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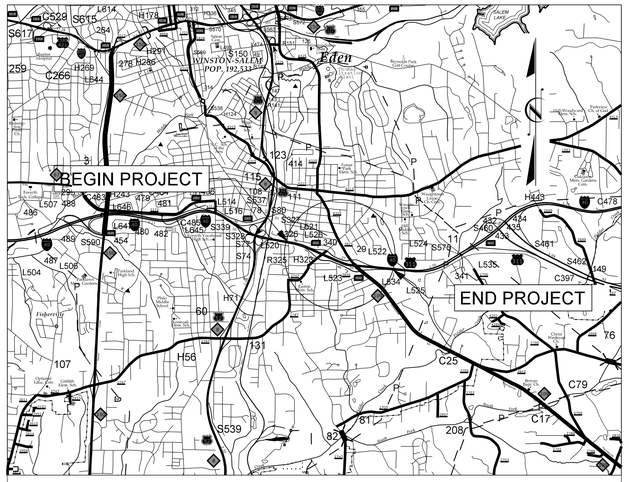
TIP PROJECT: I-5880

CONTRACT: C204975

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



VICINITY MAP (NTS)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

FORSYTH COUNTY

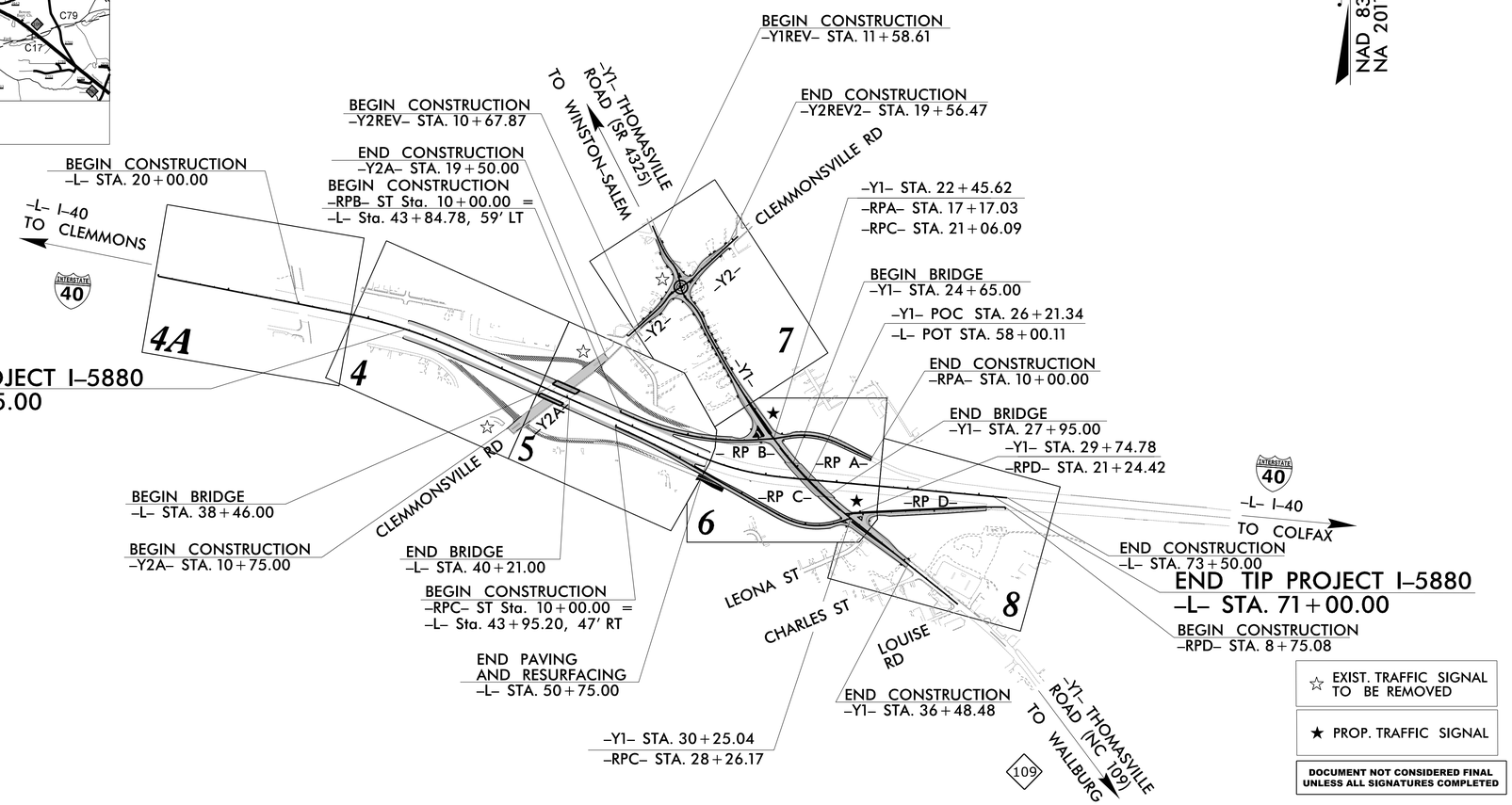
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5880	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
53080.1.1		PE
53080.2.1	5308001	RW
53080.2.2	5308001	UTL
53080.3.1	5308001	CONST

LOCATION: I-40 /US 311 AT NC 109 (THOMASVILLE RD/CLEMMONSVILLE RD)
SPLIT DIAMOND INTERCHANGE IN WINSTON-SALEM, NC

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

NAD 83
NA 2011



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GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2025 = 117,240
ADT 2045 = 145,440
K = 9 %
D = 60 %
T = 11 % *
V = 70 MPH
* TTST = 8% DUAL 3%
FUNC CLASS = INTERSTATE
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-5880 = 0.786 MILES
LENGTH OF STRUCTURE I-5880 = 0.033 MILES
TOTAL LENGTH OF TIP PROJECT I-5880 = 0.819 MILES

NCDOT POINT OF CONTACT:

RYAN NEWCOMB, PE
PROJECT ENGINEER

Prepared in the Office of:
JOHNSON, MIRMIRAN, & THOMPSON, INC.
4700 Falls of Neuse Road, Suite 100,
Raleigh NC, 27609
NC License No. C-3097

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JUNE 21, 2023

LETTING DATE:
AUGUST 19, 2025

CHARLES J. YOUNG, PE, PMP
PROJECT ENGINEER

JOSHUA ROEMER, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
Signed by: Nathan B. Clarke
SIGNATURE: P.E. 6/11/2025
SEAL 048883 NORTH CAROLINA PROFESSIONAL ENGINEER NATHAN B. CLARKE

ROADWAY DESIGN ENGINEER
Signed by: 6A9DDCE32DA4421...
SIGNATURE: P.E. 6/11/2025
SEAL 046062 NORTH CAROLINA PROFESSIONAL ENGINEER CHARLES J. YOUNG

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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4700 Falls of Neuse Rd. Suite 100.
Raleigh, NC. 27609
License No: C-3097

PROJECT REFERENCE NO.	SHEET NO.
I-5880	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 046062 ENGINEER CHARLES J. YOUNG

6/11/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1 THRU 2A-7	TYPICAL SECTION SHEETS
2B-1 THRU 2B-3	INTERSECTION DETAIL SHEETS
2B-4 THRU 2B-6	ROW CALLOUT DETAIL SHEETS
2C-1 THRU 2C-2	METHOD OF PIPE INSTALLATION DETAILS
2C-3	CONCRETE SIDEWALK DETAIL
2C-4 THRU 2C-5	CURB RAMP DETAILS
2C-6 THRU 2C-9	GUARDRAIL PLACEMENT DETAILS
2C-10	STRUCTURE ANCHOR UNITS DETAIL
2C-11	GUARDRAIL INSTALLATION DETAIL
2C-12	DETAIL TO CONVERT EXISTING DI, CB, OTCB OR GI TO JB
2D-1	DRAINAGE DETAILS
2G-1	GEOTECHNICAL DETAILS
3B-1	EARTHWORK & GUARDRAIL SUMMARY SHEET
3D-1 THRU 3D-4	DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARY
3P-1	PARCEL INDEX SHEET
4A THRU 8	PLAN SHEETS
9 THRU 18	PROFILE SHEETS
TMP-1 THRU TMP-24	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-11	PAVEMENT MARKING PLANS
E-1 THRU E-3	LIGHTING PLANS
EC-1 THRU EC-13	EROSION CONTROL PLANS
SGN-1 THRU SGN-26	SIGNING PLANS
SIG-1 THRU SIG-12	SIGNAL PLANS
UC-1 THRU UC-15	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-6	UTILITY BY OTHERS PLANS
X-1	CROSS SECTION INDEX
X-1A	CROSS SECTION EARTHWORK VOLUME SHEET
X-2 THRU X-58	CROSS SECTION SHEETS
S1-1 THRU S1-21	STRUCTURES PLANS (BRIDGE 29)
S2-1 THRU S2-72	STRUCTURES PLANS (BRIDGE 340)

GENERAL NOTES

2024 SPECIFICATIONS
EFFECTIVE: 01-16-2024
REVISED:

GRADE LINE:
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 CENTERLINE PROFILE OF SURVEY ON WHICH THE PROPOSED SURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER TO SECURE A PROPER TIE-IN.

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01 AND 560.02.

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.

SUBSURFACE DRAINS:

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

SHOULDER DRAINS:

SHOULDER DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 816.02 AND DETAILS AS SHOWN IN PLANS AT LOCATIONS AS DIRECTED BY THE ENGINEER

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.

STREET TURNOUT:

STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADII AS SHOWN ON PLANS.

GUARDRAIL:

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

TEMPORARY SHORING:

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

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.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE DUKE ENERGY (POWER), PIEDMONT NATURAL GAS (POWER),

AT&T (TELEPHONE), SPECTRUM (CATV), AND THE CITY OF WINSTON-SALEM (WATER & SEWER)

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

RIGHT-OF-WAY MARKERS:

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

CURB RAMPS

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

LIST OF STANDARDS

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	
200.03	Method of Clearing - Method III
225.01	Guide for Grading Subgrade - Interstate and Freeway
225.02	Guide for Grading Subgrade - Secondary and Local
225.03	Deceleration and Acceleration Lanes
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.09	Guide for Shoulder and Ditch Transition at Grade Separations
275.01	Rock Plating
DIVISION 3 - PIPE CULVERTS	
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
423.01	Bridge Approach Fills - Type I Approach Fill for Bridge Abutment
423.02	Bridge Approach Fills - Type IA Alternate Approach Fill for Integral Bridge Abutment
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
560.02	Method of Shoulder Construction - High Side of Superelevated Curve - Method II
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
665.01	Asphalt Shoulders - Milled Rumble Strips
665.02	Limits for Asphalt Shoulders - Milled Rumble Strips
DIVISION 7 - CONCRETE PAVEMENTS AND SHOULDERS	
700.01	Concrete Pavement Joints- Construction and Contraction Joints
700.02	Expansion Joint Layout- for Rigid Doweled Pavement at Bridges
700.03	Dowel Assembly
700.04	Concrete Pavement Header Board
700.05	Tying Proposed Pavement to Existing Pavement
710.01	Concrete Pavement- Station Marking
720.01	Concrete Shoulder - Stamped or Rolled Rumble Strips, Milled Rumble Strips
720.02	Limits of Concrete Shoulder Rumble Strips
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
815.02	Subsurface Drain
816.01	Concrete Pad for Shoulder Drain Installation
816.02	Aggregate Shoulder Drain
816.04	Markers for Drainage Structure and Concrete Pad
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
840.04	Concrete Open Throat Catch Basin 12" Thru 48" Pipe
840.05	Brick Open Throat Catch Basin 12" Thru 48" Pipe
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.20	Frames and Wide Slot Flat Grates
840.22	Frames and Wide Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.26	Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box- 12" Thru 66" Pipe
840.32	Brick Junction Box- 12" Thru 66" Pipe
840.34	Traffic Bearing Junction Box- For Use With Pipes 42" and Under
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.36	Traffic Bearing Grated Drop Inlet- For Steel (840.37) Double Frame and Grate
840.37	Steel Grate and Frame
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
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)
850.01	Concrete Paved Ditches
852.01	Concrete Islands
852.06	Method for Placement of Drop Inlet in Concrete Island
857.01	Precast Reinforced Concrete Barrier- 41" Single Faced
862.01	Guardrail Placement (Use Details in Lieu of Standards for Sheets 4, 6, 12, and 14 of 15)
862.02	Guardrail Installation (Use Details in Lieu of Standards for Sheet 5 of 9)
862.03	Structure Anchor Units (Use Details in Lieu of Standards for Sheet 8 of 9)
862.04	Anchoring End of Guardrail- for B-77 and B-83 Anchor Units
866.01	Chain Link Fence- 4', 5' and 6' High Fence
876.01	Riprap in Channels and Ditches
876.02	Guide for Riprap at Pipe Outlets
876.04	Drainage Ditches with Class B Riprap

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jhearn1@jmt.com

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Note: Not to Scale

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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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8/17/99

REVISIONS

Johnson, Mirmiran, & Thompson Inc.
4700 Falls of Neuse Rd. Suite 100,
Raleigh, NC. 27609
License No: C-3097

PROJECT REFERENCE NO.	SHEET NO.
I-5880	2A-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 046062 ENGINEER CHARLES J. YOUNG
7/1/2025

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 024641 ENGINEER JOSEPH T. HOLLAND
7/1/2025

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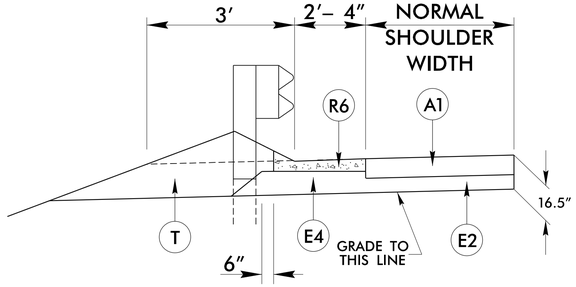
FINAL PAVEMENT SCHEDULE

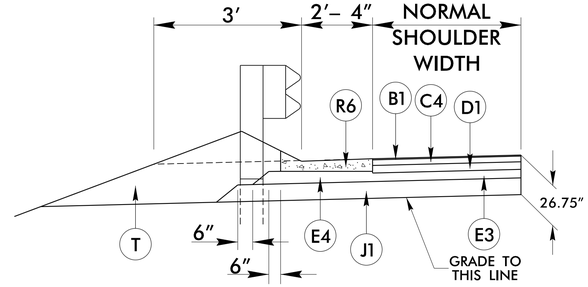
A1	PROP. 11.5″ PORTLAND CEMENT CONCRETE PAVEMENT WITH DOWELS.	E2	PROP. APPROX. 5.0″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.	R5	2′-0″ MODIFIED VALLEY CURB (SEE SHEET 2A-7 FOR DETAIL)
B1	PROP. 0.75″ ULTRA-THIN BONDED WEARING COURSE	E3	PROP. APPROX. 9″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD. IN EACH OF TWO LAYERS	R6	SHOULDER BERM GUTTER
C1	PROP. APPROX. 1.5″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	E4	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.	S	4″ CONCRETE SIDEWALK
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.	J1	PROP. 10″ AGGREGATE BASE COURSE.	T	EARTH MATERIAL
C3	PROP. APPROX. 1.5″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	K1	PROP. 8″ CLASS IV SUBGRADE STABILIZATION.	U	EXISTING PAVEMENT.
C4	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	K2	PROP. 12″ CLASS IV SUBGRADE STABILIZATION.	V1	MILLING ASPHALT PAVEMENT 1.5″ DEPTH
C5	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 LESS THAN 1 1/2″ IN DEPTH OR GREATER THAN 2″ IN DEPTH.	N1	GEOTEXTILE FOR SUBGRADE STABILIZATION	V2	MILLING ASPHALT PAVEMENT 2.25″ DEPTH
C6	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1″ DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1 1/2″ IN DEPTH OR GREATER THAN 2″ IN DEPTH.	R1	2′-6″ MODIFIED CONCRETE CURB AND GUTTER (SEE SHEET 2A-7 FOR DETAIL)	V3	VARIABLE DEPTH MILLING ASPHALT PAVEMENT 0″ TO 1.5″ DEPTH INCIDENTAL MILLING
D1	PROP. APPROX. 4.0″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R2	2′-6″ CONCRETE CURB AND GUTTER	W	VARIABLE DEPTH ASPHALT PAVEMENT. (SEE DETAIL NO. 1 SHOWING METHOD OF WEDGING) (SEE SHEET 2A-1)
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.	R3	5″ MONOLITHIC CONCRETE ISLAND (KEYED IN)	Y	RUMBLE STRIPS
E1	PROP. APPROX. 4.0″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R4	9″ JOINTED CONCRETE TRUCK APRON w/WELDED WIRE MESH (4X4 W4.5 X W4.5 OR 6X6 W7 X W7) 15′ RADIAL JOINT SPACING		

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



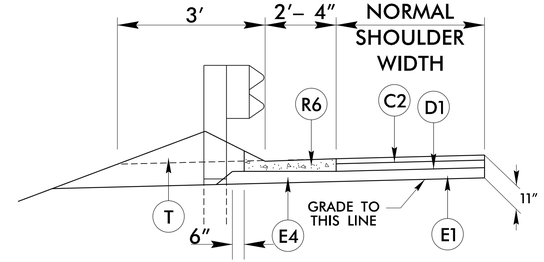
SHOULDER BERM GUTTER

–L– 37+82.00 TO STA. 38+10.00 RT
–L– 38+72.00 TO STA. 38+90.00 LT
SEE STANDARD 846.01



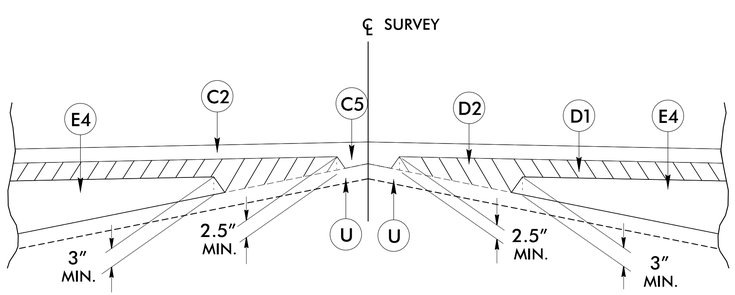
SHOULDER BERM GUTTER

–L– 40+65.00 TO STA. 41+05.00 LT
–L– 39+85.00 TO STA. 40+50.00 RT
SEE STANDARD 846.01

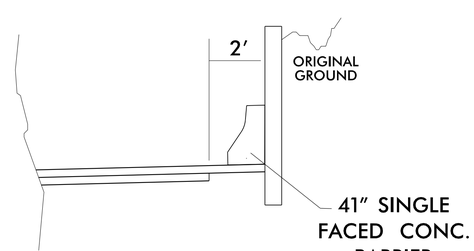


SHOULDER BERM GUTTER

–RPC– 16+25.00 TO STA. 40+50.00 RT
SEE STANDARD 846.01

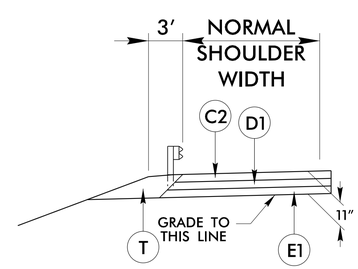


Detail Showing Method of Wedging No. 1



NOISE WALL DETAIL

–L– STA. 25+10.00 TO STA. 27+70.00 LT



DETAIL FOR ADDITIONAL WIDENING FOR GUARDRAIL

–RPB– STA. 10+00.00 TO STA. 13+70.00 RT
–RPC– STA. 10+00.00 TO STA. 20+84.00 LT

$$$$SYSTIME$$$$
$$$$USERNAME$$$$DGN$$$$

Docusign Envelope ID: EAF30178-04A7-49E9-A55E-0E62C6C9068E

8/17/99

REVISIONS

JMT Johnson, Mirmiran, & Thompson Inc.
4700 Falls of Neuse Rd. Suite 100,
Raleigh, NC. 27609
License No: C-3097

PROJECT REFERENCE NO.	SHEET NO.
I-5880	2A-2
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 046062 ENGINEER CHARLES J. YOUNG
6/11/2025

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 024964 ENGINEER JOSEPH T. HOLLAND
6/11/2025

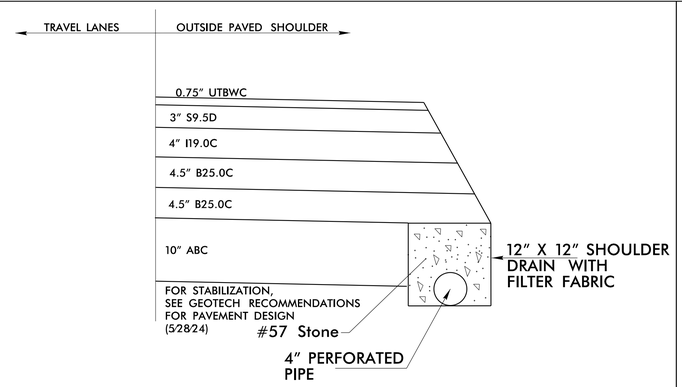
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVEMENT SCHEDULE

