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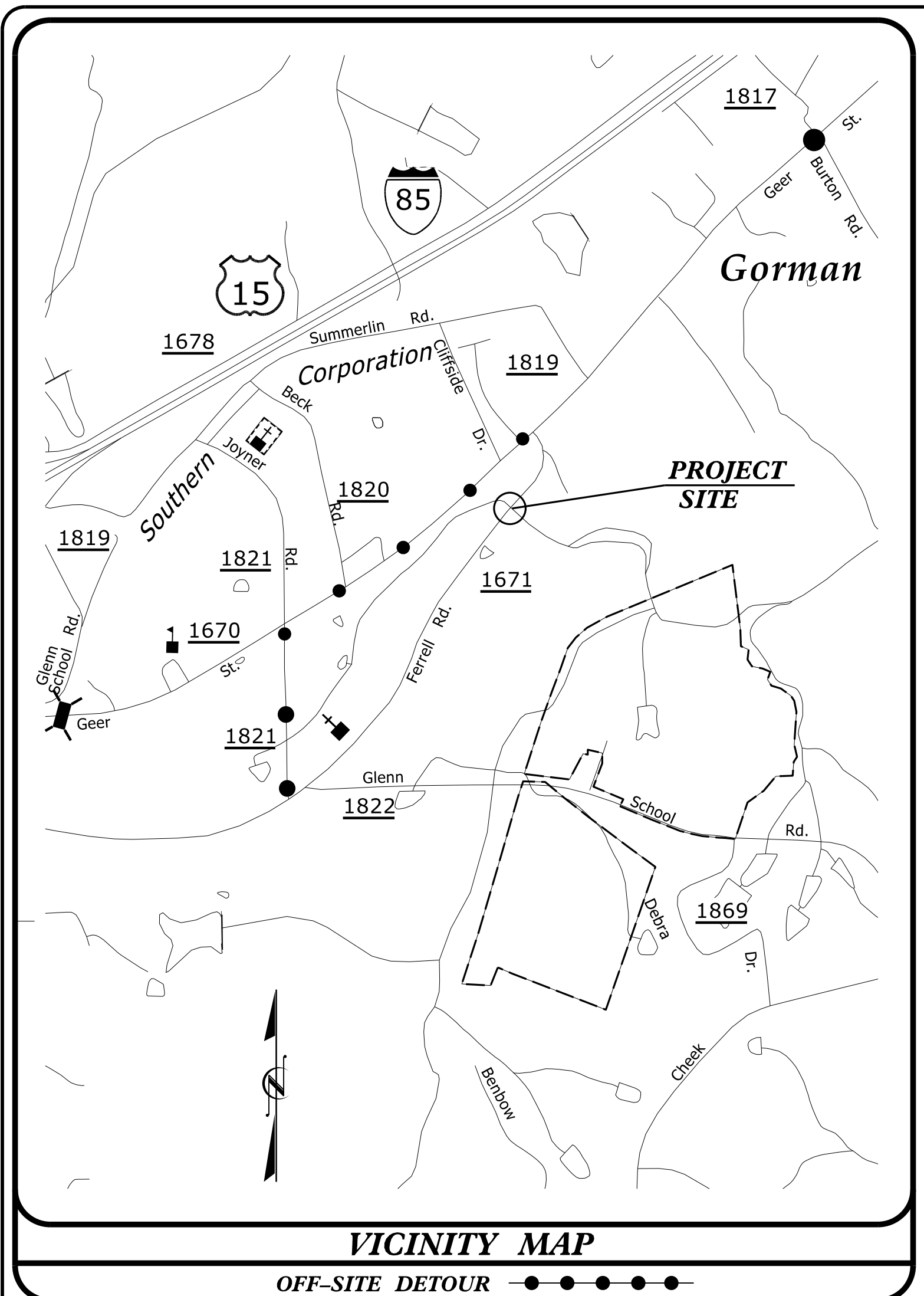
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09_05/19

PROJECT: 5B.203214.5

CONTRACT: ME00014



VICINITY MAP
OFF-SITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

DURHAM COUNTY

LOCATION: PIPE CROSSING ON SR 1671 (FERRELL ROAD)

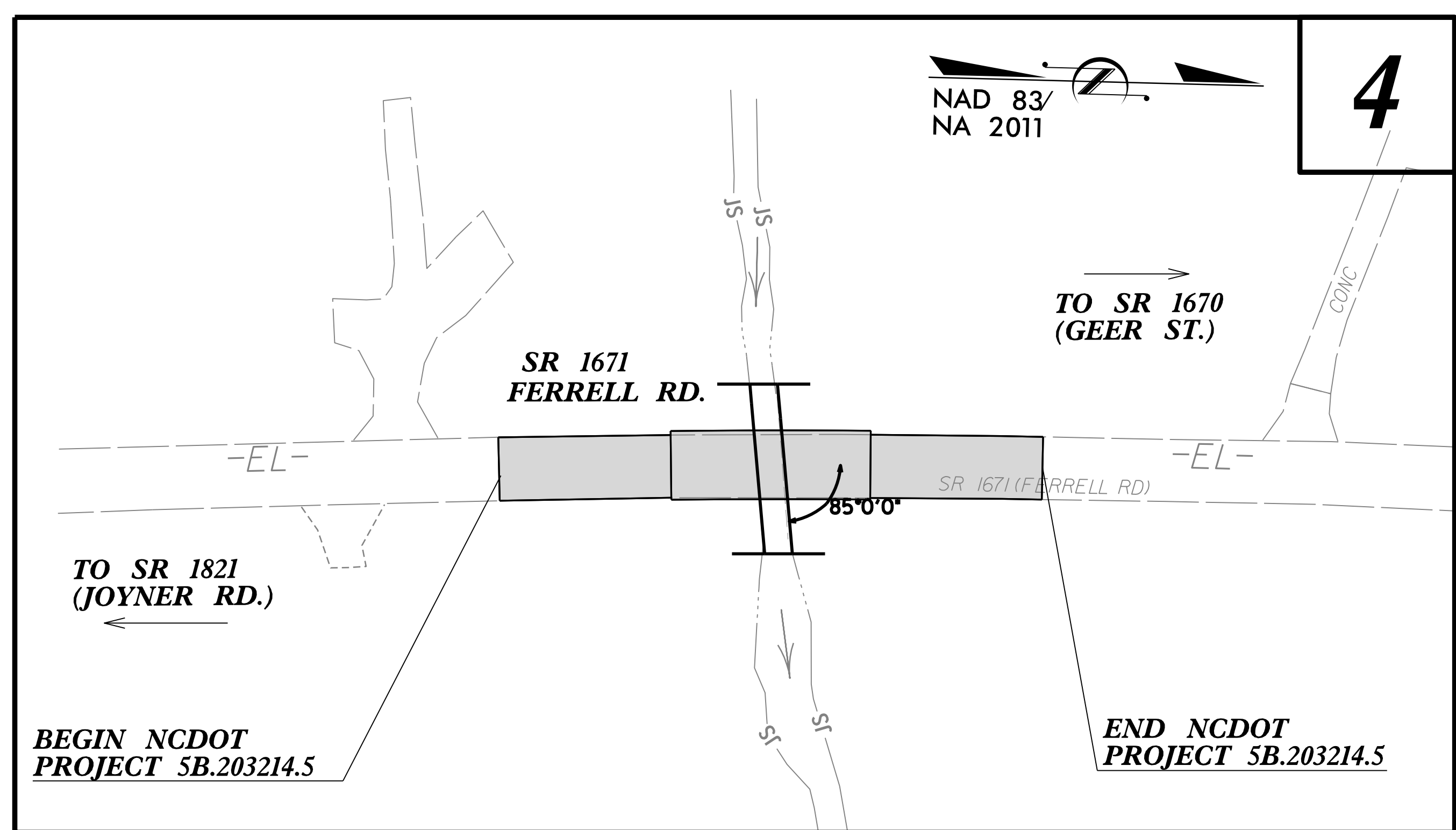
TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	5B.203214.5	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
5B.203214.5		PE, UTIL., RW	
5B.203214.5		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

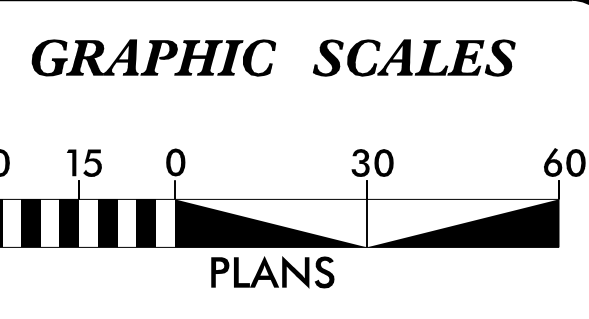
FINAL PLANS



INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-B	CONVENTIONAL SYMBOLS
2A-1	TYPICAL SECTIONS, PAVEMENT SCHEDULE, & MISCELLANEOUS DETAILS
2D-1	METHOD OF PIPE INSTALLATION DETAIL
4	PLAN SHEET
5	PROFILE AND HEADWALL DETAILS
TMP-1 THRU TMP-2	TRANSPORTATION MANAGEMENT PLANS
EC-1 THRU EC-4	EROSION CONTROL TITLE SHEET, SOIL STABILIZATION TIME FRAMES, PUMP AROUND DETAIL AND PLAN SHEET
UO-1 THRU UO-2	UTILITY BY OTHERS PLANS

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



PROJECT LENGTH

LENGTH ROADWAY PROJECT 5B.203214.5 =	0.029 MILES
LENGTH STRUCTURE PROJECT 5B.203214.5 =	0.000 MILES
TOTAL LENGTH PROJECT 5B.203214.5 =	0.029 MILES

NCDOT CONTACT: **DOUG MCNEAL, PE**
DIVISION MAINTENANCE ENGINEER

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: R.K. MURPHY, JR., PE
PROJECT DESIGN ENGINEER
APRIL 12, 2023

HYDRAULICS ENGINEER
1/30/2023

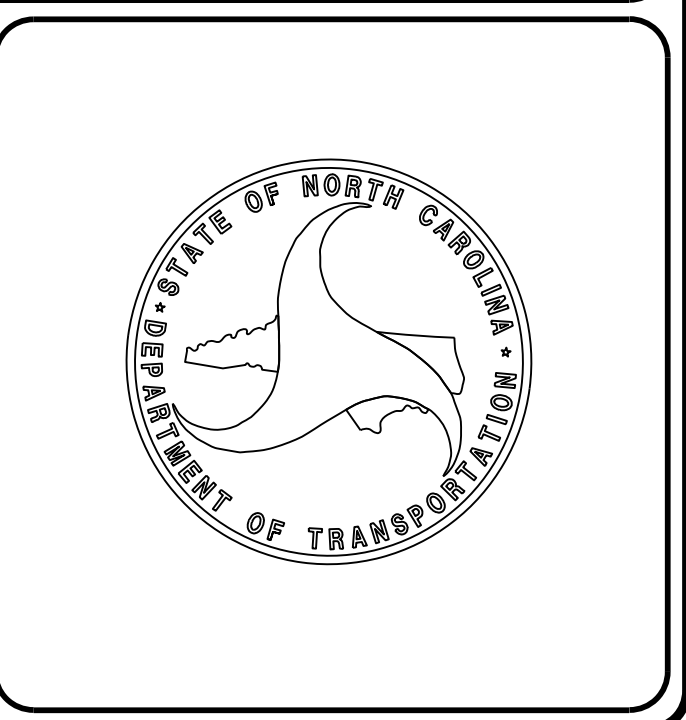
SEAL 15833

DocuSigned by:
Jerry L. Lindsey, P.E.
SIGNATURE: [Signature]

ROADWAY DESIGN ENGINEER
1/30/2023

SEAL 018981

DocuSigned by:
R.K. Murphy, Jr., P.E.
SIGNATURE: [Signature]



STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS
CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

BOUNDARIES AND PROPERTY:

Table listing symbols for boundaries and property: State Line, County Line, Township Line, City Line, Reservation Line, Property Line, Existing Iron Pin (EIP), Computed Property Corner, Existing Concrete Monument (ECM), Parcel/Sequence Number, Existing Fence Line, Proposed Woven Wire Fence, Proposed Chain Link Fence, Proposed Barbed Wire Fence, Existing Wetland Boundary, Proposed Wetland Boundary, Existing Endangered Animal Boundary, Existing Endangered Plant Boundary, Existing Historic Property Boundary, Known Contamination Area: Soil, Potential Contamination Area: Soil, Known Contamination Area: Water, Potential Contamination Area: Water, Contaminated Site: Known or Potential.

