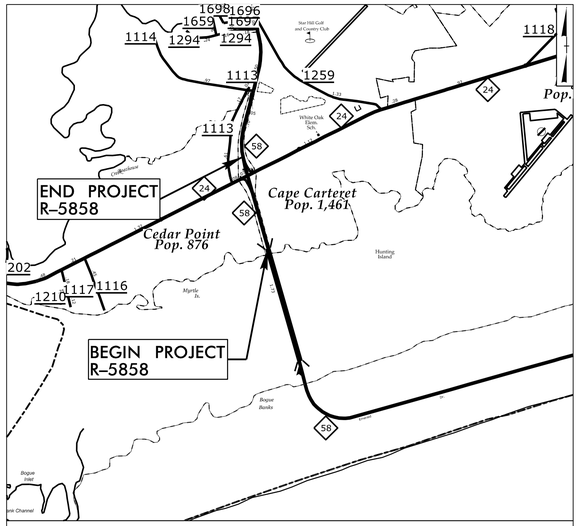
09/08/99

TIP PROJECT: R–5858

CONTRACT: C205182

4/1/2026
::\Proj\R-5858_Rdy_tsh.dgn
USER:WPope

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional symbols
See Sheets RW-01 Thru RW-08 For RW Plan Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CARTERET COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R–5858	1	

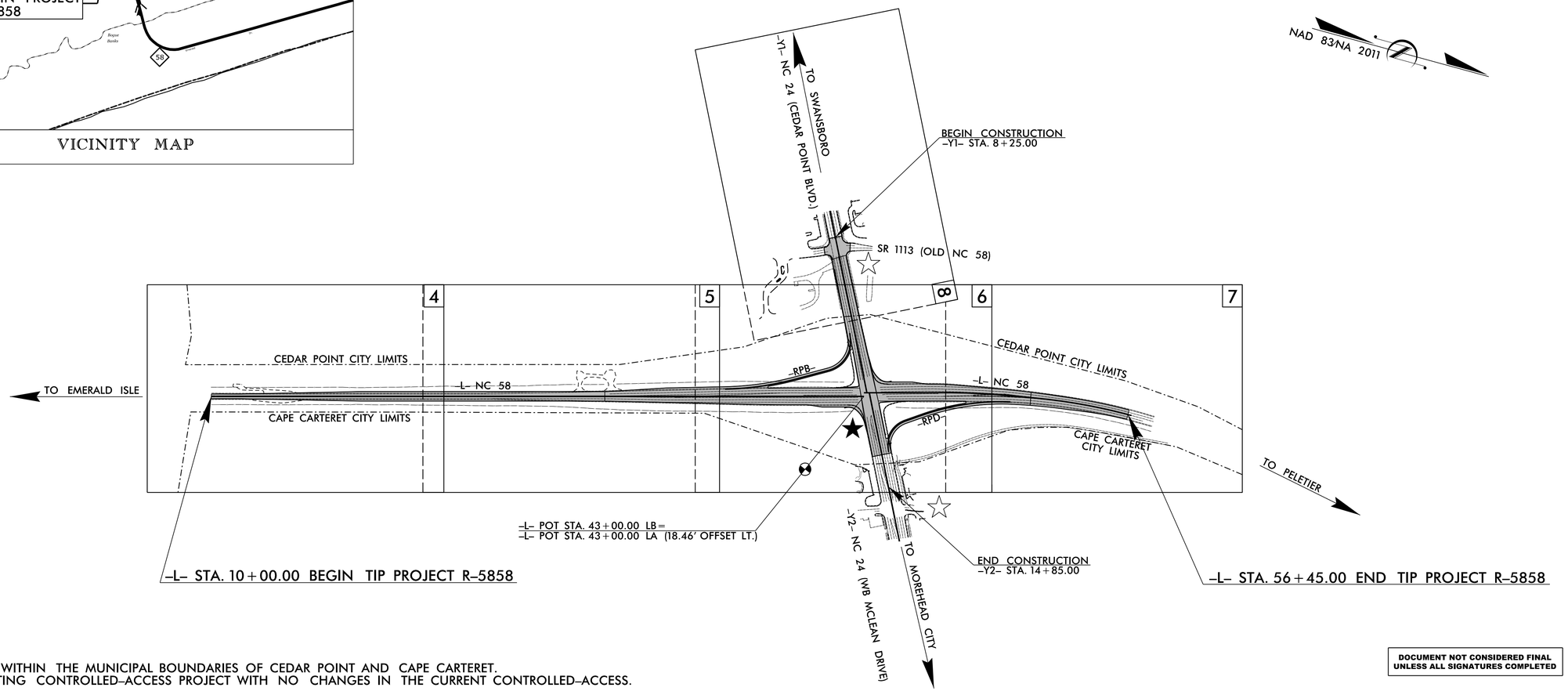
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
47546.1.1	4754601	PE
47546.2.1	N/A	R/W
47546.2.2	4754601	UTILITIES
47546.3.1	4754601	CON

★ SIGNAL UPGRADE
☆ EXISTING SIGNAL

LOCATION: NC 24 CARTERET COUNTY. AT NC 58 INTERSECTION IN CAPE CARTERET. INTERSECTION IMPROVEMENTS.

TYPE OF WORK: DRAINAGE, GRADING, PAVING, SIGNALS

NAD 83/NA 2011



THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF CEDAR POINT AND CAPE CARTERET.
THIS IS AN EXISTING CONTROLLED–ACCESS PROJECT WITH NO CHANGES IN THE CURRENT CONTROLLED–ACCESS.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2026 = 19,400
ADT 2045 = 25,100
K = 8 %
D = 55 %
T = 6 % *
V = 50 MPH
* TTST = 3% DUAL = 3%
FUNC CLASS =
MINOR ARTERIAL
"REGIONAL TIER"

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R–5858 = 0.880 MILES
TOTAL LENGTH TIP PROJECT R–5858 = 0.880 MILES

Prepared in the Office of:

GFT
GFT Infrastructure, Inc.
101 Autumn Hall Drive, Suite 210
Wilmington, NC 28403
910-523-5715
NC Lic. No. F-0270

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JUNE 15, 2021

LETTING DATE:
JUNE 16, 2026

RAJIT RAMKUMAR, PE
PROJECT ENGINEER

WILLIAM POPE, PE
PROJECT DESIGN ENGINEER

CATHRINE HOSSACK, PE
NCDOT CONTACT

HYDRAULICS ENGINEER
5/5/2026
NORTH CAROLINA PROFESSIONAL SEAL 045744 ENGINEER JANAKI H PATEL
Signed by: Janaki Patel
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER
5/4/2026
NORTH CAROLINA PROFESSIONAL SEAL 52550 ENGINEER WILLIAM A POPE
DocuSigned by: William A. Pope
SIGNATURE: P.E.

STATE OF NORTH CAROLINA * DEPARTMENT OF TRANSPORTATION *

8/17/99

TRANSYSTEMS
1 Glenwood Avenue
Raleigh, NC 27603
Tel:919.789.9977
Fax:919.789.9591
License: F-0453

PROJECT REFERENCE NO.	SHEET NO.
R-5858	1A

ROADWAY DESIGN ENGINEER

5/4/2026

NORTH CAROLINA PROFESSIONAL SEAL 52550 ENGINEER WILLIAM A POPE

Docusigned by: William A. Pope
E0EB7F4EC7914CC...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GFT
GFT Infrastructure, Inc.
101 Autumn Hall Drive, Suite 210
Wilmington, NC 28403
910-523-5715
NC Lic. No. F-0270

INDEX OF SHEETS

GENERAL NOTES:

2024 SPECIFICATIONS
EFFECTIVE: 01-16-2024
REVISED:

GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE

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

SUBSURFACE DRAINS:

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

DRIVEWAYS:

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

STREET TURNOUT:

STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADII NOTED 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 WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE

POWER DISTRIBUTION - CARTERET-CRAVEN EMC. POWER TRANSMISSION - CARTERET-CRAVEN EMC.

NATURAL GAS - PIEDMONT NATURAL GAS. COMMUNICATIONS - MCNC.

COMMUNICATIONS - SEGRA. COMMUNICATIONS - BRIGHTSPEED. COMMUNICATIONS - CONTERRA.

AND WATER - WEST CARTERET WATER CORPORATION

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

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

CURB RAMPS

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

EFF. 01-16-2024
REV.

2024 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Contracts Standards and Development Unit - N. C. Department of Transportation - Raleigh, N. C., Dated January 16, 2024 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.01	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
225.06	Method of Grading Sight Distance at Intersections
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation (Use Details in Lieu of Standards for Sheets 1 and 2 of 2)
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
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
838.01	Concrete Endwall for Single & Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single & Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.24	Frames and Narrow Slot Sag Grates
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.45	Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk (Use Detail in Lieu of Standard for Sheet 1 of 1)
848.04	Street Turnout
848.06	Curb Ramp (Use Details in Lieu of Standards for Sheets 9 and 10 of 13)
862.01	Guardrail Placement (Use Details in Lieu of Standards for Sheets 4, 6, 12, and 14 of 15)
862.02	Guardrail Installation
876.02	Guide for Rip Rap at Pipe Outlets

4/7/2026
...\Proj\R-5858_Rdy_psh_1A.dgn
USER:wpope

9/10/2021

PROJECT REFERENCE NO.	SHEET NO.
R-5858	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin (EIP)
- Computed Property Corner
- Existing Concrete Monument (ECM)
- Parcel/Sequence Number
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary
- Proposed Wetland Boundary
- Existing Endangered Animal Boundary
- Existing Endangered Plant Boundary
- Existing Historic Property Boundary
- Known Contamination Area: Soil
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign
- Well
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

- Primary Horiz Control Point
- Primary Horiz and Vert Control Point
- Secondary Horiz and Vert Control Point
- Vertical Benchmark
- Existing Right of Way Monument
- Proposed Right of Way Monument (Rebar and Cap)
- Proposed Right of Way Monument (Concrete)
- Existing Permanent Easement Monument
- Proposed Permanent Easement Monument (Rebar and Cap)
- Existing C/A Monument
- Proposed C/A Monument (Rebar and Cap)
- Proposed C/A Monument (Concrete)
- Existing Right of Way Line
- Proposed Right of Way Line
- Existing Control of Access Line
- Proposed Control of Access Line
- Proposed ROW and CA Line
- Existing Easement Line
- Proposed Temporary Construction Easement
- Proposed Temporary Drainage Easement
- Proposed Permanent Drainage Easement
- Proposed Permanent Drainage/Utility Easement
- Proposed Permanent Utility Easement
- Proposed Temporary Utility Easement
- Proposed Aerial Utility Easement

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut
- Proposed Slope Stakes Fill
- Proposed Curb Ramp
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert
- Bridge Wing Wall, Head Wall and End Wall

MINOR:

- Head and End Wall
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB
- Paved Ditch Gutter
- Storm Sewer Manhole
- Storm Sewer

UTILITIES:

** SUE – Subsurface Utility Engineering*
LOS – Level of Service – A,B,C or D (Accuracy)

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H–Frame Pole
- U/G Power Line Test Hole (SUE – LOS A)*
- U/G Power Line (SUE – LOS B)*
- U/G Power Line (SUE – LOS C)*
- U/G Power Line (SUE – LOS D)*

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole
- Telephone Pedestal
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole
- U/G Telephone Test Hole (SUE – LOS A)*
- U/G Telephone Cable (SUE – LOS B)*
- U/G Telephone Cable (SUE – LOS C)*
- U/G Telephone Cable (SUE – LOS D)*
- U/G Telephone Conduit (SUE – LOS B)*
- U/G Telephone Conduit (SUE – LOS C)*
- U/G Telephone Conduit (SUE – LOS D)*
- U/G Fiber Optics Cable (SUE – LOS B)*
- U/G Fiber Optics Cable (SUE – LOS C)*
- U/G Fiber Optics Cable (SUE – LOS D)*

WATER:

- Water Manhole
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line Test Hole (SUE – LOS A)*
- U/G Water Line (SUE – LOS B)*
- U/G Water Line (SUE – LOS C)*
- U/G Water Line (SUE – LOS D)*
- Above Ground Water Line

TV:

- TV Pedestal
- TV Tower
- U/G TV Cable Hand Hole
- U/G TV Test Hole (SUE – LOS A)*
- U/G TV Cable (SUE – LOS B)*
- U/G TV Cable (SUE – LOS C)*
- U/G TV Cable (SUE – LOS D)*
- U/G Fiber Optic Cable (SUE – LOS B)*
- U/G Fiber Optic Cable (SUE – LOS C)*
- U/G Fiber Optic Cable (SUE – LOS D)*

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line Test Hole (SUE – LOS A)*
- U/G Gas Line (SUE – LOS B)*
- U/G Gas Line (SUE – LOS C)*
- U/G Gas Line (SUE – LOS D)*
- Above Ground Gas Line

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line
- Above Ground Sanitary Sewer
- SS Force Main Line Test Hole (SUE – LOS A)*
- SS Force Main Line (SUE – LOS B)*
- SS Force Main Line (SUE – LOS C)*
- SS Force Main Line (SUE – LOS D)*

MISCELLANEOUS:

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

PROJECT REFERENCE NO.	SHEET NO.
R-5858	2A-1

ROADWAY DESIGN ENGINEER — 5/4/2026 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 52550 WILLIAM A. POPE — DocuSigned by: William A. Pope E0EB7F4EC7914CC...

PAVEMENT DESIGN ENGINEER — 5/5/2026 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044590 ANDREW D. WARGO — DocuSigned by: Andrew Wargo 2D2C959DCBCA49E...

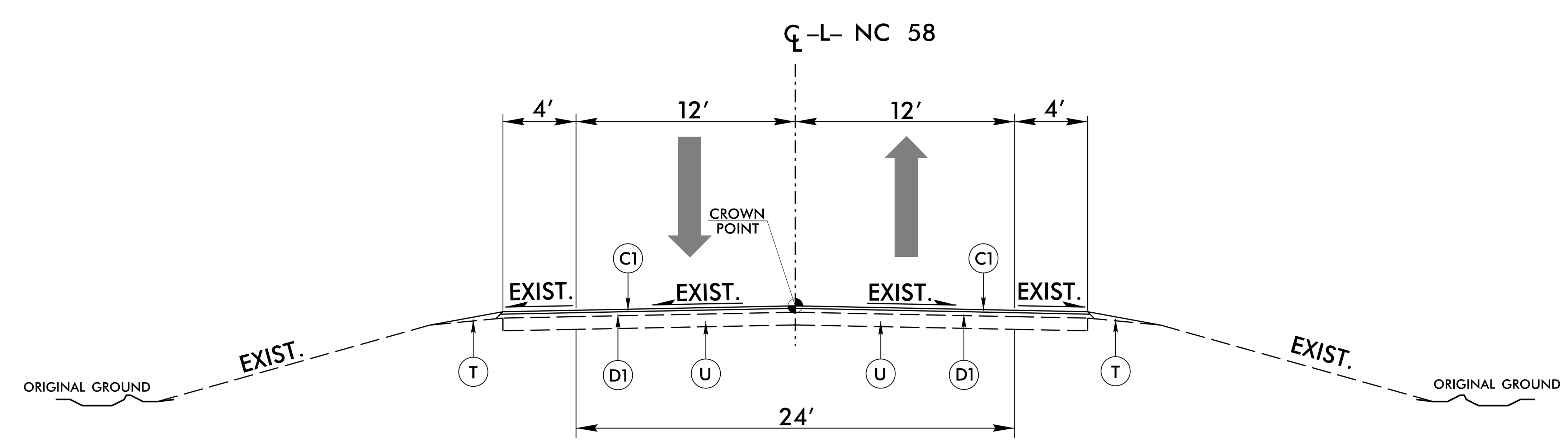
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GFT Infrastructure, Inc.
101 Autumn Hall Drive, Suite 210
Wilmington, NC 28403
910-523-5715
NC Lic. No. F-0270

FINAL PAVEMENT SCHEDULE

C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	D4	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R	2'-6" CONCRETE CURB AND GUTTER
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	D5	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" OR GREATER THAN 4" IN DEPTH.	S	4" CONCRETE SIDEWALK
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	T	EARTH MATERIAL
D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	E2	PROP. APPROX. 4.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.	U	EXISTING PAVEMENT
D2	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	E3	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.	V1	MILLING EXISTING ASPHALT PAVEMENT, 1.5" DEPTH
D3	PROP. APPROX. 3.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD.	J	PROP. 8" AGGREGATE BASE COURSE		

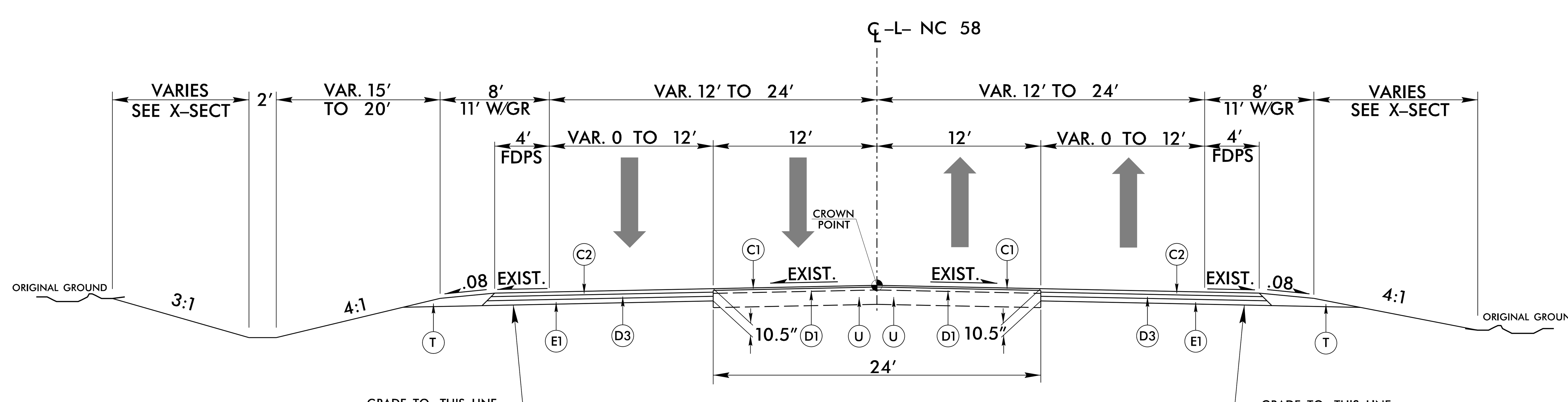
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE SHOWN.



TYPICAL SECTION NO. 1

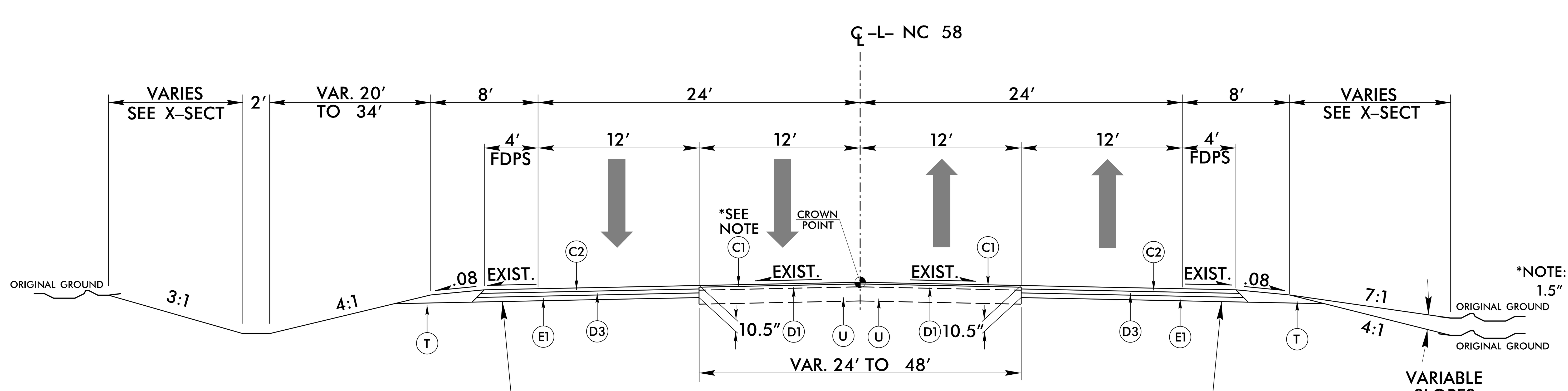
USE TYPICAL SECTION NO. 1 AS FOLLOWS
-L- STA. 10+00.00 TO STA. 11+50.00

NOTE: USE INCIDENTAL MILLING AND RESURFACING TO MAKE THE APPROPRIATE TIE AT THE END OF BRIDGE.



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 AS FOLLOWS
-L- STA. 11+50.00 TO STA. 17+50.00



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3 AS FOLLOWS
-L- STA. 17+50.00 TO STA. 29+82.00

*NOTE: THE TOTAL OVERLAY OF 1.5" S9.5C AND 2.5" I19.0C (NO MILLING) TRANSITIONS TO 1.5" MILLING, AND TWO 1.5" S9.5C LIFTS FROM -L- STA. 27+50.00 TO STA. 28+00.00.

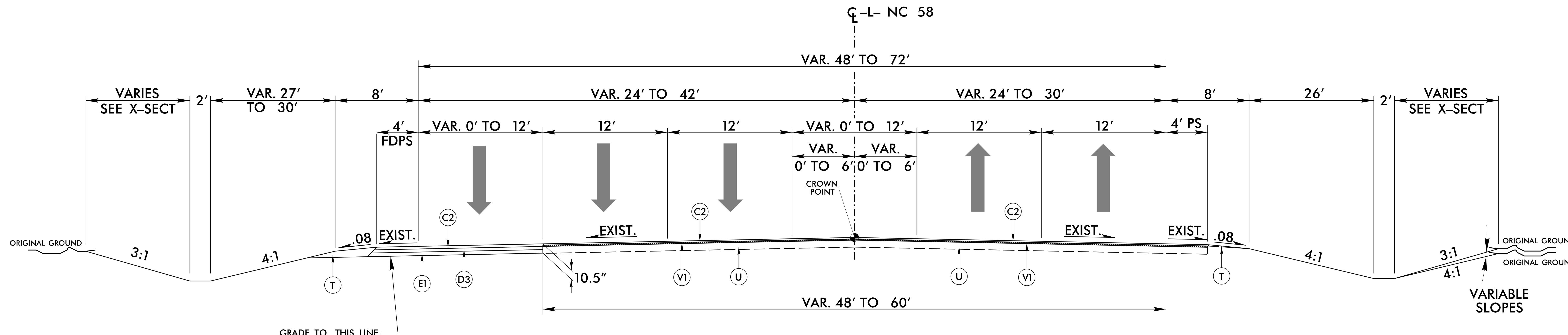
PROJECT REFERENCE NO.	SHEET NO.
R-5858	2A-2

ROADWAY DESIGN ENGINEER — 5/4/2026 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 52550 — WILLIAM A. POPE — William A. Pope

PAVEMENT DESIGN ENGINEER — 5/5/2026 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044590 — ANDREW D. WARGO — Andrew Wargo

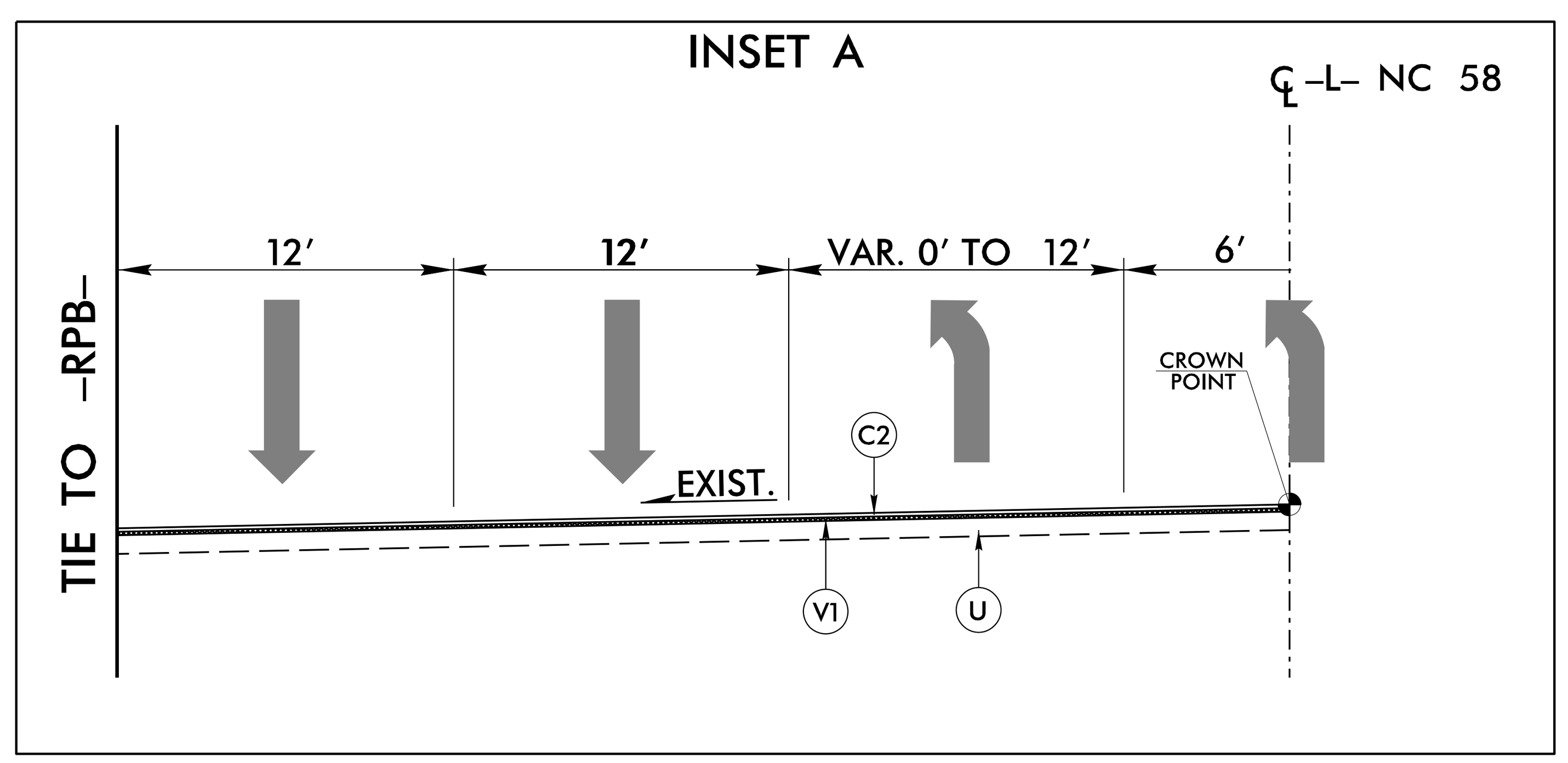
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GFT Infrastructure, Inc.
101 Autumn Hall Drive, Suite 210
Wilmington, NC 28403
910-523-5715
NC Lic. No. F-0270

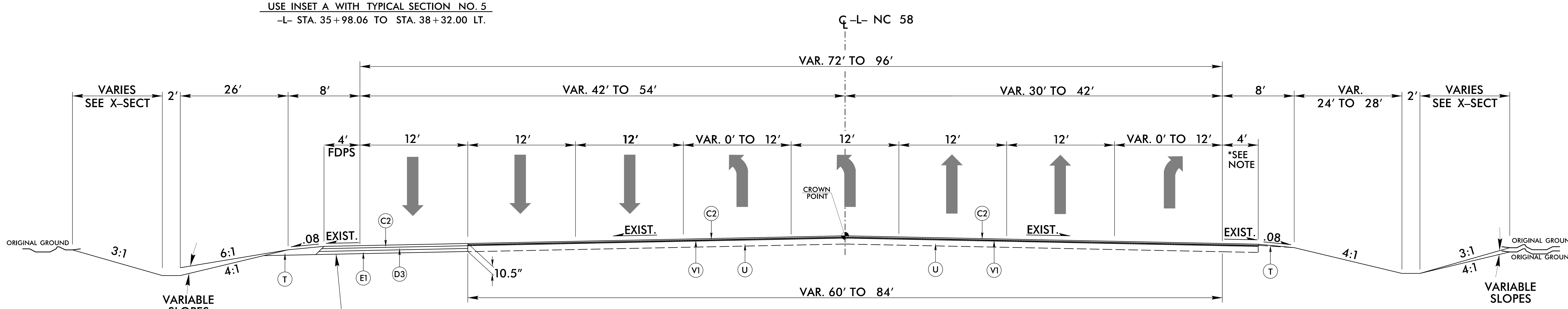


TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4 AS FOLLOWS
-L- STA. 29+82.00 TO STA. 32+82.00



USE INSET A WITH TYPICAL SECTION NO. 5
-L- STA. 35+98.06 TO STA. 38+32.00 LT.