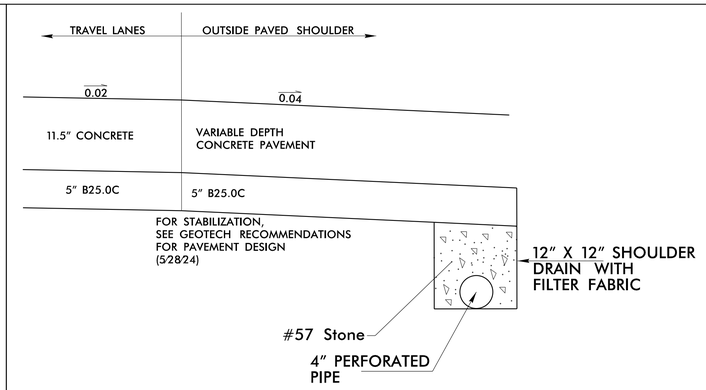
A1	11.5" PORT CONC W DOWEL
B1	0.75" UTBWC
C1	1.5" S9.5C
C2	3" S9.5C
C3	1.5" S9.5D
C4	3" S9.5D
C5	VAR. S9.5C
C6	VAR. S9.5D
D1	4" I19.0C
D2	VAR. I19.0C
E1	4" B25.0C
E2	5" B25.0C
E3	9" B25.0C
E4	VAR. B25.0C
J1	10" ABC
K1	8" CL IV SUB STAB
K2	12" CL IV SUB STAB
N1	GEOTEXT SUB STAB
R1	2'6" MODIFIED C&G
R2	2'6" C&G
R3	5" MONO CONC ISL KEY IN
R4	9" CON TRUCK APRON
R5	2' MOD VALLEY GUTTER
R6	SHOULDER BERM GUTTER
S	4" CONC SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING 1.5"
V2	MILLING 2.25"
V3	INCIDENTAL MILLING
W	WEDGING SEE DETAIL 2A-1
Y	RUMBLE STRIPS

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

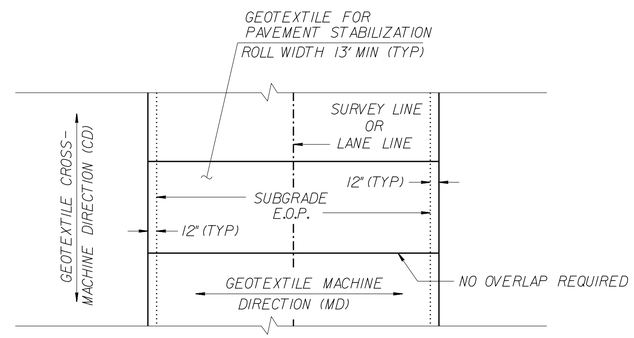
SHOULDER DRAIN DETAILS



–L– STA. 41+05 TO 44+05 LEFT OUTSIDE SHOULDER OUTLETS AT 44+05 (PAD)
–L– STA. 40+50 TO 43+50 RIGHT OUTSIDE SHOULDER OUTLETS AT 43+50 (PAD)

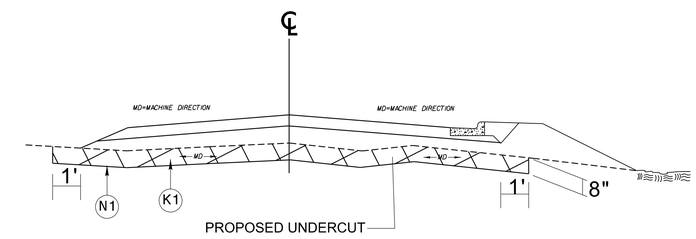


–L– STA. 31+90 TO 38+72 LEFT OUTSIDE SHOULDER OUTLETS AT 31+90 (PAD), 35+25 (PAD)
–L– STA. 30+75 TO 37+82 RIGHT OUTSIDE SHOULDER OUTLETS AT 30+75 (2GI #406), 34+00 (PAD)



GEOTEXTILE FOR SUBGRADE STABILIZATION (PLAN VIEW)

(100% COVERAGE REQUIRED)

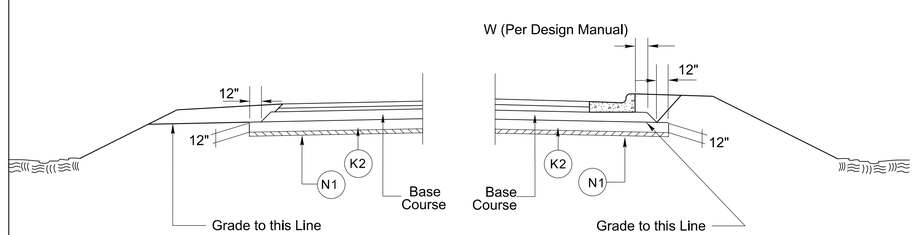


–L– STA. 36+75.00 TO STA. 37+75.00 LT
–L– STA. 37+75.00 TO STA. 38+46.00 LT & RT
–L– STA. 40+21.00 TO STA. 43+95.00 LT & RT
–L– STA. 45+00.00 TO STA. 46+50.00 LT
–L– STA. 46+50.00 TO STA. 48+25.00 LT & RT
–L– STA. 48+25.00 TO STA. 50+75.00 RT
–RPB– STA. 10+00.00 TO 16+75.00 LT & RT
–RPC– STA. 10+00.00 TO 21+00.00 LT & RT
–Y1– STA. 24+25.00 TO 24+65.00 LT & RT

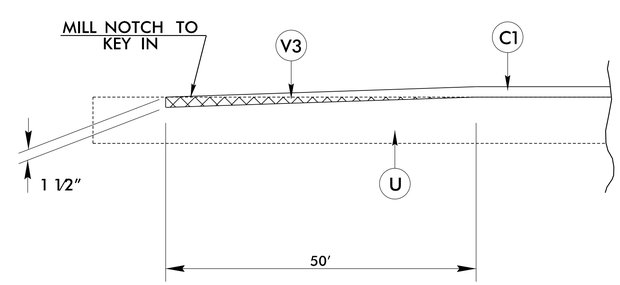
Contractor Should Investigate These Areas During Construction to Determine if Stabilization Fabric is Required

UNDERCUT DETAIL

SHALLOW UNDERCUT DETAILS



–L– STA. 27+75.00 TO STA. 33+75.00 LT & RT
–L– STA. 33+75.00 TO STA. 34+75.00 LT
–Y1– STA. 6+15.00 TO STA. 13+75.00 LT & RT
–Y1– STA. 33+75.00 TO STA. 35+40.00 LT & RT



DETAIL FOR INCIDENTAL MILLING

–Y1REV– STA. 11+59.00 TO STA. 12+09.00
–Y1– STA. 34+90.00 TO STA. 35+40.00
–Y2REV– STA. 10+68.00 TO STA. 11+18.00
–Y2REV2– STA. 19+06.00 TO STA. 19+56.00
–RPA– STA. 10+00.00 TO STA. 10+50.00
–RPD– STA. 11+34.38 TO STA. 11+84.38
–Y1– STA. 24+15.00 TO STA. 24+65.00 (BEGIN BRIDGE)
–Y1– STA. 27+95.00 (END BRIDGE) TO STA. 28+45.00

$$$$$SYSTIME$$$$
$$$$$GRAPHDATE$$$$

Docusign Envelope ID: EAF30178-04A7-49E9-A55E-0E62C6C9068E

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License No: C-3097

PROJECT REFERENCE NO.	SHEET NO.
I-5880	2A-3
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 046062 ENGINEER CHARLES J. YOUNG
6/11/2025

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 024164 ENGINEER JOSEPH T. HOLLANDSWORTH
6/11/2025

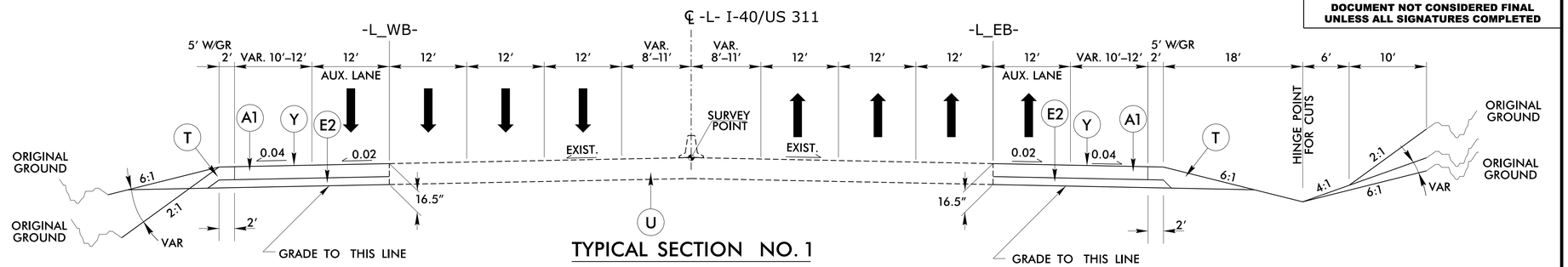
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

8/17/99

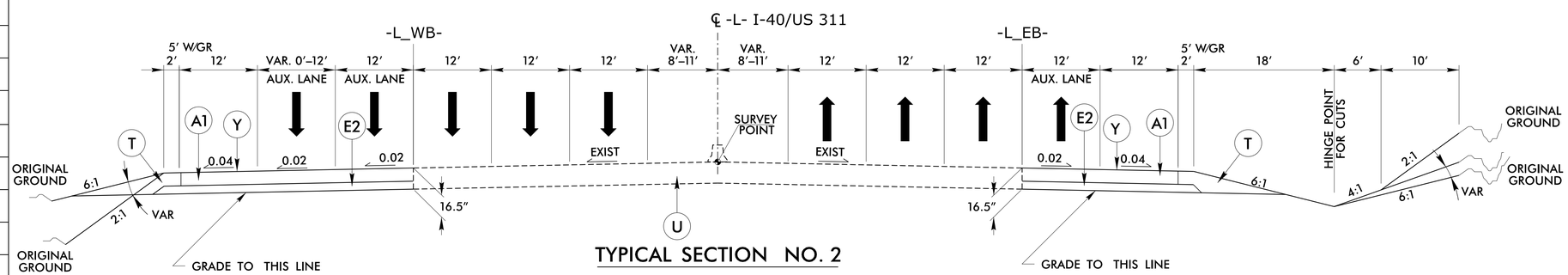
PAVEMENT SCHEDULE	
A1	11.5″ PORT CONC W DOWEL
B1	0.75″ UTBWC
C1	1.5″ S9.5C
C2	3″ S9.5C
C3	1.5″ S9.5D
C4	3″ S9.5D
C5	VAR. S9.5C
C6	VAR. S9.5D
D1	4″ I19.0C
D2	VAR. I19.0C
E1	4″ B25.0C
E2	5″ B25.0C
E3	9″ B25.0C
E4	VAR. B25.0C
J1	10″ ABC
K1	8″ CL IV SUB STAB
K2	12″ CL IV SUB STAB
N1	GEOTEXT SUB STAB
R1	2′6″ MODIFIED C&G
R2	2′6″ C&G
R3	5″ MONO CONC ISL KEY IN
R4	9″ CON TRUCK APRON
R5	2′ MOD VALLEY GUTTER
R6	SHOULDER BERM GUTTER
S	4″ CONC SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING 1.5″
V2	MILLING 2.25″
V3	INCIDENTAL MILLING
W	WEDGING SEE DETAIL 2A-1
Y	RUMBLE STRIPS

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



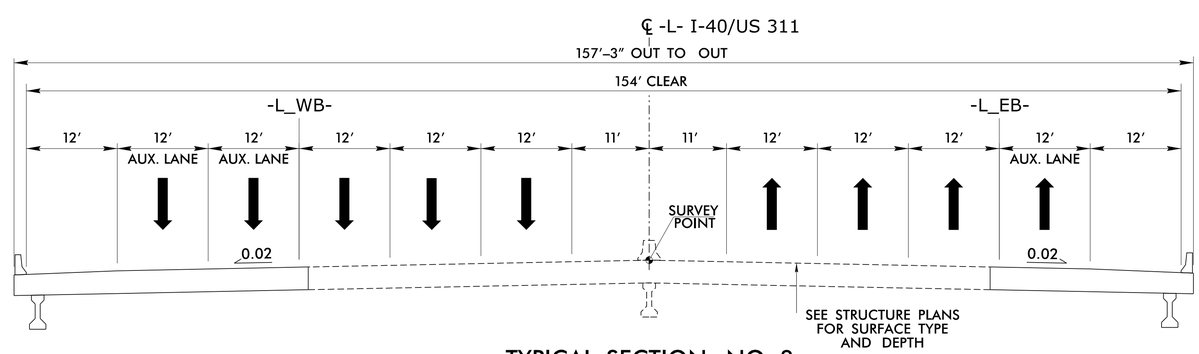
TYPICAL SECTION NO. 1

–L– STA. 27+75.00 TO STA. 35+04.78



TYPICAL SECTION NO. 2

–L– STA. 35+04.78 TO STA. 38+46.00 (Begin Bridge)



TYPICAL SECTION NO. 3

–L– STA. 38+46.00 (Begin Bridge) TO STA. 40+21.00 (End Bridge)

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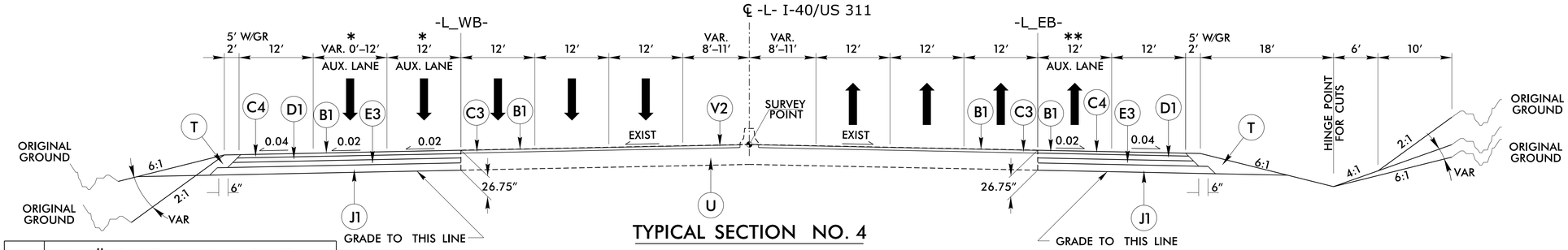
License No: C-3097

PROJECT REFERENCE NO.	SHEET NO.
I-5880	2A-4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 046062 ENGINEER CHARLES I. YOUNG — 6/11/2025

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 024464 ENGINEER JOSEPH T. HOLLAND — 6/11/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



TYPICAL SECTION NO. 4

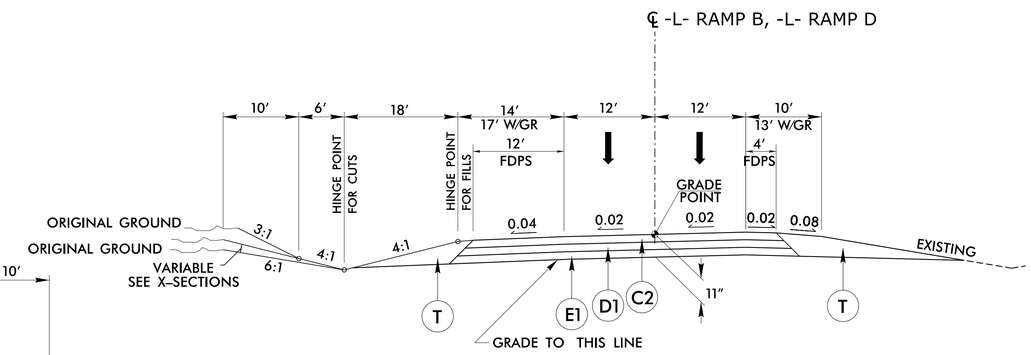
–L– STA. 40+21.00 (End Bridge) TO STA. 50+75.00

* AUX. LANE ENDS AT STA 47+87.21

** AUX. LANE ENDS AT STA 50+09.98

A1	11.5″ PORT CONC W DOWEL
B1	0.75″ UTBWC
C1	1.5″ S9.5C
C2	3″ S9.5C
C3	1.5″ S9.5D
C4	3″ S9.5D
C5	VAR. S9.5C
C6	VAR. S9.5D
D1	4″ I19.0C
D2	VAR. I19.0C
E1	4″ B25.0C
E2	5″ B25.0C
E3	9″ B25.0C
E4	VAR. B25.0C
J1	10″ ABC
K1	8″ CL IV SUB STAB
K2	12″ CL IV SUB STAB
N1	GEOTEXT SUB STAB
R1	2′6″ MODIFIED C&G
R2	2′6″ C&G
R3	5″ MONO CONC ISL KEY IN
R4	9″ CON TRUCK APRON
R5	2′ MOD VALLEY GUTTER
R6	SHOULDER BERM GUTTER
S	4″ CONC SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING 1.5″
V2	MILLING 2.25″
V3	INCIDENTAL MILLING
W	WEDGING SEE DETAIL 2A-1
Y	RUMBLE STRIPS

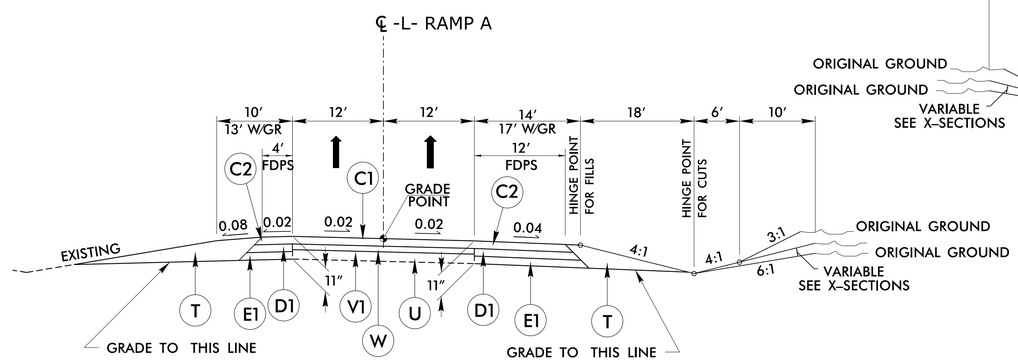
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



TYPICAL SECTION NO. 5

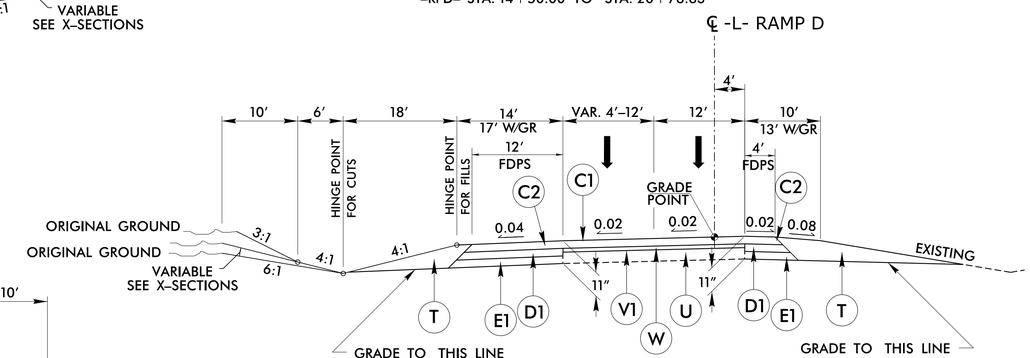
–RPB– STA. 13+99.26 TO STA. 20+65.98

–RPD– STA. 14+50.00 TO STA. 20+78.83



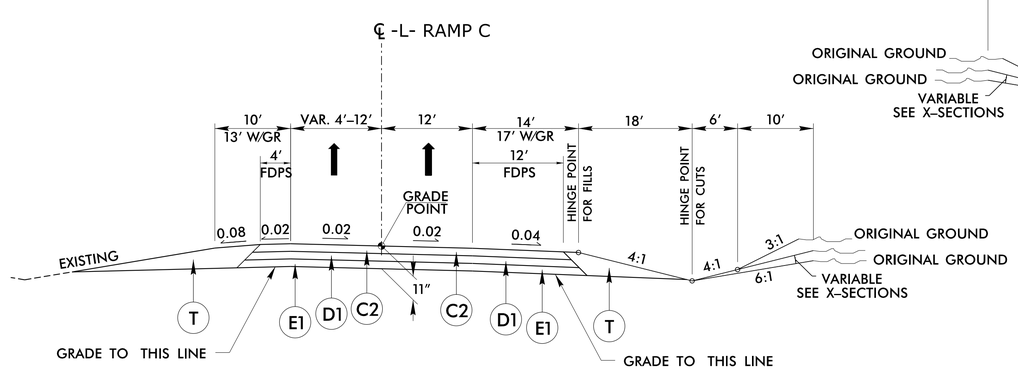
TYPICAL SECTION NO. 6

–RPA– STA. 10+00.00 TO STA. 16+82.46



TYPICAL SECTION NO. 7

–RPD– STA. 11+34.38 TO STA. 14+50.00



TYPICAL SECTION NO. 8

–RPC– STA. 16+15.59 TO STA. 27+85.38

REVISIONS

8/17/99

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USER:kittrell.ryan

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PROJECT REFERENCE NO.	SHEET NO.
I-5880	2A-5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 046062 ENGINEER CHARLES J. YOUNG — 6/11/2025

