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09/08/99

PROJECT: B-5985B

CONTRACT: C205069

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ROBESON COUNTY

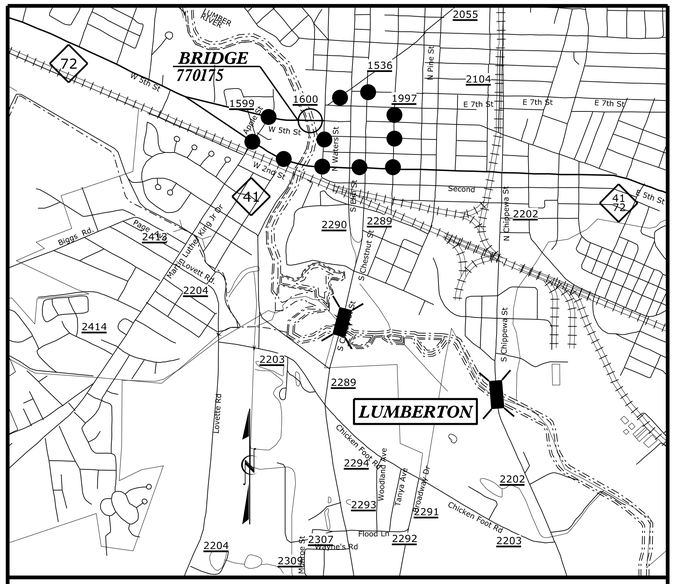
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5985B	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
47749.1.3	4774902	PE
47749.2.5		ROW
47749.2.6		UTILITY
47749.3.3	4774902	CONST.

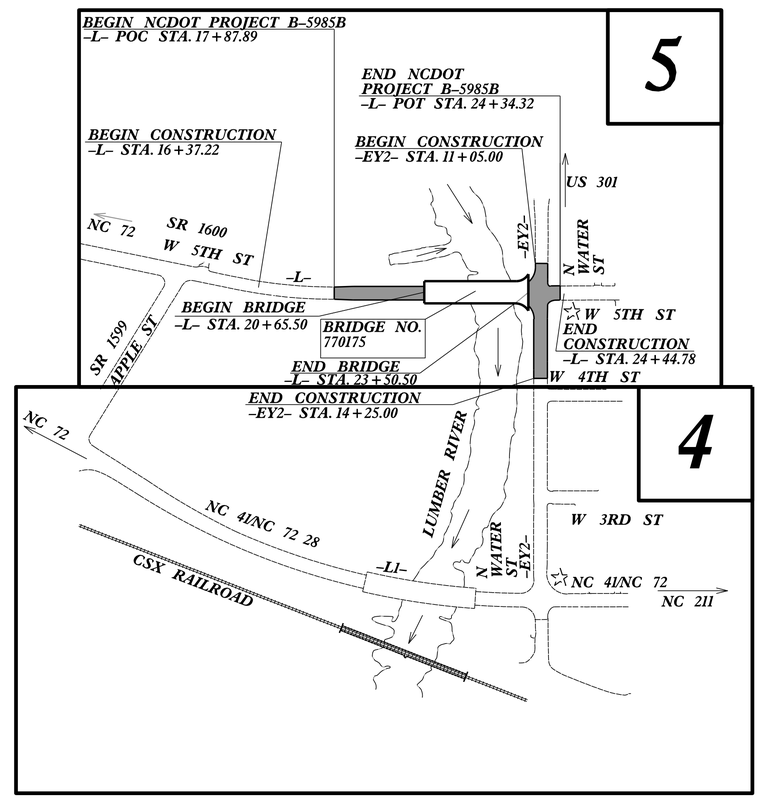
WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

LOCATION: BRIDGE NO. 770175 OVER LUMBER RIVER ON SR 1600 (W 5TH STREET)

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



OFF-SITE DETOUR



☆ - EXISTING SIGNAL

NAD 83/
NA 2011

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UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

BRIDGE # 770175
ADT 2025 = 11,100
ADT 2045 = 14,800
K = 11 %
D = 55 %
T = 3 % *
V = 40 MPH
* (TTST =1% + DUAL =2%)
FUNC CLASS =
MAJOR COLLECTOR
SUB-REGIONAL TIER

PROJECT LENGTH

BRIDGE # 770175
LENGTH ROADWAY PROJECT B-5985B = 0.068 MILES
LENGTH STRUCTURE PROJECT B-5985B = 0.054 MILES

TOTAL LENGTH PROJECT B-5985B = 0.122 MILES

Prepared for:
DIVISION OF HIGHWAYS
STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DRIVE RALEIGH NC, 27610

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 27, 2022

LETTING DATE:
NOVEMBER 18, 2025

NCDOT CONTACT:

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

GREG S. PURVIS, PE
PROJECT DESIGN ENGINEER

DAVID STUTTS, PE
PROJECT ENGINEER - PEF/PROGRAM MGT.

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044561 ENGINEER HARMINDER SINGH
SIGNATURE: Signed by: Harminder Singh D3C0C00E570240E... 9/3/2025

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022999 ENGINEER GREG S. PURVIS
SIGNATURE: Signed by: Greg S. Purvis A7C0C0A7D75E4C9... 9/3/2025

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

9/3/2025
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USER:JRosado

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5/14/99

GENERAL NOTES

GENERAL NOTES:

2024 SPECIFICATIONS
EFFECTIVE: 01-16-2024
REVISED:

GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

CLEARING:

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

DRIVEWAYS:

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

GUARDRAIL:

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

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

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.

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

CURB RAMPS

CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. CONSTRUCT ALL CURB RAMPS ACCORDANCE WITH STD 848.06.

2024 ROADWAY ENGLISH STANDARD DRAWINGS

PROJECT REFERENCE NO.	SHEET NO.
B-5985B	1A
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022999 ENGINEER GREG S. PURVIS

Signed by: Greg S. Purvis 9/2/2025

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EFF. 01-16-2024
REV.

2024 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Contracts Standards and Development Unit - N. C. Department of Transportation - Raleigh, N. C., Dated January 16, 2024 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 4 - MAJOR STRUCTURES	
423.01	Bridge Approach Fills - Type 1 Approach Fill for Bridge 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
DIVISION 8 - INCIDENTALS	
838.39	Reinforced Concrete Endwall - for Single 72" Pipe 90 Skew
838.45	Notes for Reinforced Concrete Endwall - Std. Dwg 838.21 thru 838.40
838.69	Reinforced Brick Endwall - for Single 72" Pipe 90 Skew
838.75	Notes for Reinforced Brick Endwall - Std. Dwg 838.51 thru 838.70
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.29	Frames and Narrow Slot Flat Grates
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk (Use Detail in Lieu of Standard for Sheet 1 of 1)
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
848.06	Curb Ramp (Use Details in Lieu of Standards for Sheets 9 and 10 of 13)
862.01	Guardrail Placement (Use Details in Lieu of Standards for Sheets 4, 6, 12, and 14 of 15)
862.02	Guardrail Installation
862.03	Structure Anchor Units (Use Detail in Lieu of Standard for Sheet 8 of 9)
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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 THRU 2A-2	TYPICAL SECTIONS, PAVEMENT SCHEDULE, & MISCELLANEOUS DETAILS
2B-1	-L- AND -EY2- INTERSECTION DETAIL
2C-1 THRU 2C-10	DETAILS IN LIEU OF ROADWAY STANDARDS
3B-1	SUMMARY OF GUARDRAIL SUMMARY, EARTHWORK SUMMARY, AND PAVEMENT REMOVAL SUMMARY
3D-1 THRU 3D-2	DRAINAGE SUMMARY
3G-1	GEOTECHNICAL SUMMARY
3P-1	PARCEL INDEX SHEET
4 THRU 7	PLAN AND PROFILE SHEETS
RW01 THRU RW04	RIGHT OF WAY SHEETS, SURVEY CONTROL SHEETS, PROPOSED ALIGNMENT CONTROL SHEET AND PROPOSED EASEMENT CONTROL SHEET
TMP-1 THRU TMP-9	TRANSPORTATION MANAGEMENT PLAN
PMP-1 THRU PMP-3	PAVEMENT MARKING PLAN
E-1 THRU E-2	ELECTRICAL PLANS
EC-1 THRU EC-6	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-4	SIGNING PLANS
SIG-1.0 THRU SIG-2.5	SIGNAL PLANS
M1A THRU M9	METAL POLE STANDARDS
UO-1 THRU UO-3	UTILITIES BY OTHERS PLANS
X-1A	CROSS SECTION SUMMARY SHEET
X-1 THRU X-6	CROSS SECTIONS
S-01 THRU S-64	STRUCTURE PLANS (BRIDGE 175)
SN	STRUCTURE NOTES

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9/10/2021

PROJECT REFERENCE NO.	SHEET NO.
B-5985B	1B

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
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary
- Proposed Wetland Boundary
- Existing Endangered Animal Boundary
- Existing Endangered Plant Boundary
- Existing Historic Property Boundary
- Known Contamination Area: Soil
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

- 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
- Buffer Zone 1
- Buffer Zone 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.

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PROJECT REFERENCE NO.	SHEET NO.
B-5985B	2A-1

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022999 ENGINEER GREG S. PURNIS
Signed by: Greg S. Purnis 9/2/2025

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 44590 ENGINEER ANDREW D. WARD
Docusigned by: Andrew Ward 9/3/2025

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PAVEMENT SCHEDULE

(FINAL PAVEMENT DESIGN)

C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	R1	2'-6" CONCRETE CURB AND GUTTER.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	S1	4" CONCRETE SIDEWALK.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	T	EARTH MATERIAL.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
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 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.	V1	MILLING ASPHALT PAVMENT, 0" TO 1½" DEPTH
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	V2	MILLING ASPHALT PAVMENT, 1½" DEPTH
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.	W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL SHEET No. 2A-2)

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

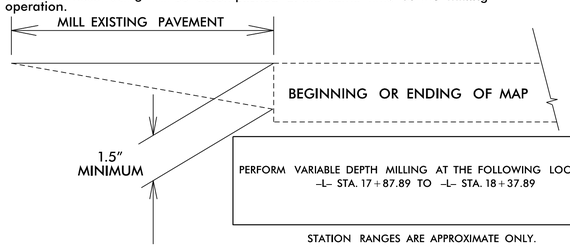
MILLING AT PAVEMENT TIE-INS

NOTES TO CONTRACTOR

For surface mixes over 1" in thickness, mill the existing pavement in accordance with the following sketch as directed by the Engineer.

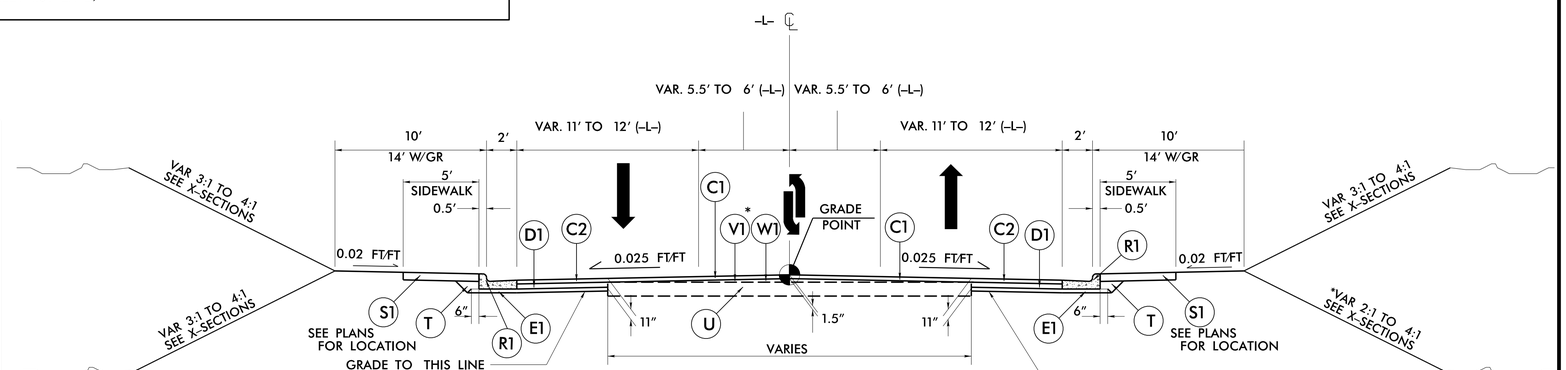
Locations shall include ties into existing concrete pavement, at bridge approaches where the bridge will not be resurfaced, and at the beginning and ending point of each resurfacing map.