BUILDINGS AND OTHER CULTURE:

Table listing symbols for buildings and other culture: Gas Pump Vent or U/G Tank Cap, Sign, Well, Small Mine, Foundation, Area Outline, Cemetery, Building, School, Church, Dam.

HYDROLOGY:

Table listing symbols for hydrology: Stream or Body of Water, Hydro, Pool or Reservoir, Jurisdictional Stream, Buffer Zone 1, Buffer Zone 2, Flow Arrow, Disappearing Stream, Spring, Wetland, Proposed Lateral, Tail, Head Ditch, False Sump.

RAILROADS:

Table listing symbols for railroads: Standard Gauge, RR Signal Milepost, Switch, RR Abandoned, RR Dismantled.

RIGHT OF WAY & PROJECT CONTROL:

Table listing symbols for right of way and project control: Primary Horiz Control Point, Primary Horiz and Vert Control Point, Secondary Horiz and Vert Control Point, Vertical Benchmark, Existing Right of Way Monument, Proposed Right of Way Monument (Rebar and Cap), Proposed Right of Way Monument (Concrete), Existing Permanent Easement Monument, Proposed Permanent Easement Monument (Rebar and Cap), Existing C/A Monument, Proposed C/A Monument (Rebar and Cap), Proposed C/A Monument (Concrete), Existing Right of Way Line, Proposed Right of Way Line, Existing Control of Access Line, Proposed Control of Access Line, Proposed ROW and CA Line, Existing Easement Line, Proposed Temporary Construction Easement, Proposed Temporary Drainage Easement, Proposed Permanent Drainage Easement, Proposed Permanent Drainage/Utility Easement, Proposed Permanent Utility Easement, Proposed Temporary Utility Easement, Proposed Aerial Utility Easement.

ROADS AND RELATED FEATURES:

Table listing symbols for roads and related features: Existing Edge of Pavement, Existing Curb, Proposed Slope Stakes Cut, Proposed Slope Stakes Fill, Proposed Curb Ramp, Existing Metal Guardrail, Proposed Guardrail, Existing Cable Guiderail, Proposed Cable Guiderail, Equality Symbol, Pavement Removal, VEGETATION: Single Tree, Single Shrub, Hedge.

Table listing symbols for woods, orchard, and vineyard: Woods Line, Orchard, Vineyard.

EXISTING STRUCTURES:

Table listing symbols for existing structures: Bridge, Tunnel or Box Culvert, Bridge Wing Wall, Head Wall and End Wall, Head and End Wall, Pipe Culvert, Footbridge, Drainage Box: Catch Basin, DI or JB, Paved Ditch Gutter, Storm Sewer Manhole, Storm Sewer.

UTILITIES:

* SUE - Subsurface Utility Engineering
LOS - Level of Service - A, B, C or D (Accuracy)

Table listing symbols for utilities: POWER: Existing Power Pole, Proposed Power Pole, Existing Joint Use Pole, Proposed Joint Use Pole, Power Manhole, Power Line Tower, Power Transformer, U/G Power Cable Hand Hole, H-Frame Pole, U/G Power Line Test Hole (SUE - LOS A)*, U/G Power Line (SUE - LOS B)*, U/G Power Line (SUE - LOS C)*, U/G Power Line (SUE - LOS D)*. TELEPHONE: Existing Telephone Pole, Proposed Telephone Pole, Telephone Manhole, Telephone Pedestal, Telephone Cell Tower, U/G Telephone Cable Hand Hole, U/G Telephone Test Hole (SUE - LOS A)*, U/G Telephone Cable (SUE - LOS B)*, U/G Telephone Cable (SUE - LOS C)*, U/G Telephone Cable (SUE - LOS D)*, U/G Telephone Conduit (SUE - LOS B)*, U/G Telephone Conduit (SUE - LOS C)*, U/G Telephone Conduit (SUE - LOS D)*, U/G Fiber Optics Cable (SUE - LOS B)*, U/G Fiber Optics Cable (SUE - LOS C)*, U/G Fiber Optics Cable (SUE - LOS D)*.

WATER:

Table listing symbols for water: Water Manhole, Water Meter, Water Valve, Water Hydrant, U/G Water Line Test Hole (SUE - LOS A)*, U/G Water Line (SUE - LOS B)*, U/G Water Line (SUE - LOS C)*, U/G Water Line (SUE - LOS D)*, Above Ground Water Line.

TV:

Table listing symbols for TV: TV Pedestal, TV Tower, U/G TV Cable Hand Hole, U/G TV Test Hole (SUE - LOS A)*, U/G TV Cable (SUE - LOS B)*, U/G TV Cable (SUE - LOS C)*, U/G TV Cable (SUE - LOS D)*, U/G Fiber Optic Cable (SUE - LOS B)*, U/G Fiber Optic Cable (SUE - LOS C)*, U/G Fiber Optic Cable (SUE - LOS D)*.

GAS:

Table listing symbols for gas: Gas Valve, Gas Meter, U/G Gas Line Test Hole (SUE - LOS A)*, U/G Gas Line (SUE - LOS B)*, U/G Gas Line (SUE - LOS C)*, U/G Gas Line (SUE - LOS D)*, Above Ground Gas Line.

SANITARY SEWER:

Table listing symbols for sanitary sewer: Sanitary Sewer Manhole, Sanitary Sewer Cleanout, U/G Sanitary Sewer Line, Above Ground Sanitary Sewer, SS Force Main Line Test Hole (SUE - LOS A)*, SS Force Main Line (SUE - LOS B)*, SS Force Main Line (SUE - LOS C)*, SS Force Main Line (SUE - LOS D)*.

MISCELLANEOUS:

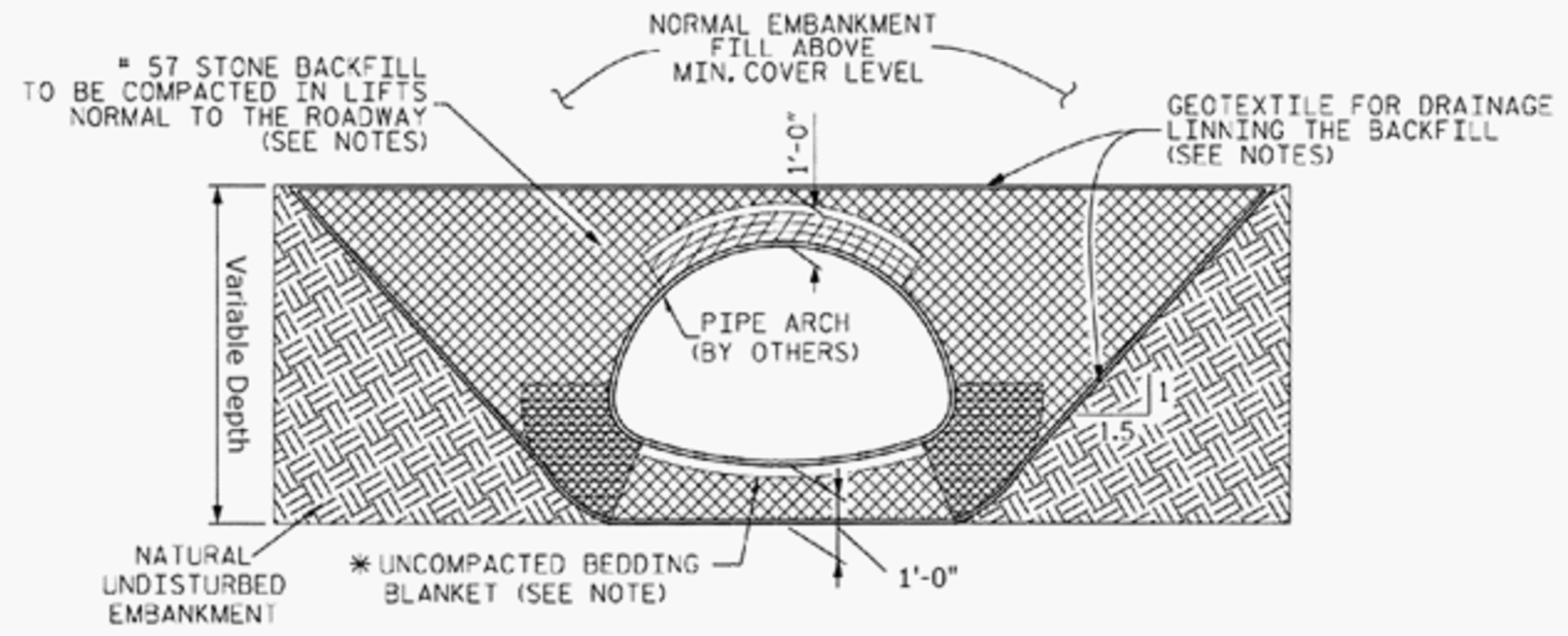
Table listing symbols for miscellaneous: Utility Pole, Utility Pole with Base, Utility Located Object, Utility Traffic Signal Box, Utility Unknown U/G Line (SUE - LOS B)*, U/G Tank; Water, Gas, Oil, Underground Storage Tank, Approx. Loc., A/G Tank; Water, Gas, Oil, Geoenvironmental Boring, Abandoned According to Utility Records, End of Information.