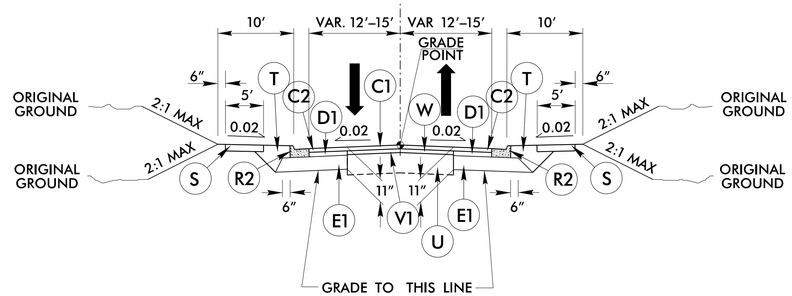
PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 024964 ENGINEER JOSEPH T. HOLLAND — 6/11/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVEMENT SCHEDULE	
A1	11.5″ PORT CONC W DOWEL
B1	0.75″ UTBWC
C1	1.5″ S9.5C
C2	3″ S9.5C
C3	1.5″ S9.5D
C4	3″ S9.5D
C5	VAR. S9.5C
C6	VAR. S9.5D
D1	4″ I19.0C
D2	VAR. I19.0C
E1	4″ B25.0C
E2	5″ B25.0C
E3	9″ B25.0C
E4	VAR. B25.0C
J1	10″ ABC
K1	8″ CL IV SUB STAB
K2	12″ CL IV SUB STAB
N1	GEOTEXT SUB STAB
R1	2′6″ MODIFIED C&G
R2	2′6″ C&G
R3	5″ MONO CONC ISL KEY IN
R4	9″ CON TRUCK APRON
R5	2′ MOD VALLEY GUTTER
R6	SHOULDER BERM GUTTER
S	4″ CONC SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING 1.5″
V2	MILLING 2.25″
V3	INCIDENTAL MILLING
W	WEDGING SEE DETAIL 2A-1
Y	RUMBLE STRIPS

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

℄ -Y1- & -Y1Rev- NC 109 & -Y2-

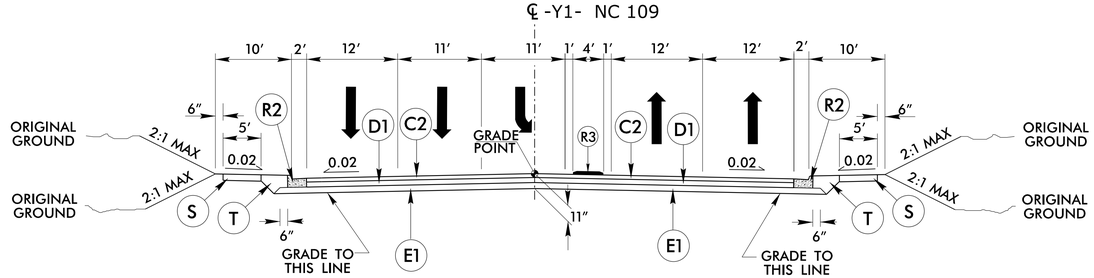


TYPICAL SECTION NO. 9

–Y1Rev– STA. 11+58.61 TO STA. 12+53.10 LB
–Y1– STA 7+09.53 LA TO STA. 8+00.00
–Y1– STA. 11+25.00 TO STA. 16+79.56
–Y2Rev– STA. 10+67.87 TO STA. 12+44.47 LB
–Y2– STA 12+44.47 LA TO STA 14+38.00
–Y2– STA. 15+68.00 TO STA. 17+64.38 LB
–Y2Rev2– Sta. 17+64.38 LA TO STA. 19+56.47

NOTE: SEE PLANS FOR ISLAND LOCATION AND TAPERS

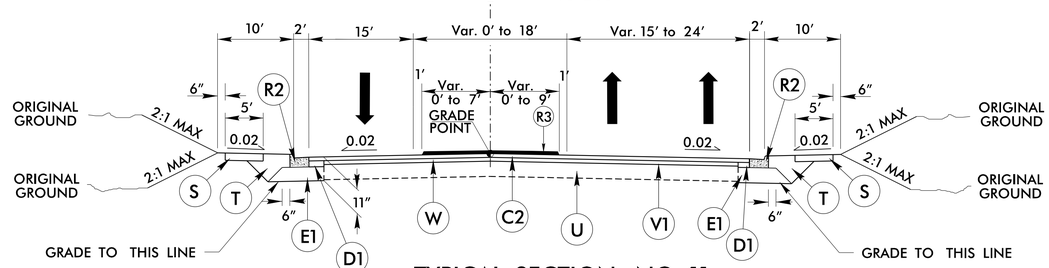
℄ -Y1- NC 109



TYPICAL SECTION NO. 10

–Y1– STA. 8+00.00 TO STA. 9+30.00
–Y1– STA. 10+60.50 TO STA. 11+25.00

℄ -Y1- NC 109



TYPICAL SECTION NO. 11

–Y1– STA. 16+79.56 TO 21+31.95

REVISIONS

8/17/99

6/2/2025 3:45:43 PM
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User:JRoemer

Docusign Envelope ID: EAF30178-04A7-49E9-A55E-0E62C6C9068E

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I-5880	2A-6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 046062 ENGINEER CHARLES I. YOUNG
6/11/2025

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 024964 ENGINEER JOSEPH T. HOLLAND
6/11/2025

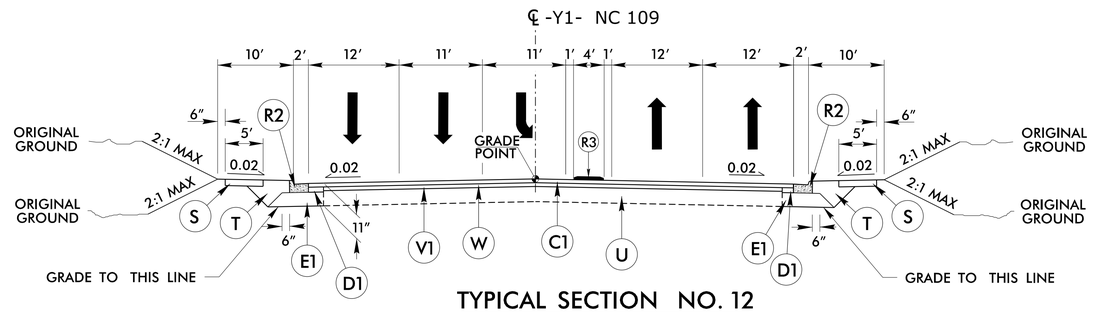
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

8/17/99

REVISIONS

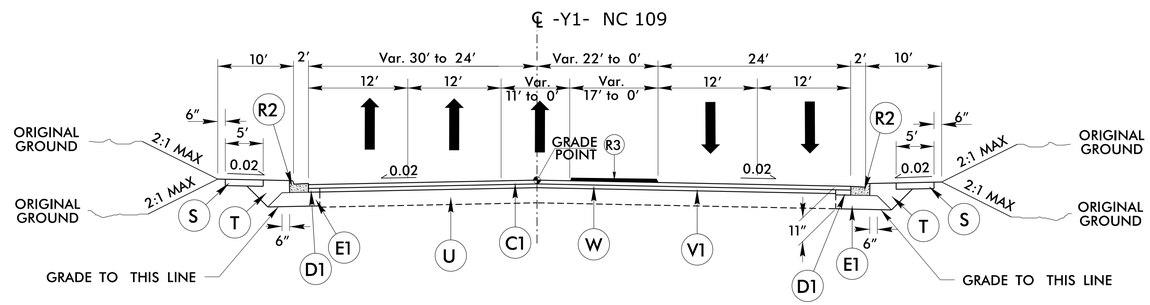
PAVEMENT SCHEDULE	
A1	11.5″ PORT CONC W DOWEL
B1	0.75″ UTBWC
C1	1.5″ S9.5C
C2	3″ S9.5C
C3	1.5″ S9.5D
C4	3″ S9.5D
C5	VAR. S9.5C
C6	VAR. S9.5D
D1	4″ I19.0C
D2	VAR. I19.0C
E1	4″ B25.0C
E2	5″ B25.0C
E3	9″ B25.0C
E4	VAR. B25.0C
J1	10″ ABC
K1	8″ CL IV SUB STAB
K2	12″ CL IV SUB STAB
N1	GEOTEXT SUB STAB
R1	2′6″ MODIFIED C&G
R2	2′6″ C&G
R3	5″ MONO CONC ISL KEY IN
R4	9″ CON TRUCK APRON
R5	2′ MOD VALLEY GUTTER
R6	SHOULDER BERM GUTTER
S	4″ CONC SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING 1.5″
V2	MILLING 2.25″
V3	INCIDENTAL MILLING
W	WEDGING SEE DETAIL 2A-1
Y	RUMBLE STRIPS

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



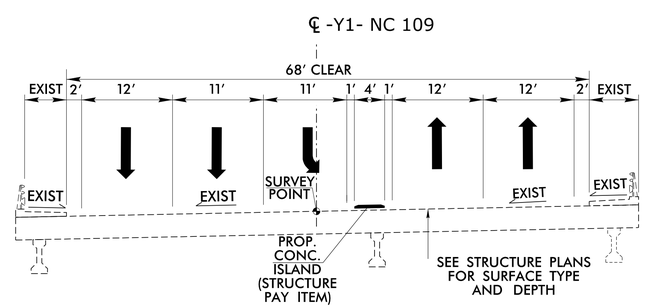
TYPICAL SECTION NO. 12

–Y1– STA. 21+31.95 TO STA. 24+65.00 (BEGIN BRIDGE)
–Y1– STA. 27+95.00 (END BRIDGE) TO STA. 30+40.00



TYPICAL SECTION NO. 13

–Y1– STA. 30+40.00 TO STA. 35+40.00



TYPICAL SECTION NO. 14

–Y1– STA. 24+65.00 (Begin Bridge) TO 27+95.00 (End Bridge)

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mlsarkisian@jmt.com

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PROJECT REFERENCE NO.	SHEET NO.
I-5880	2A-7
R/W SHEET NO.	

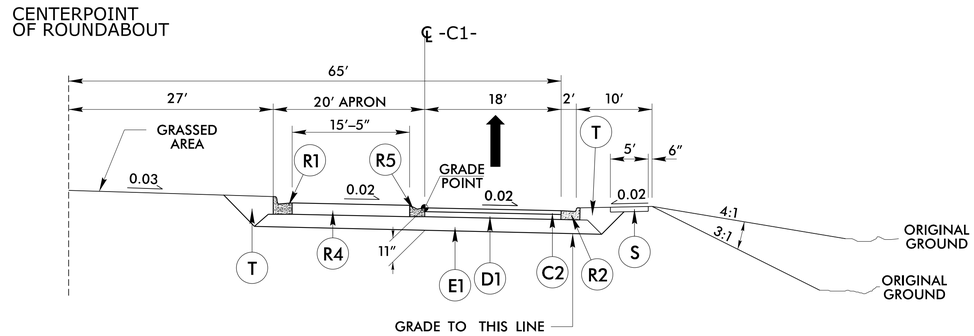
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 046062 ENGINEER CHARLES I. YOUNG
6/11/2025

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 024964 ENGINEER JOSEPH T. HOLLAND
6/11/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

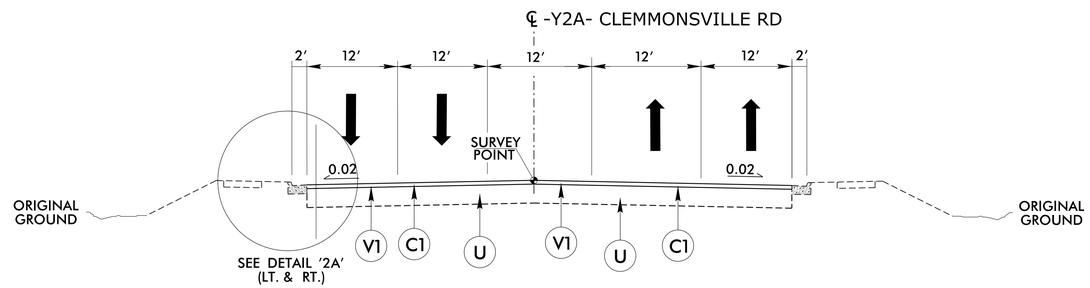
PAVEMENT SCHEDULE	
A1	11.5" PORT CONC W DOWEL
B1	0.75" UTBWC
C1	1.5" S9.5C
C2	3" S9.5C
C3	1.5" S9.5D
C4	3" S9.5D
C5	VAR. S9.5C
C6	VAR. S9.5D
D1	4" I19.0C
D2	VAR. I19.0C
E1	4" B25.0C
E2	5" B25.0C
E3	9" B25.0C
E4	VAR. B25.0C
J1	10" ABC
K1	8" CL IV SUB STAB
K2	12" CL IV SUB STAB
N1	GEOTEXT SUB STAB
R1	2'6" MODIFIED C&G
R2	2'6" C&G
R3	5" MONO CONC ISL KEY IN
R4	9" CON TRUCK APRON
R5	2' MOD VALLEY GUTTER
R6	SHOULDER BERM GUTTER
S	4" CONC SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING 1.5"
V2	MILLING 2.25"
V3	VAR. DEPTH MILLING 0" TO 1.5"
W	WEDGING SEE DETAIL 2A-1
Y	RUMBLE STRIPS

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



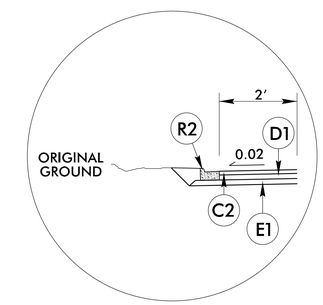
TYPICAL SECTION NO. 15

–C1– STA. 1+00.00 TO STA. 3+95.31



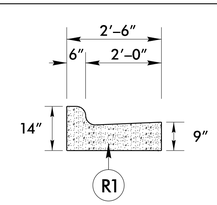
TYPICAL SECTION NO. 16

–Y2ARev– STA. 14+26.14 TO STA. 14+94.92 LB
–Y2A– STA. 11+43.84 LA TO STA. 19+50.00



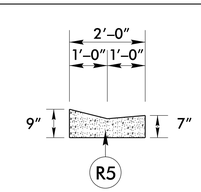
DETAIL 2A

–Y2ARev– STA. 14+26.14 TO –Y2A– STA. 12+15.00 LT
–Y2ARev– STA. 14+72.40 TO –Y2A– STA. 12+45.00 RT
–Y2A– STA. 17+49.00 TO STA. 18+64.00 LT
–Y2A– STA. 18+11.00 TO STA. 18+12.60 RT



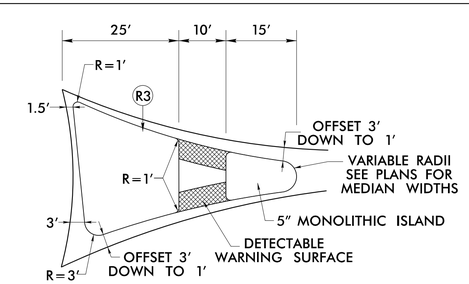
ROUNDABOUT DETAIL 1

2'-6" MODIFIED CURB & GUTTER DETAIL
SEE TYPICAL SECTION NO. 15



ROUNDABOUT DETAIL 2

2'-0" MODIFIED VALLEY GUTTER
SEE TYPICAL SECTION NO. 15



SPLITTER ISLAND DETAIL

USE CONCRETE SPLITTER ISLAND DETAIL IN CONJUNCTION WITH TYPICAL SECTION NO. 15

SEE DETAIL SHEET 2B-2 FOR INTERSECTION DETAILS

REVISIONS

8/17/99

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jwolfe@jmt.com

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PROJECT REFERENCE NO.	SHEET NO.
I-5880	2B-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 046062 ENGINEER CHARLES J. YOUNG
BY: DocuSigned by: Charles J. Young
8/11/2025

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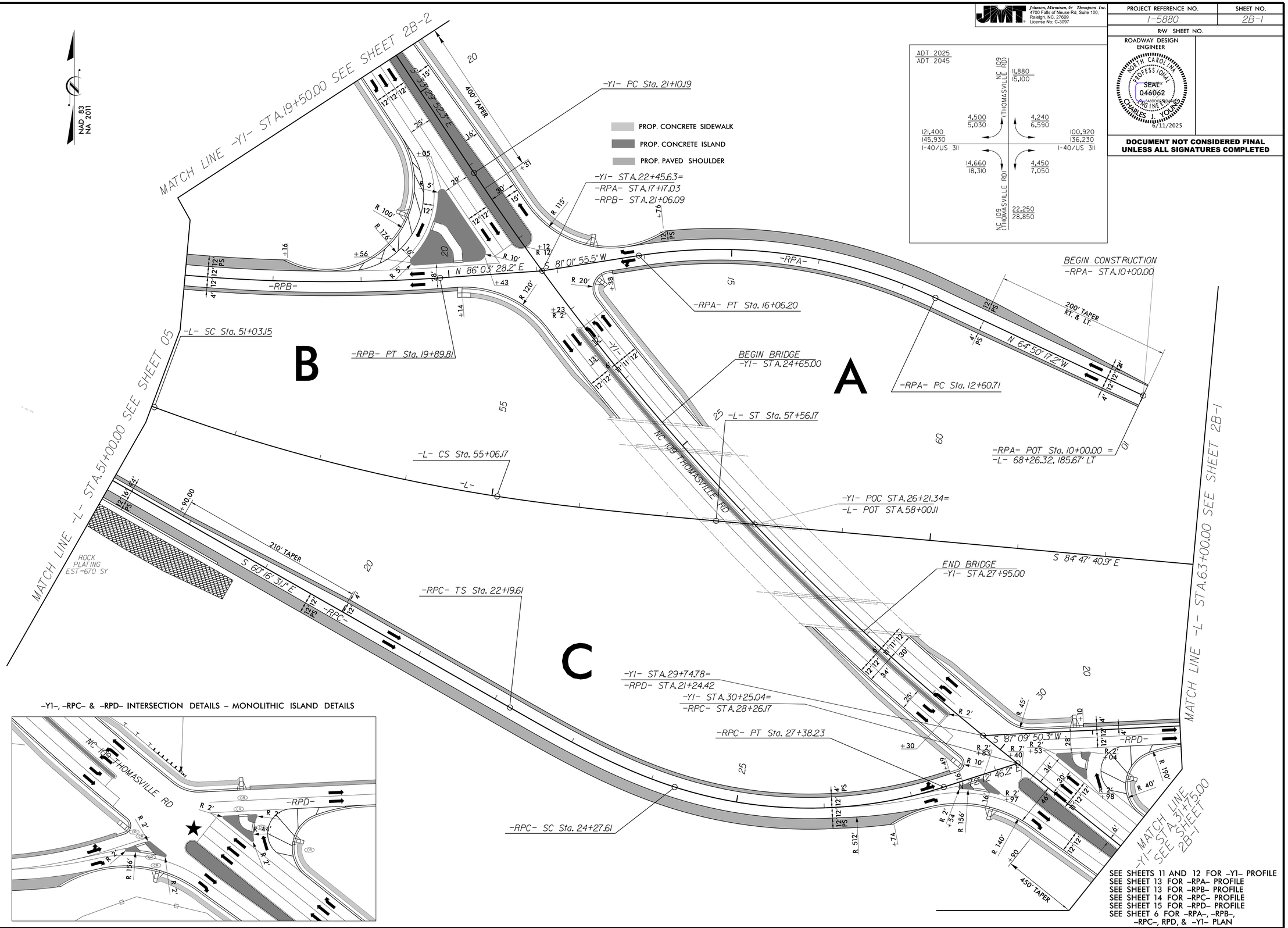

SEE SHEETS 11 AND 12 FOR -Y1- PROFILE
SEE SHEET 13 FOR -RPA- PROFILE
SEE SHEET 13 FOR -RPB- PROFILE
SEE SHEET 14 FOR -RPC- PROFILE
SEE SHEET 15 FOR -RPD- PROFILE
SEE SHEET 6 FOR -RPA-, -RPB-, -RPC-, RPD, & -Y1- PLAN

REVISIONS

8/17/99

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User: cjoyce

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PROJECT REFERENCE NO.	SHEET NO.
I-5880	2B-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 046062 ENGINEER CHARLES J. YOUNG 6/11/2025

