This electronic collection of documents is provided for the convenience of the user and is Not a Certified Document –

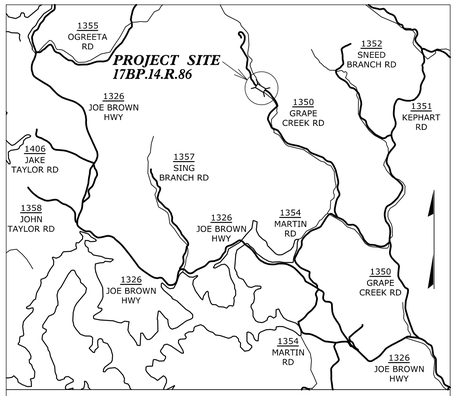
The documents contained herein were originally issued and sealed by the individuals whose names and license numbers appear on each page, on the dates appearing with their signature on that page.
This file or an individual page shall not be considered a certified document.

09/08/09

TIP PROJECT: 17BP.14.R.86

CONTRACT: DN00261

See Sheet 1-A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CHEROKEE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.14.R.86	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.14.R.86	N/A	PE
17BP.14.R.86	N/A	RIGHT–OF–WAY
17BP.14.R.86	N/A	CONSTRUCTION

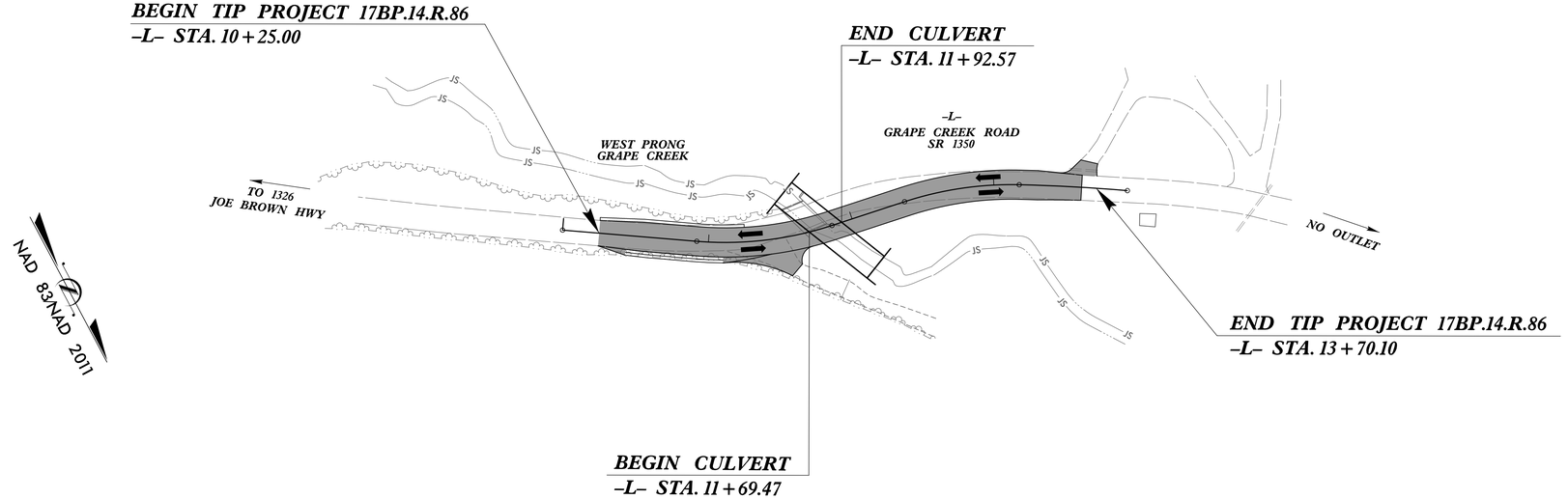
LOCATION: REPLACEMENT OF BRIDGE NO. 226 ON GRAPE CREEK RD. (SR 1350) OVER WEST PRONG GRAPE CREEK

TYPE OF WORK: GRADING, PAVING, TRAFFIC CONTROL, DRAINAGE, CULVERT, & RETAINING WALL

4

BEGIN TIP PROJECT 17BP.14.R.86
–L– STA. 10+25.00

END CULVERT
–L– STA. 11+92.57



END TIP PROJECT 17BP.14.R.86
–L– STA. 13+70.10

BEGIN CULVERT
–L– STA. 11+69.47

THIS IS A PARTIAL CONTROLLED–ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.

CONTACT: JOSHUA B. DEYTON, P.E.
NCDOT HIGHWAY DIVISION 14

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2017 = 730
ADT 2037 = 1015
DHV = NA %
D = NA %
T = 6 %
V = 20 MPH

FUNC CLASS = LOCAL
SUB REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT 17BP.14.R.86 = 0.063 MILE
LENGTH OF STRUCTURE PROJECT 17BP.14.R.86 = N/A
TOTAL LENGTH PROJECT 17BP.14.R.86 = 0.063 MILE

PREPARED IN THE OFFICE OF:
WSP USA
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
FAX: 1.919.836.4099
LICENSE NO. F–0165
FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: 07–13–2016

LETTING DATE: 01–08–2019

RONYELL THIGPEN, PE
PROJECT ENGINEER

HOLLY CHRISTENBURY, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 27876 ENGINEER RANA STAINSELL

DocuSigned by: Rana Stainsell C8F75E7A07E04B7...

P.E.

SIGNATURE: 9/28/2018 5:57:01 AM PDT

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 33290 ENGINEER RONYELL A. THIGPEN

DocuSigned by: Ronyell Thigpen 9C2B41A2DB5E447...

P.E.

SIGNATURE: 9/28/2018 7:04:31 AM PDT

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

6/7/2018
W:\Raleigh Office NCDOT\17BP GROUP 1\17BP.14.R.86_190226\Roadway\Proj\R-86_RDY_TSH_01.dgn
USHC0407

8/17/99

WSP USA
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
FAX: 1.919.836.4099
LICENSE NO. F-0165

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.86	1A

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A–1	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2B–1	TEMPORARY DETOUR PLAN AND PROFILE SHEET
3B–1	MISCELLANEOUS SUMMARIES (DRAINAGE, EARTHWORK, GUARDRAIL, PAVEMENT REMOVAL, RIGHT–OF–WAY, & SHOULDER BERM GUTTER)
4	PLAN & PROFILE SHEET
RW01 THRU RW04	RIGHT–OF–WAY PLAN SHEETS
TMP–1 THRU TMP–5	TRAFFIC MANAGEMENT PLANS
PMP–1	PAVEMENT MARKING PLANS
EC–1 THRU EC–7	EROSION CONTROL PLANS
UO–1	UTILITIES BY OTHERS
X–1A	CROSS–SECTION SUMMARY
X–1 THRU X–27	CROSS–SECTIONS
C–1 THRU C–4	STRUCTURE PLANS
W–1 THRU W–2	RETAINING WALL PLANS
SN	STANDARD NOTE SHEET

GENERAL NOTES: 2018 SPECIFICATIONS

EFFECTIVE: 01–16–18
REVISED:

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE–IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01.

SIDE ROADS:

THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3' RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

GUARDRAIL:

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

SUBSURFACE PLANS:

SUBSURFACE PLANS WILL BE MADE AVAILABLE TO THE CONTRACTOR ON THIS PROJECT.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE:
Power: Blue Ridge Mountain EWC
Telephone: Frontier Communications

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

RIGHT–OF–WAY MARKERS:

ALL RIGHT–OF–WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY CONTRACT IN ACCORDANCE WITH SECTION 801 OF THE NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.

2018 SPECIFICATIONS
EFFECTIVE: 01–16–18
REVISED:

2018 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch – 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
DIVISION 2 – EARTHWORK	
200.03	Method of Clearing – Method III
225.02	Guide for Grading Subgrade – Secondary and Local
225.04	Method of Obtaining Superelevation – Two Lane Pavement
DIVISION 3 – PIPE CULVERTS	
300.01	Method of Pipe Installation
300.10	Driveway Pipe Construction
DIVISION 5 – SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction – High Side of Superelevated Curve – Method I
DIVISION 6 – ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 – INCIDENTALS	
840.01	Brick Catch Basin – 12" thru 54" Pipe
840.02	Concrete Catch Basin – 12" thru 54" Pipe
840.03	Frame, Grates and Hood – for Use on Standard Catch Basin
840.25	Anchorage for Frames – Brick or Concrete or Precast
846.01	Concrete Curb, Gutter and Curb & Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
17BPJ4.R.86	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Computed Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- 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 — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY & PROJECT CONTROL:

- Secondary Horiz and Vert Control Point
- Primary Horiz Control Point
- Primary Horiz and Vert Control Point
- Exist Permanent Easment Pin and Cap
- New Permanent Easement Pin and Cap
- Vertical Benchmark
- Existing Right of Way Marker
- Existing Right of Way Line
- New Right of Way Line — RW
- New Right of Way Line with Pin and Cap — RW
- New Right of Way Line with Concrete or Granite R/W Marker — RW
- New Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- New Control of Access — CA
- Existing Easement Line — E
- New Temporary Construction Easement — E
- New Temporary Drainage Easement — TDE
- New Permanent Drainage Easement — PDE
- New Permanent Drainage / Utility Easement — DUE
- New Permanent Utility Easement — PUE
- New Temporary Utility Easement — TUE
- New Aerial Utility Easement — AUE

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
- 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 — HH
- 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 — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- 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:

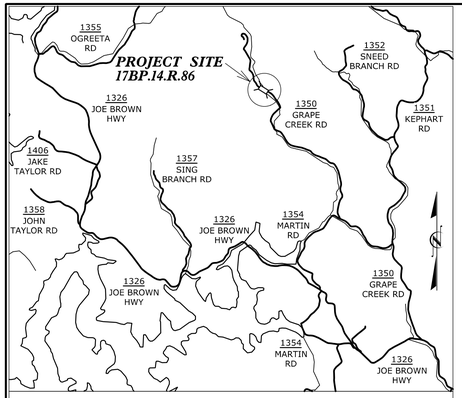
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- SS Forced Main Line LOS B (S.U.E.*) — FSS
- SS Forced Main Line LOS C (S.U.E.*) — FSS
- SS Forced Main Line LOS D (S.U.E.*) — FSS

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line LOS B (S.U.E.*) — ?UTL
- 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.

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.86	IC-1

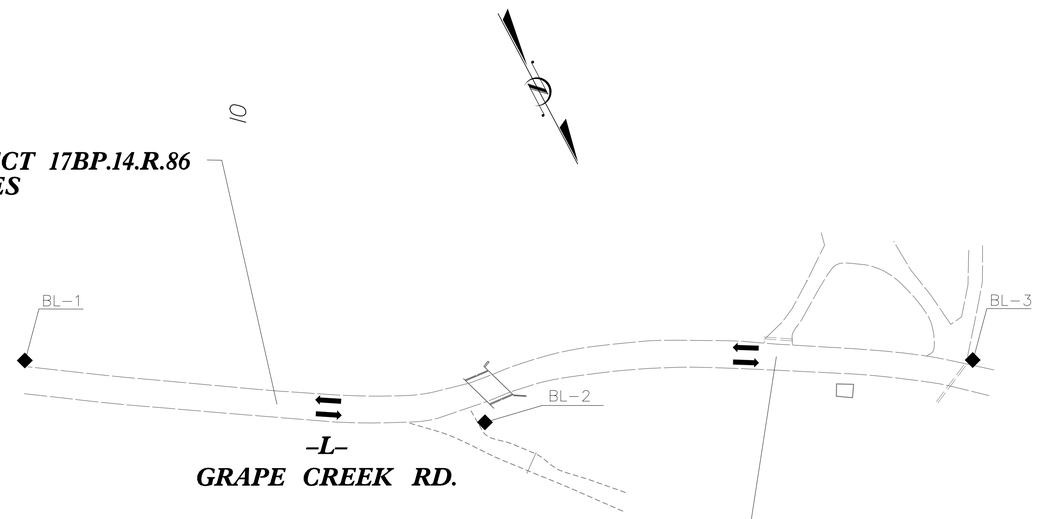
SURVEY CONTROL SHEET 17BP.14.R.86



VICINITY MAP

BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	L OFFSET
1	-BL-1	548395.6770	474523.1990	1780.76	OUTSIDE LIMITS	OUTSIDE LIMITS
2	-BL-2	548573.8540	474273.9050	1791.50	11+60.62	10.98 RT
3	-BL-3	548688.1400	473970.1810	1807.87	OUTSIDE LIMITS	OUTSIDE LIMITS

–L– STA. 10+25.00 BEGIN TIP PROJECT 17BP.14.R.86
LOCALIZED PROJECT COORDINATES
N = 548498.5931 E = 474389.5893



–L– STA. 13+60.00 END TIP PROJECT 17BP.14.R.86
LOCALIZED PROJECT COORDINATES
N = 548625.1549 E = 474083.6060

NOTES:

1. ***THE CONTROL DATA FOR THIS PROJECT WAS PROVIDED BY NCDOT. CONTROL POINTS PROVIDED ARE AS FOLLOWS:***
   BL–1
   BL–2
   BL–3
2. ***SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT.***
3. ⬢ ***INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY NCDOT.***
   ◆ ***INDICATES CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY NCDOT.***

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "190226 BL3" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 548688.140(ft) EASTING: 473970.181(ft) ELEVATION: 1807.870(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 9997921351
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "190226 BL3" TO -L- STATION IS

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

8/14/2017
R:\17BP GROUP 1\17BP.14.R.86_190226\Roadway\Proj\R.86_RDY_TSH_IC.dgn
USHC04467

8/17/99

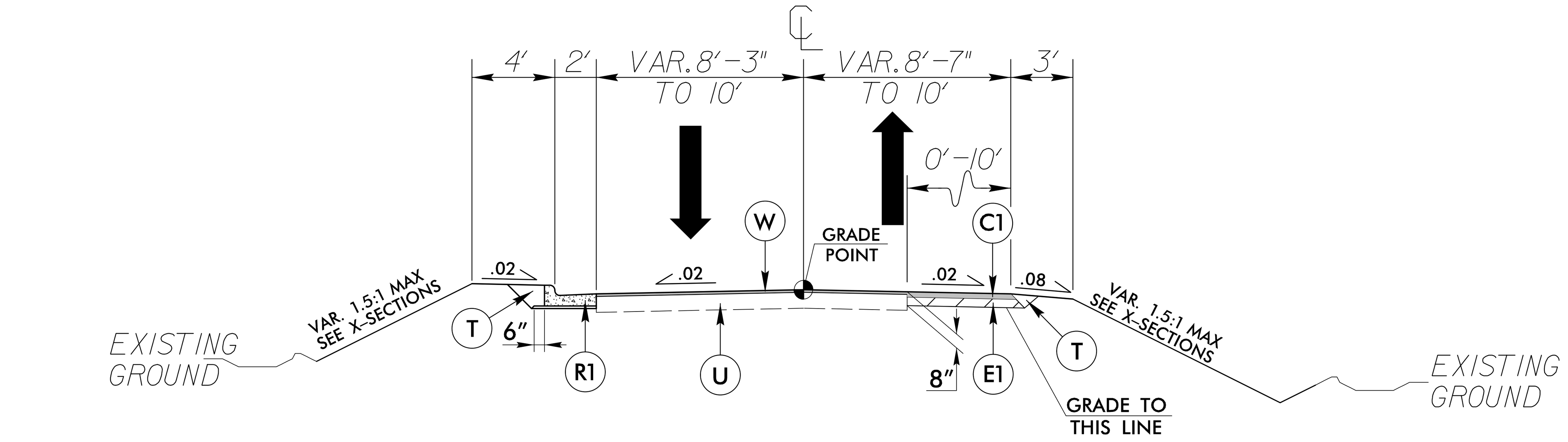
REVISIONS

WSP USA
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
FAX: 1.919.836.4099
LICENSE NO. F-0165

