TIP PROJECT: B–4414

CONTRACT: C204178

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Plan Sheet Symbols
See Sheet 1C-1 For Survey Control Sheets

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

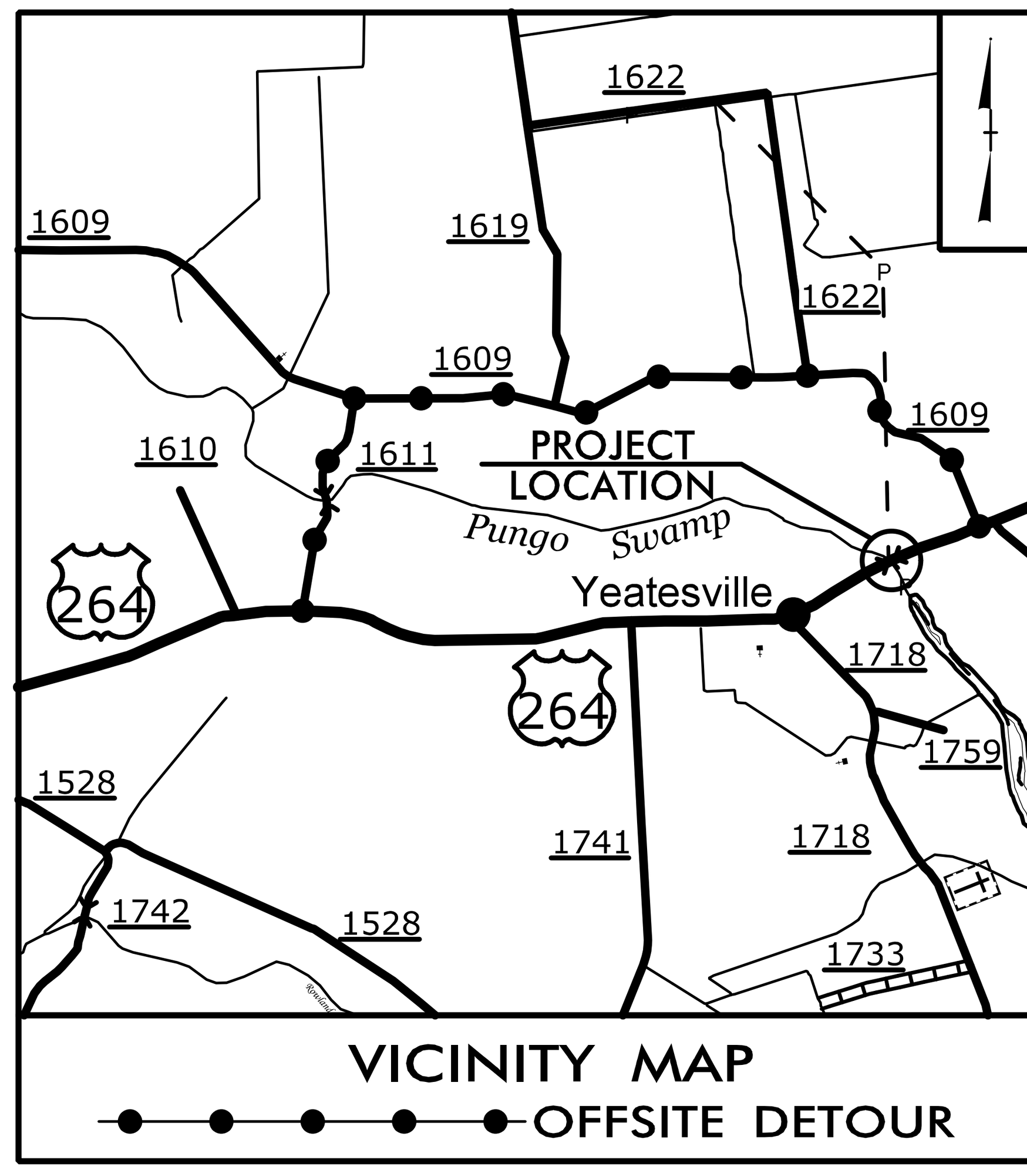
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–4414	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
38358.1.2	N/A	PE
38358.2.1	N/A	R/W & UTIL.
38358.3.1	N/A	CONST.