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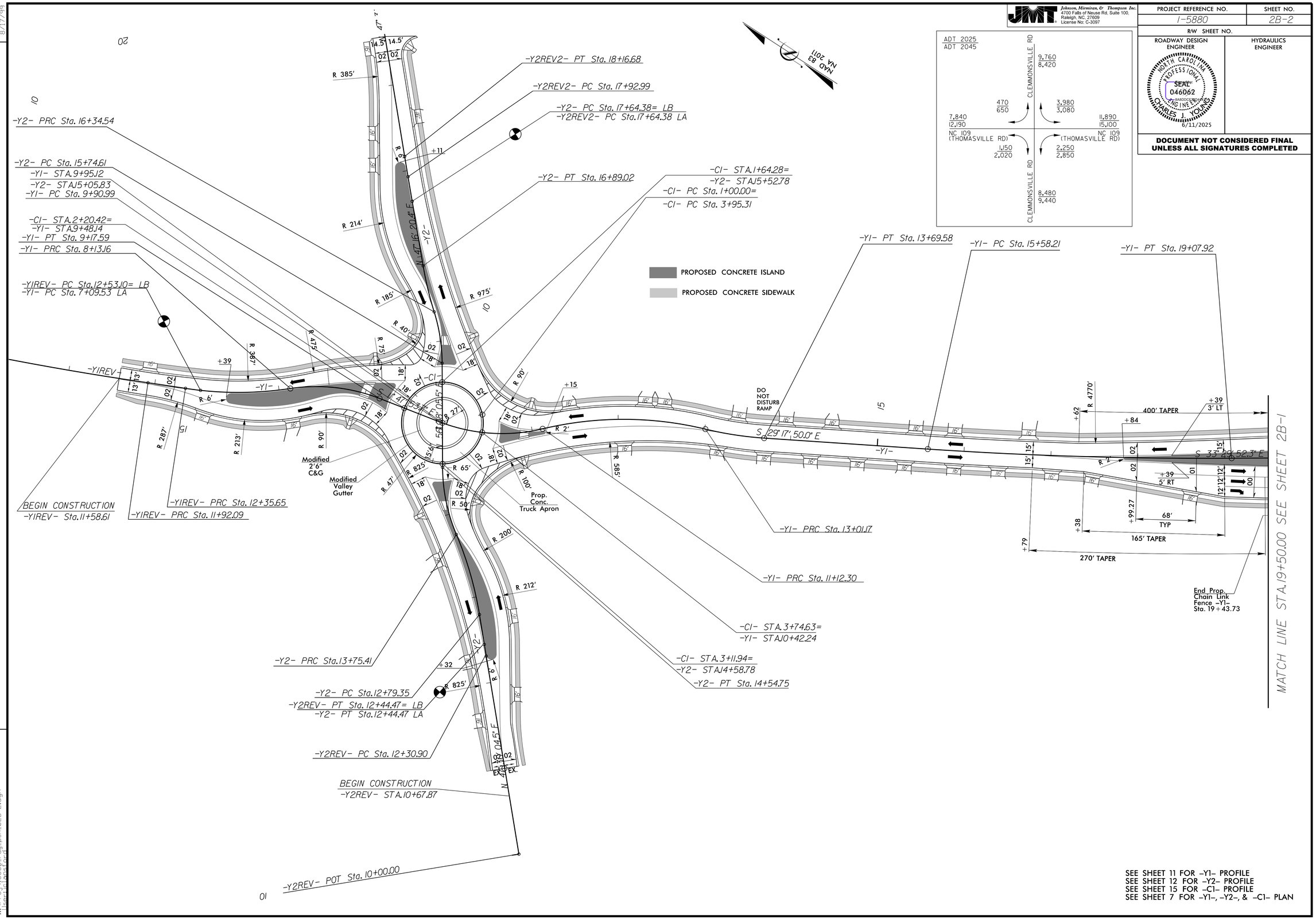

SEE SHEET 11 FOR -Y1- PROFILE
SEE SHEET 12 FOR -Y2- PROFILE
SEE SHEET 15 FOR -C1- PROFILE
SEE SHEET 7 FOR -Y1-, -Y2-, & -C1- PLAN

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jlsanchez@jmt.com

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PROJECT REFERENCE NO.	SHEET NO.
I-5880	2B-3
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 046062 ENGINEER CHARLES J. YOUNG
6/11/2025

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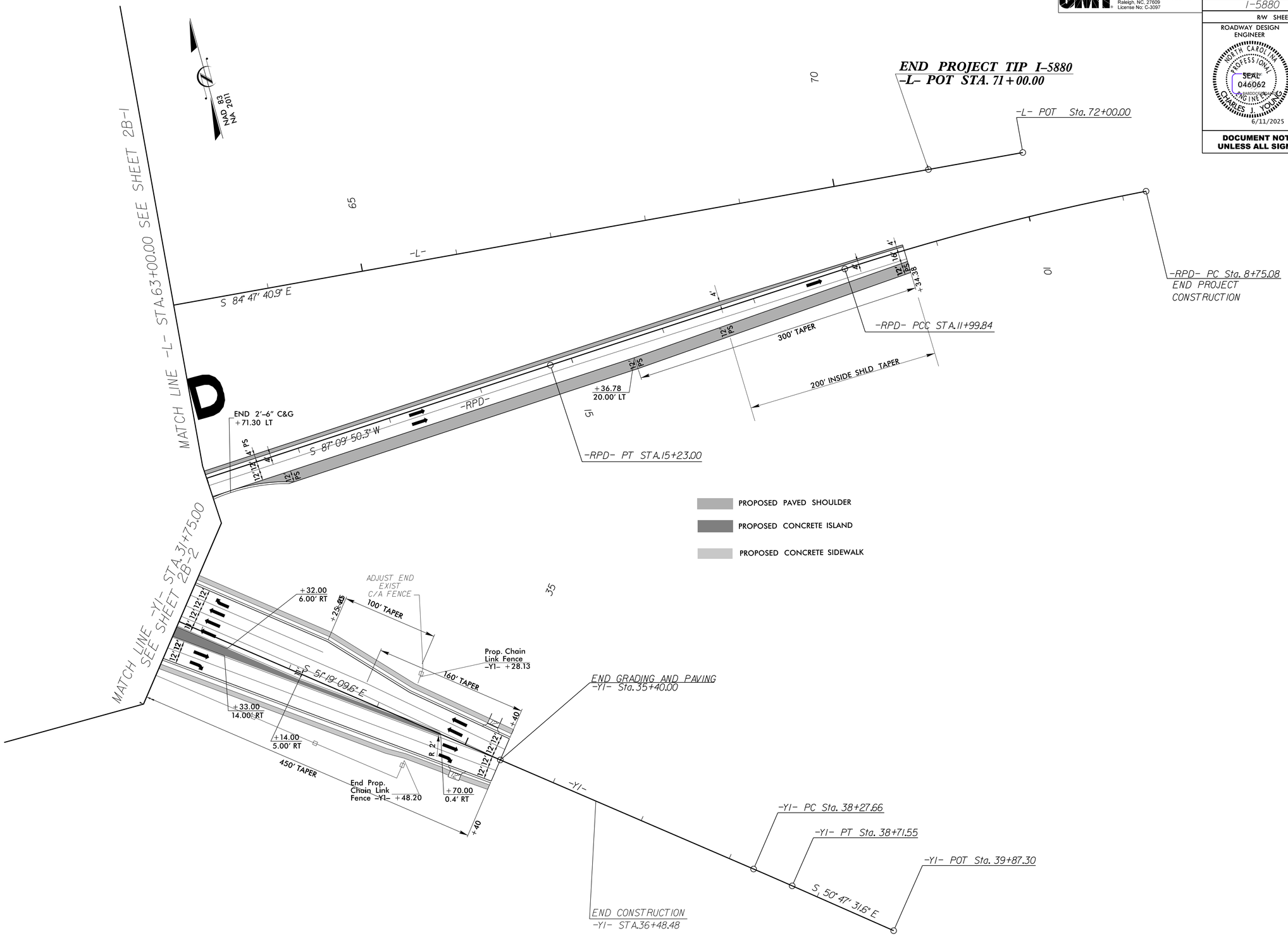

SEE SHEET 12 FOR -Y1- PROFILE
SEE SHEET 15 FOR -RPD- PROFILE
SEE SHEET 8 FOR -RPD-, & -Y1- PLAN

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PROJECT REFERENCE NO.	SHEET NO.
I-5880	2B-4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 046062 ENGINEER CHARLES J YOUNGS
Signed by: BADOOCF2D0AF4...
6/11/2025

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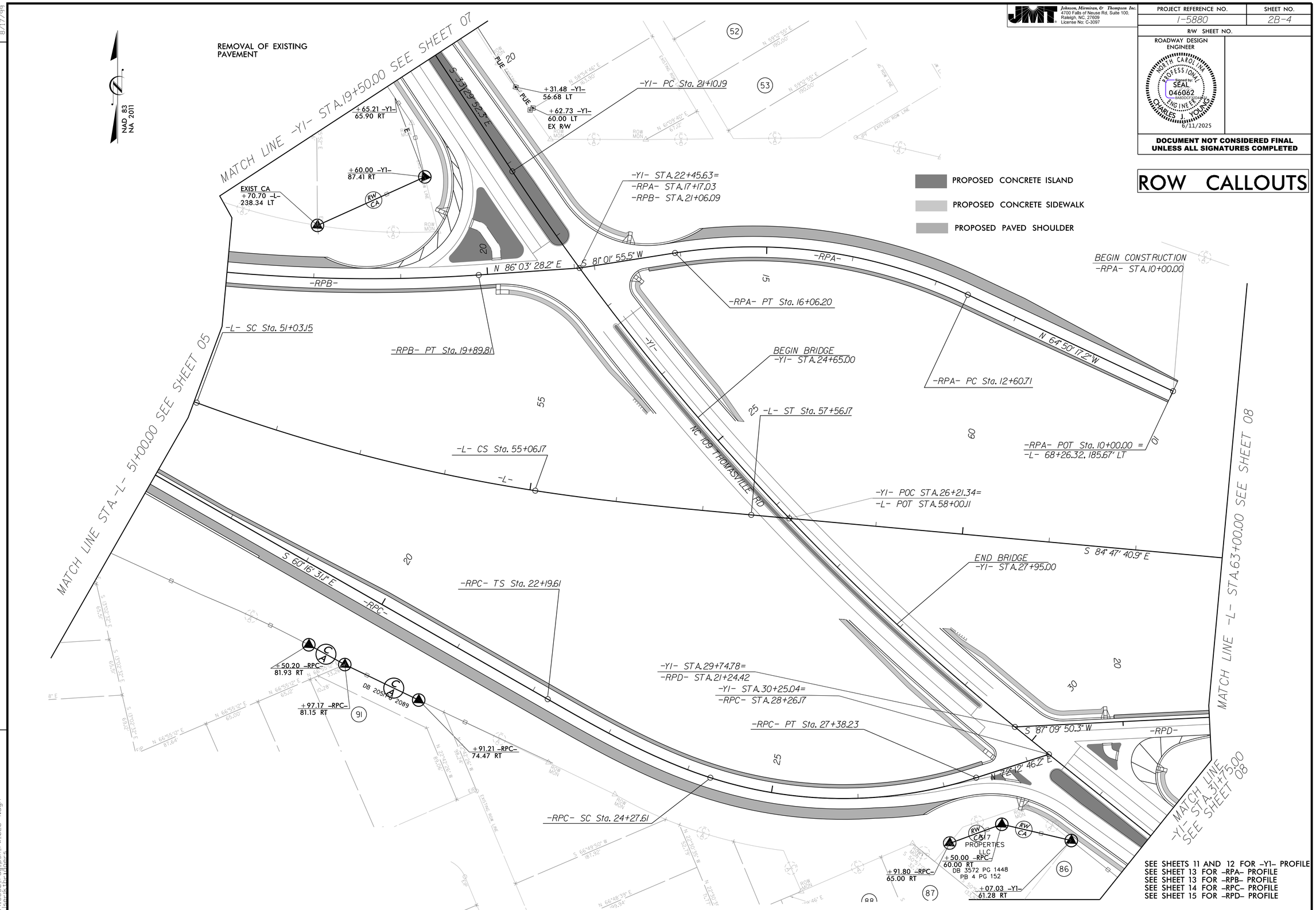
ROW CALLOUTS



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PROJECT REFERENCE NO.	SHEET NO.
I-5880	2B-5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 046062 ENGINEER CHARLES J. YOUNG
6/11/2025

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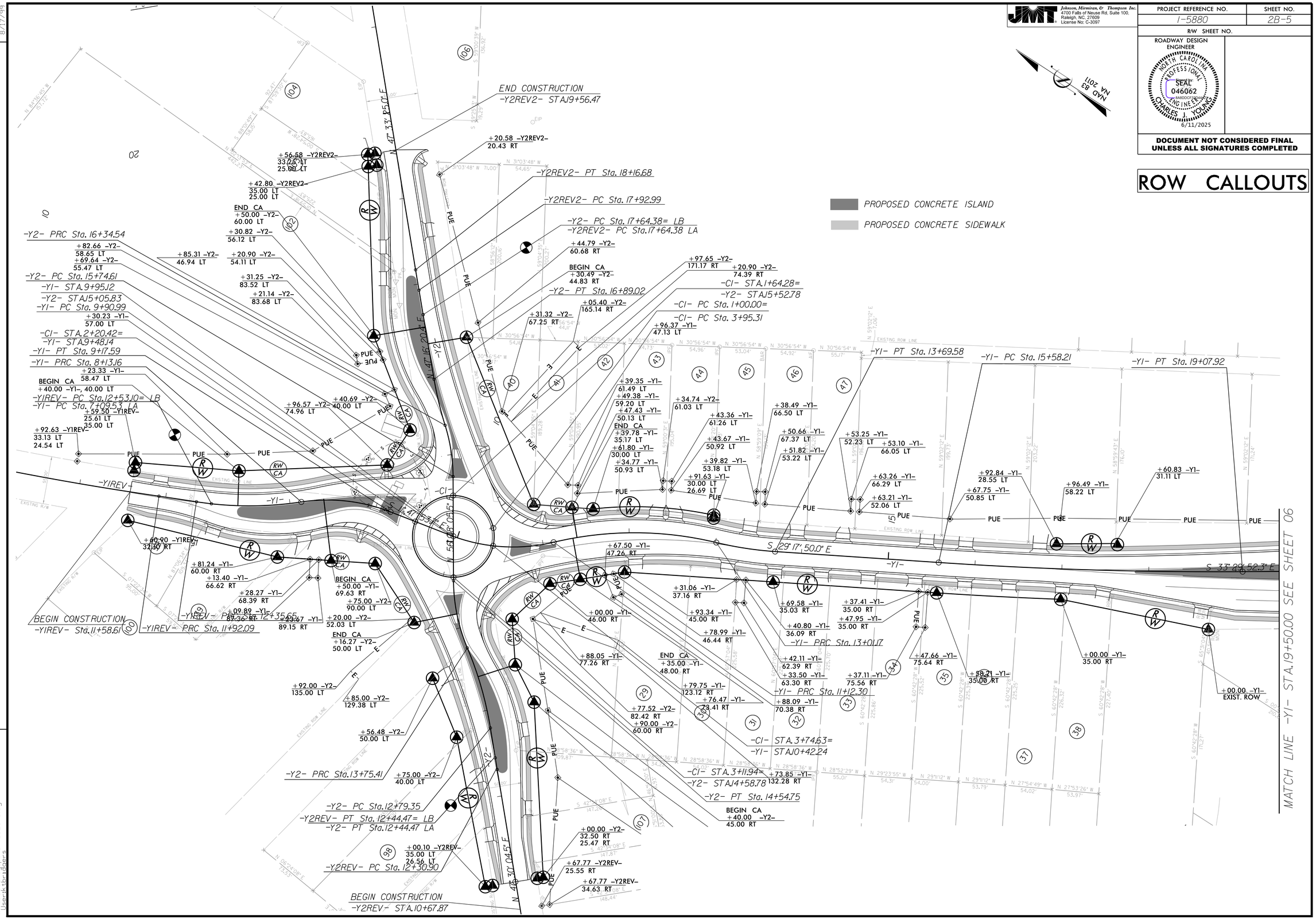
ROW CALLOUTS

PROPOSED CONCRETE ISLAND
PROPOSED CONCRETE SIDEWALK



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PROJECT REFERENCE NO.	SHEET NO.
I-5880	2B-6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 046062 ENGINEER CHARLES J. YOUNG
BY BADDOCCO ROSATI ENGINEERING INC.
6/11/2025

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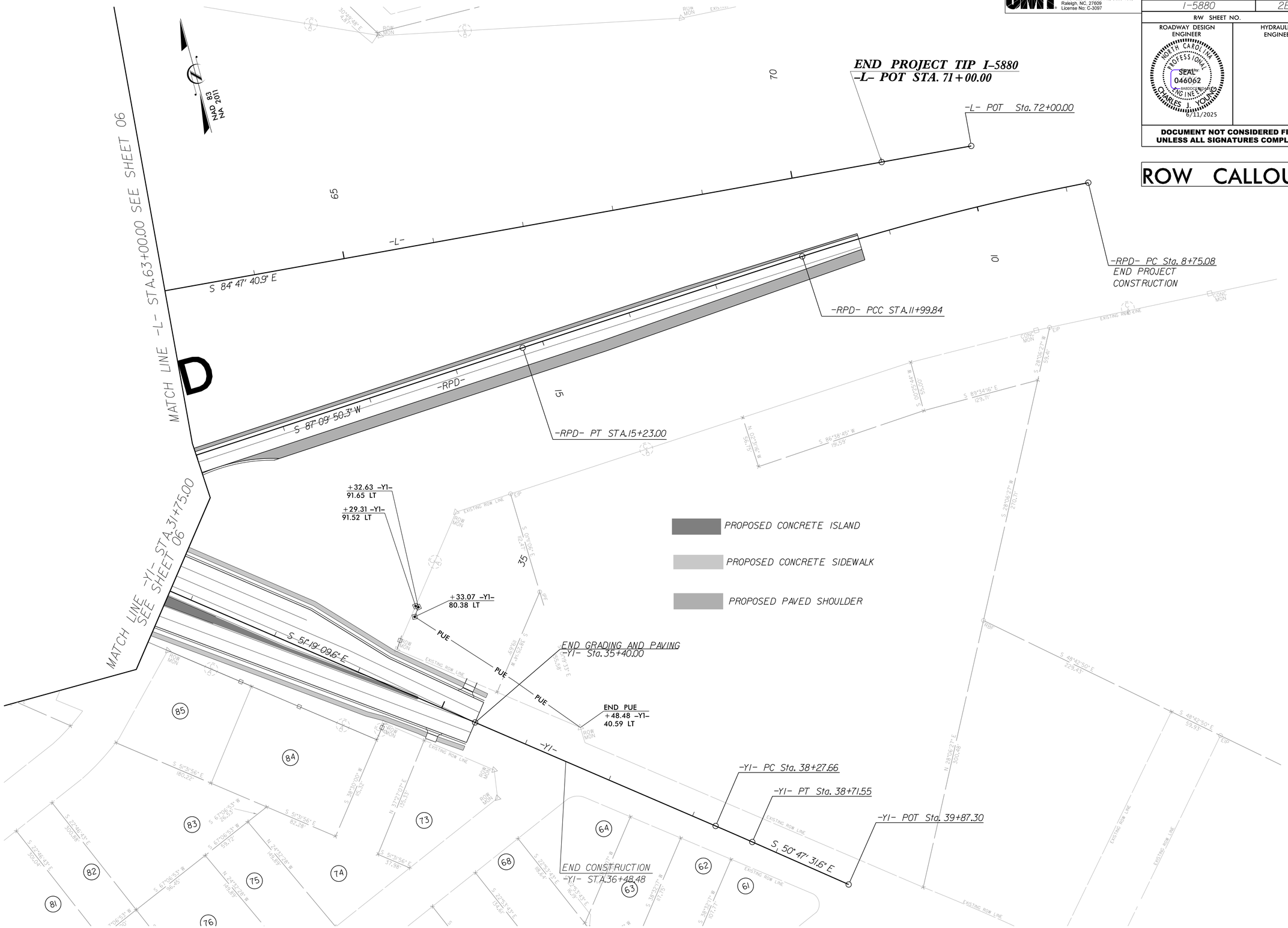