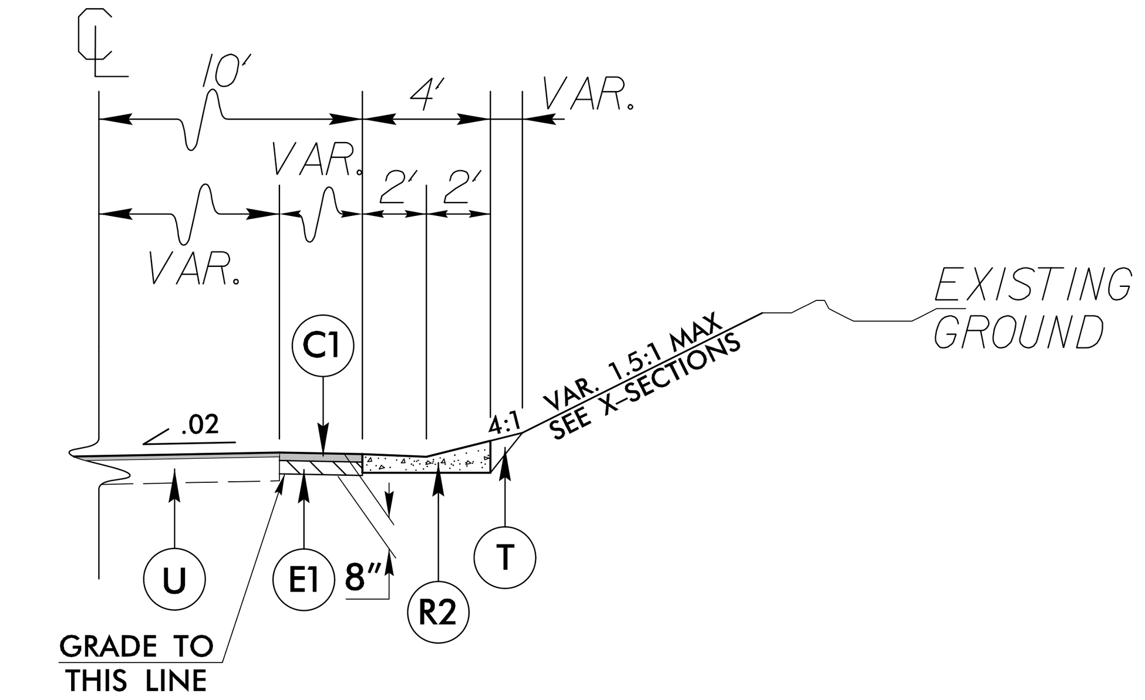
PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.86	2A-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 33290 RONYELL A. THIGPEN
9/28/2018 7:04:31 AM PDT

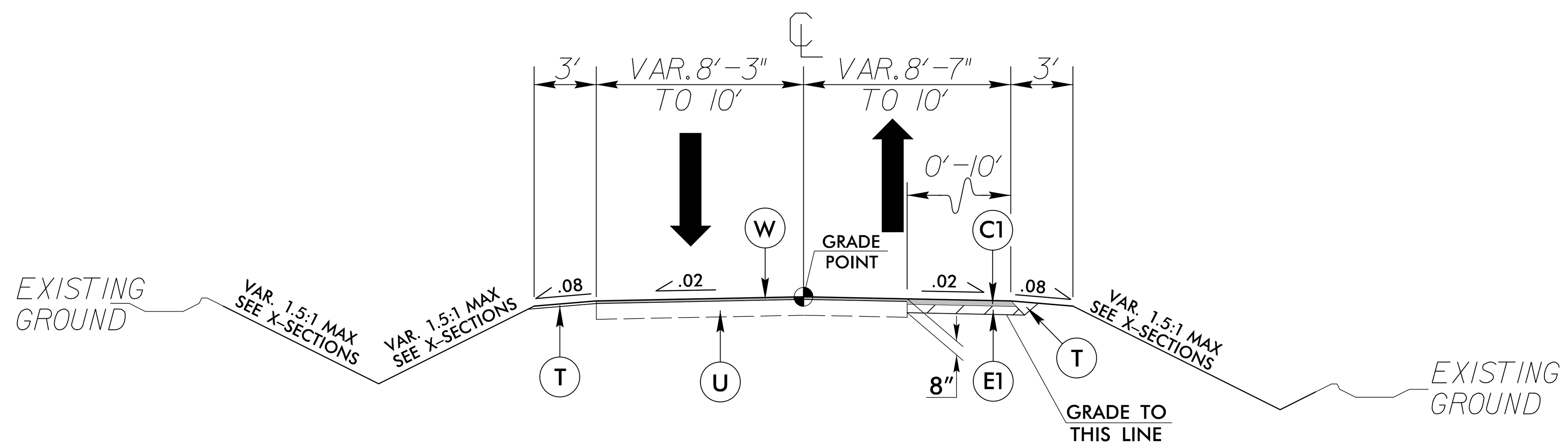
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



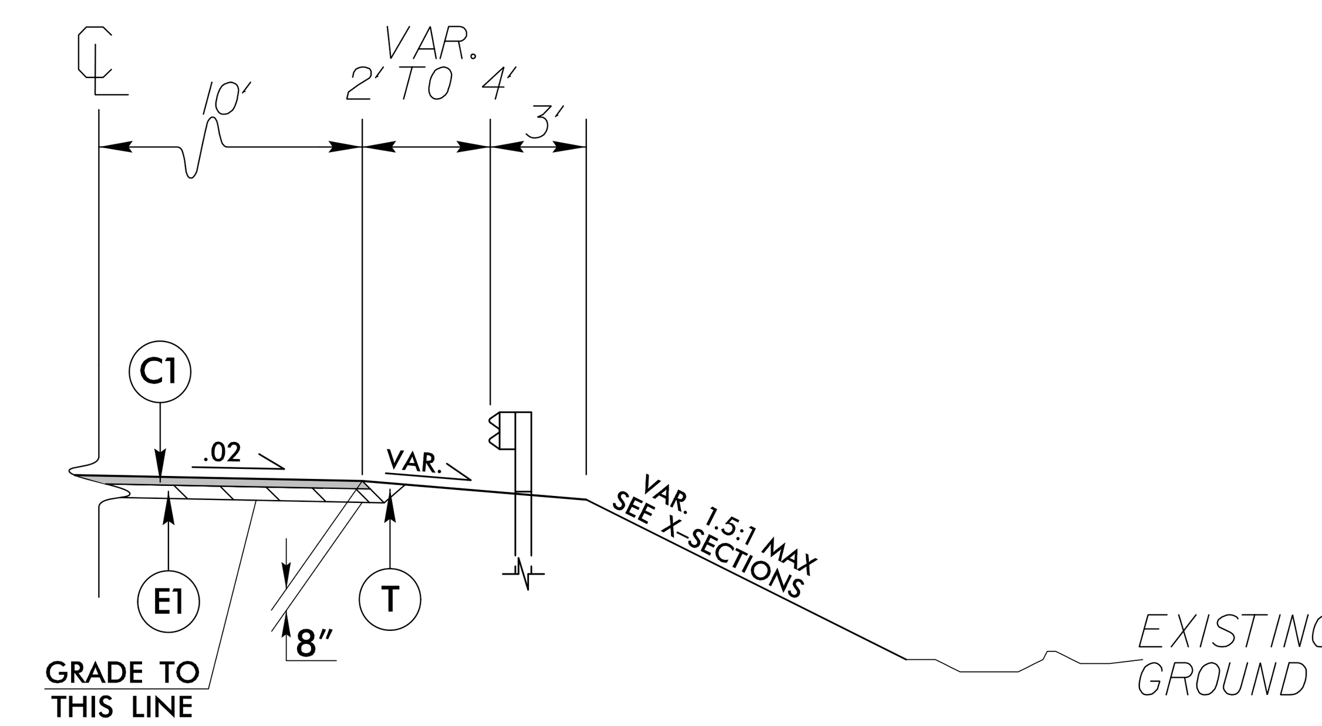
TYPICAL SECTION NO. 1
IN CONJUNCTION WITH DETAIL A & B
-L- STA. 10+25.00 TO STA. 11+25.00



DETAIL A
EXPRESSWAY GUTTER SECTION
-L- STA. 10+44.00 TO 11+10.00 (RT)

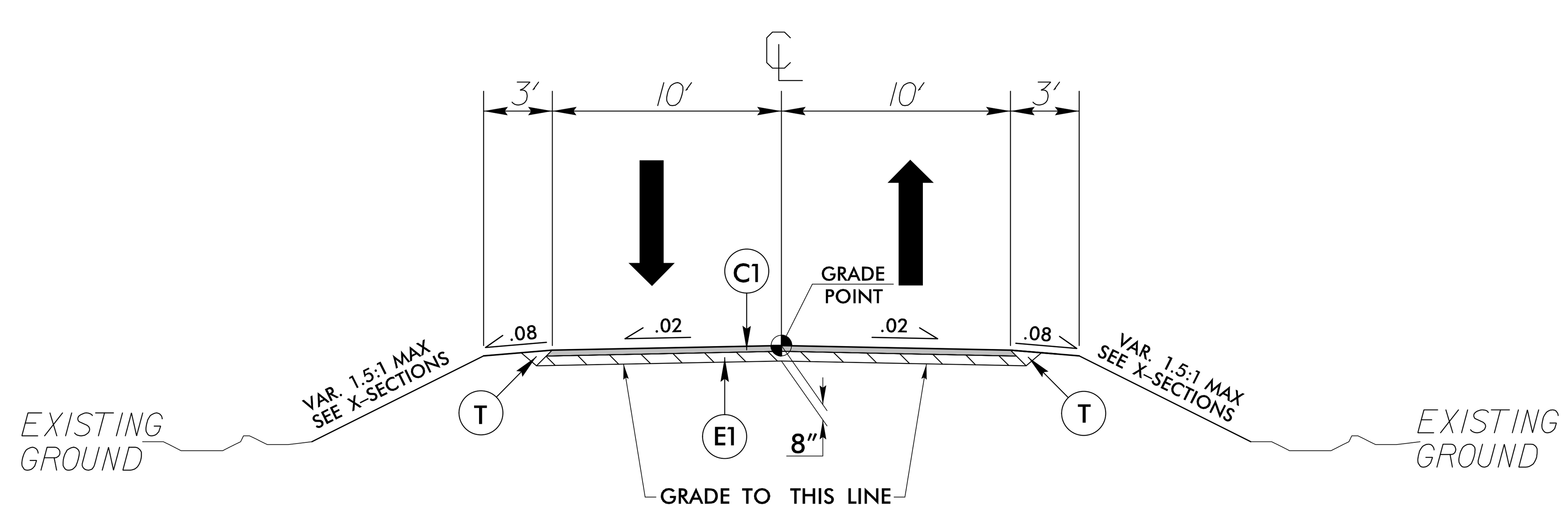


TYPICAL SECTION NO. 2
IN CONJUNCTION WITH DETAIL B
-L- STA. 11+25.00 TO STA. 11+48.85
-L- STA. 12+30.07 TO 13+60.00

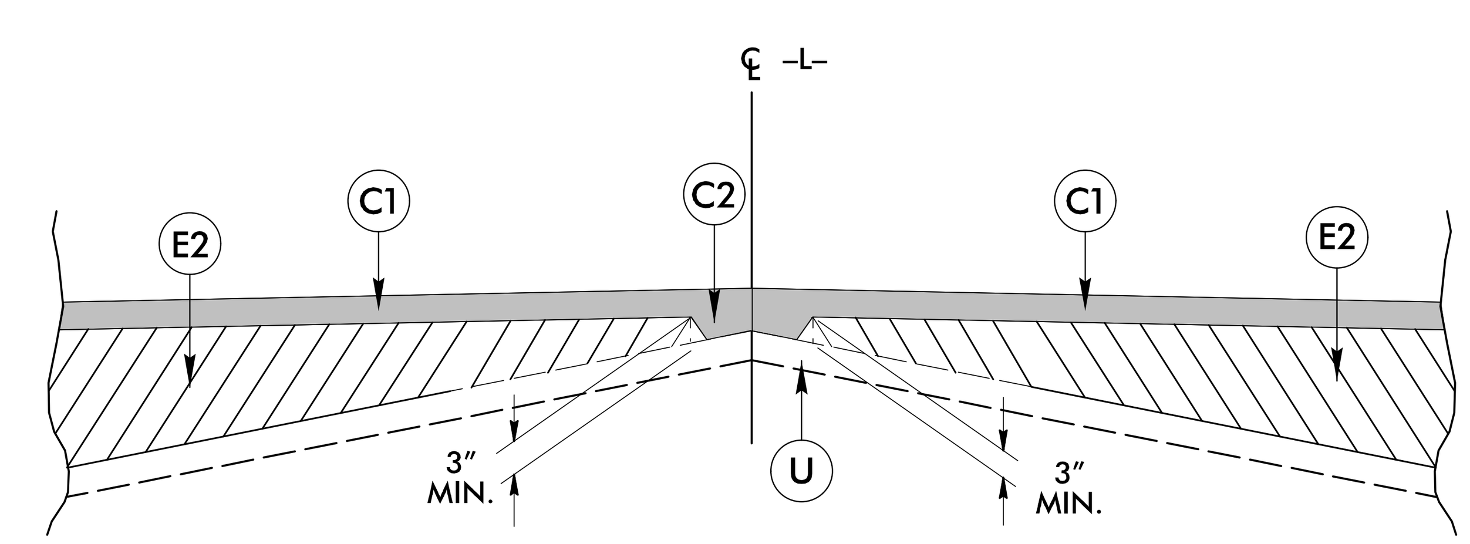


DETAIL B
GUARDRAIL
-L- STA. 10+50.00 TO STA. 11+25.00 (LT)*
-L- STA. 11+25.00 TO STA. 12+75.92 (LT)
-L- STA. 11+67.12 TO STA. 13+35.93 (RT)

*NOTE: PLACE GUARDRAIL AT FACE OF CURB AND MAINTAIN 4' BERM



TYPICAL SECTION NO. 3
IN CONJUNCTION WITH DETAIL B
-L- STA. 11+48.85 TO STA. 12+30.07



WEDGING DETAIL

PAVEMENT SCHEDULE

C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1¼" IN DEPTH OR GREATER THAN 1½" IN DEPTH.
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
J	PROP. 8" AGGREGATE BASE COURSE.
R1	2'-6" CONCRETE CURB AND GUTTER
R2	EXPRESSWAY GUTTER.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING (SEE DETAIL THIS SHEET).

NOTES:

1. ALL SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.

PAVEMENT SCHEDULE

C	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E	PROPOSED APPROX. 6" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3" OR GREATER THAN 5½" IN DEPTH.

NOTES:

1. PAVEMENT SCHEDULE FOR TEMPORARY PAVEMENT.
2. SEE SHEETS TMP-2 THRU TMP-3 FOR TEMPORARY DETOUR DESIGN.
3. SEE SHEETS X-10 THRU X-18 FOR TEMPORARY DETOUR CROSS SECTIONS.
4. SEE SHEET 4 FOR ABC DRIVEWAY TIE LOCATION.

6/4/2018
W:\Raleigh Office NCDOT\17BP GROUP 1\17BP.14.R.86_190226\Roadway\Proj\R.86_RDY_TYP_02.dgn
USHC24407

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.86	2B-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — SEAL 33290 — RONYELL A. THIGPEN — 9/28/2018 7:54:31 AM PDT

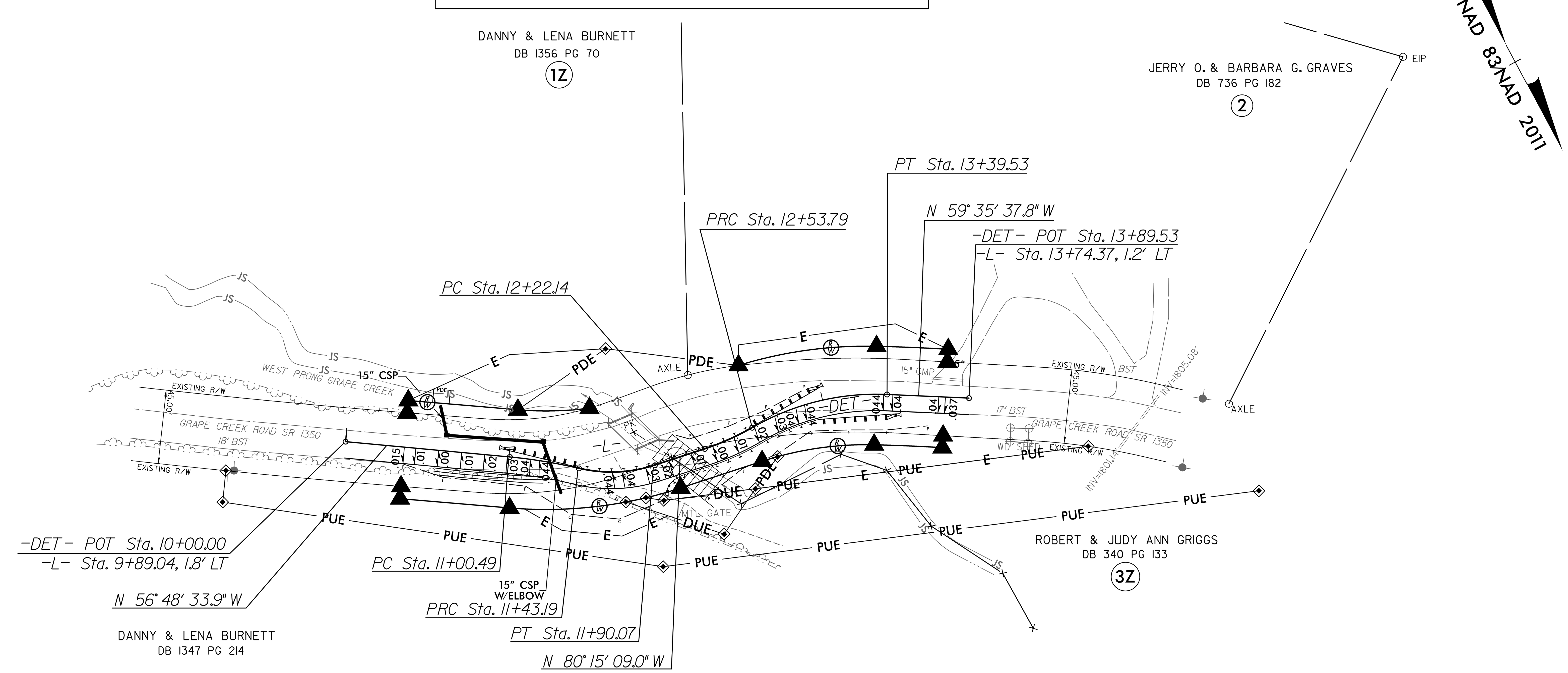
HYDRAULICS ENGINEER — SEAL 27876 — KANA STANSELL — 9/28/2018 5:59:41 AM PDT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

wsp
434 Fayetteville Street Suite 1500
Raleigh, NC 27601 - 919.836.4040
www.wspgroup.com
LICENSE NO. F-0891