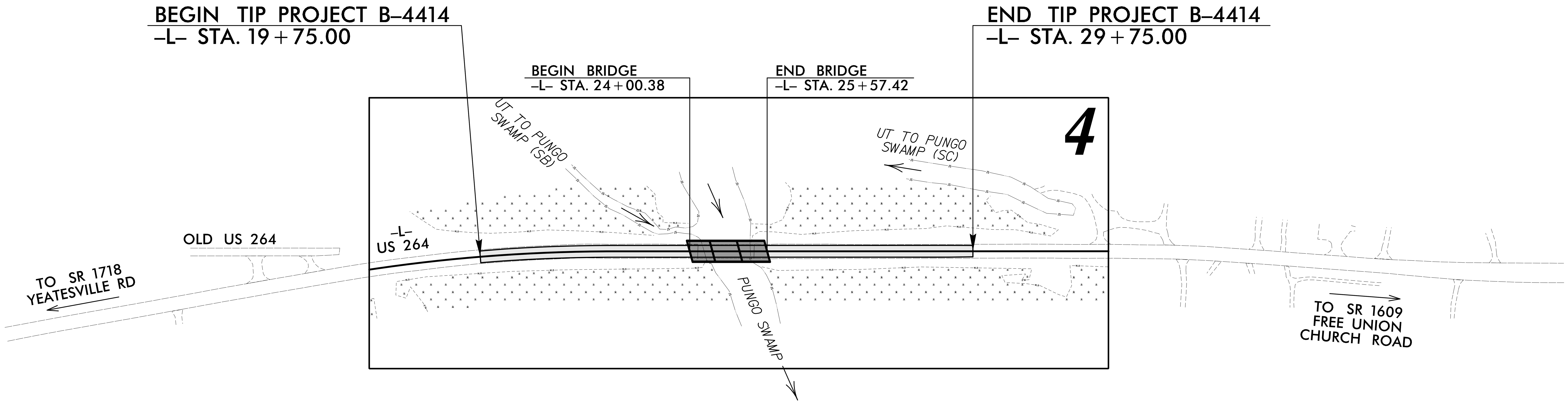
BEAUFORT COUNTY

LOCATION: REPLACE BRIDGE NO. 43 OVER PUNGO CREEK ON US 264

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



NAD 83 NA 2011



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 2021 = 5820
ADT 2041 = 7900
K = 9 %
D = 55 %
T = 7 % *
V = 60 MPH
* (TTST 3% + DUAL 4%)
FUNC CLASS = MINOR ARTERIAL
REGIONAL TIER DESIGN

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B–4414	=	0.159 mile
LENGTH STRUCTURES TIP PROJECT B–4414	=	0.030 mile
TOTAL LENGTH TIP PROJECT B–4414	=	0.189 mile

Prepared For:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

By:
TGS ENGINEERS
TGS ENGINEERS, 706 HILLSBOROUGH ST. SUITE 200, RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JULY 30, 2019

LETTING DATE: APRIL 20, 2021

V. MARCUS LOWERY, P.E. — PROJECT ENGINEER

DAVID STUTTS, P.E. — NCDOT CONTACT

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038697 DAVID B. PETTY
DocuSigned by: David B. Petty
SIGNATURE: P.E. 1/22/2021 | 8:38 AM PST

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 028392 CLIFTON T. REGISTER
DocuSigned by:
SIGNATURE: P.E. 1/26/2021 | 9:29 AM PST

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
B-4414	1A

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 028392 ENGINEER

1/26/2021 | 9:29 AM PST

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE, TYPICAL SECTIONS, DETAIL SHOWING METHOD OF WEDGING, DETAIL FOR SHOULDER BERM GUTTER, AND INCIDENTAL MILLING & RESURFACING DETAIL
2G-1	ROCK EMBANKMENT AND ROCK PLATING DETAILS
3B-1	SUMMARY OF EARTHWORK, PAVEMENT REMOVAL SUMMARY, SHOULDER BERM GUTTER SUMMARY, & GUARDRAIL SUMMARY
3D-1	DRAINAGE SUMMARY
3G-1	GEOTECHNICAL SUMMARY
04	PLAN / PROFILE SHEET
RW01 THRU RW04	SURVEY CONTROL AND RIGHT-OF-WAY SHEETS
TMP-1 THRU TMP-3	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1 THRU RF-3	REFORESTATION PLAN
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1A	CROSS SECTION EARTHWORK VOLUME SUMMARY
X-1 THRU X-5	CROSS SECTIONS
S-1 THRU S-36	STRUCTURE PLANS

GENERAL NOTES

GENERAL NOTES: 2018 SPECIFICATIONS
EFFECTIVE: 01-16-2018
REVISED:

GRADE LINE:
GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED 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

SUBSURFACE DRAINS:

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

GUARDRAIL:

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

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

COMMUNICATIONS — CENTURYLINK

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 CONTRACT.

