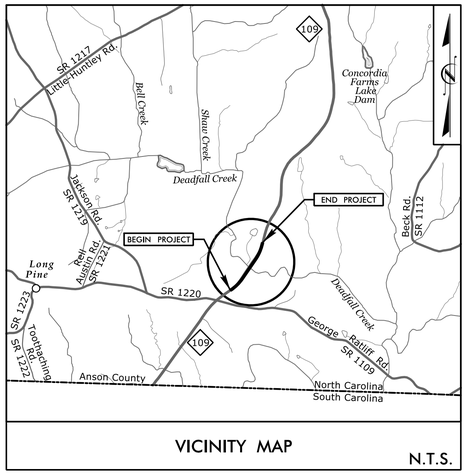
TIP PROJECT: B–5818

CONTRACT: C204555

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



VICINITY MAP N.T.S.

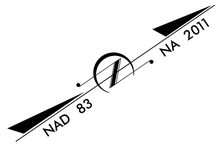
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

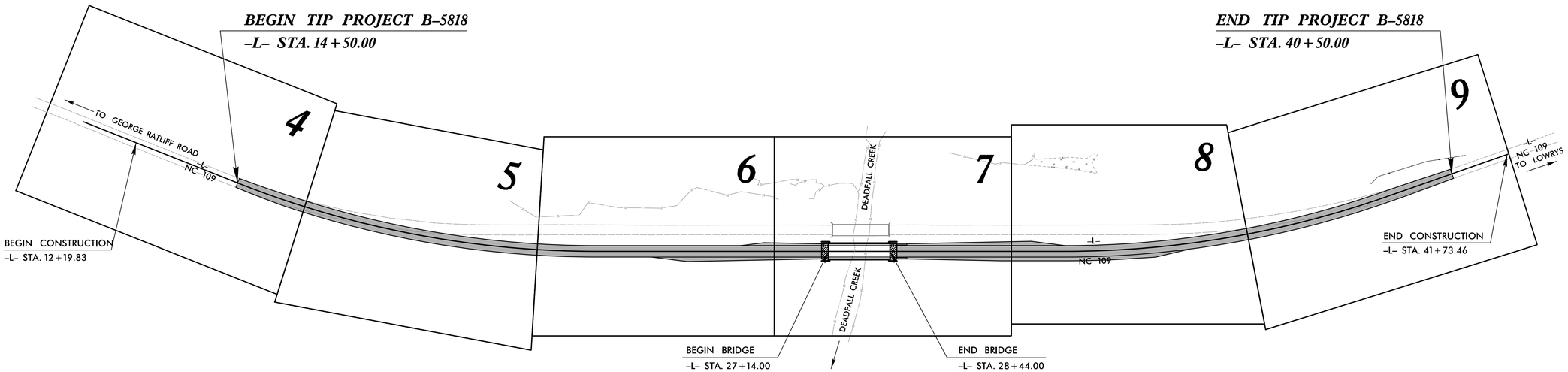
ANSON COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–5818	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
45771.1.1		P.E.
45771.2.1		ROW & UTILITIES
45771.3.1		CONSTRUCTION

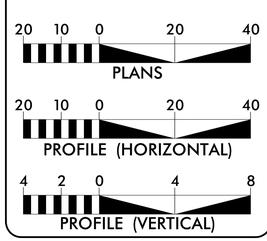
LOCATION: BRIDGE #011 OVER DEADFALL CREEK ON NC 109
TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE





DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT 2018 = 1,320
ADT 2043 = 2,640
K = 9%
D = 60%
T = 22%*
V = 55 MPH
FUNC. CLASSIFICATION: MAJOR COLLECTOR
* (TTST 15% + DUALS 7%)
REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B–5818 = 0.467 MILES
LENGTH OF STRUCTURE TIP PROJECT B–5818 = 0.025 MILES
TOTAL LENGTH OF TIP PROJECT B–5818 = 0.492 MILES

NCDOT CONTACT: KEITH PASCHAL, PE
Structure Management Unit

PLANS PREPARED FOR THE NCDOT BY:
STV 100 Years
STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F–0991

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: DECEMBER 3, 2019

LETTING DATE: MAY 18, 2021

NIKKI T. HONEYCUTT, PE
PROJECT ENGINEER

MAAMOON K. ABDELAZIZ
PROJECT DESIGNER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 029388 EDWARD J. VANCE P.E. 1/25/2021

SIGNATURE:

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039234 NIKKI T. HONEYCUTT P.E. 1/25/2021

SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

1/25/2021
r:\roadway\proj\sht\B5818_rdy_psh0l_tsh.dgn
MooreDS

STV 100 Years
STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
B-5818	1A
RW SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039234 4/13/2021 ENGINEER MARK T. HONEYCUTT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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	TYPICAL SECTIONS AND DETAILS SHEET
2C-1	GUARDRAIL DETAILS
2G-1 THRU 2G-3	TEMPORARY SHORING DETAIL SHEETS
3B-1	ROADWAY SUMMARIES
3D-1	DRAINAGE SUMMARIES
3G-1	GEOTECH SUMMARY SHEET
3P-1	PARCEL INDEX SHEET
4 THRU 9	PLAN SHEETS
10 THRU 15	PROFILE SHEETS
RW01 THRU RW09	SURVEY CONTROL AND RIGHT OF WAY SHEETS
TMP-1 THRU TMP-9	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-9	PAVEMENT MARKING AND SIGNING PLANS
EC-1 THRU EC-15	EROSION CONTROL SHEETS
RF-1	REFORESTATION
UC-1 THRU UC-14	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-7	UTILITY BY OTHERS PLANS
X-1A THRU X-19	CROSS-SECTIONS
S-1 THRU S-24	STRUCTURE PLANS

GENERAL NOTES

GENERAL NOTES: 2018 SPECIFICATIONS
EFFECTIVE: 01-01-2018

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED OR FUTURE 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 II.

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.

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.

END BENTS:

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

RIGHT-OF-WAY MARKERS:

ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY CONTRACT.

SUBSURFACE DRAINS:

SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.02 AT LOCATIONS DIRECTED BY THE ENGINEER

UNDERDRAINS:

UNDERDRAINS SHALL BE CONSTURCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER

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".

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE
POWER - PEE DEE ELECTRIC
TELEPHONE - WINDSTREAM
WATER - ANSON COUNTY UTILITIES DEPARTMENT

ROCK EXCAVATION:

ROCK IS ANTICIPATED BETWEEN -L-: 15+25 to 15+75, 25+75 to 26+25, 30+25 to 32+75, 34+25 to 38+75. BLASTING MAY BE REQUIRED FOR EXCAVATION ON THE PROJECT. SEE SECTION 220 OF THE STANDARD SPECIFICATIONS AND IF APPLICABLE, ROCK BLASTING PROVISION.

STANDARD DRAWINGS

2018 ROADWAY ENGLISH STANDARD DRAWINGS EFF. January, 2018

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	
200.02	Method of Clearing - Method II
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
DIVISION 4 - MAJOR STRUCTURES	
422.01	Bridge Approach Fills - Type I Standard Approach Fill
422.03	Reinforced Bridge Approach Fills Type A Alternate Approach Fill for Integral Abutment
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 - for Superpave Mix Types
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
815.02	Subsurface Drain
815.03	Pipe Underdrain and Blind Drain
840.00	Concrete Base Pad for Drainage Structures
840.18	Concrete Grated Drop Inlet Type 'B' - 12" Thru 36" Pipe
840.20	Frames and Wide Slot Flat Grates
840.25	Anchorage for Frames - Brick/Concrete/Precast Concrete
840.27	Brick Grated Drop Inlet Type 'B' - 12" Thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Strucure - (Solid and Waffle Wall)
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units - Guardrail Anchor Unit, Type III for Attachment to Rail on Bridge
862.04	ANCHORING END OF GUARDRAIL - FOR B-77 AND B-83 ANCHOR UNITS
866.02	Woven Wire Fence - with Wood Post
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets

12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
B-5818	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

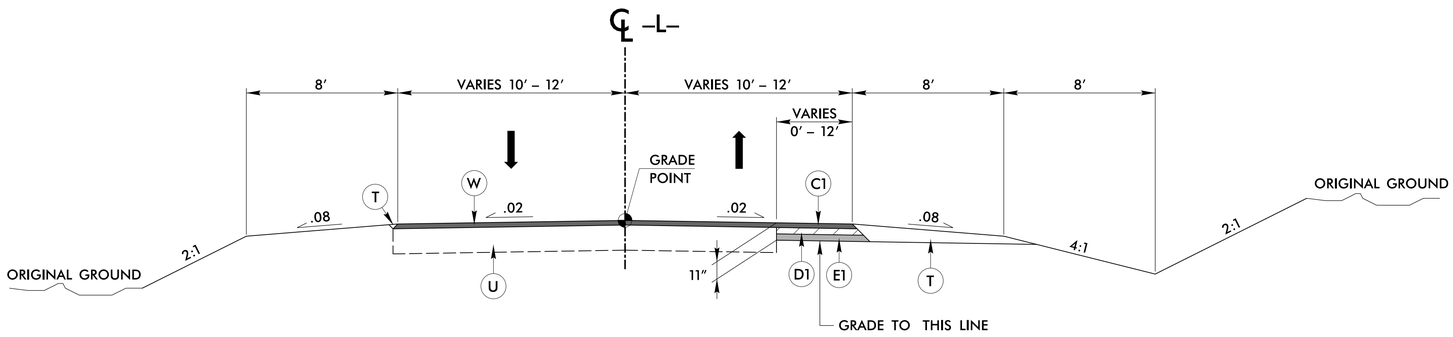
SANITARY SEWER:

- 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:

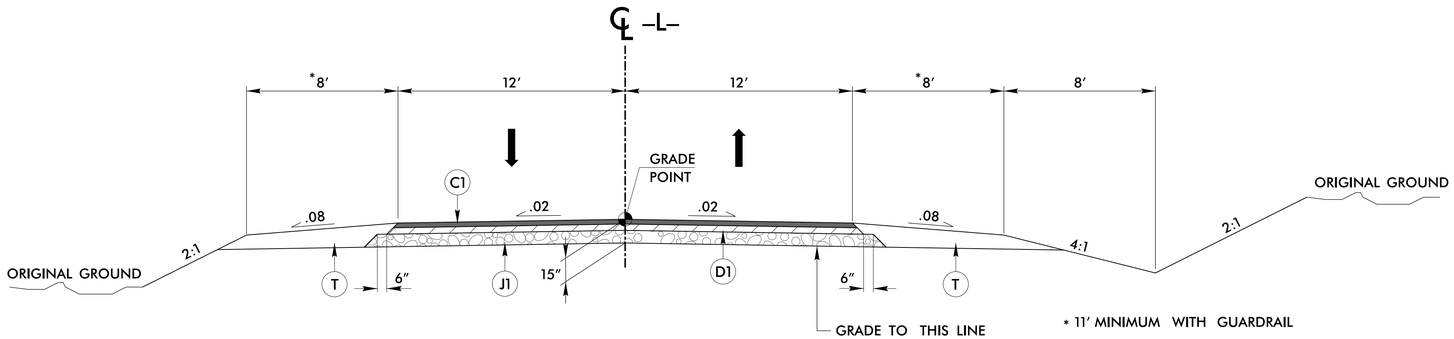
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line LOS B (S.U.E.*) — ?UTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole LOS A (S.U.E.*)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

12/23/2020
C:\roadway\proj\sht\B5818_rdy_psh01B.dgn
MooreBS



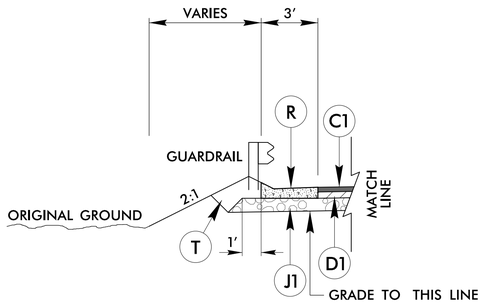
TYPICAL SECTION 1

–L– STA. 14+50.00 TO 19+00.00
–L– STA. 36+00.00 TO 40+50.00



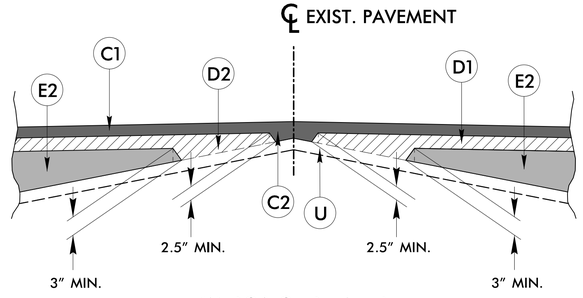
TYPICAL SECTION 2

–L– STA. 19+00.00 TO 27+14.00 (BEGIN BRIDGE)
–L– STA. 28+44.00 (END BRIDGE) TO 36+00.00

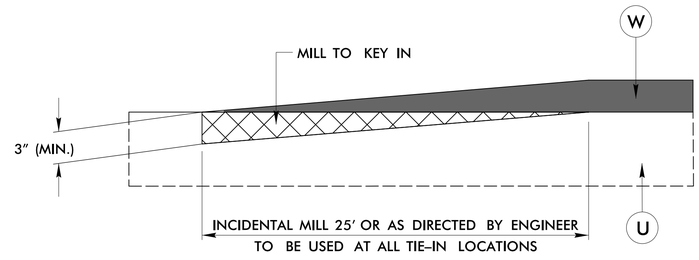


DETAIL A

–L– STA. 28+58.17 TO 28+79.37 (LT/RT)



WEDGING DETAIL B



INCIDENTAL MILLING DETAIL C

FINAL 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 1.0″ IN DEPTH OR GREATER THAN 1.5″ IN DEPTH.
D1	PROP. APPROX. 4″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 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 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2.5″ IN DEPTH OR GREATER THAN 4″ IN DEPTH.
E1	PROP. APPROX. 4.0″ 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 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3.0″ IN DEPTH OR GREATER THAN 5.5″ IN DEPTH.
J1	PROP. 8″ AGGREGATE BASE COURSE
R	CONCRETE SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	PAVEMENT WEDGING

ALL PAVEMENT SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.
NOTE: 8″ ABC TO BE USED FOR DRIVEWAYS

STV 100 Years
STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
B-5818	2A-1

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039234 3/29/2021 ENGINEER MICHAEL T. HONEYCUTT

NCDOT PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022896 3/29/2021 ENGINEER CLARK S. MORRISON