REVISIONS

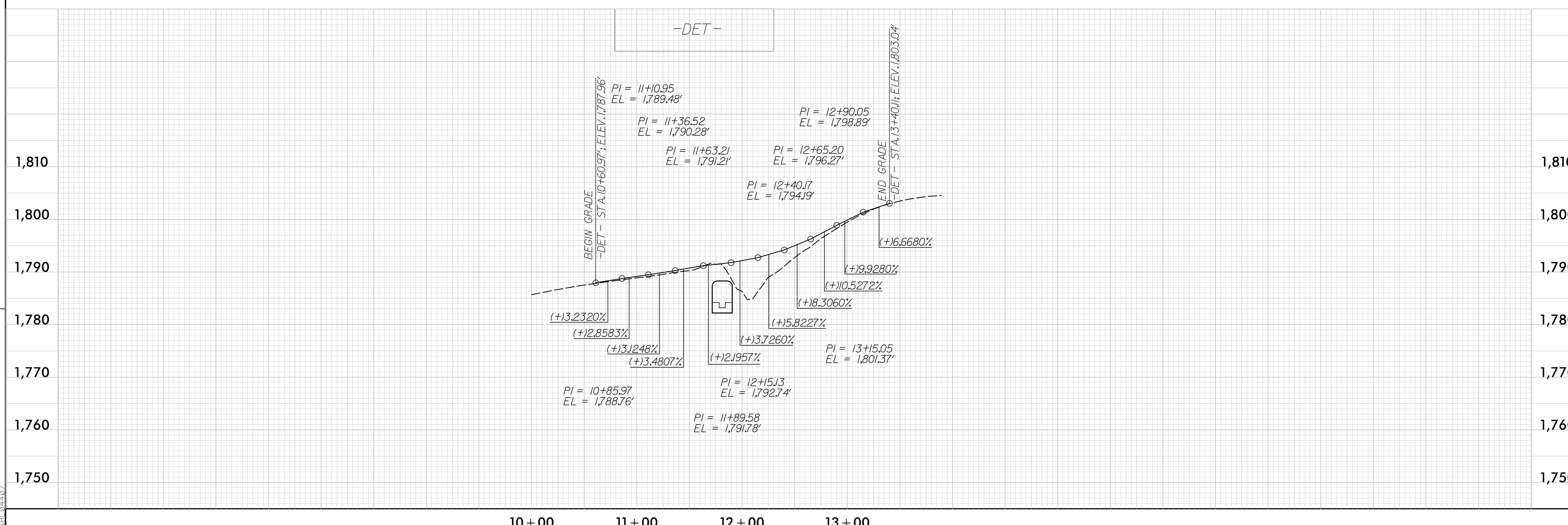
DETOUR



PI Sta 11+21.88	PI Sta 11+67.24	PI Sta 12+38.03	PI Sta 12+97.87
Δ = 8° 09' 17.3" (RT)	Δ = 31° 35' 52.3" (LT)	Δ = 12° 05' 23.5" (LT)	Δ = 32° 44' 54.6" (RT)
D = 19° 05' 54.9"	D = 67° 24' 24.5"	D = 38° 11' 49.9"	D = 38° 11' 49.9"
L = 42.70'	L = 46.88'	L = 31.65'	L = 85.74'
T = 21.39'	T = 24.05'	T = 15.88'	T = 44.07'
R = 300.00'	R = 85.00'	R = 150.00'	R = 150.00'

SEE PLANS FOR SUPERELEVATION

CONTRACTOR TO RESTORE ORIGINAL DRIVEWAY CONDITIONS AFTER REMOVAL OF TEMPORARY DETOUR.



8/17/99

9/15/2017 R:\17BP GROUP 1\17BP.14.R.86.190226\Roadway\Proj\R.86_RDY_DET_2B1.dgn USER: 04407

COMPUTED BY: B. WHITE, PE DATE: XX-XX-XX
CHECKED BY: _____ DATE: XX-XX-XX

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.86	3B-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV. (CY)	EMBANK. +% (CY)	BORROW (CY)	WASTE (CY)
10+25.00 -L-	13+50.00 -L-	89	384	295	
MAINLINE EARTHWORK					
SUBTOTAL 1:		89	384	295	
10+50.00 -L-	13+50.00 -L-	110	261	151	
DETOUR EARTHWORK					
SUBTOTAL 2:		110	261	151	
TOTAL:		199	645	446	
PROJECT TOTALS		199	645	446	
EST 5% TOPSOIL FOR BORROW PITS				22	
GRAND TOTALS:		199	645	468	
SAY:		200		470	

NOTE:
APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING."

CONTINGENCY ITEMS

ITEM	QUANTITY	UNIT
INCIDENTAL STONE BASE	50	TONS
UNDERCUT EXCAVATION	50	CY

EXPRESSWAY GUTTER SUMMARY

LINE	STATION	STATION	LENGTH FT
-L-	10+44.00 (RT)	11+10.00 (RT)	67
		TOTAL:	67
		SAY:	67

CURB & GUTTER SUMMARY

LINE	STATION	STATION	LENGTH FT
-L-	10+25.00 (RT)	11+25.00 (RT)	100
		TOTAL:	100
		SAY:	100

PAVEMENT REMOVAL SUMMARY

LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
-L-	10+79.17	11+75.00	CL	62.33
-L-	12+25.00	12+91.26	CL	33.73
-DET-	11+16.99	13+13.29	CL	168.80
			TOTAL:	264.86 SY
			SAY:	270

BREAKING OF PAVEMENT SUMMARY

LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
-L-	11+75.00	12+25.00	CL	88.34
			TOTAL:	88.34 SY
			SAY:	90

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE	DRAINAGE PIPE THICKNESS OR GAUGE	C.S. PIPE (UNLESS NOTED OTHRWISE) SIZE	C.S. PIPE THICKNESS OR GAUGE	CLASS III R.C. PIPE SIZE	ENDWALLS: STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	ENDWALLS: STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL. "B") LIN. FT. A	QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL. "B") LIN. FT. B	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE F	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE G	REMARKS
								12" 15" 18" 24" 30" 36" 42" 48"		12" 15" 18" 24" 30" 36" 42" 48"	.064 .064 .064 .064 .079 .079 .109 .109	12" 15" 18" 24" 30" 36" 42" 48"			PER EACH (0' THRU 5.0')	5.0' THRU 10.0'	10.0' AND ABOVE				
10+50	LT	0402	0401	1787.34	1783.09	1778.50					16				1		1		1		
11+10	LT	0403	0402	1788.94	1784.69	1783.09						60			1		1		1		
11+20	RT	0404	0403		1788.50	1784.69					36				1		1		1		
13+62	LT	0405			1803.70	1802.70															
PROJECT TOTAL											52	60			2		2		2		

STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. FRAME WITH GRATE STD. 840.24	G.D.I. FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.32	J.B. STD. 840.31 OR 840.32	T.B.D.I. STD. 840.35	G.D.I. FRAME WITH TWO GRATES STD. 840.29	15" CORR. STEEL ELBOWS	CONC. COLLARS CL. "B" C.Y. STD. 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
10+50		1												1				
11+10		1																
11+20														1				
13+62																	20	15" CMP PIPE REMOVAL
PROJECT TOTAL		2												2			20	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I. (N.S.)	GRATED DROP INLET (NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

NOTE: Invert Elevations are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS XI MOD	ANCHORS TYPE III	ANCHORS GREU TL-3	ANCHORS M-350	ANCHORS XIII	ANCHORS CAT-1	ANCHORS VI MOD	ANCHORS BIC	ANCHORS AT-1	IMPACT ATTENUATOR TYPE 350 EA	IMPACT ATTENUATOR TYPE 350 G	IMPACT ATTENUATOR TYPE 350 NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
-L-	10+49.59	12+75.92	LT	225'					4'-0"	7'-0"	50'-0"	50'-0"	1'-0"	1'-0"			2													
-L-	11+67.12	13+35.93	RT	162.5'	12.5'				4'-0"	7'-0"		50'-0"		1'-0"			1						1							
			SUBTOTAL	387.5	12.5'												3						1							
			LESS DEDUCTIONS																											
			GREU TL-3 (3 x 50)=	150'																										
			AT-1 (1 x 6.25)=	6.25'																										
			SUBTOTAL	156.25'	12.5'																									
			TOTALS	231.25'	12.5'												3						1							
			SAY	231.25'	12.5'		ADDITIONAL GUARDRAIL POSTS = 5										3						1							
-DET-				568.75'													5						1							TEMPORARY GUARDRAIL
		LESS DEDUCTIONS	GREU TL-3 (5 x 50)=	250'																										
			AT-1 (1 x 6.25)=	6.25'																										
			SAY	312.5'			ADDITIONAL GUARDRAIL POSTS = 10										5						1							

WSP USA
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
FAX: 1.919.836.4099
LICENSE NO. F-0165

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.86	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — SEAL 33290 — RONYELL A. THIGPEN — 9/28/2018 7:04:31 AM PDT

HYDRAULICS ENGINEER — SEAL 27876 — 9/28/2018 5:59:41 AM PDT

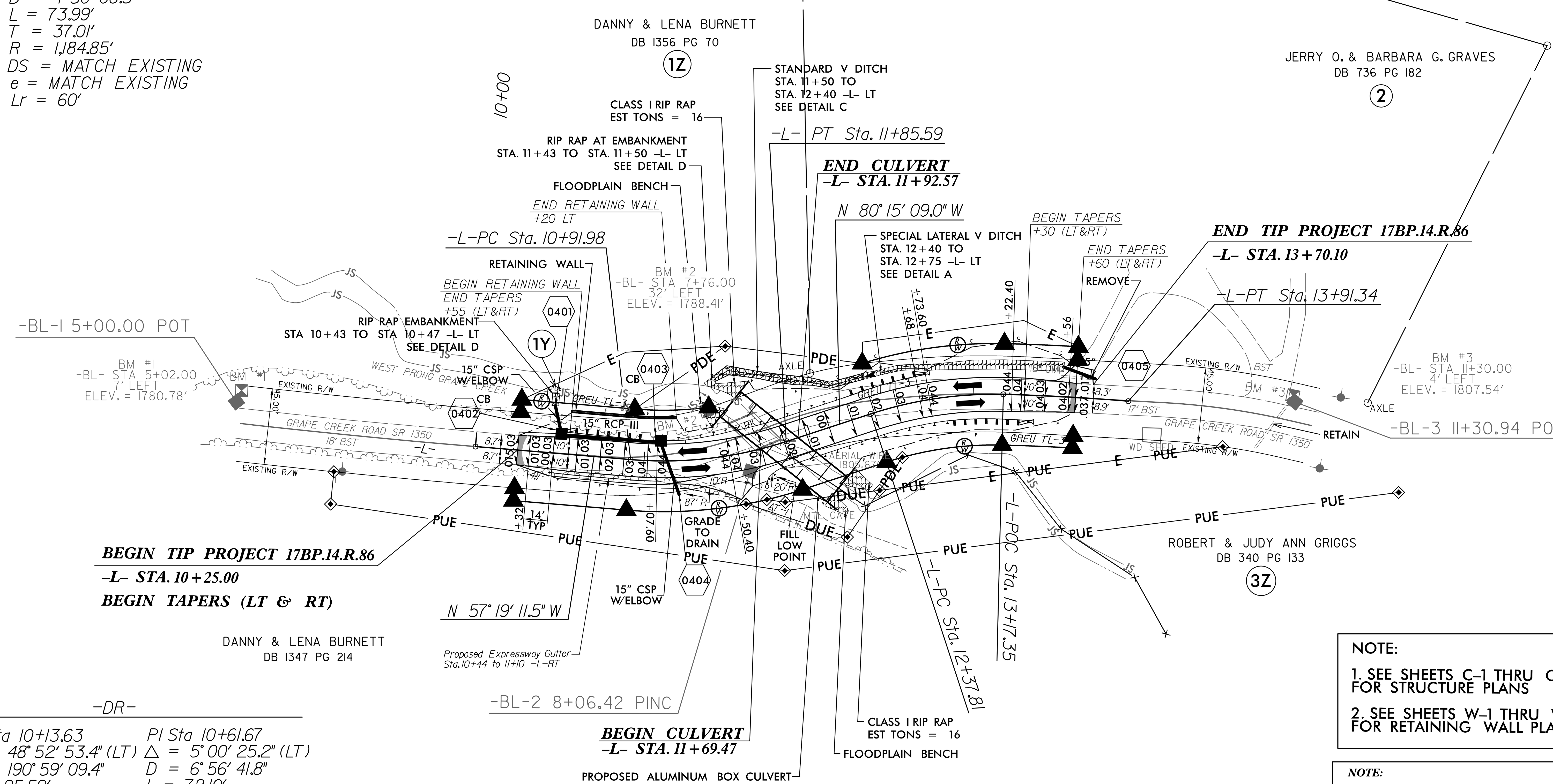
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NAD 2011

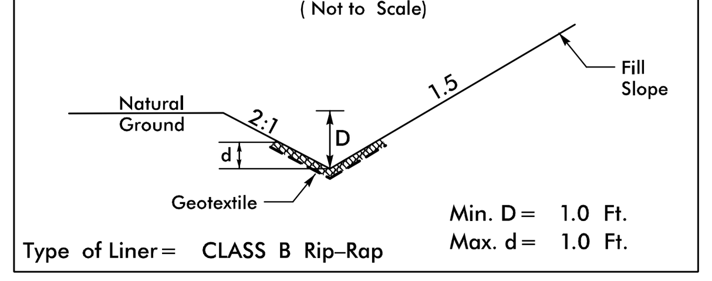
8/17/99

-L-

PI Sta 11+39.42	PI Sta 12+77.97	PI Sta 13+54.36
△ = 22° 55′ 57.5″ (LT)	△ = 19° 29′ 16.3″ (RT)	△ = 3° 34′ 40.7″ (RT)
D = 24° 30′ 00.0″	D = 24° 30′ 00.0″	D = 4° 50′ 08.5″
L = 93.60′	L = 79.54′	L = 73.99′
T = 47.44′	T = 40.16′	T = 37.01′
R = 233.86′	R = 233.86′	R = 1,184.85′
DS = 20 MPH	DS = 20 MPH	DS = MATCH EXISTING
e = 0.044	e = 0.044	e = MATCH EXISTING
Lr = 60′	Lr = 60′	Lr = 60′

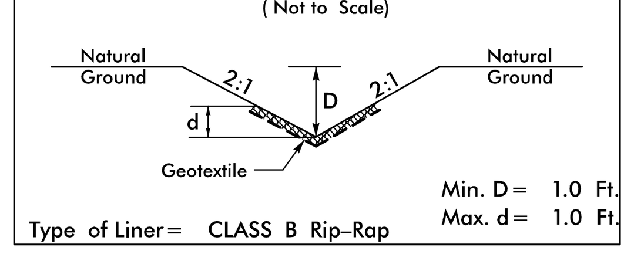


DETAIL A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



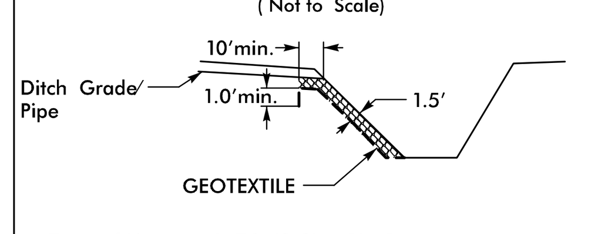
FROM STA. 12+40 TO STA. 12+75 -L- LT

DETAIL C
STANDARD 'V' DITCH
(Not to Scale)



FROM STA. 11+50 TO STA. 12+40 -L- LT

DETAIL D
RIP RAP AT EMBANKMENT
(Not to Scale)



FROM STA. 10+43 TO STA. 10+47 -L- LT
FROM STA. 11+43 TO STA. 11+50 -L- LT

-DR-

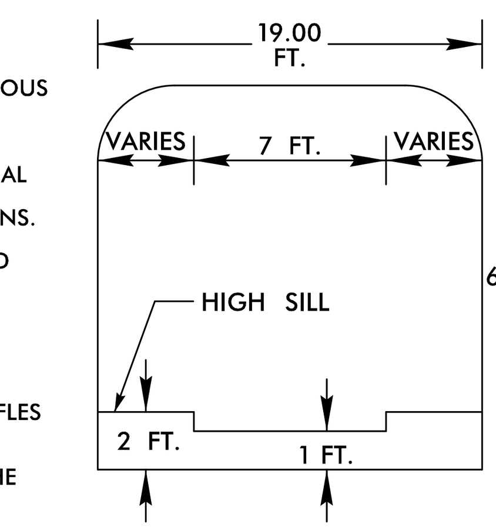
PI Sta 10+13.63	PI Sta 10+61.67
△ = 48° 52′ 53.4″ (LT)	△ = 5° 00′ 25.2″ (LT)
D = 190° 59′ 09.4″	D = 6° 56′ 41.8″
L = 25.59′	L = 72.10′
T = 13.63′	T = 36.07′
R = 30.00′	R = 825.00′