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5 AS FOLLOWS
-L- STA. 32+82.00 TO STA. 38+32.00

*NOTE: TRANSITION FROM 4' PAVED SHOULDER TO 8' PAVED SHOULDER FROM -L- STA. 37+90 TO 38+30.00 RT.

PAVEMENT SCHEDULE

C1	1.5" S9.5C
C2	3" S9.5C
C3	VAR. DEPTH S9.5C
D1	2.5" I19.0C
D2	3" I19.0C
D3	3.5" I19.0C
D4	4" I19.0C
D5	VAR. DEPTH I19.0C
E1	4" TYPE B25.0C
E2	4.5" TYPE B25.0C
E3	VAR. TYPE B25.0C
J	PROP. 8" ABC
R	2'-6" C & G
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING 1.5" DEPTH

PROJECT REFERENCE NO.	SHEET NO.
R-5858	2A-3

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 52550 WILLIAM A. POPE — 5/4/2026 — William A. Pope

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044590 ANDREW D. WARGO — 5/5/2026 — Andrew Wargo

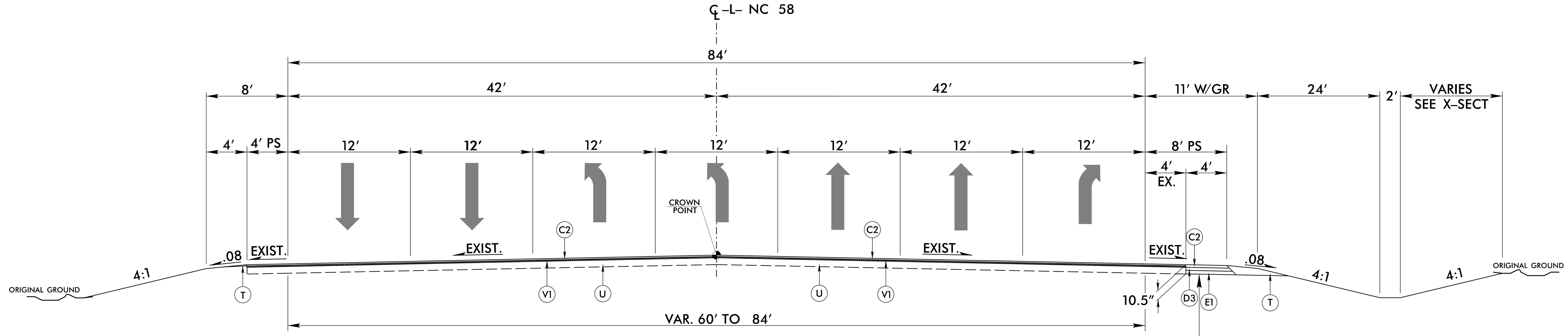
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GFT

GFT Infrastructure, Inc.
101 Autumn Hall Drive, Suite 210
Wilmington, NC 28403
910-523-5715
NC Lic. No. F-0270

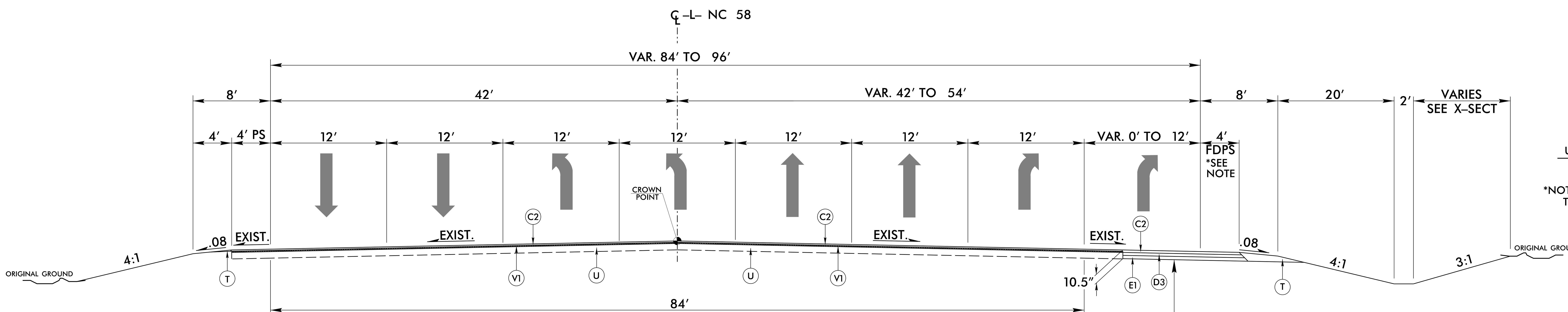
PAVEMENT SCHEDULE

C1	1.5" S9.5C
C2	3" S9.5C
C3	VAR. DEPTH S9.5C
D1	2.5" I19.0C
D2	3" I19.0C
D3	3.5" I19.0C
D4	4" I19.0C
D5	VAR. DEPTH I19.0C
E1	4" TYPE B25.0C
E2	4.5" TYPE B25.0C
E3	VAR. TYPE B25.0C
J	PROP. 8" ABC
R	2'-6" C & G
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING 1.5" DEPTH



TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6 AS FOLLOWS
-L- STA. 38+32.00 TO STA. 40+12.83

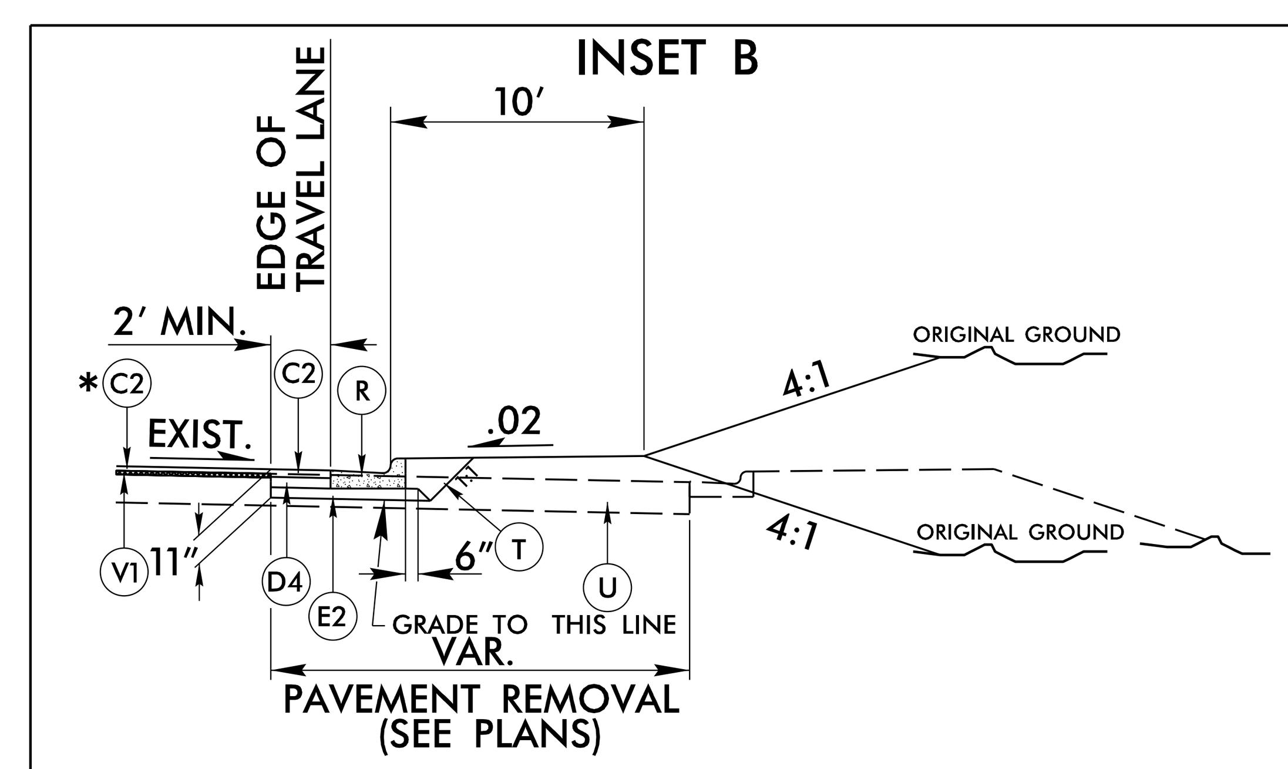


TYPICAL SECTION NO. 7

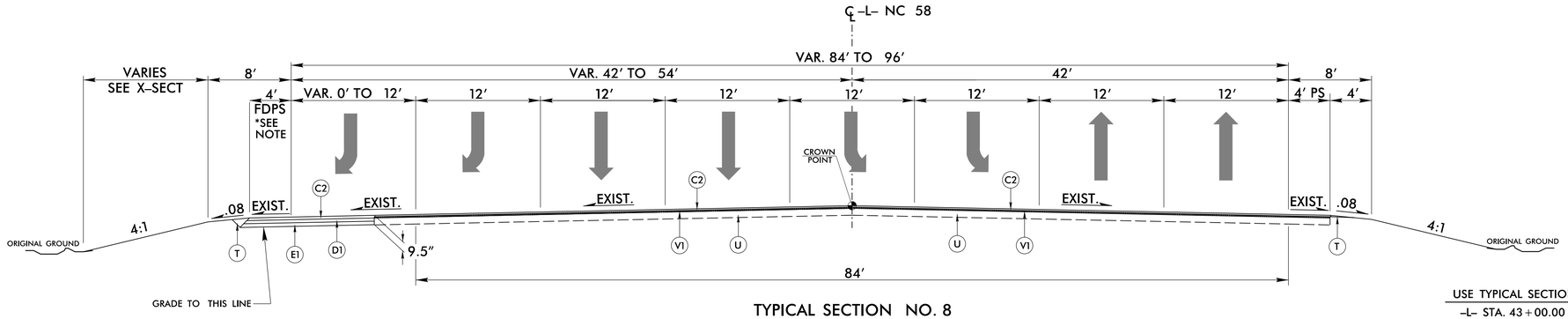
USE TYPICAL SECTION NO. 7 AS FOLLOWS
-L- STA. 40+12.83 TO STA. 43+00.00

*NOTE: TRANSITION FROM 8' PAVED SHOULDER TO 4' PAVED SHOULDER FROM -L- STA. 40+12.83 TO 40+87.83 RT.

INSET B

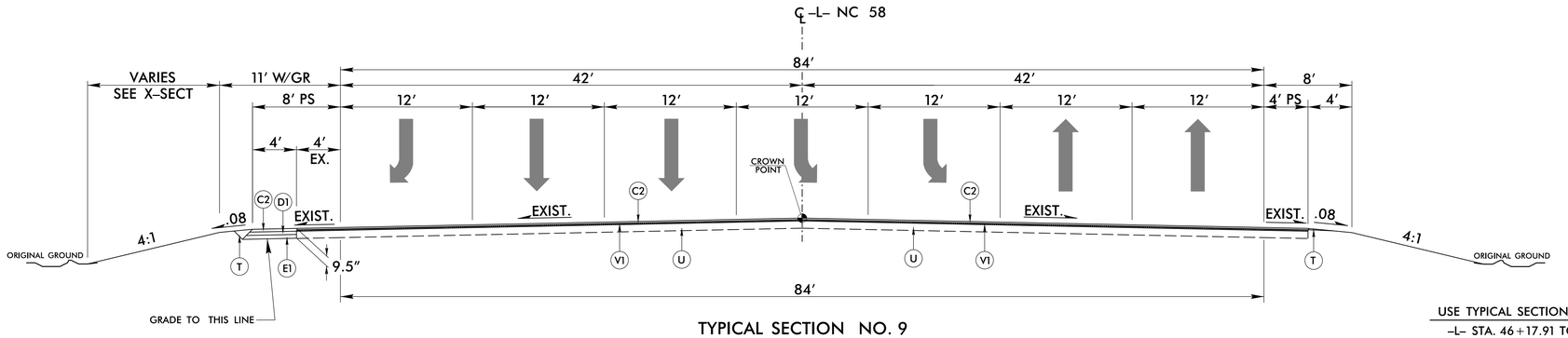


USE INSET B WITH TYPICAL SECTION NO. 7, 8, 13, AND 14
-L- STA. 41+60.00 TO STA. 42+66.15 LT.
-L- STA. 43+86.06 TO STA. 45+10.00 RT.
-Y1- STA. 14+12.15 TO STA. 15+78.66 RT.
*-Y2- STA. 10+68.45 TO STA. 12+25.98 LT. (C1)(D2)



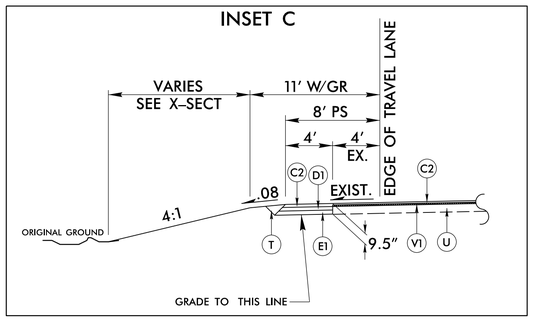
TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8 AS FOLLOWS
–L– STA. 43+00.00 TO STA. 46+17.91

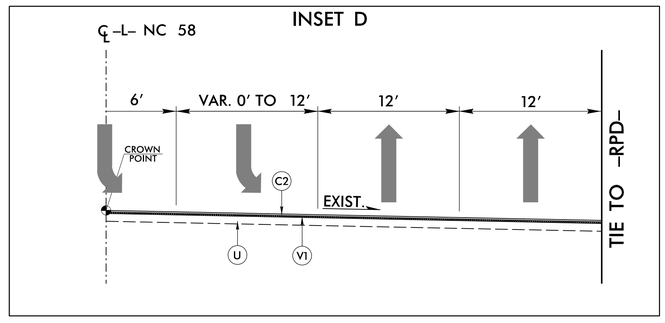


TYPICAL SECTION NO. 9

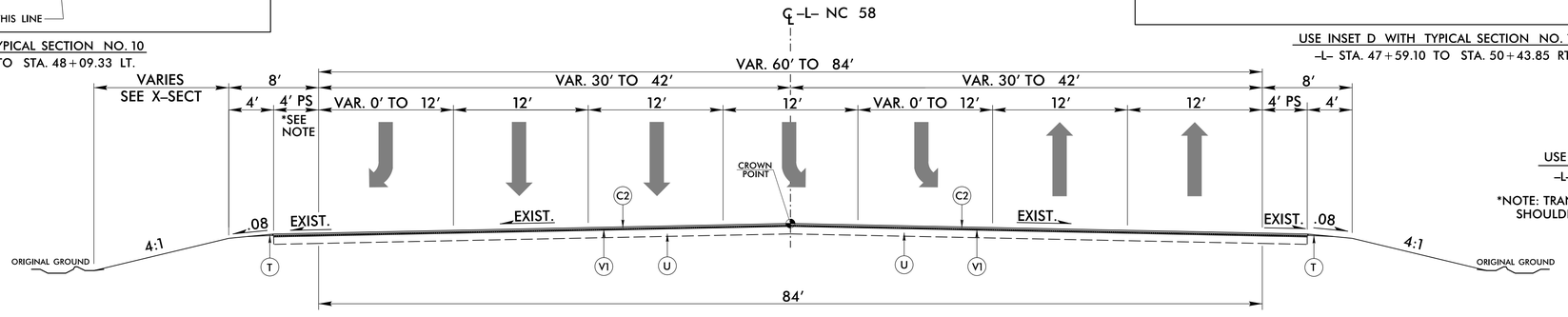
USE TYPICAL SECTION NO. 9 AS FOLLOWS
–L– STA. 46+17.91 TO STA. 47+00.41



USE INSET C WITH TYPICAL SECTION NO. 10
–L– STA. 47+00.41 TO STA. 48+09.33 LT.



USE INSET D WITH TYPICAL SECTION NO. 10
–L– STA. 47+59.10 TO STA. 50+43.85 RT.



TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10 AS FOLLOWS
–L– STA. 47+00.41 TO STA. 50+43.85

*NOTE: TRANSITION FROM 8′ PAVED SHOULDER TO 4′ PAVED SHOULDER FROM –L– STA. 48+09.33 TO 48+48.56 LT.

PROJECT REFERENCE NO.	SHEET NO.
R-5858	2A-4

ROADWAY DESIGN ENGINEER
5/4/2026
NORTH CAROLINA PROFESSIONAL SEAL 52550 ENGINEER WILLIAM A. POPE
Docusigned by: William A. Pope
E0EB7F4EC7914CC...

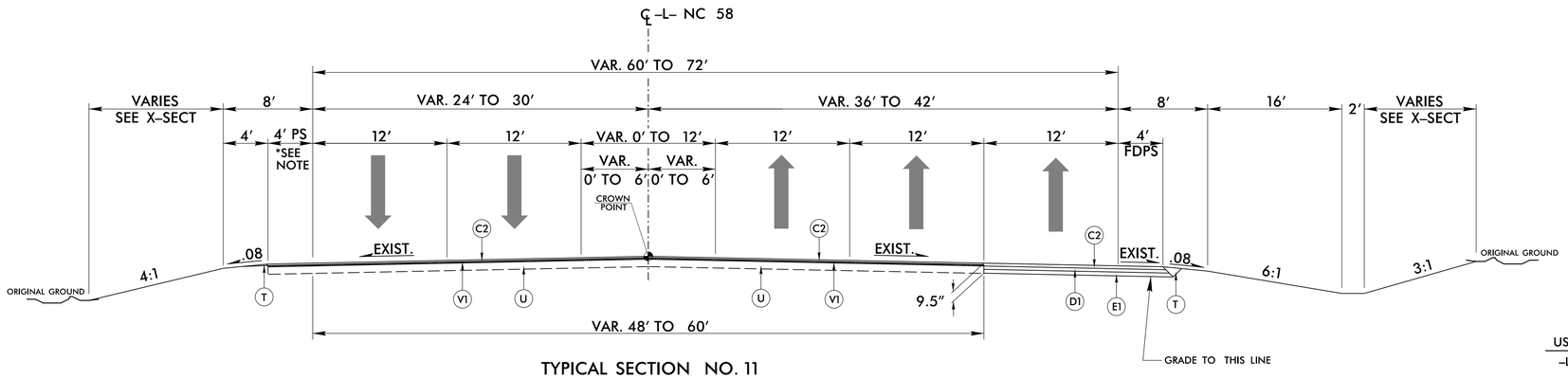
PAVEMENT DESIGN ENGINEER
5/5/2026
NORTH CAROLINA PROFESSIONAL SEAL 044590 ENGINEER ANDREW D. WARREN
Docusigned by: Andrew Warp
2D2C959DCBCA49E...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GFT Infrastructure, Inc.
101 Autumn Hall Drive, Suite 210
Wilmington, NC 28403
910-523-5715
NC Lic. No. F-0270

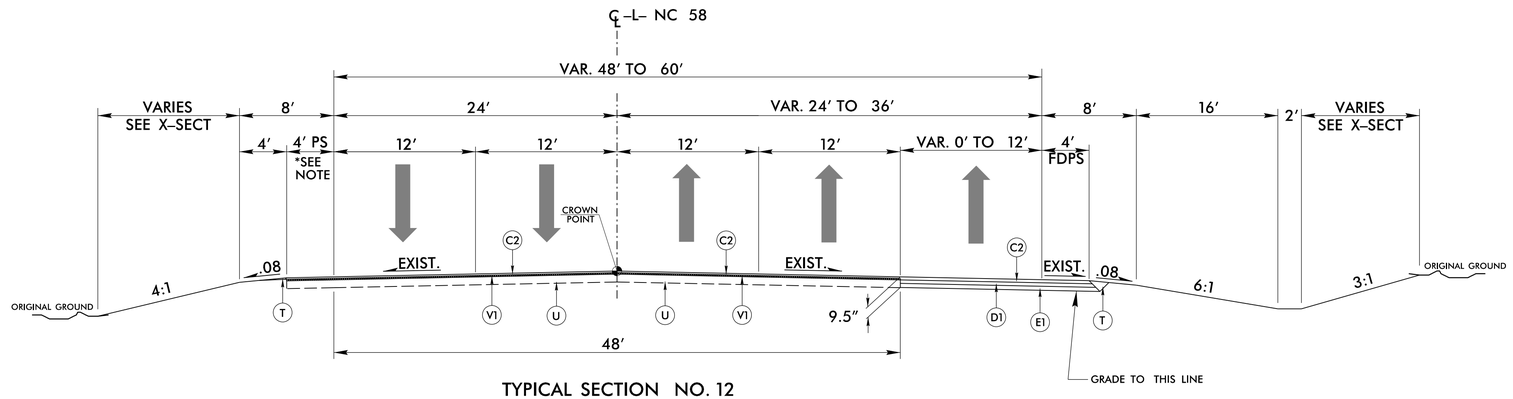
PAVEMENT SCHEDULE

C1	1.5″ S9.5C
C2	3″ S9.5C
C3	VAR. DEPTH S9.5C
D1	2.5″ I19.0C
D2	3″ I19.0C
D3	3.5″ I19.0C
D4	4″ I19.0C
D5	VAR. DEPTH I19.0C
E1	4″ TYPE B25.0C
E2	4.5″ TYPE B25.0C
E3	VAR. TYPE B25.0C
J	PROP. 8″ ABC
R	2′-6″ C & G
S	4″ CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING 1.5″ DEPTH



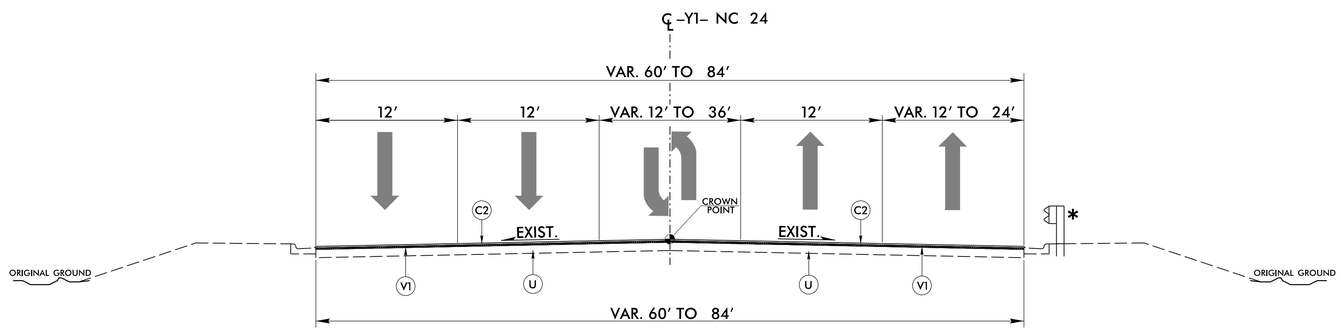
TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11 AS FOLLOWS
–L– STA. 50+43.25 TO STA. 52+84.25



TYPICAL SECTION NO. 12

USE TYPICAL SECTION NO. 12 AS FOLLOWS
–L– STA. 52+84.25 TO STA. 56+45.00



TYPICAL SECTION NO. 13

USE TYPICAL SECTION NO. 13 AS FOLLOWS
–Y1– STA. 8+25.00 TO STA. 15+96.30
*–Y1– STA. 11+50.01 TO STA. 13+49.63

PROJECT REFERENCE NO.	SHEET NO.
R-5858	2A-5

ROADWAY DESIGN ENGINEER
5/4/2026
NORTH CAROLINA PROFESSIONAL SEAL 52550 ENGINEER WILLIAM H. HOPE
Docusigned by: William H. Hope
E0EB7F4EC7914CC...