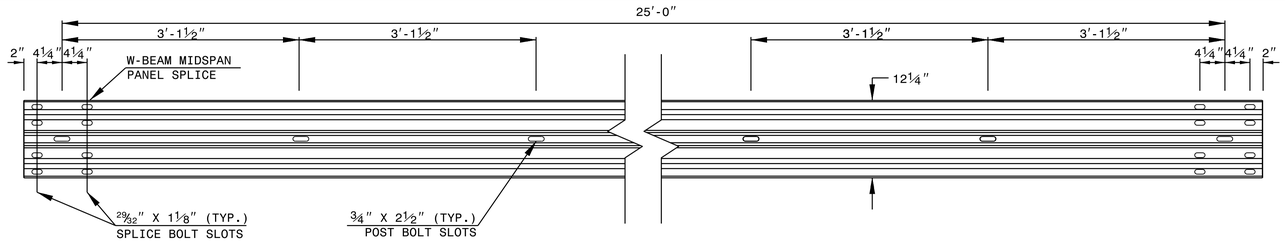
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
17BP.10.R.157	2C-1
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

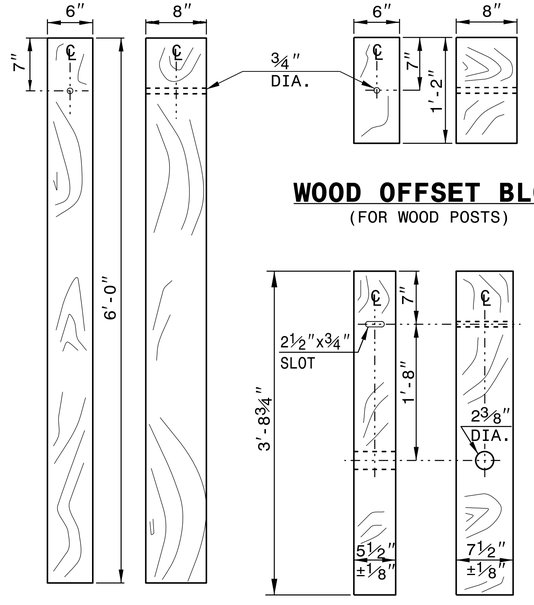
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02



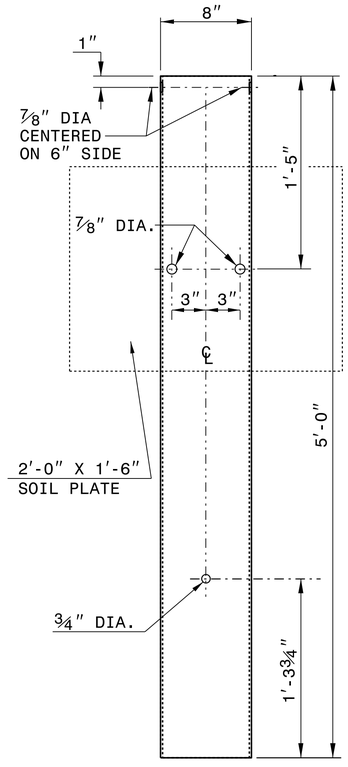
STANDARD W-BEAM GUARDRAIL



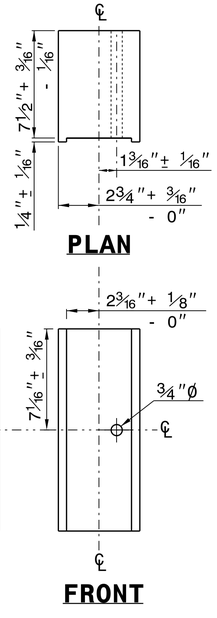
WOOD OFFSET BLOCK
(FOR WOOD POSTS)

STANDARD LINE POST

SHORT WOOD BREAKAWAY POST



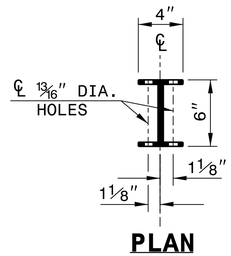
STEEL TUBE
TS 6"x8"x0.1875"



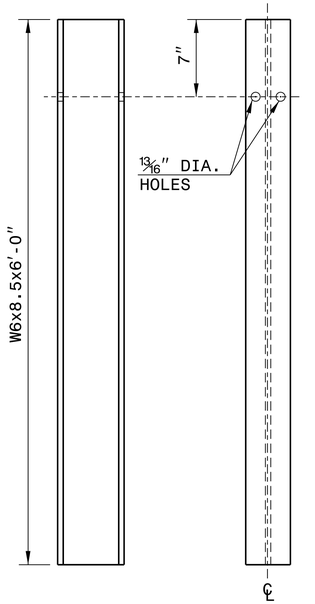
PLAN

SIDE **FRONT**

ROUTED OFFSET BLOCK



PLAN



SIDE **FRONT**

"W6" STEEL POST

SYSTEM PARTS

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022966 JOHN S. HOWERTON 3/7/2018

CONTRACTS STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: J.HOWERTON DATE: 3-7-2018
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

PROJECT REFERENCE NO.	SHEET NO.
B-5818	2G-1

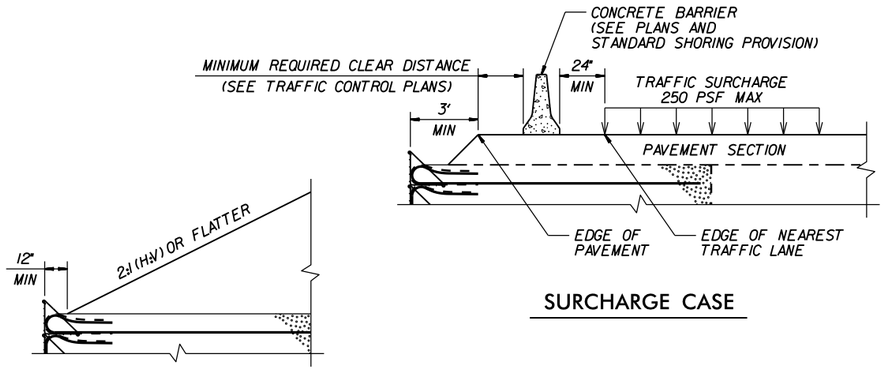
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 028893 ENGINEER MICHAEL H. STEPHENS

Docusigned by: MICHAEL H. STEPHENS 11/12/2021

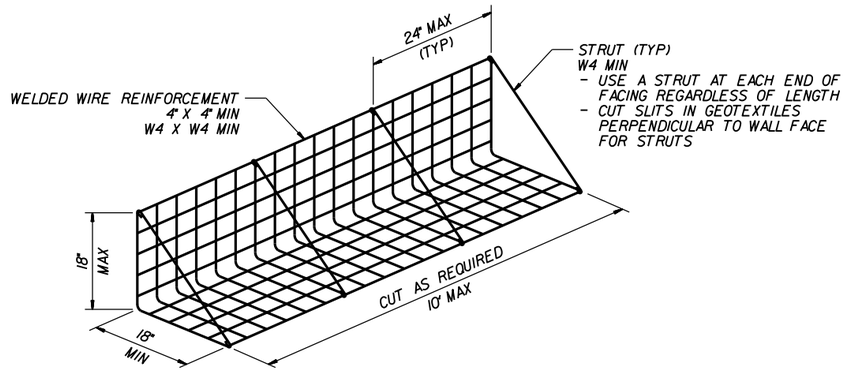
8196345B3C7046C... DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

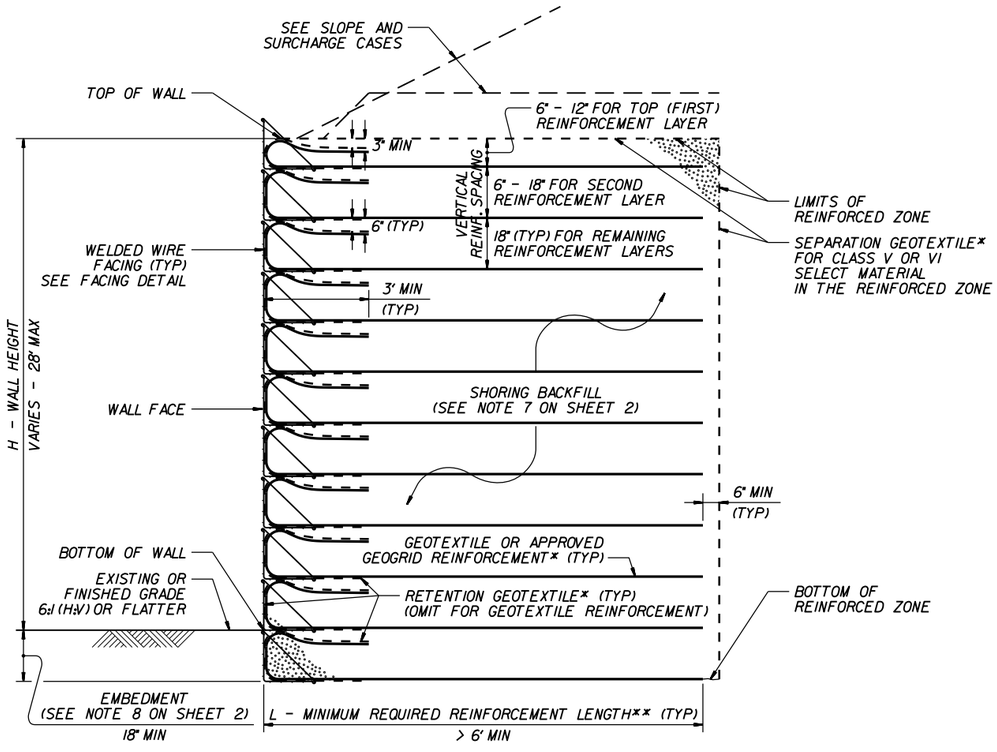


SURCHARGE CASE

SLOPE CASE

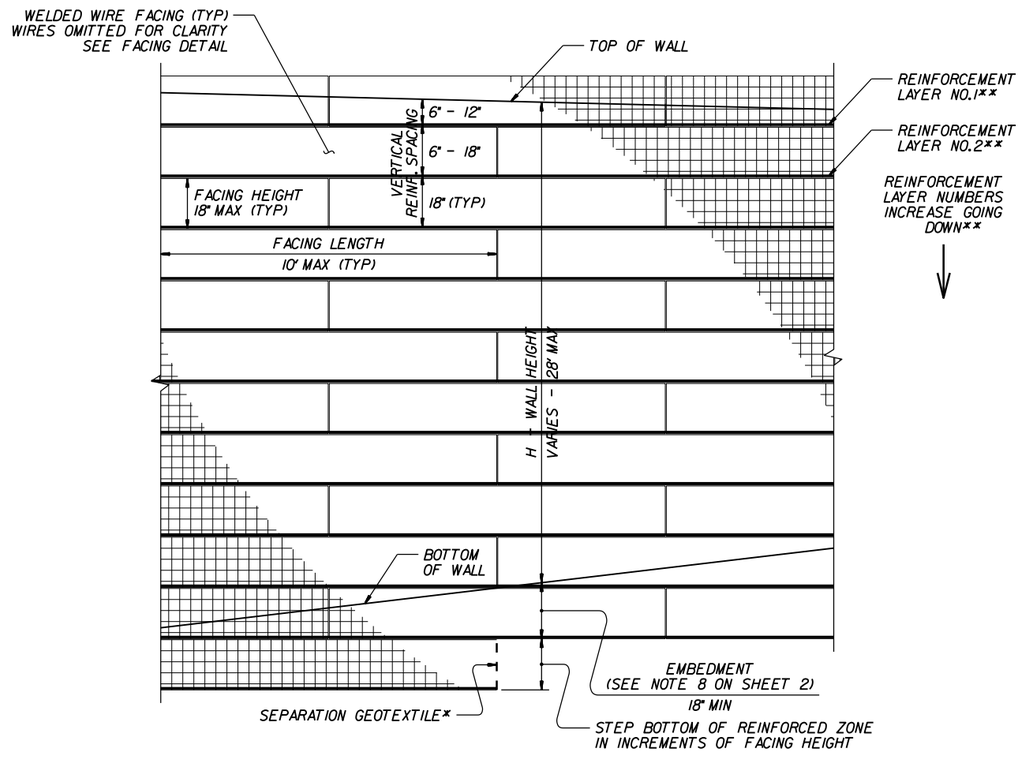


FACING DETAIL



STANDARD TEMPORARY WALL

(FOR STANDARD TEMPORARY WALLS ON STRUCTURES, SEE TEMPORARY WALL ON STRUCTURE DETAIL ON SHEET 2.)
*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
**SEE REINFORCEMENT TABLES ON SHEET 3.



STANDARD TEMPORARY WALL – PARTIAL ELEVATION

*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
**SEE REINFORCEMENT TABLES ON SHEET 3.

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL
ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD
TEMPORARY WALL
SHEET 1 OF 3

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET NO.
B-5818	2G-2

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 028893 ENGINEER MICHAEL H. STEPHENS

DocuSigned by: 11/22/2021 DATE

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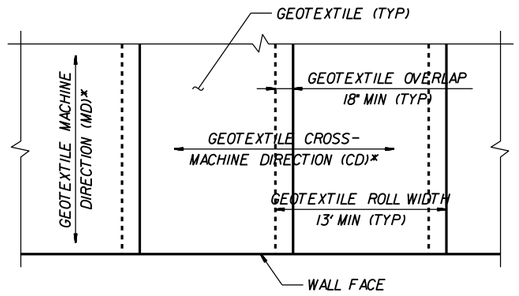
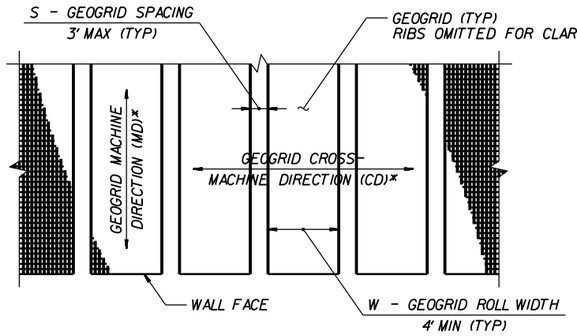


GEOTEXTILE PLACEMENT

(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)

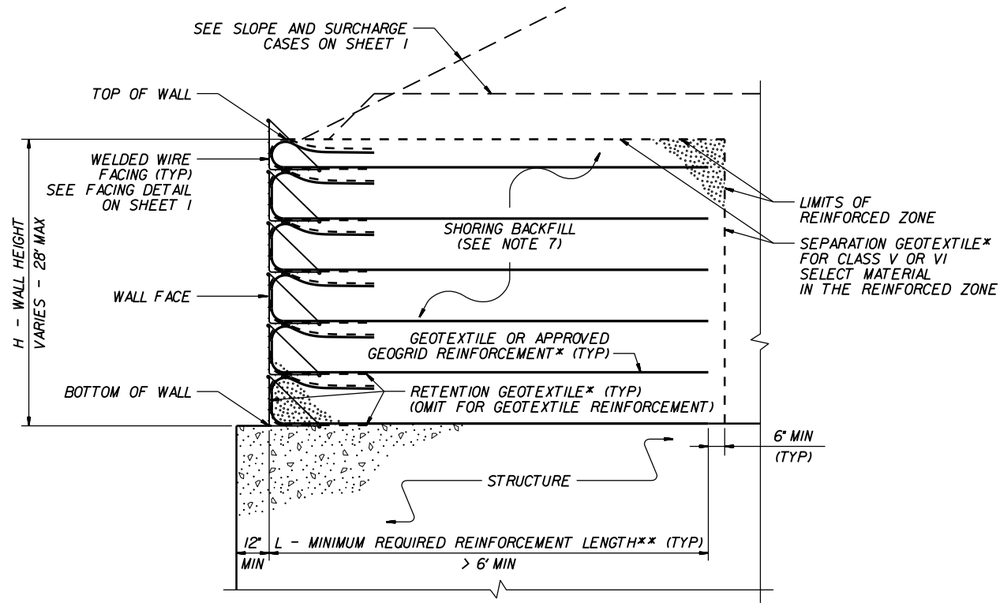


GEOGRID PLACEMENT

(80% COVERAGE MIN FOR GEOGRID REINFORCEMENT – $\frac{W}{W+S}$ x 100 $\geq$ 80%, SEE NOTE 11)

GEOSYNTHETIC PLACEMENT DETAILS

(PLAN VIEW)
*SEE NOTE 12.