NOTE:
1. SEE SHEETS C-1 THRU C-3 FOR STRUCTURE PLANS
2. SEE SHEETS W-1 THRU W-2 FOR RETAINING WALL PLANS

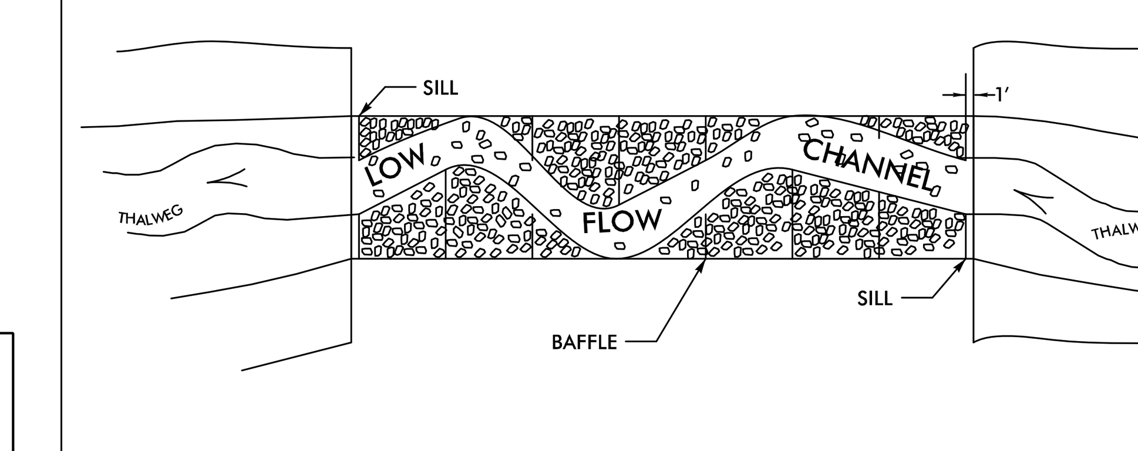
NOTE:
CONTRACTOR TO REMOVE MTL GATE AT -DR- AND REPLACE POST CONSTRUCTION.

DETAIL B SF-190226
(NOT TO SCALE)
SINGLE BARREL CULVERT SKEWED LOW FLOW CHANNEL AND SILLS

*NOTES:
1) NATIVE MATERIAL BETWEEN SILLS/BAFFLES IN THE CULVERT SHALL PROVIDE A CONTINUOUS LOW FLOW CHANNEL NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED AT THE PROJECT SITE DURING CONSTRUCTION. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.
2) SILLS/BAFFLES ARE ALUMINUM AND BOLTED INTO CULVERT.
3) TOP OF LOW FLOW SILLS/BAFFLES SHOULD MATCH STREAM BED ELEVATION IN LOW FLOW CHANNEL OF STREAM. (THALWEG)
4) DO NOT SET ELEVATION OF HIGH SILL/BAFFLES ABOVE BANK FULL.
5) NUMBER OF SILL/BAFFLES DETERMINED BY THE ENGINEER.



SILLS AT INLET AND OUTLET



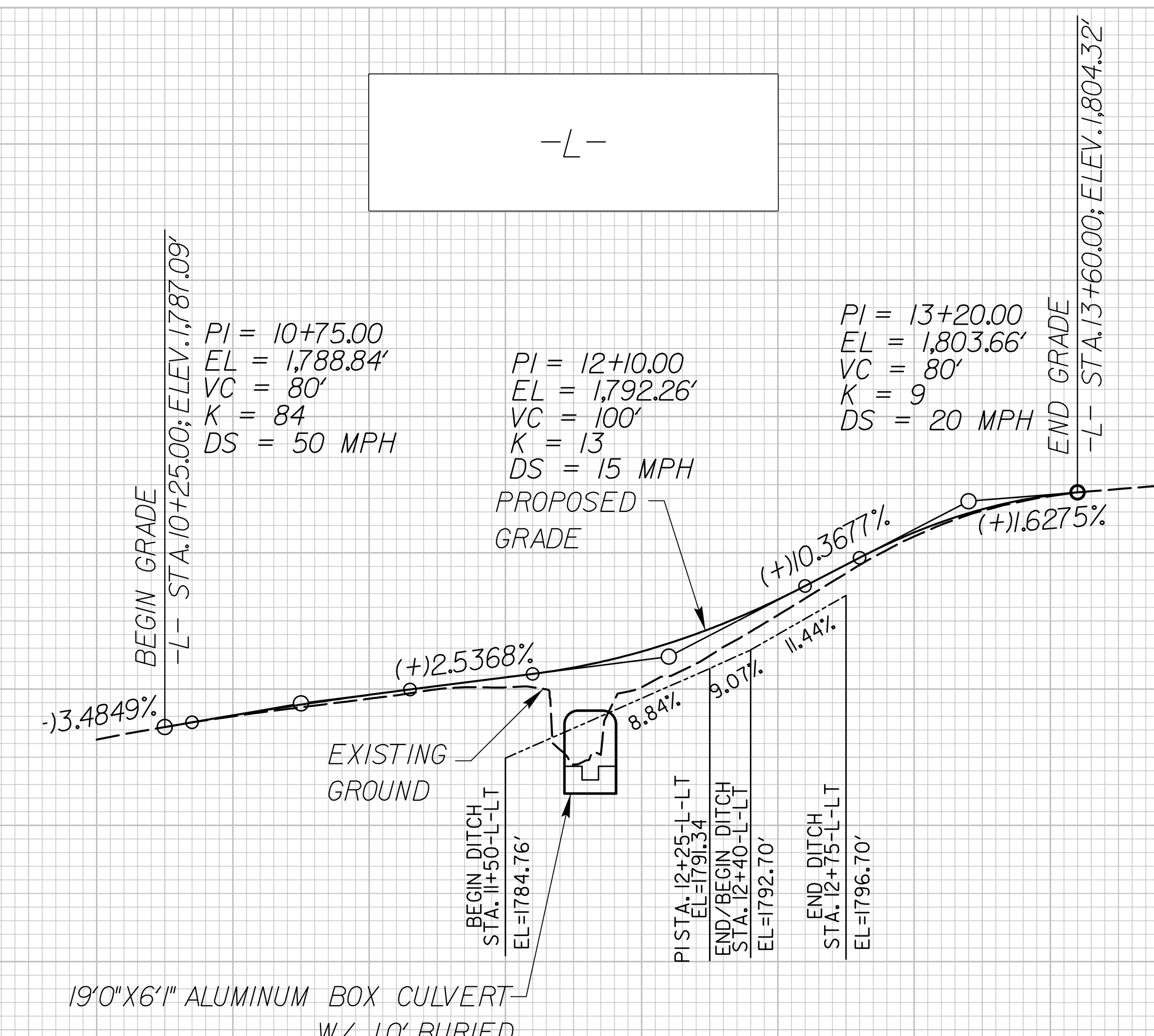
PLAN VIEW

-L-

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	=	310	CFS
DESIGN FREQUENCY	=	10	YRS
DESIGN HW ELEVATION	=	1790.0	FT
BASE DISCHARGE	=	600	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	1791.15	FT
OVERTOPPING DISCHARGE	=	420	CFS
OVERTOPPING FREQUENCY	=	25	YRS
OVERTOPPING ELEVATION	=	1790.8	FT
DATE OF SURVEY	=	11/15/13	
W.S.ELEVATION AT DATE OF SURVEY	=	1787.8	FT

BM2 ELEVATION - 1788.41
N 548530 E 474280
BL STATION 7+76.00 32 LEFT
L STATION 11+40.36 28.3 LEFT
8 INCH SPIKE SET IN BASE OF TRIPLE
MAPLE TREE



1,810 1,800 1,790 1,780 1,770 1,760 1,750

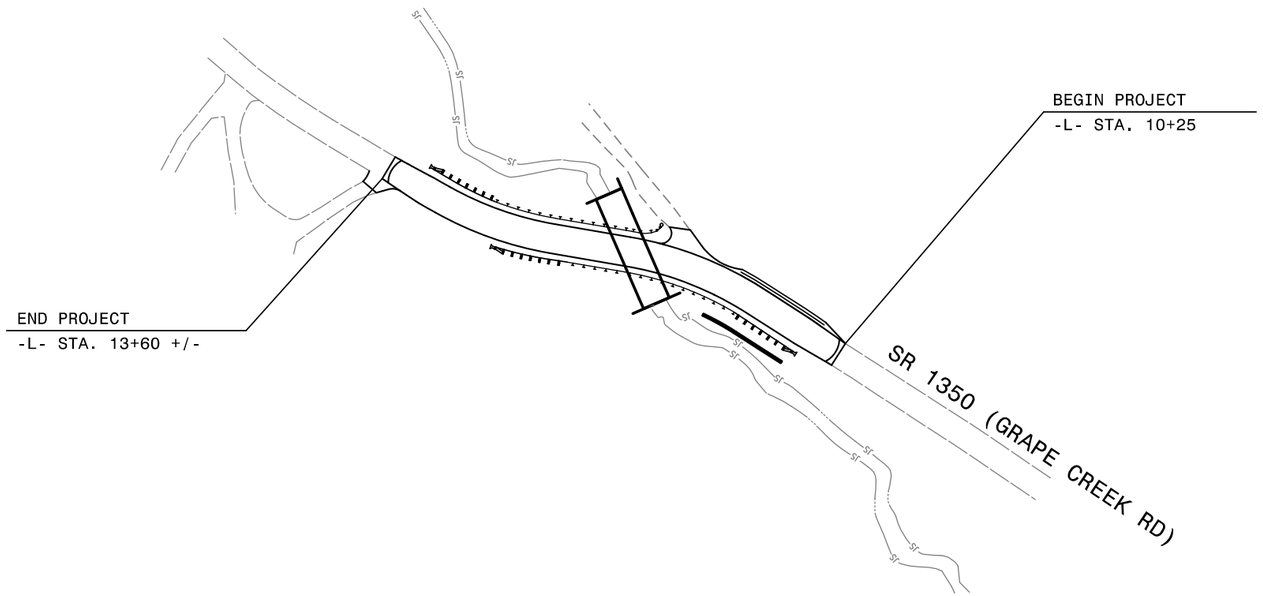
10+00 11+00 12+00 13+00 10+00 11+00

REVISIONS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

CHEROKEE COUNTY

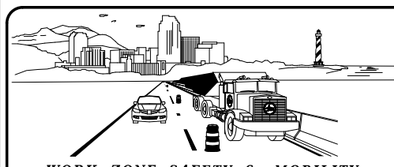


INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP AND INDEX OF SHEETS
TMP-1A	ROADWAY STANDARD DRAWINGS AND LEGEND
TMP-1B	GENERAL NOTES
TMP-3	WRITTEN PHASING
TMP-4	PHASE I DETAIL
TMP-5	PHASE II DETAIL

SHEET NO.
TMP-1

PROJECT: 17BP.14.R.86



WORK ZONE SAFETY & MOBILITY
"from the MOUNTAINS to the COAST"

N.C.D.O.T. WORK ZONE TRAFFIC CONTROL
1561 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699-1561
750 N. GREENFIELD PARKWAY, GARNER, NC 27529 (DELIVERY)
PHONE: (919) 814-5000 FAX: (919) 771-2745

_____ *STATE TRAFFIC MANAGEMENT ENGINEER*

D. A. PARKER, P.E. *TRAFFIC CONTROL PROJECT ENGINEER*

R. M. GARRETT *TRAFFIC CONTROL PROJECT DESIGN ENGINEER*

_____ *TRAFFIC CONTROL DESIGN ENGINEER*

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

1001 Morehead Square Dr.
Suite 610
Charlotte NC, 28203
NC LIC. NO. F-0165

APPROVED: DocuSigned by: Richard Odynski

DATE: 9/28/2018 6:26:50 AM PDT

NORTH CAROLINA PROFESSIONAL SEAL 037467 ENGINEER RICHARD A ODYNSKI

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN 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
1101.01	WORK ZONE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHION
1165.01	TRUCK MOUNTED ATTENUATOR
1170.01	PORTABLE CONCRETE BARRIER
1180.01	SKINNY - DRUMS
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
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

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- WORK AREA
- TEMPORARY PAVEMENT

SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY (T E M P)

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

TEMPORARY PAVEMENT MARKING

PAINT (4")

PA WHITE EDGELINE

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM
- SKINNY DRUM
- TEMPORARY CRASH CUSHION
- FLASHING ARROW BOARD
- FLAGGER
- AUTOMATED FLAGGING DEVICE W/ GATE ARM
- LAW ENFORCEMENT
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

DocuSigned by: Richard Odynski

APPROVED: 9/28/2018 6:26:59 AM PDT

DATE: 6E04DD32F...

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 037467 ENGINEER RICHARD A. ODYNSKI

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

WSP
1001 Morehead Square Dr.
Suite 610
Charlotte NC, 28203
NC LIC. NO. F-0165

TRANSPORTATION MANAGEMENT PLAN ROADWAY STANDARD DRAWINGS & LEGEND

PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.86	TMP-1B

GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.
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.

LANE AND SHOULDER CLOSURE REQUIREMENTS

A) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.

B) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.

C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

E) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

PAVEMENT EDGE DROP OFF REQUIREMENTS

F) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:

BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.

BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.

G) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 250 FEET IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

H) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

I) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

J) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

TRAFFIC BARRIER

K) INSTALL TEMPORARY BARRIER ACCORDING TO THE TRANSPORTATION MANAGEMENT PLANS A MAXIMUM OF TWO (2) WEEKS PRIOR TO BEGINNING WORK IN ANY LOCATION. ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION PROCEED IN A CONTINUOUS MANNER TO COMPLETE THE PROPOSED WORK IN THAT LOCATION UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS OR AS DIRECTED BY THE ENGINEER.

DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE.

ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION AND NO WORK IS PERFORMED BEHIND THE TEMPORARY BARRIER FOR A PERIOD LONGER THAN TWO (2) MONTHS, REMOVE / RESET TEMPORARY BARRIER AT NO COST TO THE DEPARTMENT UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS, TEMPORARY BARRIER IS PROTECTING A HAZARD, OR AS DIRECTED BY THE ENGINEER.

INSTALL TEMPORARY BARRIER WITH THE TRAFFIC FLOW BEGINNING WITH THE UPSTREAM SIDE OF TRAFFIC. REMOVE TEMPORARY BARRIER AGAINST THE TRAFFIC FLOW BEGINNING WITH THE DOWNSTREAM SIDE OF TRAFFIC.

INSTALL AND SPACE DRUMS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (MPH) TO CLOSE OR KEEP THE SECTION OF THE ROADWAY CLOSED UNTIL THE TEMPORARY BARRIER CAN BE PLACED OR AFTER THE TEMPORARY BARRIER IS REMOVED.

L) PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER AT ALL TIMES DURING THE INSTALLATION AND REMOVAL OF THE BARRIER BY EITHER A TRUCK MOUNTED ATTENUATOR (MAXIMUM 72 HOURS) OR A TEMPORARY CRASH CUSHION.

PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER FROM ONCOMING TRAFFIC AT ALL TIMES BY A TEMPORARY CRASH CUSHION UNLESS THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER IS OFFSET FROM ONCOMING TRAFFIC AS FOLLOWS OR AS SHOWN IN THE PLANS: (SEE ALSO 1101.05)

POSTED SPEED LIMIT	MINIMUM OFFSET
40 OR LESS	15 FT
45 - 50	20 FT
55	25 FT
60 MPH or HIGHER	30 FT

PAVEMENT MARKINGS AND MARKERS

M) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

ROAD NAME	MARKING	MARKER
SR 1350	PAINT	NONE

N) PLACE ONE APPLICATION OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A SECOND APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.

O) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING

P) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

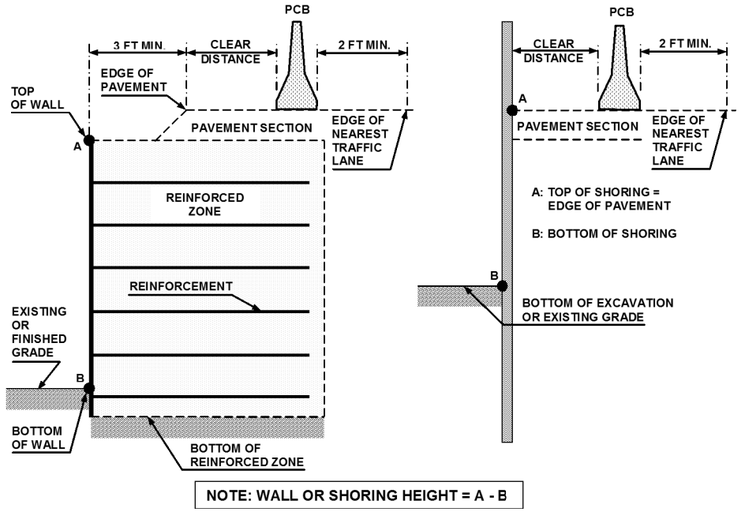
MISCELLANEOUS

Q) CONTRACTOR SHALL MAINTAIN ACCESS TO ALL RESIDENCES AT ALL TIMES. CONTRACTOR SHALL COORDINATE WITH PROPERTY OWNERS DURING CONSTRUCTION OF DRIVEWAYS.

