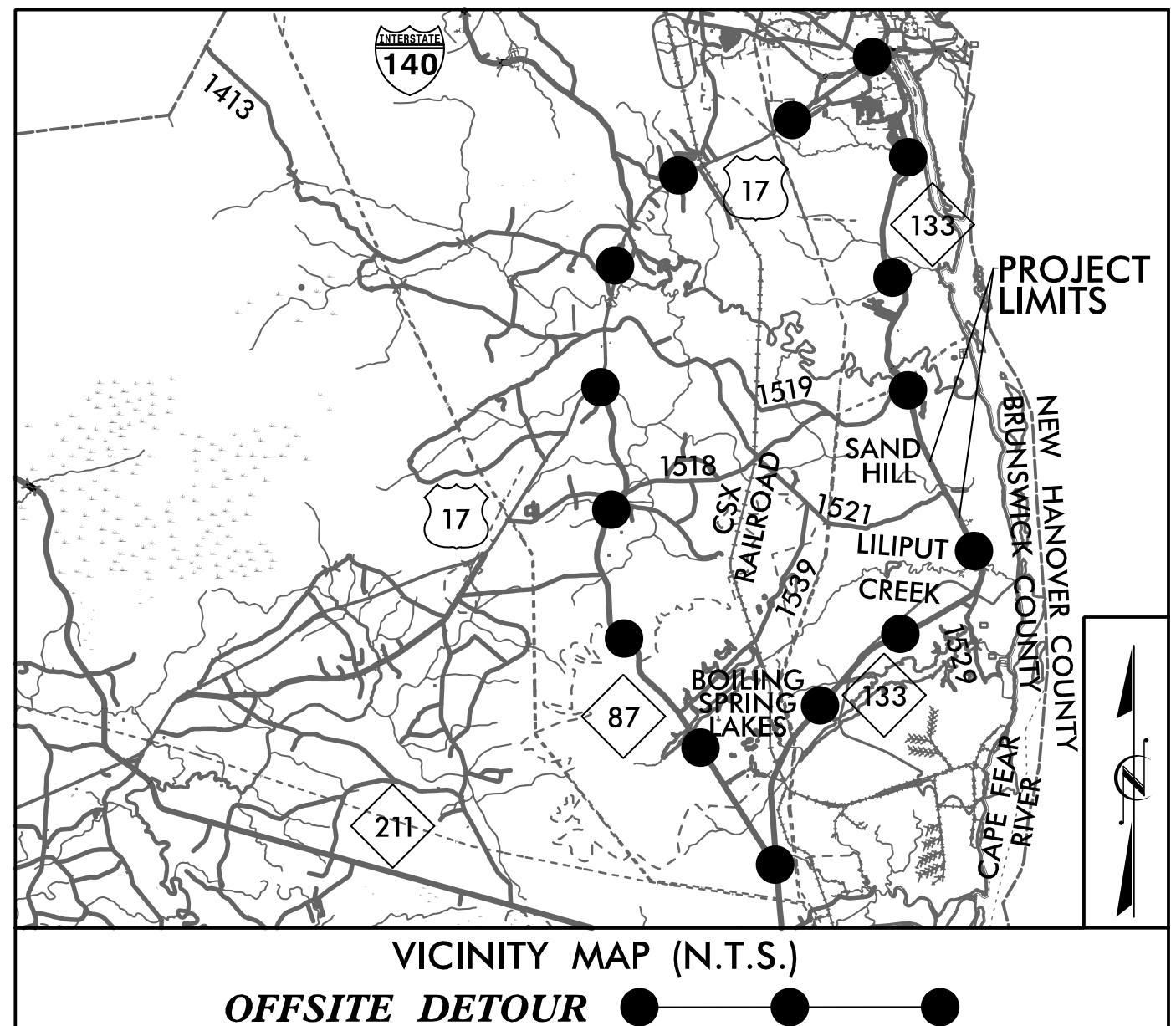


09/08/24

TIP PROJECT: BR-0139

CONTRACT: C204914

See Sheet 1A For Index of Sheets
See Sheet 1B For Standard Symbology Sheet



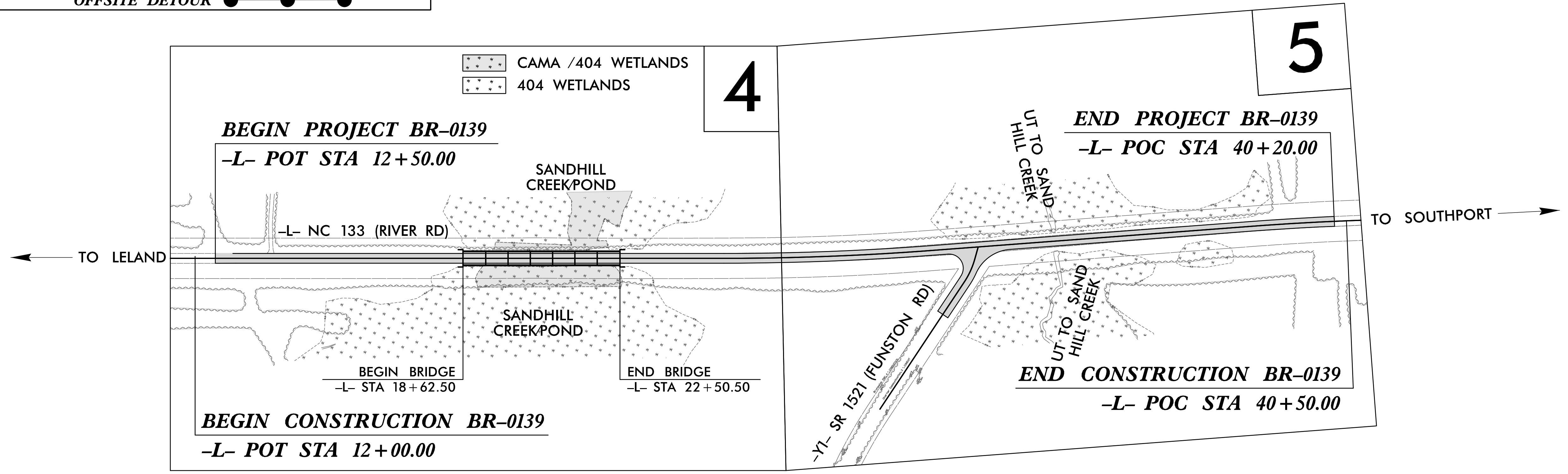
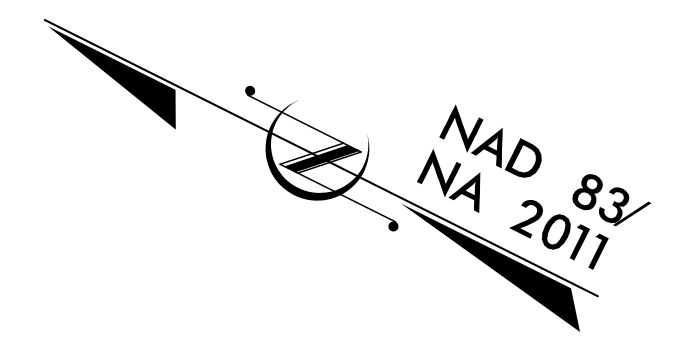
STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

BRUNSWICK COUNTY

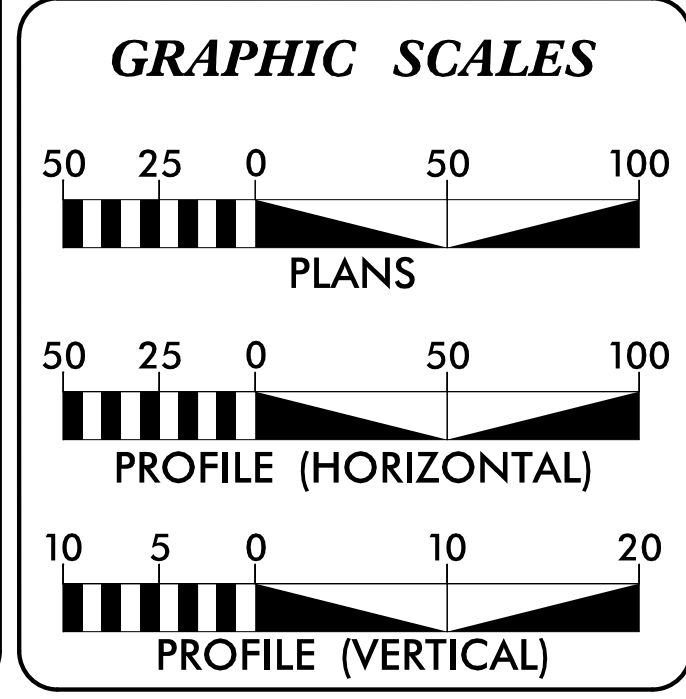
**LOCATION: REPLACE BRIDGE OVER SAND HILL CREEK
ON NC 133 (RIVER RD)**

TYPE OF WORK: DRAINAGE, GRADING, PAVING, AND STRUCTURES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0139	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
67139.1.1		PE	
67139.2.1		ROW	
67139.2.2		UTILITY	
67139.3.1		CONSTRUCTION	



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2024 =	7,300
ADT 2044 =	13,200
K =	10 %
D =	55 %
T =	8 % *
V =	60 MPH
* TTST =	2% DUAL = 6%
FUNC CLASS =	MINOR ARTERIAL
REGIONAL TIER	

PROJECT LENGTH

LENGTH OF ROADWAY T.I.P. PROJECT BR-0139 =	0.452 MI
LENGTH OF STRUCTURES T.I.P. PROJECT BR-0139 =	0.073 MI
TOTAL LENGTH OF T.I.P. PROJECT BR-0139 =	0.525 MI

Prepared In the Office of:

HNTB HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

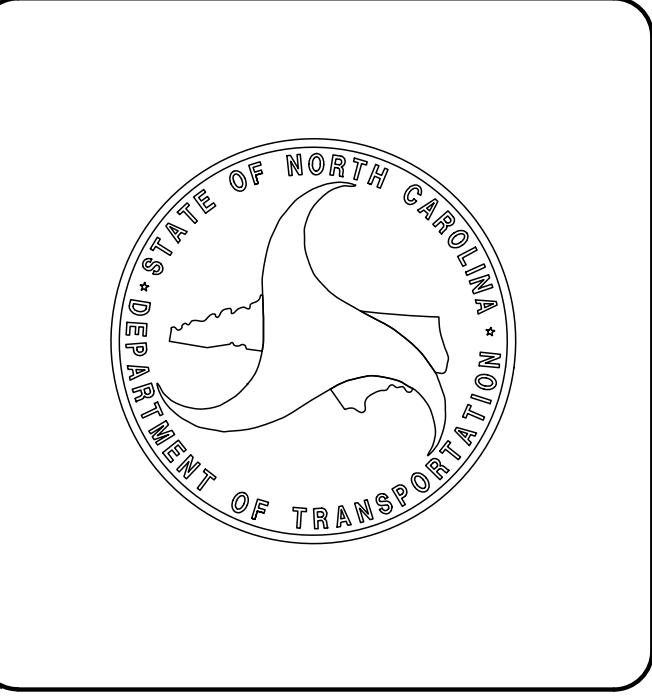
2024 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE: APRIL 27, 2023	BRIAN P. BLACKWELL, PE PROJECT ENGINEER
LETTING DATE: SEPTEMBER 17, 2024	DEREK PIELECH, PE NCDOT CONTACT

HYDRAULICS ENGINEER

DocuSigned by:
Paul Cameron
E8B53826C0F4AC...
6/26/2024

ROADWAY DESIGN ENGINEER

DocuSigned by:
Brian Blackwell
0C4D73BE1E8487...
6/26/2024



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HNTB

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

Note: Not to Scale

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	(123)
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	-----WLB-----
Proposed Wetland Boundary	-----WLB-----
Existing Endangered Animal Boundary	-----EAB-----
Existing Endangered Plant Boundary	-----EPB-----
Existing Historic Property Boundary	-----HPB-----
Known Contamination Area: Soil	-----S-----
Potential Contamination Area: Soil	-----S-----
Known Contamination Area: Water	-----W-----
Potential Contamination Area: Water	-----W-----
Contaminated Site: Known or Potential	☠ ?