8/17/99

REVISIONS



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



- 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

8/18/2022
Rdy_ash2D-1.dgn
ITSEBKENNEDY

8/17/99



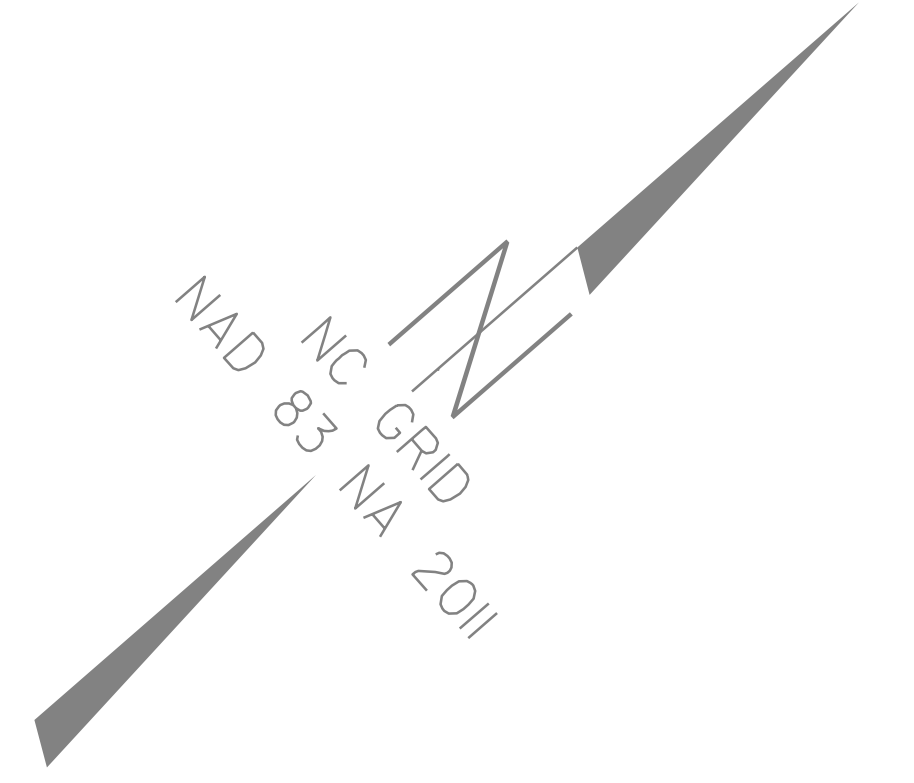
1223 Jones Franklin Rd.
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TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

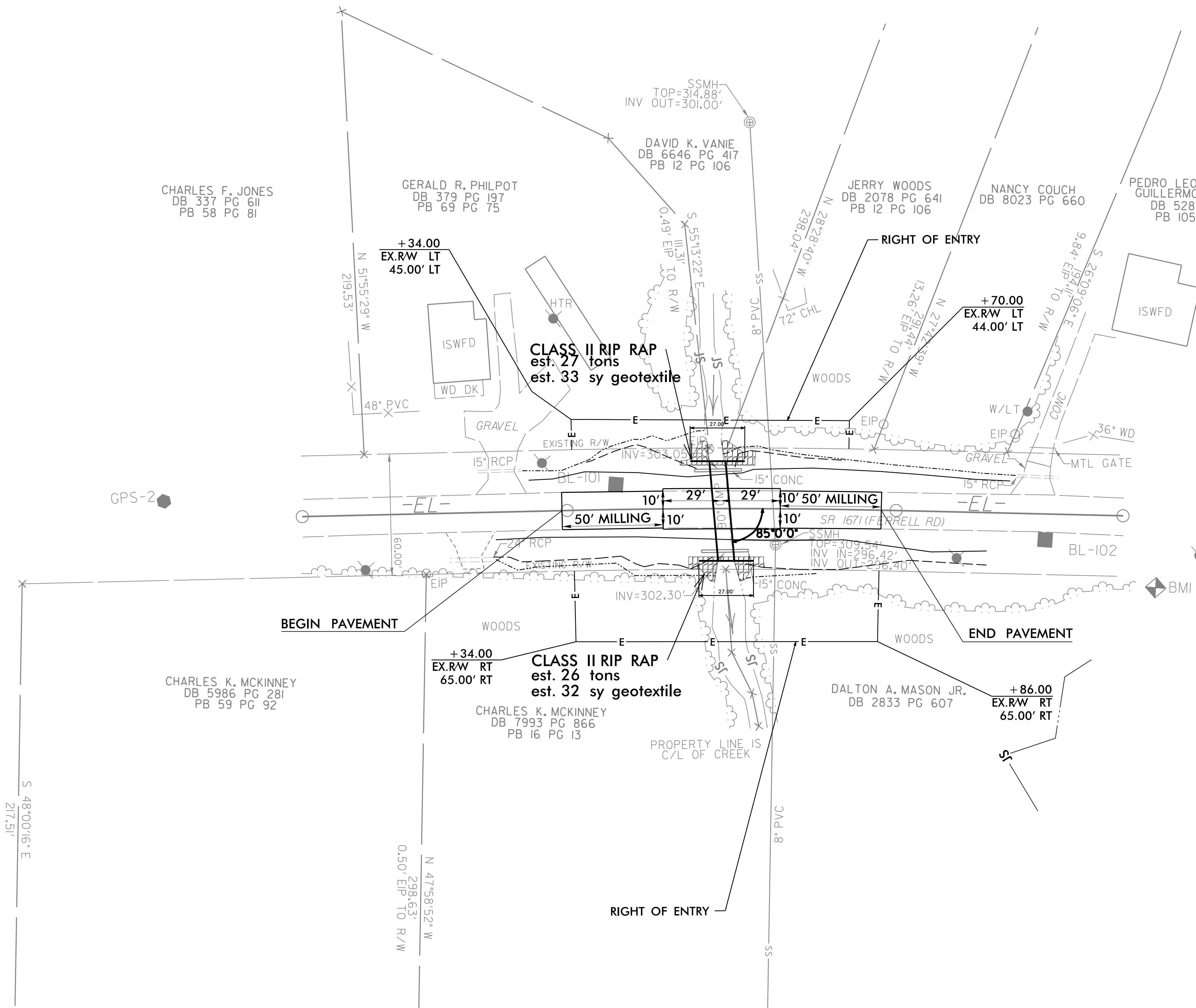
PROJECT REFERENCE NO. 5B.203214.5	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 1/25/2023	HYDRAULICS ENGINEER 1/25/2023
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

**FERRELL ROAD
(SR 1671)**

SCALE 1" = 30'



REVISIONS



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY OTHERS FOR MONUMENT "GPS-2" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 830259.2960(±) EASTING: 2050858.4910(±) ELEVATION: 320.01(±) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999954349

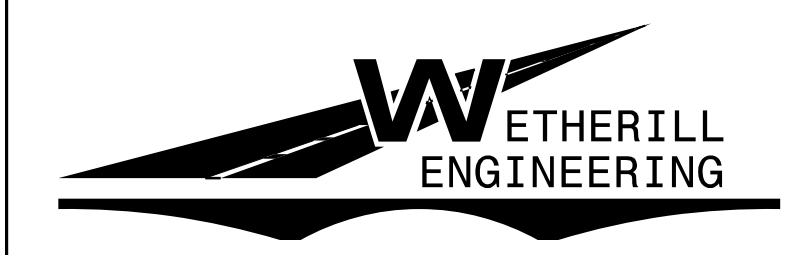
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

BM1 ELEVATION = 311.33
N 830601 E 2051213
BENCHTIE NAIL SET IN 24" PINE

Point	North	East	Elevation
GPS-1	830059.6360	2050739.1840	329.520
GPS-2	830259.2960	2050858.4910	320.005
BL-101	830433.4600	2050998.9820	314.005
BL-102	830575.6900	2051159.0290	313.016

1/24/2023
1:56:26 PM
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8/17/99

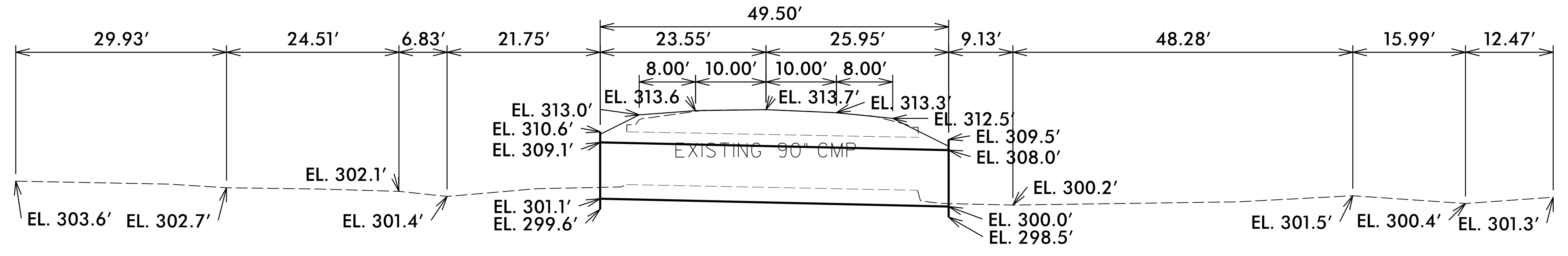


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PROJECT REFERENCE NO. 5B.203214.5	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 12/14/2022	HYDRAULICS ENGINEER 12/14/2022
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

FERRELL ROAD (SR 1671)

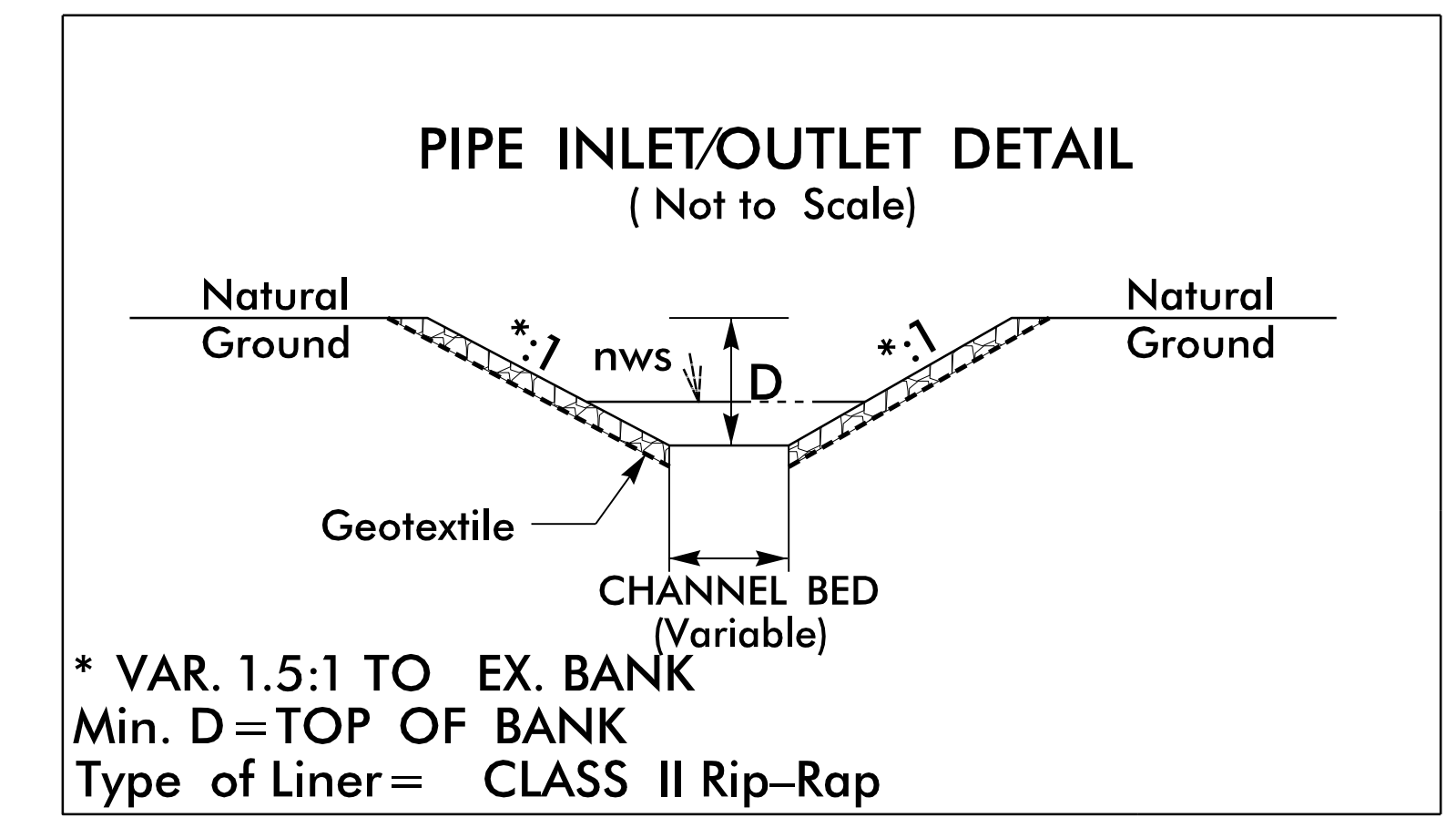


CENTERLINE PROFILE ACROSS PIPE 96" CAP 90 Degree Skew

- PROPOSED ELEVATIONS:**
CENTERLINE ROADWAY OVER PIPE
 ELEVATION = +/- 313.7'
INLET:
 TOP OF HEADWALL = +/- 310.6'
 TOP OF PIPE = +/- 309.1'
 STREAM BED = +/- 302.1'
 INVERT PIPE = +/- 301.1'
 BOTTOM HEADWALL = +/- 299.6'
OUTLET:
 TOP OF HEADWALL = +/- 309.5'
 TOP OF PIPE = +/- 308.0'
 STREAM BED = +/- 300.4' (past blowhole)
 INVERT PIPE = +/- 300.0'
 BOTTOM HEADWALL = +/- 298.5'