Perform the work in accordance with Section 607 of the January 2024 North Carolina Department of Transportation Standard Specifications for Roads and Structures. Resurfacing will be accomplished at the same time as the milling operation.



PERFORM VARIABLE DEPTH MILLING AT THE FOLLOWING LOCATIONS:
-L- STA. 17+87.89 TO -L- STA. 18+37.89

STATION RANGES ARE APPROXIMATE ONLY. GRADE MAY BE ADJUSTED BY ENGINEER TO ENSURE A PROPER TIE-IN

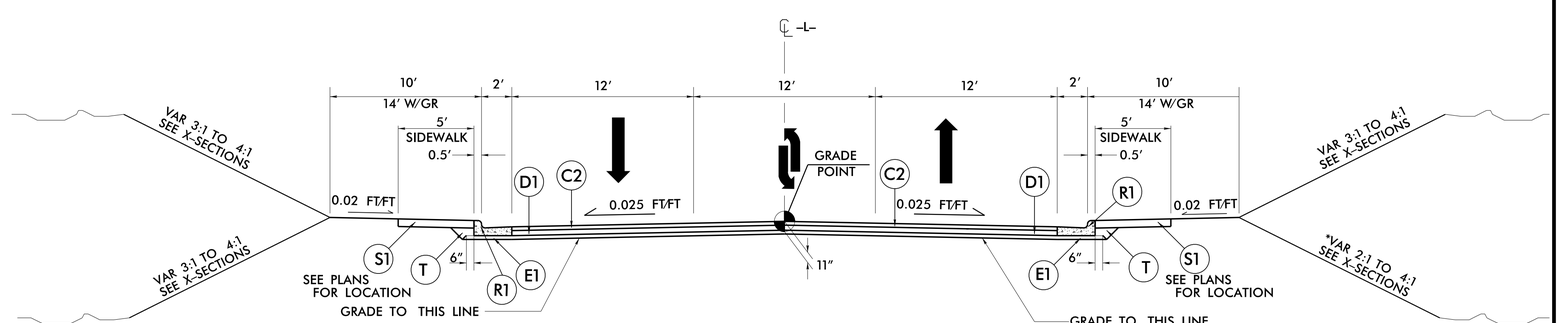


TYPICAL SECTION NO. 1

-L- STA. 17+87.89 TO -L- STA. 18+37.89
-L- STA. 18+37.89 TO -L- STA. 20+15.50

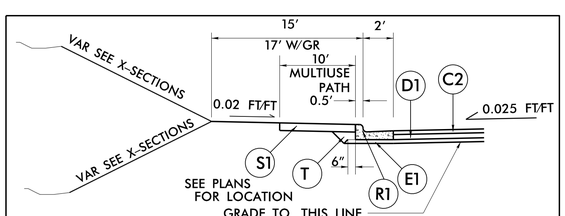
* NOTE: USE MILLING DETAIL IN CONJUNCTION WITH TYPICAL SECTION NO. 1

-L- STA. 17+87.89 TO -L- STA. 18+37.89



TYPICAL SECTION NO. 2

-L- STA. 20+15.50 TO -L- STA. 20+65.50 (BEGIN BRIDGE)
-L- STA. 23+50.50 (END BRIDGE) TO -L- STA. 23+67.19



USE WITH TYPICAL SECTION NO. 1 AND 2

-L- STA. 17+87.89 TO -L- STA. 20+65.50 (BEGIN BRIDGE) LT.
-L- STA. 23+50.50 (END BRIDGE) TO -L- STA. 23+67.19 LT.

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HYDRAULIC DESIGN ENGINEER	ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044561 ENGINEER HARMINDER SINGH	NORTH CAROLINA PROFESSIONAL SEAL 022999 ENGINEER GREG S. PURVIS	NORTH CAROLINA PROFESSIONAL SEAL 44590 ENGINEER ANDREW D. WARD
Signed by: Harminder Singh 9/3/2025	Signed by: Greg S. Purvis 9/2/2025	DocuSigned by: Andrew Ward 9/3/2025

PROJECT REFERENCE NO.	SHEET NO.
B-5985B	2A-2

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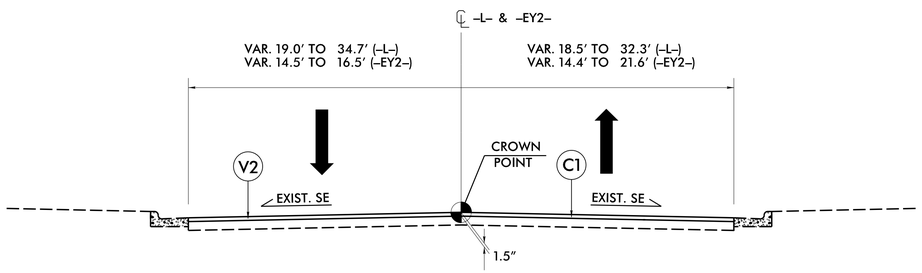
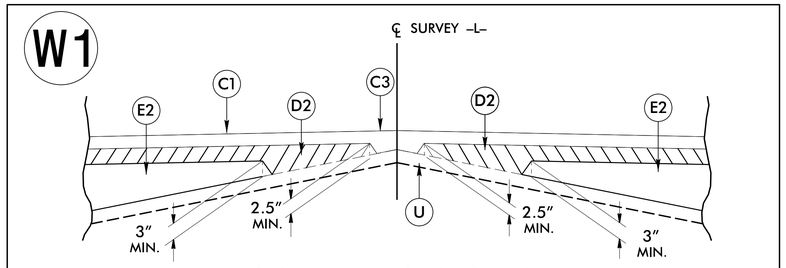


TYPICAL SECTION NO. 3

-L- STA. 23+67.19 TO -L- STA. 24+34.42
-EY2- STA. 11+05.00 TO -EY2- STA. 14+25.00

PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	1½″ S9.5C
C2	3″ S9.5C
C3	VAR. S9.5C
D1	4″ I19.0C
D2	VAR. I19.0C
E1	4″ B25.0C
E2	VAR. B25.0C
R1	2′-6″ C & G
S1	4″ SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V1	0″-1½″ MILLING
V2	1½″ MILLING
W1	WEDGING



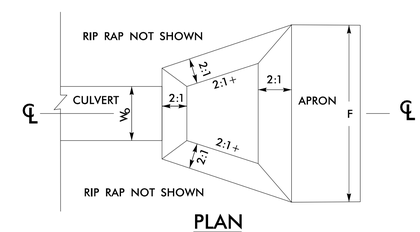
Detail Showing Method of Wedging

DETAIL A

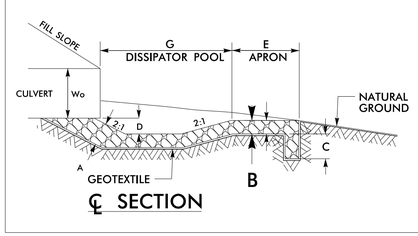
CLASS I RIP-RAPPED ENERGY DISSIPATOR BASIN

DIM. (ft)	BASIN #	1
A		1.25
B		1
C		1
D		0.5
E		3
F		10
G		4

ALL DIMENSIONS APPROXIMATE



PLAN



℄ SECTION

BASIN #	LOCATION (AT OUTLET)
1	23+44 -L- RT
12 TONS CL. I RR 7 20 SY GEO	

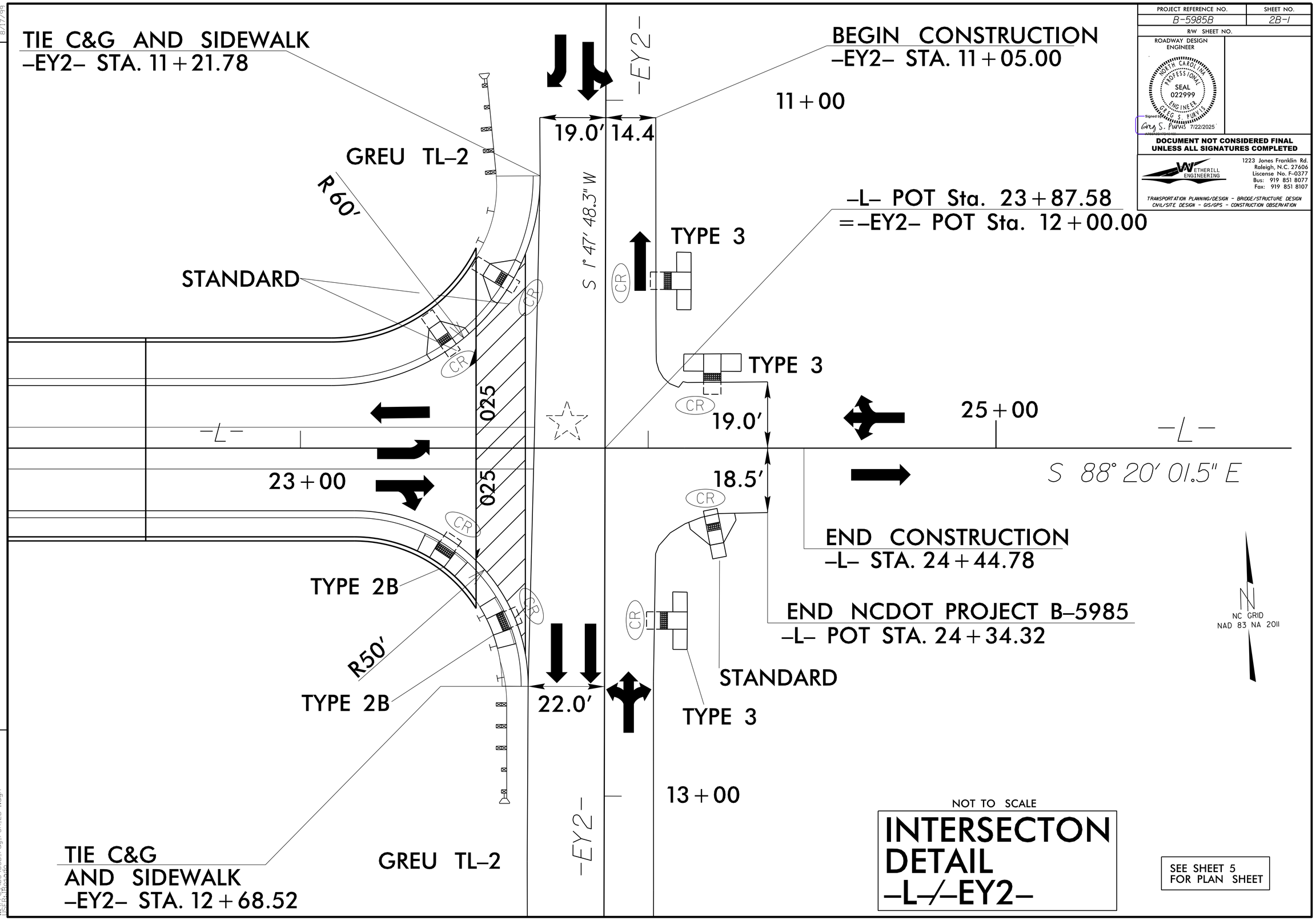
7/08

6/2/99
9/2/2025
R:\Roadway\Proj\B-5985B_rdy_typ.dgn
USER: hsingh

Docusign Envelope ID: 9E2D0FB9-AFAE-4BFF-BE70-9211B2D3AE33

8/17/99

REVISIONS



PROJECT REFERENCE NO.	SHEET NO.
B-5985B	2B-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022999 ENGINEER CRAIG S. PURVIS