TEMPORARY WALL ON STRUCTURE DETAIL

*SEE GEOSYNTHETIC PLACEMENT DETAILS.
**SEE REINFORCEMENT TABLES ON SHEET 3.

NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY WALLS AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY WALLS, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY WALLS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 PCF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 PSF
4. DO NOT USE STANDARD TEMPORARY WALLS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW TEMPORARY WALLS.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, ASSUME GROUNDWATER DEPTH IS LESS THAN 7' BELOW BOTTOM OF REINFORCED ZONE. DO NOT USE STANDARD TEMPORARY WALLS IF GROUNDWATER IS ABOVE BOTTOM OF REINFORCED ZONE.
7. DO NOT USE A-2-4 SOIL FOR STANDARD TEMPORARY WALLS AROUND CULVERTS OR IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS FOR SLOPE CASES. DO NOT USE CLASS VI SELECT MATERIAL IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS WITH GEOTEXTILE REINFORCEMENT.
8. EMBEDMENT IS NOT REQUIRED FOR STANDARD TEMPORARY WALLS ON STRUCTURES OR ROCK AS DETERMINED BY THE ENGINEER.
9. DO NOT USE MORE THAN 4 DIFFERENT REINFORCEMENT STRENGTHS FOR EACH STANDARD TEMPORARY WALL.
10. GEOGRIDS ARE TYPICALLY APPROVED FOR ULTIMATE TENSILE STRENGTHS IN THE MACHINE DIRECTION (MD) AND CROSS-MACHINE DIRECTION (CD) OR SHORT-TERM DESIGN STRENGTHS FOR A 3-YEAR DESIGN LIFE IN THE MD BASED ON MATERIAL TYPE. THE LIST OF APPROVED GEOGRIDS WITH DESIGN STRENGTHS IS AVAILABLE FROM: connect.ncdot.gov/resources/Materials/Pages/Materials-Manual-by-Manual.aspx
    DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SHORING BACKFILL AS FOLLOWS:

MATERIAL TYPE	SHORING BACKFILL
BORROW	A-2-4 SOIL
FINE AGGREGATE	CLASS II, TYPE I OR CLASS III SELECT MATERIAL
COARSE AGGREGATE	CLASS V OR VI SELECT MATERIAL

    IF THE WEBSITE DOES NOT LIST A SHORT-TERM DESIGN STRENGTH FOR AN APPROVED GEOGRID, USE A SHORT-TERM DESIGN STRENGTH EQUAL TO THE ULTIMATE TENSILE STRENGTH DIVIDED BY 3.5 FOR THE GEOGRID REINFORCEMENT.
11. FOR GEOGRID REINFORCEMENT WITH LESS THAN 100% COVERAGE, STAGGER REINFORCEMENT SO GEOGRIDS ARE CENTERED OVER GAPS IN THE REINFORCEMENT LAYER BELOW.
12. AT THE CONTRACTOR'S OPTION, REINFORCEMENT MAY BE INSTALLED WITH THE MD PARALLEL TO THE WALL FACE IF BOTH OF THE FOLLOWING CONDITIONS OCCUR:
    - W (REINFORCEMENT ROLL WIDTH) $\geq$ (MINIMUM REQUIRED REINFORCEMENT LENGTH) + 4.5' AND
    - REINFORCEMENT STRENGTH IN CD $\geq$ MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD.
13. SUBMIT A "STANDARD TEMPORARY WALL SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY WALL CONSTRUCTION. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
14. DO NOT PLACE SHORING BACKFILL OR REINFORCEMENT UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
15. FOR STANDARD TEMPORARY WALLS WITH PILE FOUNDATIONS IN THE REINFORCED ZONE, DRIVE PILES THROUGH REINFORCEMENT AFTER CONSTRUCTING TEMPORARY WALLS.
16. DO NOT SPLICE OR OVERLAP REINFORCEMENT SO SEAMS ARE PARALLEL TO THE WALL FACE.
17. CONTACT THE ENGINEER WHEN EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT.
18. FOR STANDARD TEMPORARY WALLS WITH INTERIOR ANGLES LESS THAN 90 DEGREES, WRAP GEOSYNTHETICS AT ACUTE CORNERS AS DIRECTED BY THE ENGINEER.
19. FOR STANDARD TEMPORARY WALLS WITH TOP OF WALL WITHIN 5' OF FINISHED GRADE, REMOVE TOP FACING AND INCORPORATE TOP REINFORCEMENT LAYER INTO FILL WHEN PLACING FILL IN FRONT OF WALL.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD TEMPORARY WALL SHEET 2 OF 3

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET NO.
B-5818	2G-3

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 028893 ENGINEER MICHAEL H. STEPHENS

DocuSigned by: 11/22/2021 DATE

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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SLOPE OR SURCHARGE CASE	GROUNDWATER DEPTH BELOW BOTTOM OF REINFORCED ZONE (SEE NOTE 6 ON SHEET 2) (FT)	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)	H – WALL HEIGHT (FT)																								
			< 4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
SLOPE CASE	> 0	CLASS II,TYPE I, CLASS III,CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	8	9	11	12	13	13	14	15	16	17	18	19	20	21	22	23	24	24	25	26	27	27
SURCHARGE CASE	> 0 TO 7 FOR H < 20' > 0 TO 10 FOR H ≥ 20'	ALL SHORING BACKFILL TYPES	6	7	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	17	17	18	19	19	20	21	22
	> 7 FOR H < 20' > 10 FOR H ≥ 20'	A-2-4 SOIL	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16	17	18	18	19	20	20	21
		CLASS II,TYPE I OR CLASS III SELECT MATERIAL	6	6	7	7	8	8	9	10	10	11	11	12	12	13	14	15	15	16	16	17	17	18	18	19	20
		CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	7	7	8	8	9	9	10	10	11	12	13	13	14	14	15	15	16	17	17	18	19	19

L – MINIMUM REQUIRED REINFORCEMENT LENGTH (FT)

(FOR ALL REINFORCEMENT TYPES)

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL	A-2-4 SOIL	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL
1	2400	2400	2400	2400	2400
2	2400	2400	2400	2400	2400
3	2400	2400	2400	2400	2400
4	2400	2400	2500	2400	2400
5	2500	2400	3000	2400	2400
6	3000	2400	3500	2800	2400
7	3500	2700	4000	3200	2600
8	4000	3100	4500	3600	2900
9	4500	3500	5000	4000	3200
10	5000	3900	5500	4400	3500
11	5500	4300	6000	4800	3800
12	6000	4700	6500	5200	4100
13	6500	5100	7000	5600	4400
14	7000	5400	7500	6000	4700
15	7500	5800	8000	6400	5000
16	8000	6200	8500	6800	5300
17	8500	6600	9000	7200	5600
18	9000	7000	9500	7600	5900
19	9500	7400	10000	8000	6200
20	10000	7800	10500	8400	6500

GEOTEXTILE REINFORCEMENT
ULTIMATE TENSILE STRENGTH (LB/FT)

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL	A-2-4 SOIL	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL
1	240	200	340	290	240
2	380	310	520	430	350
3	530	420	700	570	460
4	690	550	870	720	570
5	860	690	1050	860	680
6	1030	830	1220	1000	790
7	1200	970	1400	1150	900
8	1370	1110	1580	1290	1010
9	1550	1240	1750	1430	1120
10	1720	1380	1930	1580	1230
11	1890	1520	2100	1720	1340
12	2060	1660	2280	1860	1450
13	2240	1800	2450	2010	1560
14	2410	1940	2630	2150	1670
15	2580	2080	2800	2290	1780
16	2750	2220	2980	2440	1890
17	2930	2360	3160	2580	2000
18	3100	2500	3330	2720	2110
19	3270	2640	3510	2860	2220
20	3440	2780	3690	3000	2330

GEOGRID REINFORCEMENT
SHORT–TERM DESIGN STRENGTH (LB/FT)

(SEE NOTE 10 ON SHEET 2.)

WALL HEIGHT (H) + EMBEDMENT (FT)	NUMBER OF REINFORCEMENT LAYERS*
2.5 – 4	3
4 – 5.5	4
5.5 – 7	5
7 – 8.5	6
8.5 – 10	7
10 – 11.5	8
11.5 – 13	9
13 – 14.5	10
14.5 – 16	11
16 – 17.5	12
17.5 – 19	13
19 – 20.5	14
20.5 – 22	15
22 – 23.5	16
23.5 – 25	17
25 – 26.5	18
26.5 – 28	19
28 – 29.5	20

*BASED ON VERTICAL REINFORCEMENT SPACING SHOWN ON SHEET 1.

MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD

(SEE NOTE 9 ON SHEET 2.)
*SEE PARTIAL ELEVATION ON SHEET 1 FOR REINFORCEMENT LAYER NUMBERING.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD TEMPORARY WALL SHEET 3 OF 3

DATE: 11-19-13

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STV 100 Years
STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
B-5818	3B-1
R/W SHEET NO.	

EARTHWORK QUANTITIES ARE CALCULATED BY USING NCDOT – ROADWAY DESIGN GUIDELINES. THESE QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

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

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
–L–	17+43	26+61	LT	1,570
–L–	28+97	31+34	LT	500
–L–	31+34	37+95	LT	1,085
			TOTAL:	3,155
			SAY:	3,200

ESTIMATED SHOULDER BORROW = 450 CY
ESTIMATED DDE = 80 CY

USE SELECT GRANULAR MATERIAL TO BACKFILL UNDERCUT AREAS

EARTHWORK SUMMARY (IN CUBIC YARDS)

CHAIN	FROM STATION	TO STATION	SIDE	EXCAVATION		EMBANKMENT	BORROW	WASTE
				UNCL. EXCAVATION	UNDERCUT	EMBANK. +%		TOTAL
–L–	14+00.00	27+14.00	LT & RT	26,162		7,630		18,532
–L–	28+44.00	41+00.00	LT & RT	2,210	880	12,095	9,885	880
TOTAL				28,372	880	19,724	9,885	19,412
LOSS DUE TO CLEARING & GRUBBING				–500				–500
ADDITIONAL UNDERCUT					450			450
ROCK TO REPLACE EARTH EMBANKMENT							–9,885	–9,885
ADJUST FOR ROCK SWELL						–1,977	–1977	
ELIMINATE EARTH SHRINKAGE FACTOR SINCE NOW ROCK							1,977	1,977
PROJECT TOTAL				27,872	1,330	17,747		11,455
GRAND TOTAL				27,872	1,330	17,747		11,455
SAY				28,000	1,400			

"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

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL WIDTH	FLARE LENGTH		W		ANCHORS								IMPACT ATTENUATOR TYPE 350		SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	B-77	GREU TL-3	GREU TL-2	TYPE III	CAT-1	TEMP GREU TL-2	TEMP TYPE III	AT-1	EA G NG				
–L–	25+78.64	27+14.00	LT	135.375				27+14.00	4.0 – 6.2	7.0 – 9.2		112.50		2.2		1	1										
–L–	24+16.17	27+14.00	RT	297.875			27+14.00		4.0 – 9.5	7.0 – 12.5	275.00		5.5			1	1										
–L–	28+44.00	31+41.83	LT	297.875			28+44.00		4.0 – 9.2	7.0 – 12.2	262.50		5.2			1	1										
–L–	28+44.00	34+02.48	RT	560.375				28+44.00	4.0 – 8.0	7.0 – 11.0		250.00		2.0		1	1										
			TOTAL:	1291.50												4	4								480		
			DEDUCTION FOR ANCHOR UNITS:																								
			(4 B–77 @ 22.875')	–91.50																							
			(4 GREU TL–3 @ 50')	–200.00																							
			TOTAL GUARDRAIL LENGTH:	1000.00																							
			SAY:	1000.00 LF																							
ADDITIONAL GUARDRAIL POSTS = 5 EA																											
TEMPORARY GUARDRAIL																											
–L– EX.	29+63.19	32+15.83	LT	252.64													1										
			TOTAL:	252.64													1										
			DEDUCTION FOR ANCHOR UNITS:																								
			(1 GREU TL–3 @ 50')	–50.00																							
			TOTAL GUARDRAIL LENGTH:	202.64																							
			SAY:	212.50 LF																							

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

STATION / SIZE / THICKNESS OR GAUGE	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) 12"	15"	18"	24"	30"	36"	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"
-L- STA. 15+09	LT	401			321.5	320.9																		56				
-L- STA. 18+78	RT	501			306.7	305.0																	28					
-L- STA. 26+00	RT	601		279.7																								
		601	602		277.0	276.0									68													
-L- STA. 28+75	RT	702		282.8																								
		702	701		278.0	261.7			48																			
-L- STA. 28+75	LT	703		282.8																								
		703	702		278.1	278.0									28													
-L- STA. 30+00	RT	704	705		273.3	265.3			84																			
-L- STA. 32+00	LT	801		278.5																								
		801	802		275.7	275.3			72																			
-L- STA. 36+98	RT	901			299.0	297.5																		28				
-L- STA. 38+95	LT	902			304.2	303.5																		52				
-L- STA. 40+25	LT	903			307.5	307.0																28						
-L- STA. 38+06	LT	904			301.9	301.1																28						
-L- STA. 19+38	LT																											
-L- STA. 22+63	LT																											
-L- STA. 30+00	LT																											
-L- STA. 31+10	LT																											
-L- STA. 31+90	RT																											
-L- STA. 18+78	LT																											
-L- STA. 30+00	RT																											
-L- STA. 31+90	RT																											
-L- STA. 40+26	LT																											
TOTAL									204						96							56	28	136				

STATION	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EA	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G		CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES 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 OR 840.45
-L- STA. 15+09																			
-L- STA. 18+78																			
-L- STA. 26+00				1															1
-L- STA. 28+75				1															
-L- STA. 28+75				1															
-L- STA. 30+00																			
-L- STA. 32+00				1															1
-L- STA. 36+98																			
-L- STA. 38+95																			
-L- STA. 40+25																			
-L- STA. 38+06																			
-L- STA. 19+38																			
-L- STA. 22+63																			
-L- STA. 30+00																			
-L- STA. 31+10																			
-L- STA. 31+90																			
-L- STA. 18+78																			
-L- STA. 30+00																			
-L- STA. 31+90																			
-L- STA. 40+26																			
TOTAL				4															2

STATION	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME WITH TWO GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME WITH GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME WITH GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME WITH TWO GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME WITH GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VAN GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35 OR 840.46	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	15" DRAINAGE PIPE ELBOW	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN.FT. LIN. FT.	REMARKS
-L- STA. 15+09																						
-L- STA. 18+78																						
-L- STA. 26+00		1																				
-L- STA. 28+75								1						1								
																	2					DO NOT USE RCP
-L- STA. 28+75								1						1								
-L- STA. 30+00																						TEMP. PIPE
-L- STA. 32+00		1																				TEMP. STRUCTURE (INCLUDED IN "UNCLASSIFIED EXCAVATION")
																						TEMP. PIPE
-L- STA. 36+98																						
-L- STA. 38+95																						
-L- STA. 40+25																						
-L- STA. 38+06																						
-L- STA. 19+38																		3				
-L- STA. 22+63																		2				
-L- STA. 30+00																		3				
-L- STA. 31+10																		2				
-L- STA. 31+90																		3				
-L- STA. 18+78																					30	
-L- STA. 30+00																					84	
-L- STA. 31+90																					72	
-L- STA. 40+26																					16	
TOTAL		2						2						2			2	13			202	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

4/14/2021
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MooreDS

COMPUTED BY: DSM DATE: 12/20
CHECKED BY: GHM DATE: 12/20

(12-17-19)

STV 100 Years
STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
B-5818	3G-1
R/W SHEET NO.	