- CENTERLINE LENGTH = 49.50' OF 96" CORRUGATED ALUMINUM PIPE**
- TWO 27'-0" WIDE BY 11'-0" TALL FULLY WELDED ALUMINUM STRUCTURAL PLATE HEADWALLS W/2 SECTIONS OF 96" 0.105" (12 GAGE) THICK PIPE-ARCH STUBED OUT, WHICH SHALL BE FULLY WELDED TO ALUMINUM STRUCTURAL PLATE HEADWALL.**
- MINIMUM COVER = 4.0' AT SHOULDER; 4.6' AT EDGE OF PAVEMENT.**
MAXIMUM COVER OVER PIPE = 5.1'

**NOTE: EXPOSED ROCK IN STREAM BED +/- 75' UPSTREAM.
NARROW BROKEN ROCK OUTCROPPING AT UPSTREAM FACE.**



REVISIONS

12/14/2022
12X16 203214.5_Ferrell Rd..rdj_psh_05.dgn
JERRY L. LINDSEY

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - 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:

<u>STD. NO.</u>	<u>TITLE</u>
1101.03	TEMPORARY ROAD CLOSURES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - (PERMANENT AND TEMPORARY)
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS - TYPES
1264.02	OBJECT MARKERS - INSTALLATION

PHASING

- STEP 1) INSTALL ALL OFFSITE DETOUR SIGNING AND ROAD CLOSURE SIGNING NO MORE THAN THREE (3) DAYS PRIOR TO CONSTRUCTION. IF CONSTRUCTION HAS NOT BEGUN WITHIN THREE (3) DAYS OF INSTALLATION, REMOVE OR COVER SIGNS USING AN APPROVED METHOD PER THE DISCRETION OF THE ENGINEER.
[SEE SHEETS TMP-02]
- STEP 2) AWAY FROM TRAFFIC CONSTRUCT SR 1671 FERRELL RD. FROM THE BEGIN PROJECT LIMITS TO THE END PROJECT LIMITS UP TO BUT NOT INCLUDING THE FINAL LIFT OF SURFACE COURSE.
[SEE ROADWAY PLANS]
- STEP 3) AWAY FROM TRAFFIC INSTALL THE FINAL LIFT OF SURFACE COURSE AND FINAL PAVEMENT MARKINGS, AND OPEN THE ENTIRE PROJECT TO THE FINAL TRAFFIC PATTERN.
[SEE FINAL PAVEMENT MARKING PLAN]
- STEP 4) REMOVE ALL ROAD CLOSURE SIGNING, OFFSITE DETOUR SIGNING, AND TRANSPORTATION MANAGEMENT DEVICES.
[SEE SHEET TMP-04 FOR SIGN LOCATIONS]

LEGEND

GENERAL

 NORTH ARROW

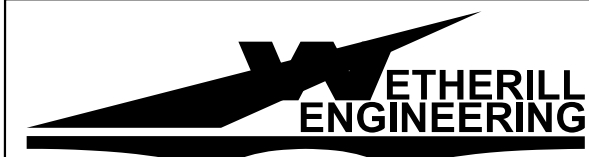
TRAFFIC CONTROL DEVICES

 BARRICADE (TYPE III)

TEMPORARY SIGNING


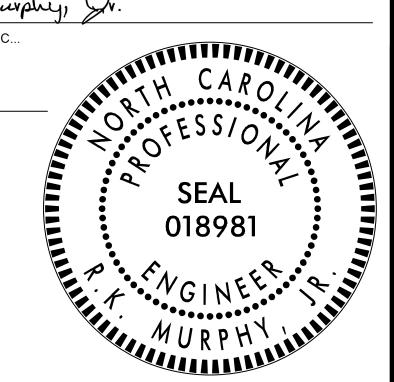
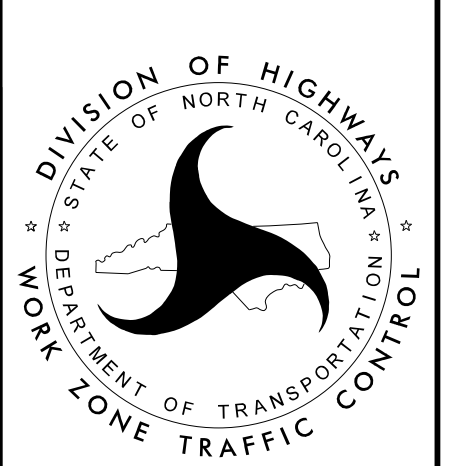
 STATIONARY SIGN

12/20/2022
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User: AHayes

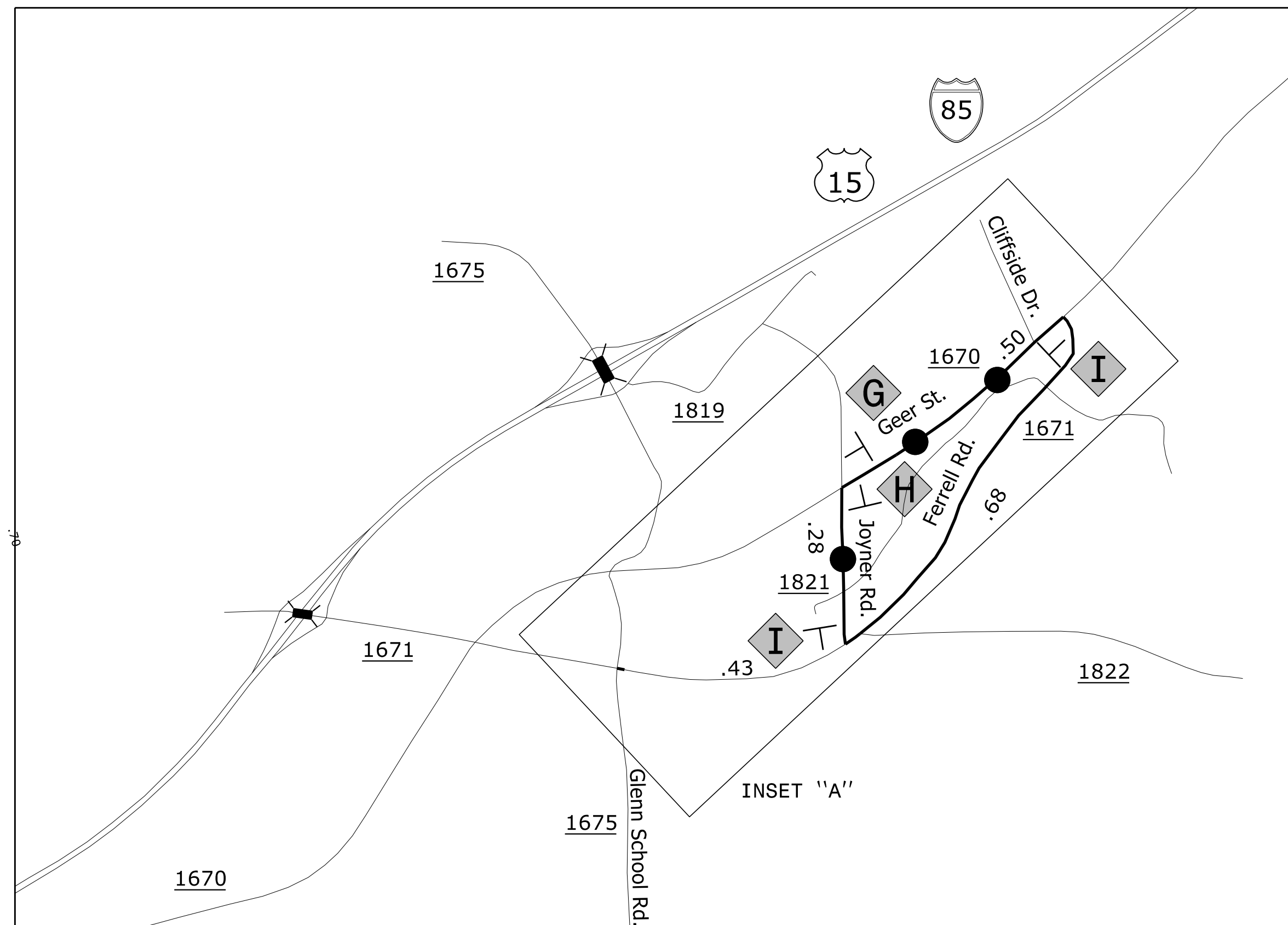


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APPROVED:  DATE: 1/25/2023		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

12/20/2022 P:\2018\18159.09 Div 5 Wake Sec Paved Brdg Maint Frc\Sr 1671\FerrellRd_Traffic_WZTC_TMP_Sheets_To_02.dgn User:AHayes



SIGN NUMBER: name	BACKG COLOR: Fluorescent Orange	DESIGN BY: DAH	CHECKED BY: SLK	Aug 09, 2019	
TYPE: STATIONARY	COPY COLOR: Black	PROJECT ID: 5B.203214.5	LOCATION: OFF-SITE DETOUR	DIV: 5	
QUANTITY: SEE PLANS	SYMBOL	X	Y	WID	HT
SIGN WIDTH: 2'-6"					
HEIGHT: 2'-0"					
TOTAL AREA: 5.0 Sq.Ft.					
BORDER TYPE: INSET					
RECESS: 0.47"					
WIDTH: 0.63"					
RADII: 1.5"					
NO. Z BARS:	MAT'L: 0.080" (2.0 mm) ALUMINUM				
LENGTH:					
USE NOTES: 1,2					
1. Legend and border shall be direct applied black non-reflective sheeting.					
2. Background shall be NC GRADE B fluorescent orange retroreflective sheeting.					