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	⊙
Well	⊙
Small Mine	×
Foundation	▭
Area Outline	▭
Cemetery	⊕
Building	▭
School	▭
Church	⊕
Dam	▭

HYDROLOGY:

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

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○
Switch	⊕
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY & 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:

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	-----

Woods Line	-----
Orchard	-----
Vineyard	-----

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	-----
Bridge Wing Wall, Head Wall and End Wall	-----
MINOR:	
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)

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:

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:

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:

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:

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)*	-----

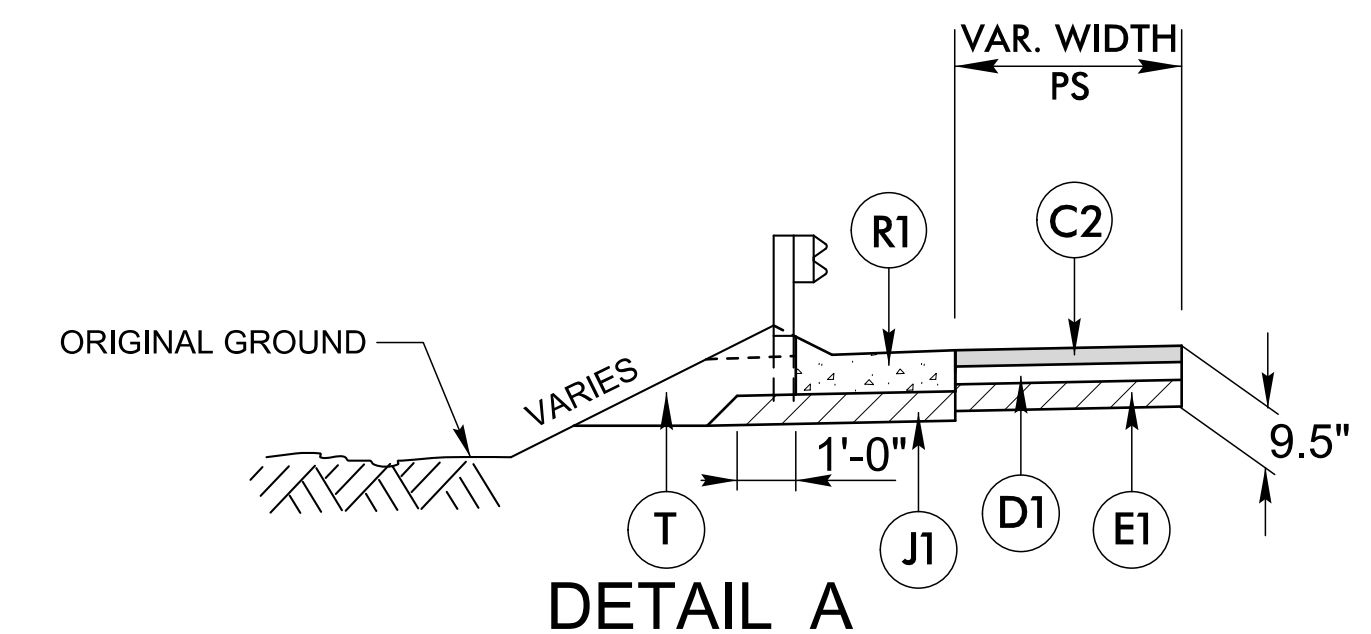
MISCELLANEOUS:

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	AATUR
End of Information	E.O.I.

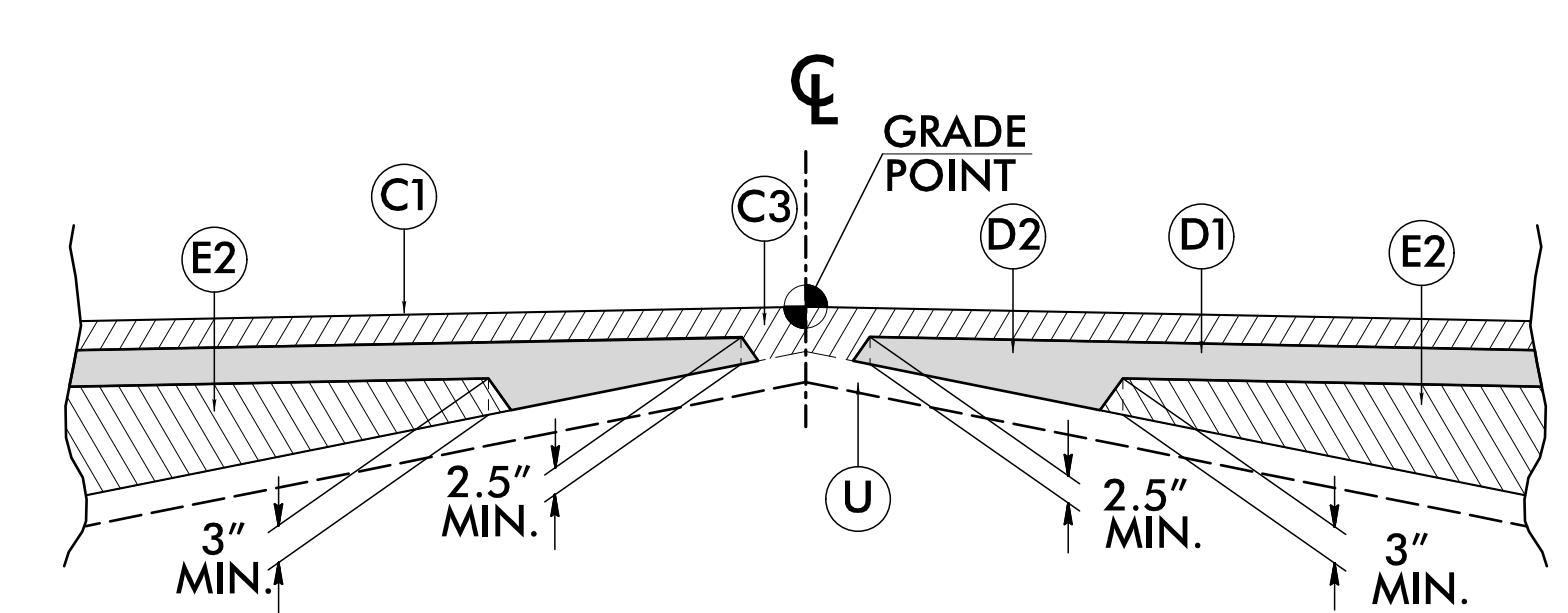
6/22/24

FINAL PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. PLACED IN TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER INCH DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1" IN DEPTH OR GREATER THAN 1.5" IN DEPTH.
D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER INCH DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2.5" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 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 INCH DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.
J1	6" AGGREGATE BASE COURSE.
R1	SHOULDER BERM GUTTER.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	INCIDENTAL MILLING.
W	VARIABLE DEPTH ASPHALT PAVEMENT. (SEE DETAIL SHOWING METHOD OF WEDGING No. 1. THIS SHEET)

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



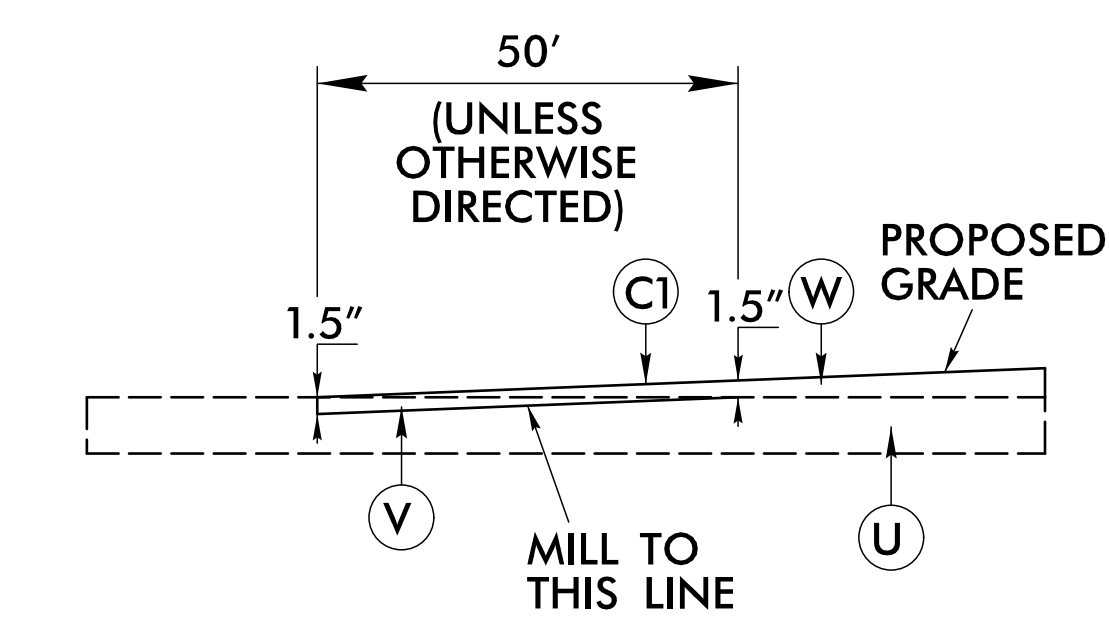
DETAIL A
SHOULDER BERM GUTTER LOCATIONS
-L- STA 22+74.38 LT/RT TO STA 23+80.00 LT/RT



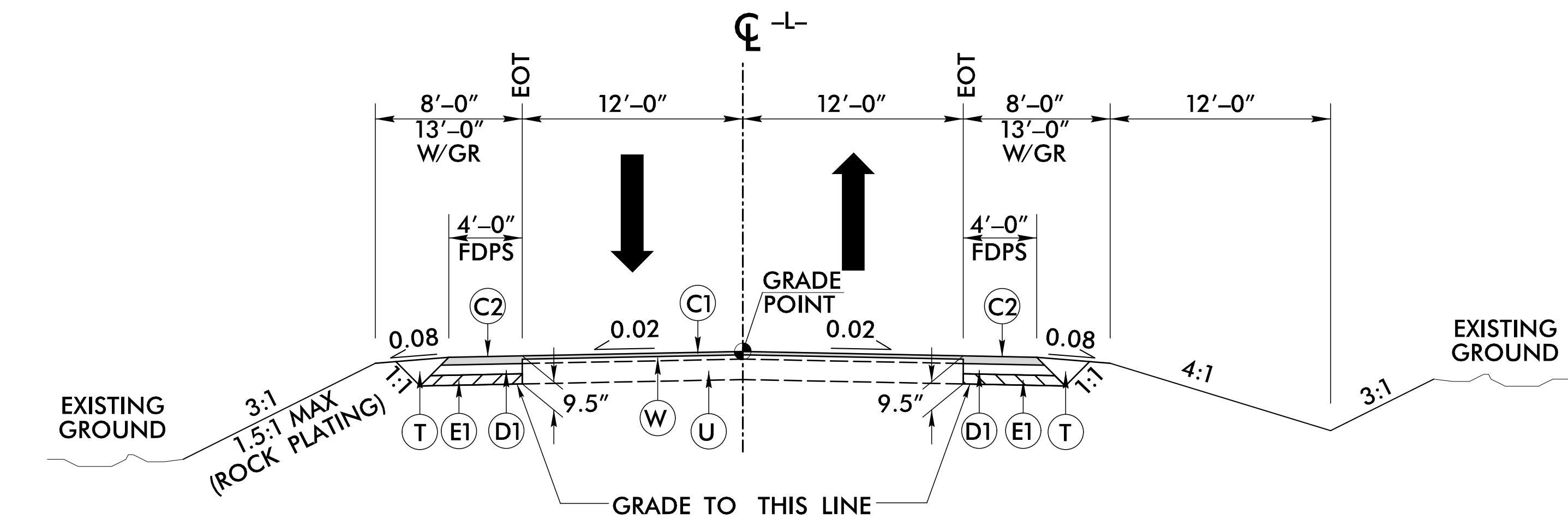
Detail Showing Method of Wedging No. 1

HNTB HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO. BR-0139	SHEET NO. 2A-1
ROADWAY DESIGN ENGINEER SEAL 043122 BLACKWELL	PAVEMENT DESIGN ENGINEER SEAL 044590 BLACKWELL
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