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SUMMARY OF SUBSURFACE DRAINAGE

LINE	STATION	STATION	LOCATION LT/RT/CL	DRAIN TYPE* UD/BD/SD	LF
CONTINGENCY				UD	200
CONTINGENCY				SD	200
				TOTAL LF:	400

*UD = UNDERDRAIN
*BD = BLIND DRAIN
*SD = SUBSURFACE DRAIN

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	STATION	STATION	AGGREGATE TYPE* ASU(1/2)/AST	AGGREGATE THICKNESS INCHES [8" FOR ASU(2)]	SHALLOW UNDERCUT CY	CLASS IV SUBGRADE STABILIZATION TONS	GEOTEXTILE FOR SOIL STABILIZATION SY	STABILIZER AGGREGATE TONS	CLASS IV AGGREGATE STABILIZATION TONS
CONTINGENCY			ASU	12	100	200	300		
			TOTAL CY/TONS/SY:		100	200**	300**	0	0

*ASU(1/2) = AGGREGATE SUBGRADE (TYPE 1 OR 2)
*AST = AGGREGATE STABILIZATION
**TOTAL TONS OF "CLASS IV SUBGRADE STABILIZATION" AND TOTAL SQUARE YARDS OF "GEOTEXTILE FOR SOIL STABILIZATION" ARE ONLY THE ESTIMATED QUANTITIES FOR ASU(1/2)/AST AND MAY ONLY REPRESENT A PORTION OF THE SUBGRADE STABILIZATION AND GEOTEXTILE QUANTITIES SHOWN IN THE ITEM SHEETS OF THE PROPOSAL.

12/8/2020
R:\Roadway\Proj\SHT\B5818_rdy.psh03G-1.dgn
MooreDS

PROJECT REFERENCE NO.	SHEET NO.
B-5818	3P-1

STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL NO.	SHEET NO.	PROPERTY OWNER NAME
1Z	4, 5, 6, & 7	SHADYS SENSATION LLC
2Z	7, 8, & 9	JAMES THOMAS HORSLEY AND MARK EDWARD MAUNEY

6/2/99

1/15/2021
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MooreDS

8/17/99

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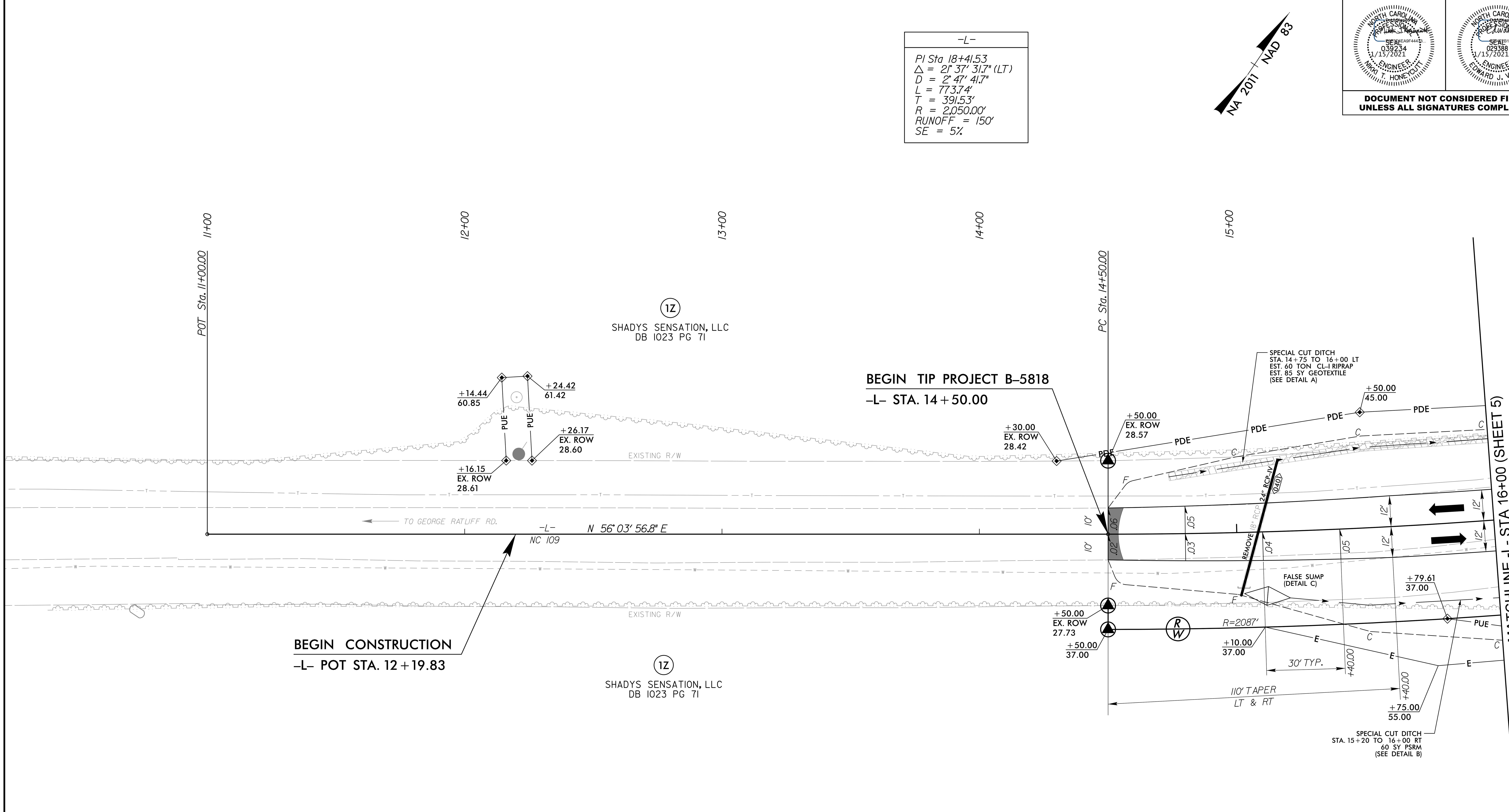
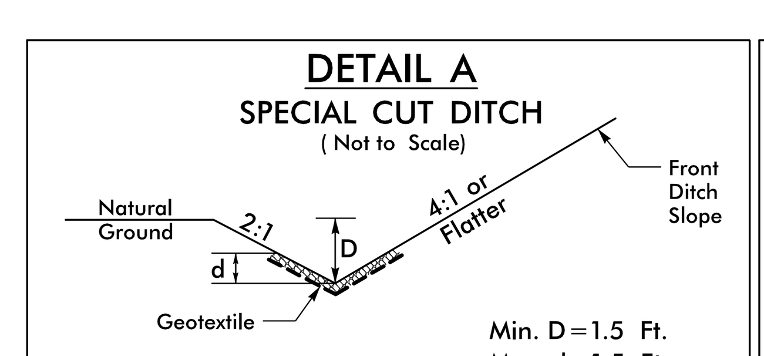
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
B-5818	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 039234 ENGINEER NIKKI T. HONEYCUTT 1/15/2021	NORTH CAROLINA PROFESSIONAL SEAL 029388 ENGINEER EDWARD J. VANCE 1/15/2021

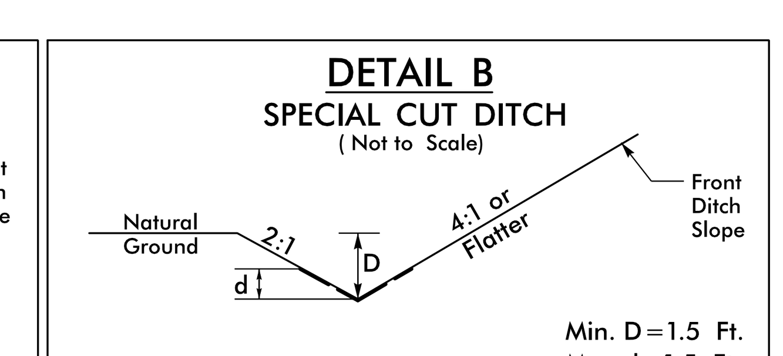
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-
PI Sta 18+41.53
△ = 21° 37' 31.7" (LT)
D = 2° 47' 41.7"
L = 773.74'
T = 391.53'
R = 2,050.00'
RUNOFF = 150'
SE = 5%

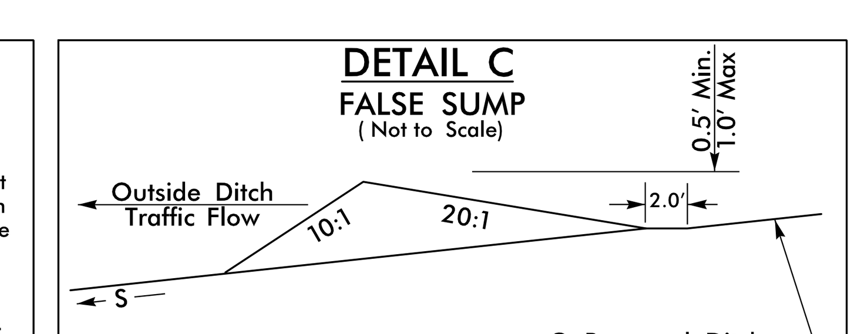




FROM -L- STA. 14+75 TO STA. 16+00 LT



FROM -L- STA. 15+20 TO STA. 16+00 RT



FROM -L- STA. 15+02 TO STA. 15+20 RT

SEE SHEET 10 FOR -L- PROFILE

1/5/2021
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8/17/99

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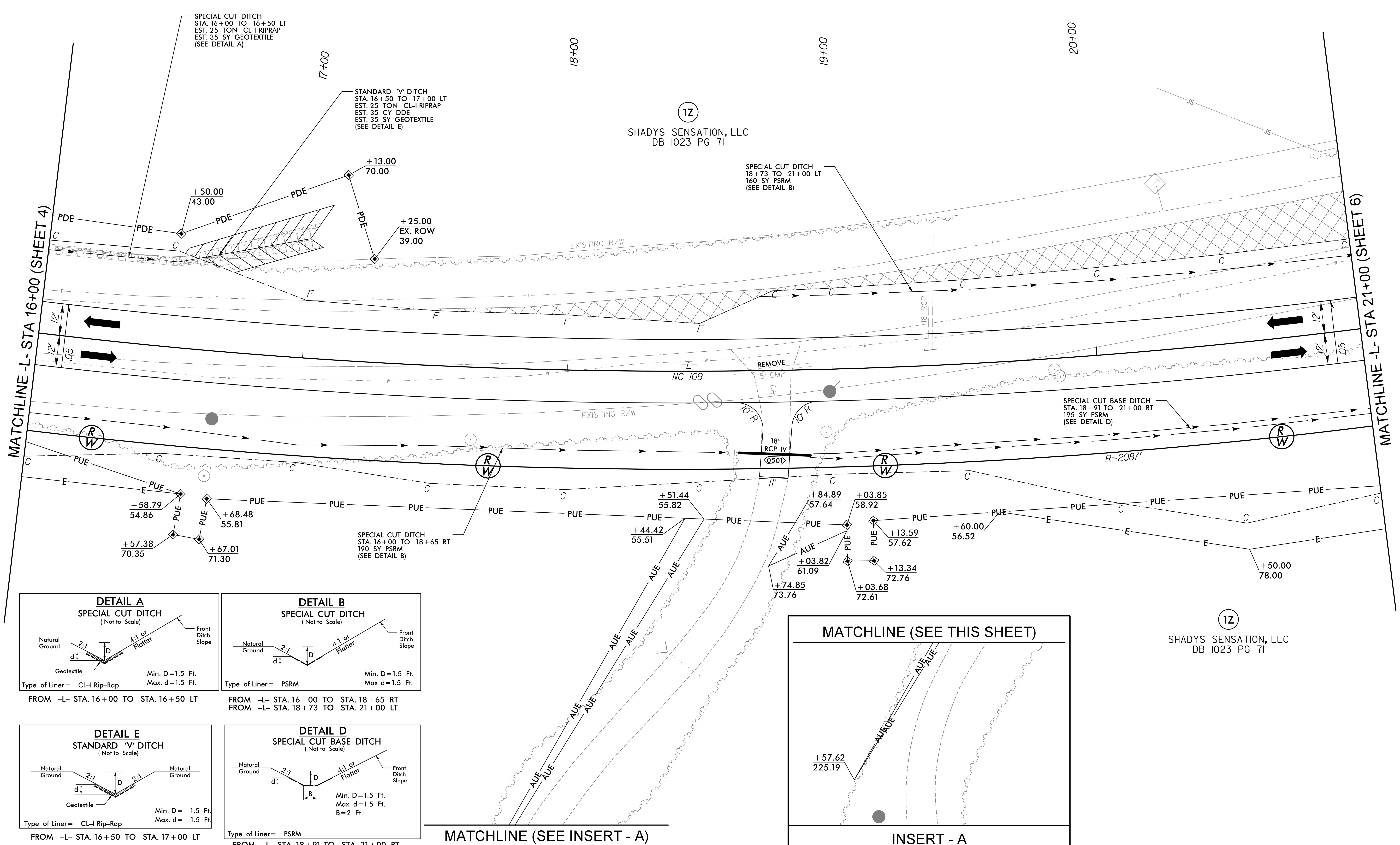
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
B-5818	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SEAL 039234 1/15/2021 NIKKI T. HONEYCUTT	SEAL 029388 1/15/2021 EDWARD J. VANCE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-
PI Sta 18+41.53
Δ = 21° 37' 31.7" (LT)
D = 2° 47' 41.7"
L = 773.74'
T = 391.53'
R = 2,050.00'
RUNOFF = 150'
SE = 5%