Letter locations are panel edge to lower left corner										Series/Size
F	e	r	r	e	l	l				Text Length
5.9	9.4	13.1	15.6	17.9	21.5	23.3				D 2000
										18.3
R	o	a	d							D 2000
7.9	11.9	15.5	19.1							14.2

FILENAME: 2018_18159.09 Div 5 Wake Sec Paved Brdg Maint Frc_Sr 1671 Ferrell Rd_Traffic_WZTC_TMP_REF_8550 NORTH CAROLINA D.O.T. SIGN DETAIL



<p>TYPE III BARRICADE A</p>	<p>TYPE III BARRICADE B</p>	<p>TYPE III BARRICADE C</p>	<p>A</p>	<p>B</p>	
<p>C</p>	<p>D</p>	<p>E</p>	<p>F</p>	<p>INSET "A"</p>	
<p>G</p>	<p>H</p>	<p>I</p>	<p>REFER TO ROADWAY STANDARD DRAWING 1101.03, SHEET 1 OF 9 FOR APPLICABLE NOTES.</p>		

WETHERILL ENGINEERING

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APPROVED:

DATE: 1/25/2023

SEAL 018981

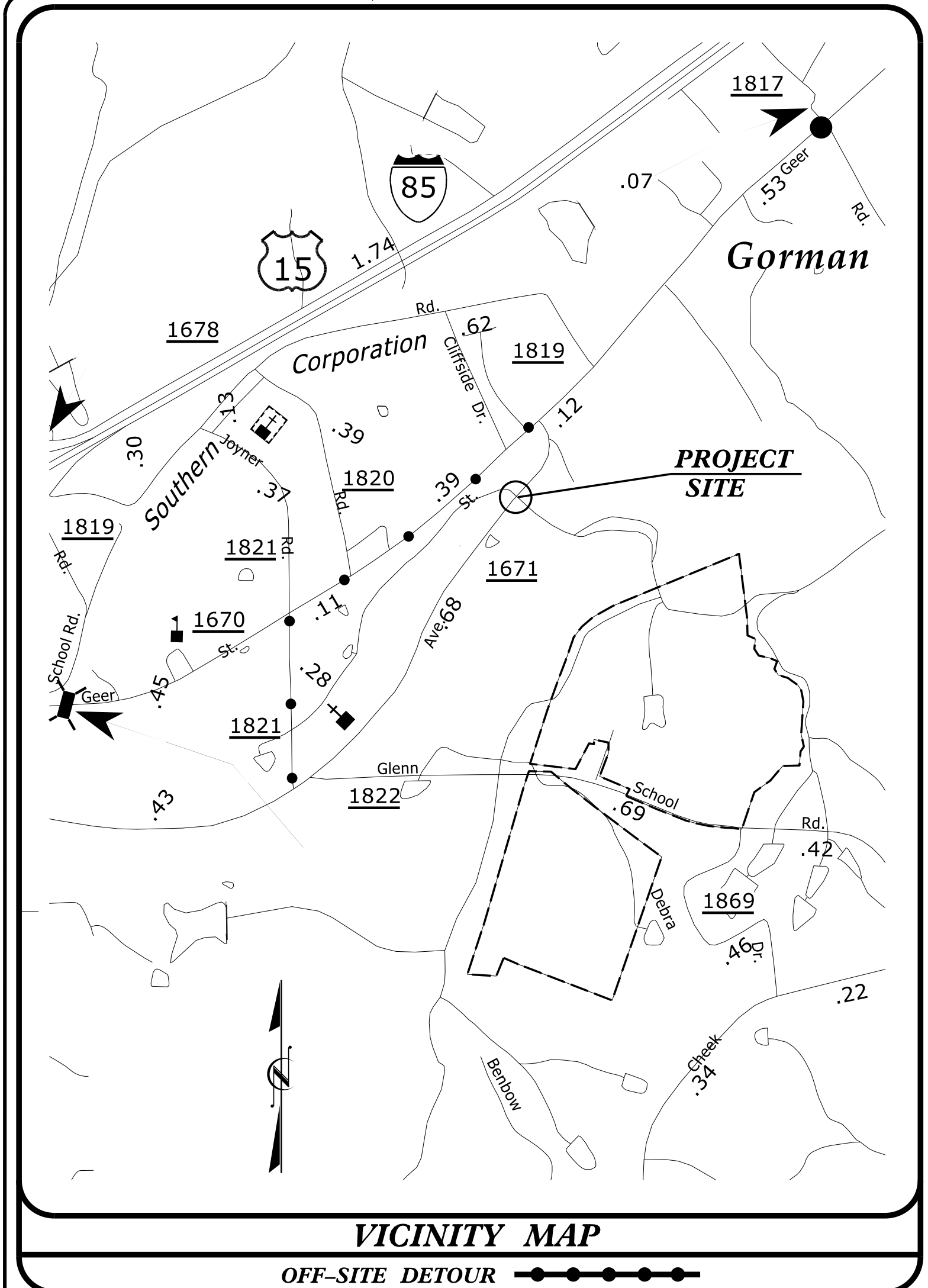
NORTH CAROLINA PROFESSIONAL ENGINEER
P. L. MURPHY, JR.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WORK ZONE TRAFFIC CONTROL

OFFSITE DETOUR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TIP PROJECT: 5B.203214.5



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

DURHAM COUNTY

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

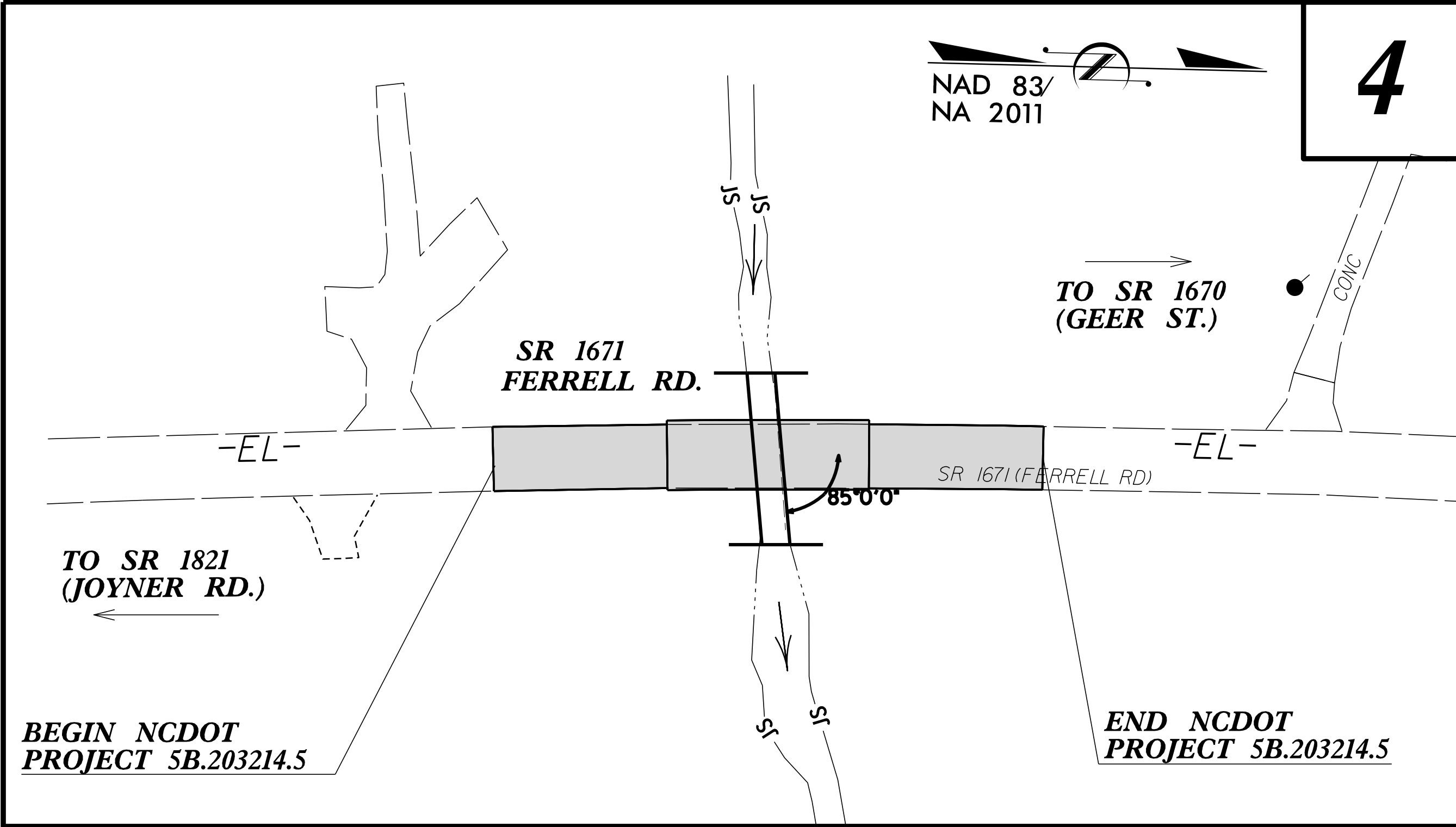
LOCATION: PIPE CROSSING ON SR 1671 (FERRELL ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	5B.203214.5	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

EROSION AND SEDIMENT CONTROL MEASURES

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

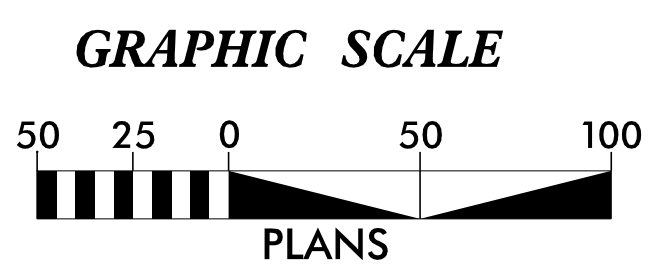


THIS PROJECT CONTAINS
EROSION CONTROL PLANS
FOR CLEARING AND
GRUBBING PHASE OF
CONSTRUCTION.

THIS PROJECT HAS
BEEN DESIGNED TO
SENSITIVE WATERSHED
STANDARDS.

ENVIRONMENTALLY
SENSITIVE AREA(S) EXIST
ON THIS PROJECT

*Refer To E. C. Special Provisions
for Special Considerations.*



THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE APPLICABLE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY 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.