Signed by: Craig S. Purvis 7/22/2025

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WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Liscense No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

NOT TO SCALE

INTERSECTON DETAIL –L–/–EY2–

SEE SHEET 5 FOR PLAN SHEET

1/20/2025
b5985B_rdy_PSH_2B-1.dgn
USER:

Docusign Envelope ID: 78246E75-556C-4F4C-B396-3BD8E2F32695

5/14/99

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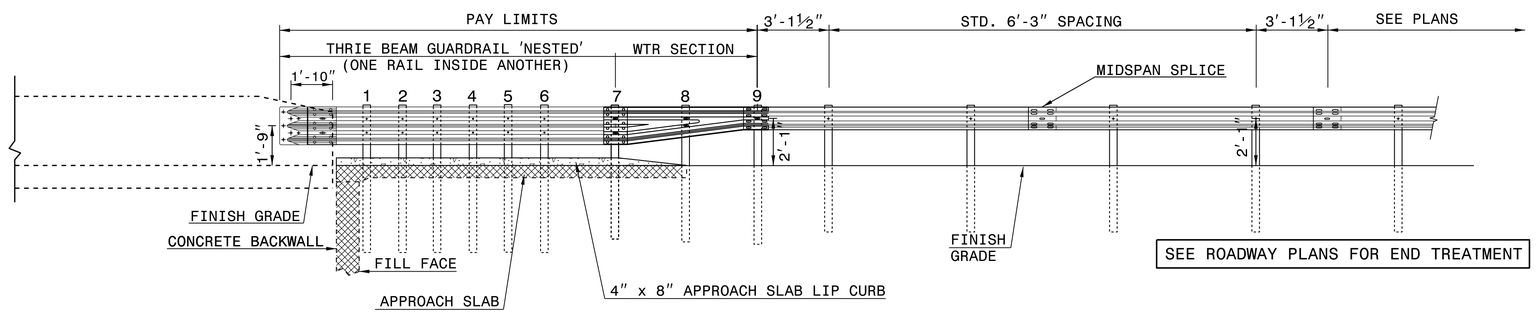
ENGLISH DETAIL DRAWING FOR

TYPE III - SHOP CURVED
STRUCTURE ANCHOR UNIT

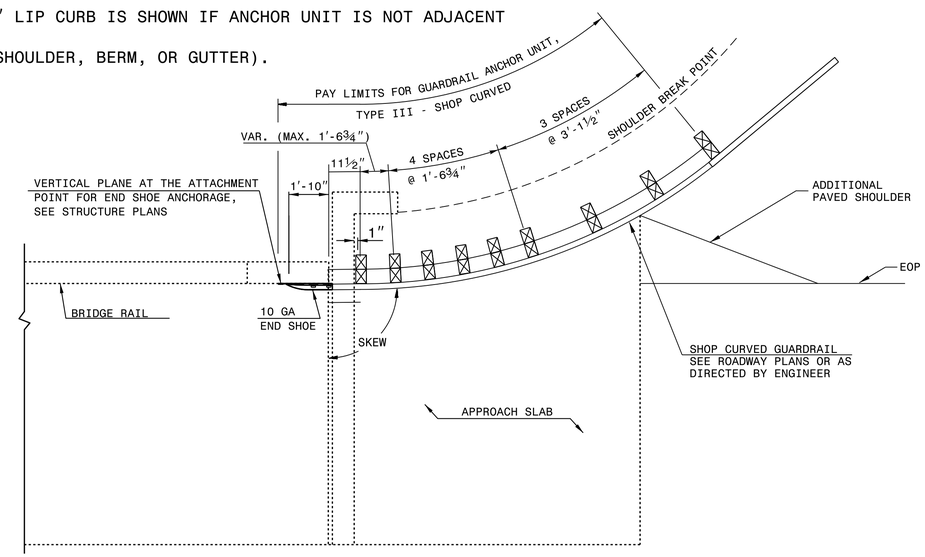
SHEET 1 OF 1

TYPE III SC



ELEVATION

NOTE:
**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-USE NO STEEL POSTS WITHIN THE GUARDRAIL ANCHOR UNIT LIMITS.
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE STANDARD 862.03 SHEET 4 FOR POST SECTIONS 1 THRU 9.



PLAN VIEW

GUARDRAIL ANCHOR UNIT, TYPE III - SHOP CURVED FOR ATTACHMENT TO RAIL ON BRIDGE

STATE OF
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RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

TYPE III - SHOP CURVED
STRUCTURE ANCHOR UNIT

SHEET 1 OF 1

TYPE III SC

01-FEB-2018 09:19
S:\Contracts\Contracts\Special Details\jhowerton\Guardrail\31 inch Guardrail\type.iii.sc.dgn
jhowerton AT CSD-232595

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NORTH CAROLINA PROFESSIONAL SEAL 33144 ENGINEER NICOLE M. HACKLER

Nicole M. Hackler
Signed by:
5B6432D3341640S...
9/2/2025

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

SEE PLATE FOR TITLE

ORIGINAL BY: E.E.Ward DATE: 4-4-02
MODIFIED BY: T.S.Spell DATE: 2-01-18
CHECKED BY: DATE:
FILE SPEC.: \jhowerton\guardrail\31inguardrail\typeiiisc.dgn

Docusign Envelope ID: 78246E75-556C-4F4C-B396-3BD8E2F32695

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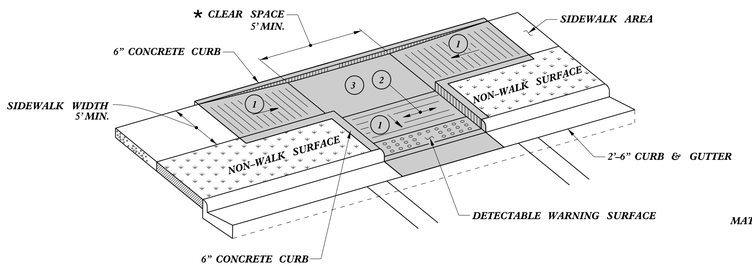
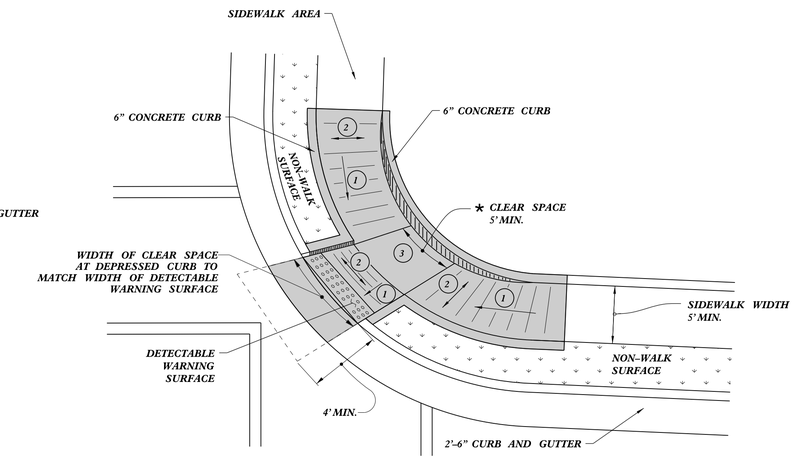
B-5985B	2C-2

* - *WHERE CLEAR SPACE IS CONSTRAINED ON TWO OR MORE SIDES, THE CLEAR SPACE SHALL BE 4' MINIMUM X 5' MINIMUM, WITH 5' PROVIDED IN THE DIRECTION OF THE PEDESTRIAN STREET CROSSING.*



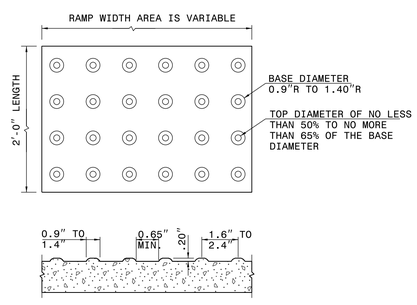
TYPE 3



TYPE 3 MODIFIED
INSTALLATION IN A RADIUS

NOTES:
DETECTABLE WARNING SURFACE SHALL COVER 2'-0" LENGTH AND FULL WIDTH OF THE RAMP FLOOR AS SHOWN ON THE DETAILS.

DETECTABLE WARNING SURFACE SHALL CONTRAST VISIBLY WITH ADJOINING SURFACE, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT SEQUENCE COVERING THE ENTIRE RAMP.



DETECTABLE WARNING SURFACE

1. *8.33% (12:1) MAX RAMP SLOPE*
2. *CROSS SLOPE: 2.00%*
3. *MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00%.*

PAY LIMITS FOR 1 CURB RAMP

STATE OF
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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
CURB RAMP
PARALLEL RAMP

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

Signed by: Nicole M. Hackler
5884323D34164C5...
9/2/2025

SHEET 9 OF13
848D06

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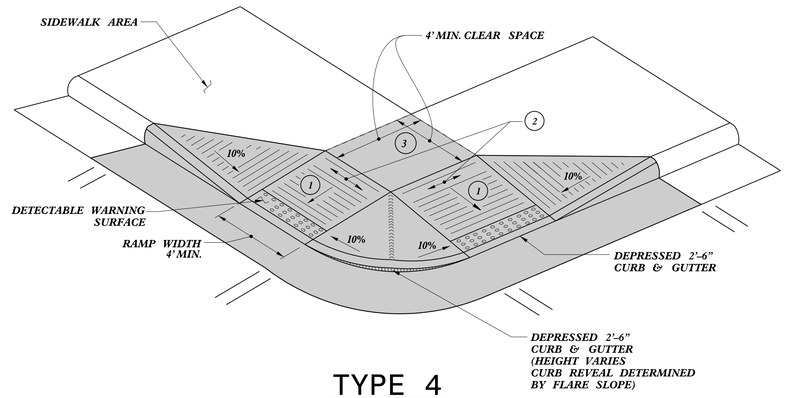
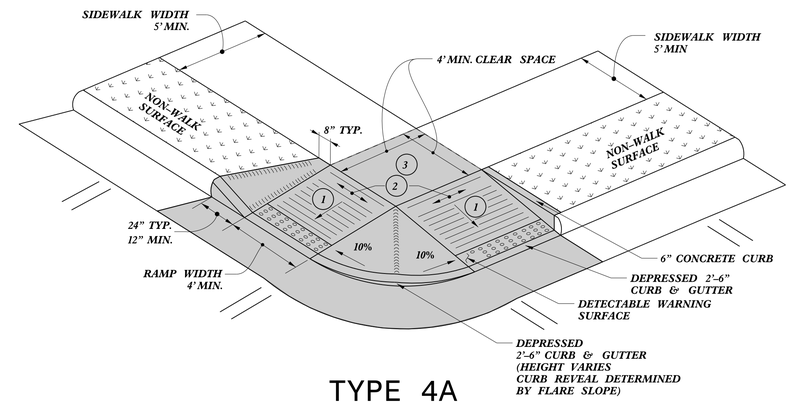
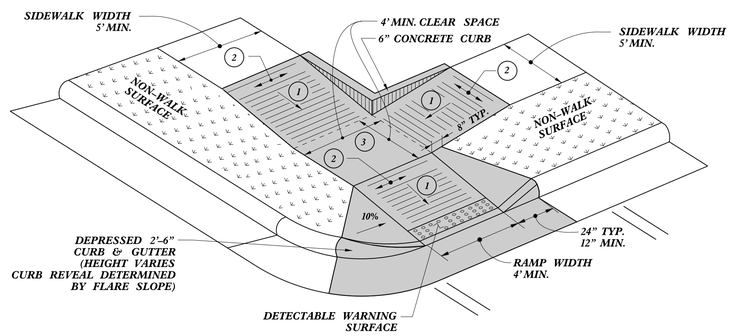


