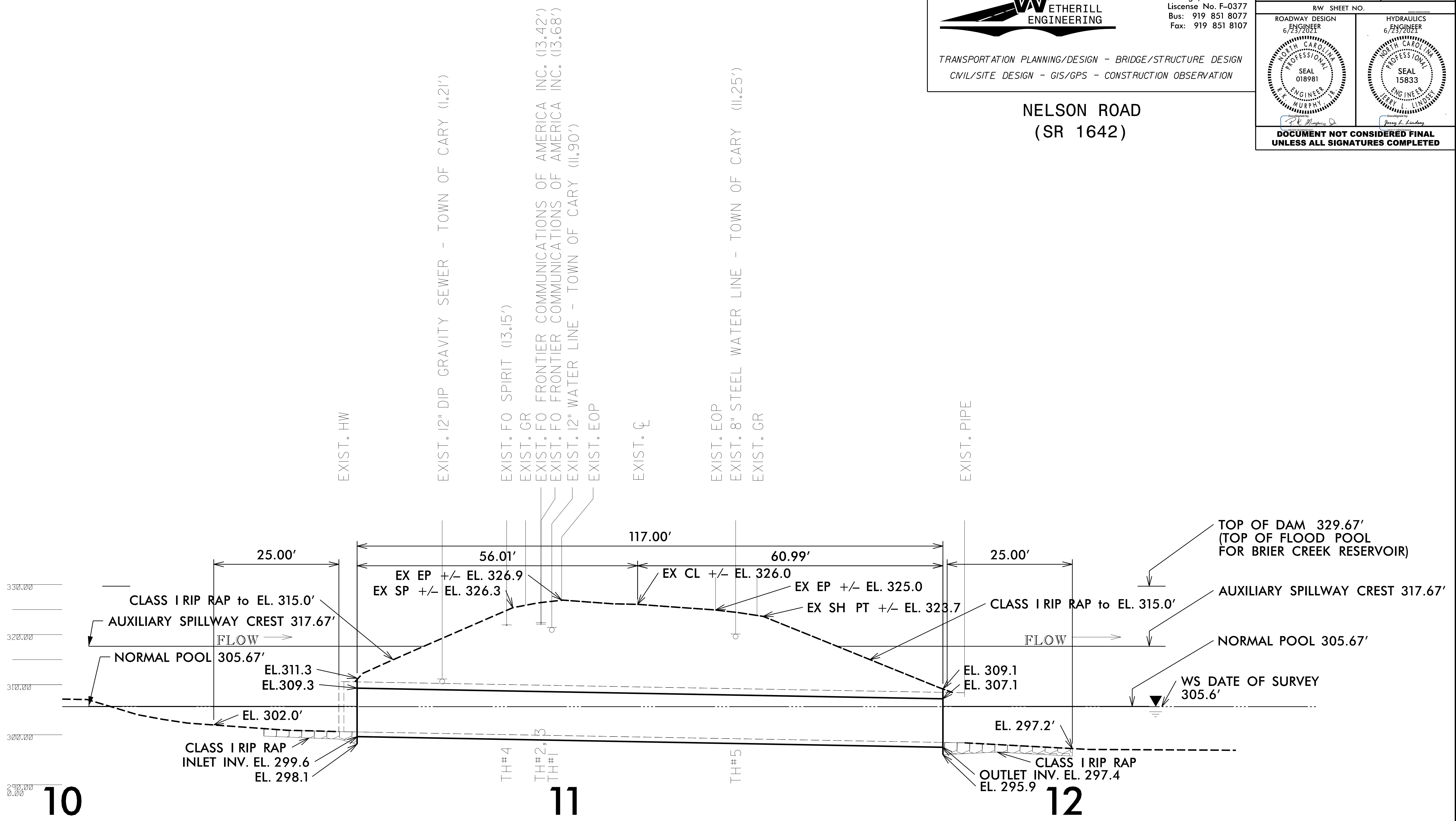


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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

### NELSON ROAD (SR 1642)

PROJECT REFERENCE NO. <b>51215.01AA</b>	SHEET NO. <b>5</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 6/23/2021 	HYDRAULICS ENGINEER 6/23/2021 
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



NOTE:

(0.00') - DISTANCE FROM UTILITY INVERT TO TOP OF ENCASEMENT PIPE

TH# - TEST HOLE NUMBER

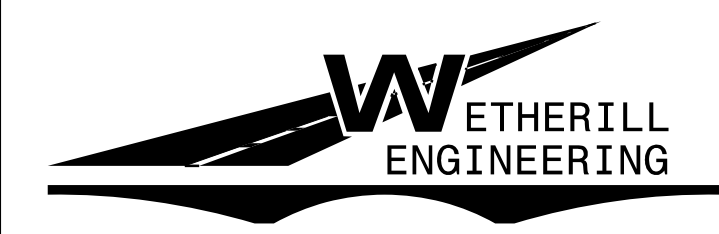
## CENTERLINE PROFILE ACROSS PIPE

### 14' 8" x 9' 8" ASPPA

### 106 Degree Skew

6/14/2021 5:01AA Nelson Rd. rdy\_psh05.dgn

8/17/99



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CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO. 51215.01AA	SHEET NO. 6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 6/23/2021 K. MURPHY	HYDRAULICS ENGINEER 6/23/2021 J. LINDSEY
SEAL 018981	SEAL 15833
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

NELSON ROAD  
(SR 1642)

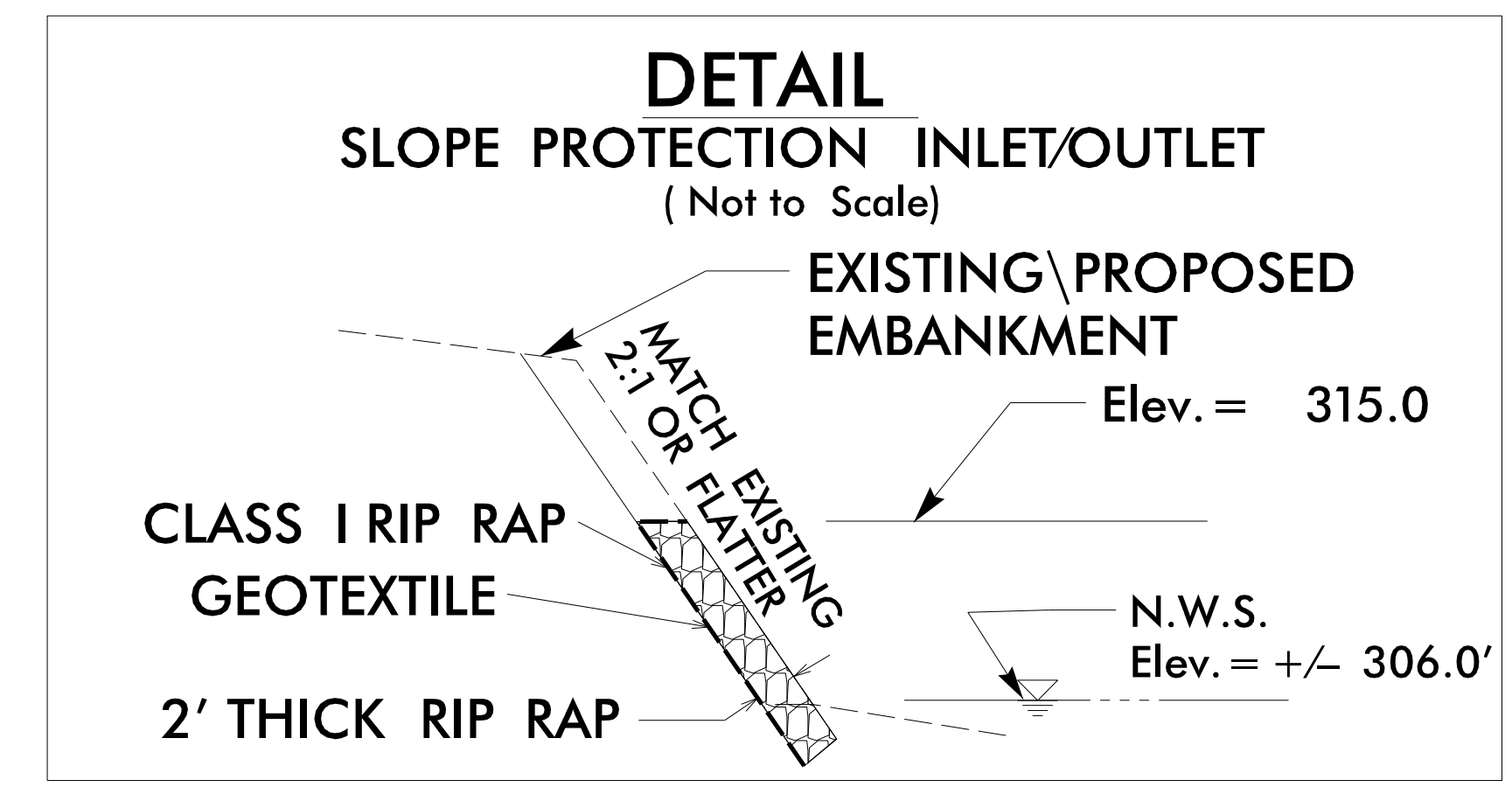
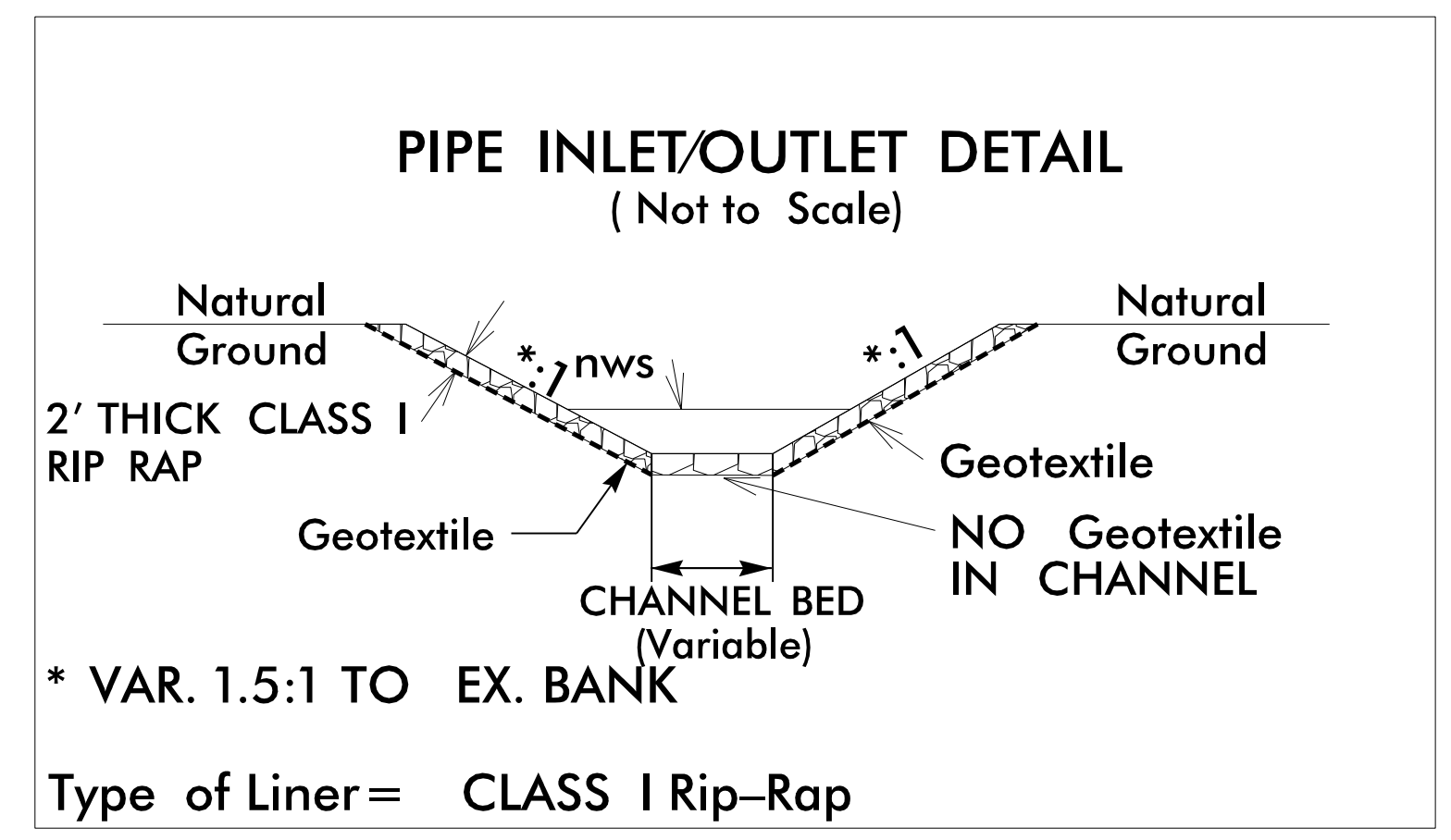
### CENTERLINE PROFILE ACROSS PIPE 14' 8" x 9' 8" ASPPA 106 Degree Skew

PROPOSED ELEVATIONS:  
 CENTERLINE ROADWAY OVER PIPE  
 ELEVATION = +/- 326.0  
 INLET:  
 TOP OF HEADWALL = +/- 311.3'  
 TOP OF PIPE = +/- 309.3'  
 STREAM BED = +/- 300.6'  
 INVERT PIPE = +/- 299.6'  
 BOTTOM HEADWALL = +/- 298.1'  
 OUTLET:  
 TOP OF HEADWALL = +/- 309.1'  
 TOP OF PIPE = +/- 307.1'  
 STREAM BED = +/- 298.4'  
 INVERT PIPE = +/- 297.4'  
 BOTTOM HEADWALL = +/- 295.9'

CENTERLINE LENGTH = 117' OF 14'-8" X 9'-8" CORRUGATED ALLUMINUM STRUCTURAL PLATE PIPE-ARCH.