PAVEMENT DESIGN ENGINEER
5/5/2026
NORTH CAROLINA PROFESSIONAL SEAL 044590 ENGINEER ANDREW D. WARCO
Docusigned by: Andrew D. Warco
2D2C959DCBCA49E...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GFT
GFT Infrastructure, Inc.
101 Autumn Hall Drive, Suite 210
Wilmington, NC 28403
910-523-5715
NC Lic. No. F-0270

PAVEMENT SCHEDULE

C1	1.5″ S9.5C
C2	3″ S9.5C
C3	VAR. DEPTH S9.5C
D1	2.5″ I19.0C
D2	3″ I19.0C
D3	3.5″ I19.0C
D4	4″ I19.0C
D5	VAR. DEPTH I19.0C
E1	4″ TYPE B25.0C
E2	4.5″ TYPE B25.0C
E3	VAR. TYPE B25.0C
J	PROP. 8″ ABC
R	2′-6″ C & G
S	4″ CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING 1.5″ DEPTH

PROJECT REFERENCE NO.	SHEET NO.
R-5858	2A-6

ROADWAY DESIGN ENGINEER

5/4/2026

NORTH CAROLINA PROFESSIONAL SEAL 52550 ENGINEER WILLIAM A. POPE

Docusigned by: William A. Pope

E0EB7F4EC7914CC...

PAVEMENT DESIGN ENGINEER

5/5/2026

NORTH CAROLINA PROFESSIONAL SEAL 044590 ENGINEER ANDREW D. WARREN

Docusigned by: Andrew Warren

202C969DCBCA49E...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

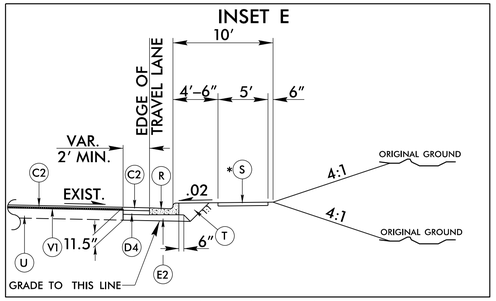
GFT

GFT Infrastructure, Inc.
101 Autumn Hall Drive, Suite 210
Wilmington, NC 28403
910-523-5715
NC Lic. No. F-0270

PAVEMENT SCHEDULE

C1	1.5" S9.5C
C2	3" S9.5C
C3	VAR. DEPTH S9.5C
D1	2.5" I19.0C
D2	3" I19.0C
D3	3.5" I19.0C
D4	4" I19.0C
D5	VAR. DEPTH I19.0C
E1	4" TYPE B25.0C
E2	4.5" TYPE B25.0C
E3	VAR. TYPE B25.0C
J	PROP. 8" ABC
R	2'-6" C & G
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING 1.5" DEPTH

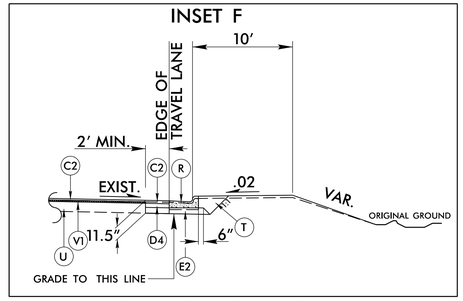
INSET E



USE INSET E WITH TYPICAL SECTION NO. 13
–Y1– STA. 9+01.08 TO STA. 12+52.80 RT.
–Y1– STA. 14+30.08 TO STA. 14+90.08 LT.

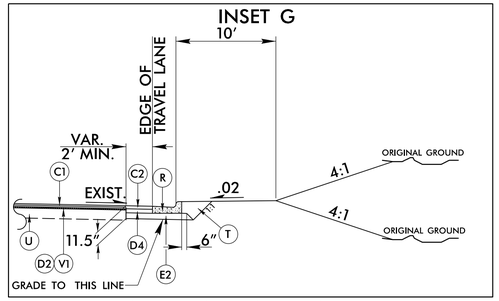
*NOTE: SIDEWALK LOCATION –Y1– STA. 9+10.06 TO STA. 11+87.00 RT.

INSET F



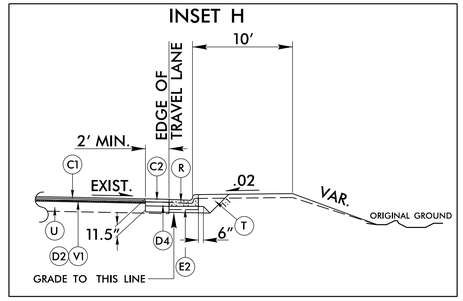
USE INSET F WITH TYPICAL SECTION NO. 13
–Y1– STA. 12+52.80 TO STA. 13+14.03 RT.
–Y1– STA. 12+95.00 TO STA. 14+30.08 LT.

INSET G

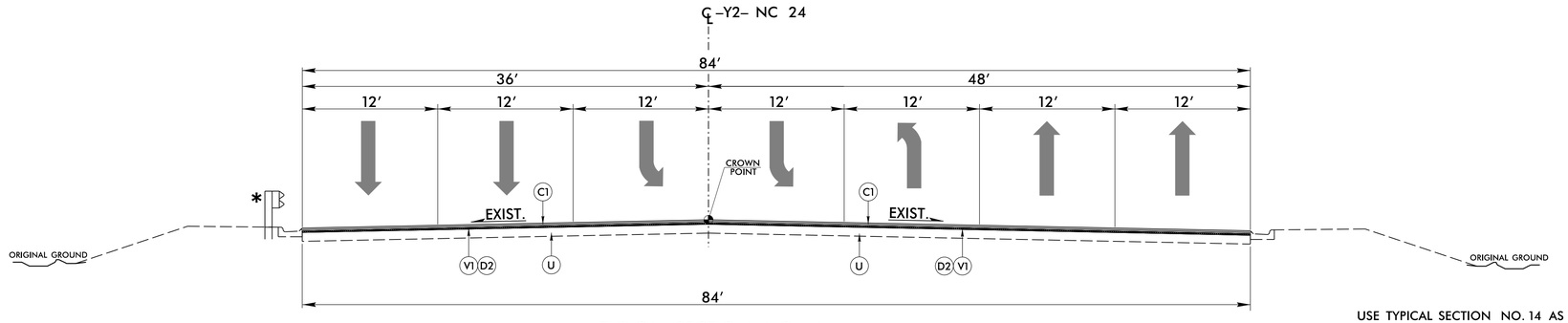


USE INSET G WITH TYPICAL SECTION NO. 14
–Y2– STA. 11+53.93 TO STA. 12+13.93 RT.

INSET H

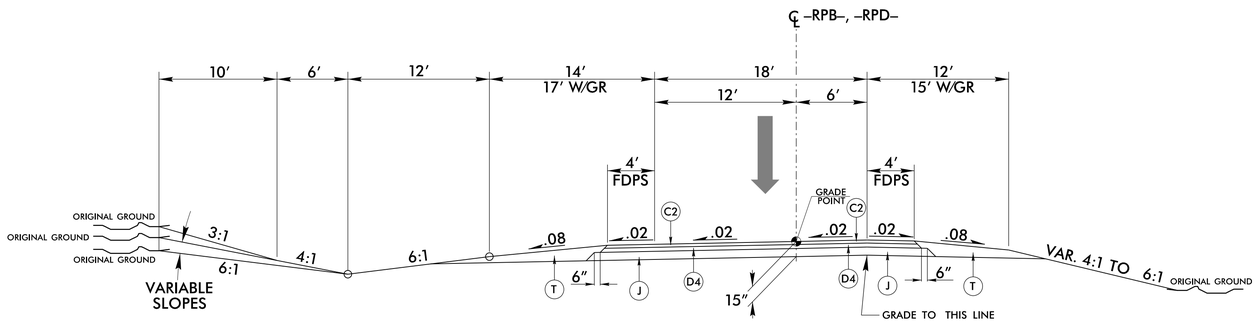


USE INSET H WITH TYPICAL SECTION NO. 14
–Y2– STA. 12+13.93 TO STA. 13+20.00 RT.



TYPICAL SECTION NO. 14

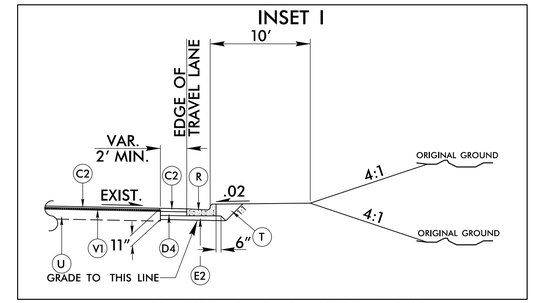
USE TYPICAL SECTION NO. 14 AS FOLLOWS
–Y2– STA. 10+49.47 TO STA. 13+20.00
*–Y2– STA. 12+85.40 TO STA. 14+85.00



TYPICAL SECTION NO. 15

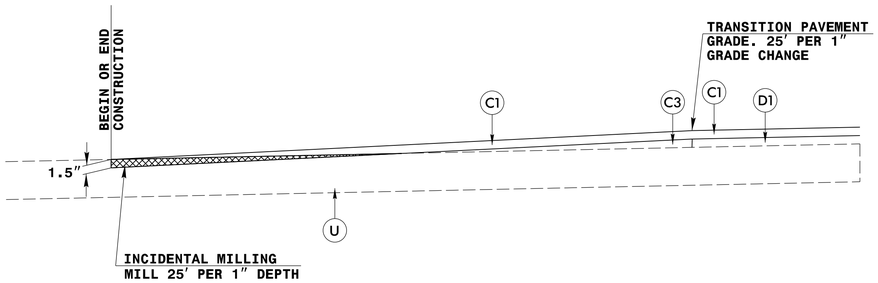
USE TYPICAL SECTION NO. 15 AS FOLLOWS
–RPB– STA. 10+00.00 TO STA. 17+73.85
–RPD– STA. 10+00.00 TO STA. 17+38.68

INSET I



USE INSET I WITH TYPICAL SECTION NO. 15
–RPB– STA. 17+23.85 TO STA. 17+73.85 LT.
–RPD– STA. 16+88.68 TO STA. 17+38.68 LT.

INCIDENTAL MILLING & PAVEMENT TRANSITION DETAIL



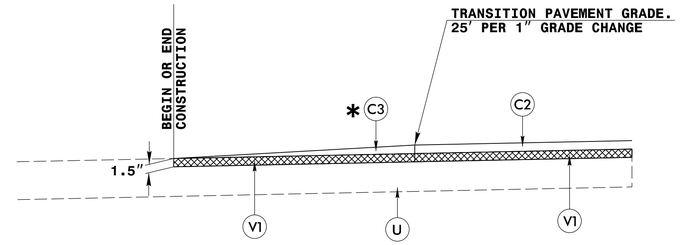
INCIDENTAL MILLING

–L– STA. 10+00.00 TO STA. 10+37.50

PAVEMENT TRANSITION

–L– STA. 10+00.00 TO STA. 11+37.50

PAVEMENT TRANSITION DETAIL 1

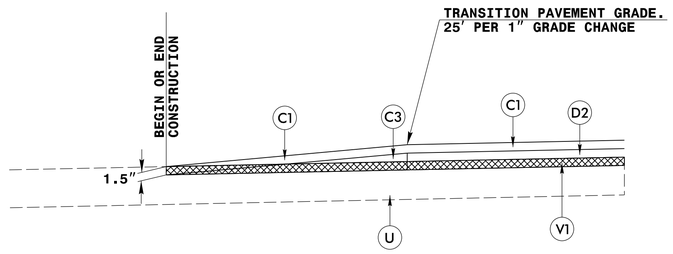


* DEPTH VARIES 1.5" TO 3"

–L– STA. 56+07.50 TO STA. 56+45.00
–Y1– STA. 8+25.00 TO STA. 8+62.50

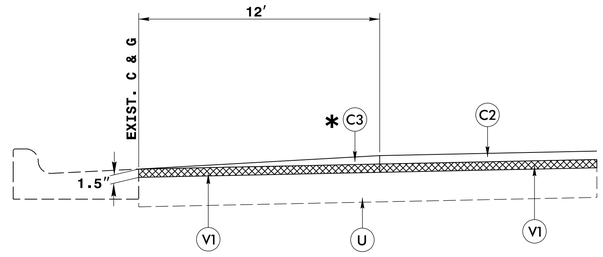
NOTE: MIRROR FOR END OF CONSTRUCTION

PAVEMENT TRANSISTION DETAIL 2



–Y2– STA. 12+45.00 TO STA. 13+20.00

PAVEMENT TRANSITION DETAIL 3

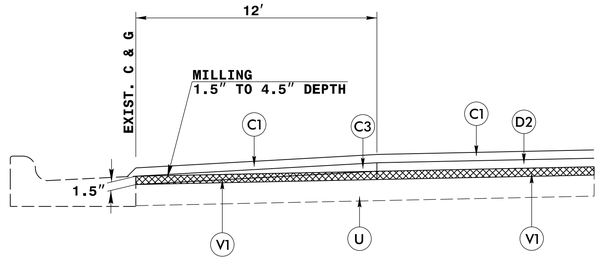


* DEPTH VARIES 1.5" TO 3"

–Y1– STA. 8+25.00 TO STA. 12+95.00 LT.
–Y1– STA. 8+25.00 TO STA. 8+65.40 RT.

NOTE: MIRROR FOR RIGHT SIDE

PAVEMENT TRANSITION DETAIL 4



–Y2– STA. 13+14.28 TO STA. 13+20.00 LT.

PROJECT REFERENCE NO.	SHEET NO.
R-5858	2A-7

ROADWAY DESIGN ENGINEER

5/4/2026

NORTH CAROLINA PROFESSIONAL SEAL 52550 ENGINEER WILLIAM A. POPE

Docusigned by: William A. Pope

E0EB7F4EC7914CC...

PAVEMENT DESIGN ENGINEER

5/5/2026

NORTH CAROLINA PROFESSIONAL SEAL 044590 ENGINEER ANDREW D. WARCO

Docusigned by: Andrew Warco

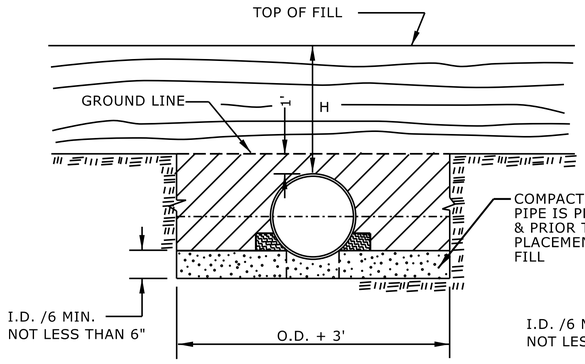
2D2C959DCBCA49E...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

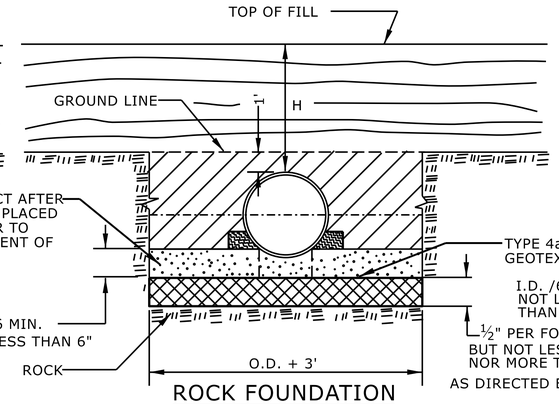
GFT Infrastructure, Inc.
101 Autumn Hall Drive, Suite 210
Wilmington, NC 28403
910-523-5715
NC Lic. No. F-0270

PAVEMENT SCHEDULE	
C1	1.5" S9.5C
C2	3" S9.5C
C3	VAR. DEPTH S9.5C
D1	2.5" I19.0C
D2	3" I19.0C
D3	3.5" I19.0C
D4	4" I19.0C
D5	VAR. DEPTH I19.0C
E1	4" TYPE B25.0C
E2	4.5" TYPE B25.0C
E3	VAR. TYPE B25.0C
J	PROP. 8" ABC
R	2'-6" C & G
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING 1.5" DEPTH

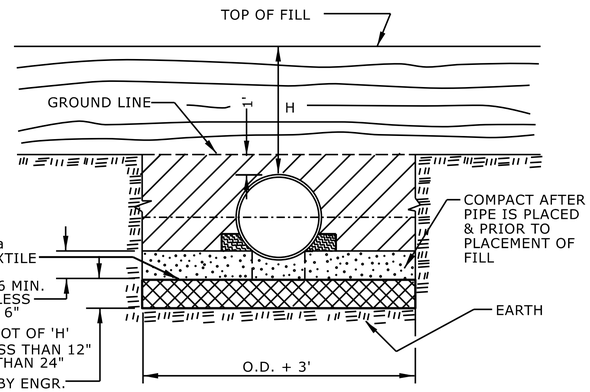
PROJECT REFERENCE NO.	SHEET NO.
R-5858	2C-1



NORMAL EARTH FOUNDATION

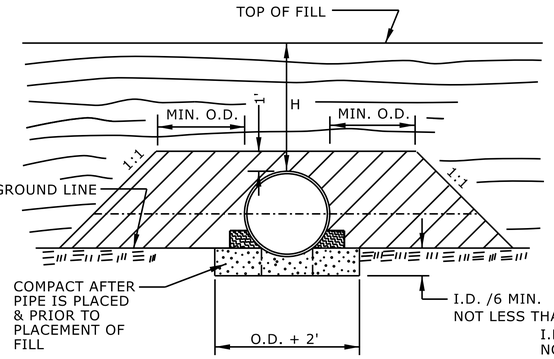


ROCK FOUNDATION

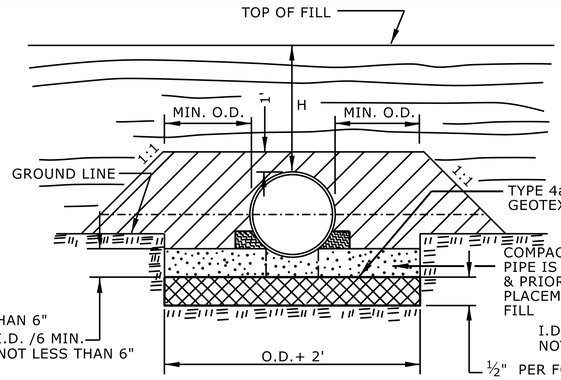


UNSUITABLE MATERIAL FOUNDATION

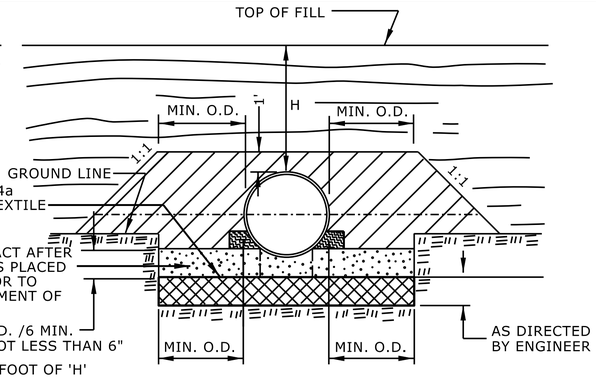
PIPE IN TRENCH



NORMAL EARTH FOUNDATION



ROCK FOUNDATION



UNSUITABLE MATERIAL FOUNDATION

PIPE ABOVE GROUND

GENERAL NOTES:

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

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

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

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

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

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

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

SPRINGLINE OF PIPE

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

UNDISTURBED EARTH MATERIAL

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

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

ROADWAY DETAIL DRAWING FOR

METHOD OF PIPE INSTALLATION

FLEXIBLE PIPE

SHEET 1 OF 2

300.01

5/5/2026
NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKER
Signed by: Nicole M Hacker
588433D3041645...

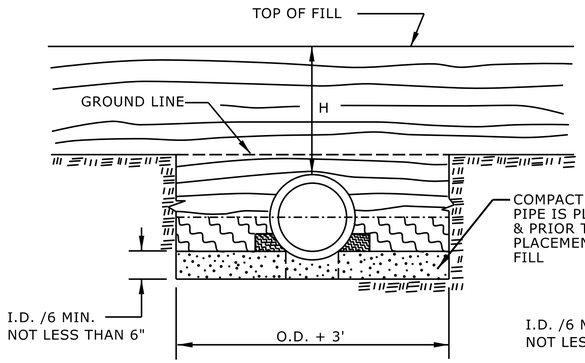
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

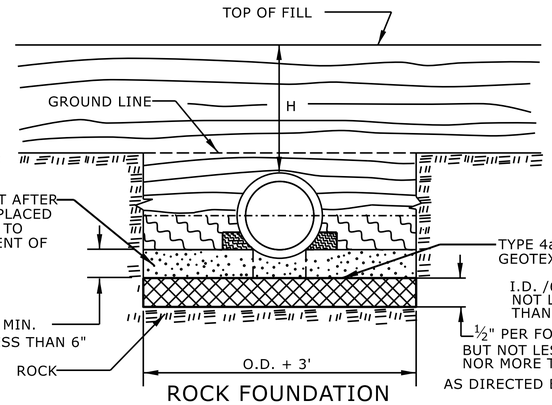
SEE TITLE BLOCK

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

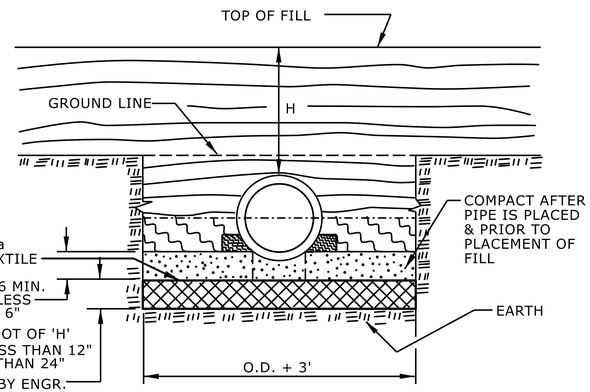
PROJECT REFERENCE NO.	SHEET NO.
R-5858	2C-2



NORMAL EARTH FOUNDATION

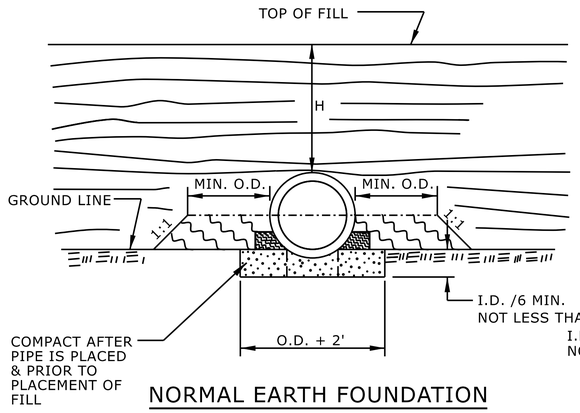


ROCK FOUNDATION

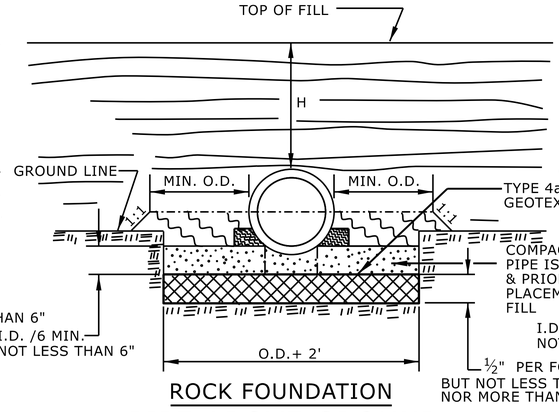


UNSUITABLE MATERIAL FOUNDATION

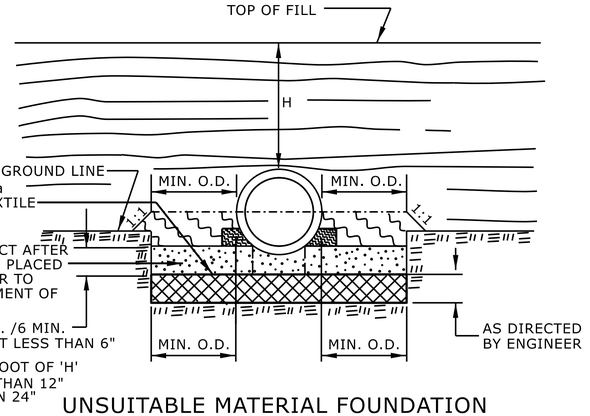
PIPE IN TRENCH



NORMAL EARTH FOUNDATION



ROCK FOUNDATION



UNSUITABLE MATERIAL FOUNDATION

PIPE ABOVE GROUND

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

SHEET 2 OF 2

300.01

5/5/2026
NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER
Signed By: Nicole M Hackler
588432303416 4C5...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