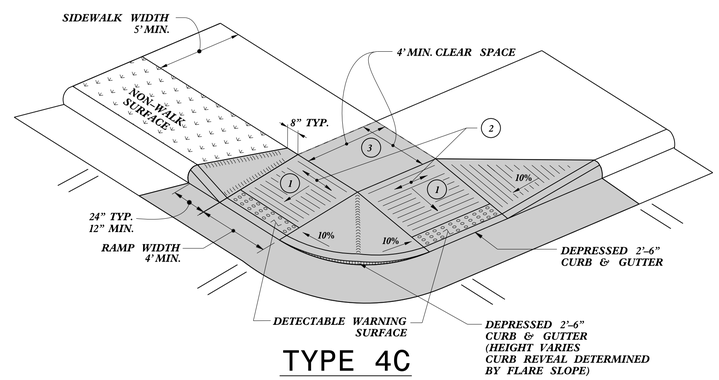
TYPE 4



TYPE 4A



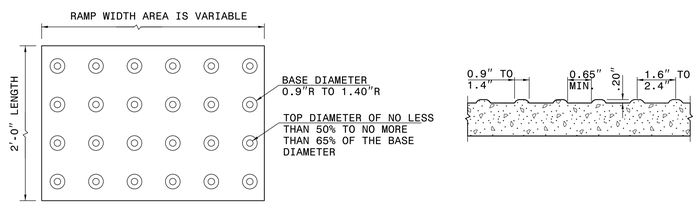
TYPE 4B



TYPE 4C

NOTES:
DETECTABLE WARNING SURFACE SHALL COVER 2'-0" LENGTH AND FULL WIDTH OF THE RAMP FLOOR AS SHOWN ON THE DETAILS.

DETECTABLE WARNING SURFACE SHALL CONTRAST VISIBLY WITH ADJOINING SURFACE, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT SEQUENCE COVERING THE ENTIRE RAMP.



DETECTABLE WARNING SURFACE

1. 8.33% (12:1) MAX RAMP SLOPE
2. CROSS SLOPE: 2.00%
3. MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00%.

PAY LIMITS FOR 1 OR 2 CURB RAMPS (CALCULATE BASED ON NUMBER OF SETS OF DETECTABLE WARNING SURFACES

STATE OF NORTH CAROLINA
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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
CURB RAMP
SHARED LANDING

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

Signed by: Nicole M. Hackler
5884323D34164C3...
9/2/2025

SHEET 10 OF 13

848D06

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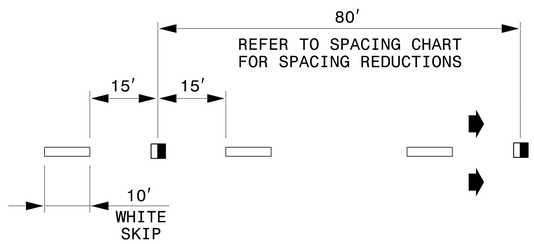
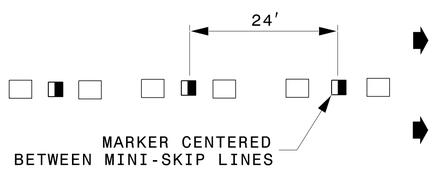
B-5985B	2C-4

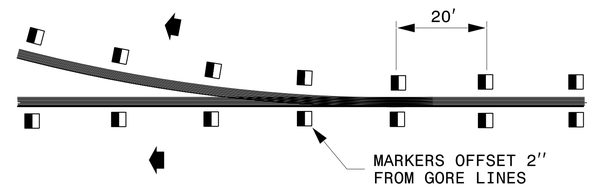
10′-30′/SP SKIP LINE



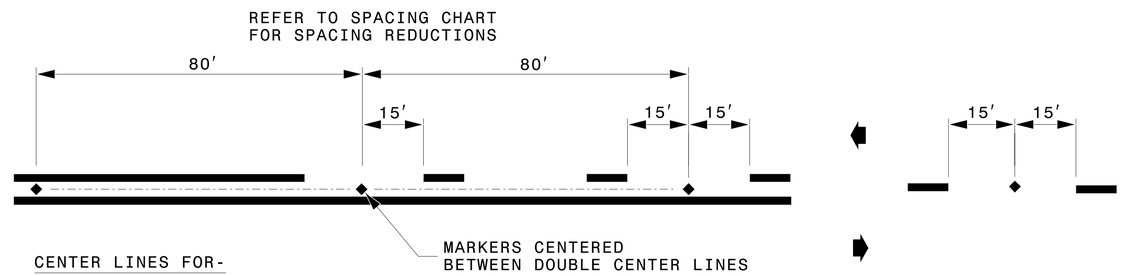
3′-9′/SP MINI-SKIP LINE



GORE LINES



YELLOW CENTER LINES

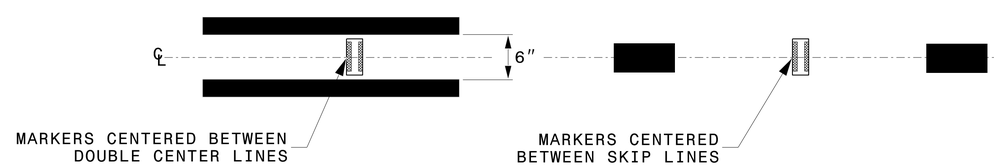


CENTER LINES FOR-

TWO-LANE, TWO-WAY ROADWAYS
UNDIVIDED ROADWAYS
TWO-WAY LEFT TURN LANES

DETAIL OF PAVEMENT MARKER PLACEMENT

RAISED REFLECTIVE PAVEMENT MARKERS



LEGEND

- CRYSTAL/RED PAVEMENT MARKER
- YELLOW/YELLOW PAVEMENT MARKER
- DIRECTION OF TRAFFIC FLOW

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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
RAISED PAVEMENT MARKERS
INSTALLATION SPACING

SHEET 2 OF 3

1250D01

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042546 MATTHEW V. SPRINGER

Signed by:
Nicole M. Huckler
5884323D34164C5...
9/2/2025

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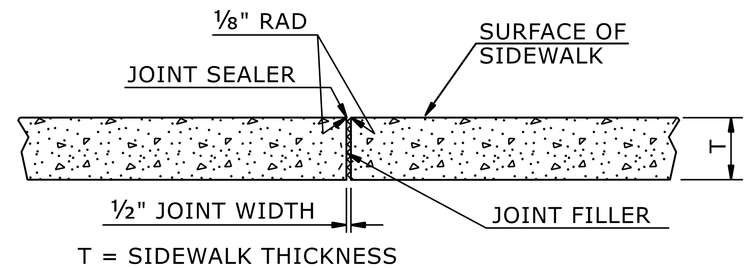
B-5985B	2C-5

NOTES:

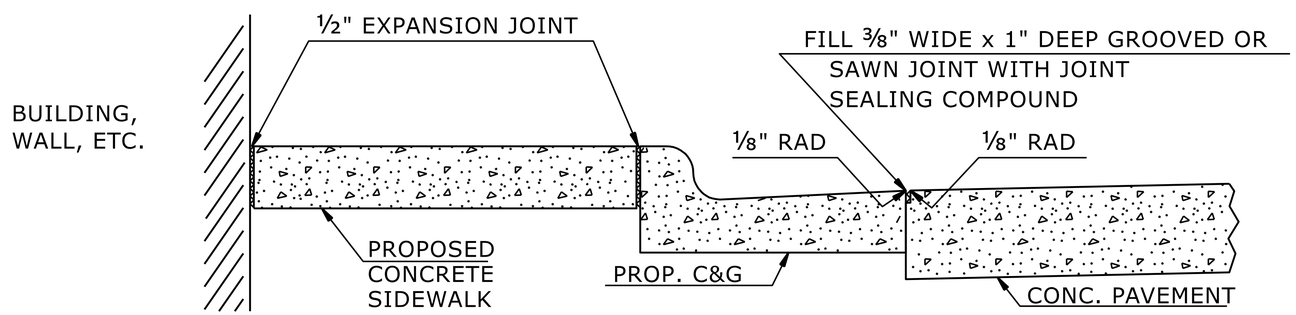
CONSTRUCT STANDARD SIDEWALK 5' WIDE AND 4" THICK UNLESS OTHERWISE DENOTED ON PLANS.

PLACE A GROOVE JOINT 1" DEEP WITH ⅛" RADII IN THE CONCRETE SIDEWALK AT 5' INTERVALS. ONE ½" EXPANSION JOINT WILL BE REQUIRED AT 50' INTERVALS. A ½" EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURE.

SEE STD. DWG. 848.06 FOR CURB RAMP LOCATION REQUIREMENTS AND CONSTRUCTION GUIDELINES.



TRANSVERSE EXPANSION JOINT IN SIDEWALK



DETAILS SHOWING JOINTS IN CONCRETE SIDEWALK

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

ROADWAY DETAIL DRAWING FOR
CONCRETE SIDEWALK

SHEET 1 OF 1

848D01

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

Signed by: Nicole M. Hackler
5884323034164C5...
9/2/2025

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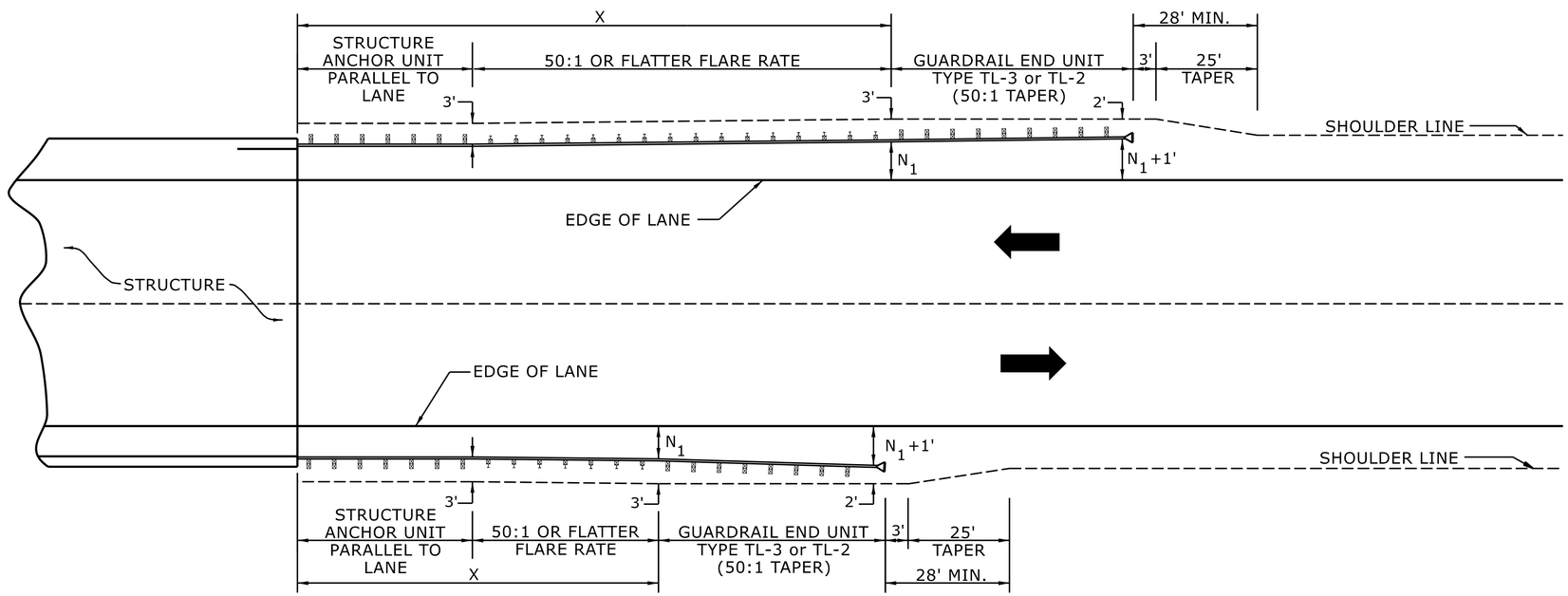
B-5985B	2C-6



USE FLARE RATE AS THE CONTROL IF THE "N_1" DISTANCE IS NOT OBTAINED.
("N_1" IS BASED ON SHOULDER WIDTHS IN THE ROADWAY DESIGN MANUAL)

SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

FOR POSTED SPEEDS ≥ 45MPH USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45MPH USE GREU TYPE TL-2

GUARDRAIL LENGTH OF NEED (X) IS CALCULATED BASED ON THE AASHTO ROADSIDE DESIGN GUIDE.