DocuSigned by:
APPROVED: Richard Odynski
DATE: 9/28/2018 6:26:51 AM EDT
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 037467 ENGINEER RICHARD A ODYNSKI
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

WSP
1001 Morehead Square Dr.
Suite 610
Charlotte NC, 28203
NC LIC. NO. F-0165

TRANSPORTATION MANAGEMENT PLAN GENERAL NOTES



NOTE: WALL OR SHORING HEIGHT = A - B

FIGURE A

NOTES

1- REFER TO THE TRAFFIC CONTROL PLANS FOR TEMPORARY SHORING LOCATIONS AND NOTES.

2- REFER TO THE "TEMPORARY SHORING" PROJECT SPECIAL PROVISION FOR INFORMATION ABOUT TEMPORARY SHORING AND PORTABLE CONCRETE BARRIER (PCB).

3- PCB IS REQUIRED IF TEMPORARY SHORING IS LOCATED WITHIN THE CLEAR ZONE IN ACCORDANCE WITH THE AASHTO ROADSIDE DESIGN GUIDE. DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE. (CONTACT NCDOT PAVEMENT MANAGEMENT UNIT FOR APPLICABLE PAVEMENT DESIGN).

4- BASED ON THE CLEAR DISTANCE, OFFSET, DESIGN SPEED AND PAVEMENT TYPE, CHOOSE AN UNANCHORED OR ANCHORED PCB FROM THE TABLE SHOWN IN FIGURE B. CLEAR DISTANCE IS DEFINED AS SHOWN IN FIGURE A AND OFFSET IS DEFINED AS SHOWN IN FIGURE B.

5- AT THE CONTRACTOR'S OPTION OR IF THE MINIMUM REQUIRED CLEAR DISTANCE IS NOT AVAILABLE, SET PCB NEXT TO AND UP AGAINST THE TRAFFIC SIDE OF THE TEMPORARY SHORING EXCEPT FOR BARRIER ABOVE TEMPORARY WALLS. PCB WITH THE MINIMUM REQUIRED CLEAR DISTANCE IS REQUIRED ABOVE TEMPORARY WALLS.

6- USE NCDOT PORTABLE CONCRETE BARRIER (PCB) IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1170.01 AND SECTION 1170 OF THE STANDARD SPECIFICATIONS.

7- PCB REQUIREMENTS FOR TEMPORARY WALLS APPLY TO TEMPORARY MECHANICALLY STABILIZED EARTH (MSE) WALLS AND TEMPORARY SOIL NAIL WALLS.

8- SET PCB WITH A MINIMUM HORIZONTAL DISTANCE OF 2 FT BETWEEN THE FRONT FACE OF THE BARRIER AND THE EDGE OF THE NEAREST TRAFFIC LANE AS SHOWN IN FIGURE A UNLESS OTHERWISE SHOWN IN THE PLANS AND OR AS APPROVED BY THE ENGINEER.

9- FOR PCB ABOVE AND BEHIND TEMPORARY WALLS, PROVIDE A MINIMUM DISTANCE OF 3 FT BETWEEN THE EDGE OF PAVEMENT AND THE WALL FACE AS SHOWN IN FIGURE A. IF THESE MINIMUM REQUIRED DISTANCES ARE NOT AVAILABLE, CONTACT THE ENGINEER.

10- TABLE SHOWN IN FIGURE B IS BASED ON NCDOT RESEARCH PROJECT NO. 2005-010 WITH VEHICLE TYPE USED FOR NCHRP 350 CRASH TESTS. BARRIER DEFLECTIONS AND RESULTING MINIMUM REQUIRED CLEAR DISTANCES MIGHT VARY SIGNIFICANTLY FOR LARGER HEAVIER VEHICLES, RUNS OF BARRIER LESS THAN 200 FT IN LENGTH AND WET OR DRY PAVEMENT.

MINIMUM REQUIRED CLEAR DISTANCE, inches

Barrier Type	Pavement Type	Offset * ft	Design Speed, mph					
			<30	31-40	41-50	51-60	61-70	71-80
Unanchored PCB	Asphalt	<8	24	26	29	32	36	40
		8-14	26	28	31	35	38	42
		14-20	27	29	34	36	39	43
		20-26	28	31	35	38	40	44
		26-32	29	32	36	39	42	45
		32-38	30	34	38	41	43	46
		38-44	31	34	41	43	45	48
		44-50	31	35	41	43	46	49
		50-56	32	36	42	44	47	50
		>56	32	36	42	45	47	51
	Concrete	<8	17	18	21	22	25	26
		8-14	19	20	23	25	26	29
		14-20	22	22	24	26	28	31
		20-26	23	24	26	27	30	34
		26-32	24	25	27	28	32	35
		32-38	24	26	27	30	33	36
		38-44	25	26	28	30	34	37
		44-50	26	26	28	32	35	37
		50-56	26	26	28	32	35	38
		>56	26	27	29	32	36	38
Anchored PCB	Asphalt	All Offsets	24 for All Design Speeds					
Anchored PCB	Concrete (including bridge approach slabs)	All Offsets	12 for All Design Speeds					

* See Figure Below

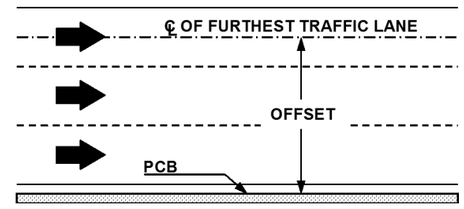


FIGURE B

APPROVED: DocuSigned by: Richard Odynski
DATE: 9/28/2018 6:26:58 PM EDT
6E94D202...

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 037467 ENGINEER RICHARD A. ODYNSKI

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

WSP
1001 Morehead Square Dr.
Suite 610
Charlotte NC, 28203
NC LIC. NO. F-0165

TRANSPORTATION MANAGEMENT PLAN
PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS

PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.86	TMP-3

PHASING NOTES

PHASE I

STEP 1: INSTALL WORK ZONE ADVANCE WARNING SIGNS ON ALL ROADS ACCORDING TO ROADWAY STANDARD DRAWING NO. 1101.01 WHERE WORK WILL BE OCCURRING NO MORE THAN THREE DAYS PRIOR TO BEGINNING CONSTRUCTION.

STEP 2: USING ROADWAY STANDARD DRAWING NO. 1101.02, SHEET 14 OF 14, SHIFT TRAFFIC AND INSTALL TEMPORARY GUARDRAIL AND TEMPORARY SHORING. CONSTRUCT IMPROVEMENTS UP TO, BUT NOT INCLUDING, THE FINAL LAYER OF SURFACE COURSE, AS SHOWN ON SHEET TMP-4.

NOTE: AUTOMATED FLAGGING OPERATIONS AND DEVICES WILL NEED TO BE ACTIVE FOR 24 HOURS FOR THE DURATION OF CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR DESIGN, MAINTENANCE, AND OPERATION OF ALL EQUIPMENT.

PHASE II

STEP 1: USING ROADWAY STANDARD DRAWING NO. 1101.02, SHEET 1 OF 14, AS NEEDED, SHIFT TRAFFIC AND INSTALL TEMPORARY GUARDRAIL AND TEMPORARY SHORING AS SHOWN ON SHEET TMP-5.

STEP 2: USING ROADWAY STANDARD DRAWING NO. 1101.02, SHEET 14 OF 14, CONSTRUCT REMAINDER OF ROADWAY CULVERT AND IMPROVEMENTS AS SHOWN ON SHEET TMP-5.

NOTE: AUTOMATED FLAGGING OPERATIONS AND DEVICES WILL NEED TO BE ACTIVE FOR 24 HOURS FOR THE DURATION OF CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR DESIGN, MAINTENANCE, AND OPERATION OF ALL EQUIPMENT.

STEP 3: REMOVE TEMPORARY GUARDRAIL AS NEEDED TO CONSTRUCT REMAINDER OF FULL DEPTH PAVEMENT ALONG -L-.

STEP 4: USING ROADWAY STANDARD DRAWING NO. 1101.02, SHEET 1 OF 14, AS NEEDED, INSTALL FINAL LAYER OF SURFACE COURSE AND FINAL PAVEMENT MARKINGS AND SHIFT TRAFFIC TO THE FINAL TRAFFIC PATTERN. SEE FINAL PAVEMENT MARKINGS PLANS FOR MORE INFORMATION.

STEP 5: REMOVE LANE CLOSURE DEVICES AND SIGNS AFTER CONSTRUCTION IS COMPLETE.

APPROVED: DocuSigned by: Richard Odynski

DATE: 9/28/2018 6:26:50 AM PDT

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 037467 ENGINEER RICHARD A ODYNSKI

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

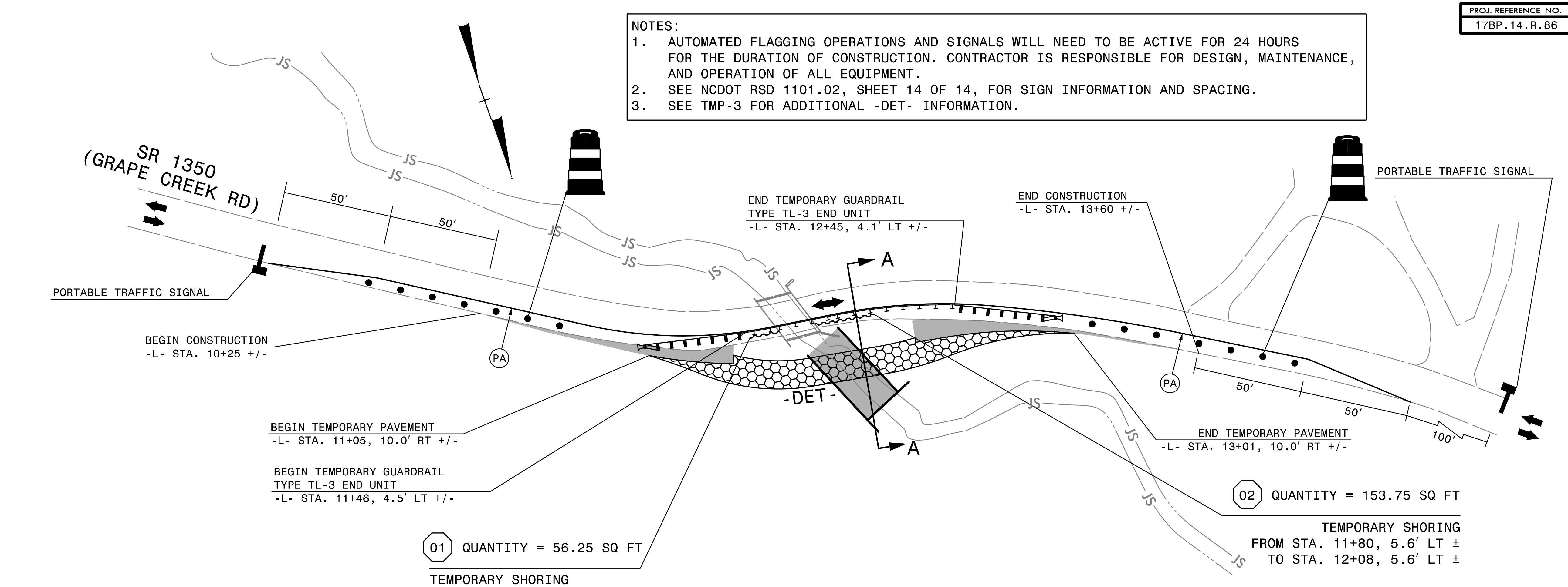
wsp

1001 Morehead Square Dr.
Suite 610
Charlotte NC, 28203

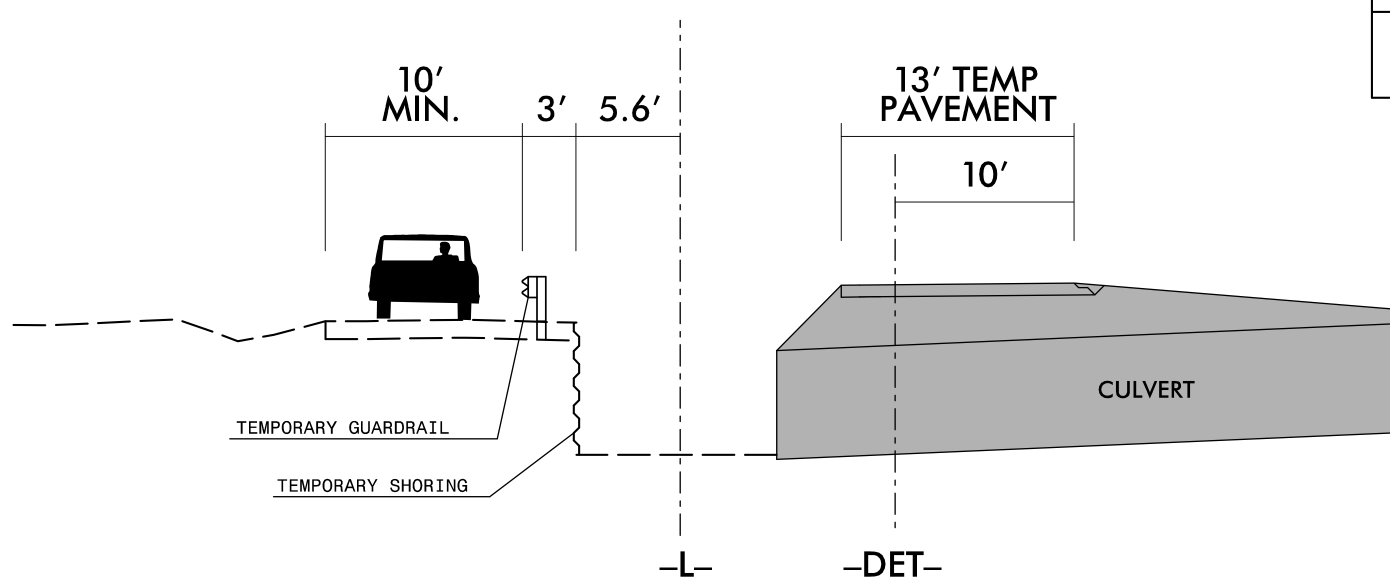
NC LIC. NO. F-0165

TRANSPORTATION MANAGEMENT PLAN
WRITTEN PHASING

NOTES:
1. AUTOMATED FLAGGING OPERATIONS AND SIGNALS WILL NEED TO BE ACTIVE FOR 24 HOURS FOR THE DURATION OF CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR DESIGN, MAINTENANCE, AND OPERATION OF ALL EQUIPMENT.
2. SEE NCDOT RSD 1101.02, SHEET 14 OF 14, FOR SIGN INFORMATION AND SPACING.
3. SEE TMP-3 FOR ADDITIONAL -DET- INFORMATION.