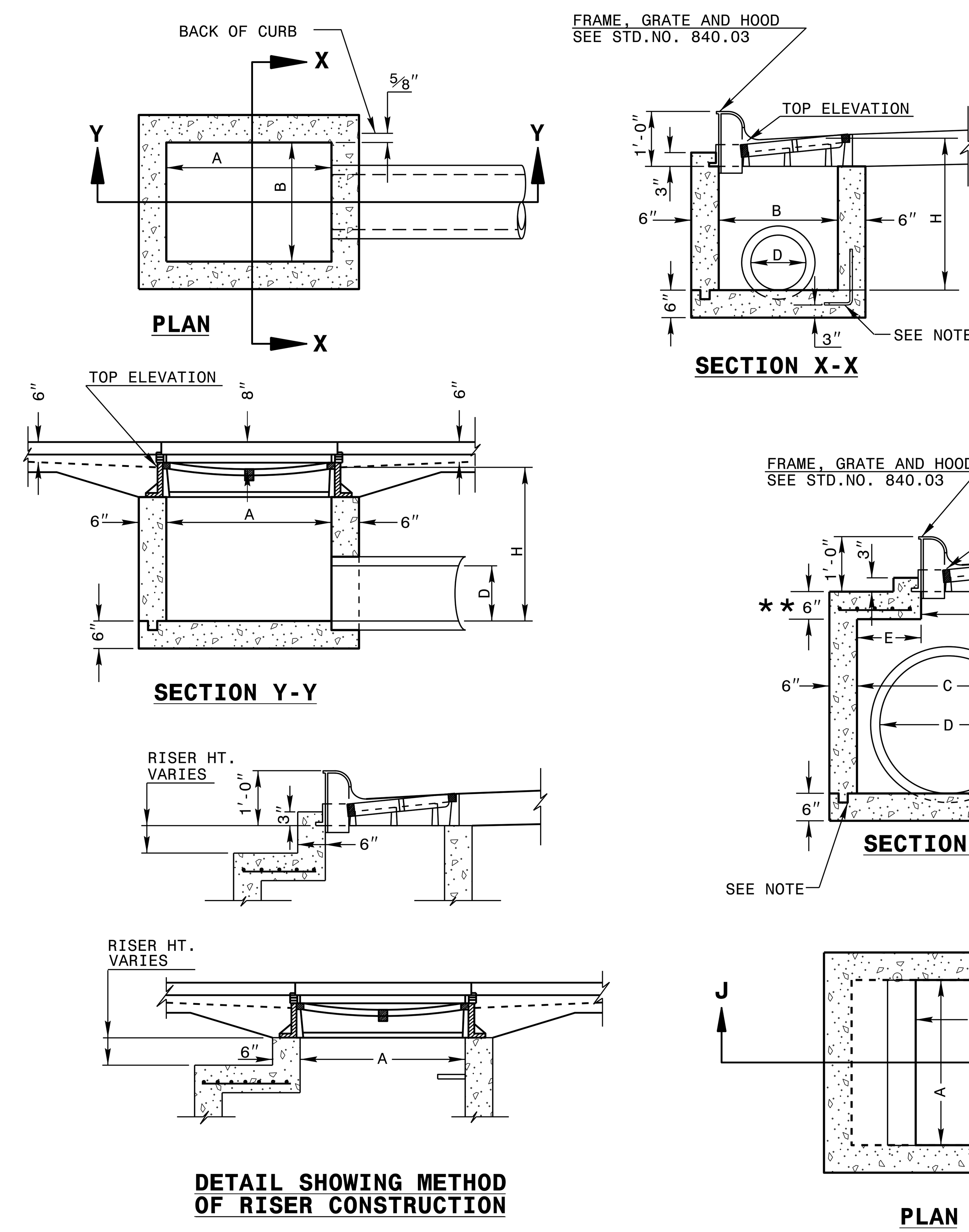
SEE TITLE BLOCK

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

ENGLISH DETAIL DRAWING FOR MINIMUM DEPTH CONCRETE CATCH BASIN 12" THRU 84" PIPE

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

SHEET 1 OF 2 — 840D02



GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.

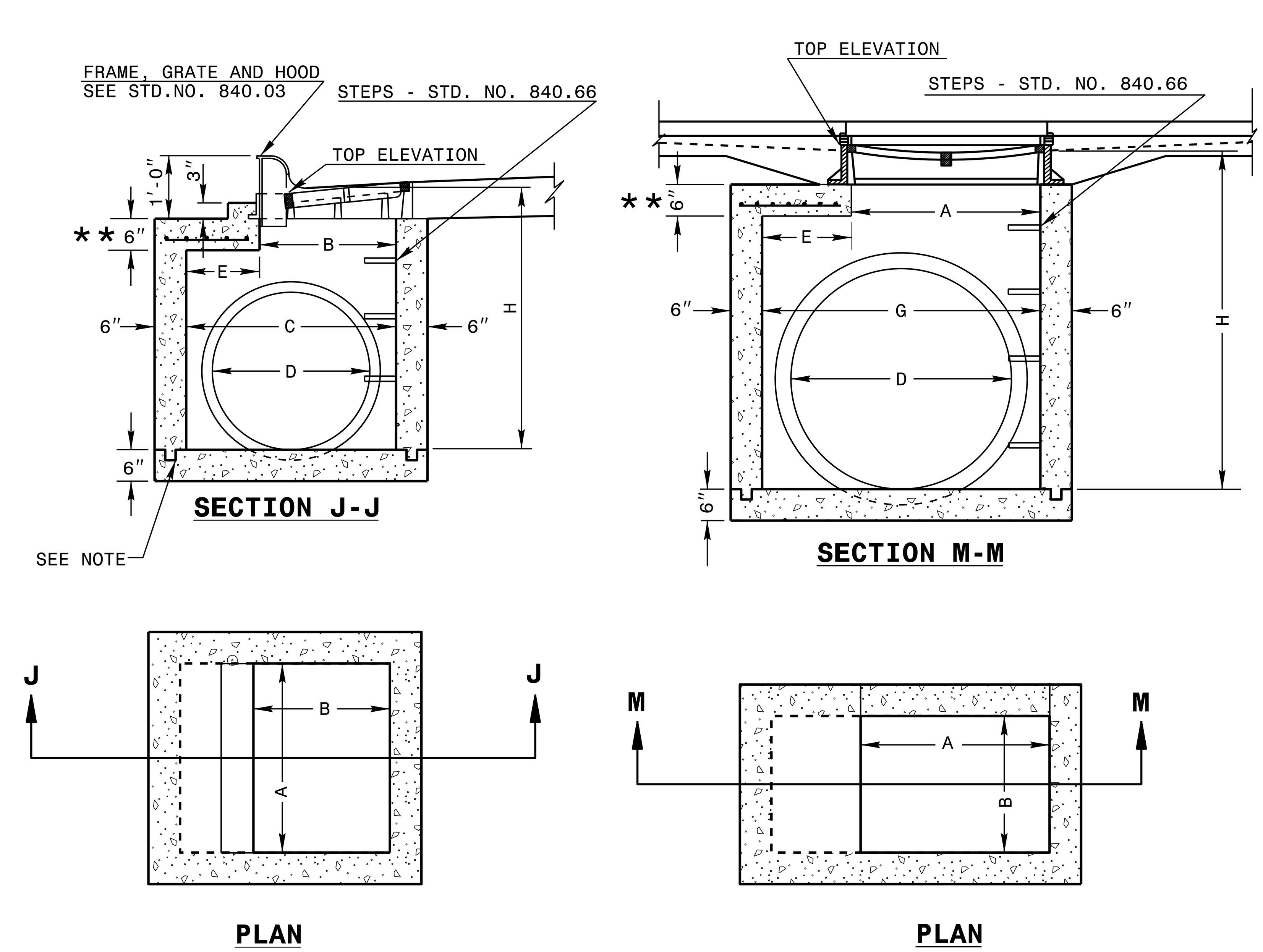
USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.

FOR 8'-0" IN HEIGHT OR LESS USE 6" WALLS AND BOTTOM SLAB. OVER 8'-0" TO 16'-0" IN HEIGHT USE 8" WALLS AND BOTTOM SLAB. ADJUST QUANTITIES ACCORDINGLY.

CONSTRUCT WITH PIPE CROWNS MATCHING.

CHAMFER ALL EXPOSED CORNERS 1".

** FOR STRUCTURES WITH PIPE LARGER THAN 54", MAKE THE TOP SLAB 8" THICK.



ENGLISH DETAIL DRAWING FOR MINIMUM DEPTH CONCRETE CATCH BASIN 12" THRU 84" PIPE

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

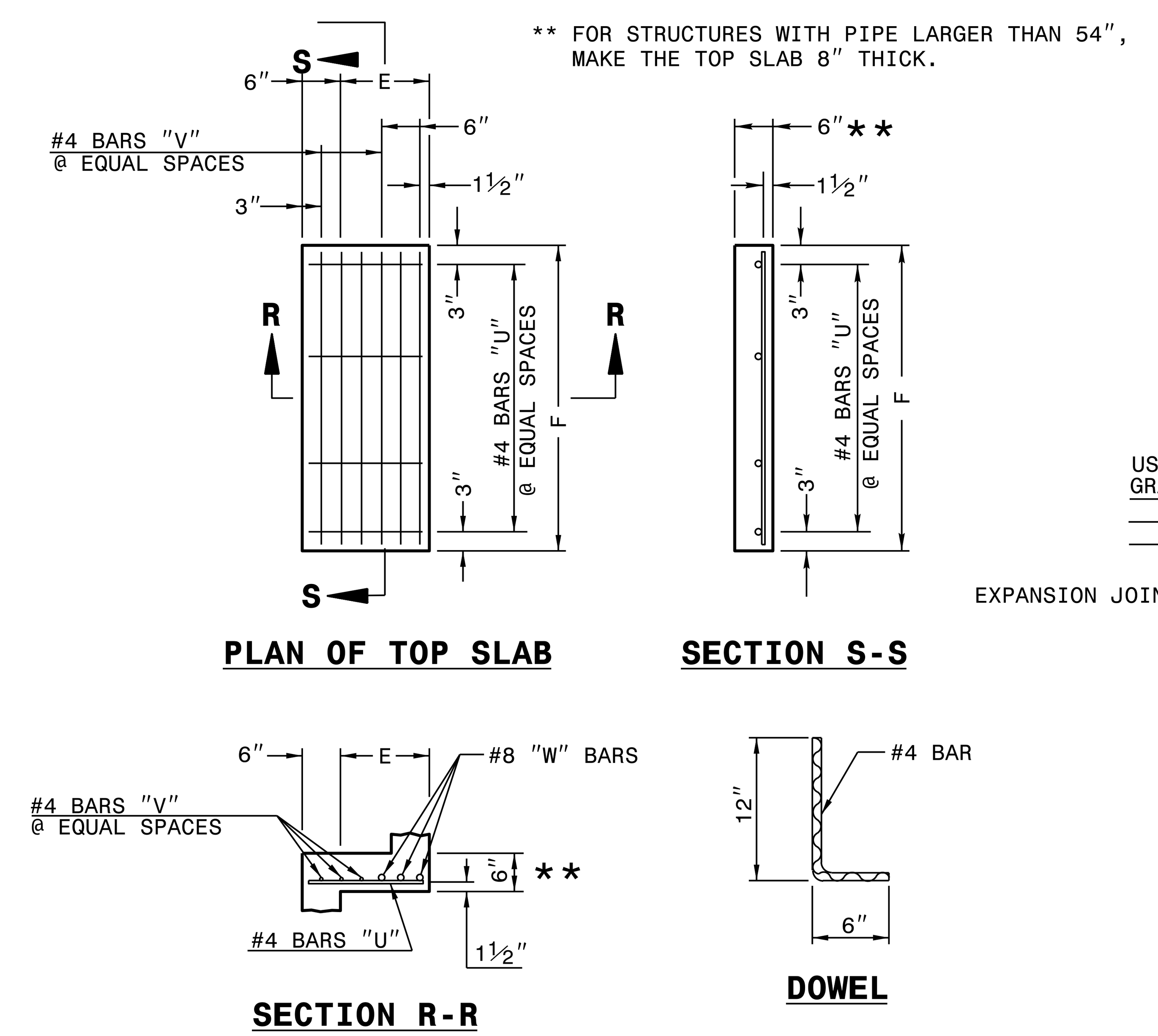
SHEET 1 OF 2 — 840D02

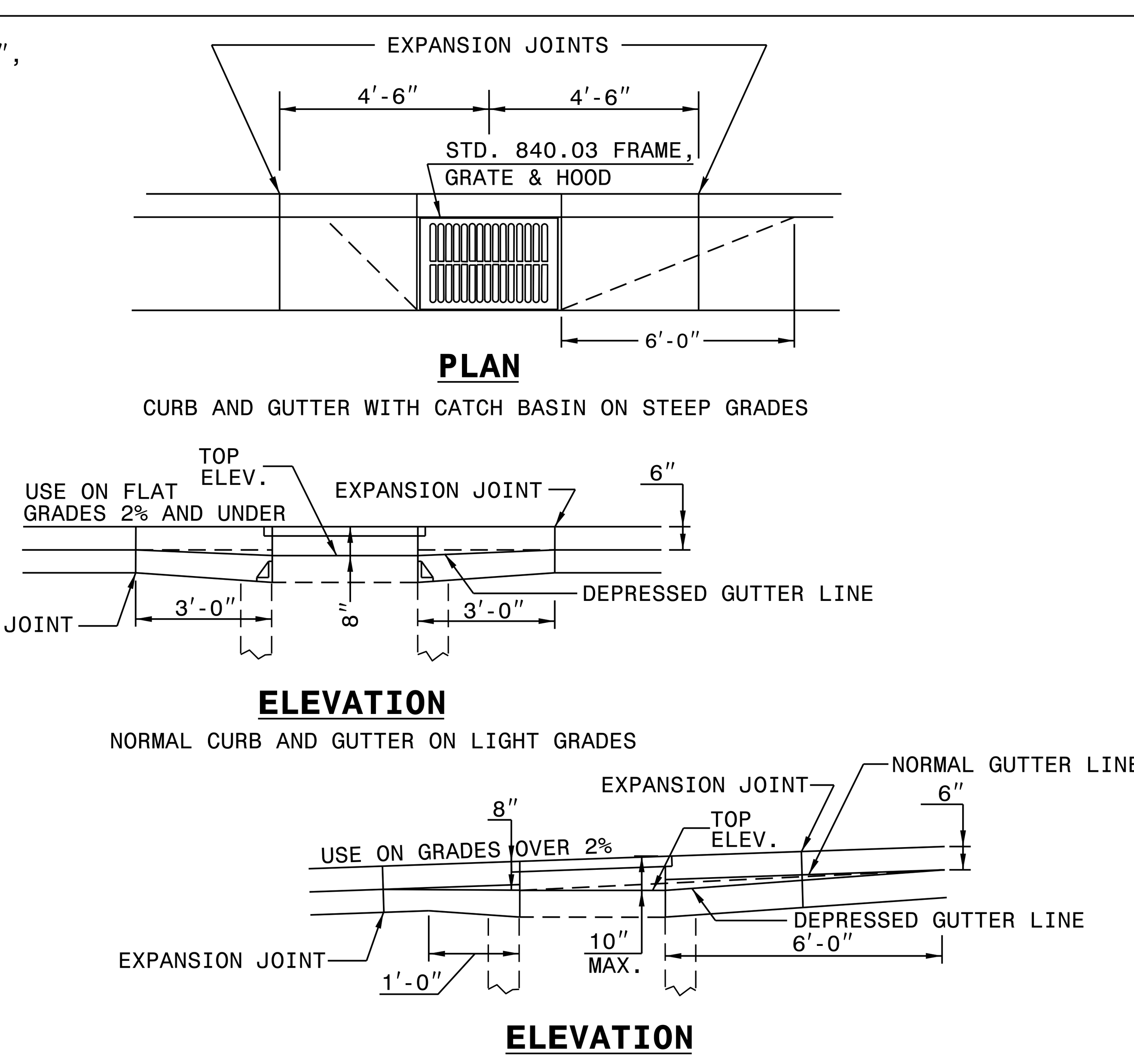
ENGLISH DETAIL DRAWING FOR MINIMUM DEPTH CONCRETE CATCH BASIN 12" THRU 84" PIPE

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

SHEET 2 OF 2 — 840D02

** FOR STRUCTURES WITH PIPE LARGER THAN 54", MAKE THE TOP SLAB 8" THICK.





* RISER HAS .228 CUBIC YARDS OF CONCRETE PER FOOT HEIGHT

MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE CATCH BASIN(BASED ON MIN. HEIGHT, H, WITH NO RISER) *

DIMENSIONS OF BOX AND PIPE						COVER DIMENSION		BARS-U		BARS-V		BARS-W		TOTAL LBS.	CU.YDS. CONC. IN BOX			DEDUCTIONS ONE PIPE	
PIPE D	SPAN A	WIDTH B	WIDTH C	SPAN G	MIN. HEIGHT H	E	F	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH		TOP SLAB	BOTTOM SLAB	TOT. CONC. FOR MINIMUM HEIGHT, H	C.M.	R.C.
12"	3'-0"	2'-2"	--	--	2'-0"	--	--	--	--	--	--	--	--	--	--	0.235	0.772	0.015	0.026
15"	3'-0"	2'-2"			2'-3"											0.235	0.829	0.023	0.036
18"	3'-0"	2'-2"			2'-6"											0.235	0.887	0.033	0.049
24"	3'-0"	2'-2"			3'-1"											0.235	1.001	0.059	0.085
30"	3'-0"	2'-2"	3'-4"	3'-4"	3'-10"	1'-2"	4'-4"	4	1'-5"	2	4'-1"	3	4'-1"	39	0.123	0.347	1.433	0.092	0.127
36"	3'-0"	2'-2"	3'-10"	3'-10"	4'-6"	1'-8"	4'-10"	4	1'-11"	3	4'-7"	3	4'-7"	43	0.161	0.432	1.714	0.132	0.178
42"	3'-0"	2'-2"	4'-5"	4'-5"	4'-11"	2'-2"	5'-5"	5	2'-5"	4	5'-2"	3	5'-2"	47	0.200	0.543	1.738	0.180	0.243
48"	3'-0"	2'-2"	5'-0"	5'-0"	5'-6"	2'-10"	6'-0"	5	3'-1"	4	5'-9"	3	5'-9"	51	0.235	0.667	2.052	0.235	0.317
54"	3'-0"	2'-2"	5'-7"	5'-7"	6'-0"	3'-5"	6'-7"	6	3'-8"	5	6'-4"	3	6'-4"	56	0.289	0.802	2.387	0.297	0.401
60"	3'-0"	2'-2"	6'-3"	6'-3"	6'-6"	4'-1"	7'-3"	6	4'-4"	5	7'-0"	3	7'-0"	61	0.340	0.973	2.722	0.363	0.546
66"	3'-0"	2'-2"	6'-11"	6'-11"	7'-0"	4'-9"	7'-11"	7	5'-0"	6	7'-8"	3	7'-8"	66	0.391	1.160	3.057	0.440	0.655
72"	3'-0"	2'-2"	7'-6"	7'-6"	7'-6"	5'-3"	8'-6"	7	5'-6"	6	8'-3"	3	8'-3"	72	0.442	1.340	3.392	0.524	0.774
78"	3'-0"	2'-2"	8'-1"	8'-1"	8'-0"	5'-11"	9'-1"	8	6'-2"	7	8'-10"	3	8'-10"	78	0.493	1.530	3.727	0.615	0.893
84"	3'-0"	2'-2"	8'-9"	8'-9"	8'-6"	6'-7"	9'-9"	8	6'-10"	7	9'-6"	3	9'-6"	84	0.544	1.760	4.062	0.713	1.010

ENGLISH DETAIL DRAWING FOR MINIMUM DEPTH CONCRETE CATCH BASIN 12" THRU 84" PIPE

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

SHEET 2 OF 2 — 840D02

PROJECT REFERENCE NO.	SHEET NO.
R-5858	2C-3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SEE PLATE FOR TITLE

ORIGINAL BY: 2002 Std.840.01 DATE:
MODIFIED BY: E.E. WARD DATE: 3-1-02
CHECKED BY: DATE:
FILE SPEC.: s:Special Details/jhowerton/840d02.dgn

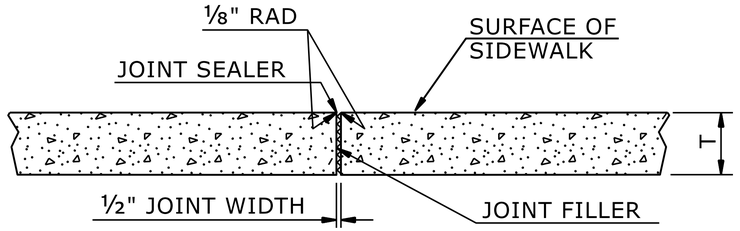
PROJECT REFERENCE NO.	SHEET NO.
R-5858	2C-4

NOTES:

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

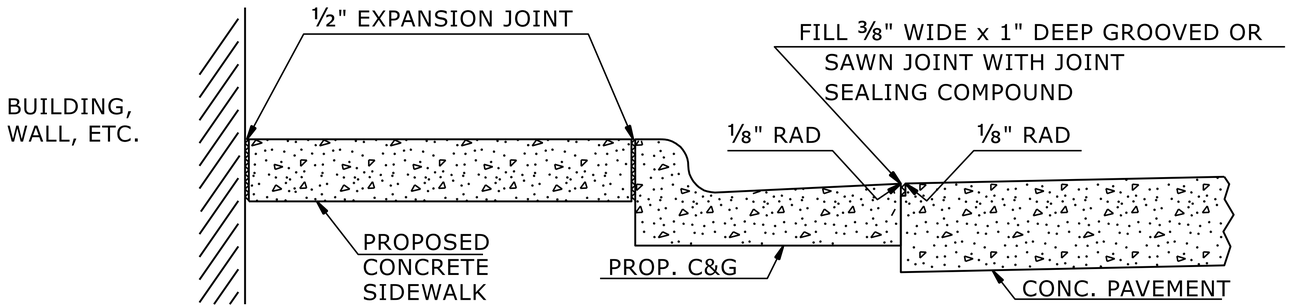
PLACE A GROOVE JOINT 1" DEEP WITH ⅛" RADII IN THE CONCRETE SIDEWALK AT 5' INTERVALS. ONE ½" EXPANSION JOINT WILL BE REQUIRED AT 50' INTERVALS. A ½" EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURE.

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



T = SIDEWALK THICKNESS

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

SHEET 1 OF 1

848D01

5/5/2025

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M. HACKLER

Signed by: Nicole M. Hackler

588432D34164C5...

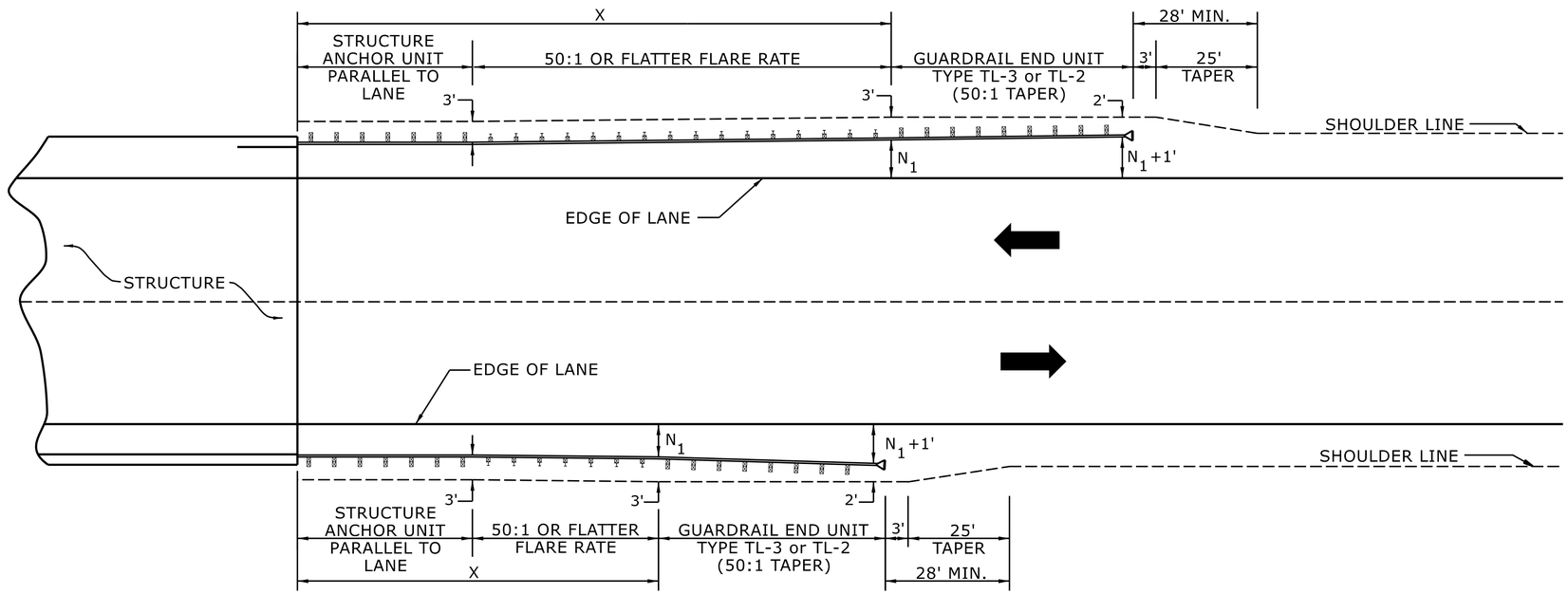
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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.: _____

PROJECT REFERENCE NO.	SHEET NO.
R-5858	2C-5



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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 4 OF 15

862D01

5/5/2025
NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER
Signature
Nicole Hackler
5884323D34164C5...