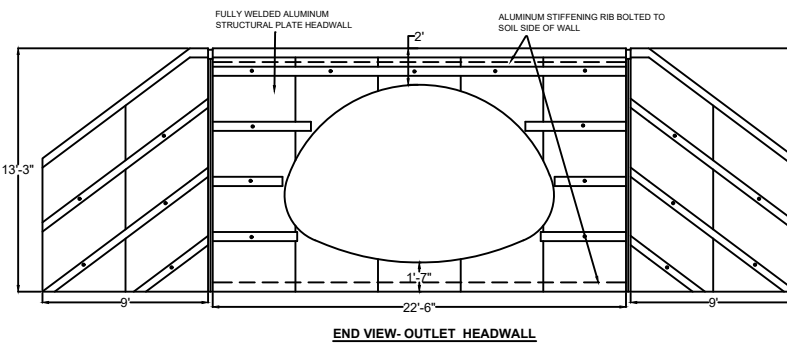
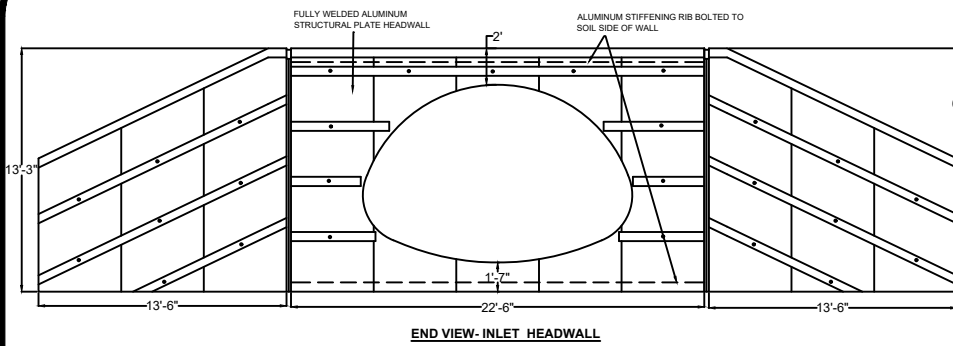
TWO 22'-6" WIDE BY 13'-2" TALL FULLY WELDED ALUMINUM STRUCTURAL PLATE HEADWALLS W/2 SECTIONS OF 14'-8" X 9'-8" 0.200" THICK ALSP PIPE-ARCH STUBED OUT, WHICH SHALL BE FULLY WELDED TO ALUMINUM STRUCTURAL PLATE HEADWALL.

MINIMUM COVER = 15.0' AT SHOULDER;  
17.8' AT CENTERLINE.  
MAXIMUM COVER OVER PIPE = 18.4'



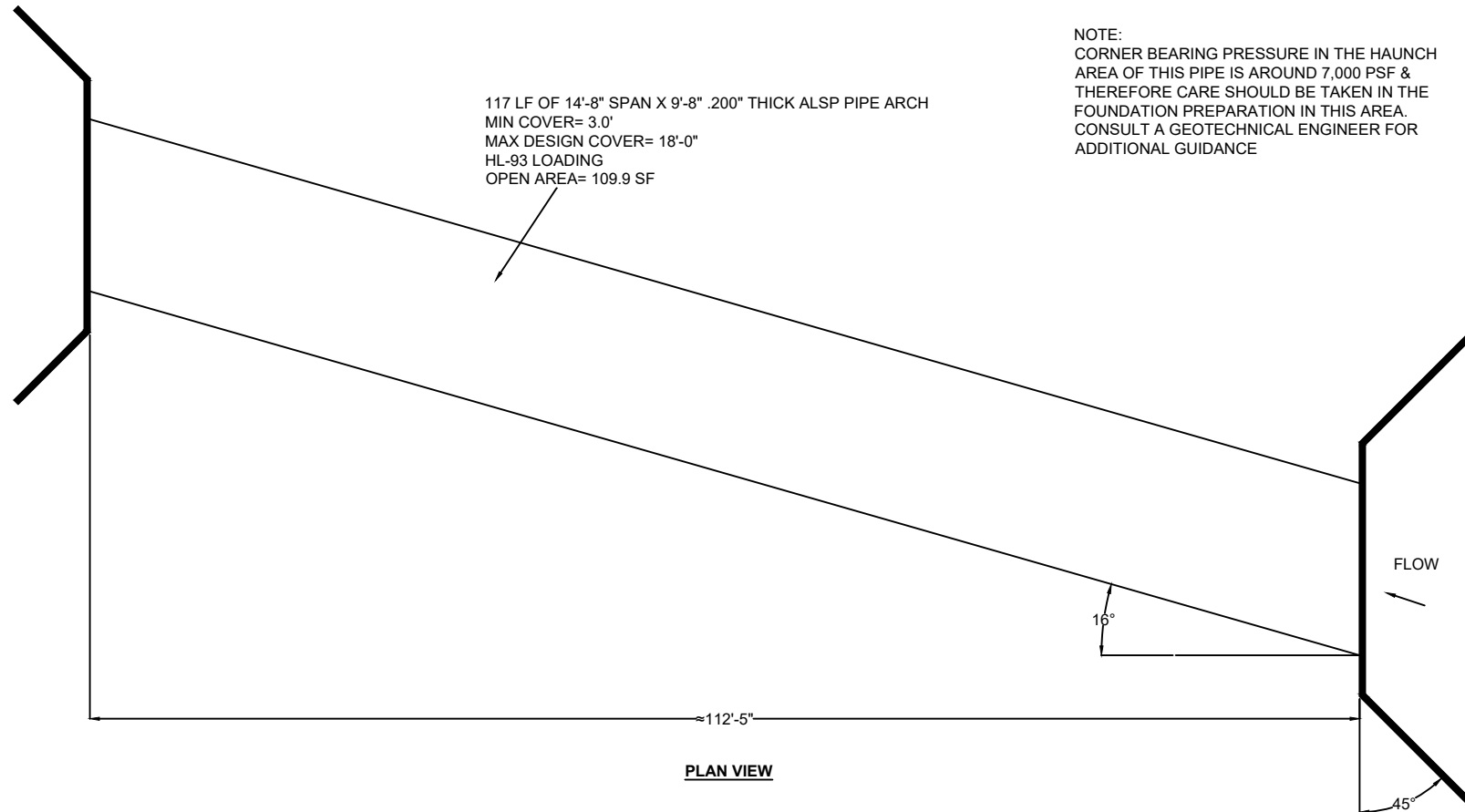
5/19/2021 5:01AA Nelson Rd. rdj\_psh05.dgn  
11:51:33 AM





117 LF OF 14'-8" SPAN X 9'-8" .200" THICK ALSP PIPE ARCH  
 MIN COVER= 3.0'  
 MAX DESIGN COVER= 18'-0"  
 HL-93 LOADING  
 OPEN AREA= 109.9 SF

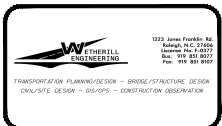
NOTE:  
 CORNER BEARING PRESSURE IN THE HAUNCH AREA OF THIS PIPE IS AROUND 7,000 PSF & THEREFORE CARE SHOULD BE TAKEN IN THE FOUNDATION PREPARATION IN THIS AREA. CONSULT A GEOTECHNICAL ENGINEER FOR ADDITIONAL GUIDANCE



DESCRIPTION

Reviewed - Information Purposes Only for General Layout and Dimensions

**NCDOT WAKE CO  
 NELSON RD**

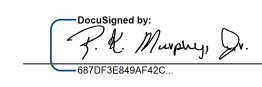
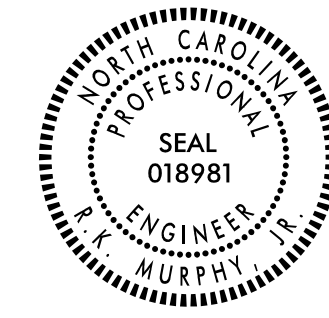


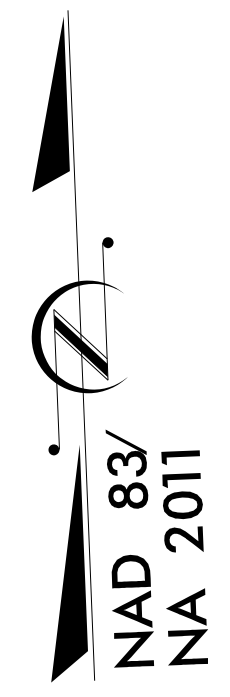
DATE:  
 DEC 9, 2020

SHEET

NOT TO SCALE

7

TIP NO. 51215.01AA	SHEET NO. PMP-01
APPROVED: 	
DATE: 6/23/2021	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

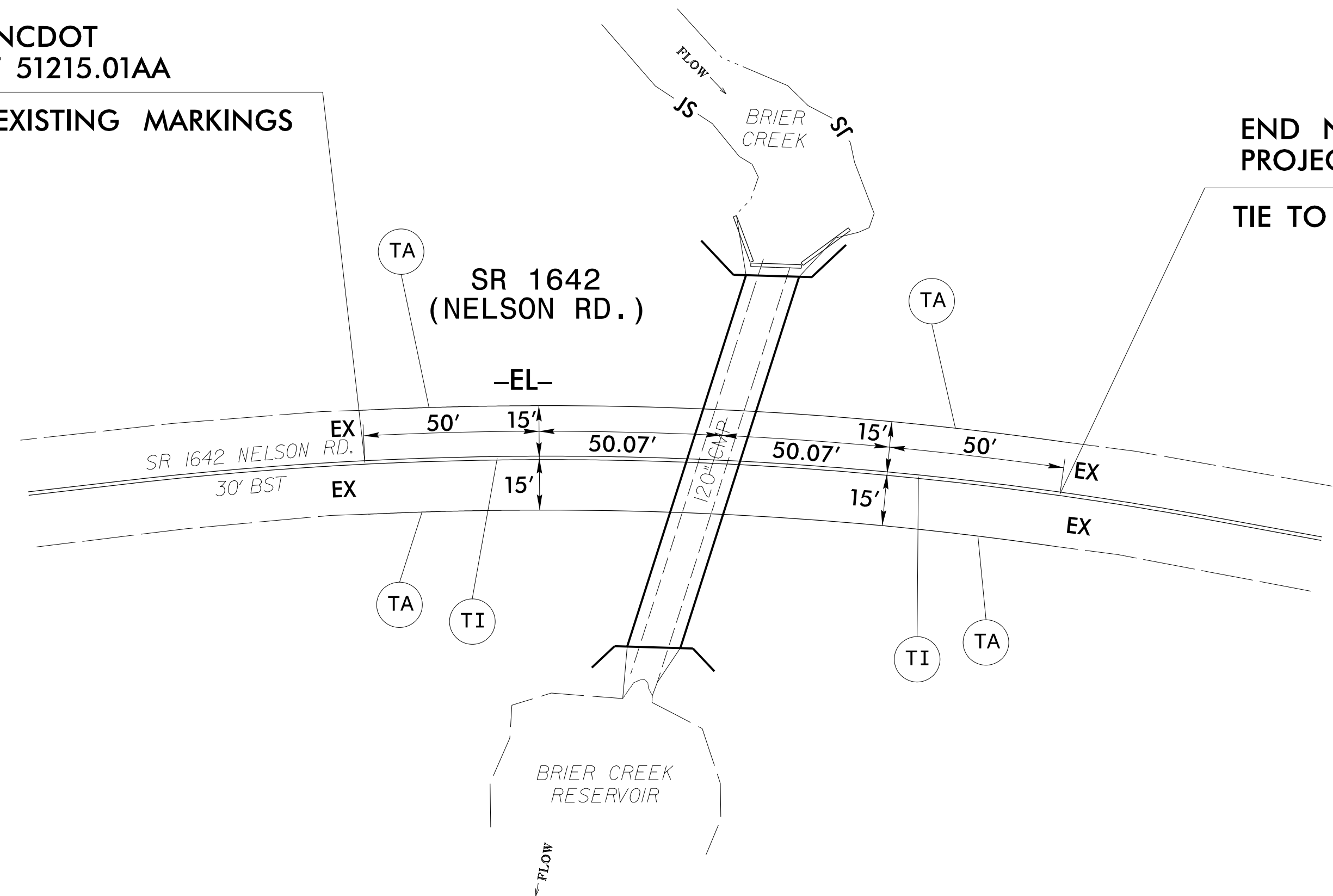


BEGIN NCDOT  
PROJECT 51215.01AA

TIE TO EXISTING MARKINGS

END NCDOT  
PROJECT 51215.01AA

TIE TO EXISTING MARKINGS



**ROADWAY STANDARD DRAWING**

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS

**GENERAL NOTES**

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED IN THE PLAN, OR DIRECTED BY THE ENGINEER.