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	

3/1/2023 5B.203214.5_Ferrell Rd..tsh-EC1.dgn

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

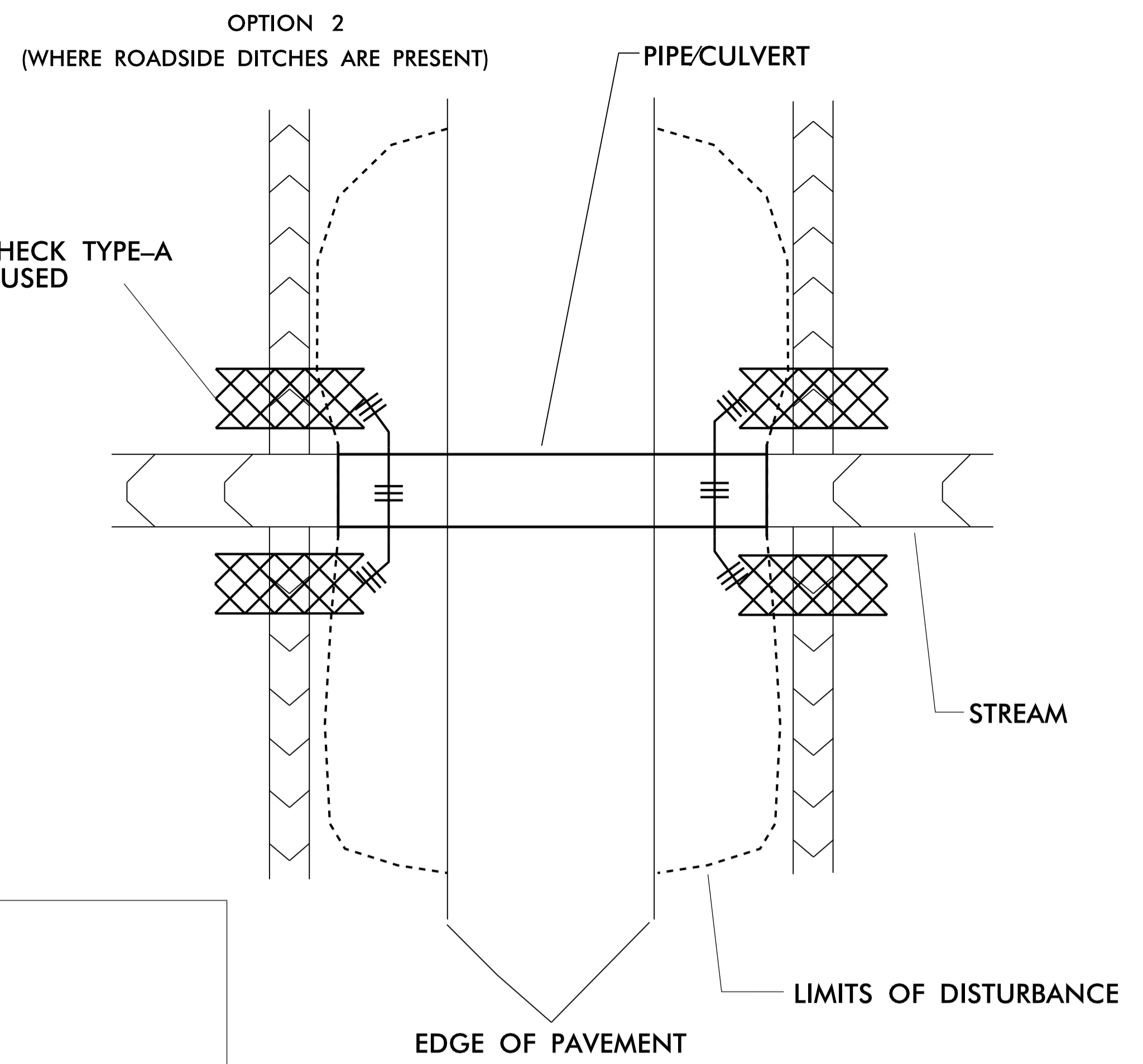
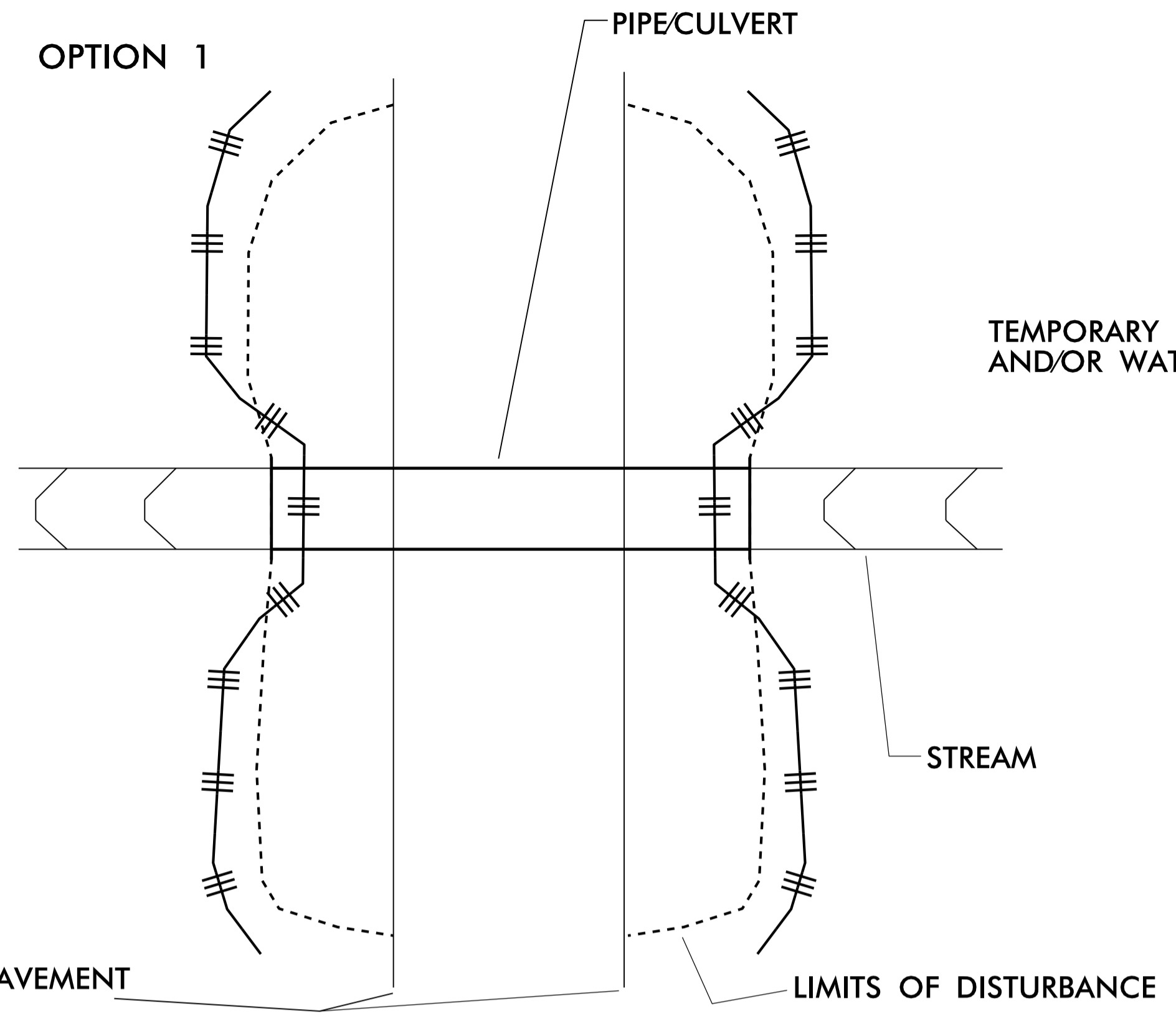
<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 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. 5B.203214.5	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)
EOP	EDGE OF PAVEMENT
ETF	EXISTING TRANSPORTATION FACILITY (ROW)
	TEMPORARY ROCK SILT CHECK TYPE-A AND/OR WATTLE
	TEMPORARY SILT FENCE



SEQUENCE OF CONSTRUCTION FOR TYPICAL WORK AREA:

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.

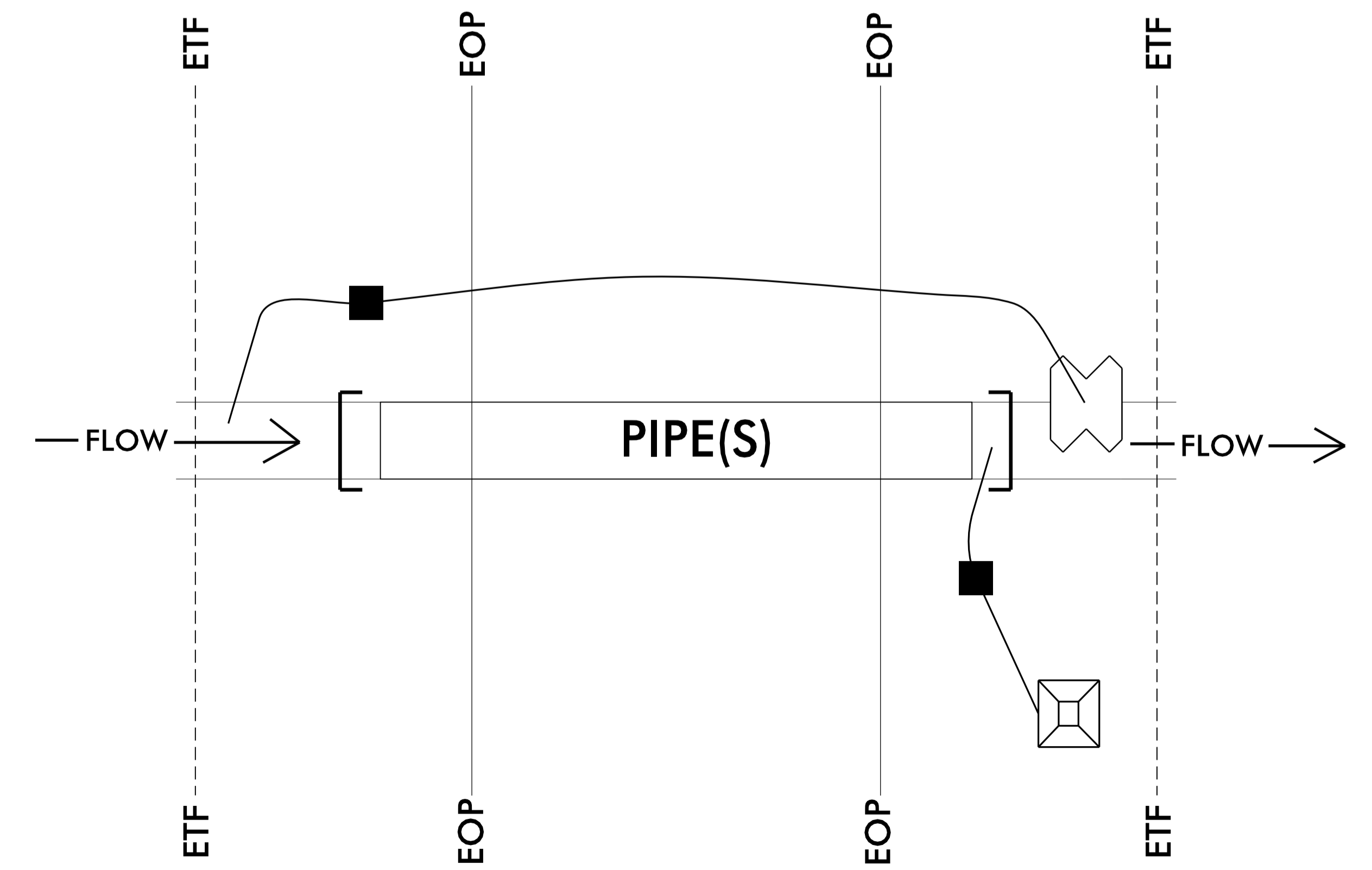
IMPERVIOUS DIKES ARE TO BE USED TO ISOLATE WORK FROM STREAM FLOW WHEN NECESSARY. MAINTENANCE OF STREAM FLOW OPERATIONS SHALL BE INCIDENTAL TO THE WORK. THIS INCLUDES THE DISCHARGE PAD, DIVERSION PIPES, PUMPS, AND HOSES.

PUMPS AND HOSES SHALL BE OF SUFFICIENT SIZE TO MAINTAIN STREAM FLOW AND TO DEWATER THE WORK AREA.

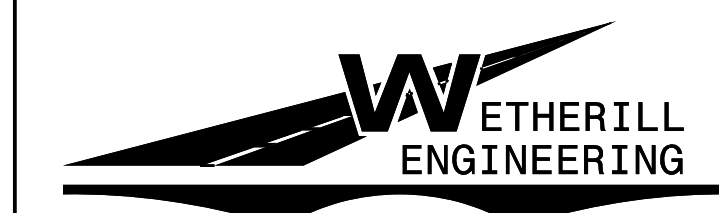
INSTALL SPECIAL STILLING BASIN IN VEGETATED AREA WITHIN RIGHT OF WAY. DISCHARGE SHOULD BE DIRECTED THROUGH VEGETATED BUFFER AWAY FROM WORK SITE.