STANDARD DRAWINGS

2018 ROADWAY ENGLISH STANDARD DRAWINGS — EFF. 01-16-2018
REV.

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2018 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
	DIVISION 2 - EARTHWORK
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
275.01	Rock Plating
	DIVISION 3 - PIPE CULVERTS
300.01	Method of Pipe Installation
	DIVISION 4 - MAJOR STRUCTURES
422.01	Bridge Approach Fills - Type I Standard Approach Fill
422.03	Bridge Approach Fills - Type A Alternate Approach Fill for Integral Abutment
	DIVISION 5 - SUBGRADE, BASES AND SHOULDERS
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
	DIVISION 8 - INCIDENTALS
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
815.02	Subsurface Drain
840.00	Concrete Base Pad for Drainage Structures
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets

12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
B-4414	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale **S.U.E. = Subsurface Utility Engineering*

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Computed Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil — S
- Potential Contamination Area: Soil — S
- Known Contamination Area: Water — W
- Potential Contamination Area: Water — W
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY & PROJECT CONTROL:

- Secondary Horiz and Vert Control Point
- Primary Horiz Control Point
- Primary Horiz and Vert Control Point
- Exist Permanent Easement Pin and Cap
- New Permanent Easement Pin and Cap
- Vertical Benchmark
- Existing Right of Way Marker
- Existing Right of Way Line
- New Right of Way Line — RW
- New Right of Way Line with Pin and Cap — RW
- New Right of Way Line with Concrete or Granite R/W Marker — RW
- New Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- New Control of Access — CA
- Existing Easement Line — E
- New Temporary Construction Easement — E
- New Temporary Drainage Easement — TDE
- New Permanent Drainage Easement — PDE
- New Permanent Drainage / Utility Easement — DUE
- New Permanent Utility Easement — PUE
- New Temporary Utility Easement — TUE
- New Aerial Utility Easement — AUE

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H-Frame Pole
- U/G Power Line LOS B (S.U.E.*) — P
- U/G Power Line LOS C (S.U.E.*) — P
- U/G Power Line LOS D (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- U/G Telephone Cable LOS B (S.U.E.*) — T
- U/G Telephone Cable LOS C (S.U.E.*) — T
- U/G Telephone Cable LOS D (S.U.E.*) — T
- U/G Telephone Conduit LOS B (S.U.E.*) — TC
- U/G Telephone Conduit LOS C (S.U.E.*) — TC
- U/G Telephone Conduit LOS D (S.U.E.*) — TC
- U/G Fiber Optics Cable LOS B (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS C (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS D (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line LOS B (S.U.E*) — W
- U/G Water Line LOS C (S.U.E*) — W
- U/G Water Line LOS D (S.U.E*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- U/G TV Cable LOS B (S.U.E.*) — TV
- U/G TV Cable LOS C (S.U.E.*) — TV
- U/G TV Cable LOS D (S.U.E.*) — TV
- U/G Fiber Optic Cable LOS B (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS C (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS D (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*) — G
- U/G Gas Line LOS C (S.U.E.*) — G
- U/G Gas Line LOS D (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- SS Forced Main Line LOS B (S.U.E.*) — FSS
- SS Forced Main Line LOS C (S.U.E.*) — FSS
- SS Forced Main Line LOS D (S.U.E.*) — FSS

MISCELLANEOUS:

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

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-4414	2A-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 028392 ENGINEER — CHRISTOPHER T. PROCTOR — BOARD RECOGNITION
1/26/2021 | 9:29 AM PST

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER — CLARK W. MORRISON — BOARD RECOGNITION
1/22/2021 | 10:53 AM PST

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TGS ENGINEERS
706 HILLSBOROUGH ST. SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