REVISIONS

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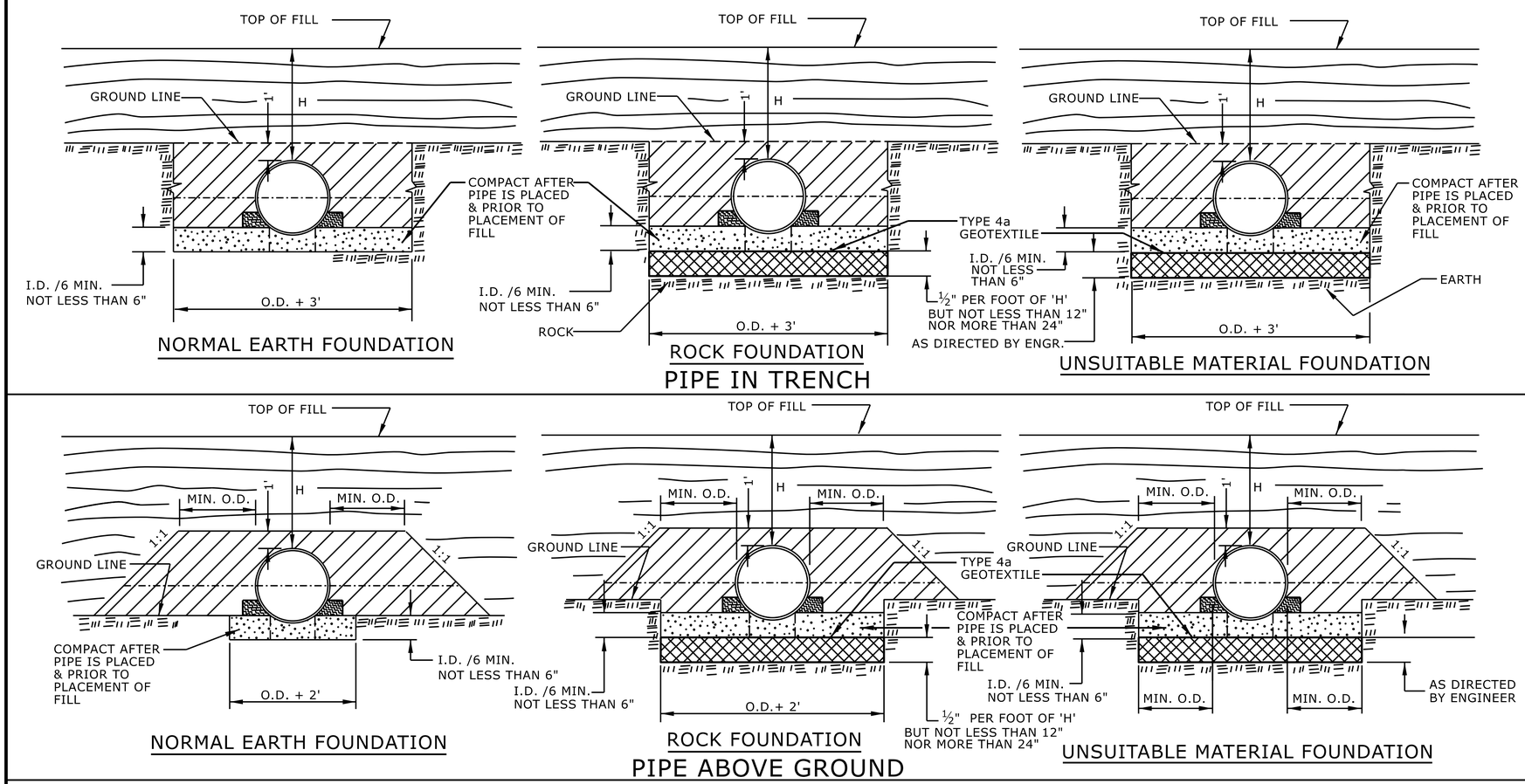
I-5880	2C-1



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

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M. HACKETT

6/10/2025

SHEET 1 OF 2

300.01

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

SEE TITLE BLOCK

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CHECKED BY: DATE:
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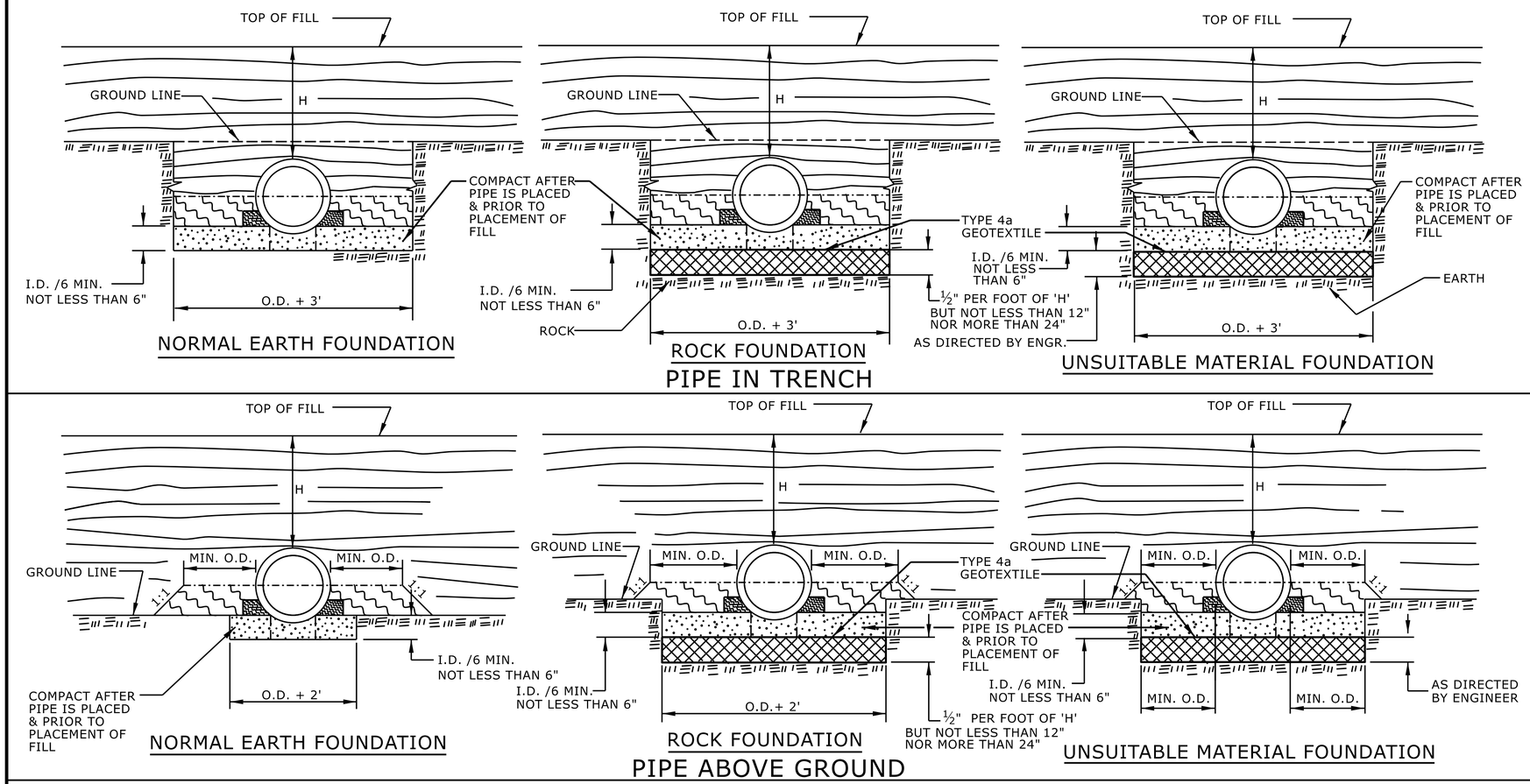
PROJECT REFERENCE NO.	SHEET NO.
I-5880	2C-2



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 030141 ENGINEER NICOLE M. HACKER
6/10/2025

SHEET 2 OF 2

300.01

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

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ORIGINAL BY: S.CALHOUN DATE: 7-25-2024
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

Docusign Envelope ID: 2C2B7A73-85D6-4A7F-BF52-360176022426

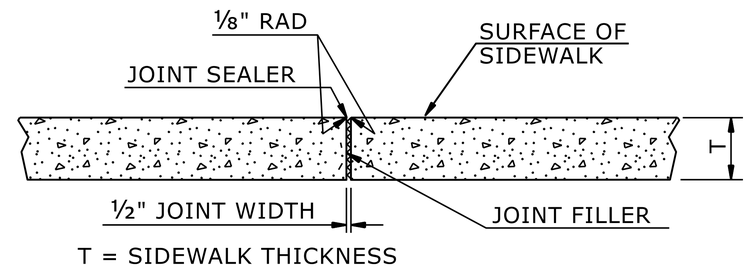
PROJECT REFERENCE NO.	SHEET NO.
I-5880	2C-3

NOTES:

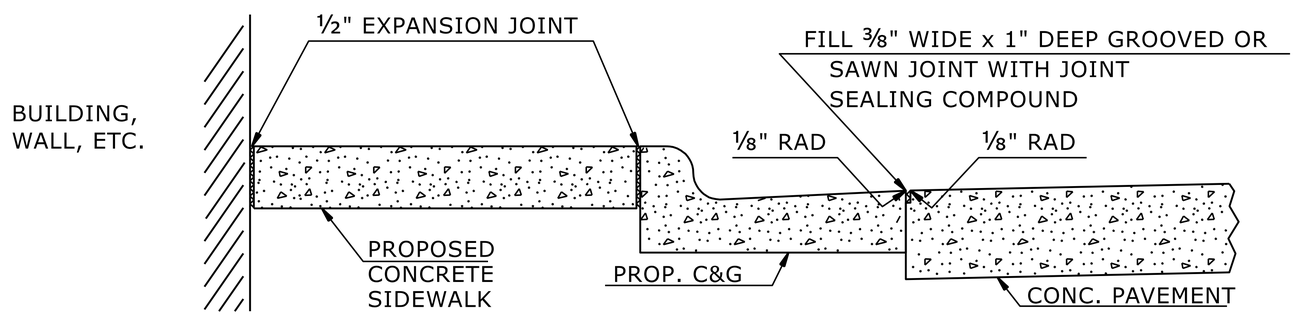
CONSTRUCT STANDARD SIDEWALK 5' WIDE AND 4" THICK UNLESS OTHERWISE DENOTED ON PLANS.

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
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
CONCRETE SIDEWALK

SEAL 053141 NORTH CAROLINA PROFESSIONAL ENGINEER NICOLE M. HACKETT
6/10/2025

SHEET 1 OF 1

848D01

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

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FILE SPEC.:

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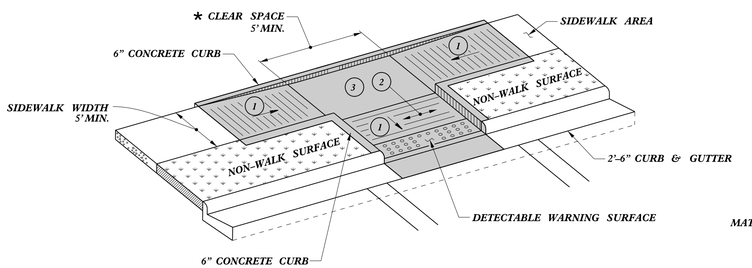
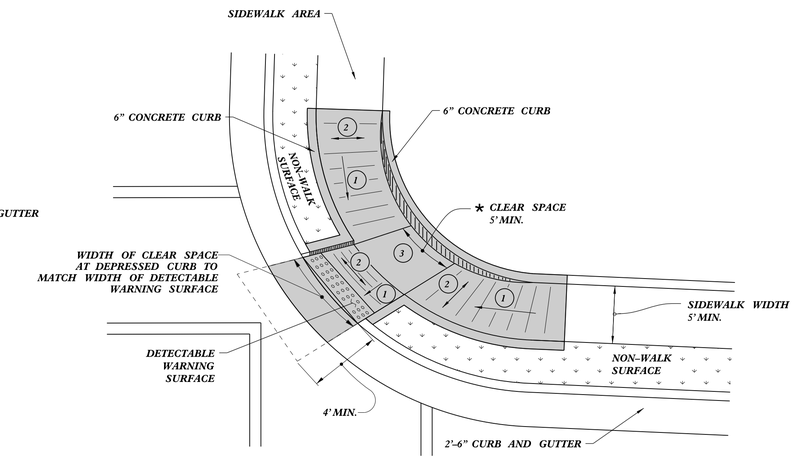
PROJECT REFERENCE NO.	SHEET NO.
I-5880	2C-4

★ - 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.



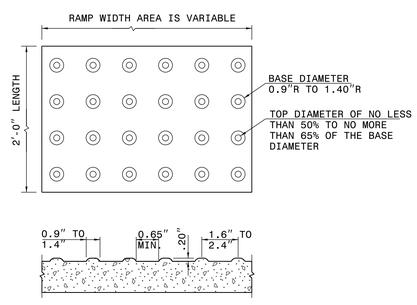
TYPE 3



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

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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
CURB RAMP
PARALLEL RAMP

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER
6/10/2025

SHEET 9 OF13
848D06

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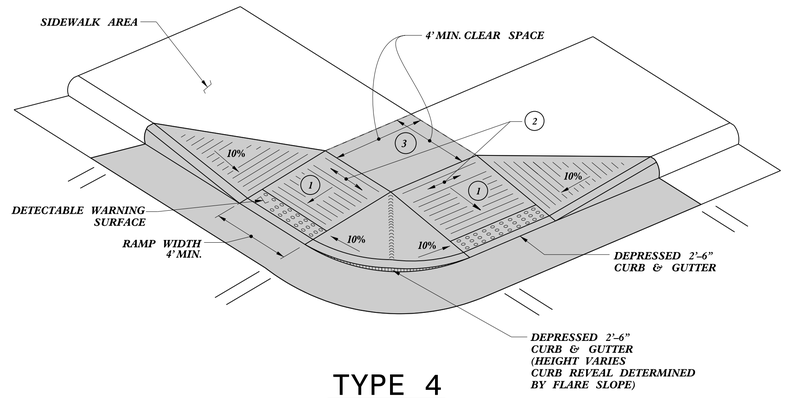
I-5880	2C-5



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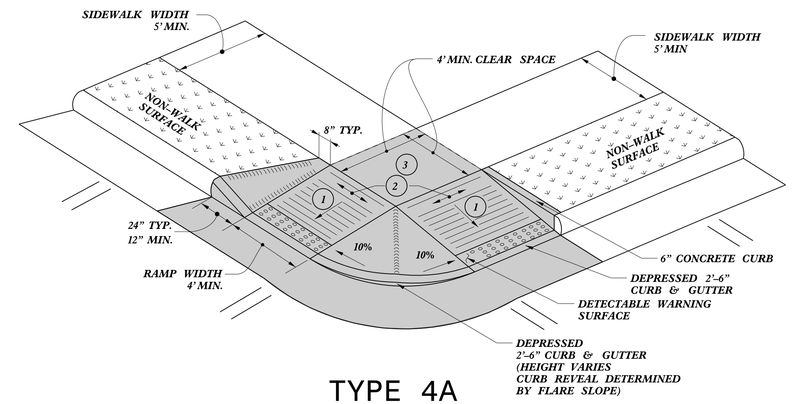
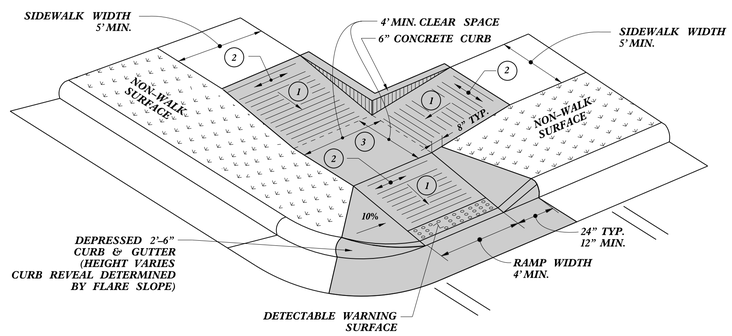
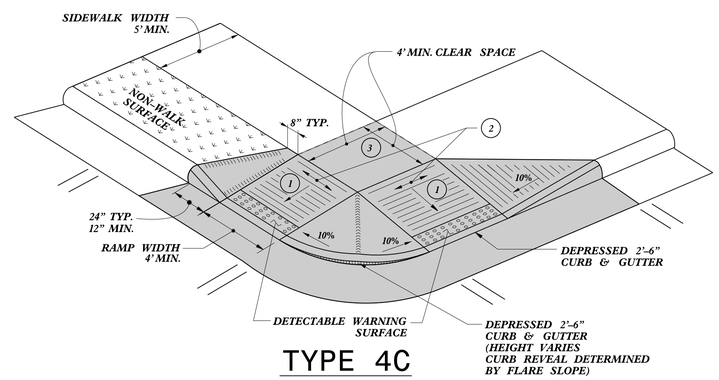


TYPE 4A



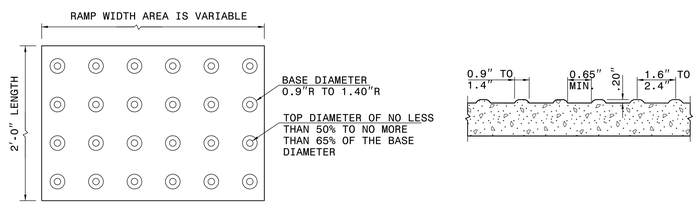
TYPE 4B



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

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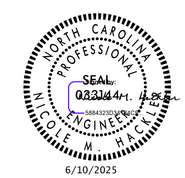
ROADWAY DETAIL DRAWING FOR
CURB RAMP
SHARED LANDING



SHEET 10 OF 13
848D06

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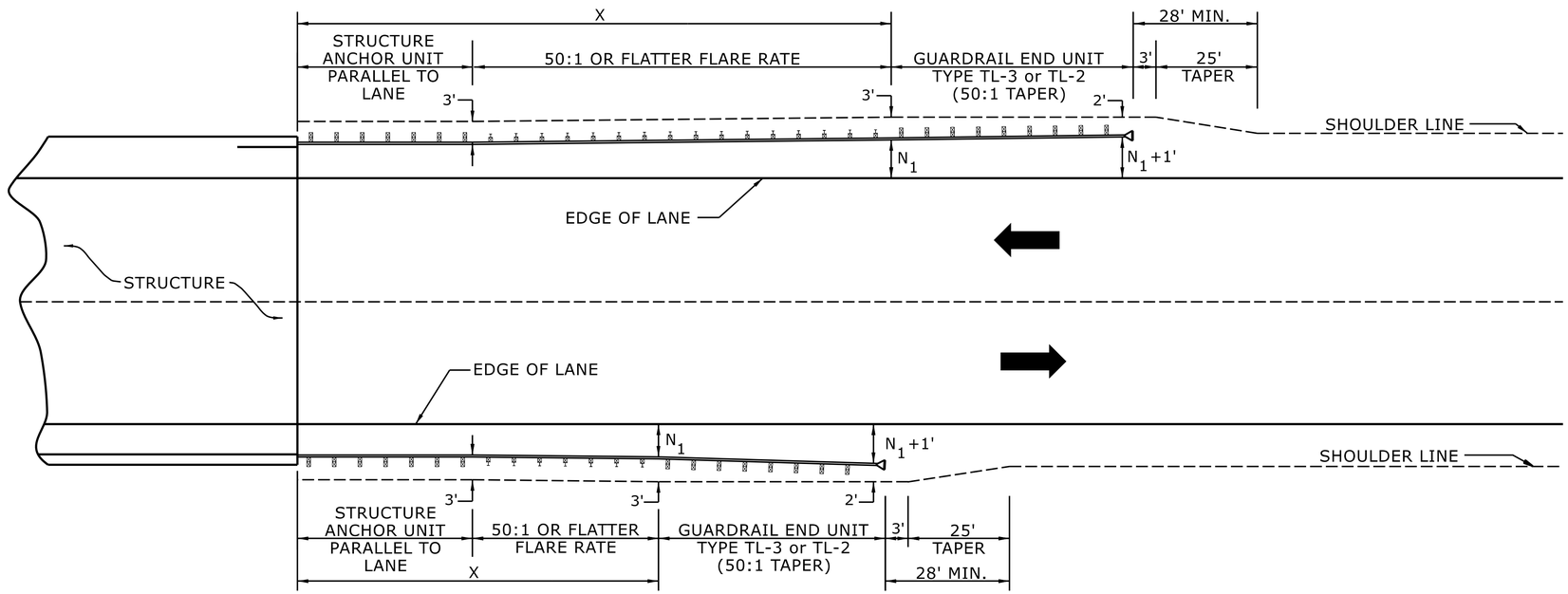

USE FLARE RATE AS THE CONTROL IF THE "N_1" DISTANCE IS NOT OBTAINED.
("N_1" IS BASED ON SHOULDER WIDTHS IN THE ROADWAY DESIGN MANUAL)

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

STATE OF
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SEAL
032444
NORTH CAROLINA PROFESSIONAL ENGINEER
NICOLE M. HACKLER
6/10/2025

SHEET 4 OF 15
862D01

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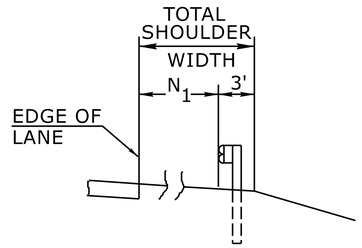
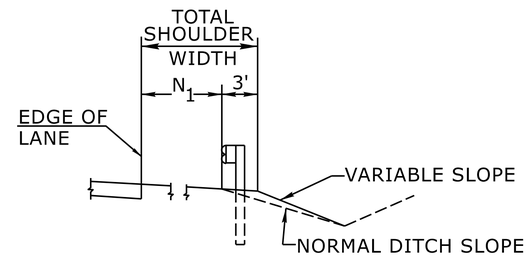
I-5880	2C-7

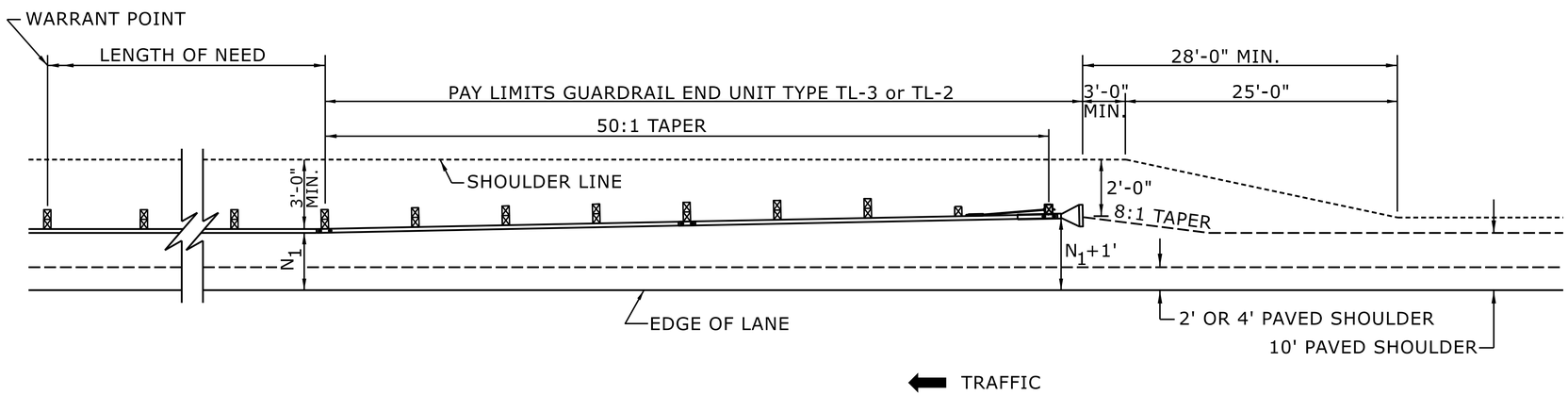


FILL SECTION



CUT SECTION

"N_1"= DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.