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

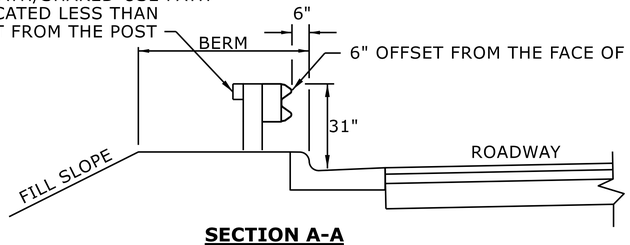
SEE TITLE BLOCK

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

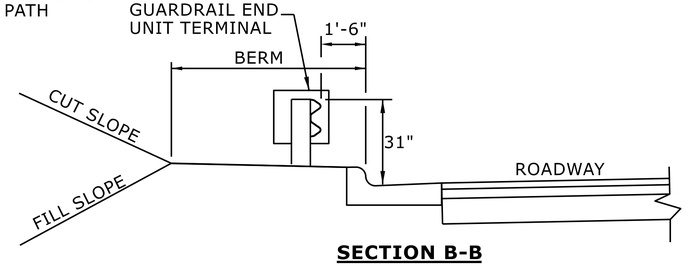
PROJECT REFERENCE NO.	SHEET NO.
R-5858	2C-6

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

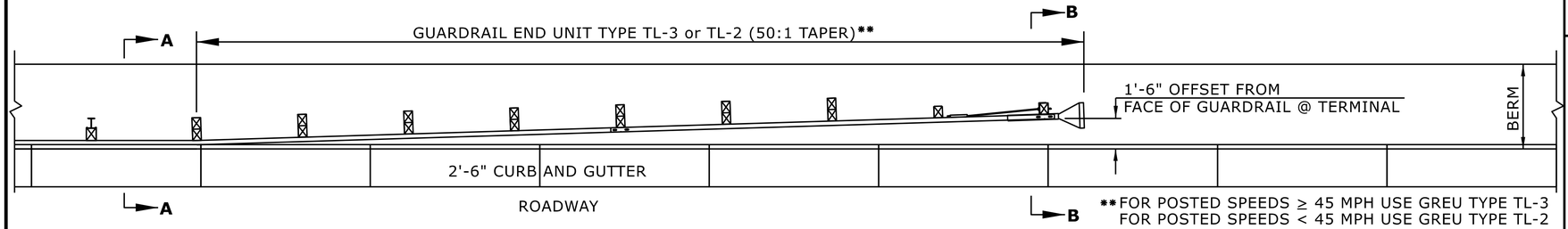
SEE THE ROADWAY DESIGN MANUAL (PART I CHAPTER 4 SECTION 4.14) FOR OFFSET DISTANCES FROM FACE OF GUARDRAIL AND BACK OF GUARDRAIL TO SIDEWALK OR SIDEPATH/SHARED-USE PATH



SECTION A-A



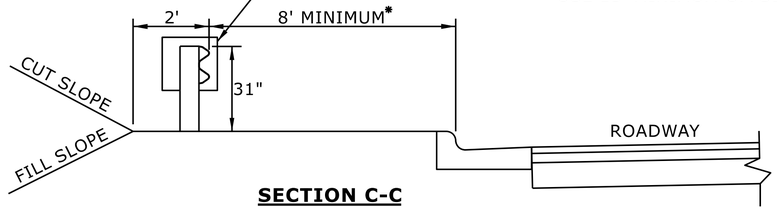
SECTION B-B



GUARDRAIL 6" FROM THE FACE OF CURB

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

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



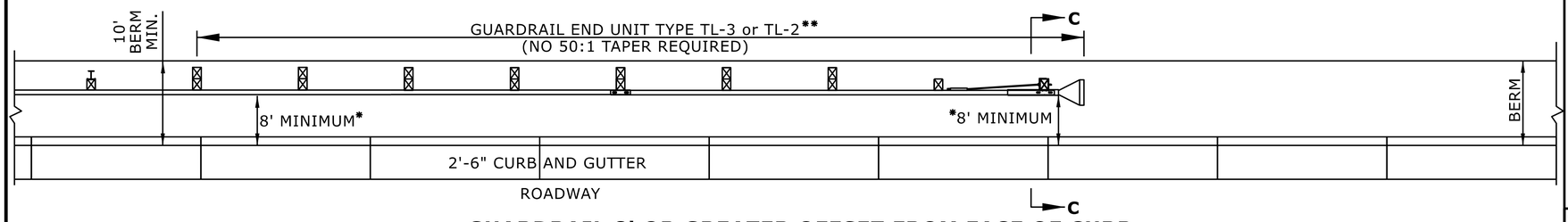
SECTION C-C

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

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

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

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



GUARDRAIL 8' OR GREATER OFFSET FROM FACE OF CURB

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

ROADWAY DETAIL DRAWING FOR

GUARDRAIL PLACEMENT

GUARDRAIL TREATMENT AT CURB AND GUTTER

SHEET 12 OF 15

862D01

5/5/2026
NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER
Signed: Nicole M. Hackler
5884323D34164C5...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SEE TITLE BLOCK

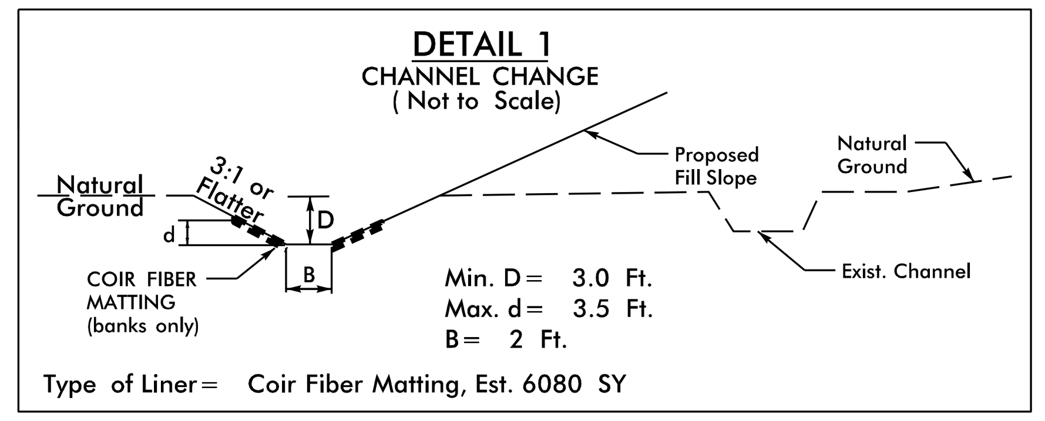
ORIGINAL BY: S.CALHOUN DATE: 7-25-2024
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

GFT
GFT Infrastructure, Inc.
101 Autumn Hall Drive, Suite 210
Wilmington, NC 28403
910-523-5715
NC Lic. No. F-0270

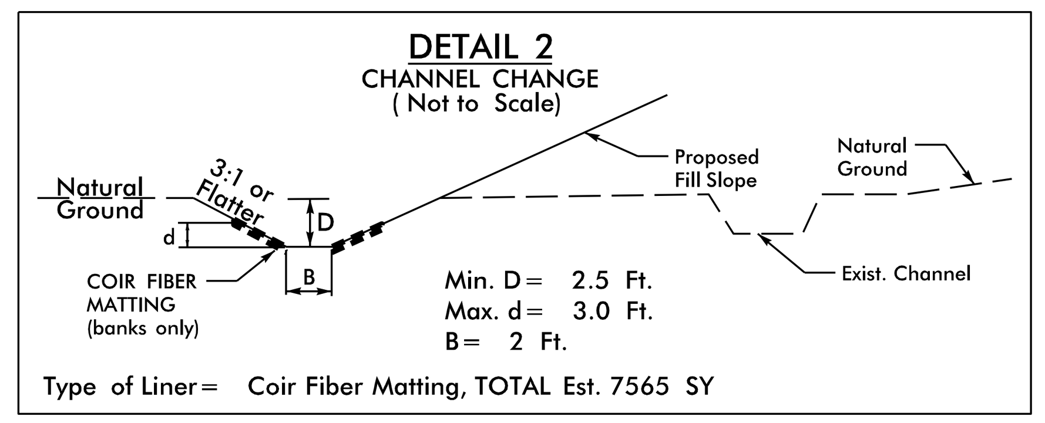
PROJECT REFERENCE NO.	SHEET NO.
R-5858	2D-1
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 52550 ENGINEER WILLIAM A. POPE	NORTH CAROLINA PROFESSIONAL SEAL 045744 ENGINEER JANAKI H. PATEL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

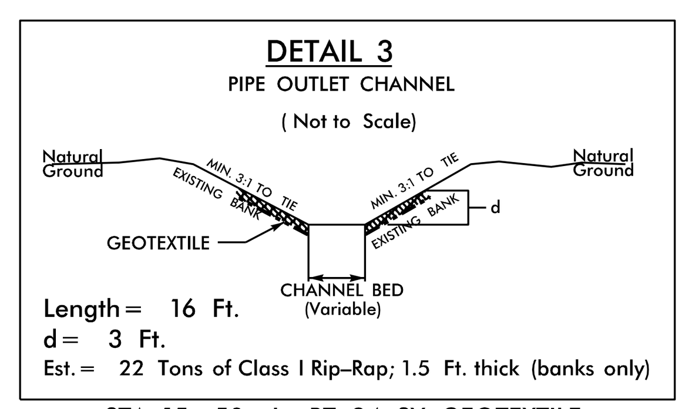
DRAINAGE DITCH DETAILS



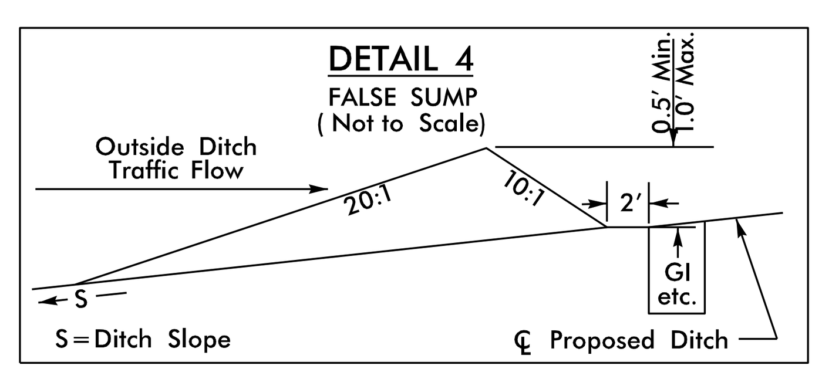
FROM STA. 15+50 TO STA. 35+98 -L- LT, 9300 CY DDE



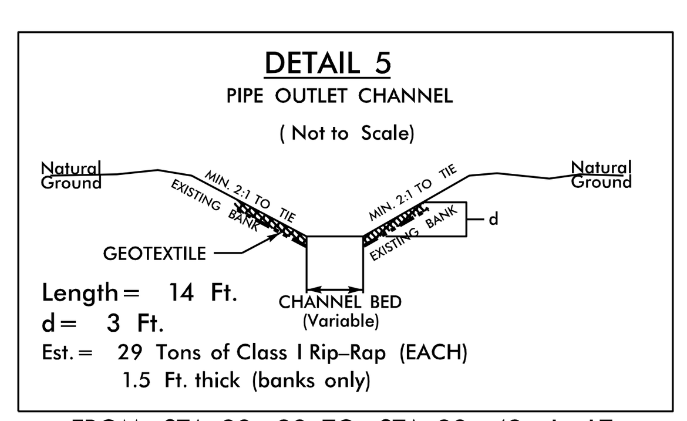
FROM STA. 30+00 TO STA. 42+35 -L- RT, 1600 CY DDE
FROM STA. 41+00 TO STA. 42+36 -L- LT, 175 CY DDE
FROM STA. 50+46 TO STA. 56+37 -L- RT, 490 CY DDE
FROM STA. 10+87 TO STA. 11+06 -Y2- RT, 50 CY DDE
FROM STA. 10+00 TO STA. 15+00 -RPB- LT, 225 CY DDE
FROM STA. 10+00 TO STA. 14+00 -RPD- LT, 25 CY DDE



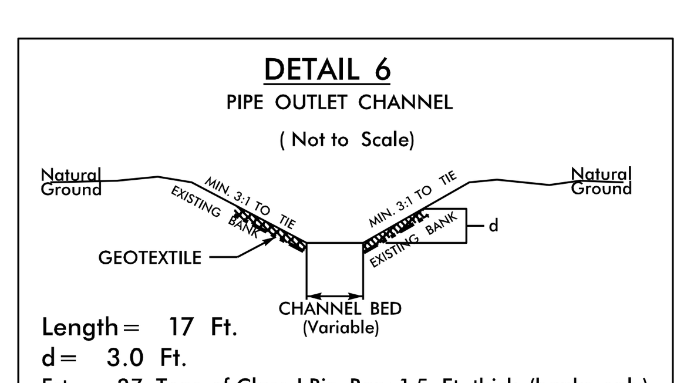
STA. 15+50 -L- RT, 34 SY GEOTEXTILE



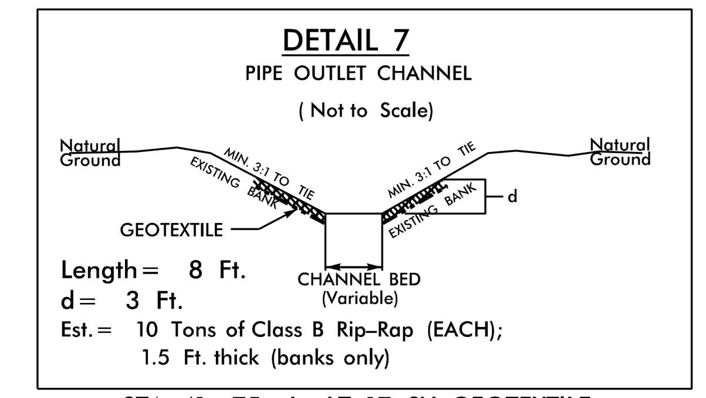
FROM STA. 19+09 TO STA. 19+46 -L- RT



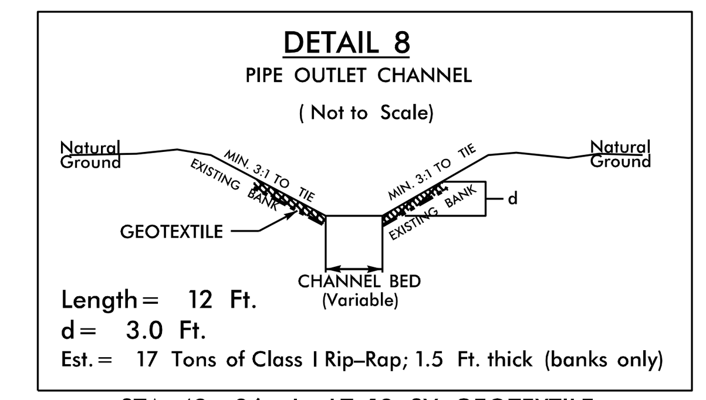
FROM STA. 28+28 TO STA. 28+42 -L- LT
21 SY GEOTEXTILE,
FROM STA. 29+76 TO STA 29+90 -L- LT
21 SY GEOTEXTILE,



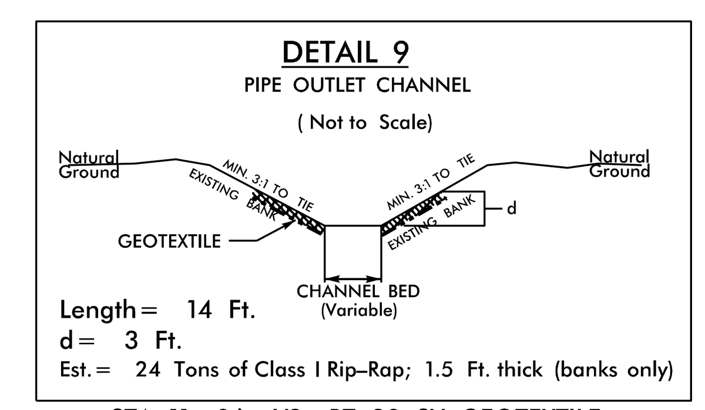
STA. 15+00 -RPB- LT, 36 SY GEOTEXTILE



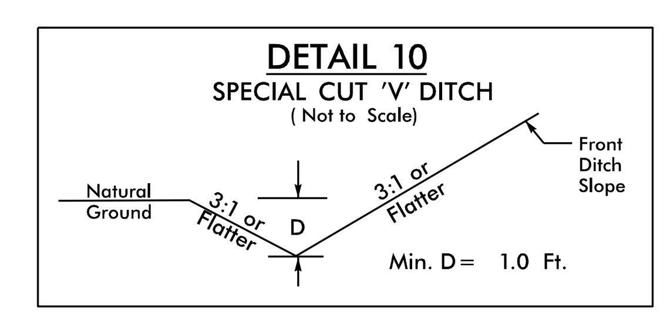
STA. 41+75 -L- LT, 17 SY GEOTEXTILE,



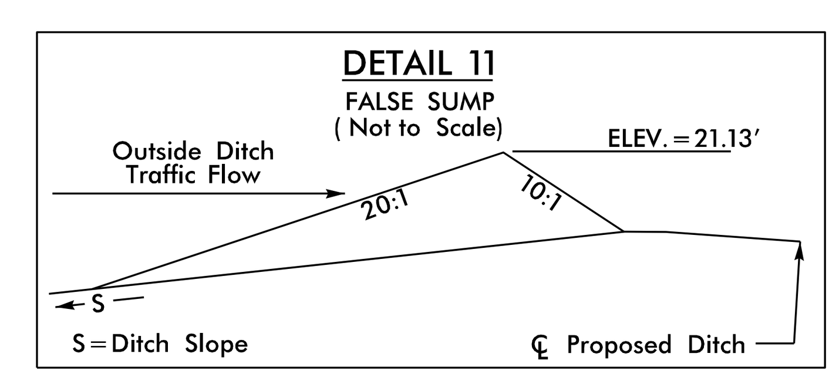
STA. 42+36 -L- LT, 13 SY GEOTEXTILE,



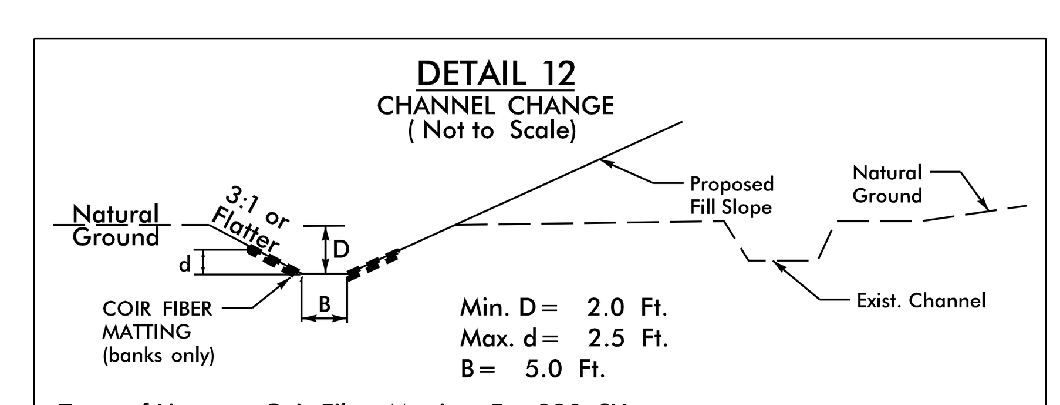
STA. 11+06 -Y2- RT, 30 SY GEOTEXTILE,



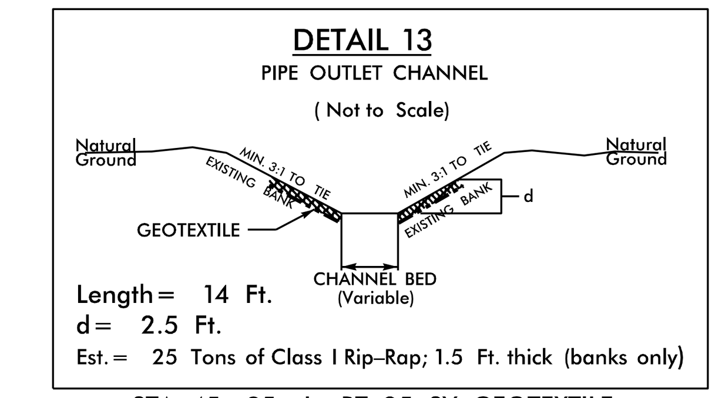
FROM STA. 14+00 TO STA. 15+00 -RPD- LT
FROM STA. 15+50 TO STA. 17+00 -RPD- LT



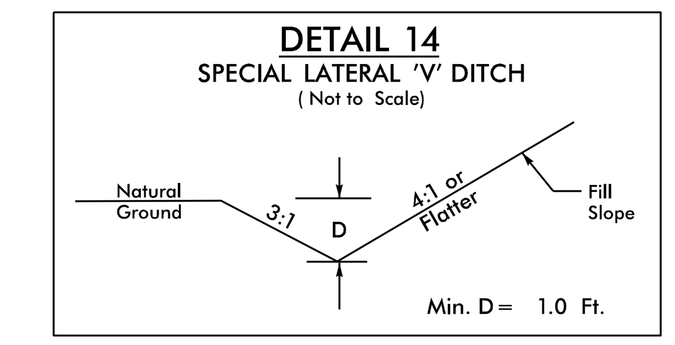
FROM STA. 15+00 TO STA. 15+25 -RPD- LT



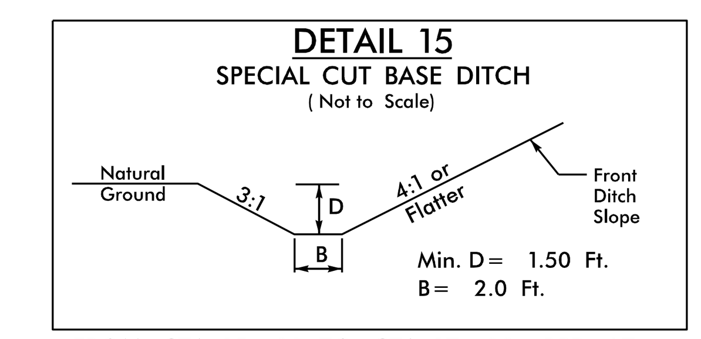
FROM STA. 44+90 TO STA. 45+85 -L- RT, 30 CY DDE