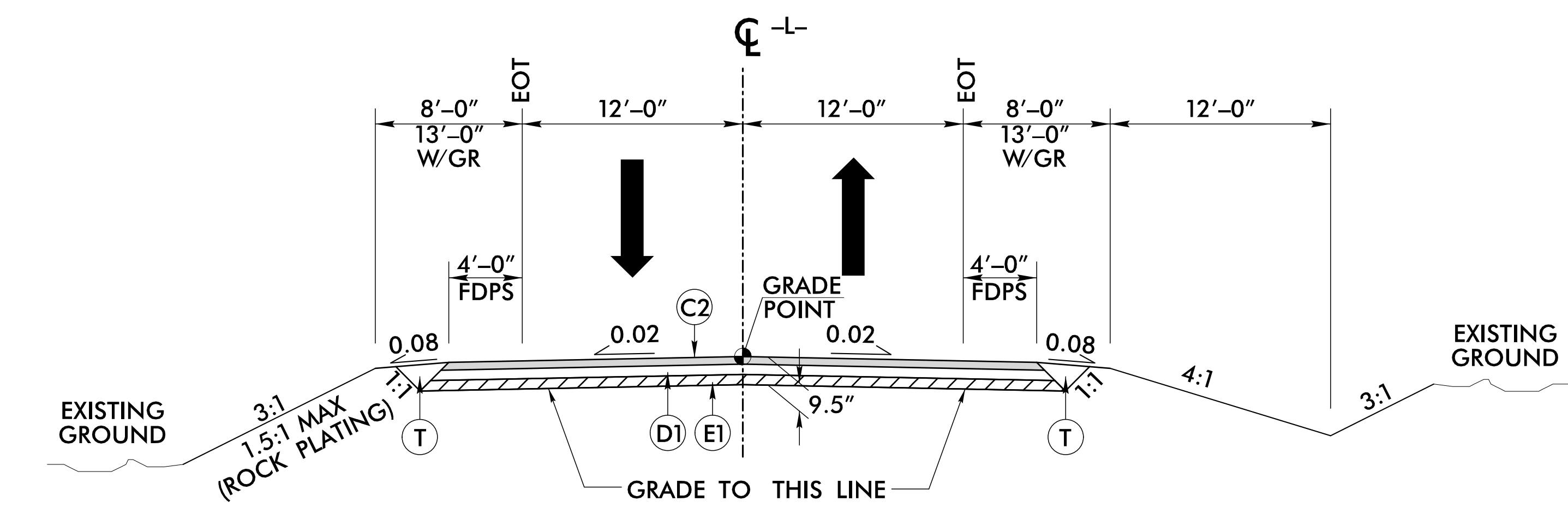


DETAIL FOR INCIDENTAL MILLING



TYPICAL SECTION NO. 1
-L- NC 133 (RIVER RD)

USE TYPICAL SECTION NO. 1
-L- STA 12+50.00 TO STA 14+20.00
-L- STA 38+25.00 TO STA 40+20.00



TYPICAL SECTION NO. 2
-L- NC 133 (RIVER RD)

USE TYPICAL SECTION NO. 2
-L- STA 14+20.00 TO STA 18+62.50 (BEGIN BRIDGE)
-L- STA 22+50.50 (END BRIDGE) TO STA 38+25.00

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 HNTB

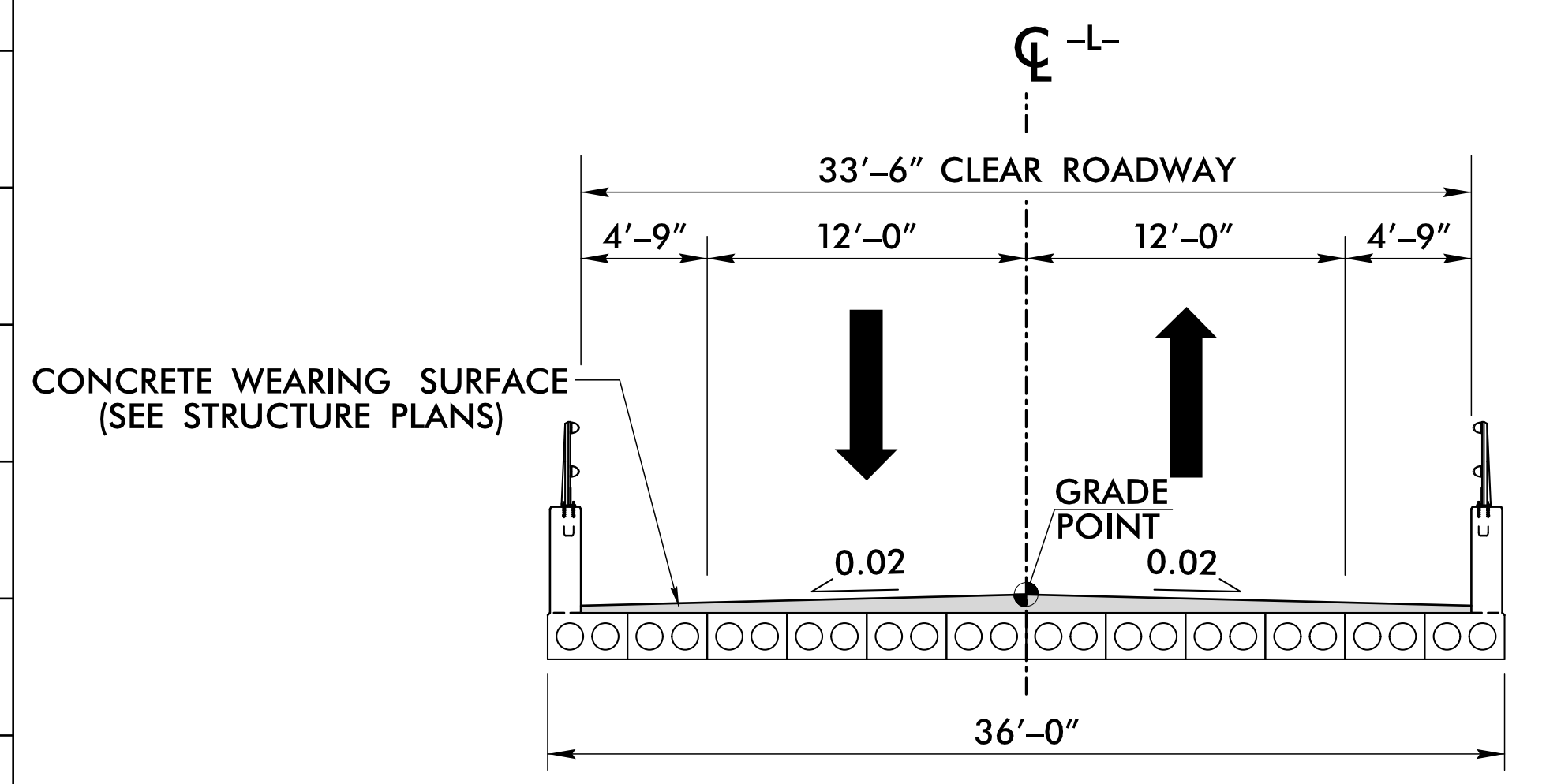
6/22/24

FINAL PAVEMENT SCHEDULE	
C1	PROP. 1.5" ACSC TYPE S9.5B.
C2	PROP. 3" ACSC, TYPE S9.5B.
C3	PROP. VAR. DEPTH ACSC, TYPE S9.5B.
D1	PROP. 2.5" ACIC, TYPE I19.0C.
D2	PROP. VAR. DEPTH ACIC, TYPE I19.0C.
E1	PROP. 4" ACBC, TYPE B25.0C.
E2	PROP. VAR. DEPTH ACBC, TYPE B25.0C.
J1	6" AGGREGATE BASE COURSE.
R1	SHOULDER BERM GUTTER.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	INCIDENTAL MILLING.
W	VARIABLE DEPTH ASPHALT PAVEMENT. (SEE DETAIL SHOWING METHOD OF WEDGING No. 1. SHEET 2A-1)

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

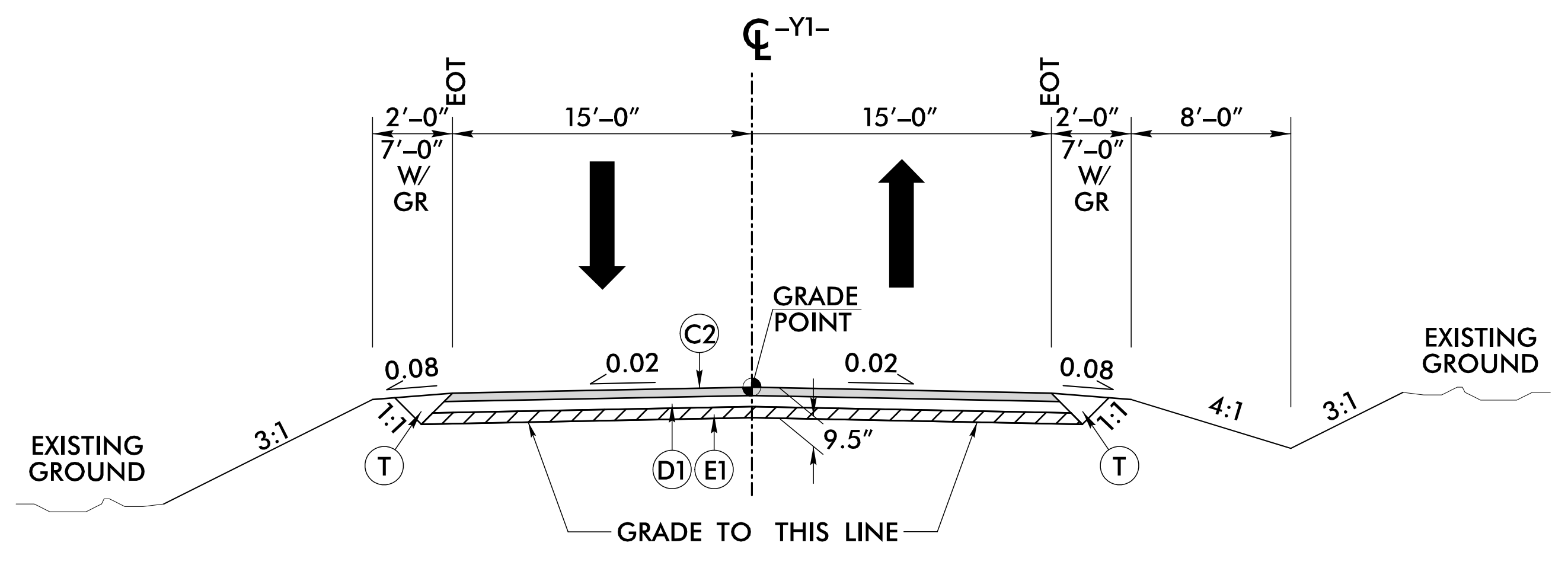
HNTB HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO. BR-0139	SHEET NO. 2A-2
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



TYPICAL SECTION NO. 3
-L- NC 133 (RIVER RD)

USE TYPICAL SECTION NO. 3
-L- 18+62.50 (BEGIN BRIDGE) TO -L- STA 22+50.50 (END BRIDGE)



TYPICAL SECTION NO. 4
-Y1- SR 1521 (FUNSTON RD)

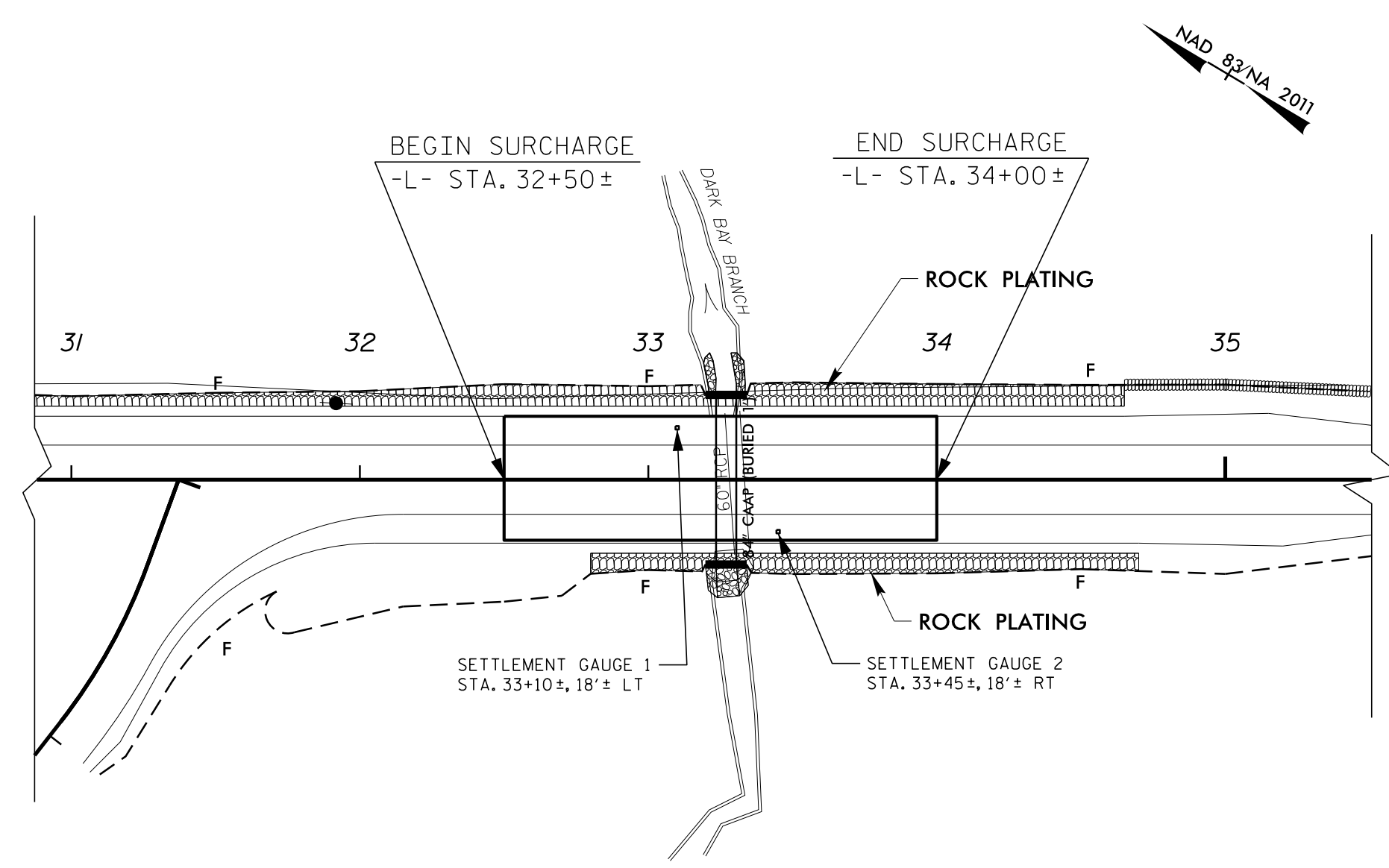
USE TYPICAL SECTION NO. 4
-Y1- STA 10+53.20 TO STA 11+90.00