LENGTHS AND OFFSETS FOR PROPOSED GUARDRAIL AT TWO LANE - TWO WAY LOCATIONS

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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 4 OF 15

862D01

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

Signed by:
Nicole M. Hackler
5884323D34164C5...
9/2/2025

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CONTRACTS STANDARDS AND DEVELOPMENT UNIT
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FILE SPEC.:

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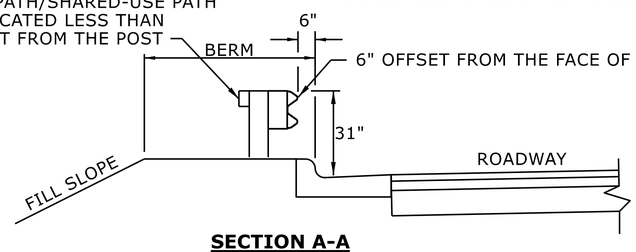
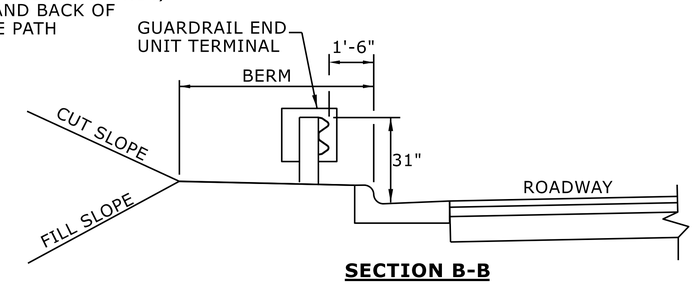
B-5985B	2C-7

PLACE APPROVED BICYCLE FRIENDLY RAILINGS, FENCE, OR RUB RAILS IF SIDEPATH/SHARED-USE PATH IS LOCATED LESS THAN 4 FEET FROM THE POST

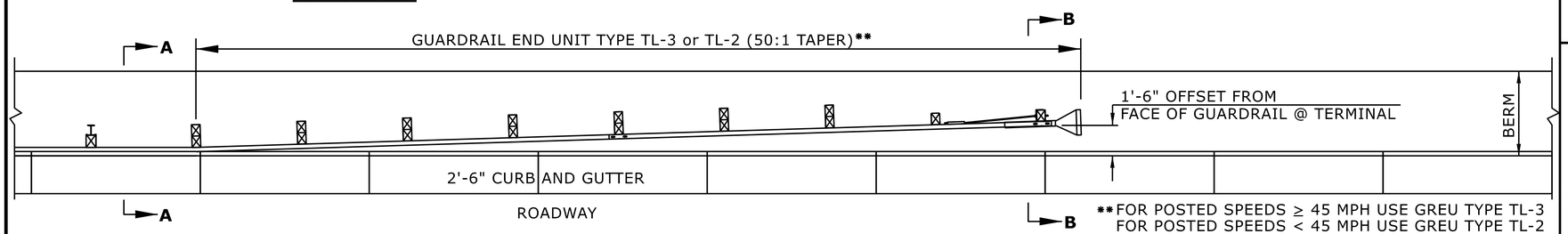
SEE THE ROADWAY DESIGN MANUAL (PART I CHAPTER 4 SECTION 4.14) FOR OFFSET DISTANCES FROM FACE OF GUARDRAIL AND BACK OF GUARDRAIL TO SIDEWALK OR SIDEPATH/SHARED-USE PATH



SECTION A-A



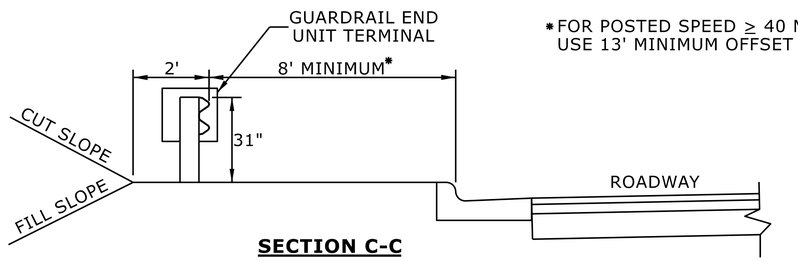
SECTION B-B



GUARDRAIL 6" FROM THE FACE OF CURB

** FOR POSTED SPEEDS ≥ 45 MPH USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45 MPH USE GREU TYPE TL-2

BICYCLE FRIENDLY RAILINGS, FENCE OR RUB RAIL SHOULD NOT BE PLACED WITHIN THE LIMITS OF THE STRUCTURAL ANCHOR OR END UNITS



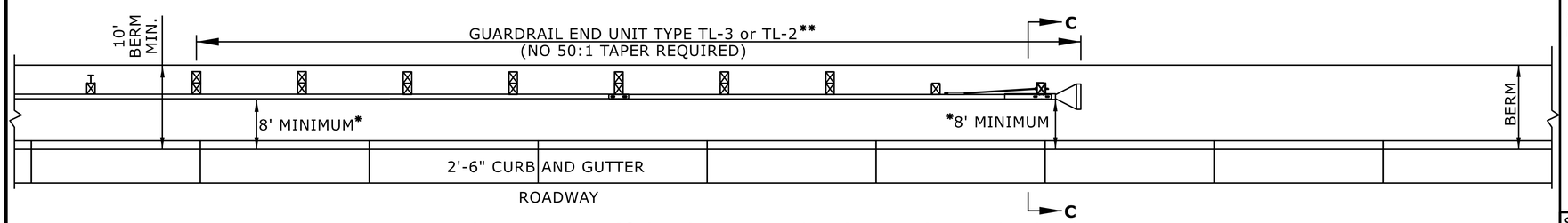
SECTION C-C

* FOR POSTED SPEED ≥ 40 MPH USE 13' MINIMUM OFFSET

SEE THE ROADWAY DESIGN MANUAL (PART I CHAPTER 4 SECTION 4.14) FOR OFFSET DISTANCES FROM FACE OF GUARDRAIL AND BACK OF GUARDRAIL TO SIDEWALK OR SIDEPATH/SHARED-USE PATH

** FOR POSTED SPEEDS ≥ 45 MPH USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45 MPH USE GREU TYPE TL-2

BICYCLE FRIENDLY RAILINGS, FENCE OR RUB RAIL SHOULD NOT BE PLACED WITHIN THE LIMITS OF THE STRUCTURAL ANCHOR OR END UNITS



GUARDRAIL 8' OR GREATER OFFSET FROM FACE OF CURB

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT
GUARDRAIL TREATMENT AT CURB AND GUTTER

SHEET 12 OF 15

862D01

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

Signed by:
Nicole M. Hackler
58843230341640C5...
9/2/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

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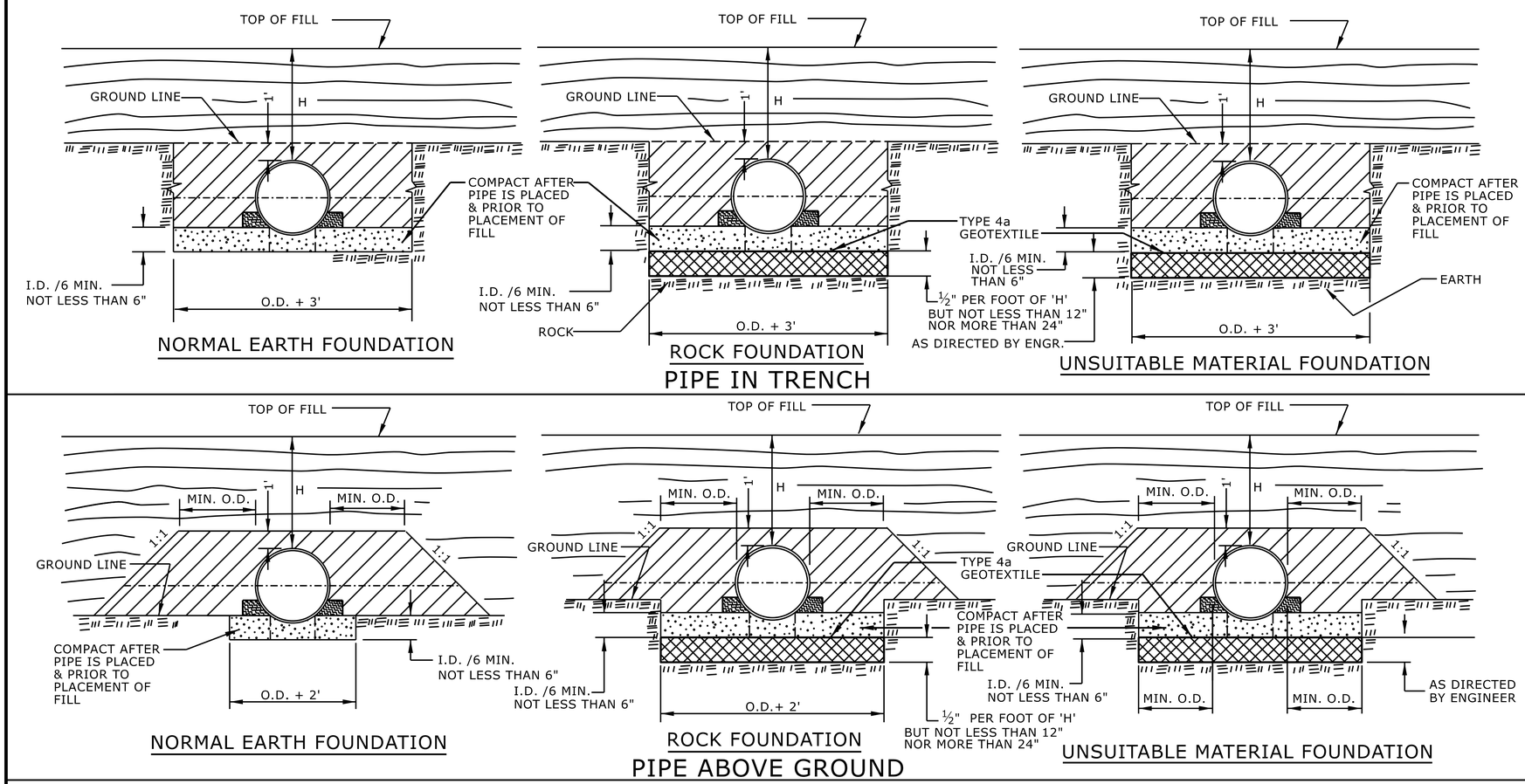
CHECKED BY: DATE:
FILE SPEC.:

Docusign Envelope ID: 78246E75-556C-4F4C-B396-3BD8E2F32695

PROJECT REFERENCE NO.	SHEET NO.
B-5985B	2C-8



GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

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

REFER TO NCDOT PIPE MATERIAL SELECTION GUIDE AND STANDARD SPECIFICATIONS FOR ALLOWABLE PIPE FILL HEIGHTS AND PIPE SPECIFICATIONS.

SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.

UNDISTURBED EARTH MATERIAL

SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.

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

ROADWAY DETAIL DRAWING FOR

METHOD OF PIPE INSTALLATION

FLEXIBLE PIPE

SHEET 1 OF 2

300.01

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

Signed by: Nicole M. Hackler
5884323D34164C5...
9/2/2025

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

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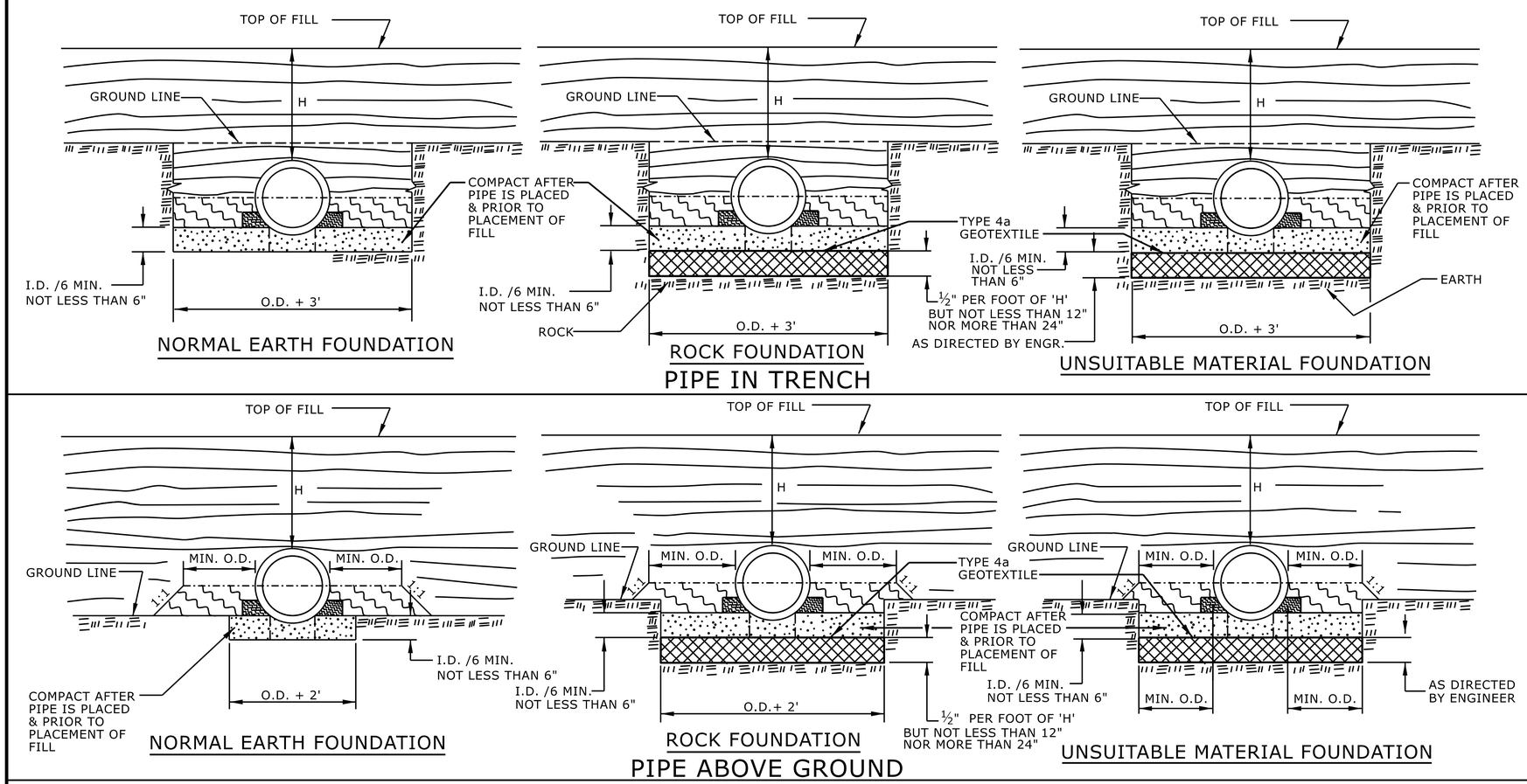
PROJECT REFERENCE NO.	SHEET NO.
B-5985B	2C-9



GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

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

REFER TO NCDOT PIPE MATERIAL SELECTION GUIDE AND STANDARD SPECIFICATIONS FOR ALLOWABLE PIPE FILL HEIGHTS AND PIPE SPECIFICATIONS.

SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II, BELOW SPRINGLINE.

UNDISTURBED EARTH MATERIAL

SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.

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

ROADWAY DETAIL DRAWING FOR

METHOD OF PIPE INSTALLATION

RIGID PIPE

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

Signed by: Nicole M. Hackler
5884323D34164C5...
9/2/2025

SHEET 2 OF 2

300.01

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Office 919-707-6950 FAX 919-250-4119

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FILE SPEC.:

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NOTES:

1. DESIGN CONFORMS WITH THE SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS - AASHTO.
2. USE MATERIALS, FABRICATE AND ERECT SIGNS AND SUPPORTS THAT CONFORM TO THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.
3. USE HIGH STRENGTH BOLTS, NUTS AND WASHERS THAT CONFORM TO ASTM A-325 AND THAT ARE GALVANIZED IN ACCORDANCE WITH ASTM F2329 OR B695 CLASS 55.
4. USE BACKING PLATES, SLIP BASE PLATES, FRICTION PLATES, AND HINGE PLATES THAT CONFORM TO ASTM A-36 AND THAT ARE GALVANIZED IN ACCORDANCE WITH ASTM A-123 PRIOR TO GALVANIZING, GRIND SMOOTH ANY METAL PROJECTION BEYOND THE PLATE FACE. KEEPER PLATES SHALL BE MANUFACTURED FROM 28 GAUGE SHEET STEEL THAT CONFORMS TO ASTM A-36 AND IS GALVANIZED IN ACCORDANCE WITH ASTM A-123
5. ASSEMBLE HINGE CONNECTIONS IN THE SHOP. THE SHOP SHALL TIGHTEN BOLTS BY USE OF EITHER A CALIBRATED POWER WRENCH OR A MANUAL TORQUE WRENCH. TIGHTEN EACH HINGE CONNECTION BOLT TO 1/3 PAST SNUG.
6. BASE PLATES DETAILS ARE FOR INSTALLATIONS ON THE RIGHT SHOULDER AND IN GORE AREAS.
7. ASSEMBLE UPPER SUPPORT TO STUB AS SHOWN IN DETAIL. SLIP BASE PLATES SHALL BE FILLET WELDED ONTO SUPPORTS ALL AROUND THE STRUCTURAL SHAPE SO AS TO INSURE NO LOSS OF STRENGTH. ASSEMBLE IN EITHER SHOP OR FIELD. 28 GAUGE KEEPER PLATE IS PLACED BETWEEN SLIP BASE PLATES TO PREVENT BOLT SLIPPING. TIGHTEN BOLTS TO THE FOLLOWING PRESCRIBED TORQUE:

BOLT DIAMETER	TORQUE (LB. FT.)
1/2"	9
5/8"	22
3/4"	37
1"	48

COMPLETELY ASSEMBLE BREAKAWAY SUPPORTS PRIOR TO ERECTION. BREAKAWAY SUPPORT TO BE SET IN ONE PIECE. AFTER SUPPORT HAS BEEN ERECTED AND THE CONCRETE FOOTINGS HAS CURED AT LEAST 48 HOURS, CLEAN CONCRETE FROM BASE CONNECTION BOLTS THEN LOOSEN AND RE TIGHTEN EACH BOLT IN A SYSTEMATIC ORDER TO THE PRESCRIBED TORQUE. DO NOT OVER TIGHTEN. BURR ALL BOLT THREADS OF BASE CONNECTIONS TO PREVENT LOOSENING.

8. ELIMINATE HINGE CONNECTION FOR ALL SINGLE SUPPORT SIGNS.
9. DETAIL IS FOR ONE DIRECTION BREAKAWAY. WHEN PLANS REQUIRE A TWO DIRECTION BREAKAWAY, TWO FRICTION PLATES SHALL BE USED IN LIEU OF ONE FRICTION PLATE AND ONE HINGE PLATE.

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

ROADWAY DETAIL DRAWING FOR
GROUND MOUNTED SIGN SUPPORTS

SHEET 3 OF 3

903D1003

NORTH CAROLINA PROFESSIONAL SEAL 042546 ENGINEER MATTHEW V. SPRINGER

Signed by:
Matthew V. Springer, PE
BC60F6E8B584403...

8/29/2025

CONTRACTS STANDARDS AND DEVELOPMENT UNIT
Office 919-707-8950 FAX 919-250-4119

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ORIGINAL BY: R.S. GALLO DATE: 05-22-2025
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Docusign Envelope ID: D4D1869C-2BA0-46A6-9354-468C22B2C884

12/06/07

COMPUTED BY: SLK DATE: 03/23/21
CHECKED BY: GSP DATE: 03/23/21

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-5985	3B-1

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WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

SUMMARY OF EARTHWORK

STATION	STATION	UNCLASSIFIED EXCAVATION (CY)	EMBANKMENT +% (CY)	BORROW (CY)	WASTE (CY)
-L- STA. 17+87.89	-L- STA. 20+65.50 (BEGIN BRIDGE)	108	1391	1283	
SUBTOTAL		**108**	**1391**	**1283**	
-L- STA. 23+50.50 (END BRIDGE)	-L- STA. 23+67.19	21	6		15
SUBTOTAL		**21**	**6**		**15**
PROJECT SUBTOTALS		**129**	**1397**	**1283**	**15**
ESTIMATE 5% TO REPLACE TOP SOIL ON BORROW PIT				**64**	
WASTE TO REPLACE BORROW				**-15**	**-15**
GRAND TOTALS		**129**	**1397**	**1332**	**0**
SAY		**150**		**1400**	

CONTINGENCY
UNDERCUT EXCAVATION = 200 CY PER GEOTECH RECS
SELECT GRANULAR MATERIAL = 200 CY PER GEOTECH RECS
GEOTEXTILE FOR SOIL STABILIZATION = 200 SY PER GEOTECH RECS
SHALLOW UNDERCUT = 50 CY PER GEOTECH RECS
CLASS IV SUBGRADE STABILIZATION = 100 TONS PER GEOTECH RECS
GEOTEXTILE FOR SUBGRADE STABILIZATION = 150 SY PER GEOTECH RECS

Approximate quantities only. Unclassified excavation, fine grading, clearing and grubbing, and removal of existing asphalt pavement will be paid for at the lump sum price for "Grading".