NA 2011 NAD 83



SEE SHEET 11 FOR -L- PROFILE

1/5/2021
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NC License Number F-0991

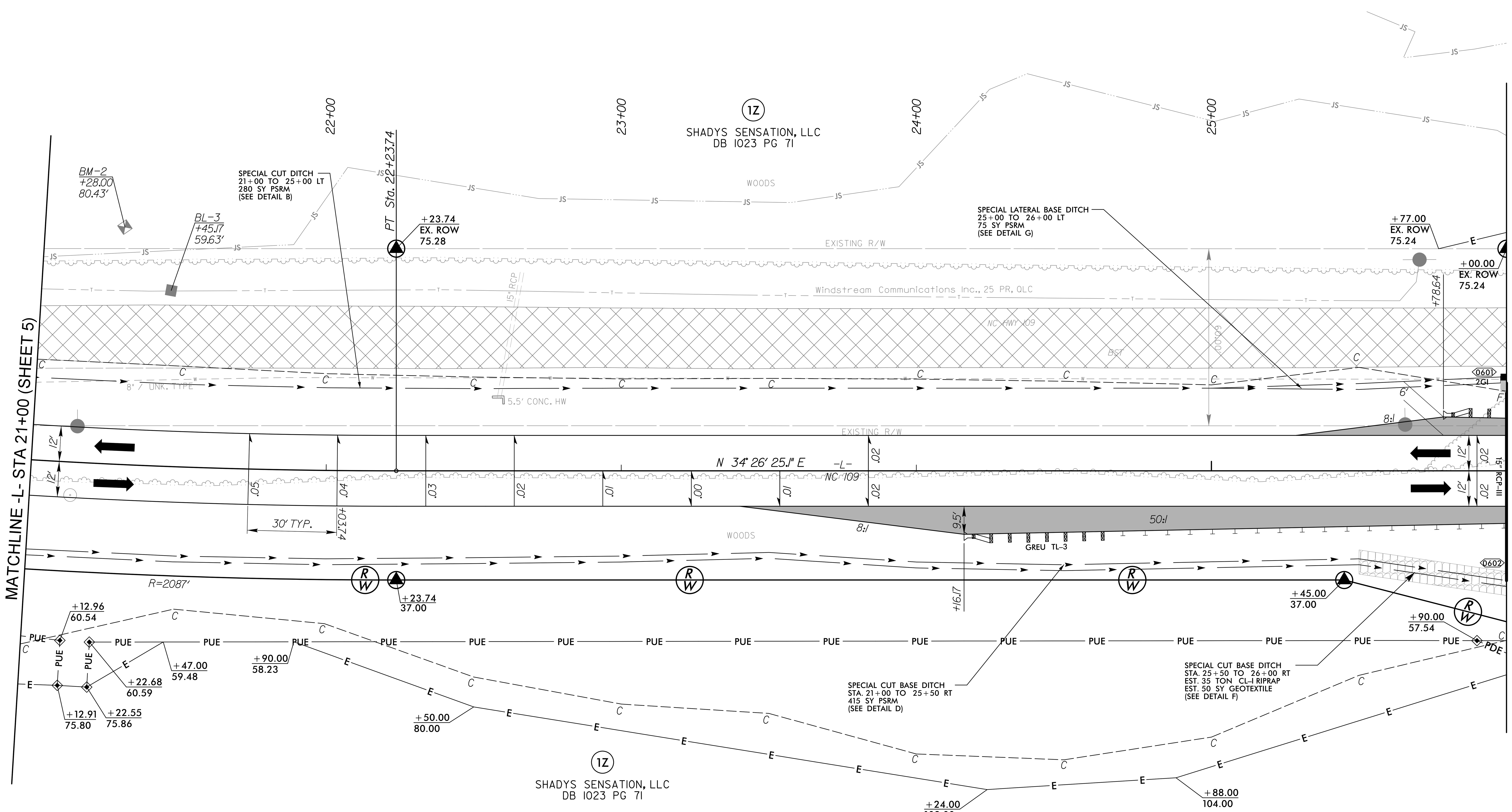
PROJECT REFERENCE NO.	SHEET NO.
B-5818	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 039234 1/15/2021 ENGINEER NIKKI T. HONEYCUTT	NORTH CAROLINA PROFESSIONAL SEAL 029388 1/15/2021 ENGINEER EDWARD J. VANCE

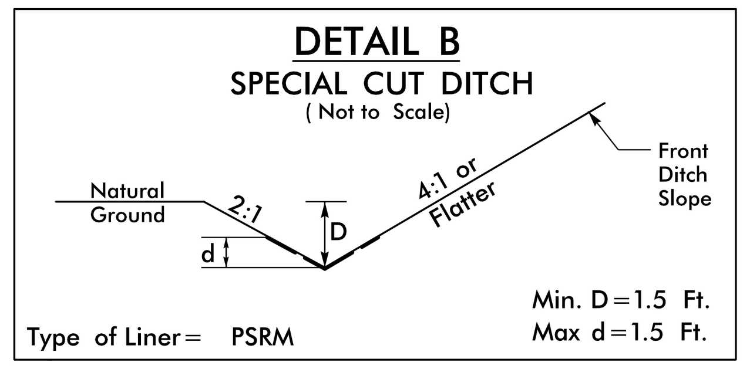
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

8/17/99

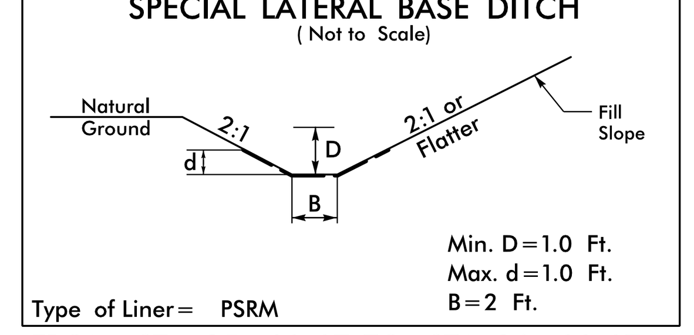
-L-
PI Sta 18+41.53
△ = 21° 37' 31.7" (LT)
D = 2° 47' 41.7"
L = 773.74'
T = 391.53'
R = 2,050.00'
RUNOFF = 150'
SE = 5%

NA 2011 NAD 83

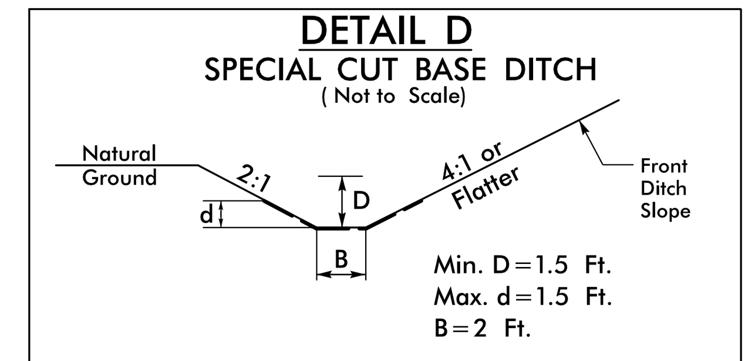


DETAIL B


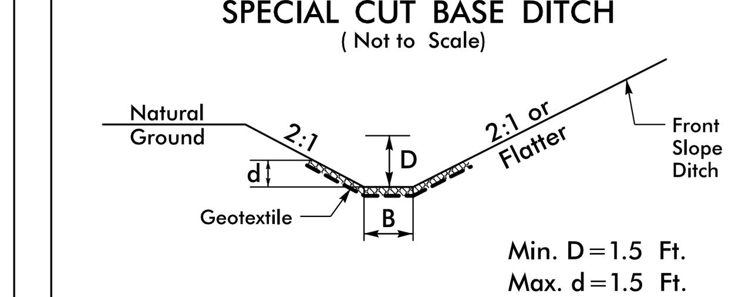
FROM -L- STA. 21+00 TO STA. 25+00 LT

DETAIL G


FROM STA. 25+00 LT TO STA. 26+00 LT

DETAIL D


FROM -L- STA. 21+00 TO STA. 25+50 RT

DETAIL F


FROM -L- STA. 25+50 TO STA. 26+00 RT

SEE SHEET 12 FOR -L- PROFILE

1/15/2021
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Charlotte, NC 28202
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
B-5818	7
RW SHEET NO.	

ROADWAY DESIGN ENGINEER

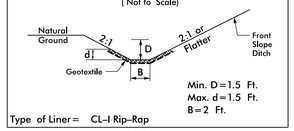
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039234 NIKKI T. HONEYCUTT
SEAL 039234
4/7/2021
ENGINEER
NIKKI T. HONEYCUTT

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 029388 EDWARD J. VANCE
SEAL 029388
4/7/2021
ENGINEER
EDWARD J. VANCE

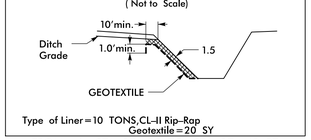
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DETAIL F
SPECIAL CUT BASE DITCH
(Not to Scale)



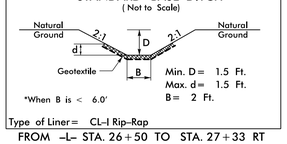
Min. D=1.5 Ft.
Max. d=1.5 Ft.
B=2 Ft.
Type of Liner= CL-I Rip-Rap
FROM –L– STA. 26+00 TO STA. 26+50 RT

DETAIL I
RIP RAP AT EMBANKMENT
(Not to Scale)



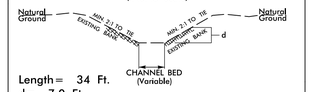
Type of Liner=10 TONS,CL-II Rip-Rap
Geotextile=20 SY
FROM –L– STA. 27+33 TO STA. 27+48 RT
FROM –L– STA. 27+87 TO STA. 28+09 RT

DETAIL H
STANDARD BASE DITCH
(Not to Scale)



Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 2 Ft.
*When B is < 6.0'
Type of Liner= CL-I Rip-Rap
FROM –L– STA. 26+50 TO STA. 27+33 RT

DETAIL J
BANK STABILIZATION
(Not to Scale)



Length= 34 Ft.
d= 7.0 Ft.
Est.= 35 Tons of CL-II Rip-Rap, 80 SY of Geotextile
FROM STA. 27+57 TO STA. 27+71 LT
FROM STA. 27+98 TO STA. 28+08 LT

BM-I
+65.28
185.40'

S 45°43'58" E
190.24'

NA 2011 | NAD 83

BANK STABILIZATION
STA. 27+57 TO STA. 27+71 LT
STA. 27+98 TO STA. 28+08 LT
EST. 35 TON CL-II RIP RAP
80 SY GEOTEXTILE
(SEE DETAIL J)

1Z
SHADYS SENSATION, LLC
DB 1023 PG 71

2Z
JAMES THOMAS HORSLEY AND
MARK EDWARD MAUNEY
DB 1043 PG 257

WOODS

DEADFALL CREEK

27+00 28+00 29+00 30+00

+52.00
116.00

+51.00
92.00, 113.00

UNCLASSIFIED EXCAVATION
(GRADE TO ELEV. 270.0');
SEE X-10 & X-11
EST. 790 CY

UNCLASSIFIED EXCAVATION
(GRADE TO ELEV. 265.0');
SEE X-13
EST. 500 CY

+85.00 EX. ROW 75.23
+85.00 94.00
+48.00 94.00
+55.00 94.00
+55.00 EX. ROW 75.23
+00.00 EX. ROW 75.24
+00.00 92.00
+25.00 92.00
+00.00 EX. ROW 75.21
+25.00 EX. ROW 75.21
+00.00 92.00
+00.00 EX. ROW 75.20

PDE

BEGIN APPROACH SLAB
–L– STA. 26+99.83

EXISTING BRIDGE TO BE REMOVED

EXISTING R/W

PLUG AND FILL TEMPORARY PIPE

GRADE TO DRAIN

NC HWY 109

MATCHLINE –L– STA 26+00 (SHEET 6)

MATCHLINE –L– STA 31+00 (SHEET 8)

<0601> 2GI
GREU TL-3
TYPE B-77
4'
12'
.02
50:1
15" RCP-III
<0602>

130' SPAN
72" MODIFIED BULB TEE

–L–
NC 109

90°

35°-3'

TB 2GI <0703>
15" RCP-III
N 34° 26' 25.1" E

END SBG LT & RT
+79.37

TB 2GI <0702>
15" W/ELBOWS

<0704>
<0705>
<0701>

BL-4
+55.94
27.29'

CL-II RIPRAP (TYP.)

BEGIN BRIDGE
–L– STA. 27+14.00

WOODS
CL-II RIPRAP (TYP.)