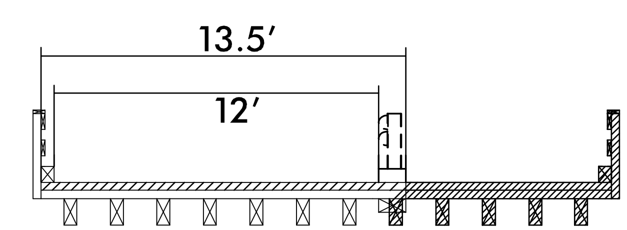


LOCATION/ SHORING TYPE	FROM STATION	TO STATION	OFFSET RANGE	EST. AVERAGE SHORING HEIGHT	MAX SHORING HEIGHT
ROADWAY	11+49	11+64	2.2′ LEFT OF –L– TO 4.1′ LEFT OF –L–	3.75′	7.5′
ROADWAY	11+80	12+08	5.6′ LEFT OF –L– TO 5.6′ LEFT OF –L–	5.5′	7.5′



SECTION A – A
–L– STA. 12+00 +/–

PHASE 1 EXISTING BRIDGE REMOVAL



APPROVED: DocuSigned by: Richard Odynski
DATE: 12/3/2018 11:31:19 AM PST

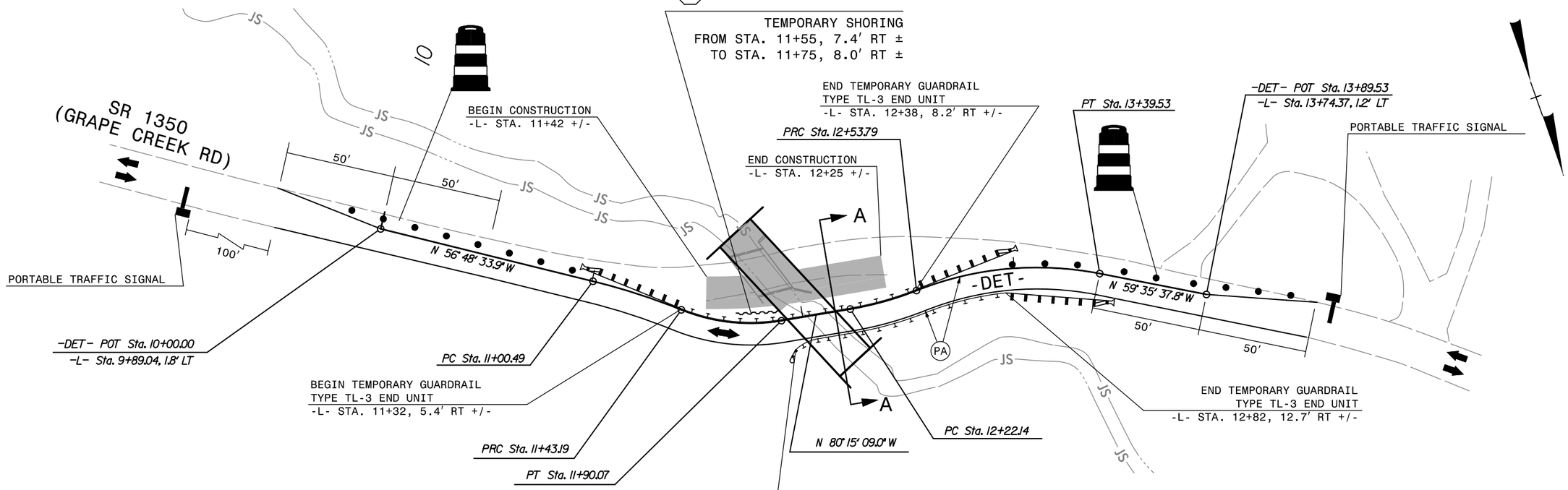
SEAL
SEAL 037467 PROFESSIONAL ENGINEER RICHARD A ODYNSKI

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

WSP
1001 Morehead Square Dr.
Suite 610
Charlotte NC, 28203
NC LIC. NO. F-0165

TRANSPORTATION MANAGEMENT PLAN
TEMPORARY TRAFFIC CONTROL
PHASE I

PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.86	TMP-5



PI Sta 11+21.88
Δ = 8° 09′ 17.3″ (RT)
D = 19° 05′ 54.9″
L = 42.70′
T = 21.39′
R = 300.00′

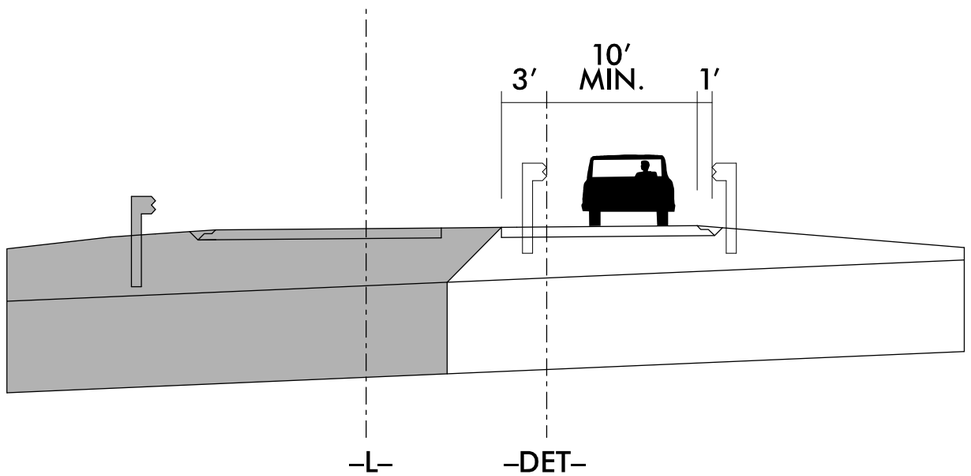
PI Sta 11+67.24
Δ = 31° 35′ 52.3″ (LT)
D = 67° 24′ 24.5″
L = 46.88′
T = 24.05′
R = 85.00′

PI Sta 12+38.03
Δ = 12° 05′ 23.5″ (LT)
D = 38° 11′ 49.9″
L = 31.65′
T = 15.88′
R = 150.00′

PI Sta 12+97.87
Δ = 32° 44′ 54.6″ (RT)
D = 38° 11′ 49.9″
L = 85.74′
T = 44.07′
R = 150.00′

NOTES:
1. AUTOMATED FLAGGING OPERATIONS AND SIGNALS WILL NEED TO BE ACTIVE FOR 24 HOURS FOR THE DURATION OF CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR DESIGN, MAINTENANCE, AND OPERATION OF ALL EQUIPMENT.
2. SEE NCDOT RSD 1101.02, SHEET 14 OF 14, FOR SIGN INFORMATION AND SPACING.
3. -DET- PROFILE AND CROSS SLOPE TO MATCH -L- FOR TEMPORARY PAVEMENT WIDENING.

LOCATION/ SHORING TYPE	FROM STATION	TO STATION	OFFSET RANGE	EST. AVERAGE SHORING HEIGHT	MAX SHORING HEIGHT
ROADWAY	11+55	11+75	7.4′ RIGHT OF –L– TO 8.0′ RIGHT OF –L–	5.0′	10.0′



SECTION A – A
–L– STA. 12+00 +/–

DocuSigned by:
APPROVED: Richard Odynski
DATE: 12/3/2018 6:01:31 AM EST
SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 037467 RICHARD A ODYNSKI
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

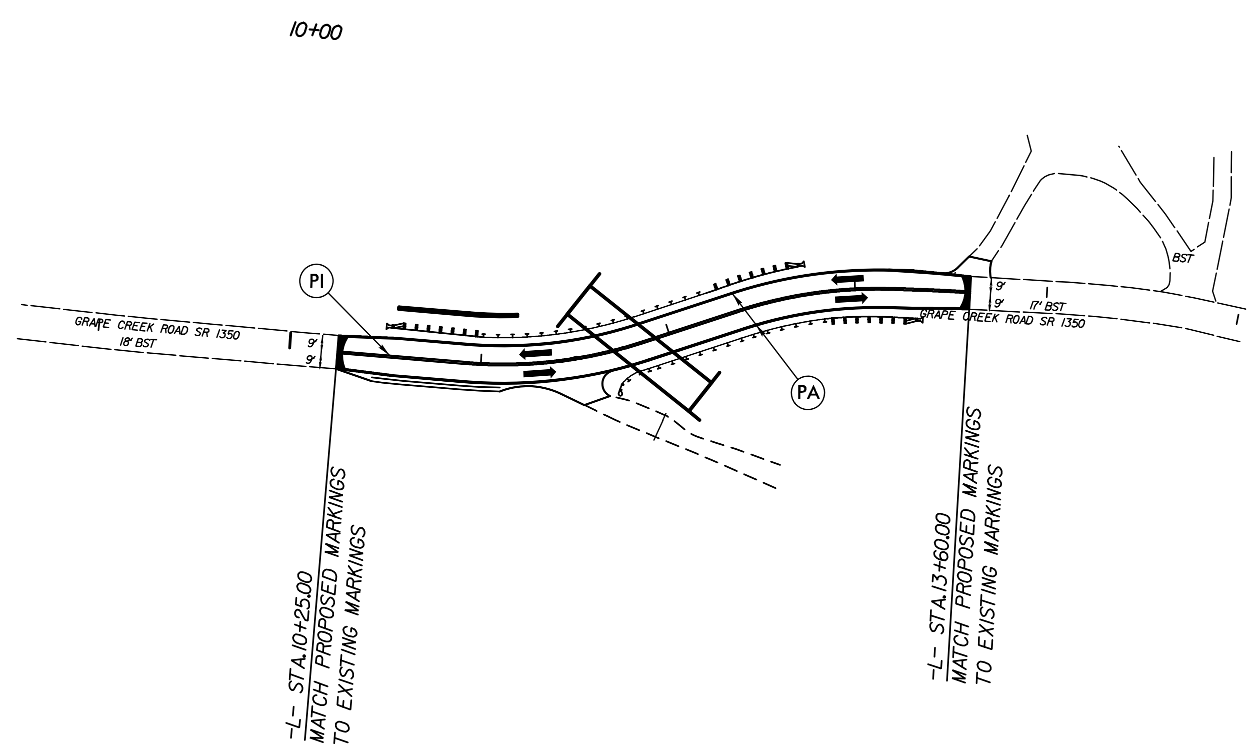
WSP
1001 Morehead Square Dr.
Suite 610
Charlotte NC, 28203
NC LIC. NO. F-0165

TRANSPORTATION MANAGEMENT PLAN
TEMPORARY TRAFFIC CONTROL
PHASE II

PAVEMENT MARKING SCHEDULE
TIP PROJECT # 17BP.14.R.86

SYMBOL	DESCRIPTION	FINAL PAVEMENT MARKINGS	PAY ITEM QUANTITY BREAKDOWN	TOTAL QUANTITY
PI	YELLOW DOUBLE CENTER	PAINT (4", 2 COATS)	670 LF	1340 LF
PA	WHITE EDGELINE	PAINT (4", 2 COATS)	670 LF	1340 LF

NOTES:
1. WHITE EDGE TO MATCH EXISTING LANE WIDTHS THROUGHOUT NEWLY CONSTRUCTED AREA.



DocuSigned by:
APPROVED: Richard Odynski
DATE: 9/28/2018 6:26:59 AM PDT

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 037467 ENGINEER RICHARD A. ODYNSKI

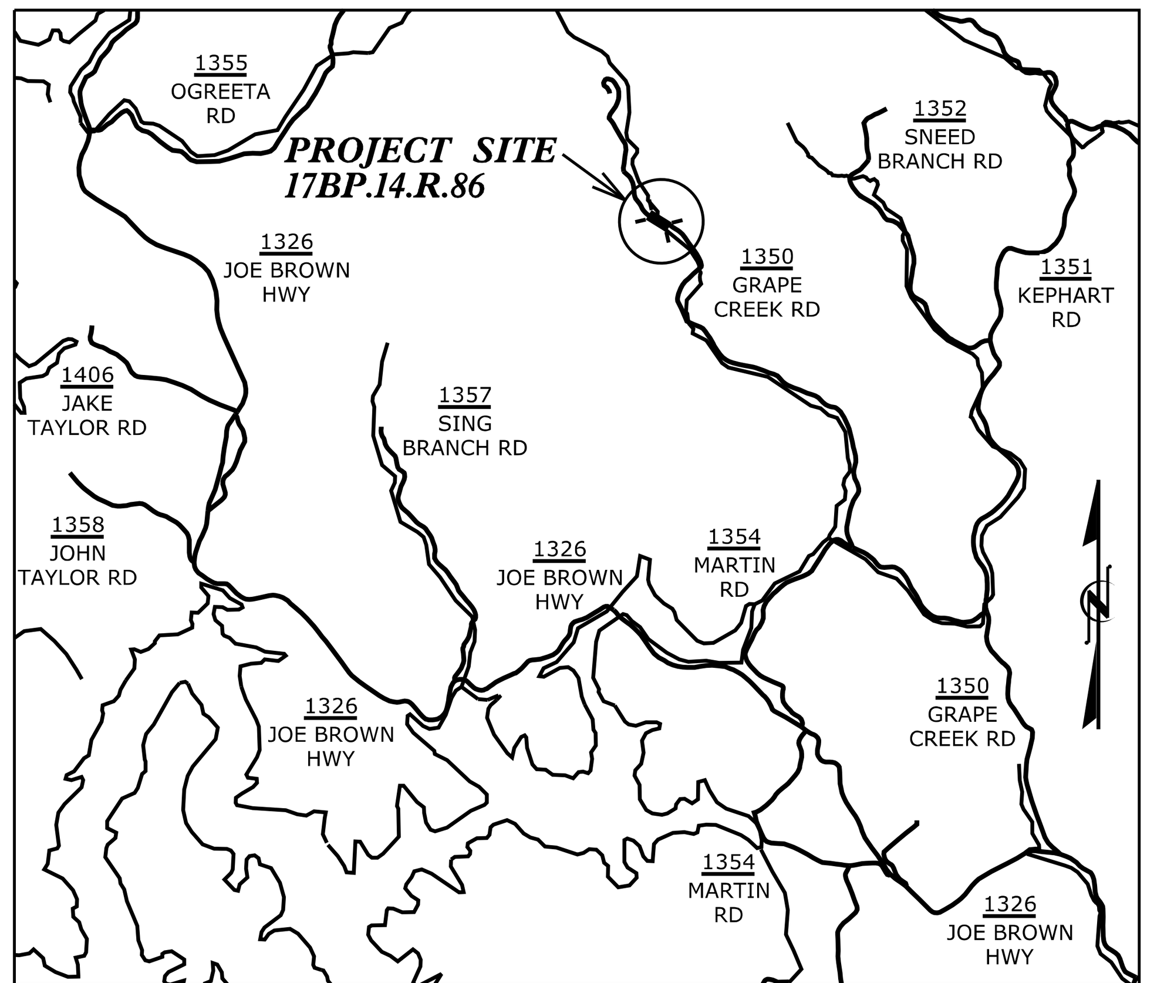
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

WSP
1001 Morehead Square Dr.
Suite 610
Charlotte NC, 28203
NC LIC. NO. F-0165

PAVEMENT MARKING PLAN

TIP PROJECT: 17BP.14.R.86

See Sheet 1-A For Index of Sheets



VICINITY MAP

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.14.R.86	EC-1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION

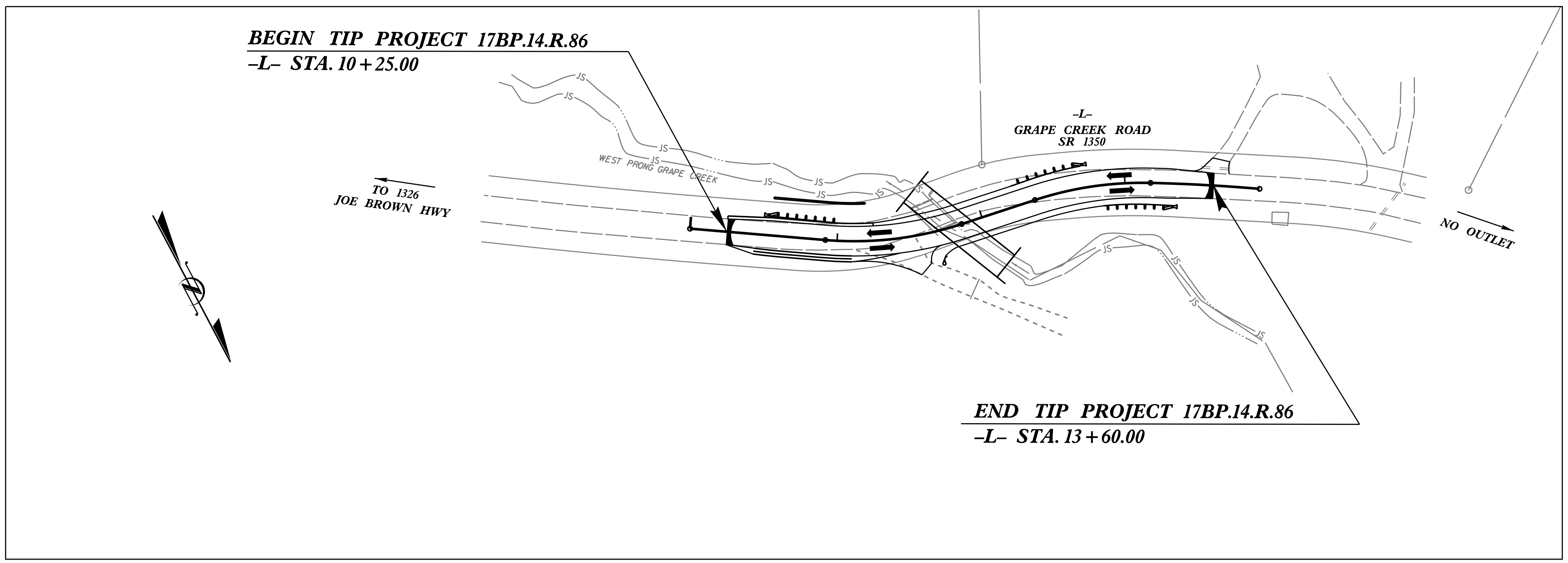
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

CHEROKEE COUNTY

LOCATION: REPLACEMENT OF BRIDGE NO. 226 ON GRAPE CREEK RD. (SR 1350) OVER GRAPE CREEK

TYPE OF WORK: GRADING, PAVING, TRAFFIC CONTROL, DRAINAGE, & CULVERT



EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TSD
1630.05	Temporary Diversion	TD
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	EW / CFW
	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	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	
	Tiered Skimmer Basin	
	Infiltration Basin	

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

GRAPHIC SCALE

0 20
PLANS

0 50
PROFILE (HORIZONTAL)

0 10
PROFILE (VERTICAL)

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 1, 2018 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER RESOURCES.