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HNTB



Designed by: *J. Park* 03/13/2023
 DATE DATE SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PLAN VIEW FOR SURCHARGE

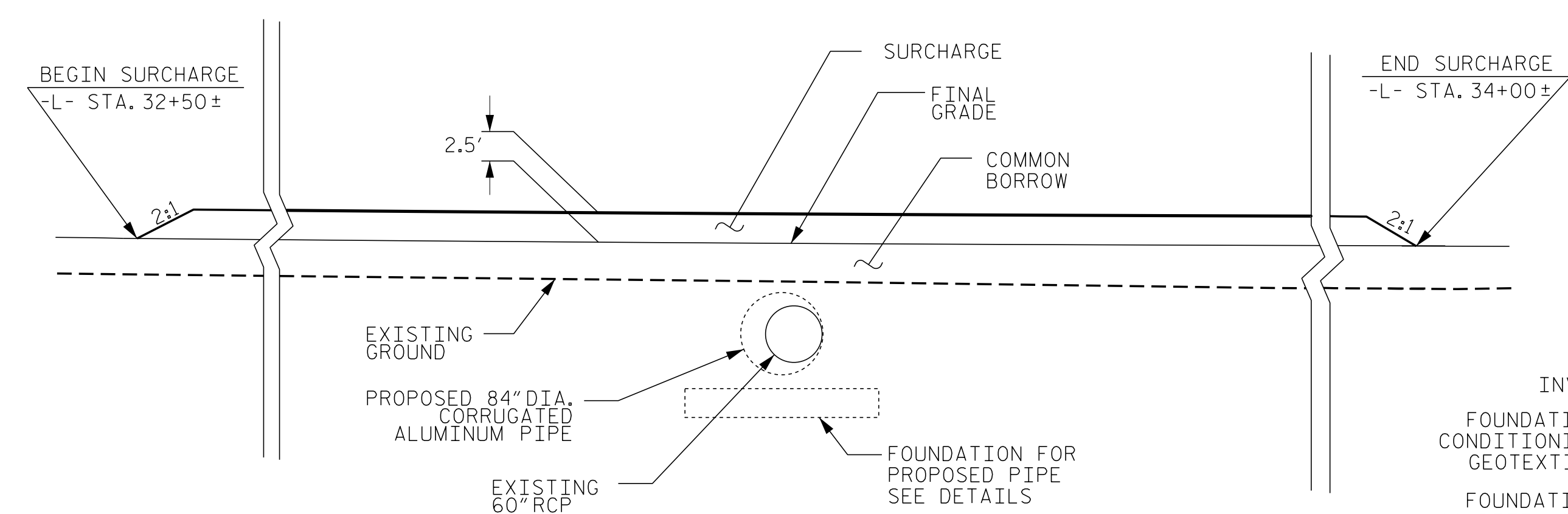
NOT TO SCALE

ESTIMATED QUANTITIES FOR SURCHARGE

BORROW EXCAVATION	700 CY
UNCLASSIFIED EXCAVATION	1,250 CY

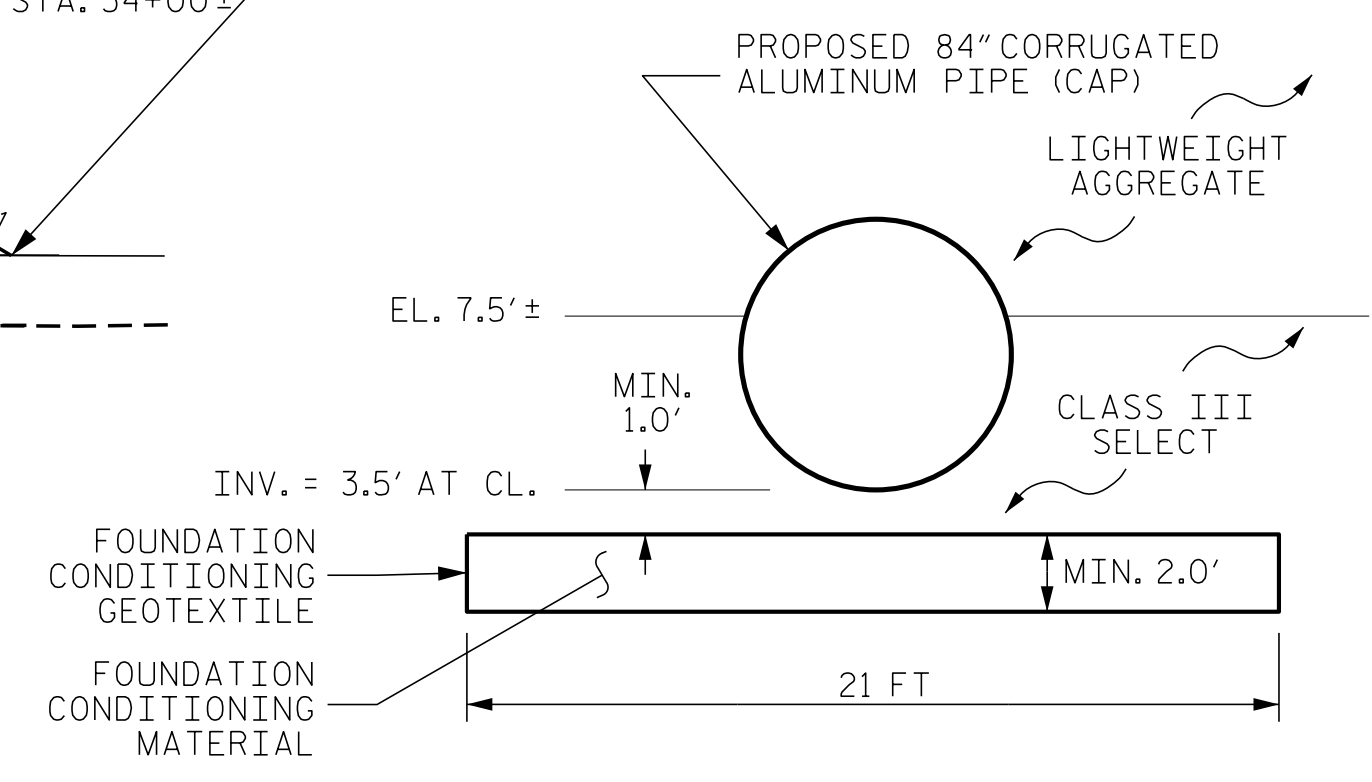
NOTES

- CONSTRUCT 2.5 FT OF SURCHARGE WITH COMMON BORROW FROM -L- STA. 32+75± TO -L- STA. 34+25±.
- OBSERVE A THREE MONTH WAITING PERIOD AFTER CONSTRUCTING THE SURCHARGE.
- SETTLEMENT GAUGES SHALL BE INSTALLED ON THE EXISTING GROUND OR AS DIRECTED BY THE ENGINEER.
- FOR THE SURCHARGE AND SETTLEMENT GAUGES, SEE SECTION 235 OF THE STANDARD SPECIFICATIONS AND ROADWAY STANDARD DRAWING NO. 235.01.
- BORROW EXCAVATION INCLUDES SURCHARGE AND ADDITIONAL MATERIAL FOR MAINTAINING SURCHARGE ELEVATION.
- UNCLASSIFIED EXCAVATION INCLUDES REMOVING SURCHARGE, ADDITIONAL MATERIAL FOR MAINTAINING EMBANKMENT GRADE ELEVATIONS AND EXCAVATION FOR INSTALLING LIGHTWEIGHT AGGREGATE.
- FOR PIPE INSTALLATION, SEE SECTION 300 OF THE STANDARD SPECIFICATIONS.



PROFILE VIEW NEAR PIPES

NOT TO SCALE

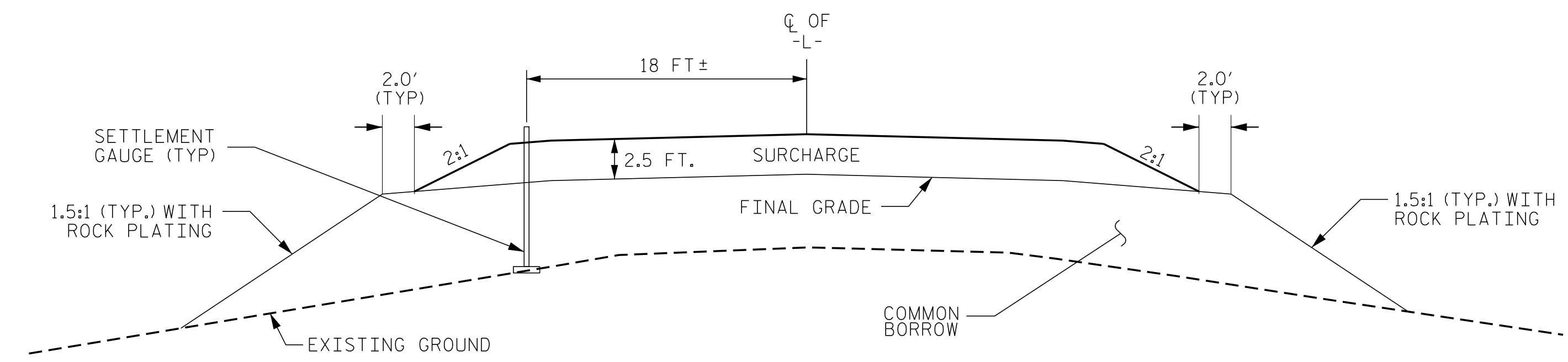


PIPE FOUNDATION DETAILS

NOT TO SCALE

CONSTRUCTION SEQUENCES

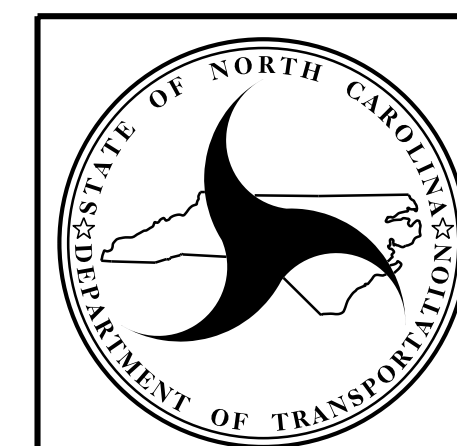
- CONSTRUCT THE EMBANKMENT ON THE EXISTING GROUND.
- PLACE SURCHARGE AS SHOWN ON PLANS.
- MONITOR EMBANKMENT DURING SURCHARGE WAITING PERIOD.
- EXCAVATE THE SURCHARGE AND EMBANKMENT AS NEEDED TO INSTALL THE PIPE FOUNDATION AND 84" CAP.
- INSTALL THE PIPE FOUNDATION AND 84" CAP.
- BACKFILL WITH SELECT MATERIAL BEFORE PLACING THE GEOTEXTILE FOR SOIL STABILIZATION. SEE 2G-2 SHEET.
- CONSTRUCT THE EMBANKMENT WITH LIGHTWEIGHT AGGREGATE. SEE 2G-2 SHEET.