- A) INSTALL PAVEMENT MARKINGS ON THE FINAL SURFACE AS FOLLOWS:
 

ROAD NAME	MARKING	MARKER
SR 1642	THERMOPLASTIC	NONE
- B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS.
- D) PASSING ZONES WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY THE ENGINEER.

**PAVEMENT MARKING SCHEDULE**

SYMBOL	DESCRIPTION	FINAL PAVEMENT MARKINGS
TA	WHITE EDGELINE	THERMOPLASTIC (4", 90 MILS)
TI	YELLOW DOUBLE CENTER	THERMOPLASTIC (4", 90 MILS)



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Raleigh, N.C. 27606  
License No. F-0377  
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Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

**PAVEMENT MARKING DETAIL**

5/6/2021 5:08:15 PM Div 5 Wake Sec Paved Brdg Maint Frc\Sr 1642 Nelson Rd\Traffic\PM\51215.01AA\_Traffic\_S&D\_P\Sheet\_01.DTL.dgn User:skennedy

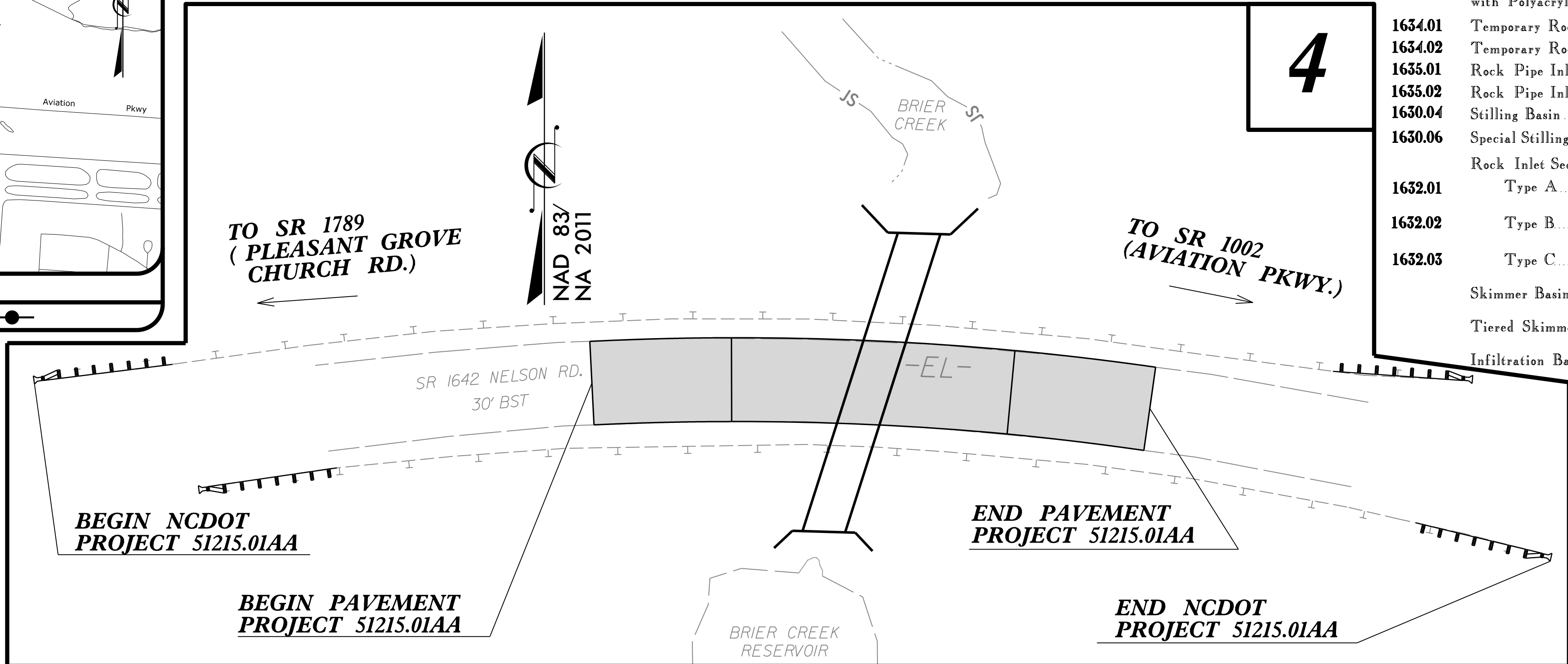
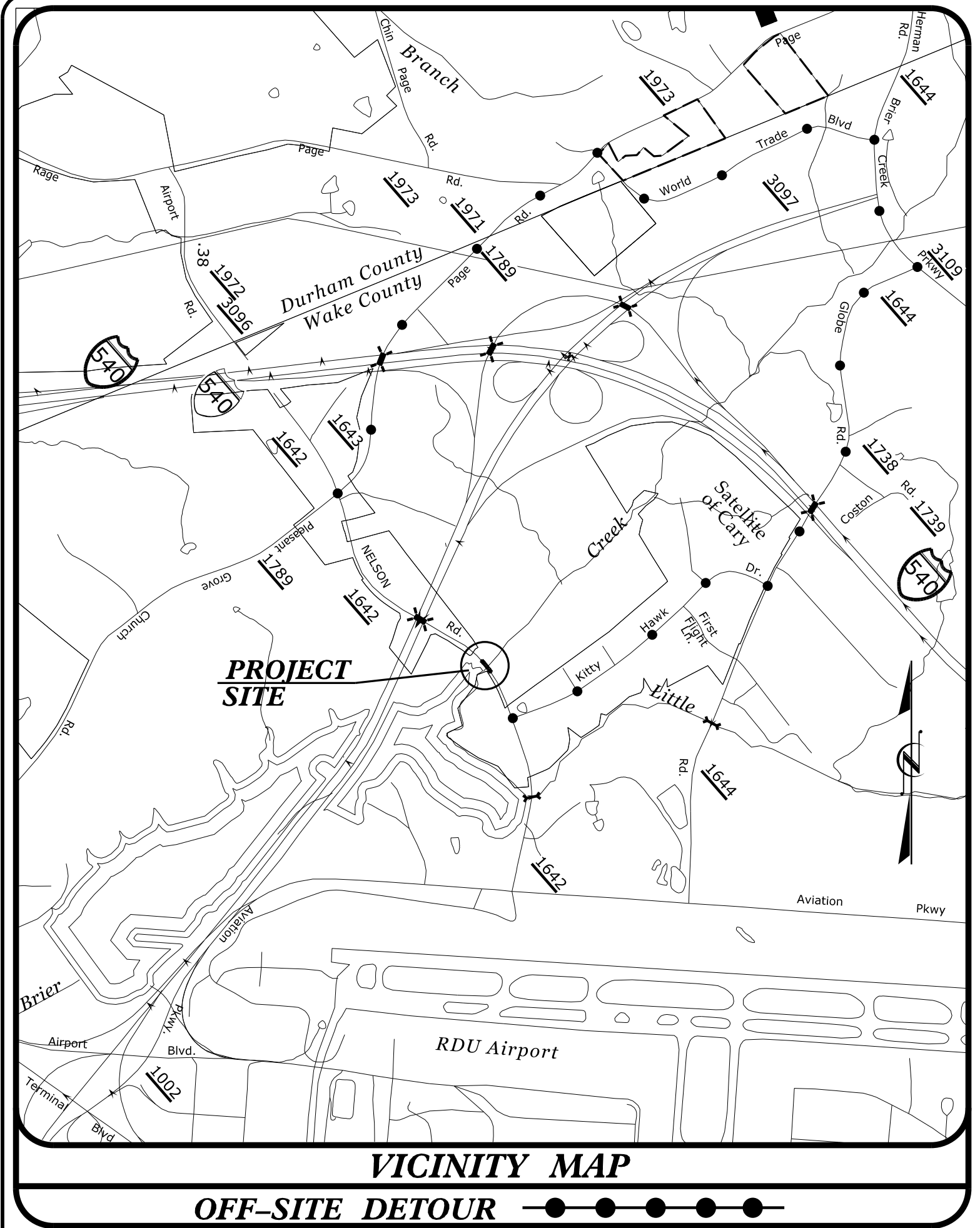
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	51215.01AA	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# WAKE COUNTY

PLAN FOR PROPOSED  
HIGHWAY EROSION CONTROL

LOCATION: PIPE CROSSING ON SR 1642 (NELSON ROAD)  
TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE & GUARDAIL



EROSION AND SEDIMENT CONTROL MEASURES

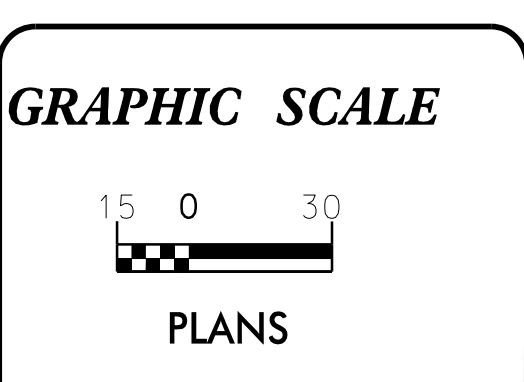
Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	
1630.05	Temporary Diversion	
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
1633.02	Temporary Rock Silt Check Type-B	
	Wattle/Coir Fiber Wattle	
	Wattle/Coir Fiber Wattle with Polyacrylamide (PAM)	
1634.01	Temporary Rock Sediment Dam Type-A	
1634.02	Temporary Rock Sediment Dam Type-B	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1630.04	Stilling Basin	
1630.06	Special Stilling Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	
1632.02	Type B	
1632.03	Type C	
	Skimmer Basin	
	Tiered Skimmer Basin	
	Infiltration Basin	

4

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

PROJECT: 51215.01AA

CONTRACT:



THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 1, 2016 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER RESOURCES.

Prepared In the Office of:  
**WETHERILL ENGINEERING, INC.**  
1223 JONES FRANKLIN ROAD  
RALEIGH, NC 27606

Designed by:  
**HARMINDER SINGH** 3519  
NAME LEVEL III CERTIFICATION NO.