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

DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

6/10/2025

SHEET 6 OF 15

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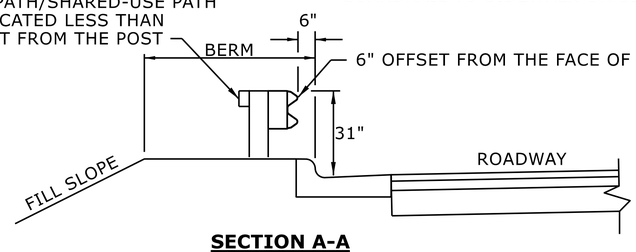
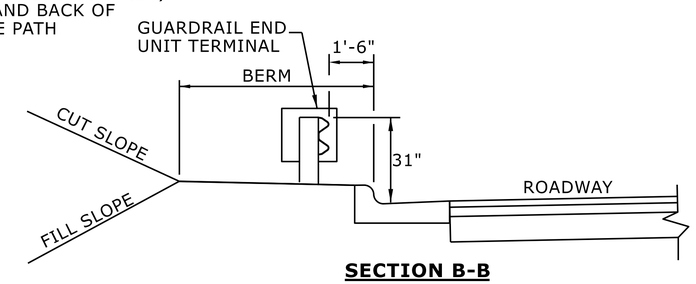
I-5880	2C-8

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

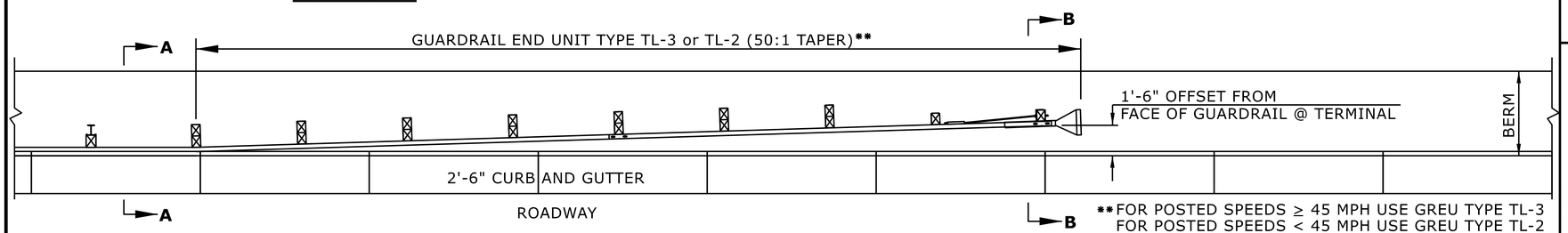
SEE THE ROADWAY DESIGN MANUAL (PART I CHAPTER 4 SECTION 4.14) FOR OFFSET DISTANCES FROM FACE OF GUARDRAIL AND BACK OF GUARDRAIL TO SIDEWALK OR SIDEPATH/SHARED-USE PATH



SECTION A-A



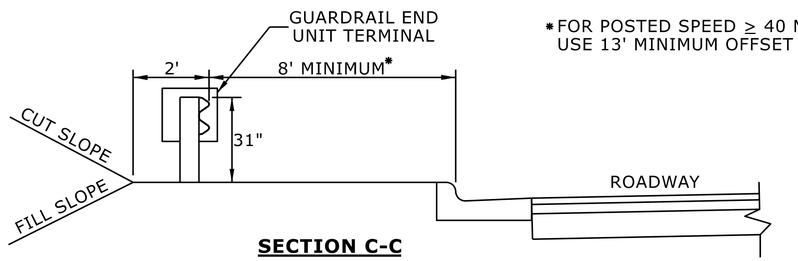
SECTION B-B



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



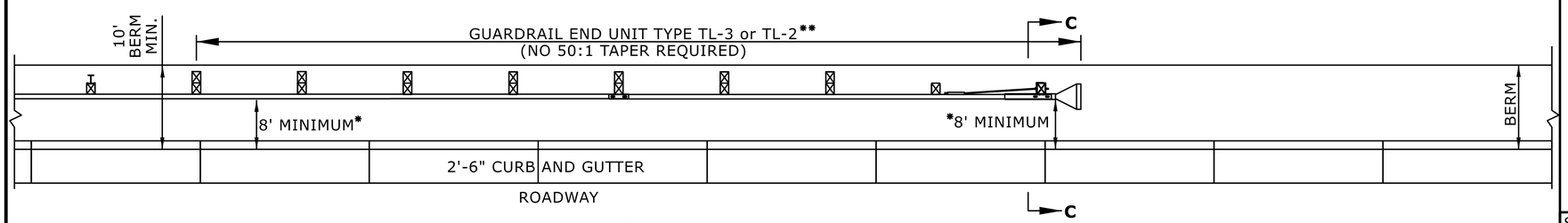
SECTION C-C

* 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

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RALEIGH, N.C.

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

SHEET 12 OF 15

862D01

NORTH CAROLINA PROFESSIONAL SEAL 023144 ENGINEER NICOLE M. HACKLER
6/10/2025

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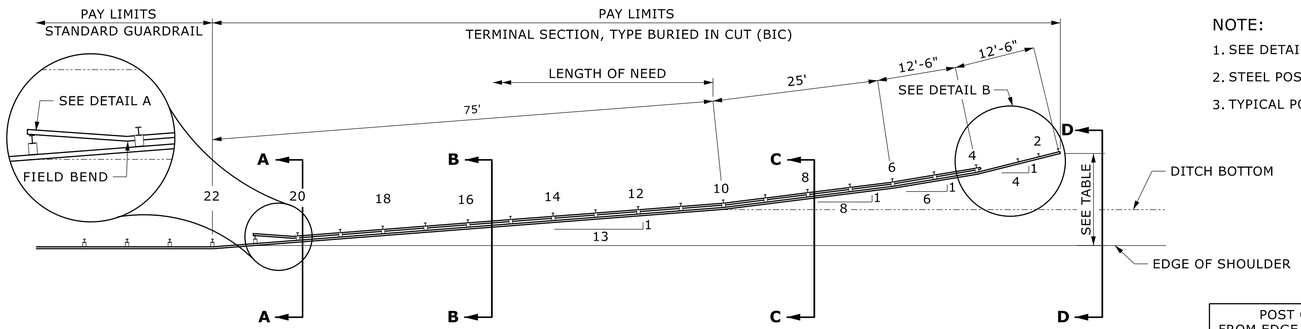
DRAWING NOT TO SCALE

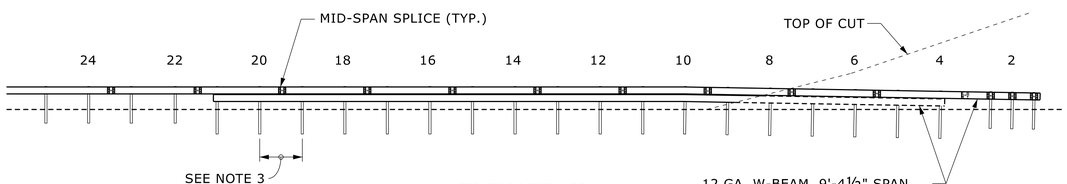


PLAN

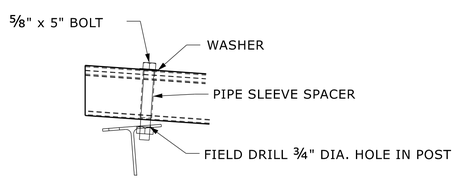
NOTE:

1. SEE DETAIL SHEET 2 OF 2 FOR OTHER DETAILS.
2. STEEL POSTS SHOWN.
3. TYPICAL POST SPACING IS 6'-3" UNLESS OTHERWISE NOTED.

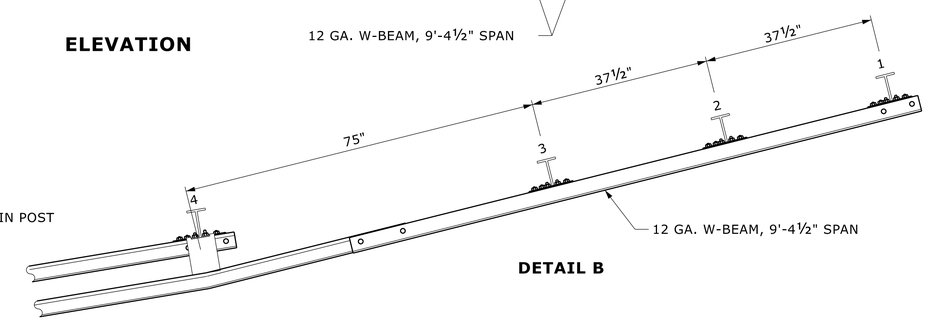
POST OFFSETS FROM EDGE OF SHOULDER	
POST	DISTANCE
1	13'-11¾"
4	10'-11"
6	8'-10¼"
10	69"



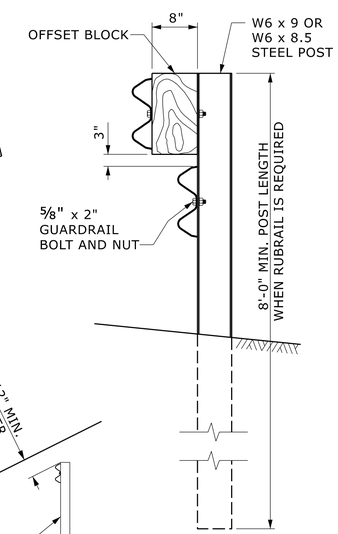
ELEVATION



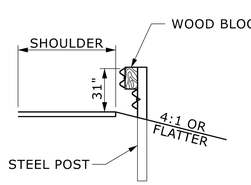
DETAIL A



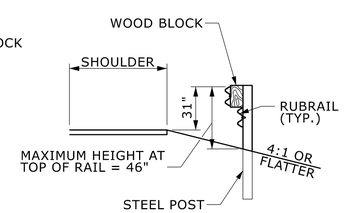
DETAIL B



STEEL POST AND BLOCK DETAIL



SECTION A-A



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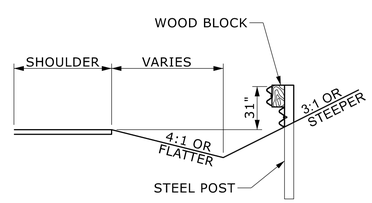
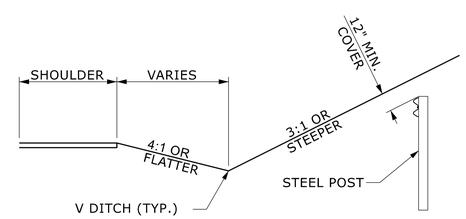


SECTION C-C



SECTION D-D

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT
BURIED IN CUT END UNIT

SEAL
033444
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL
NICOLE M. HACKLER
6/10/2025

SHEET 14 OF 15

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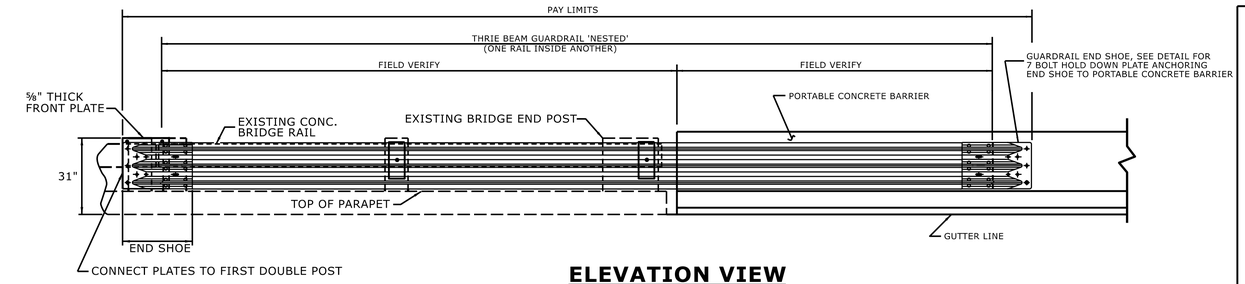
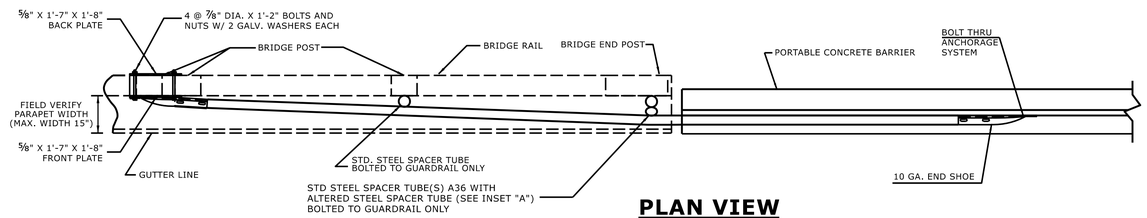
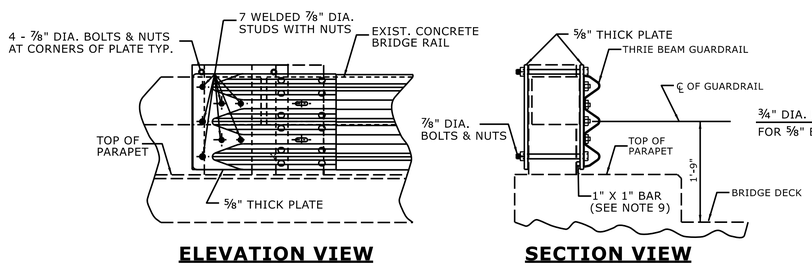
I-5880	2C-10



ELEVATION VIEW

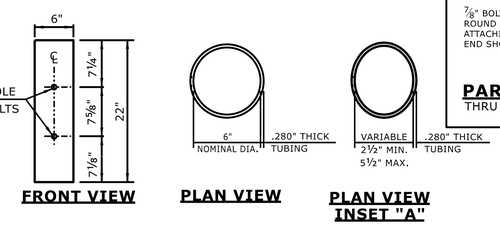


PLAN VIEW



ELEVATION VIEW

SECTION VIEW



FRONT VIEW

PLAN VIEW

PLAN VIEW INSET "A"

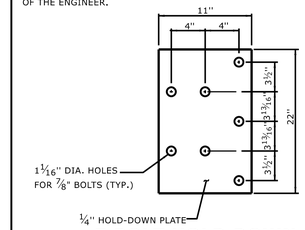
STEEL SPACER TUBE

NOTES FOR 7 BOLT HOLD DOWN PLATE

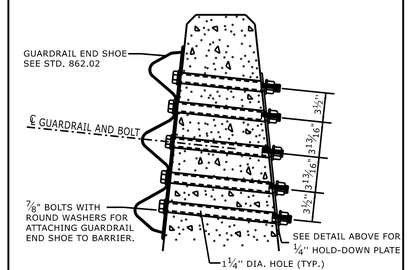
THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A ¼" HOLD DOWN PLATE AND 7 - ⅞" DIA. BOLTS WITH NUTS AND WASHERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL. THE 1¼" DIA. HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



7 BOLT HOLD DOWN PLATE

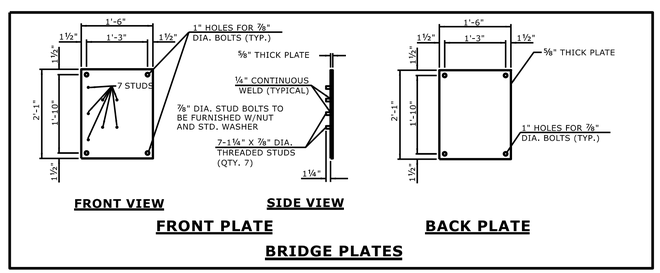


PART SECTION OF BARRIER OR RAIL

THRU END SHOE SECTION AND 7 BOLT HOLD DOWN PLATE

GENERAL NOTES:

1. USE NUTS, BOLTS, AND WASHERS CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-307 AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF STAND. SPECS.
2. TAP NUTS FOR THE ⅞" DIA. STUDS AND BOLTS AFTER GALVANIZING SEE A.S.T.M. A-563.
3. USE PLATES AND TUBES CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-36 AND GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH SECTION 1076 OF STAND. SPECS.
4. ADDITIONAL FIELD HOLES MAY BE DRILLED IN STEEL RAIL AS DIRECTED BY THE ENGINEER.
5. INSTALL FACE OF GUARDRAIL AS NEAR AS POSSIBLE TO PLUMB WITH THE PARAPET FACE AT BRIDGE END POST SPACER TUBE LOCATION BY USING STANDARD OR ALTERED SPACER TUBES OR A COMBINATION THEREOF OR AS DIRECTED BY THE ENGINEER. FOR VERY SMALL PARAPET WIDTHS, GUARDRAIL MAY BE INSTALLED AGAINST BRIDGE RAIL WITHOUT SPACER TUBES.
6. DO NOT DRILL BRIDGE RAIL IN ORDER TO INSTALL GUARDRAIL ANCHOR UNIT.
7. USE THIS DETAIL ONLY FOR BRIGES WITH POST AND BEAM TYPE RAIL.
8. ATTACH 1" X 1" BAR AND THREADED STUDS TO PLATE WITH ¼" WELDS ALL AROUND.
9. 1" X 1" BAR MAY NOT BE NEEDED ON BRIDGE RAILS WHERE FACE OF RAIL DOES NOT PROJECT BEYOND FACE OF POST.
10. PROVIDE SHOP DRAWINGS OF THE PLATES TO THE ENGINEER FOR APPROVAL BEFORE FABRICATING THE PLATES.
11. LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
12. SEE ROADWAY STANDARD DRAWING 862.03 SHEET 3 FOR ADDITIONAL INFORMATION ON THE TYPE III ANCHOR UNIT



FRONT VIEW

SIDE VIEW

FRONT PLATE

BACK PLATE

BRIDGE PLATES

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

ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
TEMPORARY ANCHOR UNIT TYPE THRIE-BEAM

SHEET 8 OF 9

862D03

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

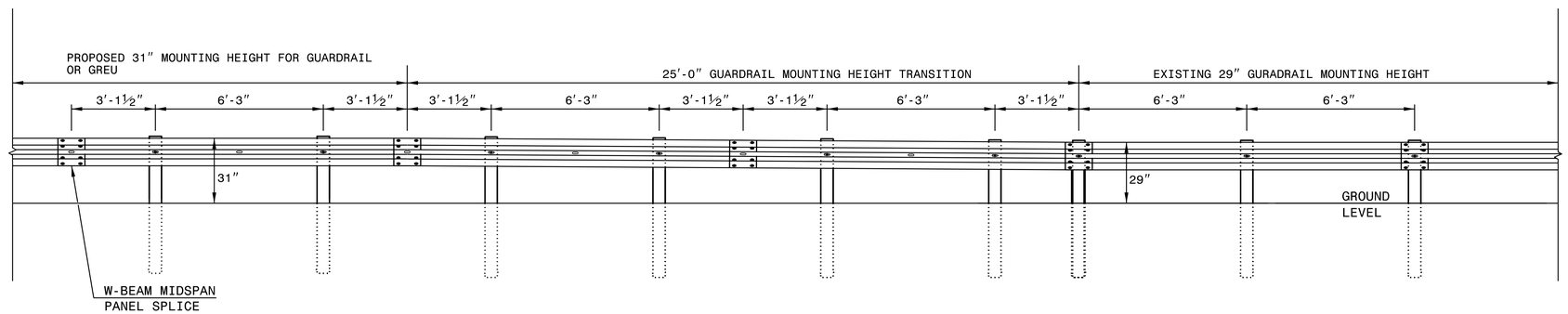
SEE TITLE BLOCK

ORIGINAL BY: S.CALHOUN DATE: 7-25-2024
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

Docusign Envelope ID: 2C2B7A73-85D6-4A7F-BF52-360176022426

PROJECT REFERENCE NO.	SHEET NO.
I-5880	2C-11

NOTE: IF EXISTING GUARDRAIL IS LOWER THAN 29″, USE AN ADDITIONAL 12′-6″ LONG SECTION OF GUARDRAIL, FOR EVERY 1″ OF HEIGHT DIFFERENCE, TO TRANSITION FROM EXISTING GUARDRAIL TO PROPOSED 31″ GUARDRAIL.