SPECIAL LATERAL 'V' DITCH
STA. 30+50 TO 31+00 RT
(SEE DETAIL L)

EST. 2 TON CL B RIP-RAP
EST. 7 SY GEOTEXTILE

+45.00
45.00

+12.84
58.40

PUE

+10.00
66.00
+25.28
57.61
+57.95
66.00
+65.00
85.00
+93.00
75.00
+43.00
75.00, 89.00
+73.00
75.00

SPECIAL CUT BASE DITCH
STA. 26+00 TO 26+50 RT
EST. 35 TON CL-I RIP RAP
EST. 50 SY GEOTEXTILE
(SEE DETAIL F)

STANDARD BASE DITCH
STA. 26+50 TO 27+33 RT
EST. 60 TON CL-I RIP RAP
EST. 25 CY DDE
EST. 80 SY GEOTEXTILE
(SEE DETAIL H)

RIPRAP AT EMBANKMENT
STA. 27+33 TO 27+48 RT
EST. 10 TON CL-II RIP RAP
20 SY GEOTEXTILE
(SEE DETAIL I)

RIPRAP AT EMBANKMENT
STA. 27+87 TO 28+09 RT
EST. 10 TON CL-II RIP RAP
20 SY GEOTEXTILE
(SEE DETAIL I)

STANDARD 'V' DITCH
STA. 28+09 TO 28+59 RT
EST. 8 CY DDE
(SEE DETAIL K)

END BRIDGE
–L– STA. 28+44.00

END APPROACH SLAB
–L– STA. 28+58.17

SPECIAL LATERAL 'V' DITCH
STA. 28+59 TO 30+00 RT
(SEE DETAIL L)

SPECIAL LATERAL 'V' DITCH
STA. 30+00 TO 30+50 RT
25 SY PSRM
(SEE DETAIL M)

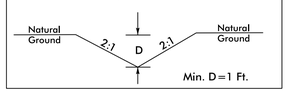
EST. 2 TON CL B RIP RAP
EST. 7 SY GEOTEXTILE

1Z
SHADYS SENSATION, LLC
DB 1023 PG 71

2Z
JAMES THOMAS HORSLEY AND
MARK EDWARD MAUNEY
DB 1043 PG 257

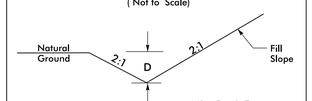
206.23'
N 43°35'43" W

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



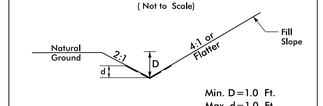
Min. D=1 Ft.
FROM STA. 28+09 RT TO STA. 28+59 RT

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



Min. D=1 Ft.
FROM STA. 28+59 RT TO STA. 30+00 RT
FROM STA. 30+50 RT TO STA. 31+00 RT

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



Min. D=1.0 Ft.
Max. d=1.0 Ft.
Type of Liner= PSRM
FROM –L– STA. 30+00 TO STA. 30+50 RT

SEE SHEET 13 FOR -L- PROFILE

4/7/2021
X:\Raleigh\proj\sht\B5818_rdy_pst07.dgn
MorePlots

8/17/99

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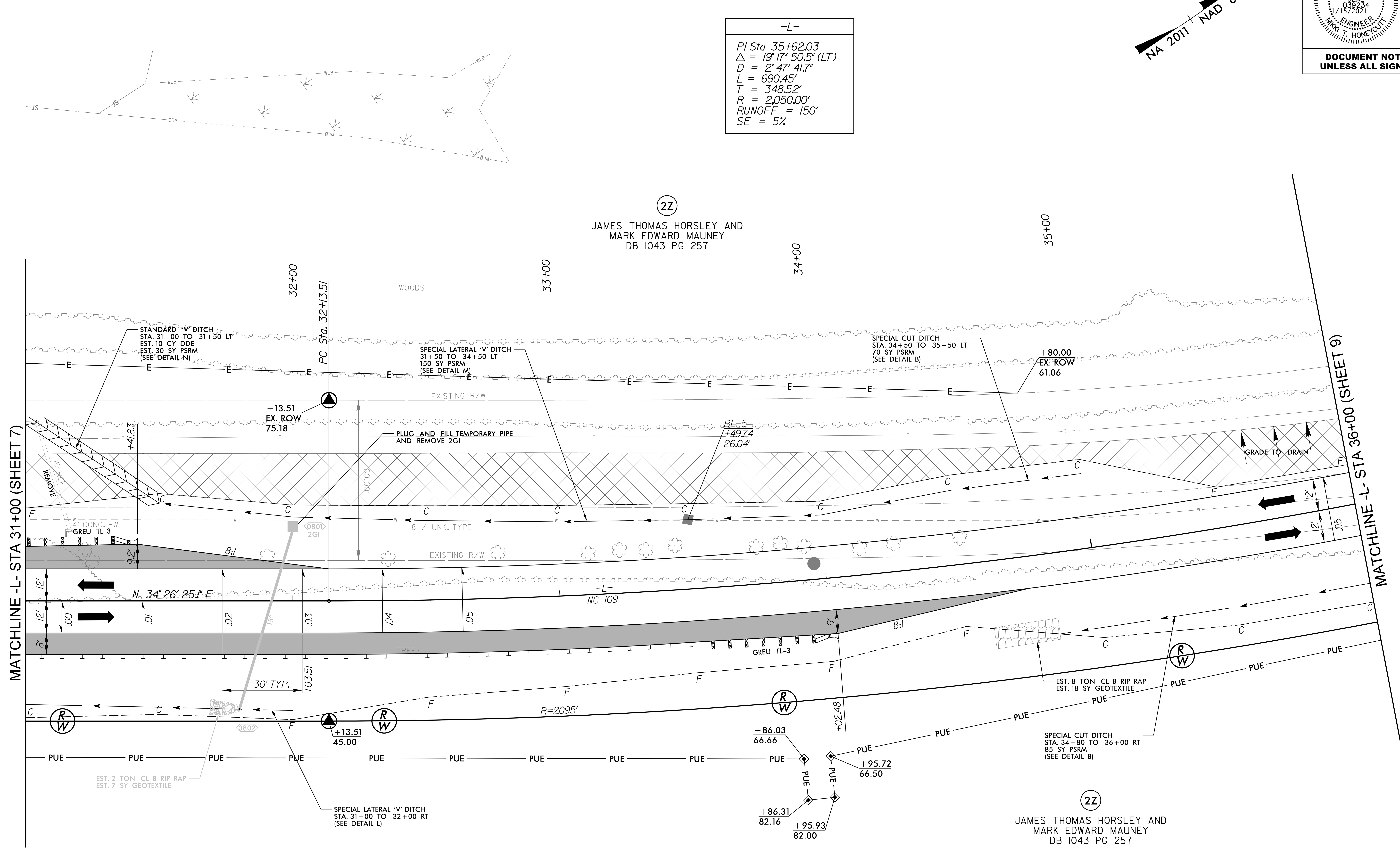
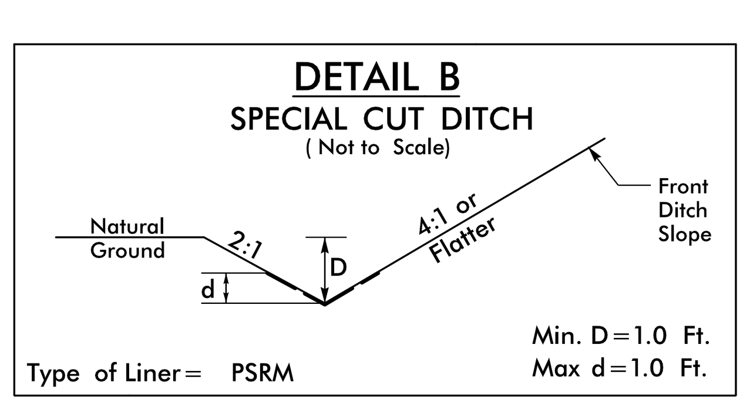
NC License Number F-0991

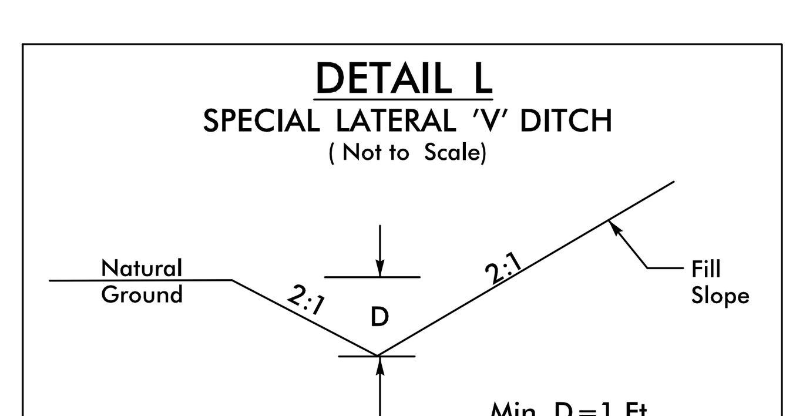
PROJECT REFERENCE NO.	SHEET NO.
B-5818	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SEAL 039234 1/15/2021 NIKKI T. HONEYCUTT	SEAL 029388 1/15/2021 EDWARD J. VANCE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

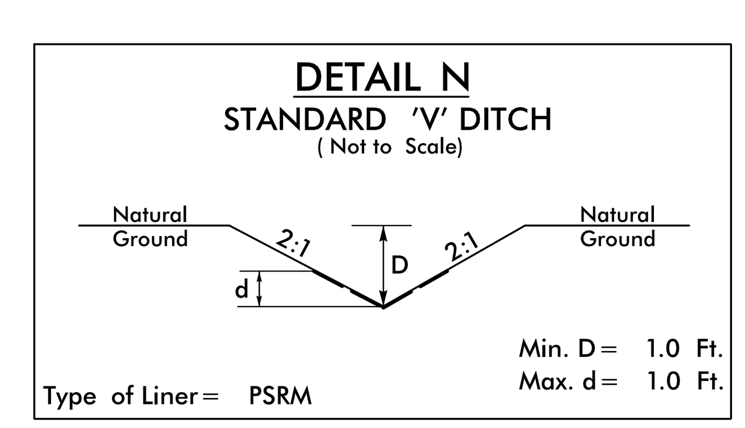

NA 2011 NAD 83
-L-
PI Sta 35+62.03
△ = 19° 17' 50.5" (LT)
D = 2° 47' 41.7"
L = 690.45'
T = 348.52'
R = 2,050.00'
RUNOFF = 150'
SE = 5%
2Z
JAMES THOMAS HORSLEY AND
MARK EDWARD MAUNEY
DB 1043 PG 257
32+00
33+00
34+00
35+00
PC Sta. 32+13.51
WOODS
STANDARD 'V' DITCH
STA. 31+00 TO 31+50 LT
EST. 10 CY DDE
EST. 30 SY PSRM
(SEE DETAIL N)
SPECIAL LATERAL 'V' DITCH
31+50 TO 34+50 LT
150 SY PSRM
(SEE DETAIL M)
SPECIAL CUT DITCH
STA. 34+50 TO 35+50 LT
70 SY PSRM
(SEE DETAIL B)
+80.00
EX. ROW
61.06
EXISTING R/W
+13.51
EX. ROW
75.18
PLUG AND FILL TEMPORARY PIPE
AND REMOVE 2GI
BL-5
+49.74
26.04'
GRADE TO DRAIN
MATCHLINE -L- STA 31+00 (SHEET 7)
MATCHLINE -L- STA 36+00 (SHEET 9)
REMOVE
4' CONC. HW
GREU TL-3
8' / UNK. TYPE
2GI
8:1
N 34° 26' 25.1" E
-L-
NC 109
TREES
GREU TL-3
EST. 8 TON CL B RIP RAP
EST. 18 SY GEOTEXTILE
30' TYP.
+03.51
R=2095'
+13.51
45.00
+02.48
+86.03
66.66
+95.72
66.50
+86.31
82.16
+95.93
82.00
PUE
EST. 2 TON CL B RIP RAP
EST. 7 SY GEOTEXTILE
SPECIAL LATERAL 'V' DITCH
STA. 31+00 TO 32+00 RT
(SEE DETAIL L)
SPECIAL CUT DITCH
STA. 34+80 TO 36+00 RT
85 SY PSRM
(SEE DETAIL B)
2Z
JAMES THOMAS HORSLEY AND
MARK EDWARD MAUNEY
DB 1043 PG 257



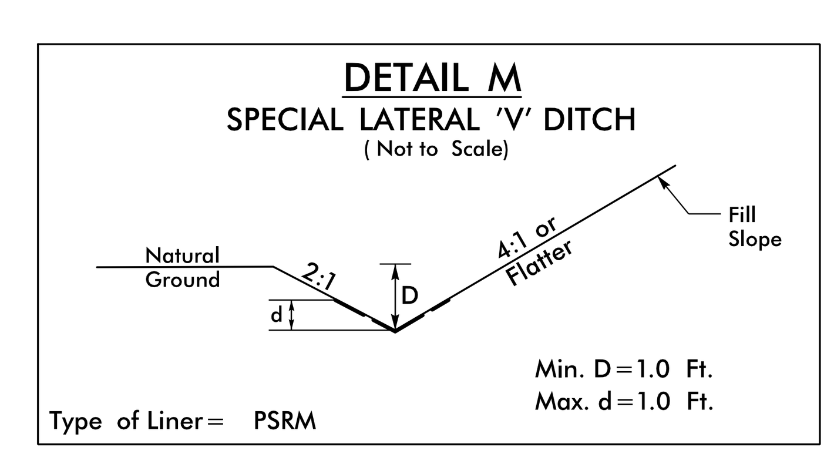
FROM -L- STA. 34+50 TO STA. 35+50 LT
FROM -L- STA. 34+80 TO STA. 36+00 RT



FROM STA. 31+00 RT TO STA. 32+00 RT



FROM -L- STA. 31+00 TO STA. 31+50 LT



FROM -L- STA. 31+50 TO STA. 34+50 LT

SEE SHEET 14 FOR -L- PROFILE

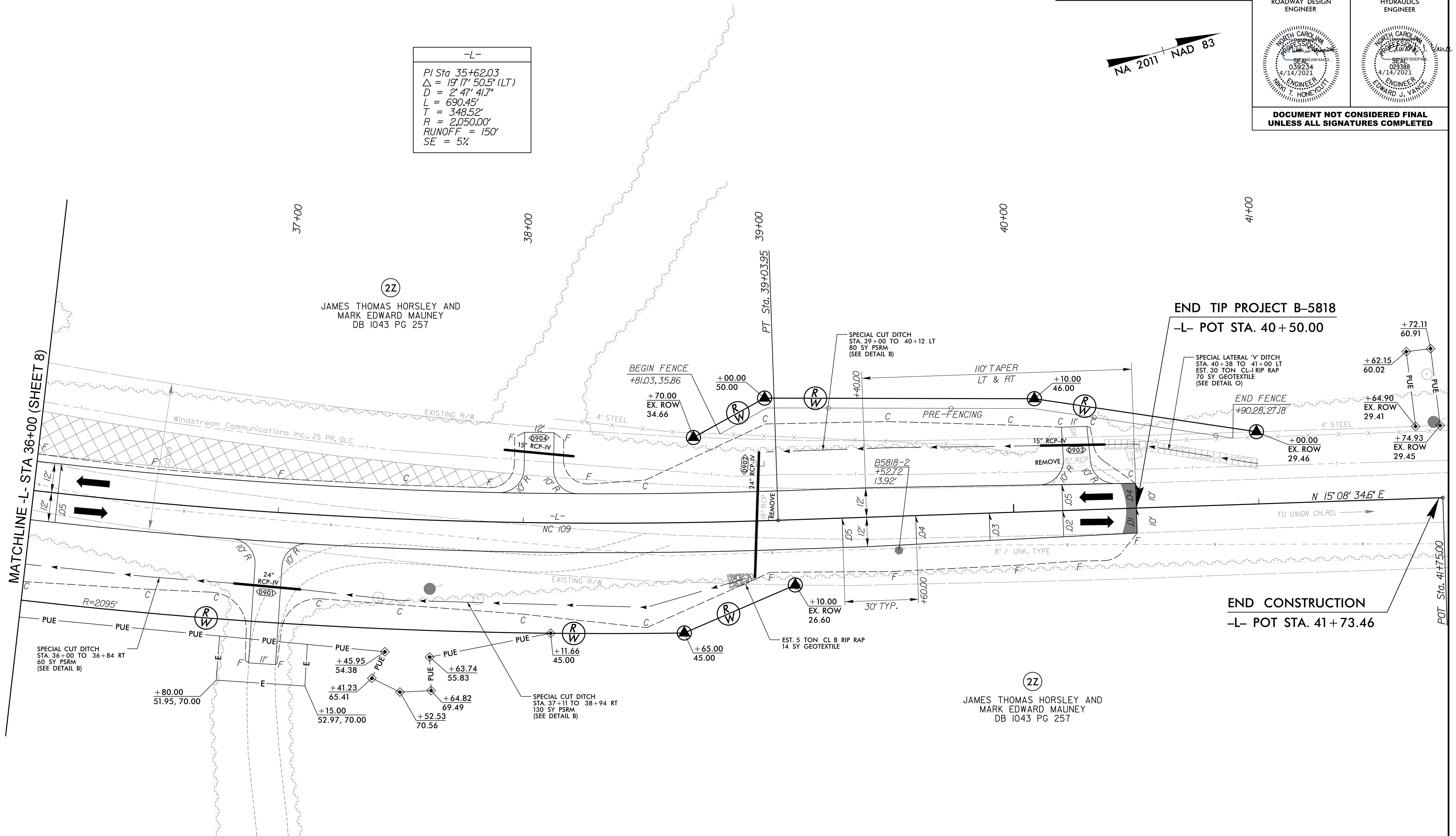
1/15/2021
r:\roadway\proj\sht\B5818_rdy_psh08.dgn