Reviewed In the Office of:  
**ROADSIDE ENVIRONMENTAL FIELD OPERATIONS**  
DIVISION 4 AND 5  
1425 Rock Quarry Rd.  
Suite 106  
Raleigh, NC 27610

2018 STANDARD SPECIFICATIONS

Reviewed by:  
**DONALD PEARSON**

- Roadway Standard Drawings
- The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2018 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.
- |  |  |
|--|--|
| 1604.01 Railroad Erosion Control Detail  | 1632.01 Rock Inlet Sediment Trap Type A      |
| 1605.01 Temporary Silt Fence             | 1632.02 Rock Inlet Sediment Trap Type B      |
| 1606.01 Special Sediment Control Fence   | 1632.03 Rock Inlet Sediment Trap Type C      |
| 1607.01 Gravel Construction Entrance     | 1633.01 Temporary Rock Silt Check Type A     |
| 1622.01 Temporary Berms and Slope Drains | 1633.02 Temporary Rock Silt Check Type B     |
| 1630.01 Riser Basin                      | 1634.01 Temporary Rock Sediment Dam Type A   |
| 1630.02 Silt Basin Type B                | 1634.02 Temporary Rock Sediment Dam Type B   |
| 1630.03 Temporary Silt Ditch             | 1635.01 Rock Pipe Inlet Sediment Trap Type A |
| 1630.04 Stilling Basin                   | 1635.02 Rock Pipe Inlet Sediment Trap Type B |
| 1630.05 Temporary Diversion              | 1640.01 Coir Fiber Baffle                    |
| 1630.06 Special Stilling Basin           | 1645.01 Temporary Stream Crossing            |
| 1631.01 Matting Installation             |  |

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

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## ***SOIL STABILIZATION TIMEFRAMES***

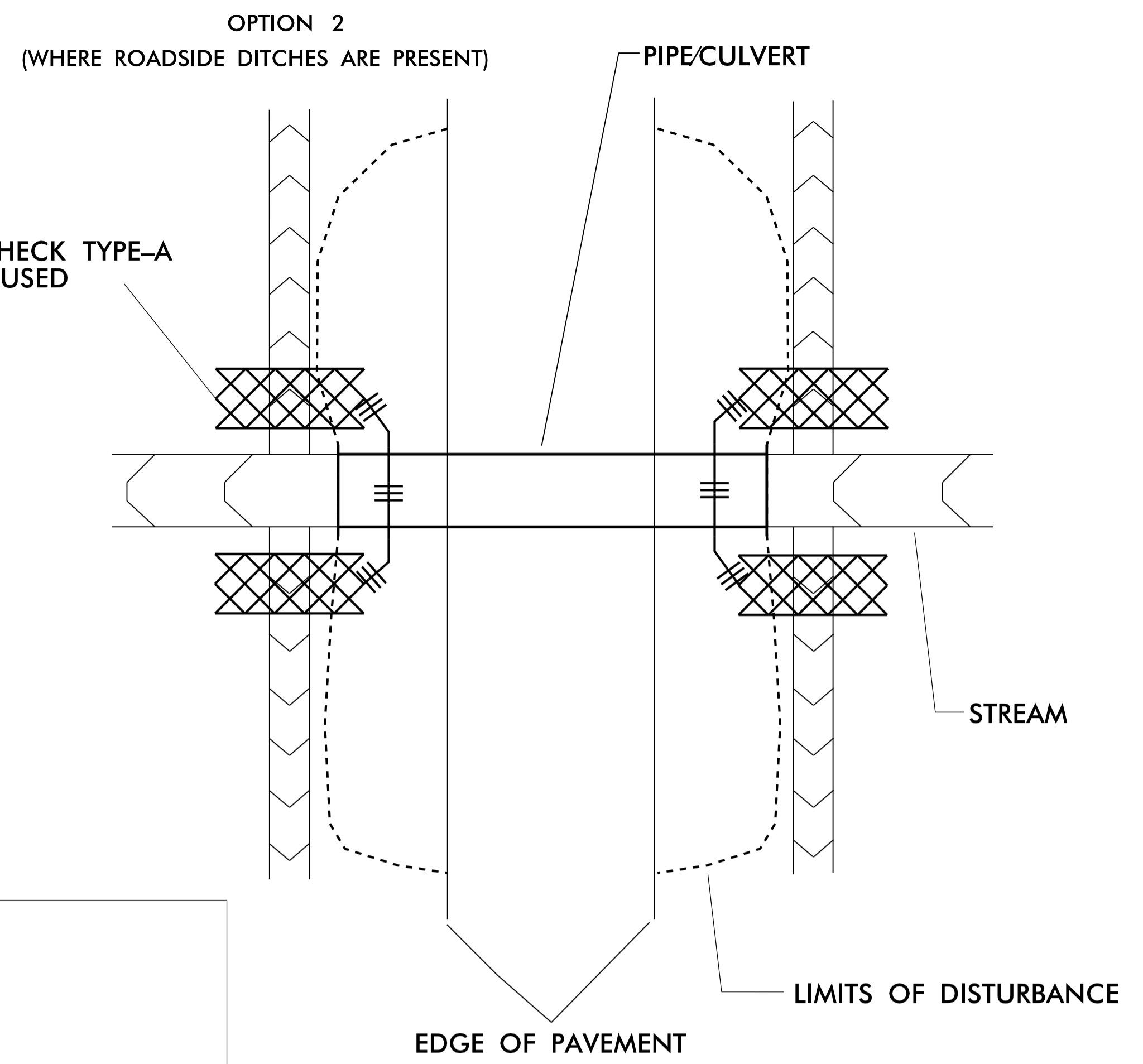
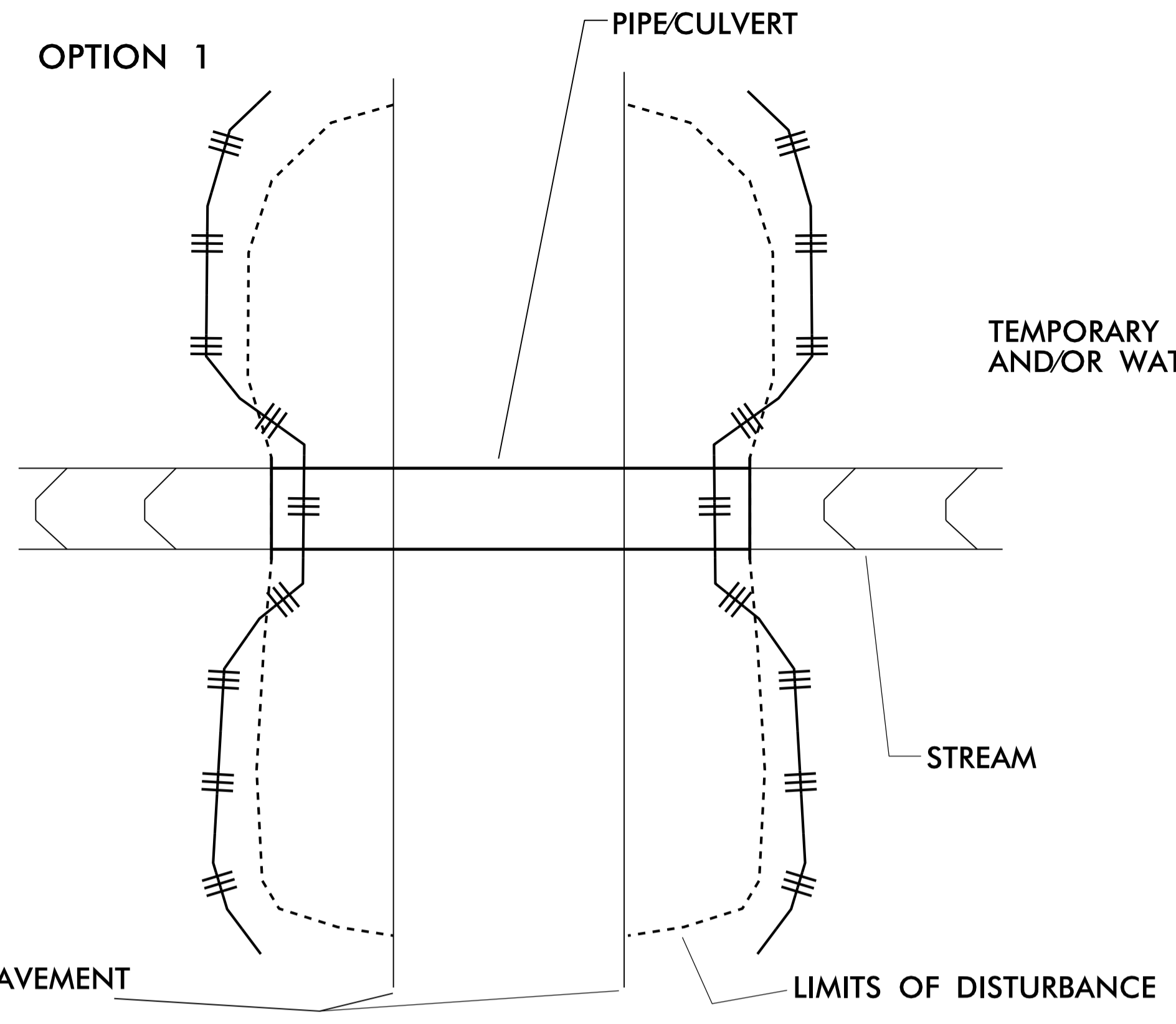
<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

PROJECT REFERENCE NO. 51215.01AA	SHEET NO. EC-3
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ROADSIDE ENVIRONMENTAL UNIT  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.  
2018 STANDARD SPECIFICATIONS  
DRAWINGS NOT DRAWN TO SCALE

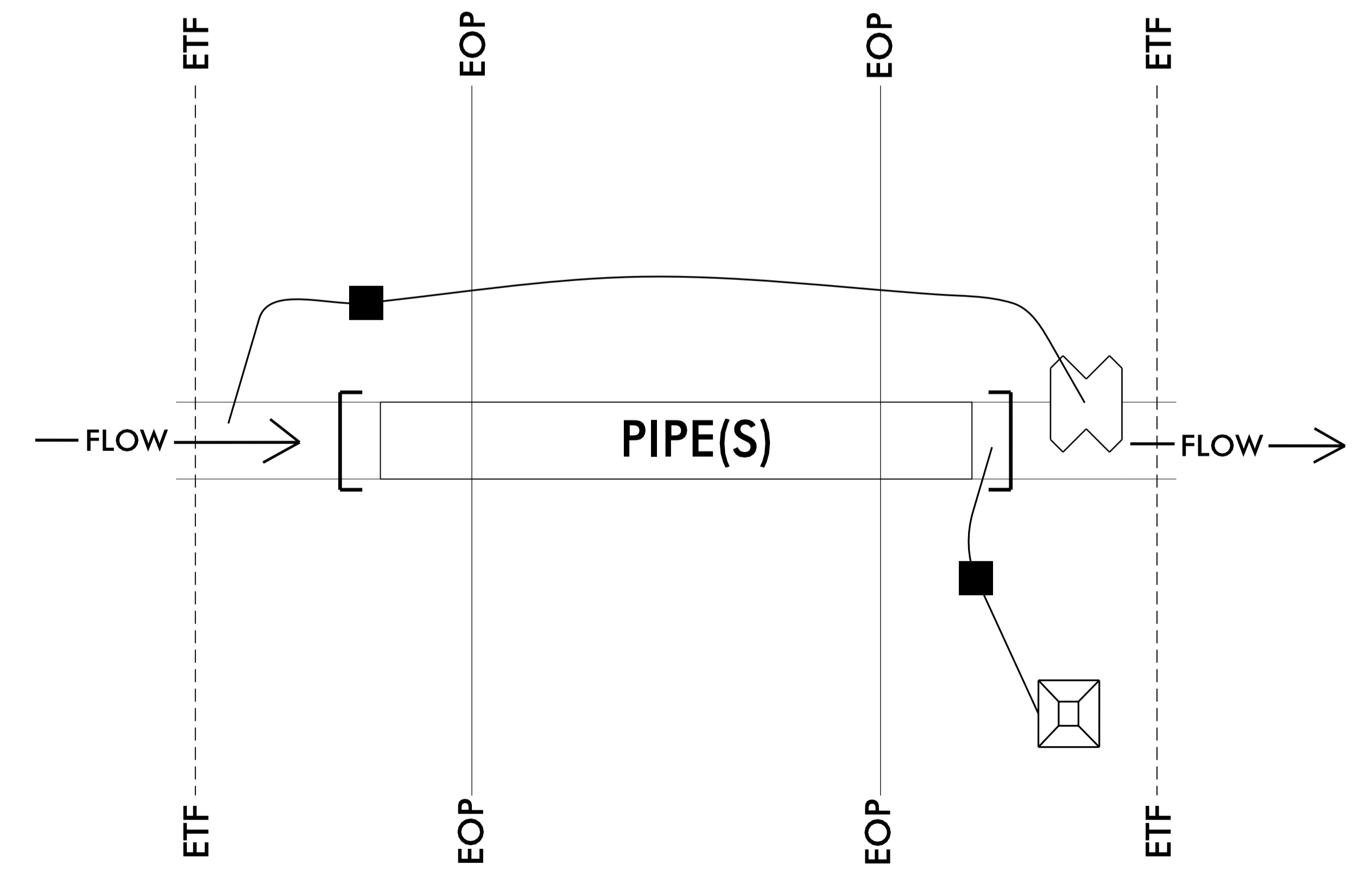
LEGEND:

	IMPERVIOUS DIKE
	PUMP
	SPECIAL STILLING BASIN
	STABILIZED DISCHARGE PAD (GEOTEXTILE)
	EDGE OF PAVEMENT
	EXISTING TRANSPORTATION FACILITY (ROW)
	TEMPORARY ROCK SILT CHECK TYPE-A AND/OR WATTLE
	TEMPORARY SILT FENCE
	SAFETY FENCE



**SEQUENCE OF CONSTRUCTION FOR TYPICAL WORK AREA:**  
**INSTALL SAFETY FENCE ALONG PDE EXCLUDING OPEN WATER.**  
 1. INSTALL SPECIAL STILLING BASIN.  
 2. INSTALL UPSTREAM PUMP, TEMPORARY FLEXIBLE HOSE, AND STABILIZED DISCHARGE PAD.  
 3. PLACE UPSTREAM IMPERVIOUS DIKE AND BEGIN PUMPING OPERATIONS FOR STREAM DIVERSION DISCHARGING ONTO STABILIZED OUTLET PAD.  
 4. PLACE DOWNSTREAM IMPERVIOUS DIKE AND PUMPING APPARATUS. DEWATER WORK ZONE. AREA TO BE DEWATERED SHALL BE EQUAL TO ONE DAY'S WORK.  
 5. INSTALL PIPE(S), STREAM BED STABILIZATION, AND SLOPE STABILIZATION AS DIRECTED.  
 6. EXCAVATE ANY ACCUMULATED SILT AND DEWATER BEFORE REMOVAL OF IMPERVIOUS DIKES. REMOVE IMPERVIOUS DIKES, PUMPS, TEMPORARY FLEXIBLE HOSE, AND STABILIZED DISCHARGE PAD. (DOWNSTREAM IMPERVIOUS DIKES FIRST).  
 7. REMOVE SPECIAL STILLING BASIN AND RESTORE AREA TO ORIGINAL CONDITIONS.  
 8. STABILIZE ALL DISTURBED AREAS THROUGHOUT PROJECT WITH SEED AND MATTING FOR EROSION CONTROL.