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



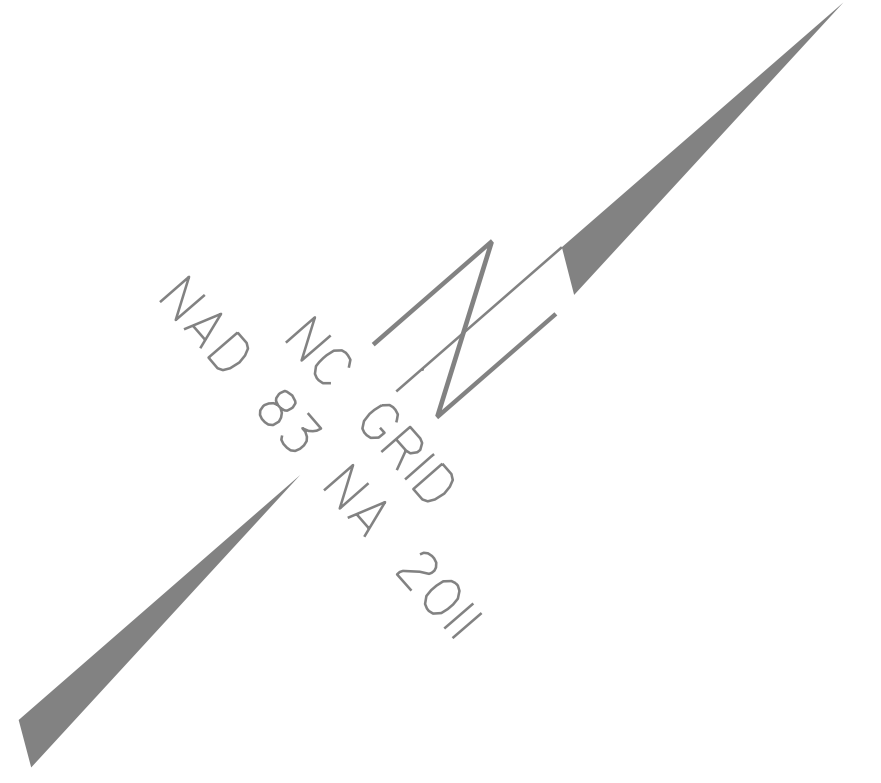
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

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

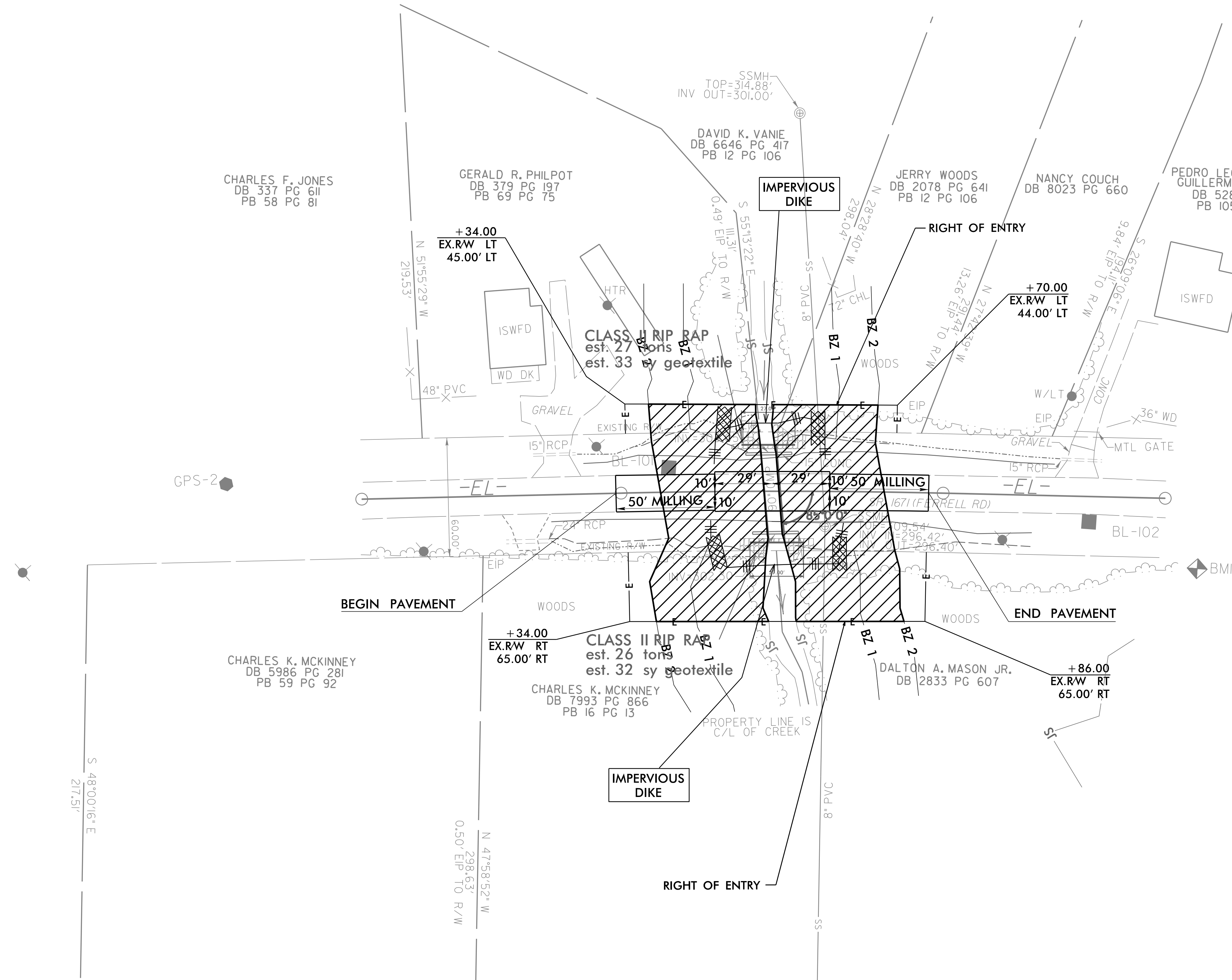
PROJECT REFERENCE NO. 5B.203214.5	SHEET NO. EC-4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

**FERRELL ROAD
(SR 1671)**

SCALE 1" = 30'



ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY OTHERS FOR MONUMENT "GPS-2" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 830259.2960(ft) EASTING: 2050858.4910(ft) ELEVATION: 320.01(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999954349

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

BM1 ELEVATION = 311.33
N 830601 E 2051213
BENCHTIE NAIL SET IN 24" PINE

Point	North	East	Elevation
GPS-1	830059.6360	2050739.1840	329.520
GPS-2	830259.2960	2050858.4910	320.005
BL-101	830433.4600	2050998.9820	314.005
BL-102	830575.6900	2051159.0290	313.016

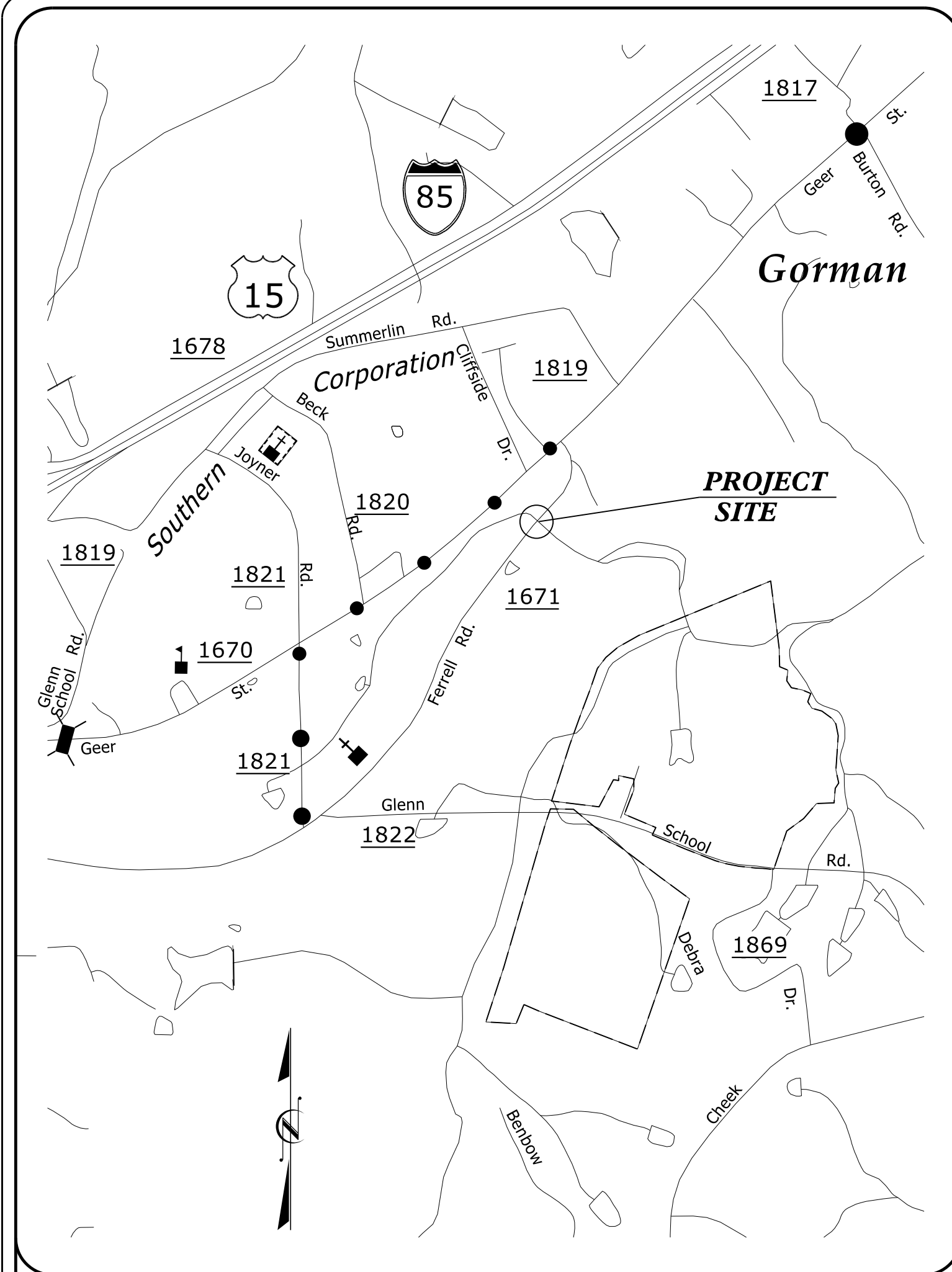
EROSION CONTROL PLAN

REVISIONS

8/17/99
3/1/2023
5B.203214.5-Ferrell Rd.-rdy-psh-EC-4.dgn
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09.08.99