TYPICAL SECTION FOR SURCHARGE

NOT TO SCALE

PREPARED BY: J. PARK DATE: 02/2023
 REVIEWED BY: J. BATTS DATE: 02/2023



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

EMBANKMENT WITH SURCHARGE DETAILS

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1	J. PARK	2/13/23	3		
2	J. PARK	3/13/23	4		

GEOTECHNICAL ENGINEER

ENGINEER



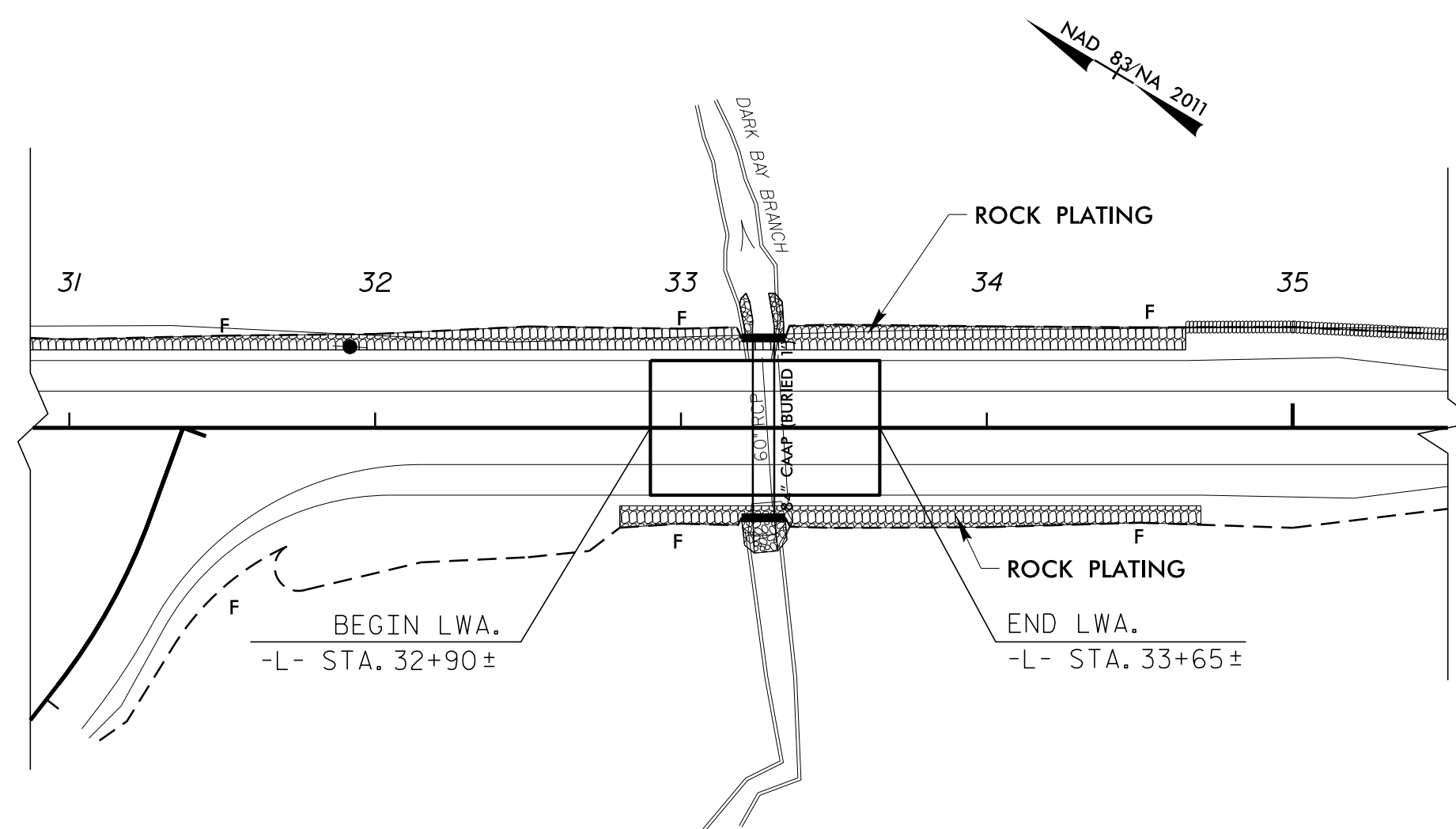
Designed by: *Jinyoung Park*

03/13/2023

DATE

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

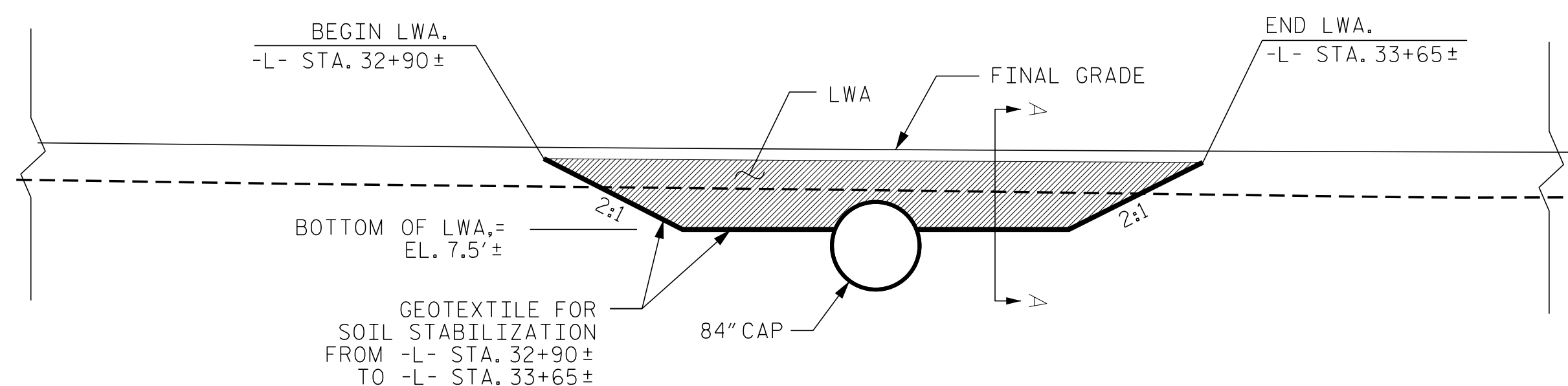


PLAN VIEW FOR LWA.

NOT TO SCALE

ESTIMATED QUANTITIES	
LIGHTWEIGHT AGGREGATE	440 TONS*
GEOTEXTILE FOR SOIL STABILIZATION	400 SY

* ESTIMATED QUANTITY IS BASED ON 60 PCF FOR THE UNIT WEIGHT OF LIGHTWEIGHT AGGREGATE

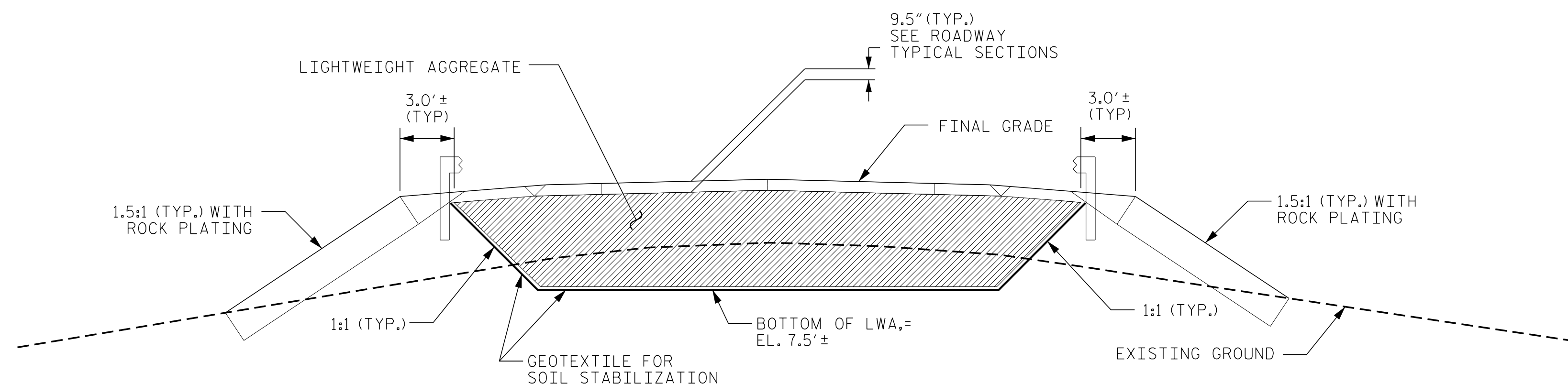


PROFILE VIEW FOR LWA.

NOT TO SCALE

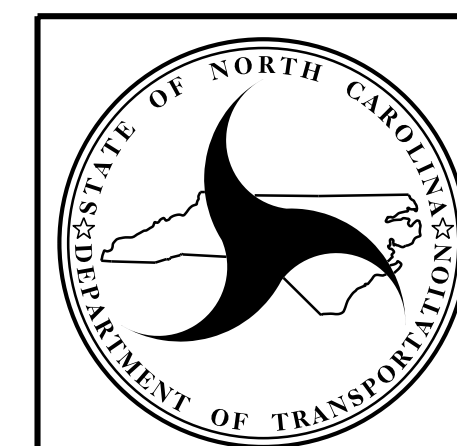
NOTES

- FOR LIGHTWEIGHT AGGREGATE (LWA.), SEE LIGHTWEIGHT AGGREGATE SPECIAL PROVISION.
- PLACE GEOTEXTILE FOR SOIL STABILIZATION AS NEEDED TO SEPARATE THE LIGHTWEIGHT AGGREGATE FROM BACKFILL MATERIAL FOR PIPE.
- PLACE LIGHTWEIGHT AGGREGATE AS SHOWN ON PLAN.



TYPICAL SECTION, A-A

NOT TO SCALE



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

EMBANKMENT WITH LIGHTWEIGHT AGGREGATE DETAILS

REVISIONS

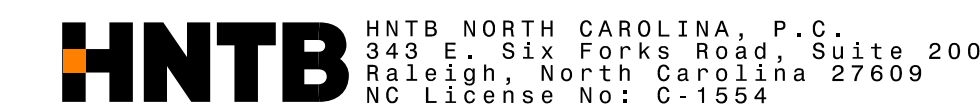
NO.	BY	DATE	NO.	BY	DATE
1	JINYOUNG PARK	3/13/23	3		
2			4		

PREPARED BY: J. PARK	DATE: 02/2023
REVIEWED BY: J. BATTS	DATE: 02/2023

12/06/07

COMPUTED BY: ZRB DATE: 10/20/2022
CHECKED BY: TAR DATE: 10/20/2022

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS



PROJECT REFERENCE NO. SHEET NO.
BR-0139 3B-1

SUMMARY OF EARTHWORK
IN CUBIC YARDS

Table with columns: STATION, UNCL. EXCAV., EMBANK. +%, BORROW, WASTE. Rows include station ranges like -L- STA 12+50.00 and project totals.

UNDERCUT EXCAVATION PER GEOTECH RECS (CONTINGENCY): 400 CY
SELECT GRANULAR MATERIAL, CLASS III PER GEOTECH RECS (CONTINGENCY): 400 CY

Note: Approximate quantities only. Unclassified Excavation, Borrow Excavation, Fine Grading, Removal of Existing Asphalt Pavement, Breaking of Existing Asphalt Pavement, and Clearing and Grubbing, will be paid for at the contract lump sum price for "Grading."

Earthwork quantities are calculated by the roadway designer. These quantities are based in part on subsurface data provided by the geotechnical engineer.

PAVEMENT REMOVAL SUMMARY
IN SQUARE YARDS

Table with columns: SURVEY LINE, STATION, LOCATION LT/RT/CL, YD. Rows show removal at stations 14+20.00 and 31+75.00.

BREAKING OF EXISTING
PAVEMENT SUMMARY
IN SQUARE YARDS

Table with columns: SURVEY LINE, STATION, LOCATION LT/RT/CL, YD. Rows show breaking at stations 31+75.00 and 37+25.00.

SHOULDER BERM
GUTTER SUMMARY
IN LINEAR FEET

Table with columns: SURVEY LINE, STATION, LENGTH (FT). Rows show gutter lengths for LT and RT lanes.