**NOTES:**  
 INSTALL EROSION CONTROL MEASURES PRIOR TO ANY EARTH DISTURBING ACTIVITIES.  
 INSTALL SPECIAL SEDIMENT CONTROL FENCE BREAKS OR TEMPORARY ROCK SILT CHECKS TYPE-A AT LOW POINTS IN SILT FENCE.  
 FOR OPTION 1 INSTALL SILT FENCE SUCH THAT ALL EARTH DISTURBANCE IS CONTAINED.  
 FOR CULVERT CONSTRUCTION SEQUENCING SEE THE PUMP AROUND DETAIL OR CONSULT "BEST MANAGEMENT PRACTICES FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES".  
 ALL EXCAVATION IN JURISDICTIONAL STREAMS SHALL BE PERFORMED IN ONLY DRY OR ISOLATED SECTIONS OF THE WORK ZONE.  
 IMPERVIOUS DIKES ARE TO BE USED TO ISOLATE WORK FROM STREAM FLOW WHEN NECESSARY. MAINTENANCE OF STREAM FLOW OPERATIONS SHALL BE INCIDENTAL TO THE WORK. THIS INCLUDES THE DISCHARGE PAD, DIVERSION PIPES, PUMPS, AND HOSES.  
 PUMPS AND HOSES SHALL BE OF SUFFICIENT SIZE TO MAINTAIN STREAM FLOW AND TO DEWATER THE WORK AREA.  
 INSTALL SPECIAL STILLING BASIN IN VEGETATED AREA WITHIN RIGHT OF WAY. DISCHARGE SHOULD BE DIRECTED THROUGH VEGETATED BUFFER AWAY FROM WORK SITE.  
 INSTALL SILT FENCE AS DIRECTED TO CONTAIN DISTURBED AREAS AND/OR EXCAVATED STOCKPILES. BORROW MATERIAL FROM OR DISPOSAL OF MATERIAL TO ANY UNPERMITTED SITE WILL REQUIRE A RECLAMATION PLAN.  
 INSTALL PIPE(S) IN JURISDICTIONAL AREAS IN ACCORDANCE WITH NCDOT BEST MANAGEMENT PRACTICES FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES MANUAL.



**PUMP-AROUND OPERATION FOR PIPE REPLACEMENT IN JURISDICTIONAL STREAMS EROSION CONTROL DETAIL**



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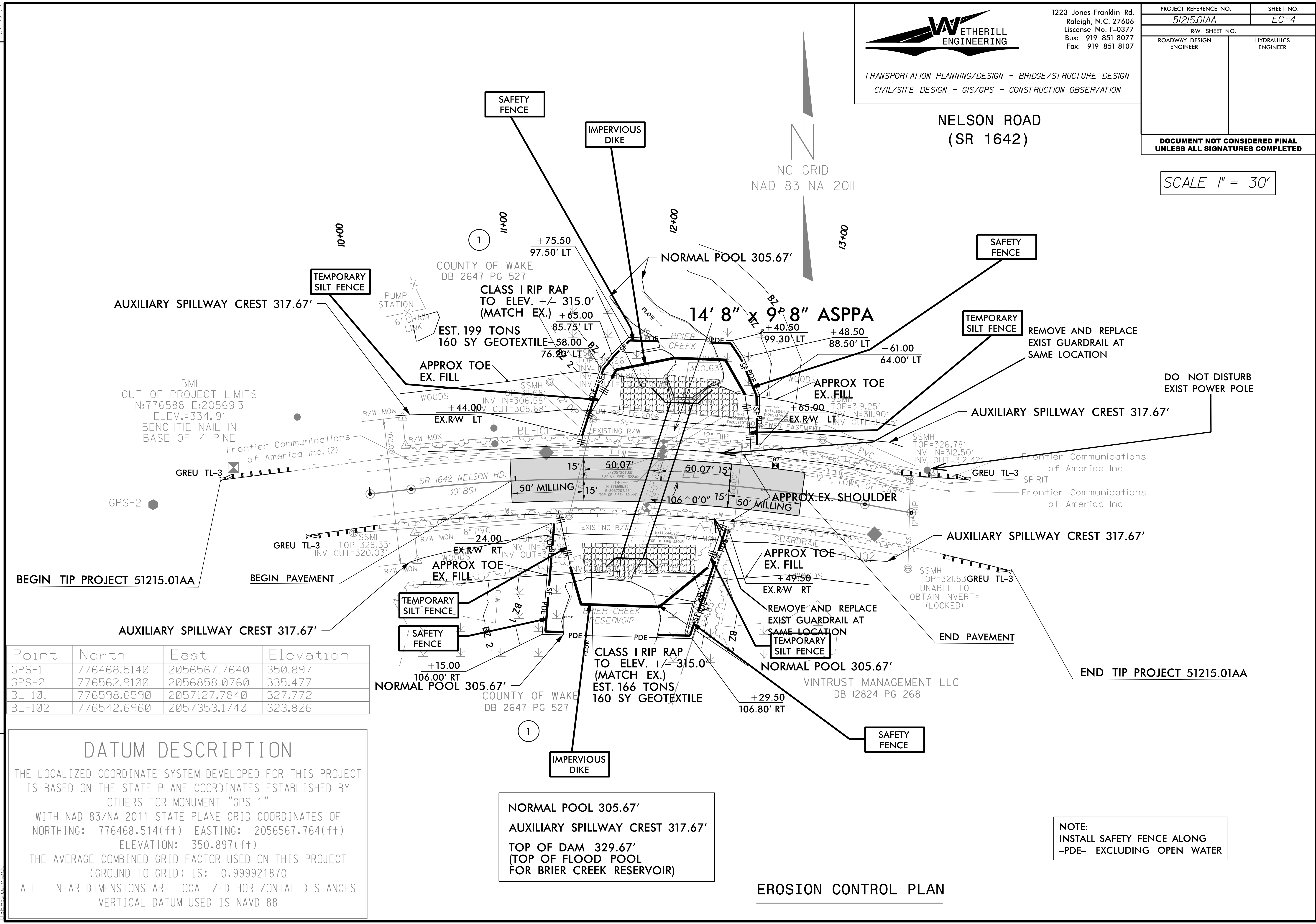
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO. 51215.01AA	SHEET NO. EC-4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

**NELSON ROAD  
(SR 1642)**

SCALE 1" = 30'

NC GRID  
 NAD 83 NA 2011



Point	North	East	Elevation
GPS-1	776468.5140	2056567.7640	350.897
GPS-2	776562.9100	2056858.0760	335.477
BL-101	776598.6590	2057127.7840	327.772
BL-102	776542.6960	2057353.1740	323.826

**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY OTHERS FOR MONUMENT "GPS-1" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 776468.514(++) EASTING: 2056567.764(++) ELEVATION: 350.897(++)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999921870

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

**NORMAL POOL 305.67'**  
**AUXILIARY SPILLWAY CREST 317.67'**  
**TOP OF DAM 329.67'**  
**(TOP OF FLOOD POOL FOR BRIER CREEK RESERVOIR)**

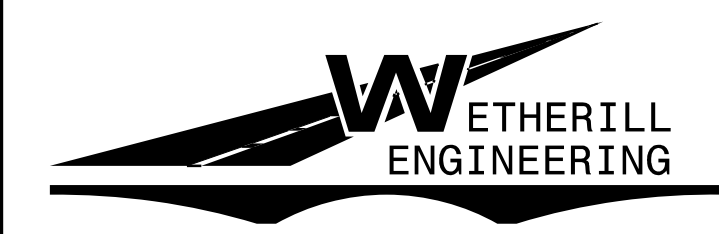
**NOTE:**  
 INSTALL SAFETY FENCE ALONG -PDE- EXCLUDING OPEN WATER

**EROSION CONTROL PLAN**

REVISIONS

2/7/2022 5:15:01 PM 51215.01AA Nelson Rd.-rdy-EC-4.dgn  
 8/17/99

5/14/19



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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