ELEVATION VIEW

TRANSITION FROM 29″ TO 31″ W-BEAM GUARDRAIL MOUNTING HEIGHT

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 5 OF 9

862D02

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M. HACKLER
6/10/2025

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

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MODIFIED BY: DATE:
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FILE SPEC.:

05-FEB-2025 07:53
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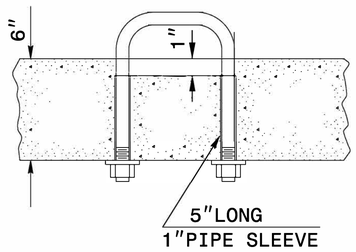
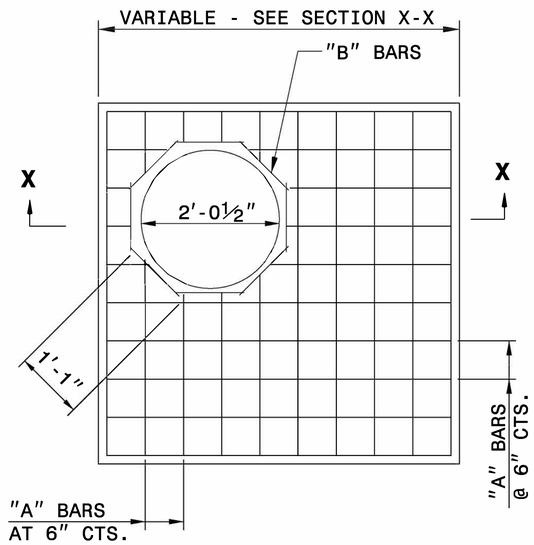
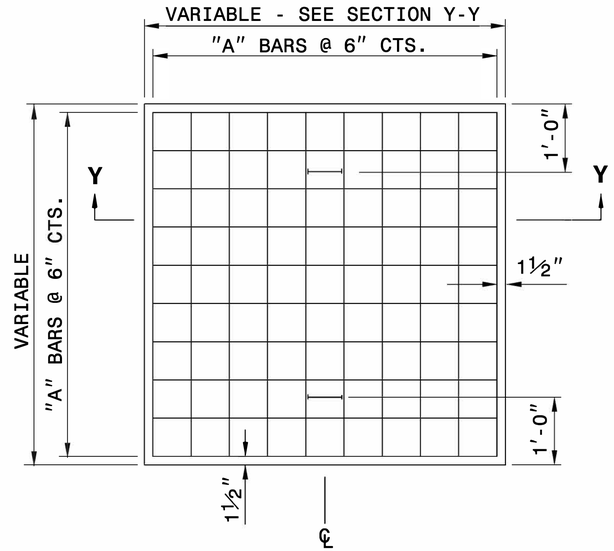


PARTIAL SECTION



PLAN



PLAN

GENERAL NOTES:

CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

THE DIMENSIONS FOR THE EXISTING BOXES ARE APPROXIMATE AND MAY VARY SLIGHTLY.

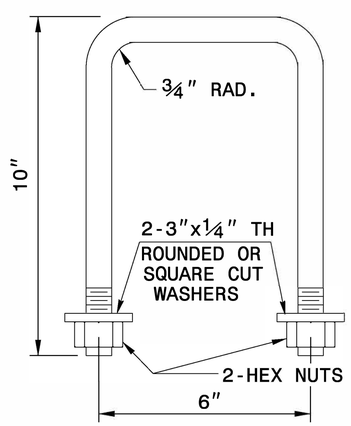
DETAIL INTENDED FOR NON-TRAFFIC BEARING DRAINAGE STRUCTURES.

BILL OF MATERIALS

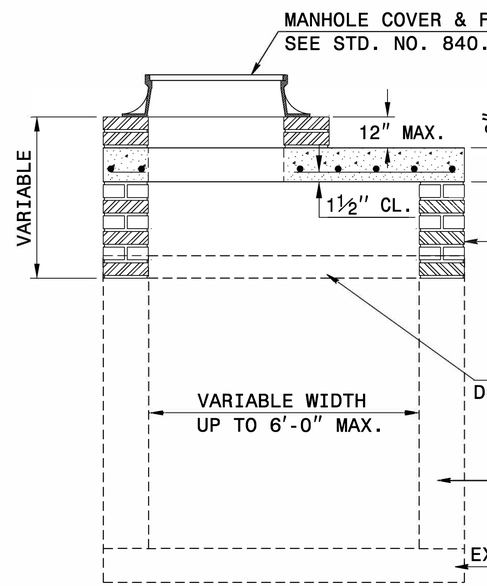
REINFORCING STEEL				
CODE	SIZE	QTY.	LENGTH	REINF. STEEL LBS.
A	#4	20	4'-6"	60.12
B	#4	8	1'-1"	5.79
TOTAL				65.91 *

MASONRY	CU YDS
TOP SLAB CONCRETE CLASS "B"	.4326 *
BRICK MASONRY PER FT HT (MIN)	.4111

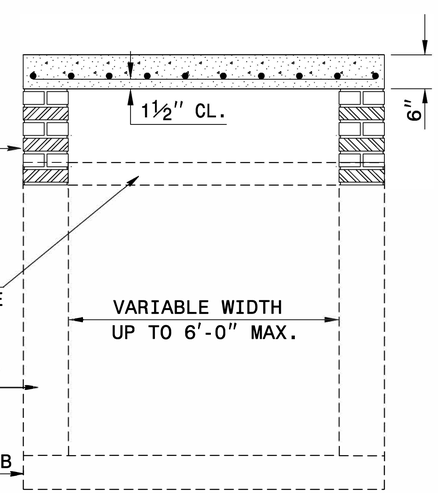
* NOTE:
QUANTITIES BASED ON 3'-6" X 3'-6" DRAINAGE STRUCTURE. ADJUST QUANTITIES FOR LARGER STRUCTURES AND MANHOLE CONSTRUCTION.



DETAIL OF HANDLE



SECTION X-X



SECTION Y-Y

NORTH CAROLINA PROFESSIONAL SEAL 33144 ENGINEER NICOLE M. HACKLER
Nicole M. Hackler
6/10/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

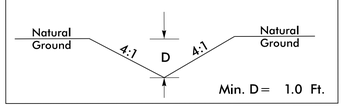
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

DETAIL TO CONVERT EXISTING DI, CB, OTCB or GI TO JUNCTION BOX (MANHOLE OPTIONAL)

ORIGINAL BY:	T.S.S.	DATE:	NOV.1997
MODIFIED BY:	T.S.S.	DATE:	FEB.2000
CHECKED BY:		DATE:	
FILE SPEC.:	ds174:/usr/details/stand/boxtojbe.dgn		

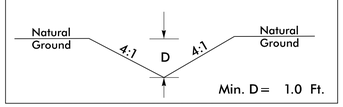
Docusign Envelope ID: EAF30178-04A7-49E9-A55E-0E62C6C9068E

DETAIL 4(1)
STANDARD 'V' DITCH
(Not to Scale)



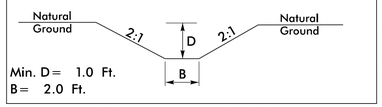
FROM –L– STA. 31+02.78 TO STA. 36+42.02 RT

DETAIL 5(1)
STANDARD 'V' DITCH
(Not to Scale)



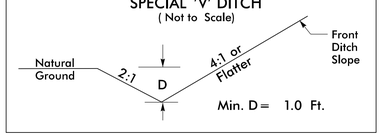
FROM –L– STA. 43+77.13 TO STA. 47+83.99 LT

DETAIL 5(2)
STANDARD BASE DITCH
(Not to Scale)



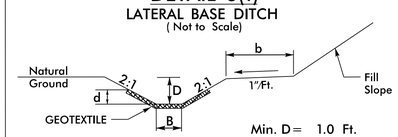
FROM –L– STA. 38+42.18 TO STA. 43+95.20 RT
FROM –L– STA. 43+05.59 TO STA. 48+00.00 RT

DETAIL 5(3)
SPECIAL 'V' DITCH
(Not to Scale)



FROM –RPB– STA. 15+50 TO STA. 17+50 LT

DETAIL 6(1)
LATERAL BASE DITCH
(Not to Scale)

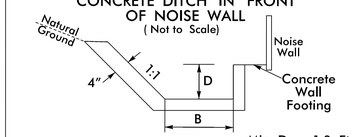


Min. D = 1.0 Ft.
Max. d = 0.5 Ft.
B = 1.0 Ft.
b = Varies Ft.

Type of Liner = 58 TONS
CL B Rip–Rap; 182 SYGF

FROM –RPC– STA. 18+10 TO STA. 20+00 RT

DETAIL 6(2)
CONCRETE DITCH IN FRONT
OF NOISE WALL
(Not to Scale)



Min. D = 1.0 Ft.
B = 2.0 Ft.

Type of Liner = 10 CY Concrete

FROM –RPC– STA. 17+00 TO STA. 18+10 RT

REVISIONS

8/17/99

2/7/2025 9:50:32 AM
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User:JBrammer

Docusign Envelope ID: EAF30178-04A7-49E9-A55E-0E62C6C9068E

5/26/20

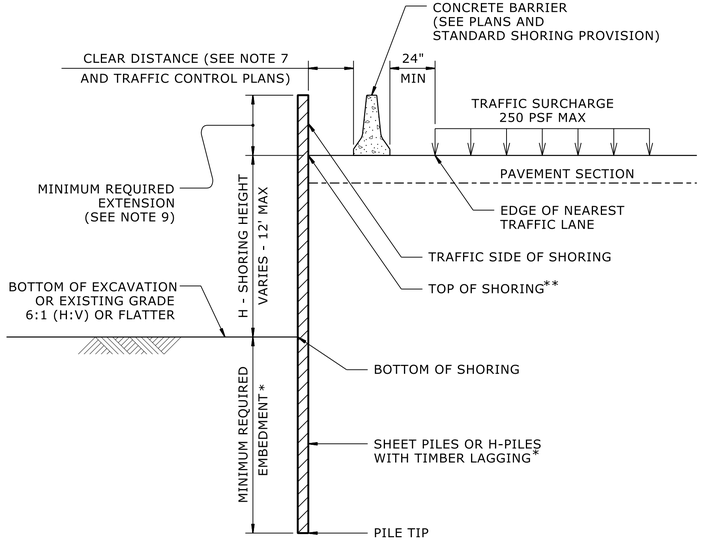
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)		
				HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73
GROUNDWATER ELEVATION BEWTEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0
	12	22.5	33.0	--	--	--	22.0	33.0	--	--	21.5
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5
	12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

*DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".

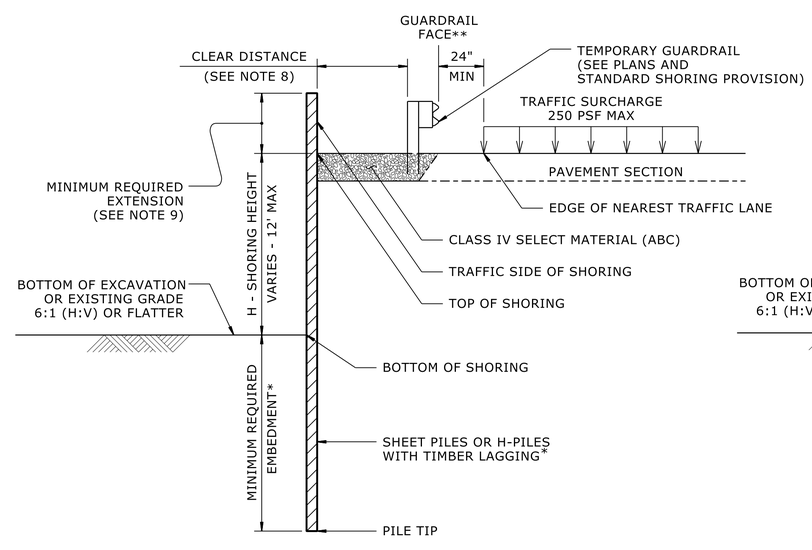
NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY SHORING IS 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 SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, USE "GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP" FOR GROUNDWATER CONDITION. DO NOT USE STANDARD TEMPORARY SHORING IF GROUNDWATER IS ABOVE BOTTOM OF SHORING.
7. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN THE MINIMUM REQUIRED FOR CONCRETE BARRIER, SET BARRIER NEXT TO AND UP AGAINST TRAFFIC SIDE OF PILES AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
8. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN 4' FOR TEMPORARY GUARDRAIL, ATTACH GUARDRAIL TO TRAFFIC SIDE OF PILES AS SHOWN IN THE PLANS AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
9. MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
10. MINIMUM REQUIRED EMBEDMENT FOR H-PILES WITH TIMBER LAGGING IS BASED ON DRIVEN H-PILES AT MAXIMUM 6' SPACING. AT THE CONTRACTOR'S OPTION, EMBEDMENT DEPTHS MAY BE REDUCED BY 25% FOR DRILLED-IN H-PILES.
11. SUBMIT A "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY SHORING CONSTRUCTION. UP TO 3 SHORING LOCATIONS MAY BE INCLUDED ON EACH FORM. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
12. CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.



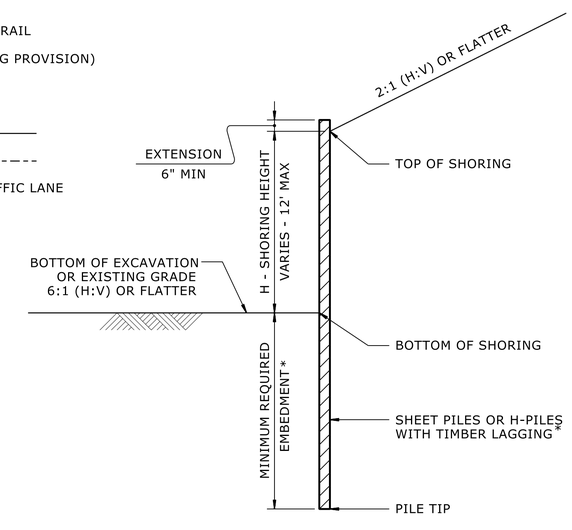
CONCRETE BARRIER

**TOP OF SHORING = EDGE OF PAVEMENT



TEMPORARY GUARDRAIL

**GUARDRAIL FACE = EDGE OF PAVEMENT



STANDARD TEMPORARY SHORING

(SLOPE CASE)
*SEE TABLE ABOVE.

STANDARD TEMPORARY SHORING

(SURCHARGE CASE)
*SEE TABLE ABOVE.

I-5880

2G-1 -

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

GEOTECHNICAL ENGINEER

DocuSigned by: Scott A. Hidden 5/14/2025

F76D9B9E0A7B4E0... NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

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STANDARD DETAIL NO. 1801.01

GEOTECHNICAL STANDARD DETAIL FOR TEMPORARY SHORING

DATE: 02-18-2025

Docusign Envelope ID: 8872E8CF-8DB3-4032-8B5C-5E4F20D06103 7/3/2025

6/21/00

COMPUTED BY: CRB DATE: 030824
CHECKED BY: CJY DATE: 030824

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

Johnson, Mirmiran, & Thompson Inc.
4700 Falls of Neuse Rd, Suite 100,
Raleigh, NC, 27609
License No: C-3097

PROJECT REFERENCE NO.	SHEET NO.
I-5880	3B-1

REMOVAL OF EXISTING PAVEMENT
IN SQUARE YARDS

STATION	STATION	LOCATION	ASPHALT REMOVAL	ASPHALT BREAKUP	CONCRETE REMOVAL	CONCRETE BREAKUP
-L- 27+75.00	-L- 38+05.00	LT			2,581.22	
-L- 27+75.00	-L- 38+05.00	RT			2,191.89	
-L- 35+05.00	-L- 40+40.00	OLD RAMP LT			1,646.22	
-L- 31+69.00	-L- 37+49.00	OLD RAMP RT			2,146.22	
-L- 39+97.00	-L- 50+75.00	RT	1,045.56			
-L- 40+46.00	-L- 50+75.00	LT	1,047.78			
-L- 38+15.00	-L- 52+21.00	OLD RAMP RT	3,701.11			
-L- 41+07.00	-L- 54+73.00	N. FRONT ROAD	3,857.22			
-RPC- 27+00.00	-RPC- 27+87.00		386.00			
-RPA- 12+63.00	-RPA- 16+42.00	RT	228.56			
-RPA- 10+00.00	-RPA- 16+42.00	LT	344.44			
-RPD- 14+50.00	-RPD- 20+73.00		1,556.78			
-Y1- 8+00.00	-Y1- 11+00.00		1,308.00			
-Y2- 13+49.00	-Y2- 14+19.00		46.56			
-RPC- 16+44.00	-RPC- 27+00.00			3,042.44		
	TOTAL		13,522.01	3,042.44	8,565.56	
	SAY		13,530	3,050	8,570	

SHOULDER BERM GUTTER SUMMARY

LINE	SIDE	BEG. STATION	END STATION	LENGTH (LF)
L	RT	37+82.00	38+10.00	28′
L	RT	39+85.00	40+50.00	65′
RP C	RT	16+25.00	18+50.00	225′
L	LT	38+72.00	38+90.00	18′
L	LT	40+65.00	41+05.00	40′
			TOTAL	376′
			SAY	380′

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

SUMMARY OF CHAIN LINK FENCE, 48" FABRIC

STATION TO STATION	LT. OR RT.	A FABRIC L.F.	B END BRACE	C CORNER BRACE	D LINE BRACE	E LINE POSTS	F TERMINAL POSTS
Y1 31+07.03 TO 34+48.26	RT	361.20	1	2	1	30	4
Y1 34+28.13 TO 34+29.35	LT	16.35	2			1	2
Y1 19+43.73 TO 20+60.00	RT	120.16	1	2		10	3
RP B 18+02.16 TO 19+32.04	LT	129.88	1	1		11	2
L 32+55.66 TO 18+15.03 Y2A	LT	827.30	2	2	2	69	6
RP C 14+85.17 TO 22+61.08	RT	773.86	2	1	1	64	4
RPC 26+91.80 TO 31+07.83 Y1	RT	146.28	1	1		12.19	2
TOTAL		2375.03				198	23
SAY		**2380.00**				**200.00**	**25.00**

EST. DDE	=	700 CY
TOTAL SHALLOW UNDERCUT	=	4,650 CY
STABILIZER AGGREGATE	=	500 TONS
CLASS IV SUBGRADE STABILIZATION	=	15,975 TONS
GEOTEXTILE FOR SOIL STABILIZATION	=	2,500 SY
GEOTEXTILE FOR SUBGRADE STABILIZATION	=	26,750 SY
ADDITIONAL UNDERCUT	=	2,300 CY

Earthwork quantities are calculated by the Roadway Designer. These quantities are based in part on subsurface data provided by the Geotechnical Engineer.