GUARDRAIL SUMMARY IN LINEAR FEET

"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 TL-3
NG = NON-GATING IMPACT ATTENUATOR TL-3

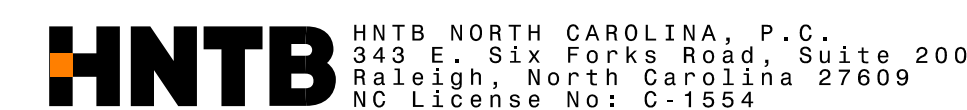
Large table with columns: SURVEY LINE, BEG. STA., END STA., LOCATION, LENGTH (STRAIGHT, SHOP CURVED, DOUBLE FACED), WARRANT POINT (APPROACH END, TRAILING END), "N" DIST. FROM E.O.L., TOTAL SHOUL. WIDTH, FLARE LENGTH (APPROACH END, TRAILING END), W (APPROACH END, TRAILING END), ANCHORS (XI MOD, TYPE III, GREU TL-3, GREU TL-2, XIII, CAT-1, VI MOD, BIC, AT-1), IMPACT ATTENUATOR TYPE 350 (EA, G, NG), SINGLE FACED GUARDRAIL, REMOVE EXISTING GUARDRAIL, REMOVE AND STOCKPILE EXISTING GUARDRAIL, REMARKS.

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HNTB

12/06/07

COMPUTED BY: IAR DATE: 5/21/2024
CHECKED BY: RHH DATE: 5/21/2024

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS



PROJECT REFERENCE NO. BR-0139
SHEET NO. 3D-1

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

Table with columns: STATION, LOCATION, STRUCTURE NO., TOP ELEVATION, INVERT ELEVATION, DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, OR PVC), R.C. PIPE CLASS IV, R.C. PIPE CLASS V, ENDWALLS, QUANTITIES FOR DRAINAGE STRUCTURES, FRAME, GRATES AND HOOD STANDARD 840.03, TYPE OF GRATE, CORR. STEEL ELBOWS NO. & SIZE, CONC. COLLARS CL. "B" C.Y. STD. 840.72, CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71, PIPE REMOVAL LIN.FT., ABBREVIATIONS, REMARKS.

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 54" & OVER)

Table with columns: STATION, LOCATION, STRUCTURE NO., TOP ELEVATION, INVERT ELEVATION, SLOPE CRITICAL, CAAP, BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE), CLASS IV R.C. PIPE OR C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D, ENDWALLS, QUANTITIES FOR DRAINAGE STRUCTURES, FRAME, GRATES AND HOOD STANDARD 840.03, TYPE OF GRATE, CORR. STEEL ELBOWS NO. & SIZE, CONC. COLLARS CL. "B" C.Y. STD. 840.72, CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71, PIPE REMOVAL LIN.FT., ABBREVIATIONS, REMARKS.

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HNTB

COMPUTED BY: Tyler C. Bottoms DATE: 9/27/22
 CHECKED BY: Jinyoung Park DATE: 2/2/23
 REVISED BY: Jinyoung Park DATE: 6/11/2024

PROJECT NO.	SHEET NO.
BR-0139	3G-1

(2-3-23)
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				SD	1000
				TOTAL LF:	1000

*UD = Underdrain
 *BD = Blind Drain
 *SD = Subsurface Drain

SUMMARY OF ROCK PLATING

LINE	Beginning Slope (H:V)	Approx. Station	Ending Slope (H:V)	Approx. Station	Location LT/RT	Rock Plating Detail No. 1/2/3/4	Riprap Class* 1/2/B	Rock Plating SY
-L-	2.5:1	17+25±	1.5:1	18+55±	RT	1	-	200
-L-	2.5:1	18+15±	1.5:1	18+55±	LT	1	-	65
-L-	1.5:1	22+58±	2.5:1	23+35±	LT	1	-	95
-L-	1.5:1	22+58±	2.5:1	23+35±	RT	1	-	95
-L-	2.5:1	30+50±	2.5:1	34+85±	LT	1	-	375
-L-	2.5:1	32+65±	2.5:1	34+85±	RT	1	-	190
TOTAL SY:								1020

*Use Class 1, 2 or B riprap if riprap class is not shown for rock plating location.

SUMMARY OF SETTLEMENT GAUGES

Gauge No.	LINE and Station	Offset	
		Distance FT	Direction LT/RT
1	-L- 33+10±	18	LT
2	-L- 33+45±	18	RT
TOTAL GAUGES (EACH):			2

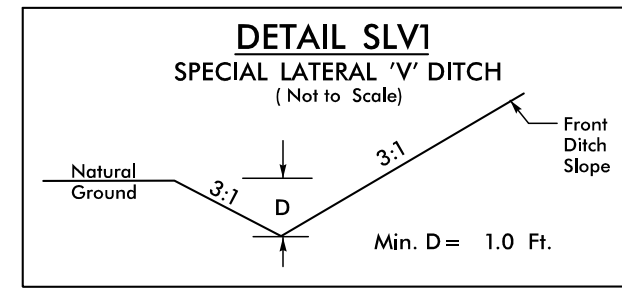
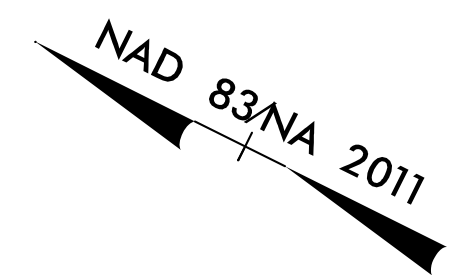
**SUMMARY OF SURCHARGES
AND SURCHARGE WAITING PERIODS**

LINE	Station	Station	Surcharge Height FT	MONTHS
-L-	32+50±	34+00±	2.5	3

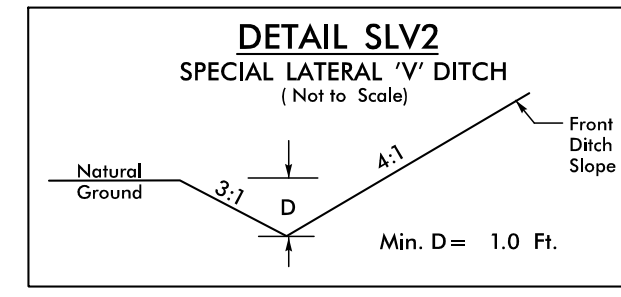
SUMMARY OF BRIDGE WAITING PERIODS

Bridge Description	End Bent/ Bent No.	MONTHS
Bridge on NC 133 (River Road) over Sand Hill Creek	End Bent 1	1

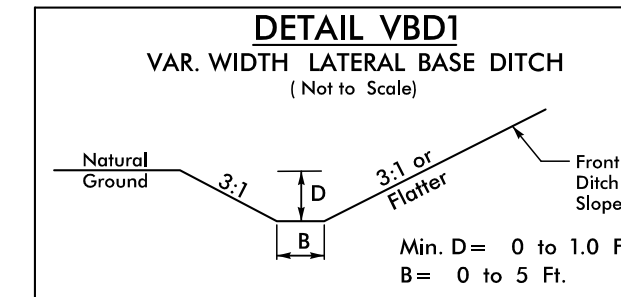
PROJECT REFERENCE NO. BR-0139		SHEET NO. 4	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
Doc: 040788E1E8D487 6/26/2024 Brian Blackwell		Doc: E89338E26C0F4AC 6/26/2024 Paul Cameron	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			



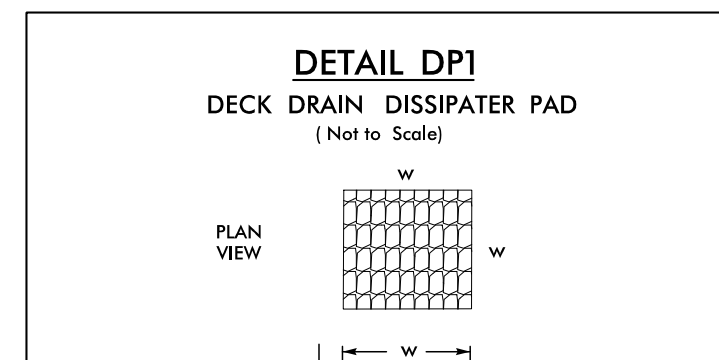
FROM -L- STA. 17+00 TO STA. 17+50 LT
FROM -L- STA. 15+00 TO STA. 17+00 RT
FROM -L- STA. 23+35 TO STA. 25+50 LT
FROM -L- STA. 24+00 TO STA. 24+50 RT



FROM -L- STA. 12+00 TO STA. 15+00 RT
FROM -L- STA. 13+00 TO STA. 17+00 LT
FROM -L- STA. 24+50 TO STA. 26+50 RT
FROM -L- STA. 25+50 TO STA. 26+50 LT



FROM -L- STA. 17+00 TO STA. 17+85 RT
FROM -L- STA. 17+50 TO STA. 18+50 LT
FROM -L- STA. 23+35 TO STA. 24+00 RT



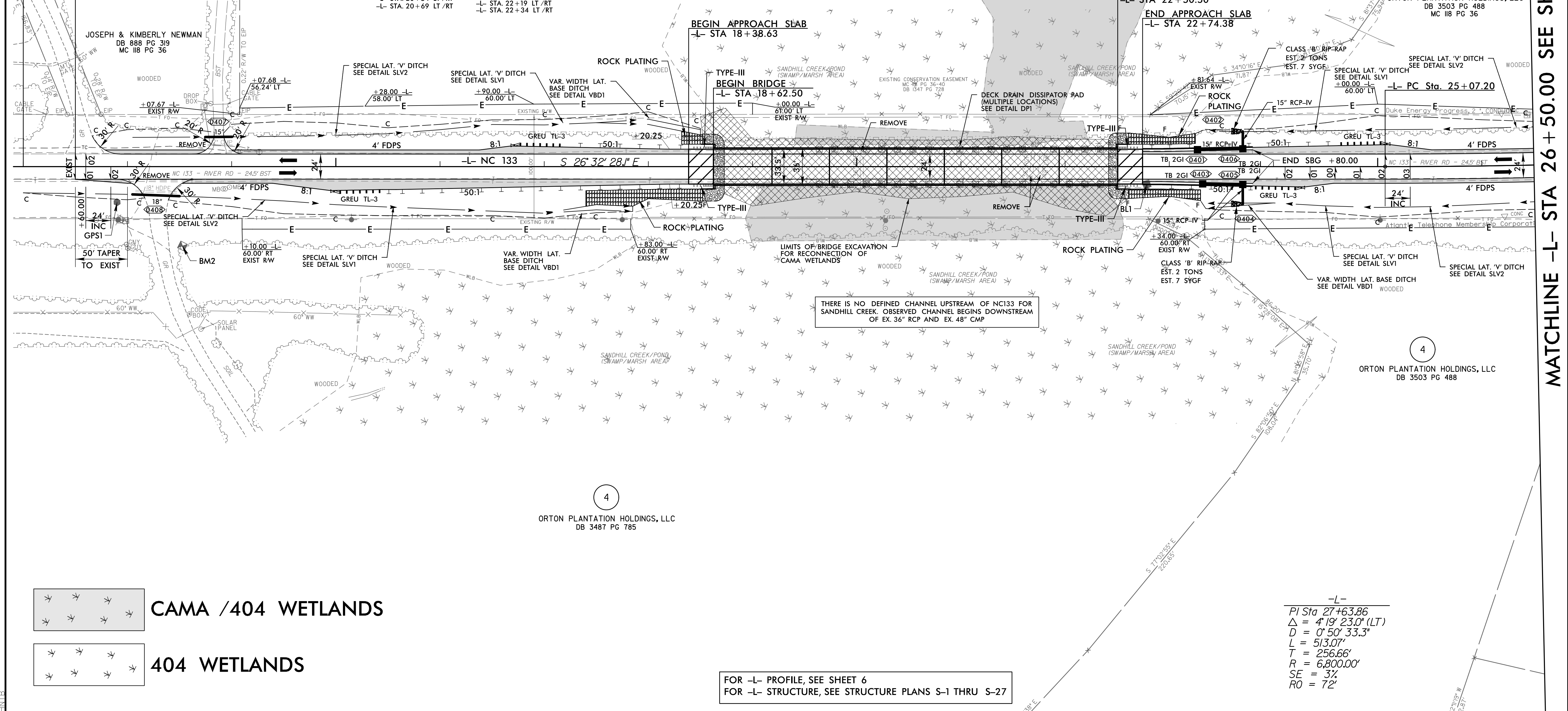
Type of Liner = CLASS '1' Rip-Rap
d = 6 FT
d = 1.5 FT