NOTE: Earthwork quantities are calculated by the Roadway Engineer. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

ASPHALT PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^3
-L-	20+16	20+82	CL	240.02
-L-	23+51	23+67	CL	120.71
			TOTAL:	360.72
			SAY:	370

"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	TYPE III SHOP CURVED	TYPE III	GREU TL-2	M-350		CAT-1	VI MOD	BIC	AT-1	EA	G	NG				
-L-	19+21.75	20+65.50	RT.	143.75'			20+65.50		7.5'	14' (BERM)	25'			0.5'		1	1													
-L-	23+50.50	10+92.00 (-EY2-)	LT.	31.25'	18.75'		23+50.50		12.5'	17' (BERM)	25'		0.5'		1		1		GUARDRAIL ANCHOR DEDUCTIONS											
-L-	23+50.50	13+02.00 (-EY2-)	RT.	37.50'	18.75'			23+50.50	7.5'	14' (BERM)		25'	0.5'		1		1		TYPE III = 1 @ 18.75' = 18.75'											
																			GREU TL-2 = 3 @ 25' = 75.00'											
		PROJECT SUBTOTAL		212.50'	37.50'										2	1	3		TOTAL STRAIGHT DEDUCTIONS = 93.75'											
		LESS ANCHOR DEDUCTIONS		(-)93.75'	(-)37.50'																									
		PERMANENT GR PROJECT TOTAL		118.75'			ADDITIONAL GUARDRAIL POSTS = 5 EACH												TYPE III SC = 2 @ 18.75' = 37.50'											
		PERMANENT GR SAY		125.00'															TOTAL SC DEDUCTIONS = 37.50'											

9/2/2025
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USER: Rosario

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WE1-LP26S3

COMPUTED BY:	Harminder Singh	DATE:	10/10/24
CHECKED BY:	Kevin Alford	DATE:	10/14/24

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
B-5985B	3D-1

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

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

| LINE & STATION / SIZE / THICKNESS OR GAUGE | OFFSET | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | % MINIMUM REQUIRED SLOPE | Drainage Pipe (RCP, CSP, CAAP, HDPE, PVC, or PP PIPE) 12 | 15 | 18 | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | DO NOT USE PVC | DO NOT USE PP PIPE | R. C. PIPE CLASS III 12 | 15 | 18 | 66 | 72 | 78 | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | 24" SIDE DRAIN PIPE | 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' EACH | 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 STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24 | G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | DRIVEWAY D.I. STD. 840.30 | FRAME W/ GRATE FOR DRIVEWAY STD. 840.30 | J.B. STD. 840.31 OR STD. 840.32 | ANGLED VANE GRATES AND FRAMES STD. 840.33 | T.B.J.B. STD. 840.34 or STD. 840.46 | T.B.D.I. STD. 840.35 or STD. 840.46 | T.B.D.I. FOR STEEL GRATES STD. 840.36 | STEEL FRAME WITH TWO GRATES STD. 840.37 | TEMP STEEL PLATE COVER MASONRY DRAINAGE | ### SPRING BOX PIPE | SPRING BOX STD. 840.41 | M.H. STD. 840.51, STD. 840.52, OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING C.B. TO J.B. | CONVERT EXISTING C.B. TO D.I. | CONVERT EXISTING D.I. TO J.B. | CONVERT EXISTING J.B. TO D.I. | ADJUST C.B. | ADJUST D.I. | 15" DRAINAGE PIPE ELBOW | 15" C.A.A. ELBOW | 18" C.A.A. ELBOW | 24" C.A.A. ELBOW | 15" PIPE PLUG | BERM DITCH OUTLET STD. 850.10 (PER EACH) | BERM DITCH OUTLET STD. 850.11 (PER EACH) | MODIFIED CONC. FLUME | PREFORMED SCOUR HOLE (PER EACH) | ENERGY DISSIPATION BASIN - EACH | FLOWABLE FILL CY | CONCRETE COLLARS CL. "B" STD. 840.72 CY | CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY | PIPE REMOVAL LIN. FT. | REMARKS |
|---|---|---|---

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WEL1.JP2653

COMPUTED BY:	Harminder Singh	DATE:	10/10/24
CHECKED BY:	Kevin Alford	DATE:	10/14/24

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
B-5985B	3D-2

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

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

| LINE & STATION / SIZE / THICKNESS OR GAUGE | OFFSET | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | % MINIMUM REQUIRED SLOPE | Drainage Pipe (RCP, CSP, CAAP, HDPE, PVC, or PP PIPE): DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | DO NOT USE PVC | DO NOT USE PP PIPE | R. C. PIPE CLASS III: 54 | 60 | 66 | 72 | 78 | 84 | 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)): A: 0' THRU 5' EACH | A: 5' THRU 10' LIN. FT. | A: 10' AND ABOVE LIN. FT. | B | 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 STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24 | G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | DRIVEWAY D.I. STD. 840.30 | FRAME W/ GRATE FOR DRIVEWAY STD. 840.30 | J.B. STD. 840.31 OR STD. 840.32 | ANGLED VANE GRATES AND FRAMES STD. 840.33 | T.B.J.B. STD. 840.34 | T.B.D.I. STD. 840.35 | T.B.D.I. FOR STEEL GRATES STD. 840.36 | STEEL FRAME WITH TWO GRATES STD. 840.37 | TEMP STEEL PLATE COVER MASONRY DRAINAGE | ## SPRING BOX PIPE | SPRING BOX STD. 840.41 | M.H. STD. 840.51, STD. 840.52, OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING C.B. TO J.B. | CONVERT EXISTING C.B. TO D.I. | CONVERT EXISTING D.I. TO J.B. | CONVERT EXISTING J.B. TO D.I. | ADJUST C.B. | ADJUST D.I. | 15" C.A.A. ELBOW | 18" C.A.A. ELBOW | 24" C.A.A. ELBOW | 30" C.A.A. ELBOW | 36" C.A.A. ELBOW | BERM DITCH OUTLET STD. 850.10 (PER EACH) | BERM DITCH OUTLET STD. 850.11 (PER EACH) | MODIFIED CONC. FLUME | PREFORMED SCOUR HOLE (PER EACH) | ENERGY DISSIPATION BASIN | FLOWABLE FILL CY | CONCRETE COLLARS CL. "B" STD. 840.72 CY | CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY | PIPE REMOVAL LIN. FT. | REMARKS |
|---|---|---|---

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COMPUTED BY: Nick Moore	DATE: 7/31/2024
CHECKED BY: Jinyoung Park	DATE: 7/31/2024

(2-3-23)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
B-5985B	3G-1

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 Subgrade Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			ASU(1)	12"	50	100	150		
				TOTAL CY/TONS/SY:	50	100**	150**	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 Subgrade 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.

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PROJ. REFERENCE NO.	SHEET NO.
B-5985B	3P-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4, 5	LUMBERTON HOUSING AUTHORITY
2	4, 5	CITY OF LUMBERTON
3	4	JANICE MARIE LEE JOHNNY M. LEE
4	4	CHARLES THOMAS STRICKLAND BILLY WAYNE STRICKLAND
5	4	LEE INVESTMENTS OF LUMBERTON, NC, LLC.
6	4	TAYLOR INSURANCE AGENCY, INC.
7	5	COUNTY OF ROBESON
8	5	CAPITOL INVESTMENT COMPANY
9	5	PARADISE FARM, INC.

PARCEL No.	SHEET No.	PROPERTY OWNER NAME

Docusign Envelope ID: 9E2D0FB9-AFAE-4BFF-BE70-9211B2D3AE33

MATCHLINE SHEET 5 –EY2– STA. 15 + 00.00

PROJECT REFERENCE NO.	SHEET NO.
B-5985B	4

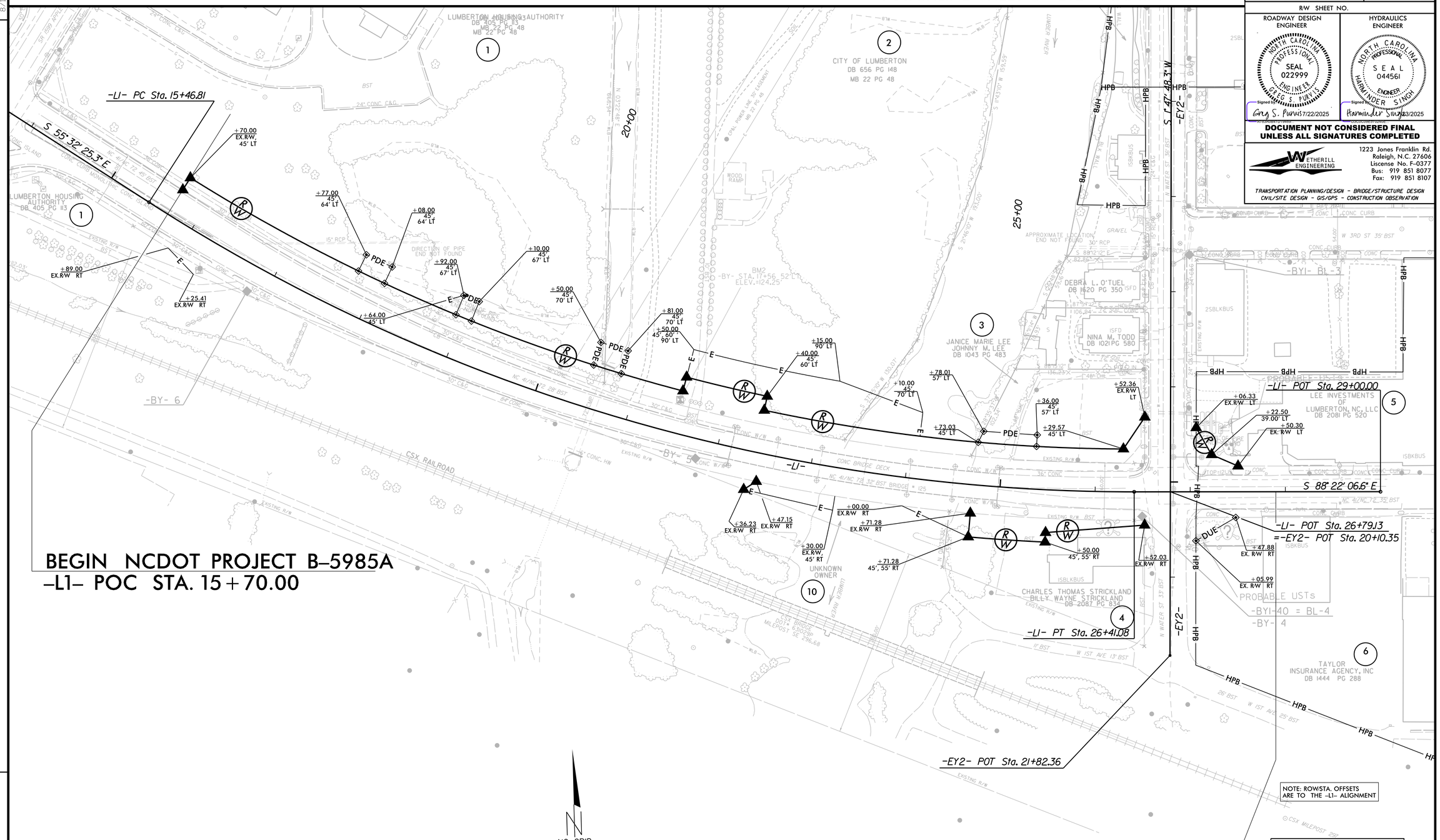
R/W SHEET NO.