8/17/99

STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

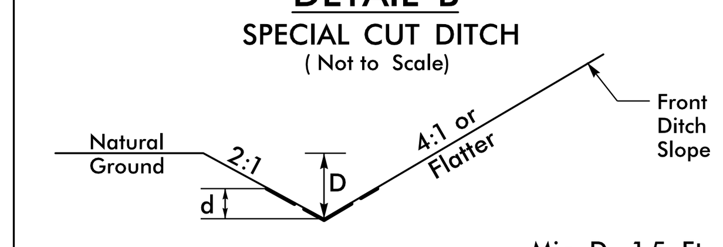
PROJECT REFERENCE NO.	SHEET NO.
B-5818	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SEAL 039234 4/14/2021 NIKKI T. HONEYCUTT	SEAL 029388 4/14/2021 EDWARD J. VANCE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



NA 2011 NAD 83
-L-
PI Sta 35+62.03
Δ = 19° 17' 50.5" (LT)
D = 2° 47' 41.7"
L = 690.45'
T = 348.52'
R = 2,050.00'
RUNOFF = 150'
SE = 5%
37+00
38+00
39+00
40+00
41+00
2Z
JAMES THOMAS HORSLEY AND
MARK EDWARD MAUNEY
DB 1043 PG 257
END TIP PROJECT B-5818
-L- POT STA. 40+50.00
PT Sta. 39+03.95
SPECIAL CUT DITCH
STA. 39+00 TO 40+12 LT
80 SY PSRM
(SEE DETAIL B)
SPECIAL LATERAL 'V' DITCH
STA. 40+38 TO 41+00 LT
EST. 30 TON CL-I RIP RAP
70 SY GEOTEXTILE
(SEE DETAIL O)
BEGIN FENCE
+81.03, 35.86
+00.00
50.00
+70.00
EX. ROW
34.66
110' TAPER
LT & RT
+10.00
46.00
END FENCE
+90.28, 27.18
PRE-FENCING
+40.00
+72.11
60.91
+62.15
60.02
+64.90
EX. ROW
29.41
+74.93
EX. ROW
29.45
+00.00
EX. ROW
29.46
4' STEEL
EXISTING R/W
Windstream Communications Inc., 25 PR, QLC
MATCHLINE -L- STA 36+00 (SHEET 8)
0904
15" RCP-IV
0902
24" RCP-IV
18" RCP
REMOVE
B5818-2
+52.72
13.92'
15" RCP-IV
0903
15" RCP
REMOVE
N 15° 08' 34.6" E
TO UNION CH. RD.
-L-
NC 109
8" / UNK. TYPE
24" RCP-IV
0901
R=2095'
PUE
SPECIAL CUT DITCH
STA. 36+00 TO 36+84 RT
60 SY PSRM
(SEE DETAIL B)
+80.00
51.95, 70.00
+45.95
54.38
+41.23
65.41
+15.00
52.97, 70.00
+63.74
55.83
+64.82
69.49
+52.53
70.56
+11.66
45.00
+65.00
45.00
+10.00
EX. ROW
26.60
30' TYP.
+60.00
SPECIAL CUT DITCH
STA. 37+11 TO 38+94 RT
130 SY PSRM
(SEE DETAIL B)
EST. 5 TON CL B RIP RAP
14 SY GEOTEXTILE
END CONSTRUCTION
-L- POT STA. 41+73.46
POT Sta. 41+75.00

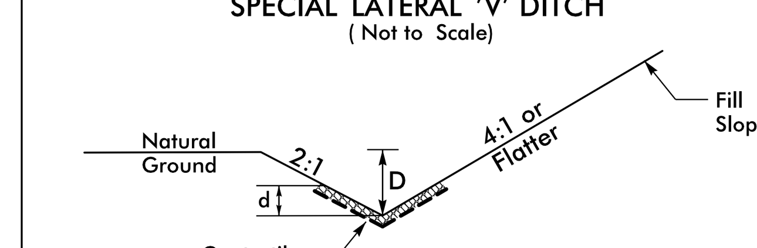
DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



Type of Liner= PSRM

FROM -L- STA. 36+00 TO STA. 36+84 RT
FROM -L- STA. 37+11 TO STA. 38+94 RT
FROM -L- STA. 39+00 TO STA. 40+12 LT

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



Type of Liner= CL-I Rip-Rap

FROM -L- STA. 40+38 TO STA. 41+00 LT

SEE SHEET 15 FOR -L- PROFILE

4/14/2021
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STV 100 Years — STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

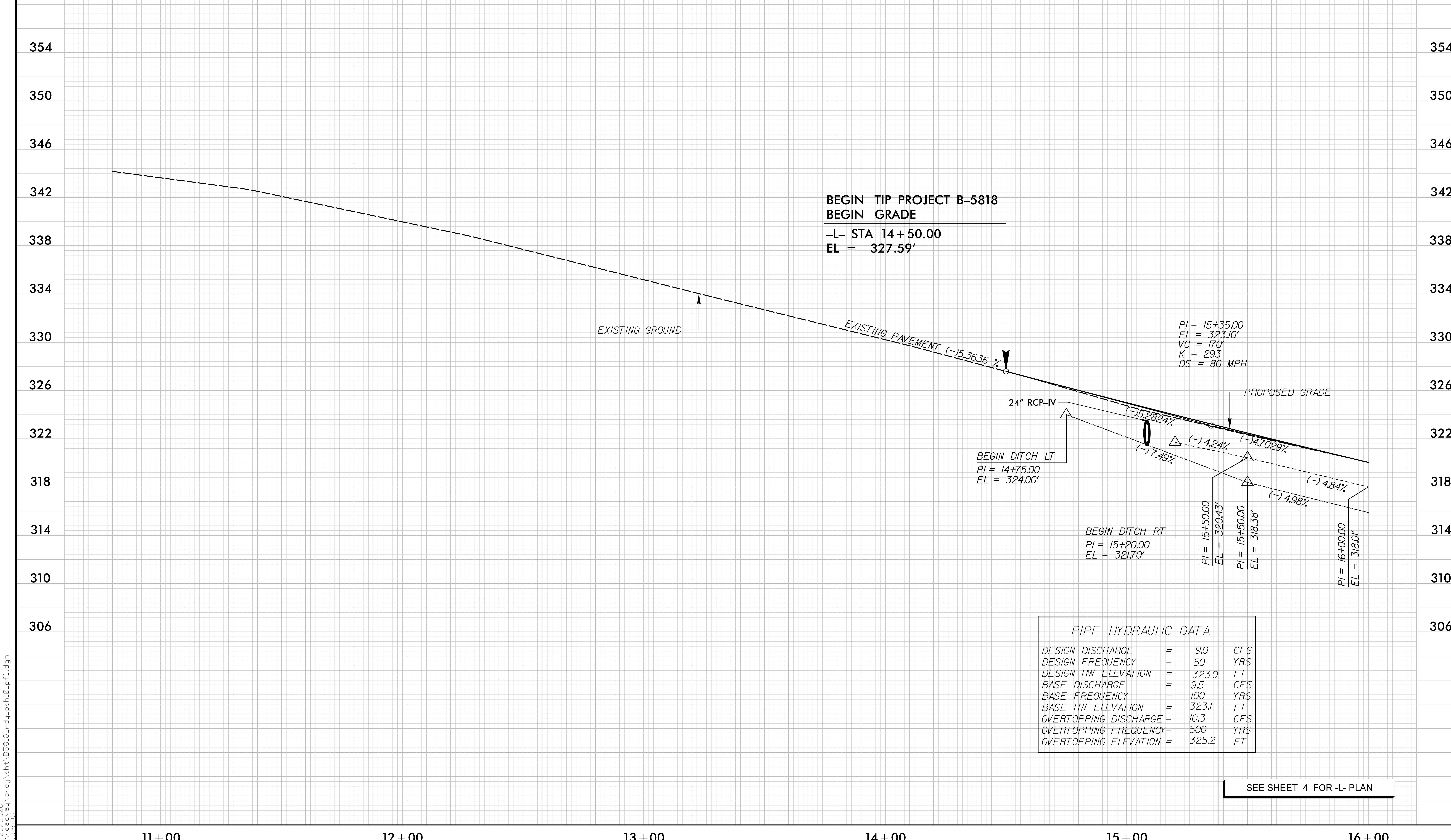
PROJECT REFERENCE NO.	SHEET NO.
B-5818	10

ROADWAY DESIGN ENGINEER — SEAL 039214, 12/23/2020, NIKKI T. HONEYCUTT

HYDRAULICS ENGINEER — SEAL 023388, 12/23/2020, EDWARD J. VANCE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-



PIPE HYDRAULIC DATA

DESIGN DISCHARGE	=	9.0	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	323.0	FT
BASE DISCHARGE	=	9.5	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	323.1	FT
OVERTOPPING DISCHARGE	=	10.3	CFS
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING ELEVATION	=	325.2	FT

SEE SHEET 4 FOR -L- PLAN

5/14/99

12/23/2020
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PROJECT REFERENCE NO.	SHEET NO.
B-5818	11

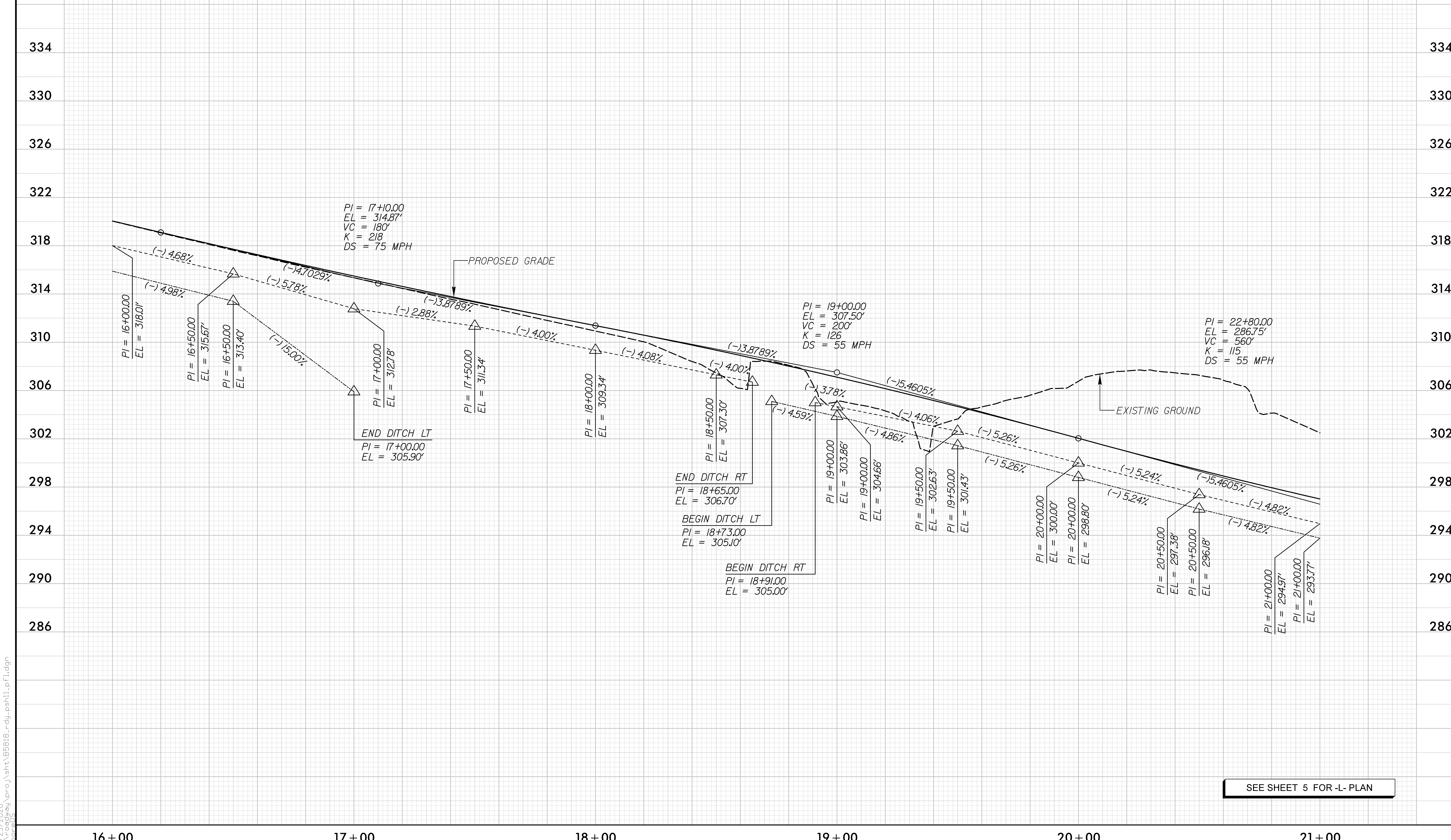
ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 039234 ENGINEER NIKKI T. HONEYCUTT 12/23/2020

NORTH CAROLINA PROFESSIONAL SEAL 029388 ENGINEER EDWARD J. VANCE 12/23/2020

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-



SEE SHEET 5 FOR -L- PLAN

5/14/99

-L-

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NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
B-5818	12

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 039271 ENGINEER NIKKA T. HONEYCUTT
12/23/2020

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029388 ENGINEER EDWARD J. VANCE
12/23/2020

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316 312 308 304 300 296 292 288 284 280 276 272 268