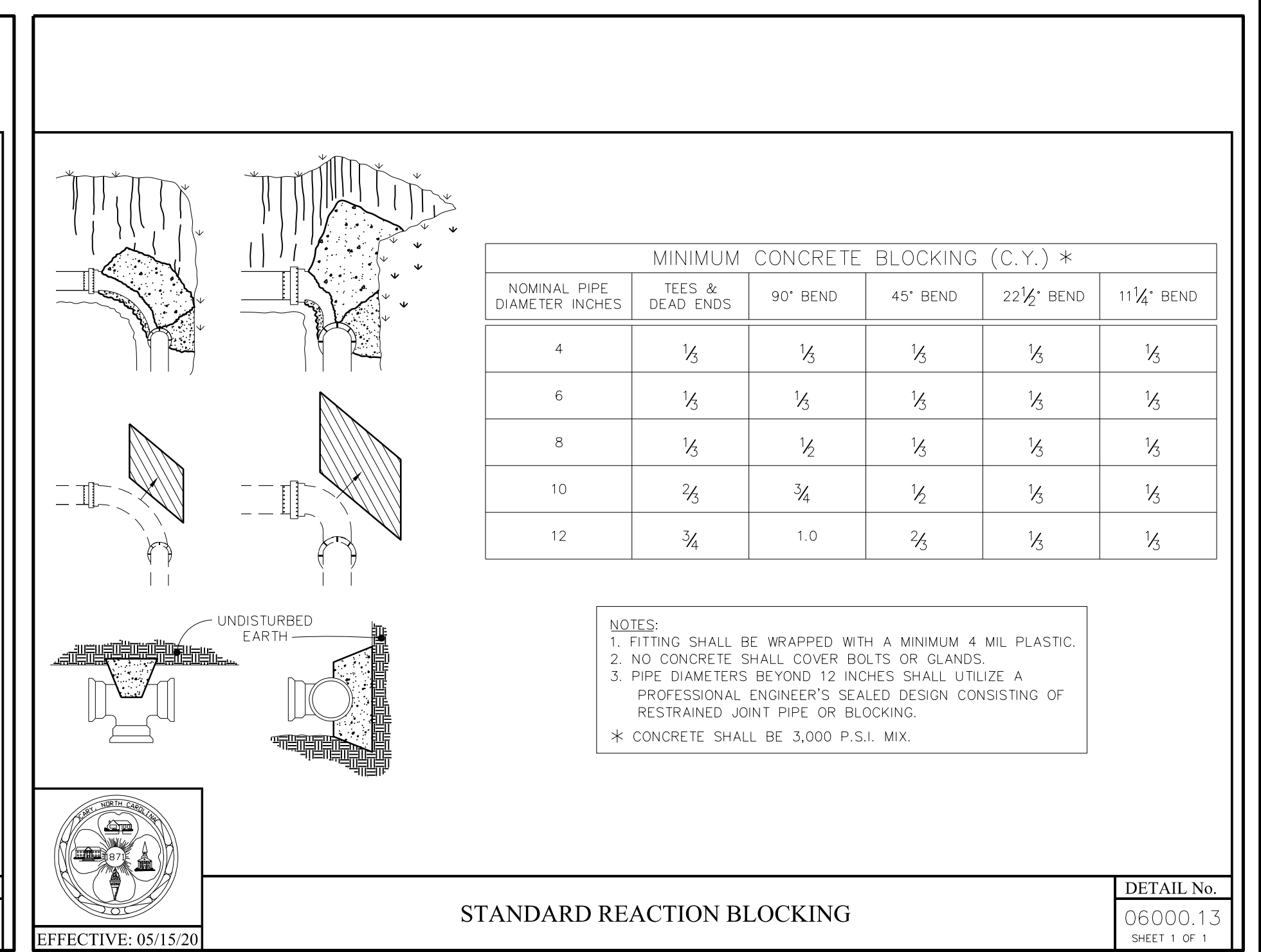
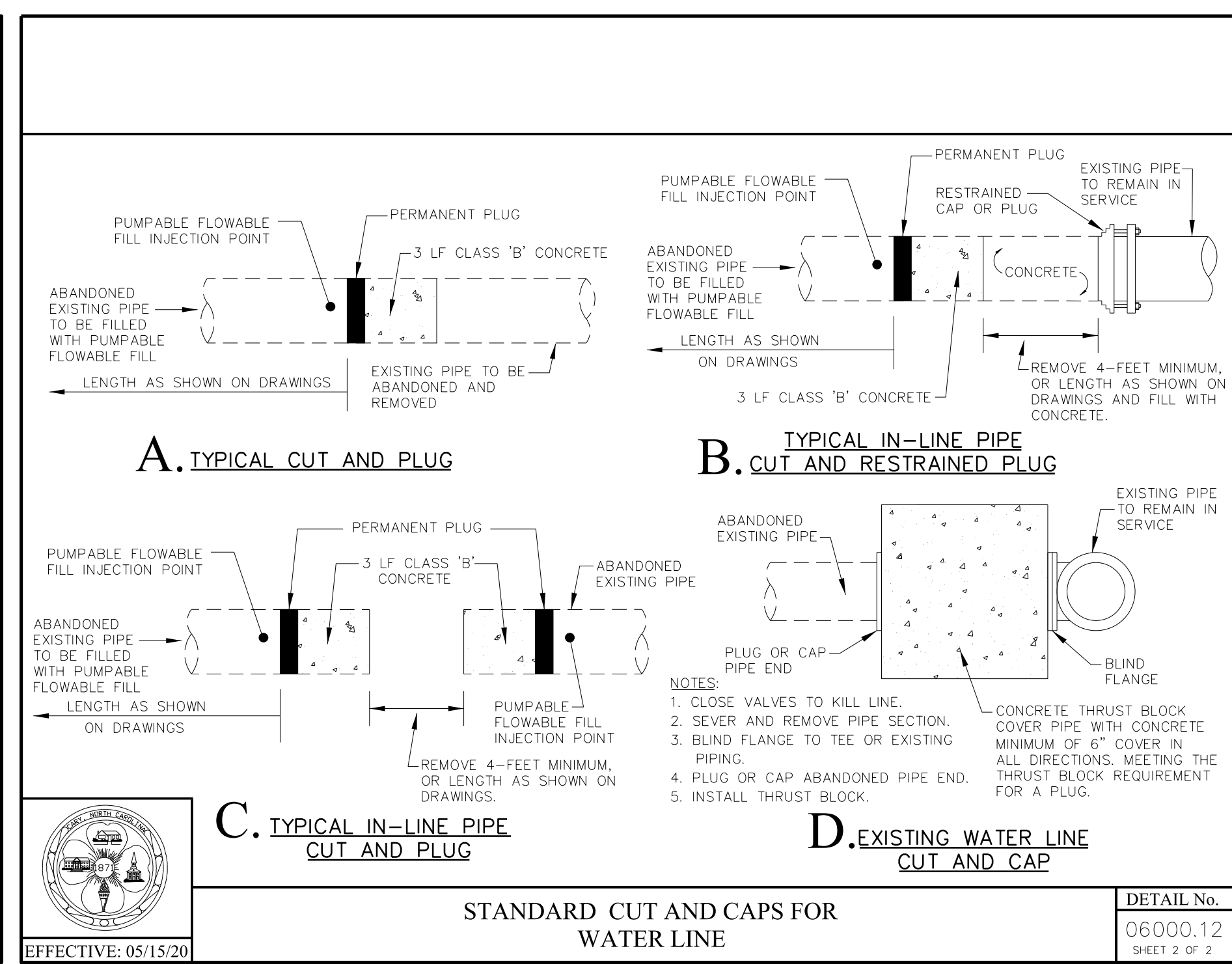
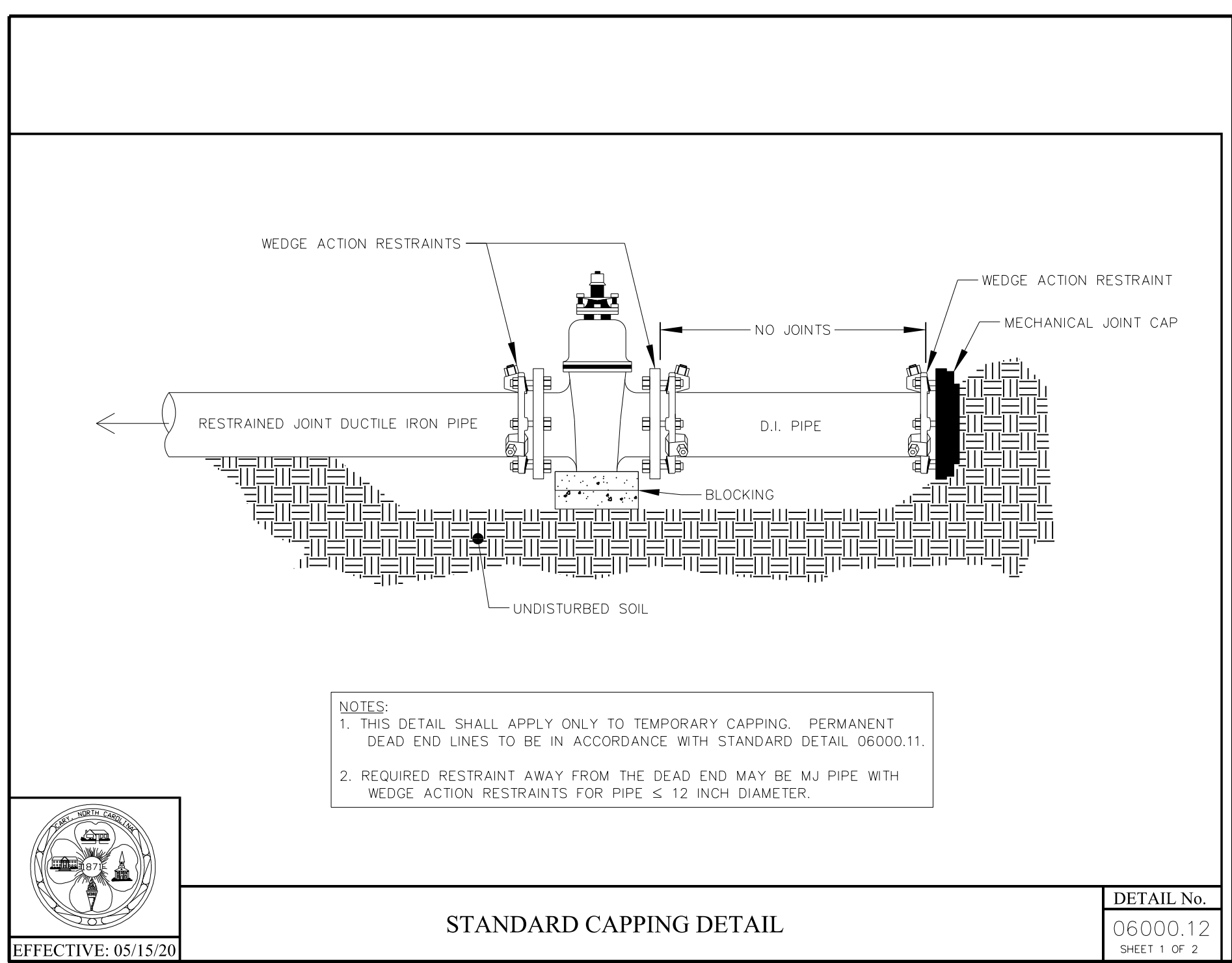
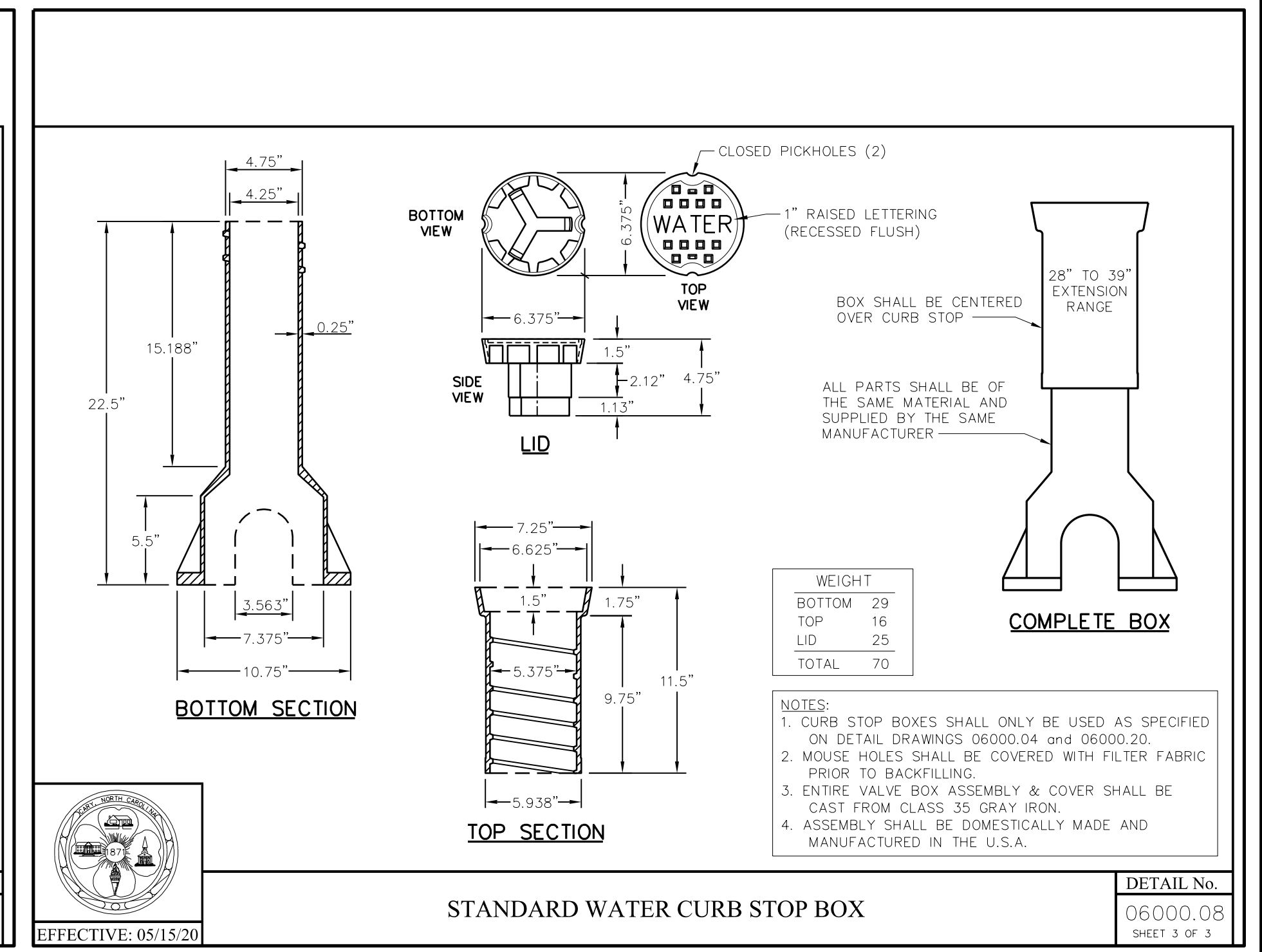
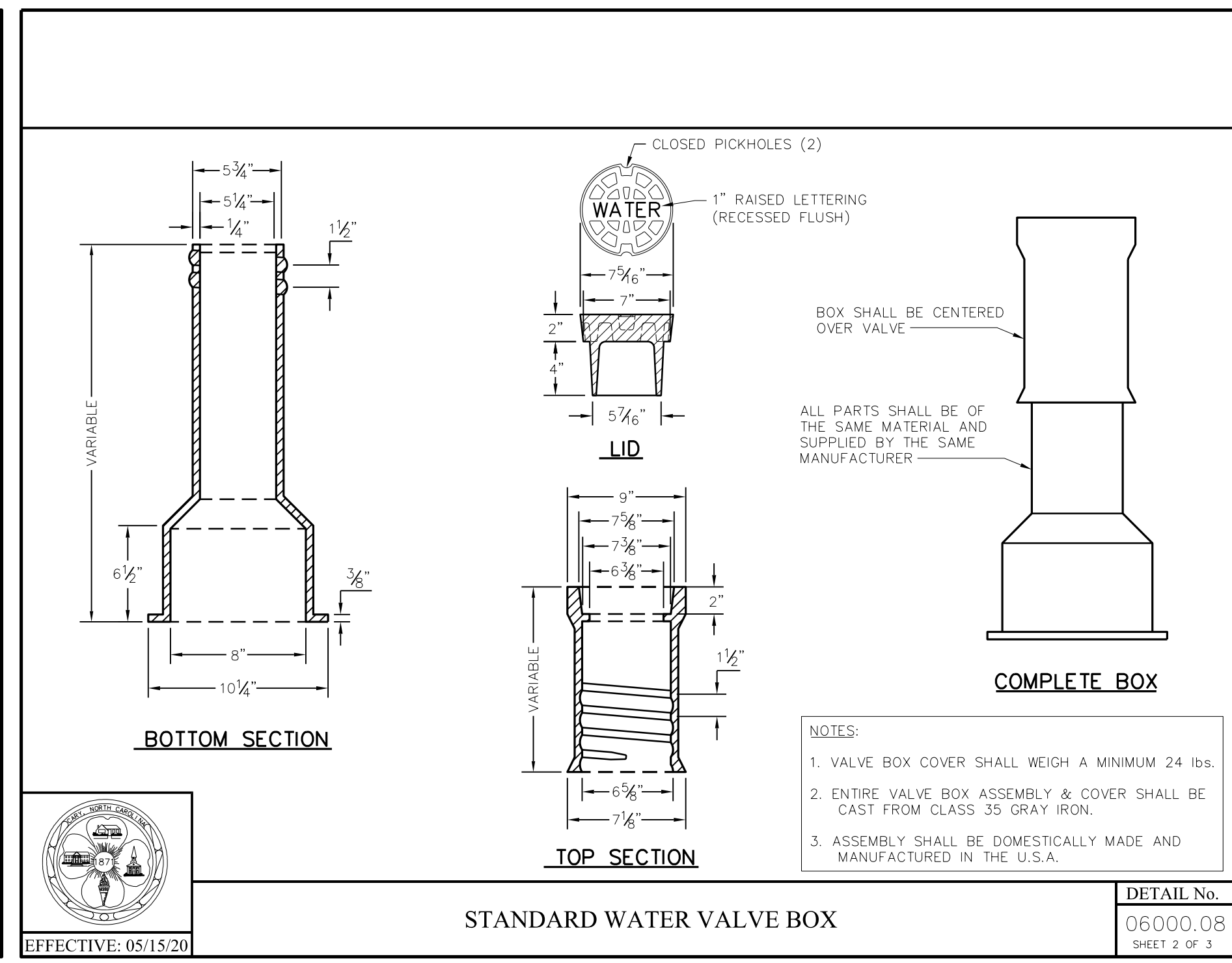
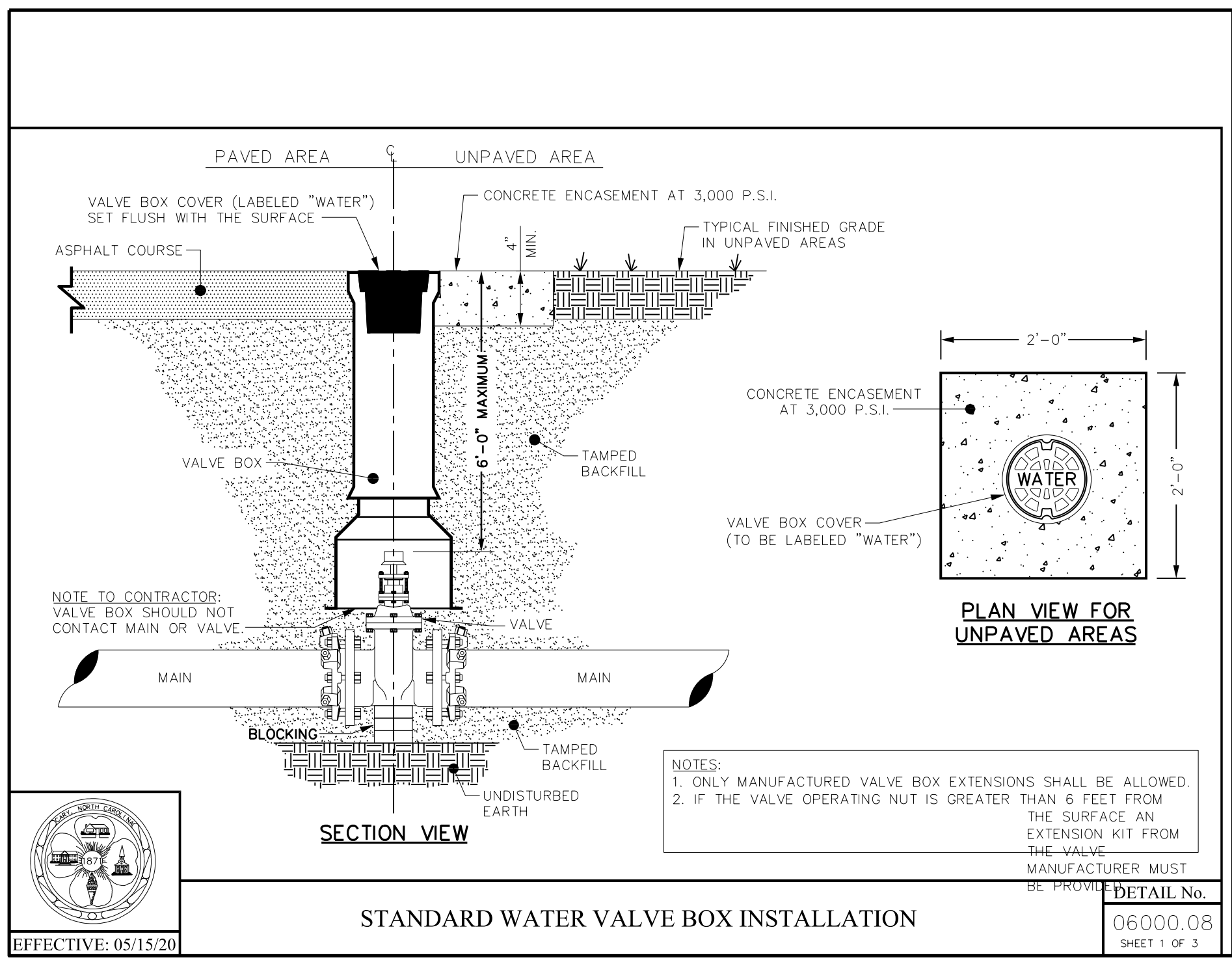
PROJECT REFERENCE NO. 51215.01AA	SHEET NO. UC-3
DESIGNED BY: SLK	
DRAWN BY: SLK	
CHECKED BY: RKM	
APPROVED BY: RKM	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	5/23/2019 UTILITY CONSTRUCTION PLANS ONLY