NOTE: PAD TO BE CENTERED UNDER DECK DRAIN

- L- STA. 19+64 LT / RT
- L- STA. 19+79 LT / RT
- L- STA. 19+94 LT / RT
- L- STA. 20+09 LT / RT
- L- STA. 20+24 LT / RT
- L- STA. 20+39 LT / RT
- L- STA. 20+54 LT / RT
- L- STA. 20+69 LT / RT
- L- STA. 20+99 LT / RT
- L- STA. 21+14 LT / RT
- L- STA. 21+29 LT / RT
- L- STA. 21+44 LT / RT
- L- STA. 21+59 LT / RT
- L- STA. 21+89 LT / RT
- L- STA. 22+04 LT / RT
- L- STA. 22+19 LT / RT
- L- STA. 22+34 LT / RT

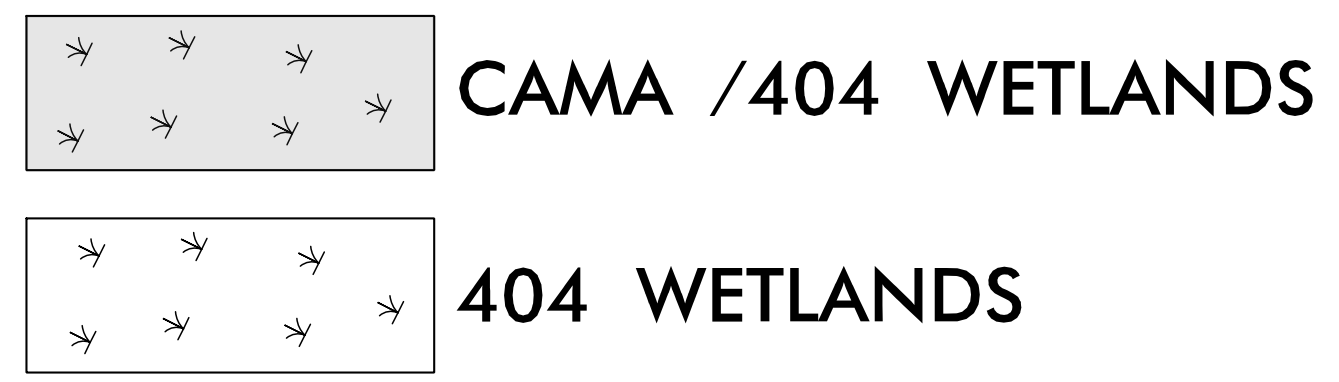
BEGIN CONSTRUCTION
-L- POT Sta. 12+00.00

BEGIN PROJECT
-L- POT Sta. 12+50.00



DECK DRAINS REQUIRED
8" x 6" SLOTS ON 15' CENTERS
FROM STA. -L- 19+64 TO STA. 20+69 LT/RT
FROM STA. -L- 20+99 TO STA. 21+59 LT/RT
FROM STA. -L- 21+89 TO STA. 22+34 LT/RT

THERE IS NO DEFINED CHANNEL UPSTREAM OF NC133 FOR SANDHILL CREEK. OBSERVED CHANNEL BEGINS DOWNSTREAM OF EX. 36" RCP AND EX. 48" CMP



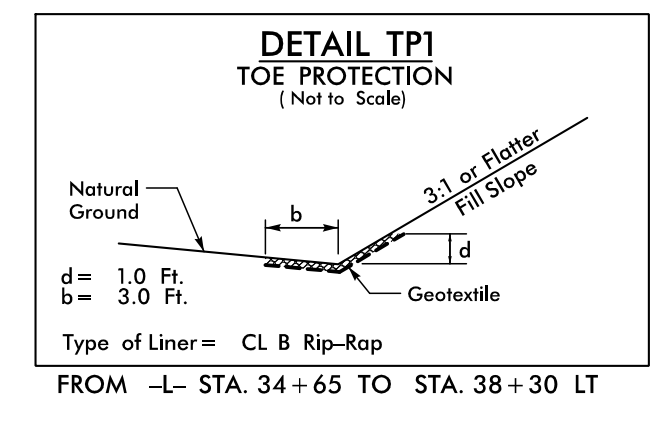
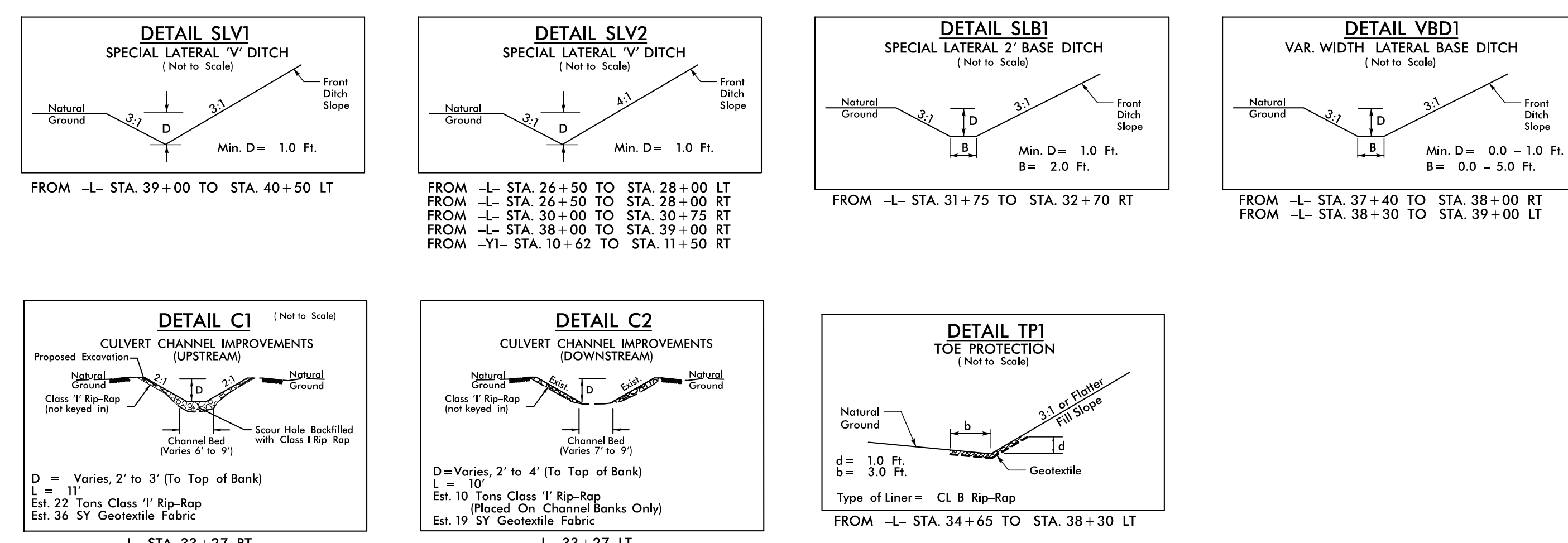
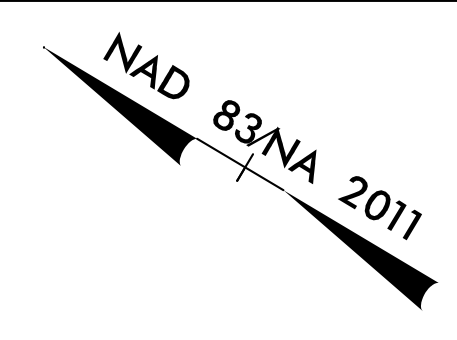
FOR -L- PROFILE, SEE SHEET 6
FOR -L- STRUCTURE, SEE STRUCTURE PLANS S-1 THRU S-27

-L-
PI Sta 27+63.86
 $\Delta = 4' 19'' 23.0''$ (LT)
 $D = 0' 50'' 33.3''$
 $L = 513.07'$
 $T = 256.66'$
 $R = 6,800.00'$
 $SE = 3\%$
 $RO = 72'$

MATCHLINE -L- STA 26 + 50.00 SEE SHEET 5

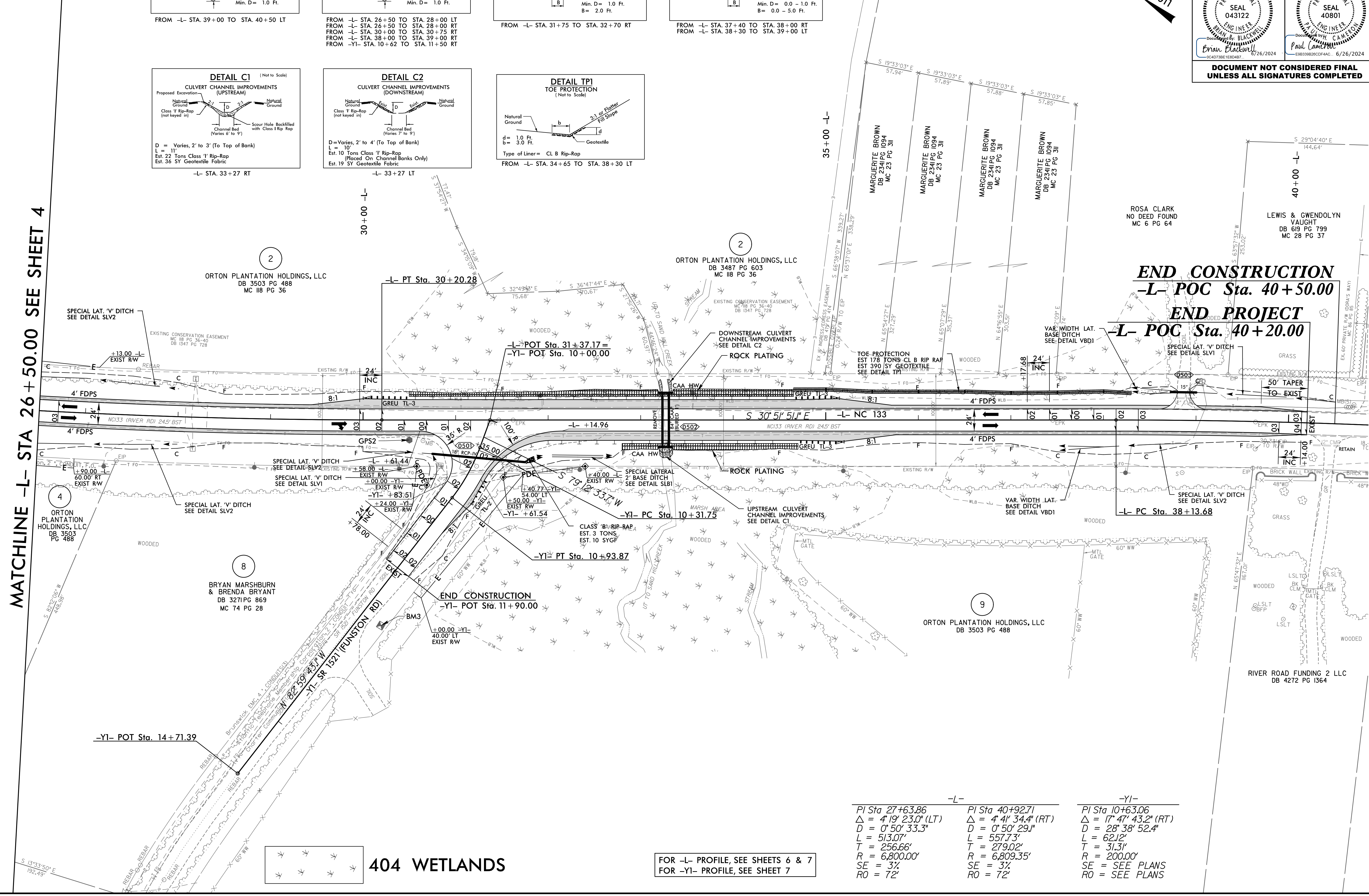
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PROJECT REFERENCE NO. BR-0139		SHEET NO. 5	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		VAUGHT	
<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>			



MATCHLINE -L- STA 26 + 50.00 SEE SHEET 4

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END CONSTRUCTION
-L- POC Sta. 40 + 50.00

END PROJECT
-L- POC Sta. 40 + 20.00

404 WETLANDS

FOR -L- PROFILE, SEE SHEETS 6 & 7
FOR -Y1- PROFILE, SEE SHEET 7

-L-	-Y1-
PI Sta 27+63.86	PI Sta 40+92.71
$\Delta = 4' 19' 23.0''$ (LT)	$\Delta = 4' 41' 34.4''$ (RT)
$D = 0' 50' 33.3''$	$D = 0' 50' 29.1''$
$L = 513.07'$	$L = 557.73'$
$T = 256.66'$	$T = 279.02'$
$R = 6,800.00'$	$R = 6,809.35'$
$SE = 3\%$	$SE = 3\%$
$RO = 72'$	$RO = 72'$