EXISTING GROUND

PROPOSED GRADE

PI = 22+80.00
EL = 286.75'
VC = 560'
K = 115
DS = 55 MPH

BM-2 (80.43' LT)

PI = 21+00.00
EL = 293.77'

PI = 21+00.00
EL = 294.97'

PI = 21+50.00
EL = 291.58'

PI = 21+50.00
EL = 292.78'

PI = 22+00.00
EL = 289.72'

PI = 22+00.00
EL = 290.71'

PI = 22+50.00
EL = 288.75'

PI = 23+00.00
EL = 286.68'

PI = 23+00.00
EL = 287.02'

PI = 23+50.00
EL = 285.36'

PI = 24+00.00
EL = 284.26'

PI = 24+00.00
EL = 284.47'

PI = 24+50.00
EL = 283.37'

PI = 24+50.00
EL = 283.59'

PI = 25+00.00
EL = 282.70'

PI = 25+00.00
EL = 282.94'

PI = 25+50.00
EL = 282.51'

PI = 25+50.00
EL = 281.91'

END DITCH LT
PI = 26+00.00
EL = 279.71'

(−) 4.38%
(−) 4.38%
(−) 4.14%
(−) 3.72%
(−)5.4605%
(−) 3.92%
(−) 3.04%
(−) 3.46%
(−) 2.55%
(−) 2.64%
(−)0.6031%
(−) 2.55%
(−) 2.20%
(−) 1.76%
(−) 1.78%
(−) 1.34%
(−) 1.30%
(−) 0.86%
(−) 1.58%
(−) 4.40%
(−) 12.94%

BM-2
STA.= 21+28.00
ELEV.= 292.53'
RAILROAD SPIKE IN 2.4' DIA. OAK

SEE SHEET 6 FOR -L- PLAN

21+00 22+00 23+00 24+00 25+00 26+00

12/23/2020
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Modified

5/14/99

-L-

STV 100 Years
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PROJECT REFERENCE NO.	SHEET NO.
B-5818	13

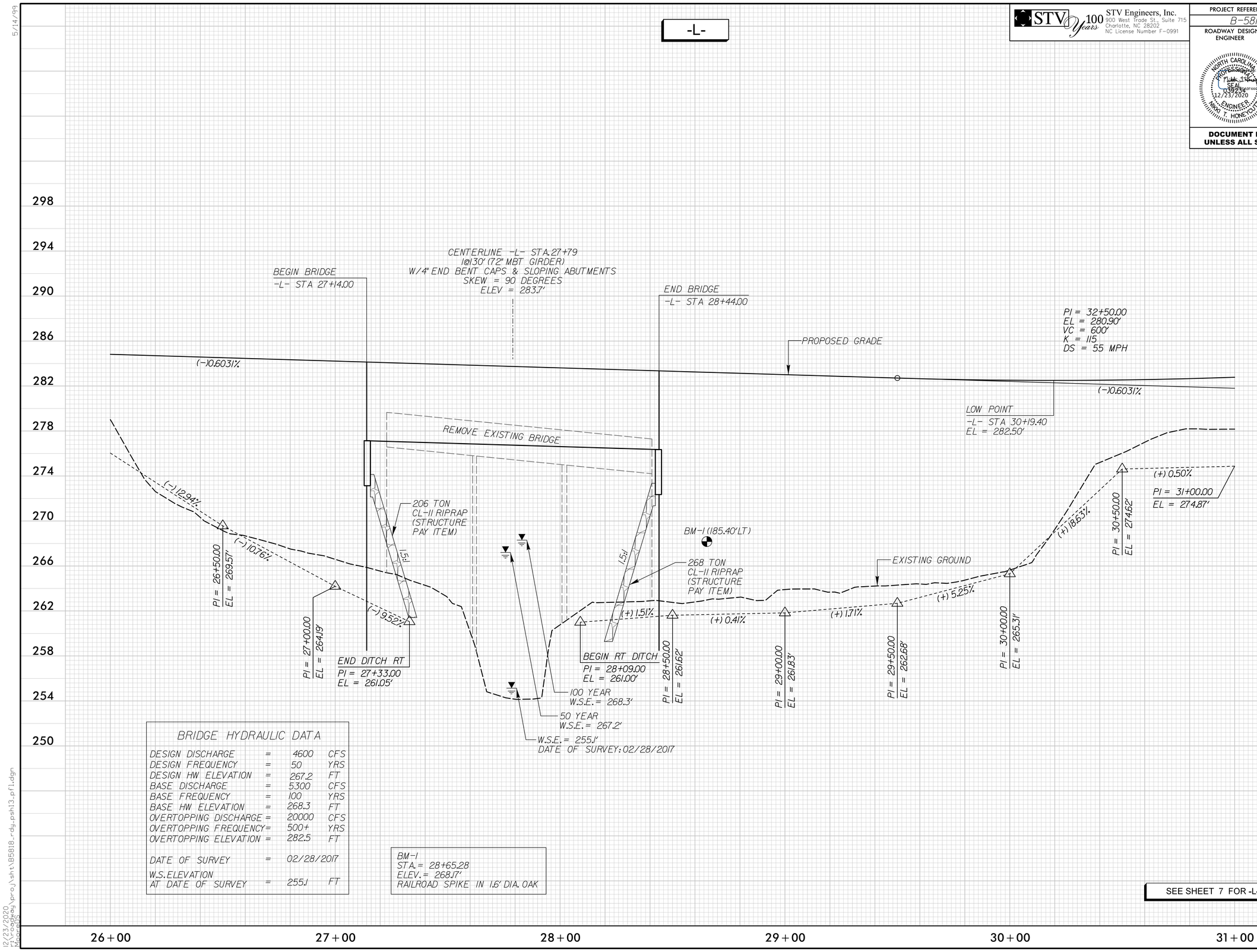
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 039274 ENGINEER NIKKA T. HONEYCUTT
12/23/2020

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029588 ENGINEER EDWARD J. VANCE
12/23/2020

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	4600	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	267.2	FT
BASE DISCHARGE	=	5300	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	268.3	FT
OVERTOPPING DISCHARGE	=	20000	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	282.5	FT
DATE OF SURVEY	=	02/28/2017	
W.S. ELEVATION AT DATE OF SURVEY	=	255.1	FT

BM-1
STA. = 28+65.28
ELEV. = 268.17'
RAILROAD SPIKE IN 1.6' DIA. OAK

SEE SHEET 7 FOR -L- PLAN

12/23/2020
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Modified

PROJECT REFERENCE NO.	SHEET NO.
B-5818	14

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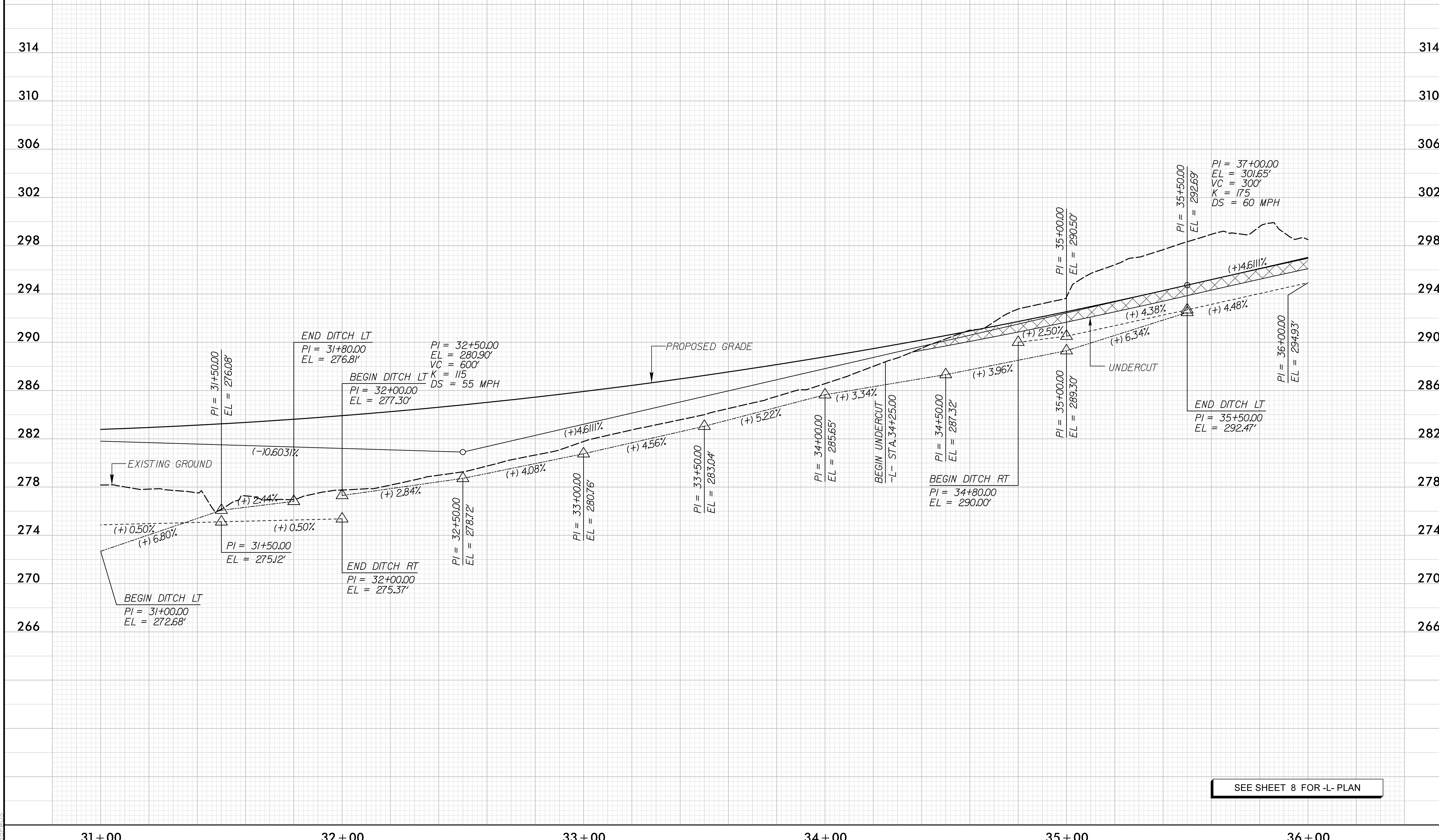
ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-



SEE SHEET 8 FOR -L- PLAN

5/14/99

12/23/2020 r:\roadway\proj\sht\B5818_rdy_psh14_pfl.dgn

5/14/99

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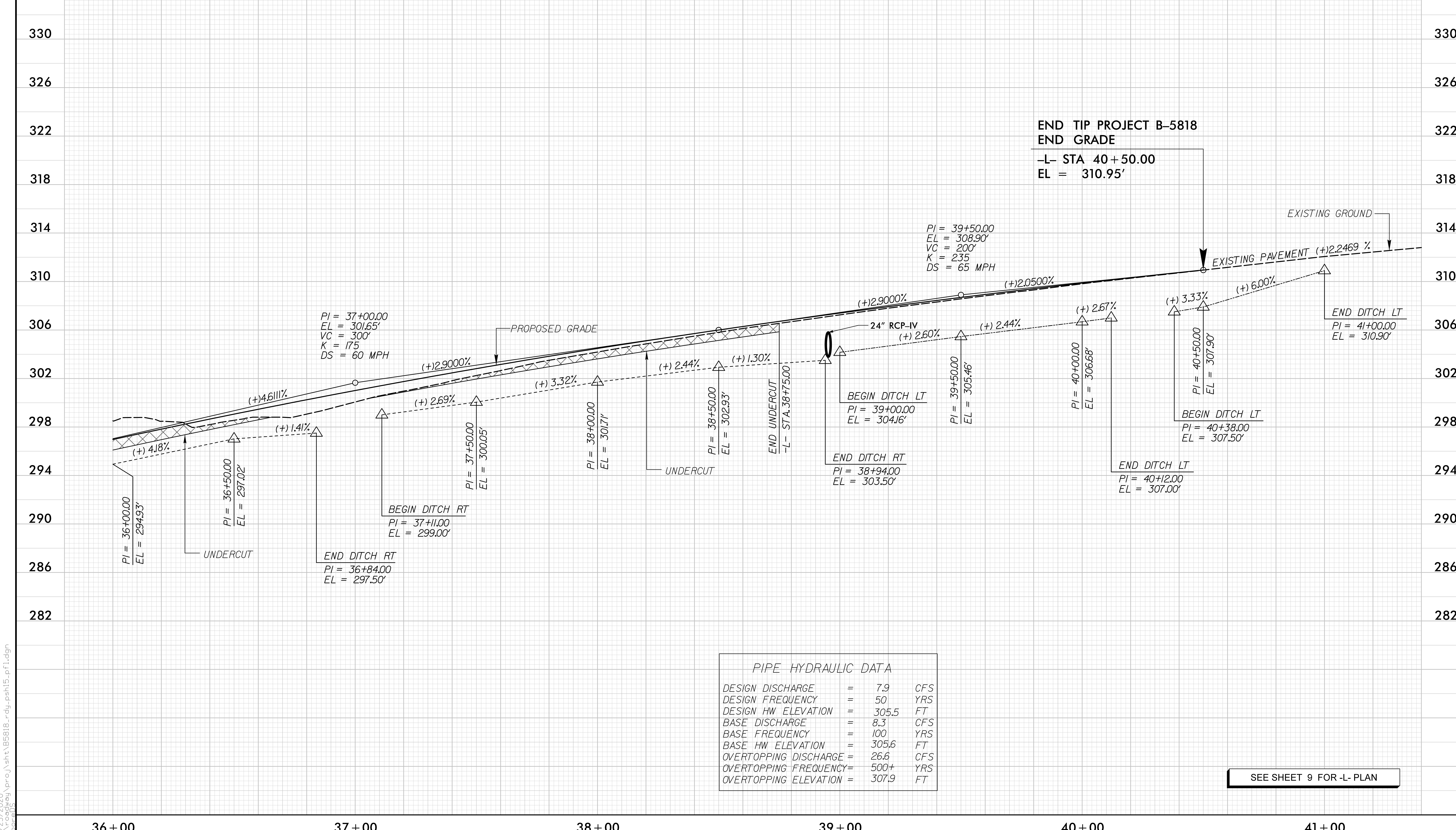
Charlotte, NC 28202
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
B-5818	15

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 039234 ENGINEER NIKKI T. HONEYCUTT 12/23/2020	NORTH CAROLINA PROFESSIONAL SEAL 029588 ENGINEER EDWARD J. VANCE 12/23/2020

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-



PIPE HYDRAULIC DATA

DESIGN DISCHARGE	=	7.9	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	305.5	FT
BASE DISCHARGE	=	8.3	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	305.6	FT
OVERTOPPING DISCHARGE	=	26.6	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	307.9	FT

SEE SHEET 9 FOR -L- PLAN

12/23/2020
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