Prepared in the Office of:

WSP USA
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
FAX: 1.919.836.4099
LICENSE NO. F-0165

Designed by:

RANA STANSELL — NAME
3597 — LEVEL III CERTIFICATION NO.

Reviewed in the Office of:

ROADSIDE ENVIRONMENTAL UNIT

693 Mountain Road
Hendersonville, NC 28791

2018 STANDARD SPECIFICATIONS

Reviewed by:

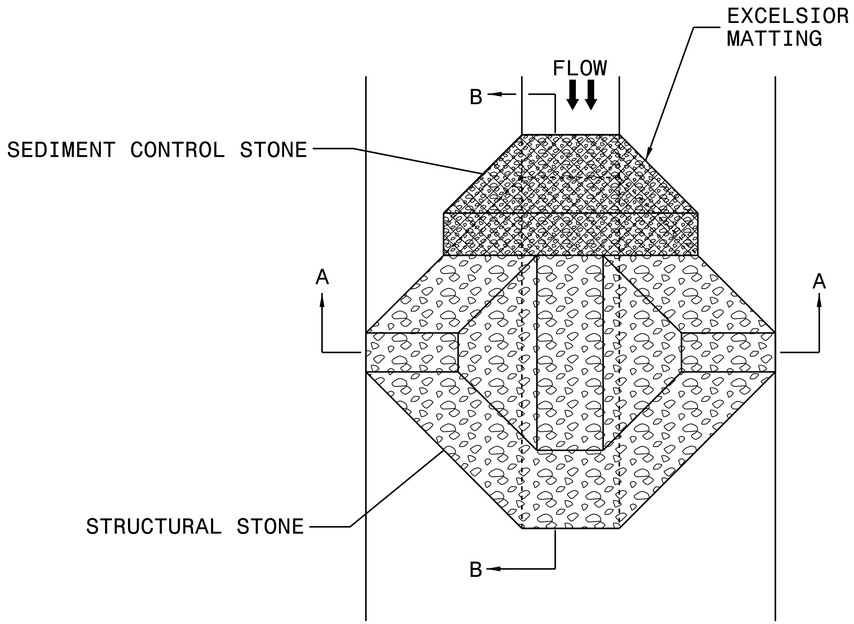
Roadway Standard Drawings

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 revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

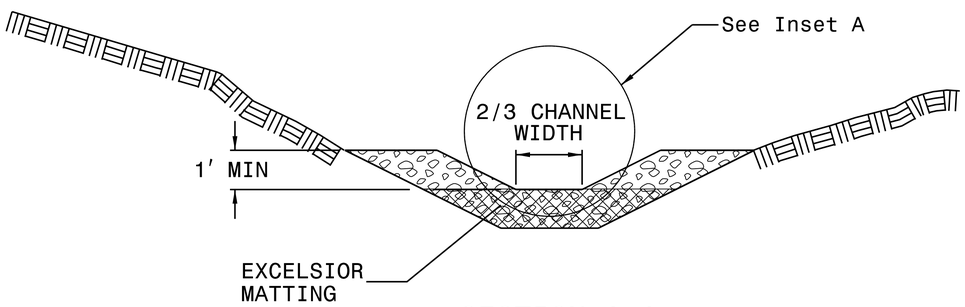
1604.01	Railroad Erosion Control Detail
1605.01	Temporary Silt Fence
1606.01	Special Sediment Control Fence
1607.01	Gravel Construction Entrance
1622.01	Temporary Berms and Slope Drains
1630.01	Riser Basin
1630.02	Silt Basin Type B
1630.03	Temporary Silt Ditch
1630.04	Stilling Basin
1630.05	Temporary Diversion
1630.06	Special Stilling Basin
1631.01	Matting Installation
1632.01	Rock Inlet Sediment Trap Type A
1632.02	Rock Inlet Sediment Trap Type B
1632.03	Rock Inlet Sediment Trap Type C
1633.01	Temporary Rock Silt Check Type A
1633.02	Temporary Rock Silt Check Type B
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
1640.01	Coir Fiber Baffle
1645.01	Temporary Stream Crossing

PROJECT REFERENCE NO.	SHEET NO.
17BPJ4.R.86	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM)



PLAN



SECTION A-A

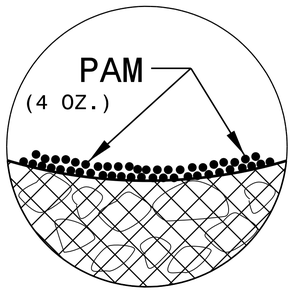
NOTES:

INSTALL TEMPORARY ROCK SILT CHECK TYPE A IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1633.01.

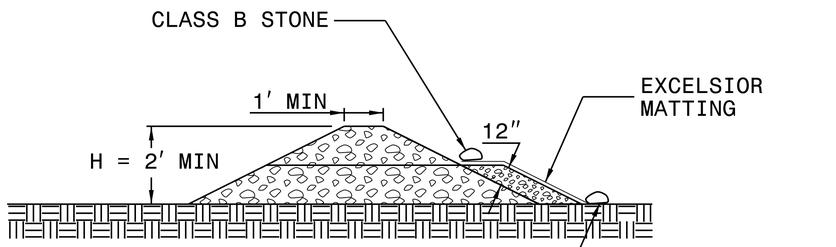
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH ROCK SILT CHECK.

INITIALLY APPLY 4 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A

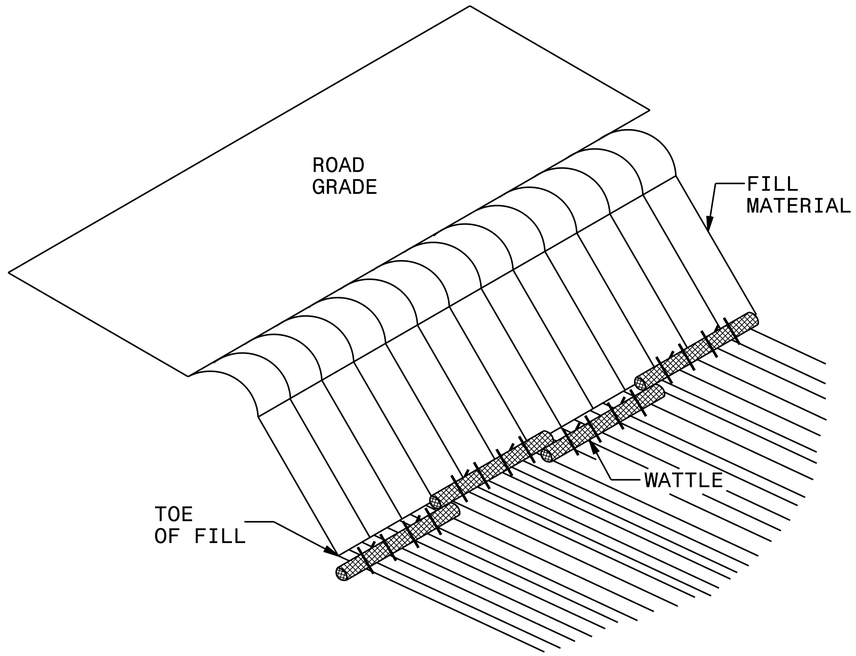


SECTION B-B

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
17BPJ4.R.86	EC-2B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

WATTLE BARRIER DETAIL



ISOMETRIC VIEW

NOTES:

USE MINIMUM 18 IN. NOMINAL DIAMETER EXCELSIOR WATTLE AND LENGTH OF 10 FT.

EXCAVATE A 2 TO 3 INCH TRENCH FOR WATTLE TO BE PLACED.

DO NOT PLACE WATTLES ON TOE OF SLOPE.

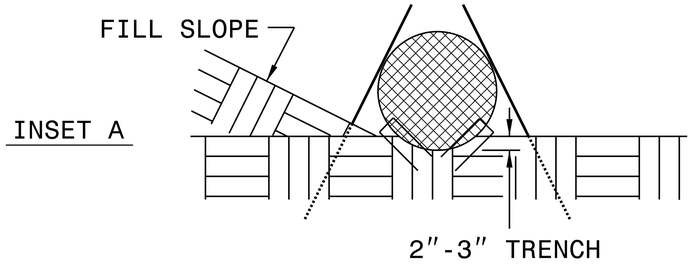
USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

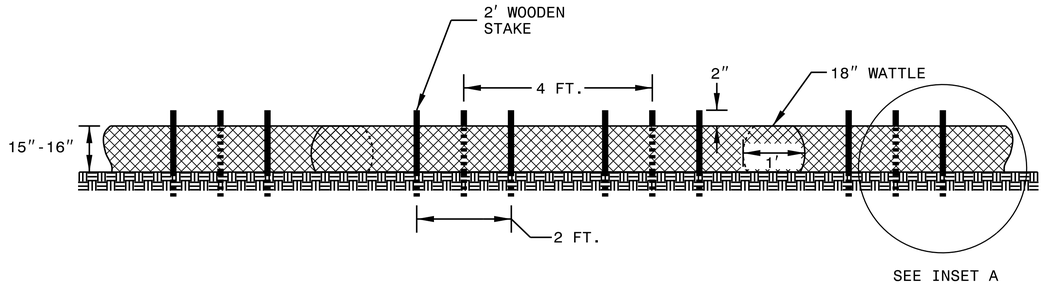
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.

PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

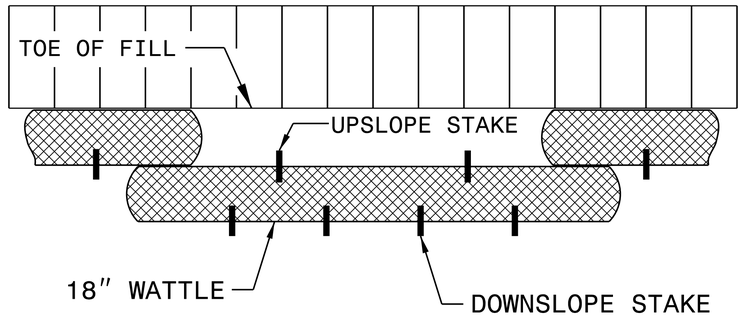
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

FOR BREAKS ALONG LARGE SLOPES, USE MAXIMUM SPACING OF 25 FT.





FRONT VIEW



TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
17BPJ4.R.86	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

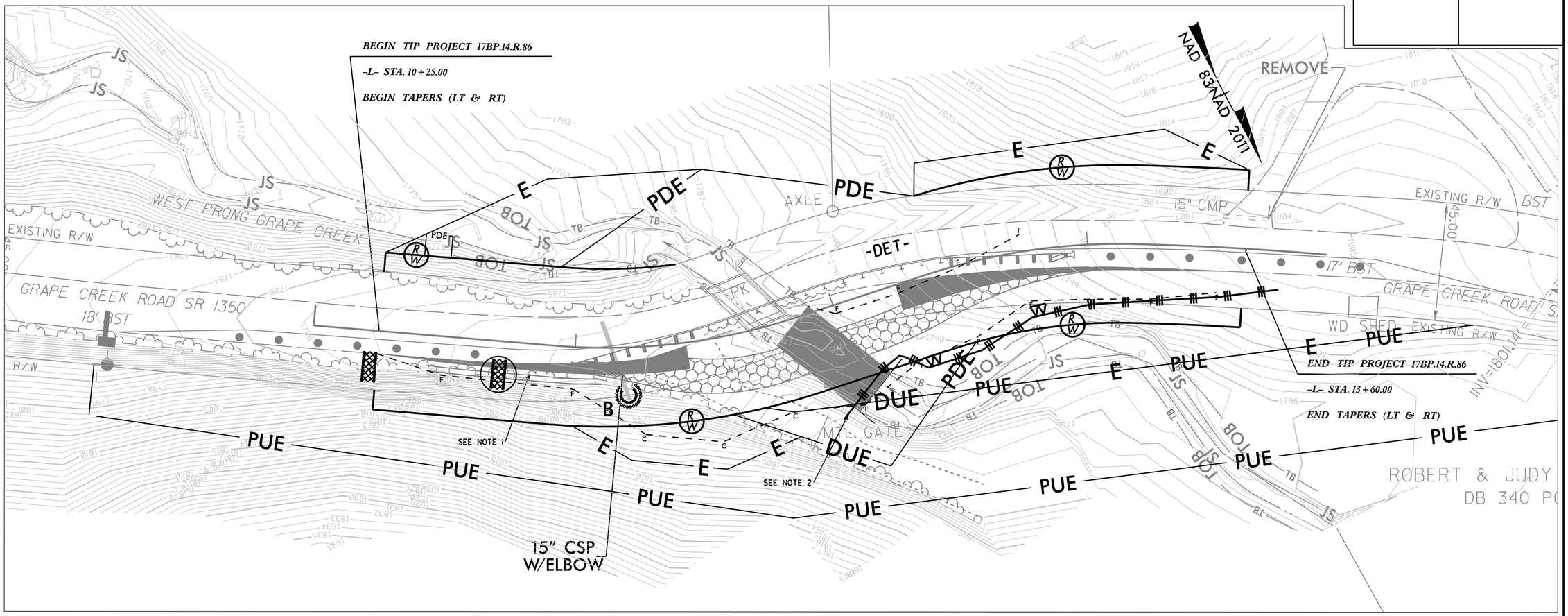
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
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.	SHEET NO.
17BP.14.R.86	EC-4/CONST.4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

EROSION CONTROL PLAN



NOTES:
1. MAINTAN EXISTING DITCH UNTIL CONSTRUCTION OF PHASE 1 IS ALMOST COMPLETE. INSTALL EXPRESSWAY GUTTER AND PIPE AS LAST STEP IN CONSTRUCTION OF PHASE 1.
2. INSTALL SILT FENCE OVER CULVERT AS SOON AS ROADWAY OVER CULVERT FOR PHASE 1 IS COMPLETE.
3. SEE EC–7 FOR CULVERT CONSTRUCTION SEQUENCE.

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET
TMP–4 (PHASE I)

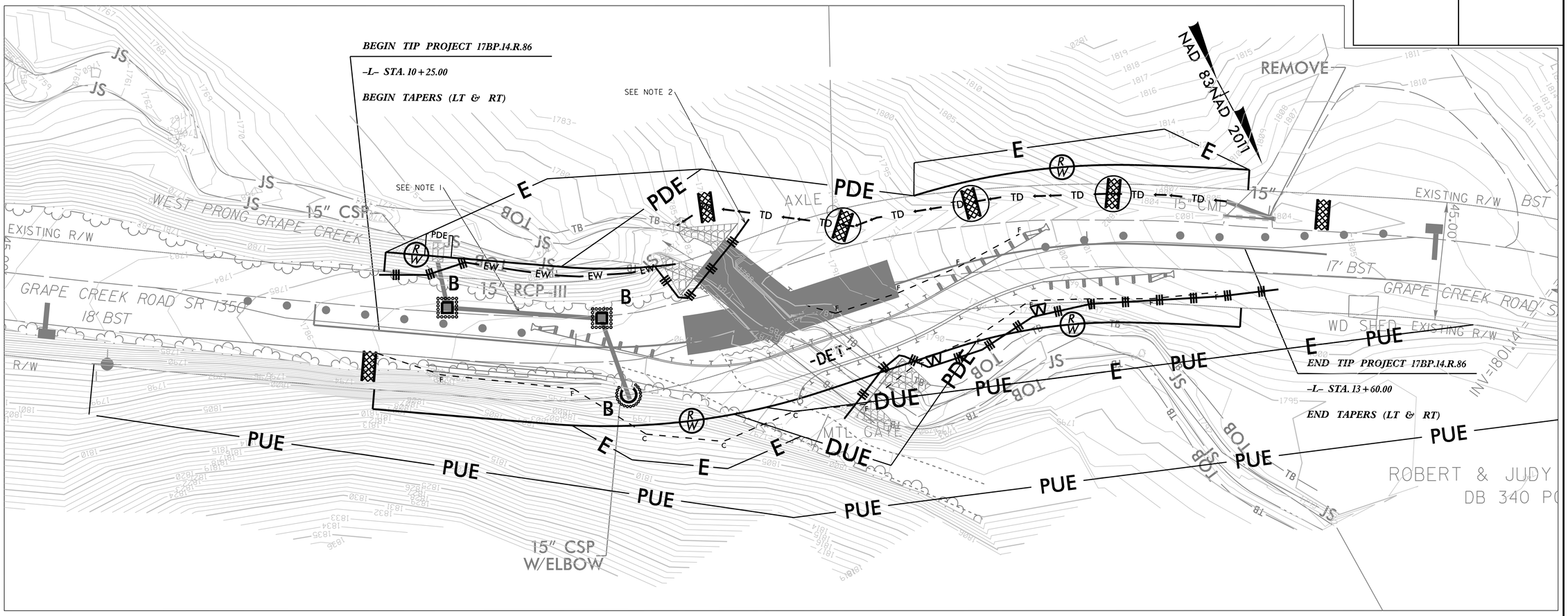
CONTRACTOR SHALL INSTALL AN ONSITE CONCRETE WASHOUT STRUCTURE PER THE NCDOT DETAIL AND SPECIAL PROVISIONS. ACTUAL LOCATION OF THE STRUCTURE SHALL BE DETERMINED IN THE FIELD. CONCRETE WASHOUT STRUCTURE SHALL BE MAINTAINED BY THE CONTRACTOR. ALL CONCRETE TRUCKS SHALL USE THE CONCRETE WASHOUT STRUCTURE. NO WASHOUT OF CONCRETE TRUCKS SHALL BE ALLOWED EXCEPT IN THE CONCRETE WASHOUT STRUCTURE.