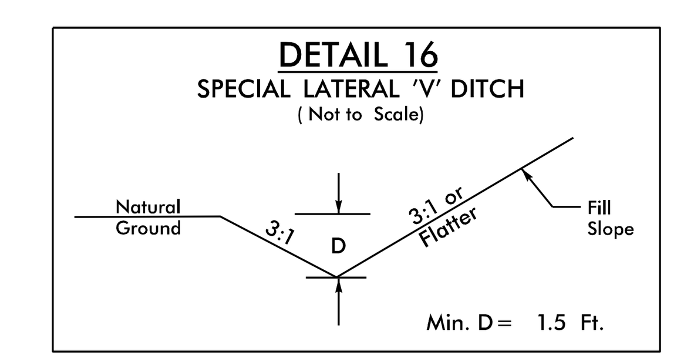
STA. 45+85 -L- RT, 25 SY GEOTEXTILE,



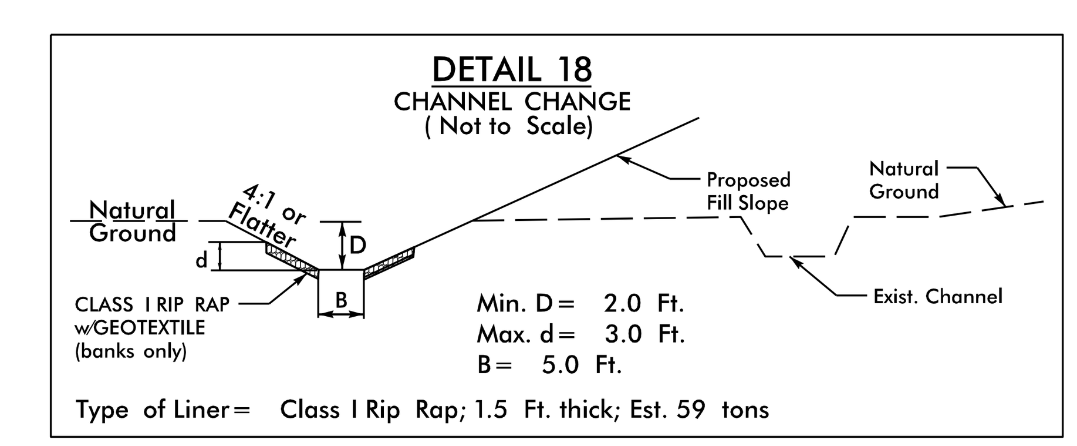
FROM STA. 13+00 TO STA. 15+00 -RPB- RT



FROM STA. 15+00 TO STA. 17+00 -RPB- LT
FROM STA. 11+06 TO STA. 12+15 -Y2- RT



FROM STA. 9+50 TO STA. 10+15 -Y1- RT



FROM STA. 44+60 TO STA. 44+90 -L- RT, 83 SY GEOTEXTILE, 10 CY DDE

SEE SHEETS 4 THRU 8 FOR PLAN VIEW

8/17/99

COMPUTED BY: DWG DATE: 1/1/2024
CHECKED BY: WAP DATE: 4/15/2026

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GFT Infrastructure, Inc.
101 Autumn Hall Drive, Suite 210
Wilmington, NC 28403
910-523-5715
NC Lic. No. F-0270

PROJECT REFERENCE NO.	SHEET NO.
R-5858	3B-1

SUMMARY OF EARTHWORK

IN CUBIC YARDS

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
PHASE I					
SUMMARY NO. 1 (LT.)					
–L– STA. 10+00.00	–L– STA. 43+00.00	709	2,889	2,180	
–RPB– STA. 13+04.73	–RPB– STA. 17+37.74	2,065	321		1,744
–Y1– STA. 8+25.00	–Y1– STA. 15+96.30	302	389	87	
TOTAL SUMMARY NO. 1		3,076	3,599	2,267	1,744
SUMMARY NO. 2 (LT.)					
–L– STA. 43+00.00	–L– STA. 56+45.00	109	52		57
TOTAL SUMMARY NO. 2		109	52		57
PHASE II					
SUMMARY NO. 3 (RT.)					
–L– STA. 10+00.00	–L– STA. 43+00.00	567	2,146	1,579	
TOTAL SUMMARY NO. 3		567	2,146	1,579	
SUMMARY NO. 4 (RT.)					
–L– STA. 43+00.00	–L– STA. 56+45.00	315	983	668	
–RPD– STA. 13+43.56	–RPD– STA. 17+25.21	400	455	55	
–Y2– STA. 10+49.47	–Y2– STA. 13+20.00	370	133		237
TOTAL SUMMARY NO. 4		1,085	1,571	723	237
SUMMARY TOTALS		4,837	7,368	4,569	2,038
WASTE IN LIEU OF BORROW				–1,538	–1,538
MATERIAL FOR SHOULDER CONSTRUCTION			2,210	2,210	
LOSS DUE TO CLEARING & GRUBBING		–500			–500
PROJECT TOTALS		4,337	9,578	5,241	
EST. 5% TO REPLACE TOPSOIL ON BORROW PIT				262	
GRAND TOTALS		4,337	9,578	5,503	
SAY		4,400		5,600	

SELECT GRANULAR MATERIAL = 1,100 CY
GEOTEXTILE FOR SOIL STABILIZATION = 1,100 SY
CLASS IV SUBGRADE STABILIZATION = 950 TONS
UNDERCUT = 1,100 CY
SHALLOW UNDERCUT = 500 CY
GEOTEXTILE FOR SUBGRADE STABILIZATION = 1,500 SY
DDE = 11,905 CY

Earthwork quantities are calculated by GFT.
These earthwork quantities are based in part on subsurface data provided by Wood Engineering.

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

ASPHALT PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	SQUARE YARDS
–Y1–	14+12.15	15+74.61	RT	386.42
–Y2–	10+75.69	12+25.98	LT	394.98
–L–	48+52.49	50+97.03	CL	327.11
			TOTALS	1108.51
			SAY	1,200

36" WOODEN PICKET FENCE

STATION TO STATION	LOC. LT/RT	LENGTH LF
–Y1– STA. 9+85.75 TO 11+96.41	RT	210.66
TOTALS		210.66
SAY		215

4/15/2026
R-5858_Rdy_sum_3B-1.dgn
USER:wapp

COMPUTED BY: DWG DATE: 7/31/2019
CHECKED BY: WAP DATE: 12/29/2025

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GFT
GFT Infrastructure, Inc.
101 Autumn Hall Drive, Suite 210
Wilmington, NC 28403
910-523-5715
NC Lic. No. F-0270

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

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS		IMPACT ATTENUATOR TYPE 350			REMOVE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GREU TL-3	CAT-1	EA	G	NG		
-L-	11+75.50	12+25.50	LT												1					50	REMOVE EXISTING END UNIT AND REPLACE WITH GREU TL-3
-L-	11+75.50	12+25.50	RT												1					50	REMOVE EXISTING END UNIT AND REPLACE WITH GREU TL-3
-L-	38+30.00	40+29.59	RT	199.59			40+16.21	40+21.87	8'	10.42'	50'		1'		1	1					
-L-	46+10.38	48+09.42	LT	199.04			46+16.30	46+21.90	8'	10.94'	50'		1'		1	1					
-Y1-	11+50.01	13+49.63	RT	199.62			13+42.03	13+47.32	2'		50'		1'		1	1					
-Y2-	12+85.40	14+85.00	LT	199.60			12+98.00	12+92.71	2.4'		50'		1'		1	1					
			SUBTOTALS	797.85'											6	4				100	
DEDUCTIONS FOR ANCHORS			4 GREU TL-3 @ 50' =	-200'																	
			4 CAT-1 @ 6.25' =	-25'																	
			PROJECT TOTALS	572.85'											6	4				100	
			SAY	600'																	
ADDITIONAL GUARDRAIL POSTS = 5 EA.																					

8/17/99
2/23/2026
...\Proj\R-5858_Rdy_sum_3B-2.dgn
...\SERWagne

COMPUTED BY: Tyler D Overby DATE: 31 October 2019
CHECKED BY: Harrison Villareal DATE: 26 March 2026

PROJECT REFERENCE NO.	SHEET NO.
R-5858	3D-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
SUB–REGIONAL & REGIONAL
LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48” & UNDER)

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

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
30+00 -L-	RT	0508			14.9														
		0508	0506		14.9	13.9							252				X		
27+50 -L-	RT	0507		17.8	14.5														
		0507	0506		14.5	13.9			20								X		
27+50 -L-	RT	0506		21.5	13.9														
		0506	0504		13.9	12.9							348				X		
24+00 -L-	RT	0505		16.4	13.7														
		0505	0504		13.7	12.9			20								X		
24+00 -L-	RT	0504		20.9	12.9														
		0504	0402		12.9	11.4							448				X		
19+50 -L-	RT	0403		15.2	12.5														
		0403	0402		12.5	11.4			16								X		
19+50 -L-	RT	0402		18.6	11.4														
		0402	0406		11.4	10.9							200				X		
17+50 -L-	RT	0405		14.0	11.3														
		0405	0406		11.3	10.9			12								X		
17+50 -L-	RT	0406		16.3	10.9														
		0406	0401		10.9	10.5							200				X		
10+75 -Y2-	RT	0602		22.6	19.6														
		0602	0601		19.6	18.0			32								X		
17+00 -RPD-	LT	0603		20.4	18.7														
		0603	0604		18.7	18.6				24							X		
17+00 -RPD-	LT	0604		21.5	18.6														
		0604	0605		18.6	18.5											X		
11+75 -Y2-	LT	0618		22.1	18.8														
		0618	0605		18.8	18.5											X		
12+15 -Y2-	LT	0605		21.9	18.5														
		0605	0609		18.5	18.3											X		
13+10 -Y2-	RT	0616		22.0	19.0														
		0616	0610		19.0	18.8											X		
12+63 -Y2-	RT	0610		21.8	18.8														
		0610	0609		18.8	18.6											X		
11+35 -Y2-	RT	0606		22.4	19.4														
		0606	0609		19.4	18.6											X		
12+15 -Y2-	LT	0609		22.0	18.3														
		0609	0611		18.3	18.2					28						X		
41+75 -L-	LT	0613		22.7	19.7														
		0613	0614		19.7	17.9			32								X		
SHEET TOTALS									132	24	28		1448						

FROM	TO	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	36" .079	42" .109	48" .109		30" WELDED STEEL PIPE 0.25" THICK, IN SOIL	30" WELDED STEEL PIPE 0.25" THICK, NOT IN SOIL	36" WELDED STEEL PIPE 0.375" THICK, IN SOIL	36" WELDED STEEL PIPE 0.375" THICK, NOT IN SOIL	42" WELDED STEEL PIPE 0.375" THICK, IN SOIL	42" WELDED STEEL PIPE 0.375" THICK, NOT IN SOIL	R.C. PIPE (CLASS V) 12"	15"	18"	24"	30"	36"	42"	48"	**" R. C. PIPE (CLASS V)	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE
0508																																	
0508	0506																												3.6				
0507																															1		
0507	0506																																
0506																															1	2.6	
0506	0504																																
0505																															1		
0505	0504																																
0504																															1	2.9	
0504	0402																																
0403																															1		
0403	0402																																
0402																															1	2.2	
0402	0406																																
0405																															1		
0405	0406																																
0406																															1	0.40	
0406	0401																																
0602																															1		
0602	0601																																
0603																																	
0603	0604																																
0604																															1		
0604	0605																		64														
0618																															1		
0618	0605																	40															
0605																															1		
0605	0609																		84														
0616																															1		
0616	0610																	44															
0610																															1		
0610	0609																	48															
0606																															1		
0606	0609																	80															
0609																															1		
0609	0611																																
0613																															1		
0613	0614																																
SHEET TOTALS																	212	148											3.6		17	8.1	

FROM	TO	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G		CONCRETE TRANSITIONAL SECTION CATCH BASIN	DROP INLET	SPECIAL DETAIL TRANSITION SECTION FOR DROP INLET	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. (W.S.) FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.32	M.H. FRAME & COVER STD. 840.54	84840D02 MINIMUM DEPTH CONCRETE CATCH BASIN			PIPE REMOVAL LIN.FT.	REMARKS
0508																						OPEN END PIPE
0508	0506																					
0507												1			1							
0507	0506																					
0506																1	1					
0506	0504																					
0505												1			1							
0505	0504																					
0504																1	1					
0504	0402																					
0403												1			1							
0403	0402																					
0402																1	1					
0402	0406																					
0405												1			1							
0405	0406																					
0406																1	1					
0406	0401																					
0602		1		1																		REMOVE EXISTING 24" RCP
0602	0601																					
0603																						OPEN END PIPE
0603	0604																					
0604				1														1				
0604	0605																					MINIMUM DEPTH CATCH BASIN
0618		1			1																	
0618	0605																				51	REMOVE EXISTING 15" RCP (AT STA. 11+40 -Y2- LT)
0605		1			1																	
0605	0609																				96	REMOVE EXISTING 15" RCP
0616		1			1																	
0616	0610																					
0610		1	1																			
0610	0609																				179	REMOVE EXISTING 15" RCP
0606		1		1																		
0606	0609																				175	REMOVE EXISTING 15" RCP
0609		1		1																		
0609	0611																					
0613		1		1																		
0613	0614																					
SHEET TOTALS		9	1	5	3							4			4	4	4	1			501	

ABBREVIATIONS

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

COMPUTED BY: Tyler D Overby	DATE: 31 October 2019
CHECKED BY: Harrison Villareal	DATE: 26 March 2026

PROJECT REFERENCE NO.	SHEET NO.
R-5858	3D-2

4/04/06

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
SUB–REGIONAL & REGIONAL
LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

ABBREVIATIONS

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

STATION (SIZE / THICKNESS OR GAUGE)	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	36" .079	42" .109	48" .109		30" WELDED STEEL PIPE 0.25" THICK, IN SOIL	30" WELDED STEEL PIPE 0.25" THICK, NOT IN SOIL	36" WELDED STEEL PIPE 0.375" THICK, IN SOIL	36" WELDED STEEL PIPE 0.375" THICK, NOT IN SOIL	42" WELDED STEEL PIPE 0.375" THICK, IN SOIL	42" WELDED STEEL PIPE 0.375" THICK, NOT IN SOIL	R.C. PIPE (CLASS V) 12"	15"	18"	24"	30"	36"	42"	48"	**" R. C. PIPE (CLASS V)	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') PER EACH (0' THRU 5.0')	LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G		CONCRETE TRANSITIONAL SECTION CATCH BASIN	DROP INLET	SPECIAL DETAIL TRANSITION SECTION FOR DROP INLET	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. (W.S.) FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.32	M.H. FRAME & COVER STD. 840.54	84840D02 MINIMUM DEPTH CONCRETE CATCH BASIN			PIPE REMOVAL LIN.FT.	REMARKS
13+00 -Y1-	LT	0626		22.5	19.5																																												1			1			1																	
		0626	0628		19.5	18.9											X																		136																																				4	REMOVE EXISTING 15" RCP
14+90 -Y1-	LT	0621		22.4	19.4																																												1			1		1																		
		0621	0628		19.4	18.9											X																		48																																					
14+39 -Y1-	LT	0628		21.9	18.9																																												1			1	1																				
		0628	0629		18.9	18.5	X										X																		72																																					
14+90 -Y1-	RT	0631		22.5	19.5																																												1			1			1																	82	REMOVE EXISTING 15" RCP MINIMUM SLOPE REQUIRED = 0.30%
		0631	0629		19.5	18.8											X																		48																																					
14+39 -Y1-	RT	0629		22.3	18.5																																												1			1	1																				
		0629	0630		18.5	18.2											X																			80																																			144	REMOVE EXISTING 15" RCP
17+34 -RPB-	LT	0640		22.5	19.5																																												1			1		1																		
		0640	0641		19.5	19.3											X																		52																																					
13+00 -Y1-	RT	0641		22.3	19.3																																												1			1		1																		
		0641	0642		19.3	18.6			44								X																																																								
43+90 -L-	RT	0608		23.0	20.0																																												1			1			1																	
		0608	0615		20.0	19.1											X																		100																																					
44+90 -L-	RT	0615		23.1	19.1																																												1			1			1																	
		0615	0650		19.1	18.4			36								X																																																							
10+15 -Y1-	RT	0801		19.4	16.7																																												1														1		1							
		0801	0802		16.7	16.6					24						X																																																						
10+20 -Y1-	RT	0802		22.1	16.6																																												1	0.5		1		1																		12	REMOVE 12 LF OF EXISTING 12" RCP
SHEET TOTALS									80		24																								456	80													11	0.5		10	2	4	4								1		1						242	

4/04/26

COMPUTED BY: Tyler D Overby DATE: 31 October 2019
CHECKED BY: Harrison Villareal DATE: 26 March 2026

PROJECT REFERENCE NO.	SHEET NO.
R-5858	3D-3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

SUB–REGIONAL & REGIONAL

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

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM.	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
								THICKNESS OR GAUGE											
28+75 –L–	LT	0501			13.1														
					13.1	13.0								44					
30+25 –L–	LT	0502			13.5														
					13.5	13.4								60					
11+06 –Y2–	CL	0607			17.4														
					17.4	17.0													
15+58 –Y1–	CL	0622			18.4														
					18.4	17.2													
15+00 –RPB–	CL	0625			16.5														
					16.5	16.2													
14+29 –RPD–	CL	0652			17.3														
					17.3	17.1													
SHEET TOTALS														104					
PROJECT TOTAL									212	24	52			1448	104				

C.S. PIPE .064	.064	.064	.064	.079	.109	.109	30" WELDED STEEL PIPE 0.25" THICK, IN SOIL	30" WELDED STEEL PIPE 0.25" THICK, NOT IN SOIL	36" WELDED STEEL PIPE 0.375" THICK, IN SOIL	36" WELDED STEEL PIPE 0.375" THICK, NOT IN SOIL	42" WELDED STEEL PIPE 0.375" THICK, IN SOIL	42" WELDED STEEL PIPE 0.375" THICK, NOT IN SOIL	R.C. PIPE (CLASS V) 12"	15"	18"	24"	30"	36"	42"	48"	*** R. C. PIPE (CLASS V)	*** R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	*** R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE
									88	88														
											216	216												
									88	88														
																			100					
																			200					
									88	88	216	216		668	228				300					
									88	88	216	216		668	228				300					

ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL."B") PER EACH (0' THRU 5.0')	LIN. FT. 5.0' THRU 10.0' A	10.0' AND ABOVE B	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION CATCH BASIN	DROP INLET	SPECIAL DETAIL TRANSITION SECTION FOR DROP INLET	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. (W.S.) FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.32	M.H. FRAME & COVER STD. 840.54	848400D02 MINIMUM DEPTH CONCRETE CATCH BASIN			PIPE REMOVAL LIN.FT.	REMARKS
4.6																							42	OPEN ENDED DRIVE PIPE – BURIED 1' BURIED INVERTS SHOWN; REMOVE EXISTING 18" RCP
4.6																							61	OPEN ENDED DRIVE PIPE – BURIED 1' BURIED INVERTS SHOWN; REMOVE EXISTING 18" RCP
5.0																							217	DUAL OPEN ENDED CROSS PIPES – BURIED 1' BURIED INVERTS SHOWN; REMOVE EXISTING 24" RCP
3.6																							193	OPEN ENDED CROSS PIPE – BURIED 1' BURIED INVERTS SHOWN; REMOVE EXISTING 24" RCP
4.6																								OPEN ENDED CROSS PIPE – BURIED 1.0' BURIED INVERTS SHOWN
5.0																								DUAL OPEN ENDED CROSS PIPES – BURIED 1.5' BURIED INVERTS SHOWN
27.4		28	8.6		19	3	9	7						4	1		5	4	4	1			513	
31.0		28	8.6		19	3	9	7						4	1		5	4	4	1			1256	

ABBREVIATIONS

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

8/17/99

COMPUTED BY: K. Plummer DATE: 11/21/2019
CHECKED BY: Shane Johnson DATE: 11/21/2019
UPDATED BY: Jinyoung Park DATE: 11/26/2025

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GFT
GFT Infrastructure, Inc.
101 Autumn Hall Drive, Suite 210
Wilmington, NC 28403
910-523-5715
NC Lic. No. F-0270

PROJECT REFERENCE NO.	SHEET NO.
R-5858	3G-1

SUMMARY OF QUANTITIES

SUMMARY OF SUBSURFACE DRAINAGE

LINE	STATION	STATION	LOCATION LT/RT/CL	DRAIN TYPE* UD/BD/SD	LF
-L-	11+50	56+45	LT & RT	SD	8,990
-RPB-	10+00	17+75	LT	SD	775
-RPD-	10+00	17+50	LT	SD	750
-Y1-	10+00	16+00	LT & RT	SD	1,200
-Y2-	10+50	13+25	LT & RT	SD	550
CONTINGENCY					
				SUBTOTAL:	12,265
				TOTAL LF:	12,265

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

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	STATION	STATION	AGGREGATE TYPE* ASU(1/2)/ AST	AGGREGATE THICKNESS INCHES [8" for ASU(2)]	SHALLOW UNDERCUT CY	CLASS IV SUBGRADE STABILIZATION TONS	GEOTEXTILE FOR SUBGRADE STABILIZATION SY	STABILIZER AGGREGATE TONS	CLASS IV AGGREGATE STABILIZATION TONS
	CONTINGENCY		ASU(1)	12	500	950	1500		
			TOTAL CY/TONS/SY:		500	950**	1500**		

*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.

2/23/2026
...\Proj\R-5858_Rdy_sum_3G-1.dgn
...

PROJ. REFERENCE NO.	SHEET NO.
R-5858	3P-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4 .5, 6, & 8	BOGUE SOUND RV OWNER, LLC
2	8	GLOBIL, LLC
3	6, 7, & 8	CP DEVELOPMENT COMPANY, LLC
4	8	BRANCH BANKING AND TRUST COMPANY

PARCEL No.	SHEET No.	PROPERTY OWNER NAME

8/17/99

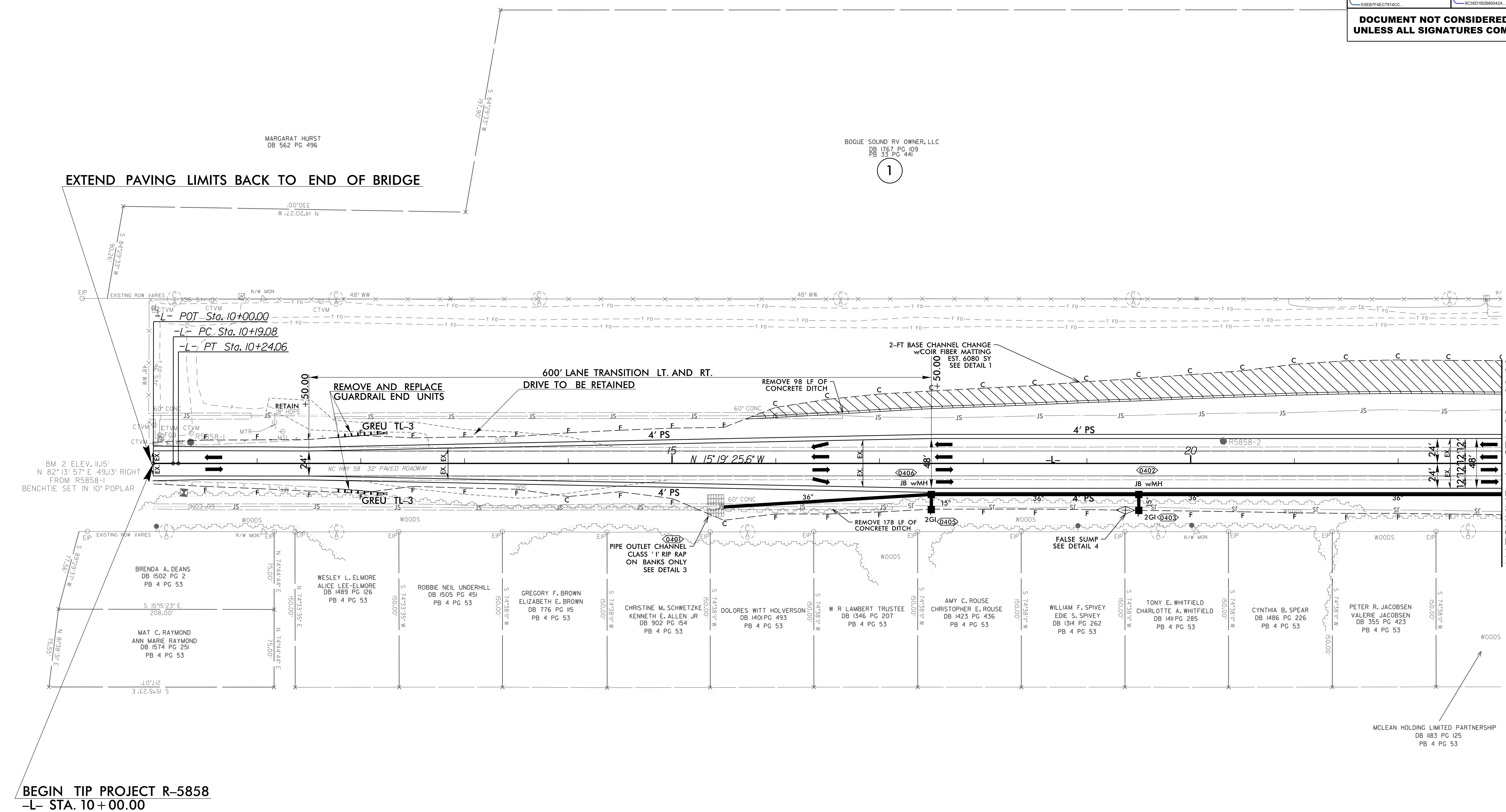
-L-
PI Sta 10+21.57
Δ = 0° 03' 25.3" (LT)
D = 1° 08' 45.3"
L = 4.98'
T = 2.49'
R = 5,000.00'
SE = EXIST.