# UTILITY NOTES AND TYPICAL DETAILS

## NELSON ROAD (SR 1642)

## UTILITY CONSTRUCTION

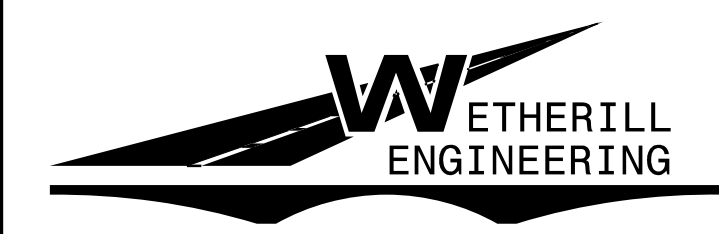
### DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



5/19/2019 Nelson Rd - ut - UC3 - psh.dgn

5/14/99

# UTILITY NOTES AND TYPICAL DETAILS (CONTINUED)



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Fax: 919 851 8107

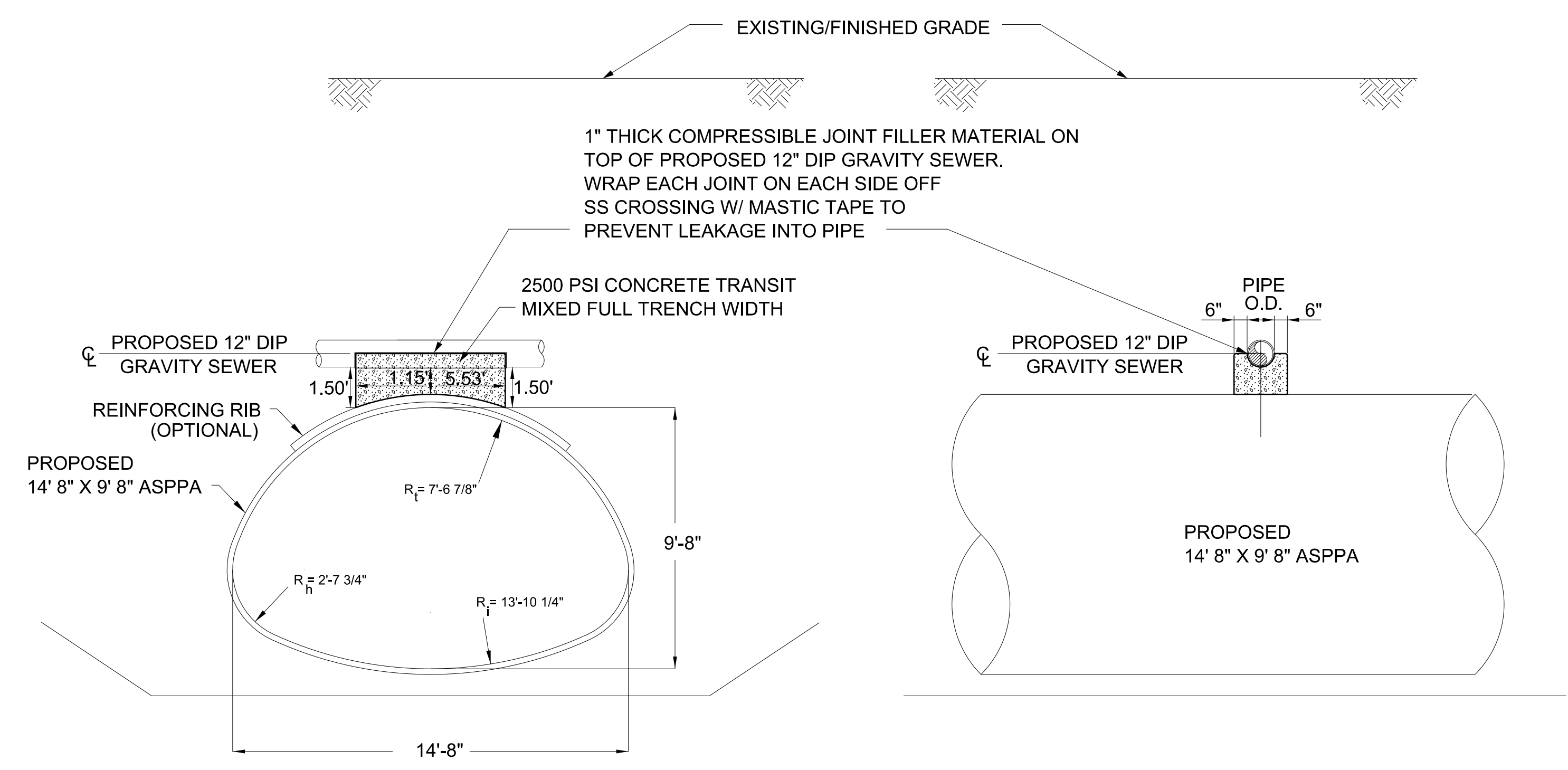
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO. 51215.01AA	SHEET NO. UC-3A
DESIGNED BY: SLK	
DRAWN BY: SLK	
CHECKED BY: RKM	
APPROVED BY: RKM	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	6/23/2024
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY

### NELSON ROAD (SR 1642)

### UTILITY CONSTRUCTION

**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**



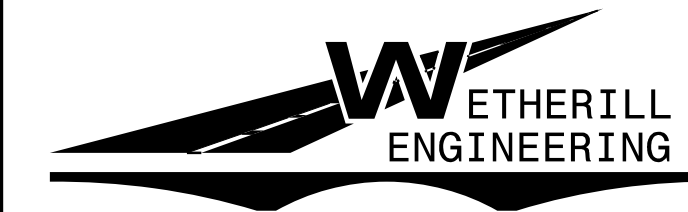
## CONCRETE CRADLE PROTECTION FOR SEWER LINE CROSSINGS

PROPOSED 12" R.J. DIP SS &  
PROPOSED 14' 8" X 9' 8" ASPPA CROSSING  
N.T.S.