PROJECT: 5B.203214.5



VICINITY MAP
OFF-SITE DETOUR ●●●●●

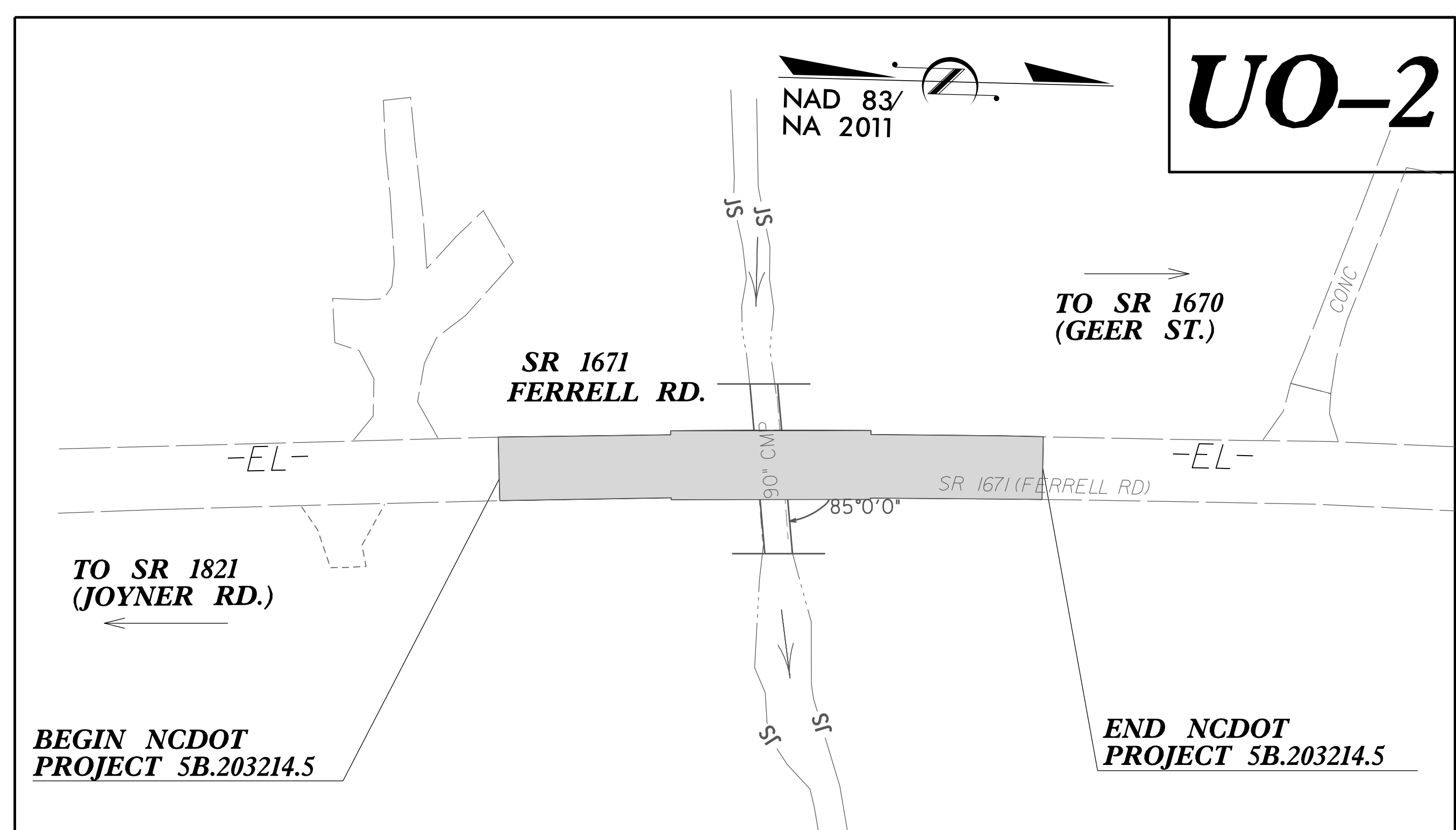
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

**UTILITIES BY OTHERS PLANS
DURHAM COUNTY**

LOCATION: PIPE CROSSING ON SR 1671 (FERRELL ROAD)
TYPE OF WORK: COMMUNICATION RELOCATION

T.I.P. NO.	SHEET NO.
5B.203214.5	UO-1

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

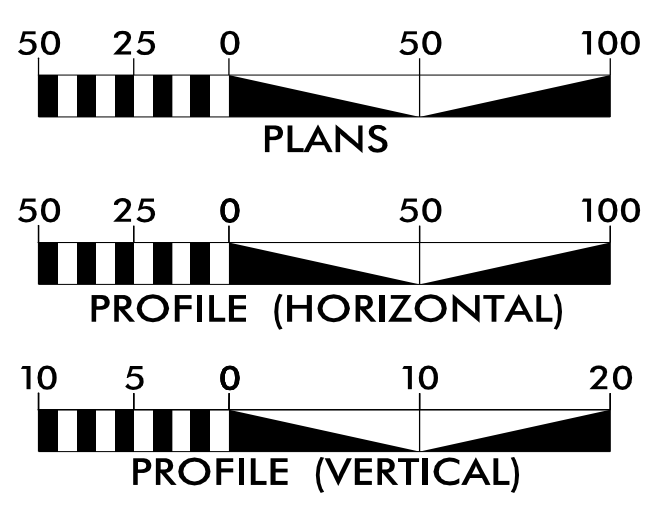


UO-2

BEGIN NCDOT
PROJECT 5B.203214.5

END NCDOT
PROJECT 5B.203214.5

GRAPHIC SCALES



INDEX OF SHEETS

SHEET NO.:	DESCRIPTION:
UO-1	TITLE SHEET
UO-2	UBO PLAN SHEET

UTILITY OWNERS WITH CONFLICTS

- (A) COMMUNICATION - CHARTER
- (B) COMMUNICATION - FRONTIER

PREPARED IN THE OFFICE OF:

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
SURVEY/SUE - UTILITIES

PANKIL PATEL UTILITY PROJECT MANAGER
JOHN SCHRINER, PLS PROJECT UTILITY COORDINATOR

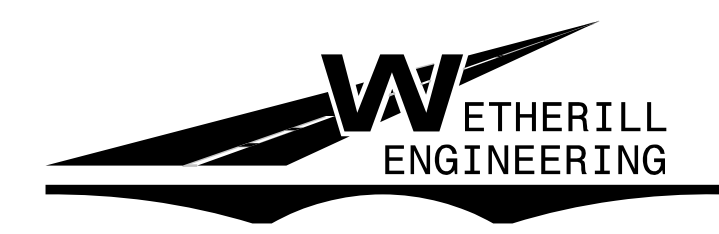
**DIVISION OF HIGHWAYS
DIVISION 5**

2612 N. Duke Street
Durham, NC, 27704

JEREMY L. WARREN, PE ASSISTANT DIVISION MAINTENANCE ENGINEER
DON PROPER DIVISION UTILITY COORDINATOR

\$\$\$\$\$ SYSTEM \$\$\$\$\$\$
\$\$\$\$\$ DGN \$\$\$\$\$\$
\$\$\$\$\$ USERNAME \$\$\$\$\$\$

5/14/99
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13:16:22
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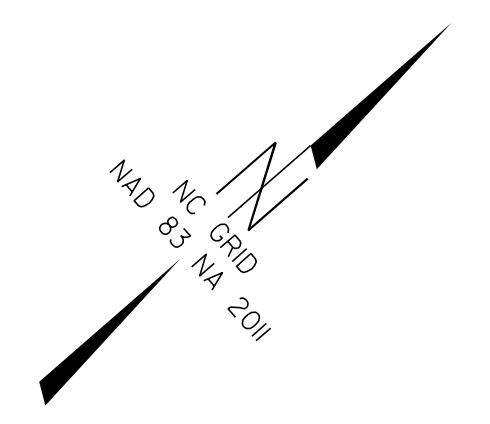
1223 Jones Franklin Rd.
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PROJECT REFERENCE NO.	SHEET NO.
5B.203214.5	U0-2
THIS SHEET CORRESPONDS TO RDY-4	

UTILITIES BY OTHERS

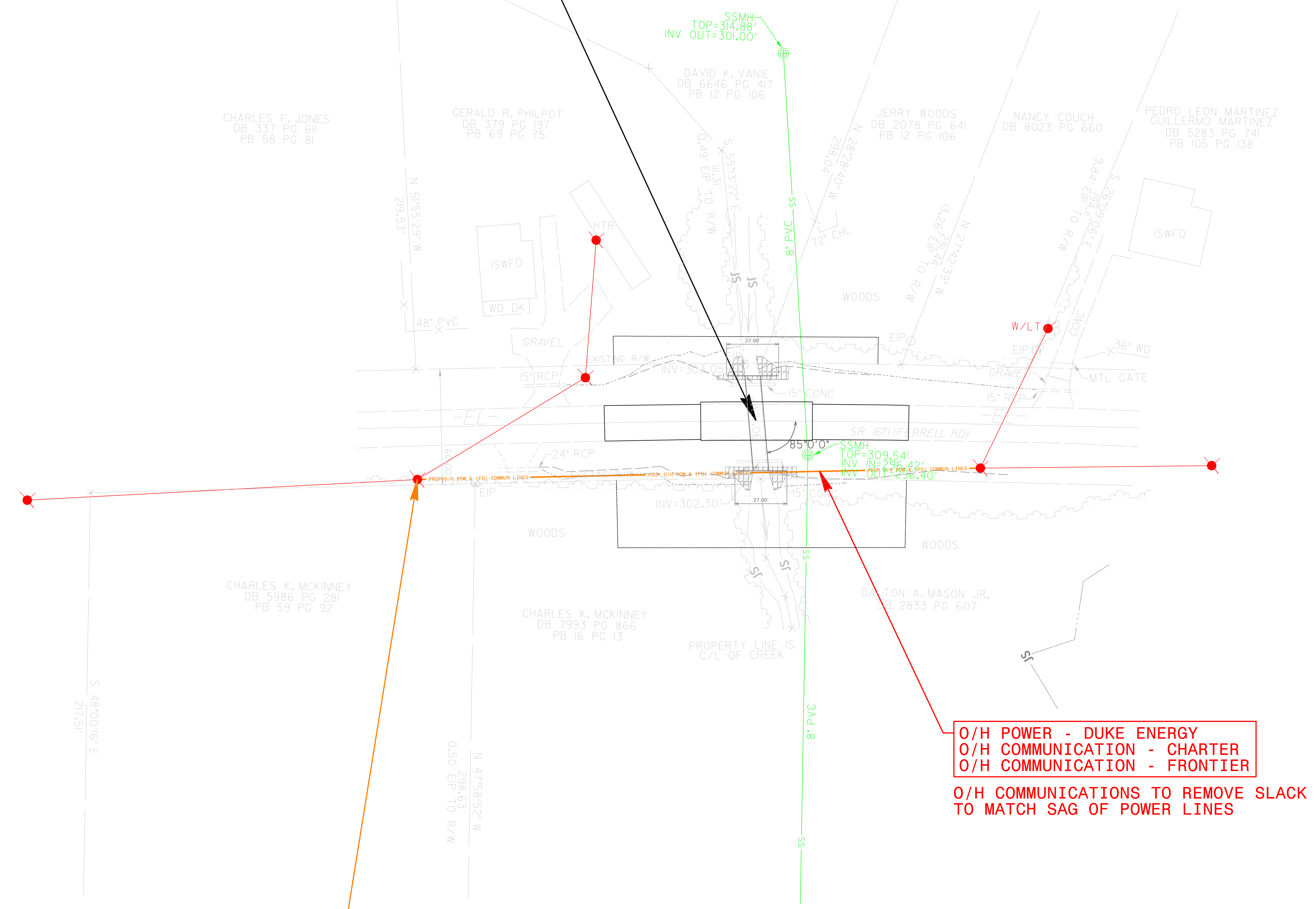
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROPOSED UTILITY WORK SHOWN ON THIS SHEET.

SCALE 1" = 30'



PROPOSED 90" CMP

FERRELL ROAD
(SR 1671)



O/H COMMUNICATION TO TRANSFER TO DUKE ENERGY POLE (CHARTER & FRONTIER)

O/H POWER - DUKE ENERGY
O/H COMMUNICATION - CHARTER
O/H COMMUNICATION - FRONTIER

O/H COMMUNICATIONS TO REMOVE SLACK TO MATCH SAG OF POWER LINES