TEMPORARY ROCK SILT CHECKS TYPE – A AT DRAINAGE OUTLETS.

BRIDGE REMOVAL AND CULVERT CONSTRUCTION SHALL BE PER REQUIREMENTS IN THE NCDOT BEST MANAGEMENT PRACTICES FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES MANUAL

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.86	EC-5/CONST.4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

EROSION CONTROL PLAN



NOTES:

1. INSTALL INLETS AND PIPING NETWORK AS FIRST STEP IN CONSTRUCTION OF PHASE 2.
2. INSTALL SILT FENCE OVER CULVERT AS SOON AS ROADWAY OVER CULVERT FOR PHASE 2 IS COMPLETE.
3. SEE EC–7 FOR CULVERT CONSTRUCTION SEQUENCE.

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET TMP–5 (PHASE 2)

CONTRACTOR SHALL INSTALL AN ONSITE CONCRETE WASHOUT STRUCTURE PER THE NCDOT DETAIL AND SPECIAL PROVISIONS. ACTUAL LOCATION OF THE STRUCTURE SHALL BE DETERMINED IN THE FIELD. CONCRETE WASHOUT STRUCTURE SHALL BE MAINTAINED BY THE CONTRACTOR. ALL CONCRETE TRUCKS SHALL USE THE CONCRETE WASHOUT STRUCTURE. NO WASHOUT OF CONCRETE TRUCKS SHALL BE ALLOWED EXCEPT IN THE CONCRETE WASHOUT STRUCTURE.

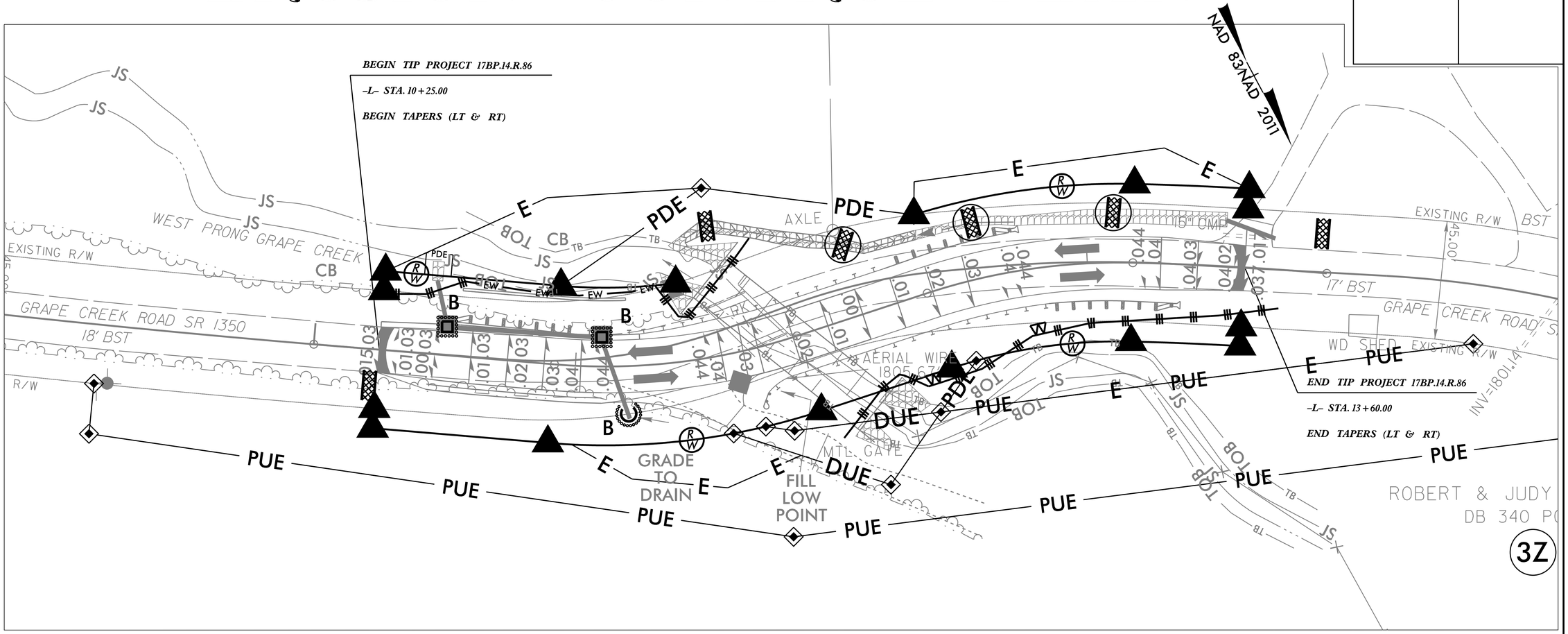
NOTE:
TEMPORARY ROCK SILT CHECKS TYPE – A AT DRAINAGE OUTLETS.

BRIDGE REMOVAL AND CULVERT CONSTRUCTION SHALL BE PER REQUIREMENTS IN THE NCDOT BEST MANAGEMENT PRACTICES FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES MANUAL

INSTALL DRIVEWAY PIPE DURING CLEARING & GRUBBING PHASE

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.86	EC-6/CONST.4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

EROSION CONTROL PLAN



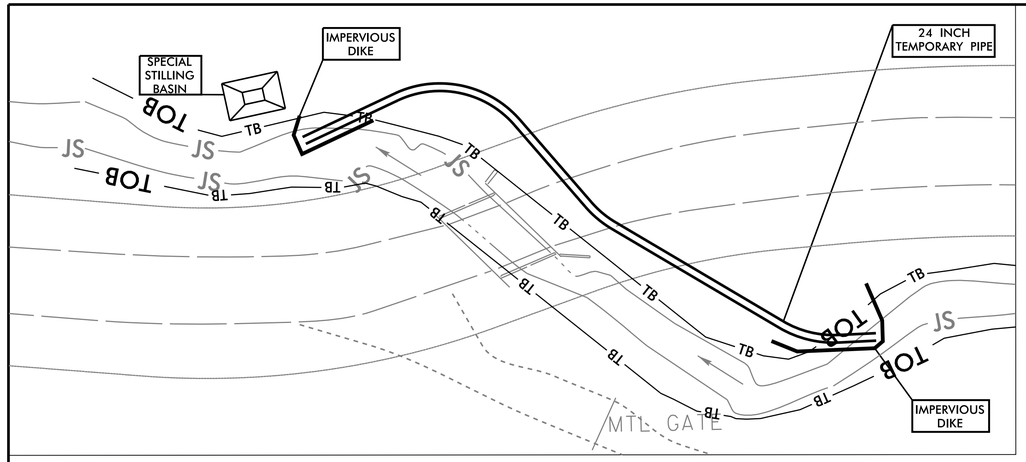
Place Matting for Erosion Control on Slope as Work Allows.
Sta. 12+25 to Sta. 13+25 RT
Sta. 12+25 to Sta. 13+00 LT

INSTALL CLASS B RIPRAP IN THE PROPOSED DITCH LINE.
Sta 11+50 to Sta 13+50 –L– LT

CULVERT CONSTRUCTION SEQUENCE STA. 11+81 –L–

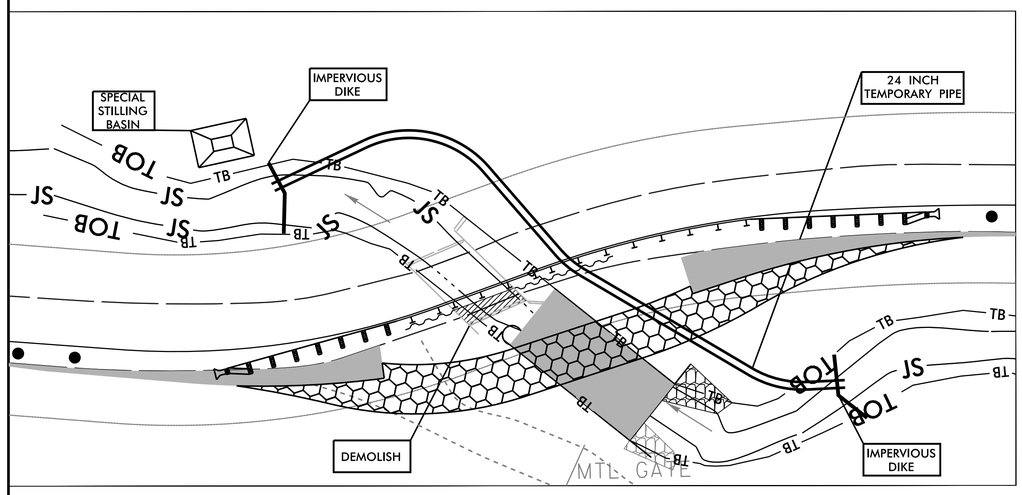
19'x16'-1" ALUMINUM BOX CULVERT -L-

PROJECT REFERENCE NO.	SHEET NO.
17BPJ4.R.86	EC-7/CONST.4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



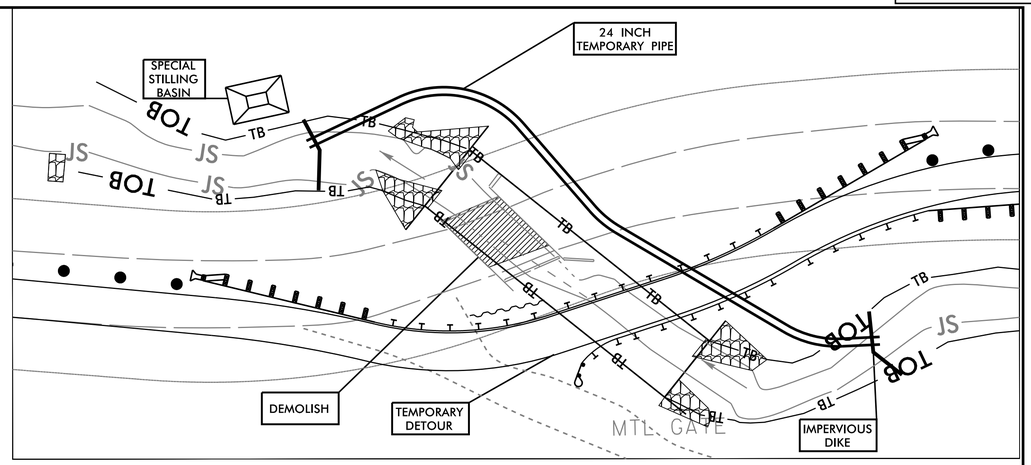
PHASE I

1. CONSTRUCT IMPERIOUS DIKES. DEWATER AREA ENCLOSED INSIDE OF IMPERVIOUS DIKES INTO SPECIAL STILLING BASIN.
2. INSTALL TEMPORARY 24"FLEXIBLE PIPE VIA OPEN CUT ACROSS GRAPE CREEK ROAD AS SHOWN AND BACKFILL. DEWATER AREA AS NECESSARY INTO SPECIAL STILLING BASIN.



PHASE II

1. RELOCATE IMPERVIOUS DIKES TO ALLOW WATER TO FLOW THROUGH TEMPORARY FLEXIBLE PIPE.
2. DEWATER AREA ENCLOSED INSIDE OF IMPERVIOUS DIKES INTO SPECIAL STILLING BASIN.
3. INSTALL TEMPORARY SHORING/BARRIERS AND DIRECT TRAFFIC ONTO SOUTH SIDE OF ROAD OVER EXISTING BRIDGE.
4. REMOVE PORTION OF BRDGE AS SHOWN.
5. INSTALL UPSTREAM PORTION OF CULVERT INCLUDING WINGWALLS, RIP RAP ALONG WINGWALLS AND RETAINING WALL.
6. CONSTRUCT SILL AND BAFFLES IN UPSTREAM CULVERT.
7. BACKFILL INSIDE CULVERT WITH STOCKPILED NATIVE MATERIAL.
8. CONSTRUCT TEMPORARY DETOUR OVER NEWLY CONSTRUCTED CULVERT.



PHASE III

1. INSTALL BARRIERS AND REDIRECT TRAFFIC TO TEMPORARY DETOUR.
2. REMOVE THE REMAINING PORTION OF THE EXISTING BRIDGE.
3. CONSTRUCT SOUTHERN PORTION OF CULVERT INCLUDING WINGWALLS AND RIP RAP ALONG WINGWALLS.
4. CONSTRUCT SILL AND BAFFLES IN CULVERT. BACKFILL INSIDE CULVERT WITH STOCKPILED NATIVE MATERIAL.
5. REMOVE IMPERVIOUS DIKES, SPECIAL STILLING BASIN AND PORTION OF 24" TEMPORARY PIPE THAT IS NOT UNDER TEMPORARY DETOUR ROADWAY.
6. REMOVE TEMPORARY SHORING. FINISH ROADWAY WORK. REMOVE TEMPORARY DETOUR AND REMAINING 24" TEMPORARY FLEXIBLE PIPE.
7. OPEN NEW ROAD TO TRAFFIC.

GRAPHIC SCALE

0 20

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.86	U0-1
R/W SHEET NO.	

REVISIONS

8/17/99

PI Sta 11+39.42
△ = 22° 55' 57.5" (LT)
D = 24° 30' 00.0"
L = 93.60'
T = 47.44'
R = 233.86'
DS = 20 MPH
e = 0.044
Lr = 60'

PI Sta 12+77.97
△ = 19° 29' 16.3" (RT)
D = 24° 30' 00.0"
L = 79.54'
T = 40.16'
R = 233.86'
DS = 20 MPH
e = 0.044
Lr = 60'

PI Sta 13+54.36
△ = 3° 34' 40.7" (RT)
D = 4° 50' 08.5"
L = 73.99'
T = 37.01'
R = 1,184.85'
DS = MATCH EXISTING
e = MATCH EXISTING
Lr = 60'

DANNY & LENA BURNETT
DB 1356 PG 70
1Z

JERRY O. & BARBARA G. GRAVES
DB 736 PG 182
2

EIP

NAD 83

10+00

N 80° 15' 09.0" W

EXISTING LINE TO BE REMOVED

EXIS LINE TO REMAIN

EXISTING R/W

WEST PRONG GRAPE CREEK

GRAPE CREEK ROAD SR 1350

18' BST

17' BST

EXISTING R/W

EXIST.LINE TO REMAIN

AXLE

WD SHED

EXISTING R/W

INV.1805.28'

15" RCP-IV

15" RCP-III

15" RCP-III

264'

319'

N 57° 19' 11.5" W

EXISTING POLE TO REMAIN

TB-2GI

TB-2GI

PROPOSED OVERHEAD POWER/TELEPHONE LINE

PROPOSED POLE

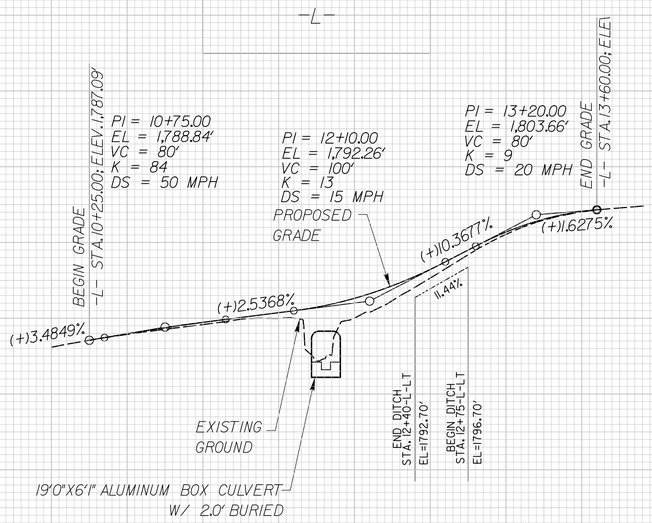
EXISTING LINE TO BE REMOVED

DANNY & LENA BURNETT
DB 1347 PG 214

ROBERT & JUDY ANN GRIGGS
DB 340 PG 133
3Z

PI Sta 10+13.63
△ = 48° 52' 53.4" (LT)
D = 190° 59' 09.4"
L = 25.59'
T = 13.63'
R = 30.00'

PI Sta 10+61.67
△ = 5° 00' 25.2" (LT)
D = 6° 56' 41.8"
L = 72.10'
T = 36.07'
R = 825.00'



BM #2: "8 INCH SPIKE SET IN BASE OF TRIPLE MAPLE TREE" 32' LEFT OF -L- STA. 11+40.36 ELEV: 1788.41'

1,810 1,800 1,790 1,780 1,770 1,760 1,750

10+00 11+00 12+00 13+00

10/14/2016
R:\17BP.14.R.86_190226\Utilities\R_B6_UTIL_PSH.dgn
USER:84467