-Y1-
PI Sta 10+63.06
$\Delta = 17' 47' 43.2''$ (RT)
$D = 28' 38' 52.4''$
$L = 62.12'$
$T = 31.31'$
$R = 200.00'$
$SE = SEE PLANS$
$RO = SEE PLANS$

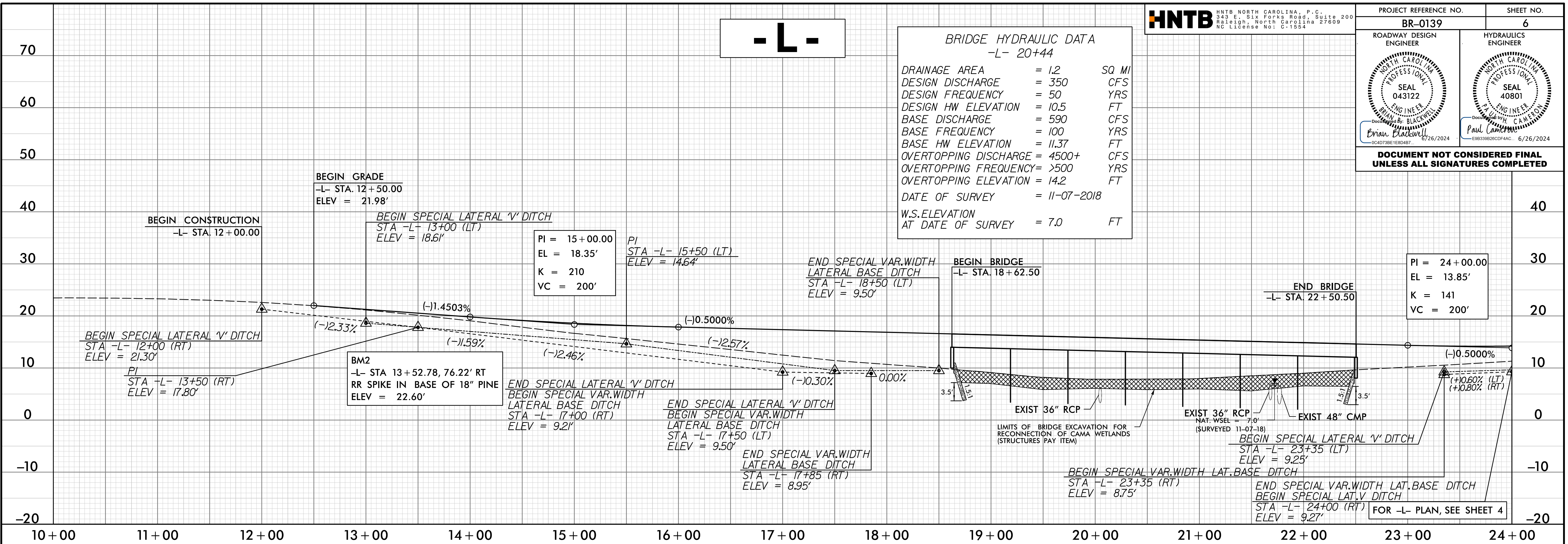
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PROJECT REFERENCE NO. BR-0139		SHEET NO. 6
ROADWAY DESIGN ENGINEER BRIAN BLACKWELL SEAL 043122 DATE: 6/26/2024	HYDRAULICS ENGINEER PAUL CAHILL SEAL 40801 DATE: 6/26/2024	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

BRIDGE HYDRAULIC DATA
-L- 20+44

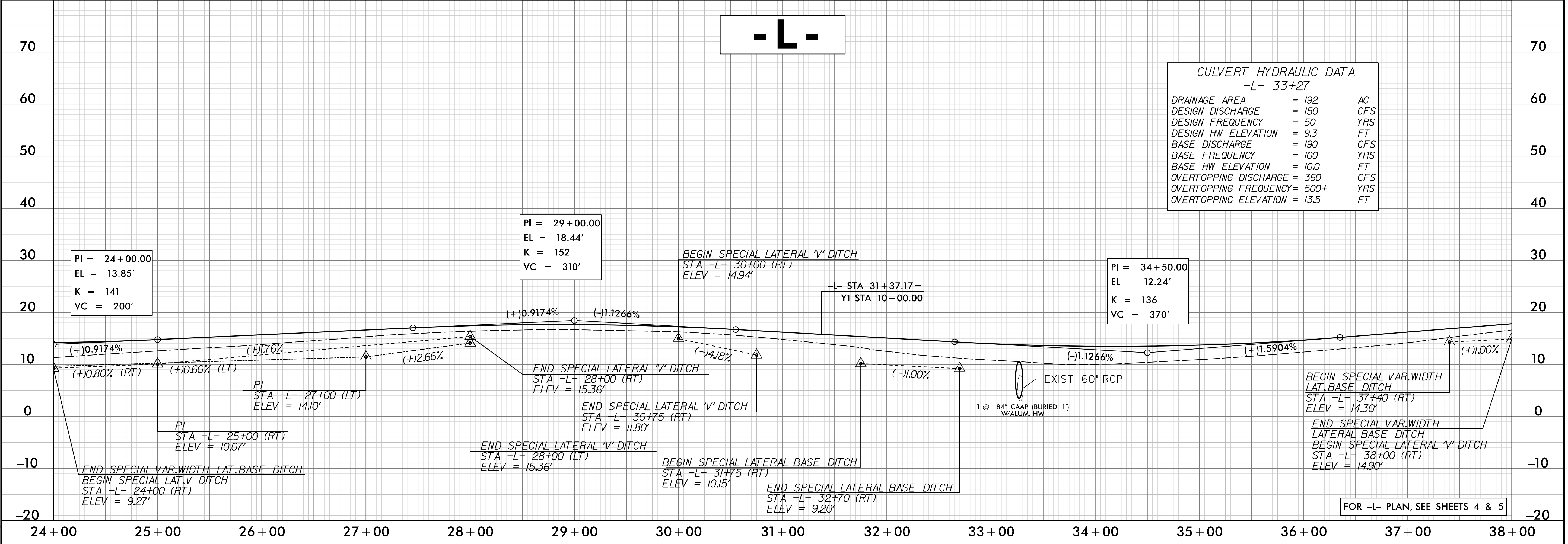
DRAINAGE AREA	= 1.2	SQ MI
DESIGN DISCHARGE	= 350	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 10.5	FT
BASE DISCHARGE	= 590	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 11.37	FT
OVERTOPPING DISCHARGE	= 4500+	CFS
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING ELEVATION	= 14.2	FT
DATE OF SURVEY	= 11-07-2018	
W.S. ELEVATION AT DATE OF SURVEY	= 7.0	FT



- L -

CULVERT HYDRAULIC DATA
-L- 33+27

DRAINAGE AREA	= 192	AC
DESIGN DISCHARGE	= 150	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 9.3	FT
BASE DISCHARGE	= 190	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 10.0	FT
OVERTOPPING DISCHARGE	= 360	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 13.5	FT

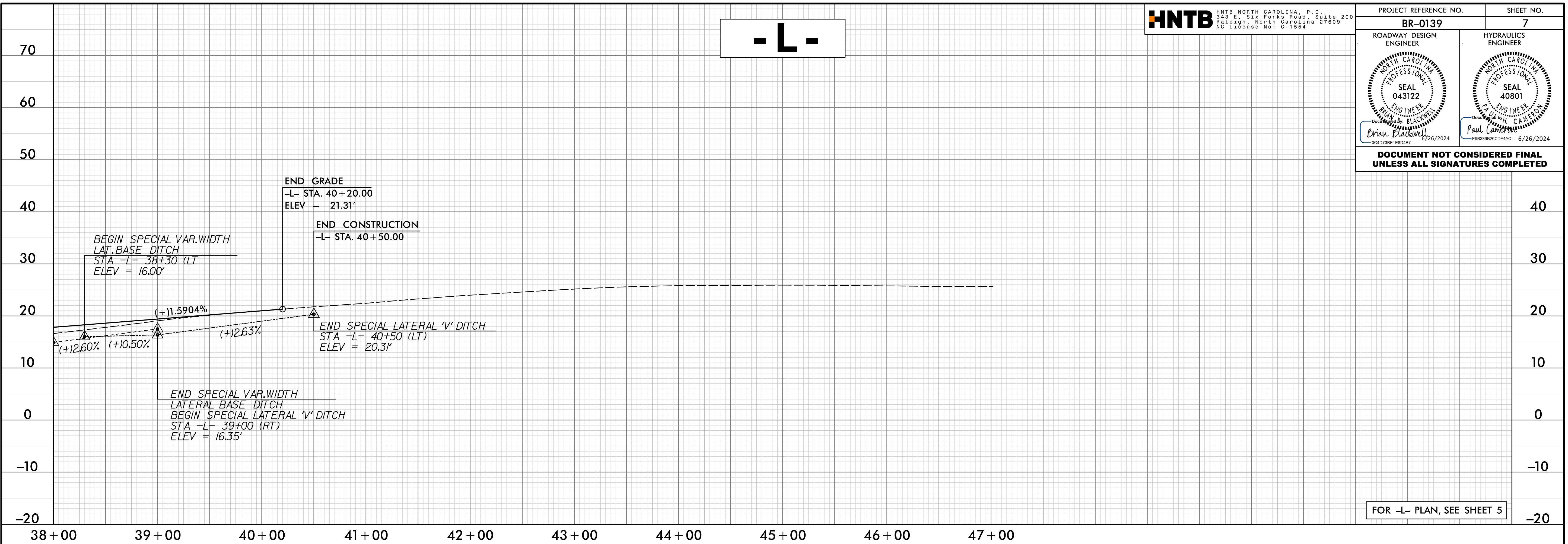


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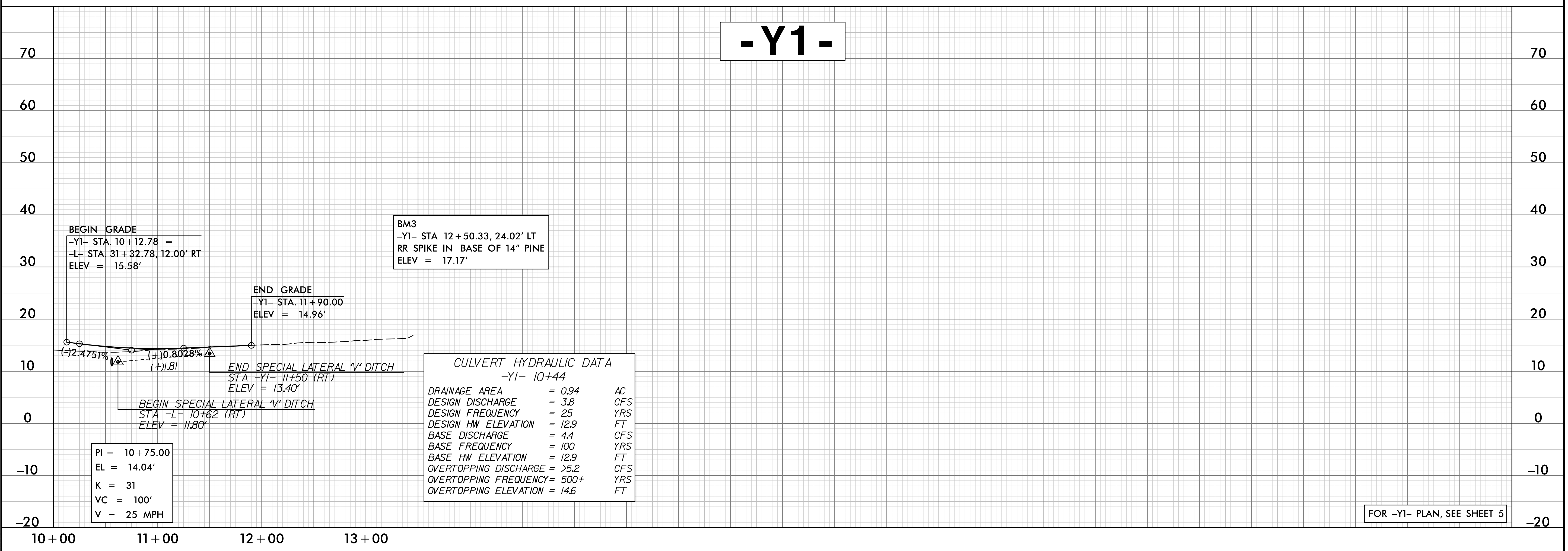
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PROJECT REFERENCE NO. BR-0139	SHEET NO. 7
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER

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



FOR -L- PLAN, SEE SHEET 5



FOR -Y1- PLAN, SEE SHEET 5

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