GFT Infrastructure, Inc.
101 Autumn Hall Drive, Suite 210
Wilmington, NC 28403
910-523-5715
NC Lic. No. F-0270

PROJECT REFERENCE NO.	SHEET NO.
R-5858	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
5/4/2026 NORTH CAROLINA PROFESSIONAL SEAL 52550 ENGINEER WILLIAM A. POPE — William A. Pope	5/5/2026 NORTH CAROLINA PROFESSIONAL SEAL 045744 ENGINEER JANAKI H. PATEL — Janaki Patel

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NA 2011



MARGARAT HURST
DB 562 PG 496
BOGUE SOUND RV OWNER, LLC
DB 1767 PG 109
PB 33 PG 441
1
EXTEND PAVING LIMITS BACK TO END OF BRIDGE
330.00'
N 14°20'27" W
-L- POT Sta. 10+00.00
-L- PC Sta. 10+19.08
-L- PT Sta. 10+24.06
600' LANE TRANSITION LT. AND RT.
REMOVE AND REPLACE GUARDRAIL END UNITS
DRIVE TO BE RETAINED
GREU TL-3
RETAIN 18" HDPE
REMOVE 98 LF OF CONCRETE DITCH
2-FT BASE CHANNEL CHANGE w/COIR FIBER MATTING EST. 6080 SY SEE DETAIL 1
+50.00
4' PS
N 15° 19' 25.6" W
-L-
15
20
24'
48'
JB w/MH
0406
0402
R5858-1
R5858-2
BM 2 ELEV. 11.15'
N 82°13' 57" E 49.13' RIGHT
FROM R5858-1
BENCHTIE SET IN 10" POPLAR
NC HWY 58 32' PAVED ROADWAY
60" CONC
36"
15"
2GI 0405
2GI 0403
PIPE OUTLET CHANNEL 0401 CLASS 'I' RIP RAP ON BANKS ONLY SEE DETAIL 3
REMOVE 178 LF OF CONCRETE DITCH
FALSE SUMP SEE DETAIL 4
EXISTING ROW VARIES
WOODS
BRENDA A. DEANS
DB 1502 PG 2
PB 4 PG 53
MAT C. RAYMOND
ANN MARIE RAYMOND
DB 1574 PG 251
PB 4 PG 53
WESLEY L. ELMORE
ALICE LEE-ELMORE
DB 1489 PG 126
PB 4 PG 53
ROBBIE NEIL UNDERHILL
DB 1505 PG 451
PB 4 PG 53
GREGORY F. BROWN
ELIZABETH E. BROWN
DB 776 PG 115
PB 4 PG 53
CHRISTINE M. SCHWETZKE
KENNETH E. ALLEN JR
DB 902 PG 154
PB 4 PG 53
DOLORES WITT HOLVERSON
DB 1401 PG 493
PB 4 PG 53
W R LAMBERT TRUSTEE
DB 1346 PG 207
PB 4 PG 53
AMY C. ROUSE
CHRISTOPHER E. ROUSE
DB 1423 PG 436
PB 4 PG 53
WILLIAM F. SPIVEY
EDIE S. SPIVEY
DB 1314 PG 262
PB 4 PG 53
TONY E. WHITFIELD
CHARLOTTE A. WHITFIELD
DB 1411 PG 285
PB 4 PG 53
CYNTHIA B. SPEAR
DB 1486 PG 226
PB 4 PG 53
PETER R. JACOBSEN
VALERIE JACOBSEN
DB 355 PG 423
PB 4 PG 53
MCLEAN HOLDING LIMITED PARTNERSHIP
DB 1183 PG 125
PB 4 PG 53
S 15°15'23" E 208.00'
S 15°15'23" E 217.07'
MATCHLINE -L- STA. 23+00.00 SEE SHEET 5
BEGIN TIP PROJECT R-5858
-L- STA. 10+00.00

SEE SHEET 9 FOR -L- PROFILE
SEE SHEET 2D-1 FOR DRAINAGE DITCH DETAILS

4/1/2026 R-5858_Rdy_psh04.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-5858	5
R/W SHEET NO.	

GFT Infrastructure, Inc.
101 Autumn Hall Drive, Suite 210
Wilmington, NC 28403
910-523-5715
NC Lic. No. F-0270

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 52550 — WILLIAM H. POPE — 5/4/2026

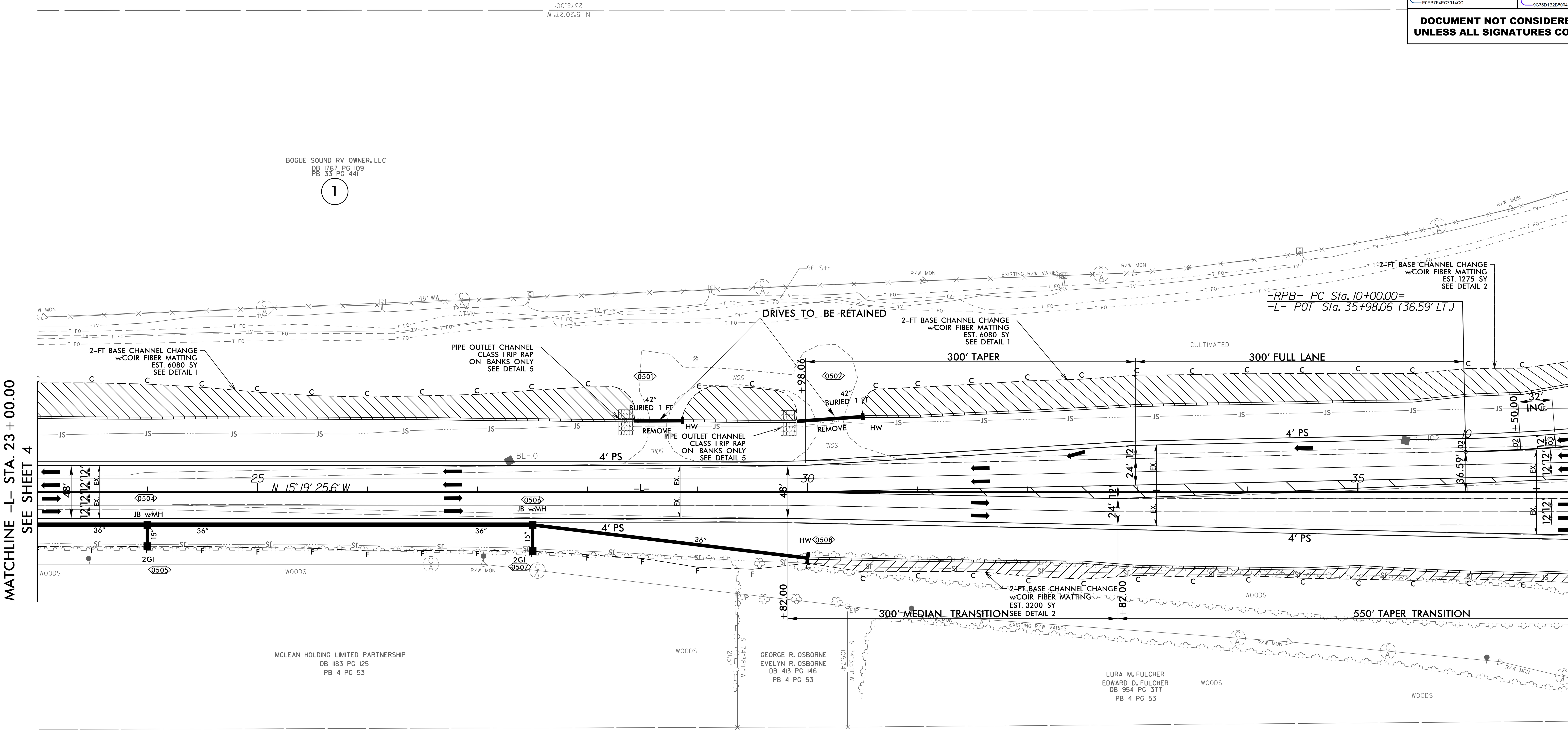
HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 045744 — JANAKI H. PATEL — 5/5/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-RPB-

PI Sta 11+81.15	PI Sta 16+65.26
△ = 13° 46′ 19.7″ (LT)	△ = 82° 30′ 02.8″ (LT)
D = 3° 49′ 11.0″	D = 38° 11′ 49.9″
L = 360.55′	L = 215.99′
T = 181.15′	T = 131.55′
R = 1,500.00′	R = 150.00′
SE = .03	SE = .02
R.O. = 96′	R.O. = 50′

NAD 83/NA 2011



BOGUE SOUND RV OWNER, LLC
DB 1767 PG 109
PB 33 PG 441
DRIVES TO BE RETAINED
2-FT BASE CHANNEL CHANGE wCOIR FIBER MATTING EST. 6080 SY SEE DETAIL 1
PIPE OUTLET CHANNEL CLASS I RIP RAP ON BANKS ONLY SEE DETAIL 5
2-FT BASE CHANNEL CHANGE wCOIR FIBER MATTING EST. 1275 SY SEE DETAIL 2
-RPB- PC Sta. 10+00.00=
-L- POT Sta. 35+98.06 (36.59′ LT)
300′ TAPER
300′ FULL LANE
CULTIVATED
N 15° 19′ 25.6″ W
JB wMH
4′ PS
2GI
WOODS
2-FT BASE CHANNEL CHANGE wCOIR FIBER MATTING EST. 3200 SY SEE DETAIL 2
300′ MEDIAN TRANSITION
550′ TAPER TRANSITION
MCLEAN HOLDING LIMITED PARTNERSHIP
DB 1183 PG 125
PB 4 PG 53
GEORGE R. OSBORNE
EVELYN R. OSBORNE
DB 413 PG 146
PB 4 PG 53
LURA M. FULCHER
EDWARD D. FULCHER
DB 954 PG 377
PB 4 PG 53
MATCHLINE -L- STA. 23+00.00 SEE SHEET 4
MATCHLINE -L- STA. 37+00.00 SEE SHEET 6

SEE SHEET 9 FOR -L- PROFILE
SEE SHEET 12 FOR -RPB- PROFILE
SEE SHEET 2D-1 FOR DRAINAGE DITCH DETAILS

4/1/2026 R-5858_Rdy_psh05.dgn

PROJECT REFERENCE NO. R-5858 | SHEET NO. 6

R/W SHEET NO.

GFT Infrastructure, Inc.
101 Autumn Hall Drive, Suite 210
Wilmington, NC 28403
910-523-5715
NC Lic. No. F-0270

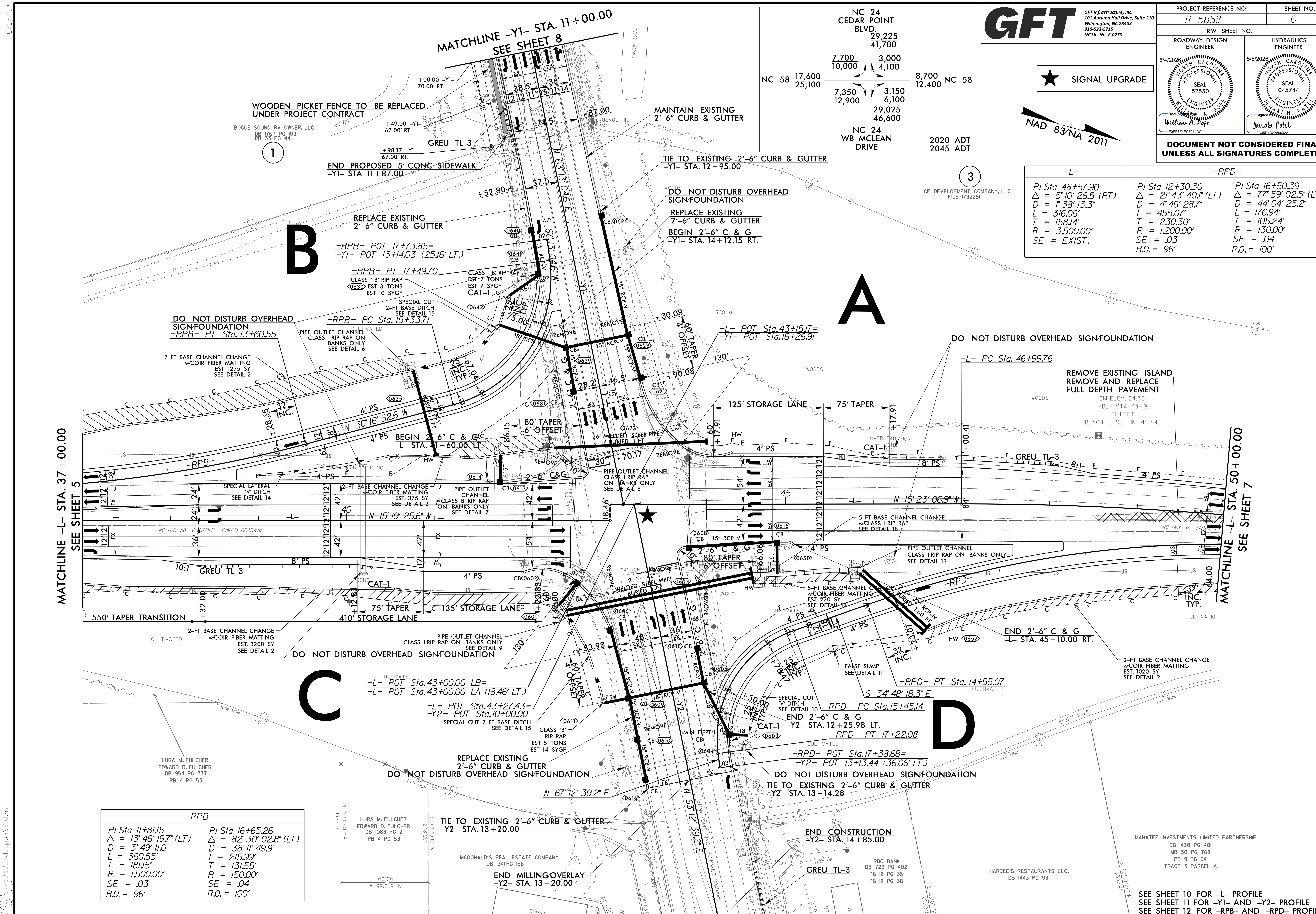
ROADWAY DESIGN ENGINEER — SEAL 52550 — William A. Pope — 5/4/2026

HYDRAULICS ENGINEER — SEAL 045744 — Janaki Patel — 5/5/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

★ SIGNAL UPGRADE

NAD 83/NA 2011



NC 24 CEDAR POINT BLVD.		
29,225 / 41,700		
7,700 / 10,000		3,000 / 4,100
NC 58: 17,600 / 25,100		8,700 / 12,400 NC 58
7,350 / 12,900		3,150 / 6,100
29,025 / 46,600		
NC 24 WB MCLEAN DRIVE		2020 ADT / 2045 ADT

-L-	-RPD-	
PI Sta 48+57.90	PI Sta 12+30.30	PI Sta 16+50.39
Δ = 5° 10' 26.5" (RT)	Δ = 21° 43' 40.1" (LT)	Δ = 77° 59' 02.5" (LT)
D = 1° 38' 13.3"	D = 4° 46' 28.7"	D = 44° 04' 25.2"
L = 316.06'	L = 455.07'	L = 176.94'
T = 158.14'	T = 230.30'	T = 105.24'
R = 3,500.00'	R = 1,200.00'	R = 130.00'
SE = EXIST.	SE = .03	SE = .04
	R.O. = 96'	R.O. = 100'

-RPB-	
PI Sta 11+81.15	PI Sta 16+65.26
Δ = 13° 46' 19.7" (LT)	Δ = 82° 30' 02.8" (LT)
D = 3° 49' 11.0"	D = 38° 11' 49.9"
L = 360.55'	L = 215.99'
T = 181.15'	T = 131.55'
R = 1,500.00'	R = 150.00'
SE = .03	SE = .04
R.O. = 96'	R.O. = 100'

NOTE: DO NOT DISTURB OVERHEAD SIGNS

SEE SHEET 10 FOR -L- PROFILE
SEE SHEET 11 FOR -Y1- AND -Y2- PROFILE
SEE SHEET 12 FOR -RPB- AND -RPD- PROFILE
SEE SHEET 2D-1 FOR DRAINAGE DITCH DETAILS

-L-
PI Sta 54+03.55
△ = 10° 21′ 44.0″ (RT)
D = 1° 59′ 43.7″
L = 519.29′
T = 260.35′
R = 2,871.30′
SE = EXIST.

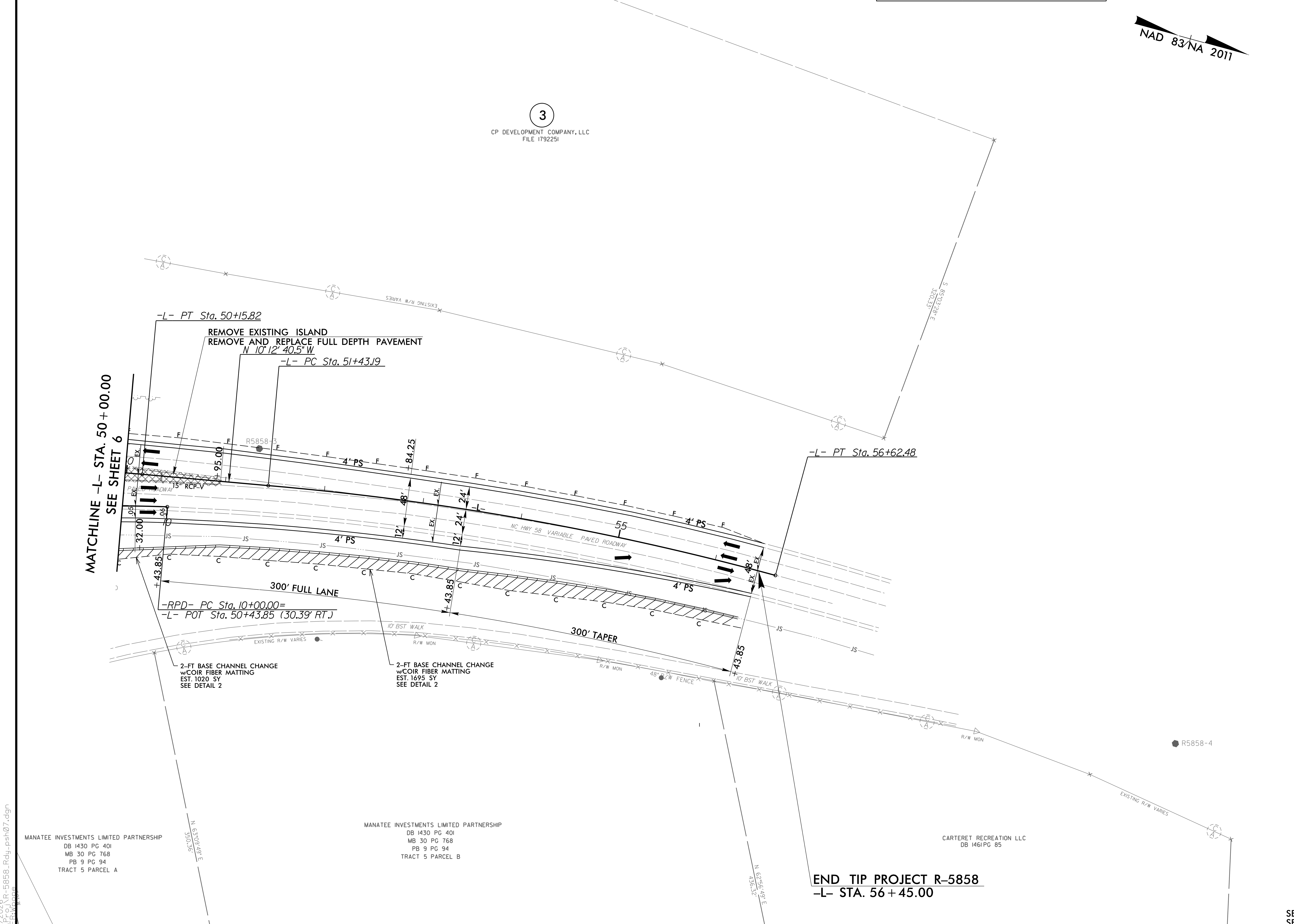
-RPD-	
PI Sta 12+30.30	PI Sta 16+50.39
△ = 21° 43′ 40.1″ (LT)	△ = 77° 59′ 02.5″ (LT)
D = 4° 46′ 28.7″	D = 44° 04′ 25.2″
L = 455.07′	L = 176.94′
T = 230.30′	T = 105.24′
R = 1,200.00′	R = 130.00′
SE = .03	SE = .04
R.O. = 96′	R.O. = 100′

GFT

GFT Infrastructure, Inc.
101 Autumn Hall Drive, Suite 210
Wilmington, NC 28403
910-523-5715
NC Lic. No. F-0270

PROJECT REFERENCE NO.	SHEET NO.
R-5858	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
5/4/2026 NORTH CAROLINA PROFESSIONAL SEAL 52550 ENGINEER WILLIAM A. POPE — DocuSigned by: William A. Pope E0EB7F4EC7914CC...	5/5/2026 NORTH CAROLINA PROFESSIONAL SEAL 045744 ENGINEER JANAKI H. PATEL — Signed by: Janaki Patel 9C35D1B2B80042A...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SEE SHEET 10 FOR -L- PROFILE
SEE SHEET 12 FOR -RPD- PROFILE
SEE SHEET 2D-1 FOR DRAINAGE DITCH DETAILS

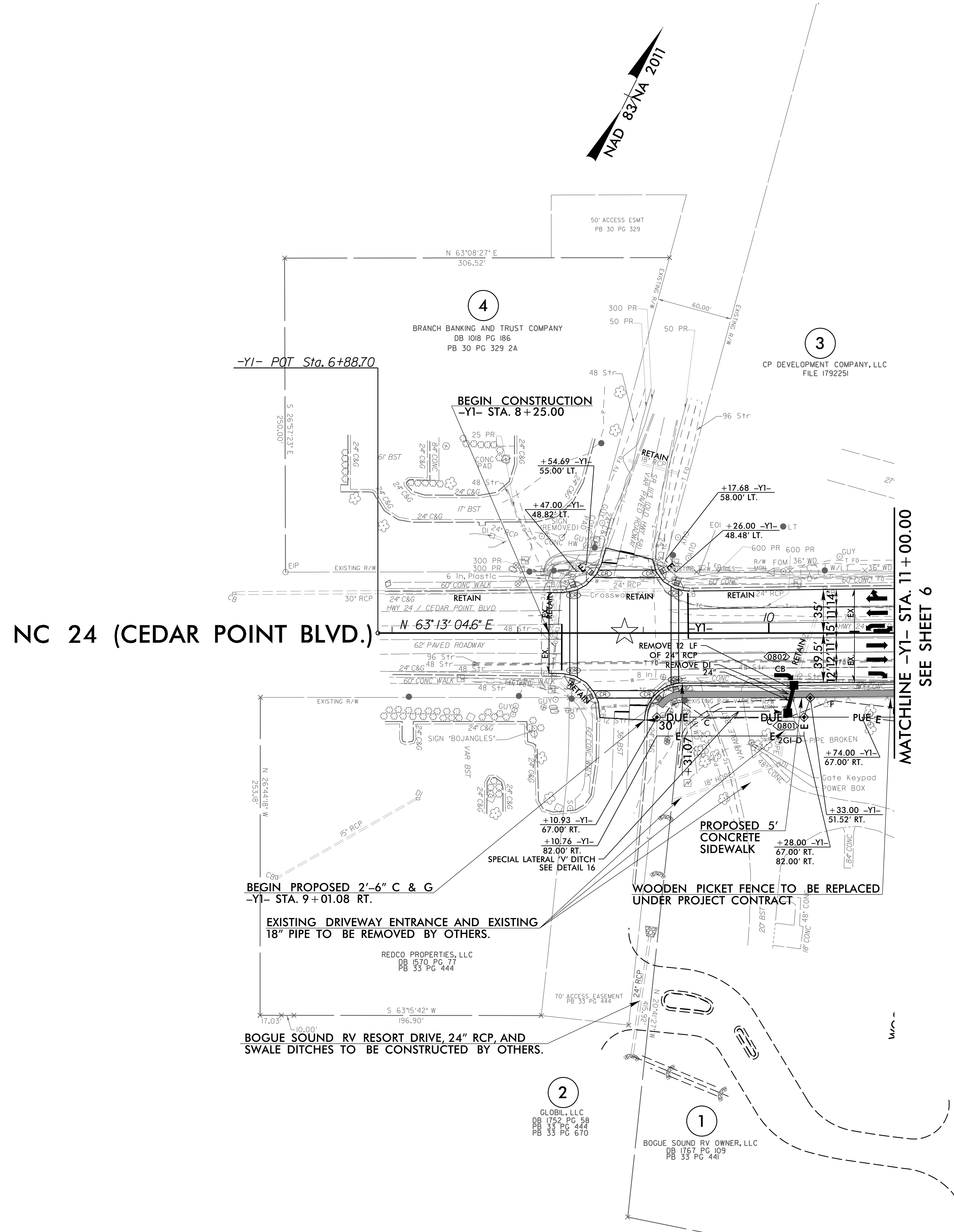
GFT Infrastructure, Inc.
101 Autumn Hall Drive, Suite 210
Wilmington, NC 28403
910-523-5715
NC Lic. No. F-0270

PROJECT REFERENCE NO.	SHEET NO.
R-5858	8
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
5/4/2026 NORTH CAROLINA PROFESSIONAL SEAL 52550 ENGINEER WILLIAM A. POPE — DocuSigned by: William A. Pope E0EB7F4EC7914CC...	5/5/2026 NORTH CAROLINA PROFESSIONAL SEAL 045744 ENGINEER JANAKI H. PATEL — Signed by: Janaki Patel 9C35D1B2B80042A...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