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022999 ENGINEER CRAIG S. PURVIS
Signed by: Craig S. Purvis 7/22/2025

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044561 ENGINEER HARMINDER SINGH
Signed by: Harminder Singh 7/23/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Liscense No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION



-L1-
PI Sta 21+09.42
Δ = 32° 49' 41.4" (LT)
D = 3° 00' 00.0"
L = 1,094.27'
T = 562.61'
R = 1,909.86'
SE = .03
RO = SEE PLANS
DS = 40MPH

REVISIONS

8/17/99

7/11/2025
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PROJECT REFERENCE NO.	SHEET NO.
B-5985B	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022999 ENGINEER
Greg S. Hanna 9/2/2025

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 045561 ENGINEER HARMINDER SINGH
Harminder Singh 9/2/2025

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SEE SHEET 2B-1 FOR INT. DETAIL

☆ - *EXISTING SIGNAL*

SEE SHEET 6 FOR -L- PROFILE
SEE SHEET 7 FOR -EY2- PROFILE

SEE SHEETS S-01 THRU S-64 FOR STRUCTURE PLANS

2025 / 2045	N. WATERS ST.	
11100 / 14800	8900 / 11600	430 / 520
(-L-) SR 1600 W. 5TH ST.	470 / 920	170 / 350
	2300 / 3100	W. 5TH ST.
	2300 / 3000	N. WATERS ST.

-L-
PI Sta 17+10.16
Δ = 11° 32' 05.1" (LT)
D = 4° 30' 00.0"
L = 256.33'
T = 128.60'
R = 1,273.24'
SE = .025 NC
RO = SEE PLANS
DS = 40MPH

NOTE: ROW/STA. OFFSETS ARE TO THE -L- ALIGNMENT

NC GRID NAD 83 NA 2011

BEGIN NCDOT PROJECT B-5985B
-L- POC STA. 17+87.89

END NCDOT PROJECT B-5985B
-L- POT STA. 24+34.32

-L- PC STA.18+37.89

-L- PC Sta. 15+81.56

-EY2- POT Sta. 10+08.00

-L- POT Sta. 23+87.58
=-EY2- POT Sta. 12+00.00

-L- POT Sta. 25+85.00

S 76° 47' 56.4" E

S 88°20' 01.5" E -L-

S 1° 47' 48.3" W -EY2-

BEGIN CONSTRUCTION -L- STA. 16+37.22

BEGIN CONSTRUCTION -EY2- STA. 11+05.00

END CONSTRUCTION -L- STA. 24+44.78

END CONSTRUCTION -EY2- STA. 14+25.00

TIE C&G AND SIDEWALK -EY2- STA. 11+21.78

TIE C&G AND SIDEWALK -EY2- STA. 12+68.52

PROPOSED EXCAVATION (STR. PAY ITEM)

CL. B RIP RAP EST. 1 TON EST. 5 SY GT

CL. B RIP RAP EST. 1 TON EST. 5 SY GT

CL. B RIP RAP EST. 1 TON EST. 5 SY GT

CL. B RIP RAP EST. 1 TON EST. 5 SY GT

CL. II RIP RAP TO SHLD POINT (STR. PAY ITEM)

CL. II RIP RAP TO SHLD POINT (STR. PAY ITEM)

REMOVE & RESET BOLLARD

REMOVE CB & ASSOCIATED PIPE

REMOVE 13' OF 15" RCP

REMOVE 25' OF 15" RCP

REMOVE JB

REMOVE EXISTING STRUCTURE (STR. PAY ITEM)

MH ABANDONED BY AT&T. REMOVE AND BACKFILL AS PART OF RDY GENERAL EXCAVATION. PAY LIMITS TO INSTALL GUARDRAIL.

GRADE TO DRAIN

RIPRAP ENERGY DISSIPATOR PAD SEE DETAIL A SHEET 2A-2

TIE SIDEWALK & C&G

50' TAPER PAVEMENT

50' TAPER SIDEWALK

31' TYP.

4" CONC. SW
2'-6" C&G
GREU TL-2

CAPITOL INVESTMENT COMPANY DB 530 PG 345

LUMBERTON MOTORS INC. DB 423 PG 268

NATOYA L. POWELL DB 1952 PG 537

PARADISE FARM INC. DB 1634 PG 372

LUMBERTON HOUSING AUTHORITY DB 405 PG 113 MB 22 PG 48

CITY OF LUMBERTON DB 656 PG 148 MB 22 PG 48

CITY OF LUMBERTON NO DEED FOUND

COUNTY OF ROBESON DB 1535 PG 349

K.M. BIGGS INC DB 1963 PG 217

-GPS-102 BL-BMI STA. 10+65 18' RT ELEV.=118.49'

-BL-1

-BYI- BL-2

-BYI-50 = BL-105
-BL- 105

SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP

END APPROACH SLAB -L- STA. 23+64.67
END BRIDGE -L- STA. 23+50.50
BEG. APPROACH SLAB -L- STA. 20+41.33
BEGIN BRIDGE -L- STA. 20+85.50
TYPE III SHOP CURVED
R=60'
R=50'
34.75'
32.33'

REVISIONS

8/17/99

MATCHLINE SHEET 4 -EY2- STA. 15+00.00

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PROJECT REFERENCE NO.	SHEET NO.
B-5985B	6

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022999 ENGINEER GREG S. PURVIS
Signature: Greg S. Purvis 7/22/2025

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044561 ENGINEER HARMINDER SINGH
Signature: Harminder Singh 7/22/2025

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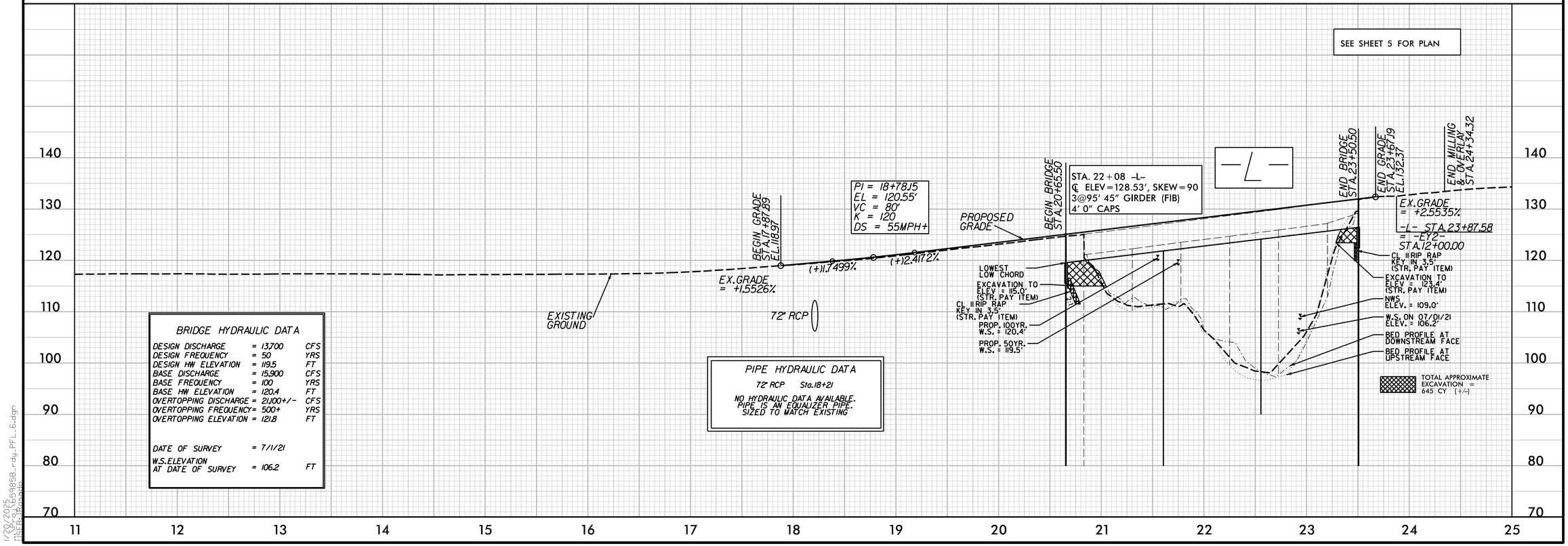

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 13,700	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 119.5	FT
BASE DISCHARGE	= 15,900	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 120.4	FT
OVERTOPPING DISCHARGE	= 21,100+/-	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 121.8	FT
DATE OF SURVEY	= 7/1/21	
W.S. ELEVATION AT DATE OF SURVEY	= 106.2	FT

PIPE HYDRAULIC DATA

72" RCP Sta.18+21

NO HYDRAULIC DATA AVAILABLE. PIPE IS AN EQUALIZER PIPE. SIZED TO MATCH EXISTING

5/28/99
1/29/2025
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PROJECT REFERENCE NO.	SHEET NO.
B-5985B	7

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022999 ENGINEER GREG S. PURVIS
Signature: Greg S. Purvis 7/22/2025

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044561 ENGINEER HARMINDER SINGH
Signature: Harminder Singh 7/23/2025

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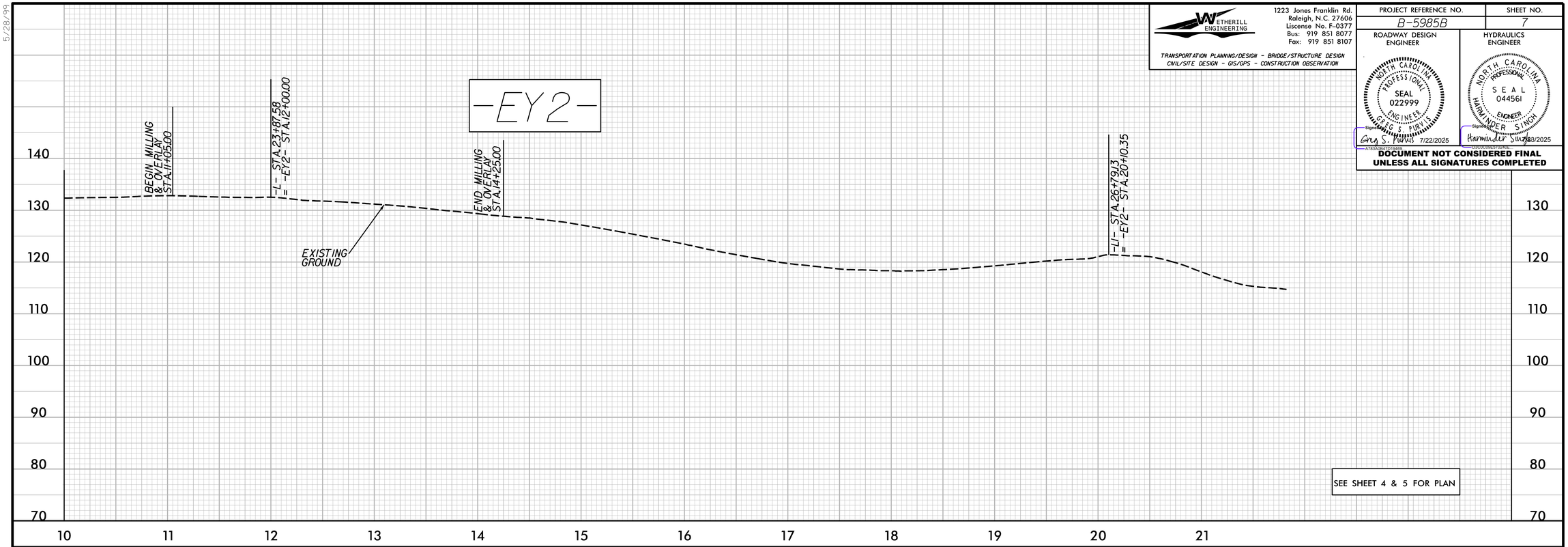

SEE SHEET 4 & 5 FOR PLAN

5/28/99

1/29/2025
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USER: hsingh