SHOULDER DRAIN SUMMARY

LINE	BEG. STATION	END STATION	SHOULDER DRAIN PIPE (LF)	SHOULDER DRAINS (LF)	OUTLET PIPE (LF)	CONCRETE PADS (EA)
L LT	31+90.00 (OUTSIDE)	38+72.00 (OUTSIDE)	682′	682′	25′	2
L LT	41+05.00 (OUTSIDE)	44+05.00 (OUTSIDE)	300′	300′	12′	1
L RT	30+75.00 (OUTSIDE)	37+82.00 (OUTSIDE)	707′	707′	25′	1 (1 @ 2GI)
L RT	40+50.00 (OUTSIDE)	43+50.00 (OUTSIDE)	300′	300′	12′	1
		TOTAL	1989′	1989′	74′	5
		SAY	2000′	2000′	80′	6

SUMMARY OF EARTHWORK
IN CUBIC YARDS

STATION	STATION	UNCL. EXCAV.	UNDERCUT	EMBANK. +%	BORROW	WASTE
-L- 27+75.00 RT	-L- 38+46.00 RT	1,180	87	923		243
-Y2A- 14+26.14	-Y2A- 15+12.51	34		131	97	
SUBTOTAL		1,214	87	1,054	97	243
-L- 27+75.00 LT	-L- 38+46.00 LT	1,558	88	889		757
-Y1- 6+15.00	-Y1- 9+30.00	445		176		269
-Y2- 10+67.87	-Y2- 14+38.00	133		309	176	
-Y2- 15+68.00	-Y2- 19+56.47	277		231		46
-Y2A- 15+12.51	-Y2A- 19+50.00	41		131	90	
-C1- 1+00.00	-C1- 3+95.31	161		996	835	
SUBTOTAL		2,615	88	2,732	1,101	1,072
-L- 40+21.00 RT	-L- 50+75.00 RT	1,011	263	21,172	20,161	263
-RPC- 16+60.78	-RPC- 27+85.38	1,452	125	22,969	21,517	125
-RPD- 11+35.00	-RPD- 20+78.83	1,543		1,097		446
-Y1- 27+95.00	-Y1- 35+40.00	575		795	220	
SUBTOTAL		4,581	388	46,033	41,898	834
-L- 40+21.00 LT	-L- 50+75.00 LT	1,202	262	6,883	5,681	262
-Y1- 10+60.50	-Y1- 24+65.00	1,208	75	2,114	906	75
-RPB- 14+67.64	-RPB- 20+65.98	423	100	7,246	6,823	100
-RPA- 10+00.00	-RPA- 16+82.46	853		159		694
SUBTOTAL		3,686	437	16,402	13,410	1,131
TOTAL		12,096	1,000	66,221	56,506	3,381
SHOULDER MATERIAL				3,358	3,358	
ADDITIONAL UNDERCUT			1,300	1,495	1,495	1,300
WASTE IN LIEU OF BORROW					-2,381	-2,381
PROJECT TOTAL		12,096	2,300	71,074	58,978	2,300
5% TO REPLACE BORROW PIT					2,949	
GRAND TOTAL		12,096	2,300	71,074	61,927	2,300
SAY		12,100			61,950	

GUARDRAIL SUMMARY

G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350
"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.

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS GREU TL-3	ANCHORS B-77	ANCHORS CAT-1	ANCHORS TL-2	ANCHORS TYPE III					IMPACT ATTENUATOR TYPE 350 NO.	PERMITTED G	PERMITTED NG	REMOVE EXISTING GUARDRAIL			REMARKS
-L-	27+34.49	28+65.61	LT	131.12			27+34.49		14	17	50		1		1	1											312.50			TIE TO CONCRETE BARRIER
-L-	29+83.71	38+09.45	RT	825.74			32+09.85 (SIGN)	38+09.45 (BRIDGE)	14	17	50		1		1	1											212.50			
-L-	33+50.75	38+89.46	LT	538.71			38+89.46 (BRIDGE)		14	17						1	1													
-L-/-RPC-	39+84.34	20+73.65	RT	1484.51			39+84.34 (BRIDGE)		14	17						1	1										1412.50			
-L-/-RPB-	40+65.35	13+04.98	LT	624.40				40+65.35 (BRIDGE)	14	17	50		1		1	1											112.50			
-RPB-/-Y1-	19+58.44	24+22.14	RT	172.30	106.20			24+22.14 (BRIDGE)	12.5	15.5					1				1								100			
-Y1-	23+30.02	25+05.02	RT																								112.50			
	27+41.38	29+16.38	RT																								112.50			
-Y1-	28+46.07	29+90.88	LT	144.81				28+46.07 (BRIDGE)	12.5	15.5					1				1								112.50			
-Y2A-	13+17.21	13+98.47	LT	81.26			13+98.47		10.0	13.0						1	1										100			TIE TO CONCRETE BARRIER
-Y2A-	13+34.67	14+44.53	RT	109.86				14+44.53	10.5	13.5						1		1									100			TIE TO CONCRETE BARRIER
-Y2A-	15+90.75	17+03.03	LT	112.28				15+90.75	10.5	13.5						1		1									100			TIE TO CONCRETE BARRIER
-Y2A-	16+36.88	17+23.53	RT	86.65			16+36.88		12.0	15.0						1	1										100			TIE TO CONCRETE BARRIER
-L-	52+00.00	54+00.00	RT	200			53+79.17								1		1													
-L- /Y2A	34+88.91	18+48.43	LT																								612.50			
			SUBTOTALS	4511.64	106.20						ANCHOR DEDUCTIONS				6	9	5	2	2								3500			
			ANCHOR DEDUCTION	-624.63	0						TL-3: 6 @ 50 = -300																			
			TOTAL	3887.01	106.20						B-77: 9 @ 22.875 = -205.88																			
			SAY	3900′	125′						CAT-1: 5 @ 6.25 = -31.25				6	9	5	2	2								3500			
											TL-2: 2 @ 25 = -50																3550′			
											Type III: 2 @ 18.75 = -37.5																			
											GRAND TOTAL = -624.63																			
											ADDITIONAL GUARDRAIL POSTS = 10																			

$$$

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
I-5880	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 % | Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 18 DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | DO NOT USE PVC | C.S.P. 15 .064 | R.C. PIPE CLASS III 12 | 15 | 18 | 24 | 30 | 42 | | R.C. PIPE CLASS IV 12 | 15 | 18 | 24 | 30 | 36 | 42 | R.C. PIPE CLASS V 12 | 15 | 18 | 24 | 30 | 36 | 30" WELDED STEEL PIPE 0.469" THICK, GRADE B IN SOIL | 30" WELDED STEEL PIPE 0.469" THICK, GRADE B NOT IN SOIL | 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. 852.06 | D.I. STD. 852.04 OR STD. 852.05 | 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 | J.B. STD. 840.31 OR STD. 840.32 | T.B.J.B. STD. 840.34 | T.B.J.B. STD. 840.35 | T.B.D.I. FOR STEEL GRATES STD. 840.36 | STEEL FRAME WITH TWO GRATES STD. 840.37 | M.H. STD. 840.51, STD. 840.52, OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | M.H. FRAME AND COVER STD 840.55 | CONVERT EXISTING C.B. TO J.B. | CONVERT EXISTING D.I. TO J.B. | ADJUST C.B. | ADJUST D.I. | ADJUST M.H. | 15" C.S. 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. | REMARKS |
|---|---|---|---

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
I-5880	3D-2

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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 % | Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 18 DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | DO NOT USE PVC | C.S. PIPE 15 .064 | R.C. PIPE CLASS III 12 | 15 | 18 | 24 | 30 | 42 | | R.C. PIPE CLASS IV 12 | 15 | 18 | 24 | 30 | 36 | 42 | R.C. PIPE CLASS V 12 | 15 | 18 | 24 | 30 | 36 | 30" WELDED STEEL PIPE 0.469" THICK, GRADE B IN SOIL | 30" WELDED STEEL PIPE 0.469" THICK, GRADE B NOT IN SOIL | 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 | J.B. STD. 840.31 OR STD. 840.32 | 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 | M.H. STD. 840.51, STD. 840.52, OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | M.H. FRAME AND COVER STD 840.55 | CONVERT EXISTING C.B. TO J.B. | CONVERT EXISTING D.I. TO J.B. | ADJUST C.B. | ADJUST D.I. | ADJUST M.H. | 15" C.S. 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. | REMARKS |
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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
I-5880	3D-3

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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 % | Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 18 DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | DO NOT USE PVC | C.S.PIPE .064 15 | R.C. PIPE CLASS III 12 | 15 | 18 | 24 | 30 | 42 | | R.C. PIPE CLASS IV 12 | 15 | 18 | 24 | 30 | 36 | 42 | R.C. PIPE CLASS V 12 | 15 | 18 | 24 | 30 | 36 | 30" WELDED STEEL PIPE 0.469" THICK, GRADE B IN SOIL | 30" WELDED STEEL PIPE 0.469" THICK, GRADE B NOT IN SOIL | 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: 0' THRU 5' EACH | B: 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. 852.06 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 | J.B. STD. 840.31 OR STD. 840.32 | 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 | M.H. STD. 840.51, STD. 840.52, OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | M.H. FRAME AND COVER STD 840.55 | CONVERT EXISTING C.B. TO J.B. | CONVERT EXISTING D.I. TO J.B. | ADJUST C.B. | ADJUST D.I. | ADJUST M.H. | 15" C.S. 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. | REMARKS |
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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
I-5880	3D-4

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

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* Information taken from Subsurface investigation from Kleinfelder Inc. in May 2024.

Johnson, Mirmiran, & Thompson Inc.
4700 Falls of Neuse Rd, Suite 100,
Raleigh, NC, 27609
License No: C-3097

PROJECT REFERENCE NO.	SHEET NO.
I-5880	3G-1

(9-17-24)
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

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

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

*Subsurface Drainage quantity taken from report from Feb. 2022.

SUMMARY OF AGGREGATE SUBGRADE /STABILIZATION

LINE	STATION	STATION	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Subgrade Stabilization SY	Stabilzer Aggregate TONS	Class IV Aggregate Stabilization TONS
L	27+75	33+75	1	12	1200	2400	3600		
L	33+75	34+75	1	12	100	200	300		
L	36+75	37+75	2	8		175	400		
L	37+75	38+46	2	8		275	600		
L	40+21	43+95	2	8		1175	2675		
L	45+00	46+50	2	8		50	75		
L	46+50	48+25	2	8		200	425		
L	48+25	50+75	2	8		275	600		
Y1	6+15	13+75	2	12	1850	3700	5550		
Y1	24+25	24+65	1	8		150	325		
Y1	33+75	35+40	2	8	400	800	1200		
RPB	10+00	16+75	2	8		1350	3075		
RPC	10+00	21+00	2	8		1825	4175		
CONTINGENCY					1100	3200	3750	500	
			TOTAL CY/TONS/SY:		4650	15975**	26750**	500	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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License No: C-3097

PROJECT REFERENCE NO.	SHEET NO.
I-5880	3P-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL NO.	SHEET NO.	PROPERTY OWNERS NAMES
1	7	TWELVE STAR EXPRESS, INC
2	7	RC FLETCHERS PROPERTIES LLC
3, 3Z	7	MARGARET B GORDON
4	7	MELYNDA K WALLER
5	7	JOHN F JOHNSON & WIFE, MARY H JOHNSON
6	7	MIGUEL CUADRA JR
7	7	MAYLI MONTALVAN FLORES
8	7	TRACY KAREN HERNANDEZ–MONTALBAN
9	7	GILBERT G POPLIN JR & WIFE MARY M POPLIN
10	7	EDILBERTO RAMIREZ OLEA
11	7	DONNA M SUMLER
12	7	REINA ISABEL GUEVARA
13	7	ARTHUR T WILLIAMS JR
14	7	MARSHALL MARTIN JR, HEIRS
15	7	IRFAN K JANJUA & SHAHID CHAUDHARY
16	7	ESTEBAN BERNAL SILVA
17	7	NATALIA ZARRAGOZA VILLEGAS
18	7	BARBARA C WHITE
19	7	NANCY G STARBUCK
20	7	ESSENTIAL PROPERTIES NC LLC
21	7	IRFANK JANJUA & SHAHID CHAUDHARY
22	7	MARISOL PELAEZ ESTRADA
23	7	WILLIAM C HOWARD SR & WIFE, IMOGENE L HOWARD
24	7	ELLENA BLACKWELL
25	7	OGBURN INVESTMENTS, INC

PARCEL NO.	SHEET NO.	PROPERTY OWNERS NAMES
26	7	KRISTOPHER LITTLEJOHN
27	7	JUAN LUIS GARCIA & WIFE, GLORIA GARCIA
28	7	MARIA OFELIA SANDOVAL
29	7	PROSPERO SALGADO & WIFE, SARA SALGADO
30	7	HECTOR SALGADO
31	7	SAMUEL R HURSCH & WIFE, EMMA F HURSH
32	7	ERNEST M FAUST JR & WIFE, LILLIAN P FAUST
33	7	ARTHUR T WILLIAMS JR
34	8	A T WILLIAMS OIL COMPANY
39	8	WILCOHESS LLC
40	7	MARGIE L GRAVES
41	7	JOHN EMORY JOHNSON & WIFE PARTHELIA M JOHNSON
42	7	WILLIAMS, ARTHUR T JR HIERS
43	7	WILLIAMS, ARTHUR T JR HIERS
44	7	MARY MILLER BURNETT
46	7	GKAK PROPERTIES LLC
47	6	317 PROPERTIES LLC
48	6	TRAVIS H MOCK
15Z	7	IRFAN K JANJUA & SHAHID CHAUDHARY

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JMT Johnson, Mirmiran, & Thompson Inc.
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Raleigh, NC. 27609
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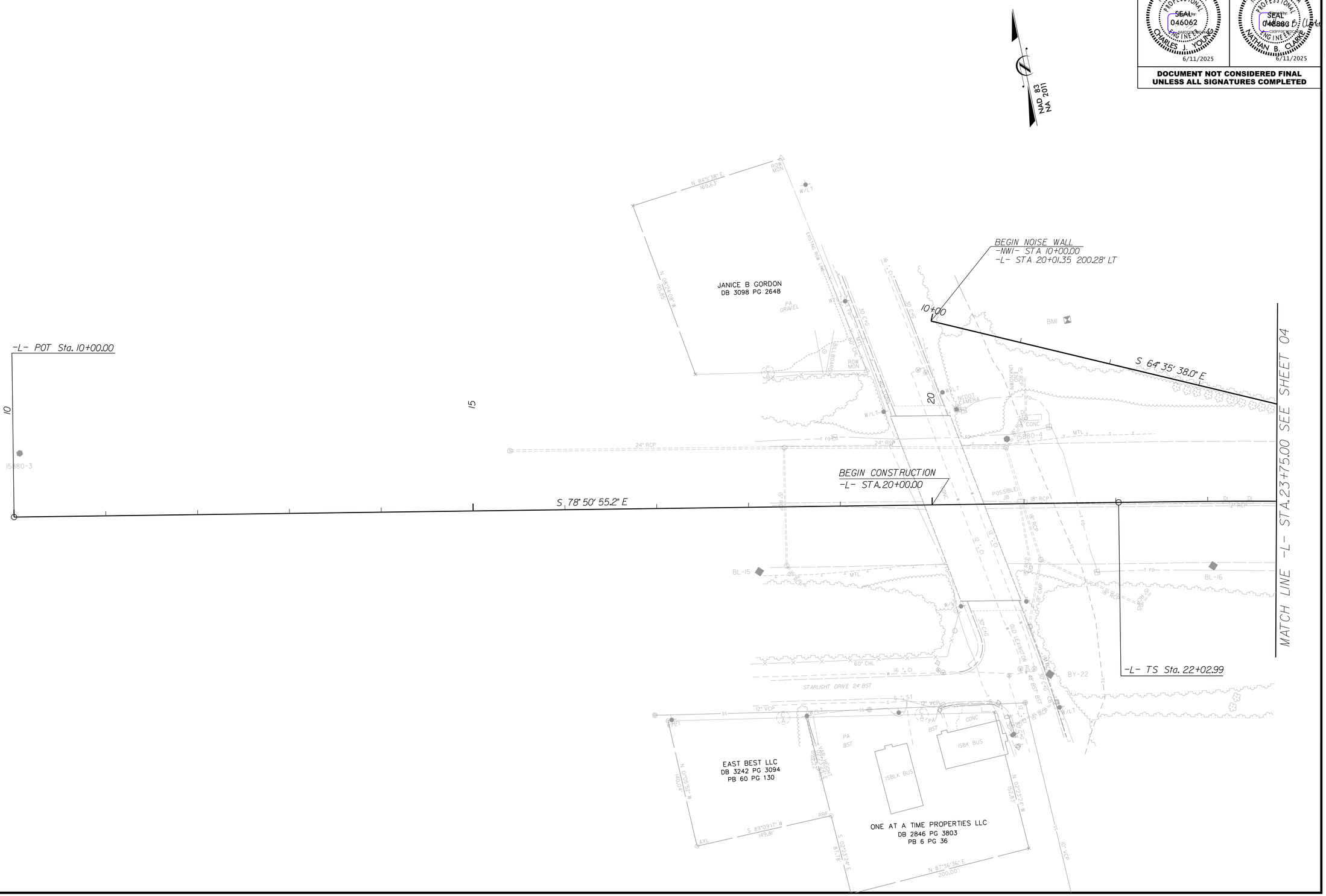
PROJECT REFERENCE NO.	SHEET NO.
I-5880	04A
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 046062 ENGINEER CHARLES J. YOUNG
6/11/2025

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 048883 ENGINEER NATHAN B. CLARK
6/11/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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PROJECT REFERENCE NO.	SHEET NO.
I-5880	04
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 046062 ENGINEER CHARLES J. YOUNG
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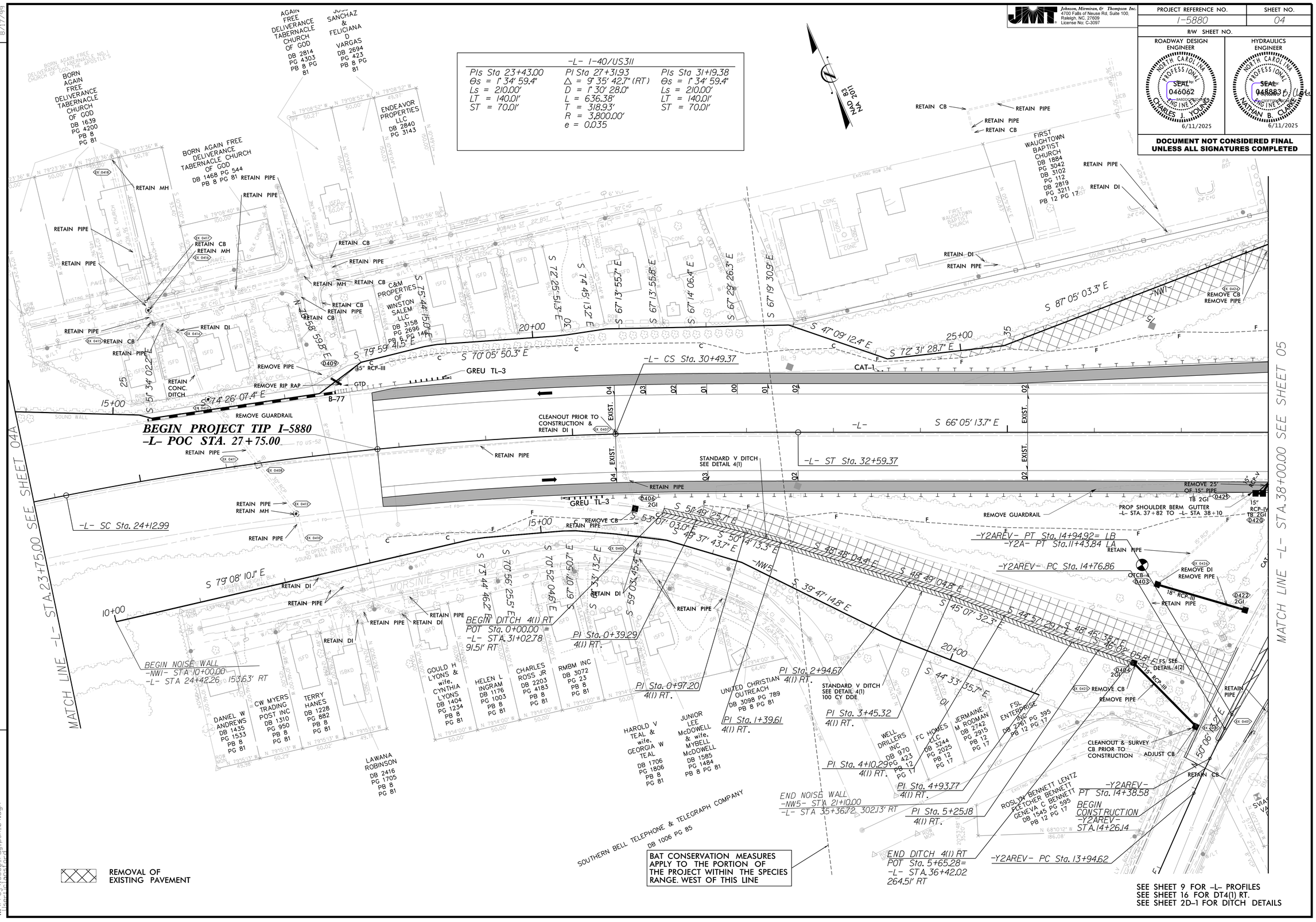
REVISIONS

8/17/99

-L- I-40/US311

PIs Sta 23+43.00	PI Sta 27+31.93	PIs Sta 31+19.38
Θs = 1° 34' 59.4"	Δ = 9° 35' 42.7" (RT)	Θs = 1° 34' 59.4"
Ls = 210.00'	D = 1° 30' 28.0"	Ls = 210.00'
LT = 140.01'	L = 636.38'	LT = 140.01'
ST = 70.01'	T = 318.93'	ST = 70.01'
	R = 3,800.00'	
	e = 0.035	



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