EXISTING SIGNAL



SEE SHEET 11 FOR -Y1- PROFILE
SEE SHEET 2D-1 FOR DRAINAGE DITCH DETAILS

8/17/99
5/4/2026
R-5858_Rdy_psh08.dgn

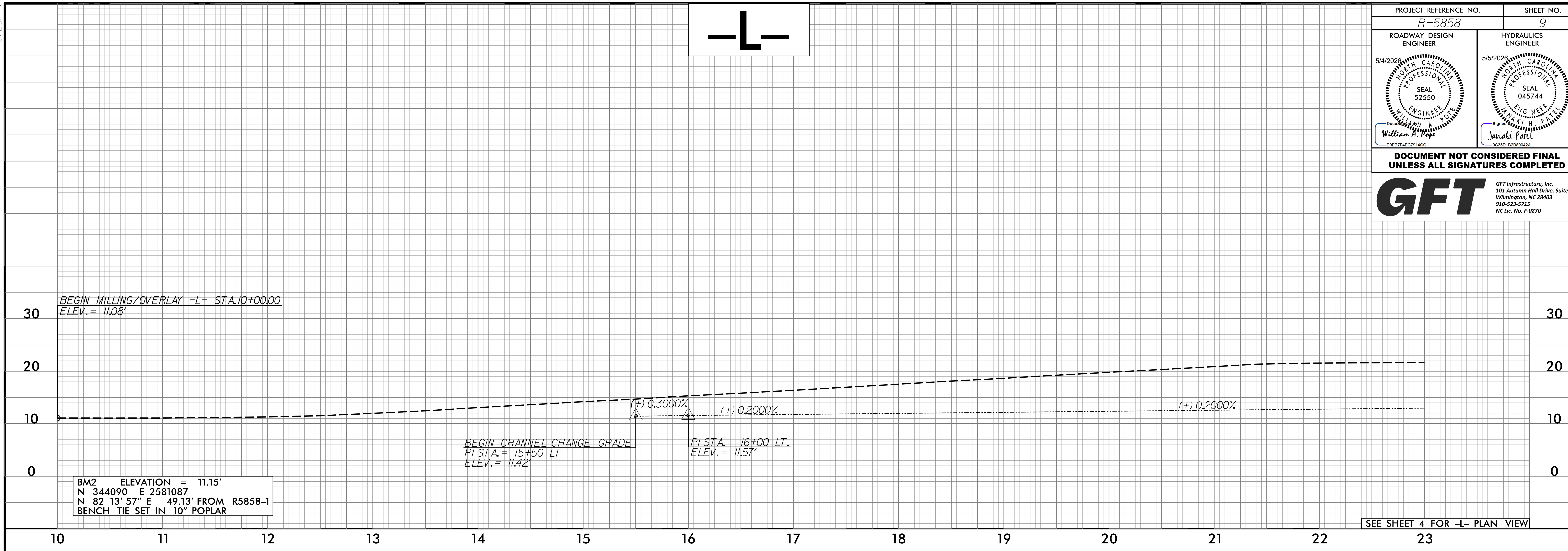
PROJECT REFERENCE NO.	SHEET NO.
R-5858	9

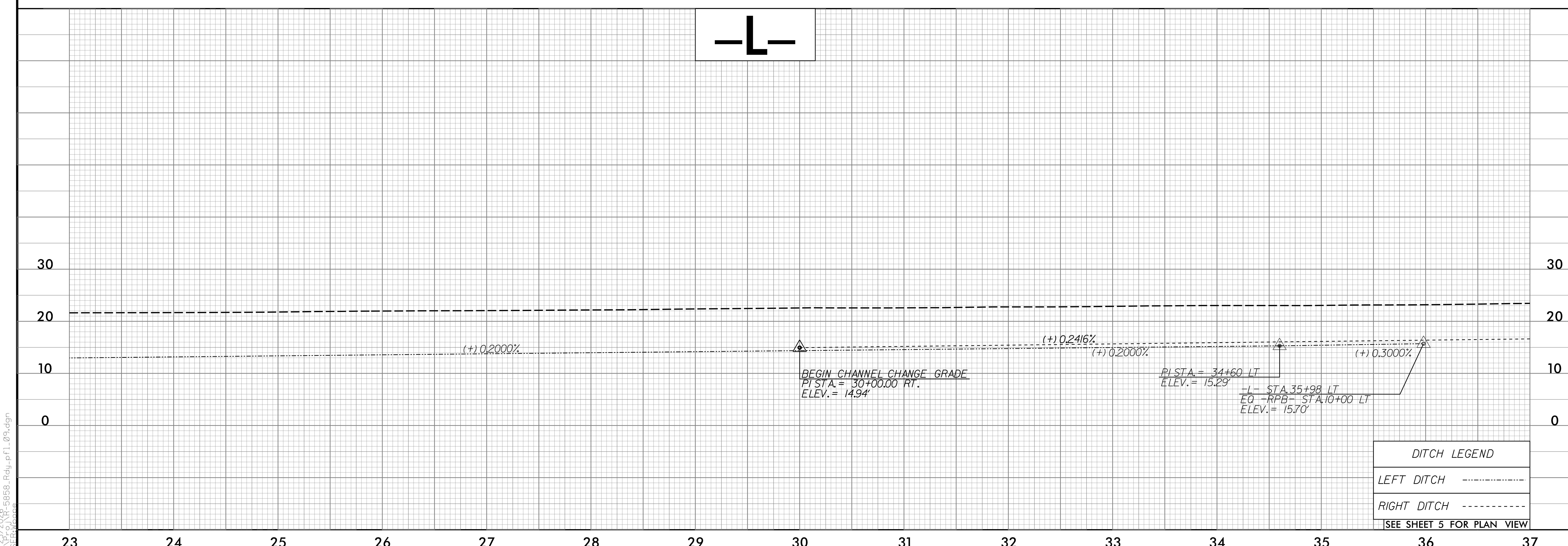
ROADWAY DESIGN ENGINEER — 5/4/2026 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 52550 WILLIAM A. POPE — DocuSigned by: William A. Pope E0EB7F4EC7914CC...

HYDRAULICS ENGINEER — 5/5/2026 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 045744 JANAKI H. PATEL — Signed by: Janaki Patel 9C35D1B2B80042A...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GFT Infrastructure, Inc.
101 Autumn Hall Drive, Suite 210
Wilmington, NC 28403
910-523-5715
NC Lic. No. F-0270





PROJECT REFERENCE NO.	SHEET NO.
R-5858	10

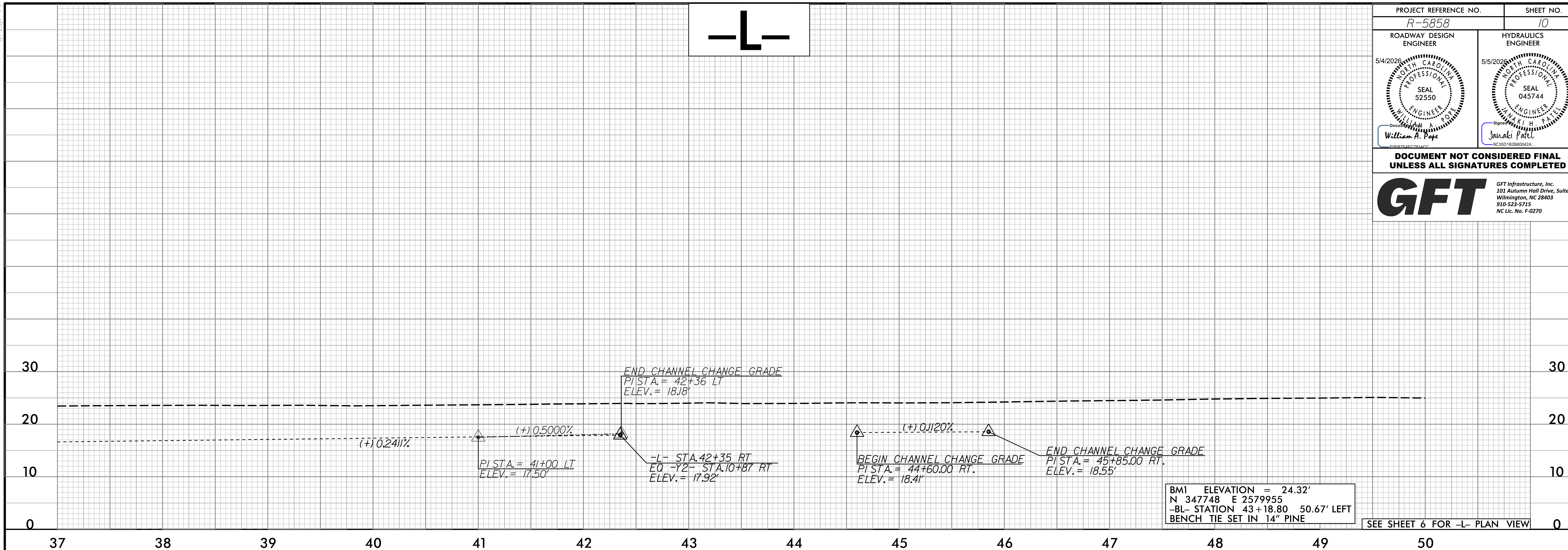
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
5/4/2026 NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 52550 WILLIAM A. POPE DocuSigned by: William A. Pope F0EB7F4FC7914CC...	5/5/2026 NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 045744 JANAKI H. PATEL Signed by: Janaki Patel 9C35D1B2B80042A...

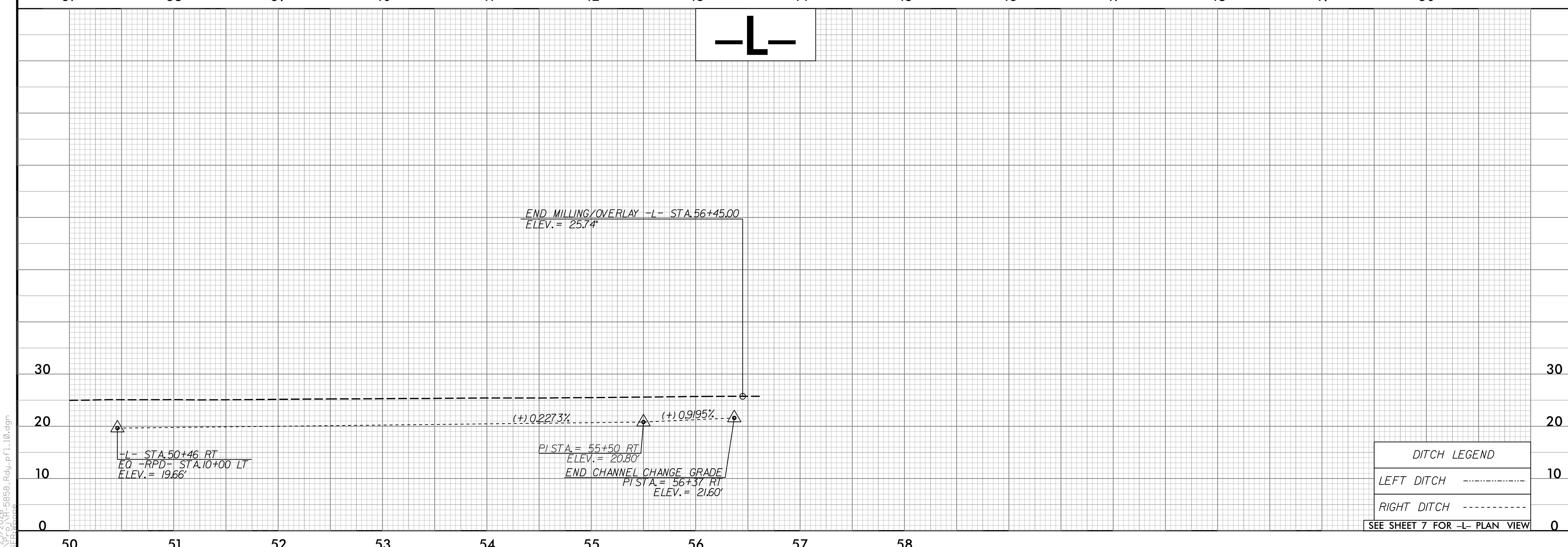
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GFT

GFT Infrastructure, Inc.
101 Autumn Hall Drive, Suite 210
Wilmington, NC 28403
910-523-5715
NC Lic. No. F-0270

5/28/99





2/23/2026
...\Proj\R-5858_Rdy-pfl_10.dgn
USER:Wpope

PROJECT REFERENCE NO.	SHEET NO.
R-5858	11

ROADWAY DESIGN ENGINEER — 5/4/2026 — SEAL 52550 — William A. Pope

HYDRAULICS ENGINEER — 5/5/2026 — SEAL 045744 — Janaki Patel

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GFT Infrastructure, Inc.
101 Autumn Hall Drive, Suite 210
Wilmington, NC 28403
910-523-5715
NC Lic. No. F-0270

-Y1-

PIPE HYDRAULIC DATA
Existing 24" RCP Sta.10+33

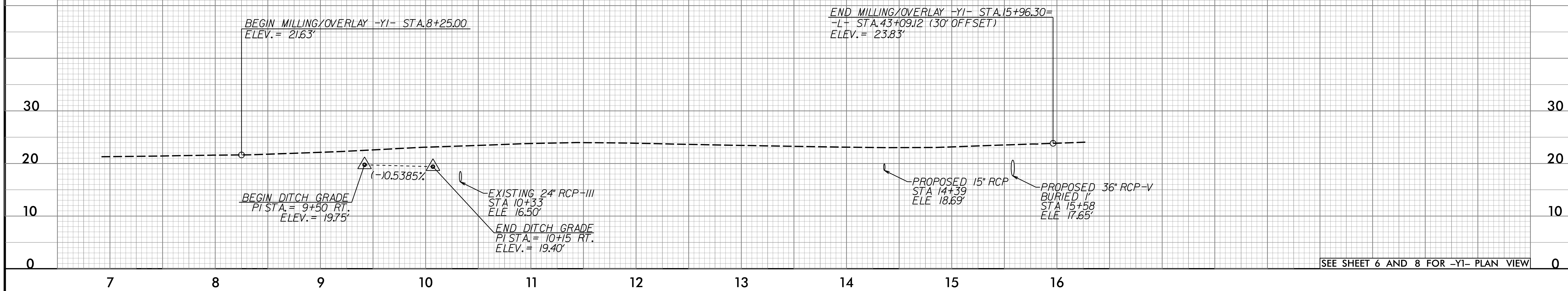
DRAINAGE AREA	= 2.5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 11	CFS
DESIGN HW ELEVATION	= 19.2	FT
100 YEAR DISCHARGE	= 12	CFS
100 YEAR HW ELEVATION	= 19.3	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 24	CFS
OVERTOPPING ELEVATION	= 22.5	FT

PIPE HYDRAULIC DATA
Proposed 15" RCP-V Sta.14+39

DRAINAGE AREA	= 0.65	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 5	CFS
DESIGN HW ELEVATION	= 20.7	FT
100 YEAR DISCHARGE	= 6	CFS
100 YEAR HW ELEVATION	= 21.2	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 8	CFS
OVERTOPPING ELEVATION	= 21.9	FT

PIPE HYDRAULIC DATA
Proposed 36" RCP-V Buried 1' Sta.15+69

DRAINAGE AREA	= 5.31	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 23	CFS
DESIGN HW ELEVATION	= 21.9	FT
100 YEAR DISCHARGE	= 25	CFS
100 YEAR HW ELEVATION	= 22.3	FT
OVERTOPPING FREQUENCY	= 500+/-	YRS
OVERTOPPING DISCHARGE	= 30	CFS
OVERTOPPING ELEVATION	= 23.3	FT



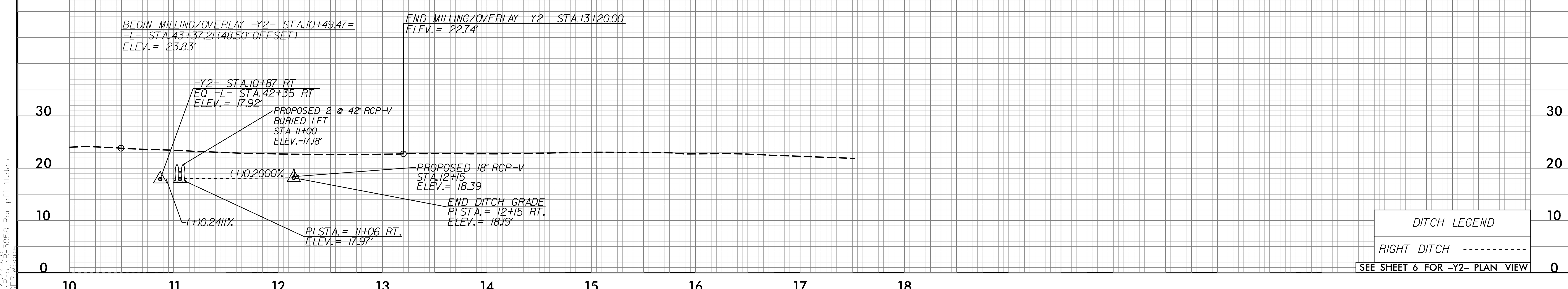
-Y2-

PIPE HYDRAULIC DATA
Proposed 2 @ 42" RCP-V Buried 1' Sta.11+06

DRAINAGE AREA	= 14.0	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 40	CFS
DESIGN HW ELEVATION	= 20.9	FT
100 YEAR DISCHARGE	= 44	CFS
100 YEAR HW ELEVATION	= 21.0	FT
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 52	CFS
OVERTOPPING ELEVATION	= 21.5	FT

PIPE HYDRAULIC DATA
Proposed 18" RCP-V Sta.12+15

DRAINAGE AREA	= 0.63	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 5	CFS
DESIGN HW ELEVATION	= 19.8	FT
100 YEAR DISCHARGE	= 5	CFS
100 YEAR HW ELEVATION	= 19.8	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 12	CFS
OVERTOPPING ELEVATION	= 21.9	FT



DITCH LEGEND

RIGHT DITCH - - - - - - - - - -

SEE SHEET 6 FOR -Y2- PLAN VIEW

5/28/99

2/23/2026
R-5858_Rdy_pfl_11.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-5858	12

ROADWAY DESIGN ENGINEER — 5/4/2026 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 52550 — William A. Pope

HYDRAULICS ENGINEER — 5/5/2026 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 045744 — Janaki Patel

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

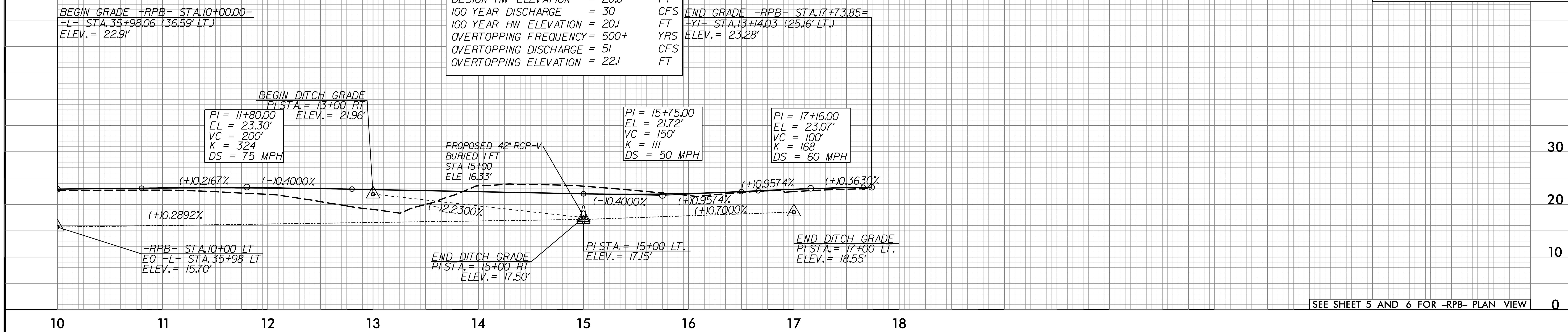
GFT
GFT Infrastructure, Inc.
101 Autumn Hall Drive, Suite 210
Wilmington, NC 28403
910-523-5715
NC Lic. No. F-0270

–RPB–

PIPE HYDRAULIC DATA

Proposed 42" RCP-V Buried 1' Sta.15+00

DRAINAGE AREA	= 6.3	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 28	CFS
DESIGN HW ELEVATION	= 20.0	FT
100 YEAR DISCHARGE	= 30	CFS
100 YEAR HW ELEVATION	= 20.1	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 51	CFS
OVERTOPPING ELEVATION	= 22.1	FT

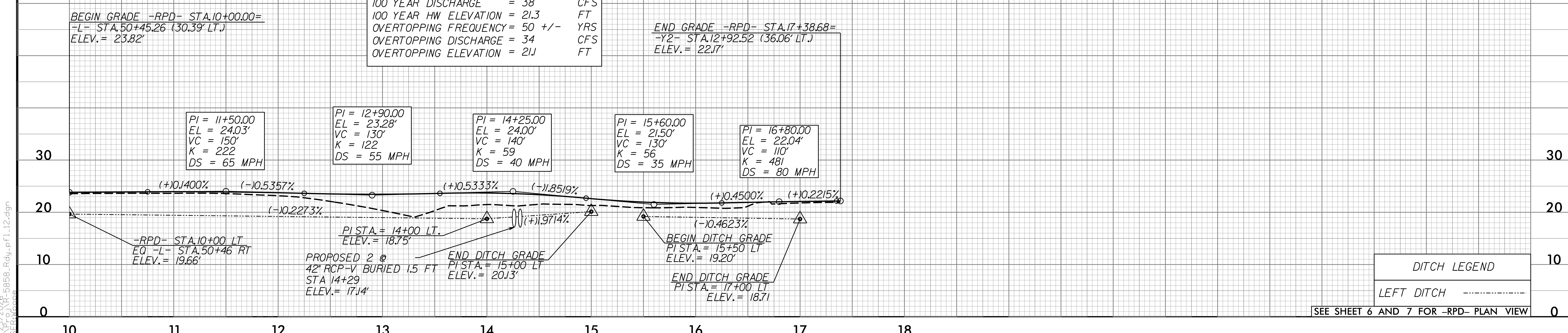

BEGIN GRADE -RPB- STA.10+00.00=
-L- STA.35+98.06 (36.59' LT.)
ELEV.= 22.91'
END GRADE -RPB- STA.17+73.85=
-Y1- STA.13+14.03 (25.16' LT.)
ELEV.= 23.28'
BEGIN DITCH GRADE
PI STA.= 13+00 RT
ELEV.= 21.96'
PI = 11+80.00
EL = 23.30'
VC = 200'
K = 324
DS = 75 MPH
PI = 15+75.00
EL = 21.72'
VC = 150'
K = 111
DS = 50 MPH
PI = 17+16.00
EL = 23.07'
VC = 100'
K = 168
DS = 60 MPH
PROPOSED 42" RCP-V
BURIED 1 FT
STA 15+00
ELE 16.33'
(+)0.2167%
(-)0.4000%
(+)0.9574%
(+)0.3630%
(+)0.2892%
(-)2.2300%
(-)0.4000%
(+)0.7000%
-RPB- STA.10+00 LT
EQ -L- STA.35+98 LT
ELEV.= 15.70'
END DITCH GRADE
PI STA.= 15+00 RT
ELEV.= 17.50'
PI STA.= 15+00 LT.
ELEV.= 17.15'
END DITCH GRADE
PI STA.= 17+00 LT.
ELEV.= 18.55'
SEE SHEET 5 AND 6 FOR -RPB- PLAN VIEW
30
20
10
0
10
11
12
13
14
15
16
17
18

–RPD–

PIPE HYDRAULIC DATA

Proposed 2 @ 42" RCP-V Buried 1.5' Sta.14+29

DRAINAGE AREA	= 12.7	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 31	CFS
DESIGN HW ELEVATION	= 21.0	FT
100 YEAR DISCHARGE	= 38	CFS
100 YEAR HW ELEVATION	= 21.3	FT
OVERTOPPING FREQUENCY	= 50 +/-	YRS
OVERTOPPING DISCHARGE	= 34	CFS
OVERTOPPING ELEVATION	= 21.1	FT


BEGIN GRADE -RPD- STA.10+00.00=
-L- STA.50+45.26 (30.39' LT.)
ELEV.= 23.82'
END GRADE -RPD- STA.17+38.68=
-Y2- STA.12+92.52 (36.06' LT.)
ELEV.= 22.17'
PI = 11+50.00
EL = 24.03'
VC = 150'
K = 222
DS = 65 MPH
PI = 12+90.00
EL = 23.28'
VC = 130'
K = 122
DS = 55 MPH
PI = 14+25.00
EL = 24.00'
VC = 140'
K = 59
DS = 40 MPH
PI = 15+60.00
EL = 21.50'
VC = 130'
K = 56
DS = 35 MPH
PI = 16+80.00
EL = 22.04'
VC = 110'
K = 481
DS = 80 MPH
(+)0.1400%
(-)0.5357%
(+)0.5333%
(-)1.8519%
(+)0.4500%
(+)0.2215%
(-)0.2273%
(+)1.9714%
(-)0.4623%
-RPD- STA.10+00 LT
EQ -L- STA.50+46 RT
ELEV.= 19.66'
PI STA.= 14+00 LT.
ELEV.= 18.75'
PROPOSED 2 @
42" RCP-V BURIED 1.5 FT
STA 14+29
ELEV.= 17.14'
END DITCH GRADE
PI STA.= 15+00 LT
ELEV.= 20.13'
BEGIN DITCH GRADE
PI STA.= 15+50 LT
ELEV.= 19.20'
END DITCH GRADE
PI STA.= 17+00 LT
ELEV.= 18.71
SEE SHEET 6 AND 7 FOR -RPD- PLAN VIEW
30
20
10
0
10
11
12
13
14
15
16
17
18

DITCH LEGEND	
LEFT DITCH	-·-·-·-

5/28/99

2/23/2026
R-5858_Rdy_pfl_12.dgn