5/19/2024 Nelson Rd..ut\_UC3\_psh.dgn



UTILITY NOTES AND TYPICAL DETAILS (CONTINUED)



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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

Table with project reference no. (51215.01AA), sheet no. (UC-3B), and design/checked/approved/revised/signature information.

NELSON ROAD
(SR 1642)

UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL
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Table with 2 columns: Public Works - Operations Division STANDARD PROCEDURE and Sewer By-Pass Pumping. Contains details like Standard Procedure No. OPS 047, Effective: February, 2016, Prepared by: Paul Campbell, Title: Collections System Operator, Approved: Jim Hallowes, Title: Operations Division Manager.

PURPOSE:

Sewer By-Pass pumping will serve as a means of removing sewer from manholes and/or main lines so either main line replacement, line point repairs or manhole rehabilitation can take place.

PROCEDURE:

- List of procedural steps for by-pass pumping, including pump configuration, suction manhole identification, installation procedures, and approval requirements.

- Operational instructions and safety protocols, such as 'Once the plan has been approved...', 'Once the by-pass pumping has been completed...', and 'In the event of any Emergency and a Spill occurs...'.

Contact Information:

- Contact details for Paul Campbell (Collections System Operator) and Tom Lubcker (Wastewater Collections Field Supervisor).

TOWN OF CARY
WASTEWATER BYPASS PUMPING CHECKLIST

CONTRACTOR NAME:
CONTRACTOR 24 HR EMERGENCY CONTACT NAME:
PHONE#:
TOWN OF CARY EMERGENCY CONTACT #:
PHONE#:
BYPASS PUMP SETUP AND INSPECTION: DATE:
TOC STAFF INITIAL:
BYPASS PLAN IN PLACE: YES / NO
TELEPHONE DIALER INSTALLED & PROGRAMMED: YES / NO
TOWN EMERGENCY CONTACT INCLUDED IN DIALER CALL OUT LIST: YES / NO

Checklist table with columns: BYPASS / DEWATERING PUMPS, DEWATERED PIPE, IN/OUT, TOC STAFF INITIAL, CONTRACTOR STAFF INITIAL, DATE, TIME, COMMENTS.

TOWN OF CARY

5/14/2021



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Raleigh, N.C. 27606  
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Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	51215.01AA	SHEET NO.	UC-4
DESIGNED BY:	SLK		
DRAWN BY:	SLK		
CHECKED BY:	RKM		
APPROVED BY:	RKM		
REVISED:			
UTILITIES ENGINEERING SEC.	PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY	

NC GRID  
NAD 83 NA 2011

CONTRACTOR TO TEMPORARILY PLUG EXISTING 12" DIP SEWER LINE AT EACH MANHOLE AND BYPASS PUMP TO FACILITATE REMOVAL OF SEWER LINE AND REMOVAL OF EXISTING CMP PIPE. SEE SHEET UC-3B FOR STANDARD PROCEDURE FOR SEWER BY-PASS PUMPING.

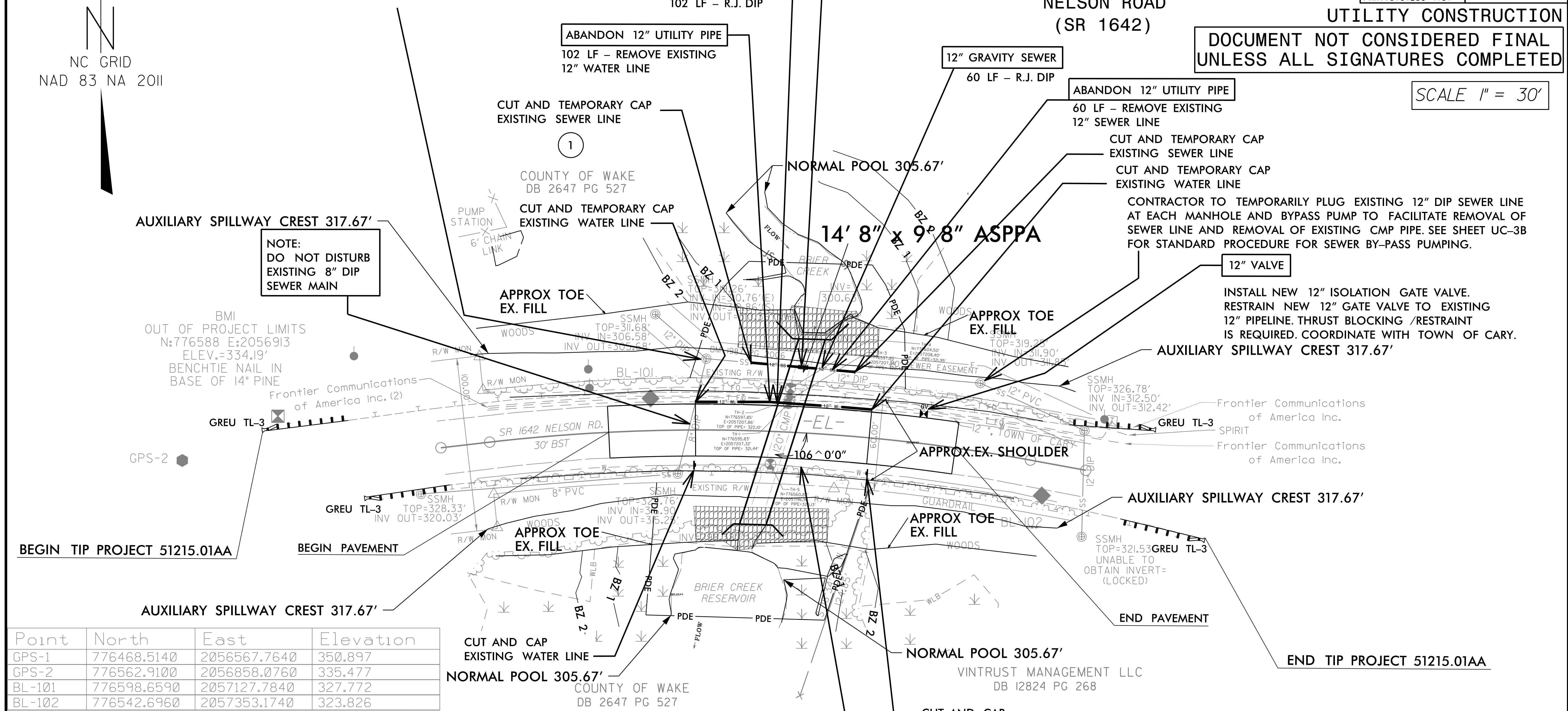
PROPOSED CONCRETE CRADLE  
(SEE DETAIL ON SHEET UC-3A)

NELSON ROAD  
(SR 1642)

UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

SCALE 1" = 30'



Point	North	East	Elevation
GPS-1	776468.5140	2056567.7640	350.897
GPS-2	776562.9100	2056858.0760	335.477
BL-101	776598.6590	2057127.7840	327.772
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DATUM DESCRIPTION

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WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF  
 NORTHING: 776468.514(ft) EASTING: 2056567.764(ft)  
 ELEVATION: 350.897(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999921870

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
 VERTICAL DATUM USED IS NAVD 88

NORMAL POOL 305.67'  
 AUXILIARY SPILLWAY CREST 317.67'  
 TOP OF DAM 329.67'  
 (TOP OF FLOOD POOL FOR BRIER CREEK RESERVOIR)

WATER AND SEWER INSTALLATION NOTES:  
 ALL WATER AND SEWER CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST TOWN OF CARY AND NCDOT STANDARDS AND SPECIFICATIONS.

5/14/2021 10:00 AM Rd...ut\_UC4...psd.dgn

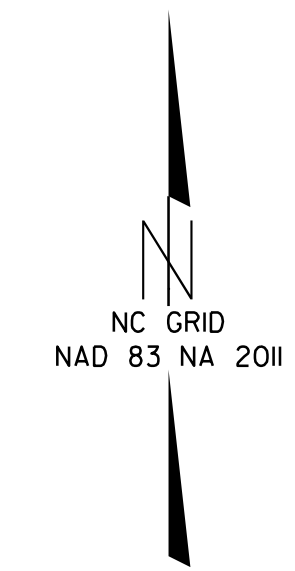
### UTILITIES BY OTHERS

ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROPOSED UTILITY WORK SHOWN ON THIS SHEET.



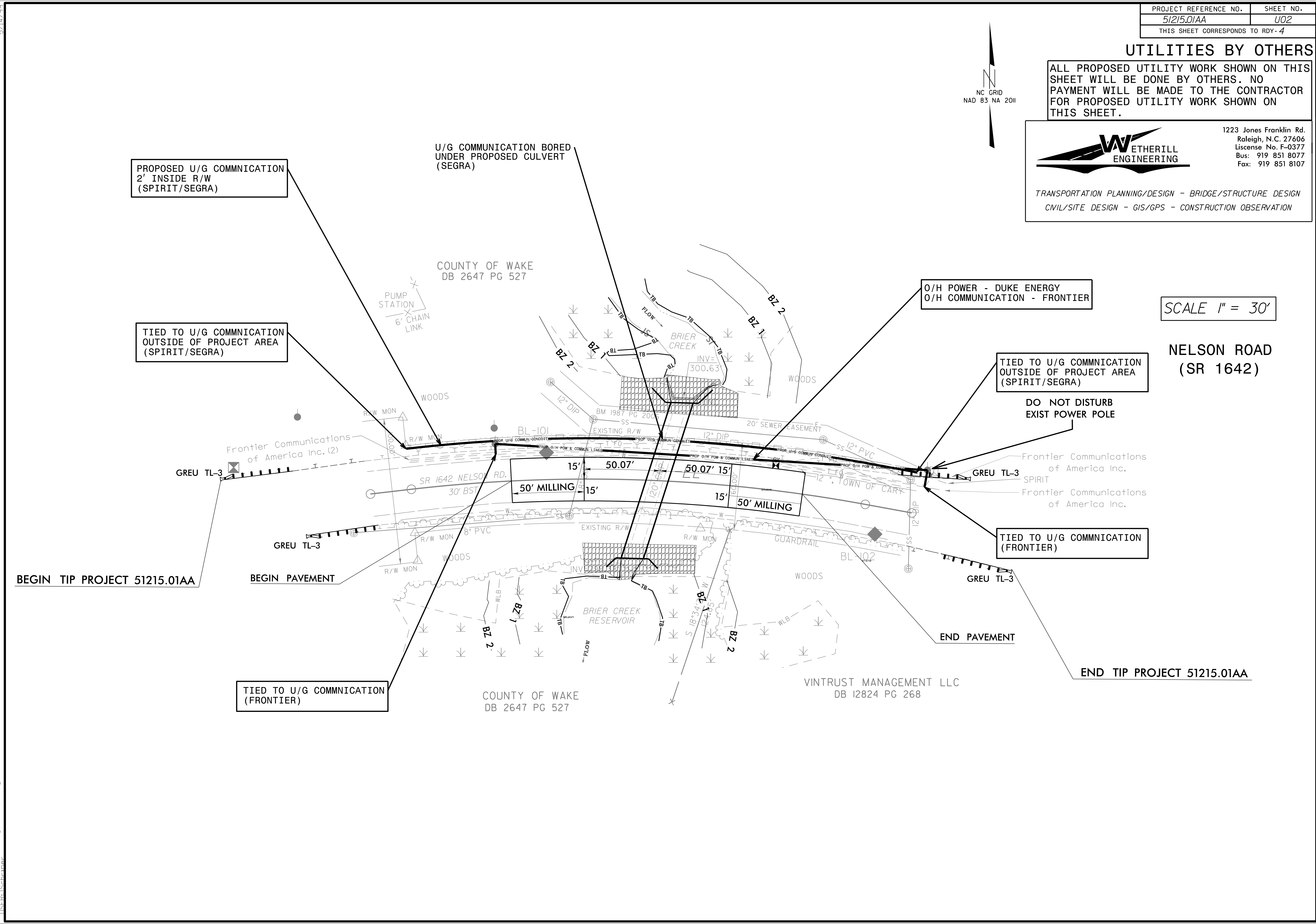
1223 Jones Franklin Rd.  
Raleigh, N.C. 27606  
License No. F-0377  
Bus: 919 851 8077  
Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION



SCALE 1" = 30'

NELSON ROAD  
(SR 1642)



07 Feb 2011 09:14:59  
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