PAVEMENT SCHEDULE

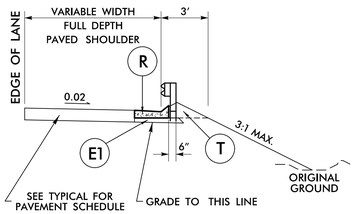
FINAL PAVEMENT DESIGN: DECEMBER 1, 2018

C1	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1″ DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 1½″ IN DEPTH.
D1	PROP. APPROX. 2½″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½″ IN DEPTH OR GREATER THAN 4″ IN DEPTH.
E1	PROP. APPROX. 4″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3″ IN DEPTH OR GREATER THAN 5½″ IN DEPTH.
R	CONCRETE SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	INCIDENTAL MILLING
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

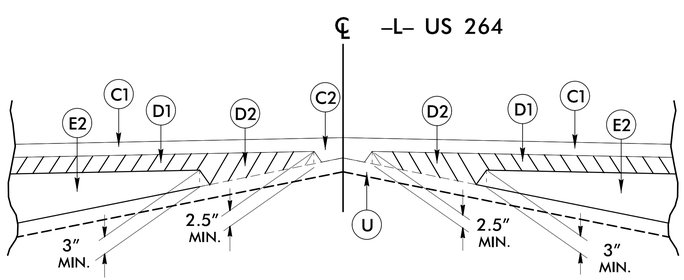
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

DETAIL FOR SHOULDER BERM GUTTER

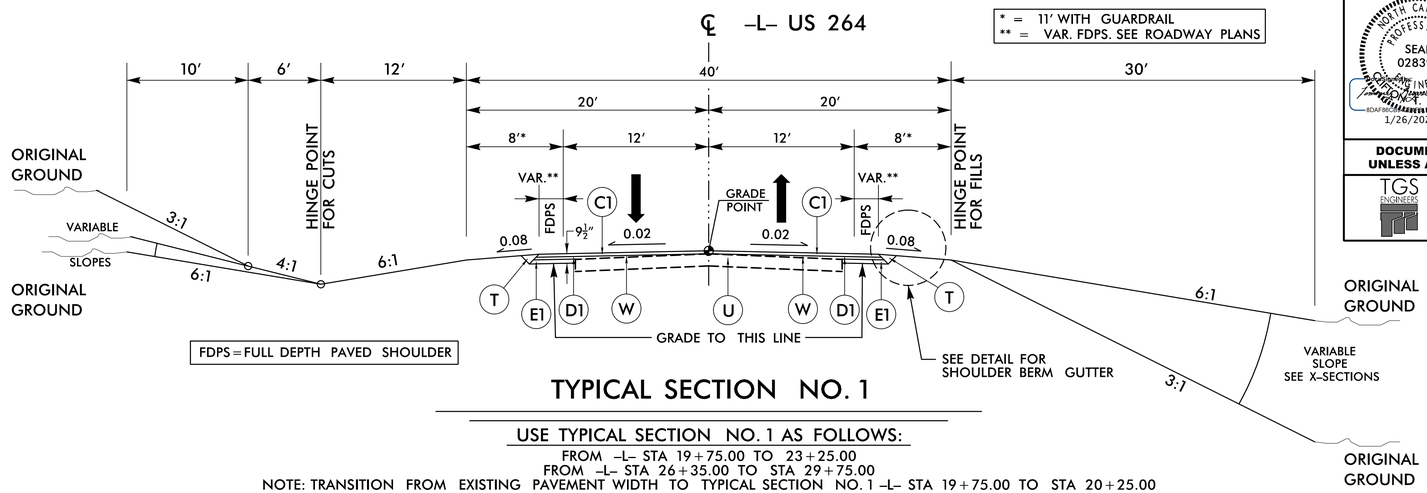
SEE CORRESPONDING TYPICAL SECTION FOR PAVEMENT DESIGN.
SEE TYPICAL SECTIONS AND PLANS FOR ACTUAL DIMENSIONS.



LINE	STATIONS
–L–	23+41.00 to 23+70.88 LT
–L–	20+94.45 to 23+81.60 RT
–L–	25+76.20 to 25+94.86 LT
–L–	25+86.92 to 26+41.99 RT

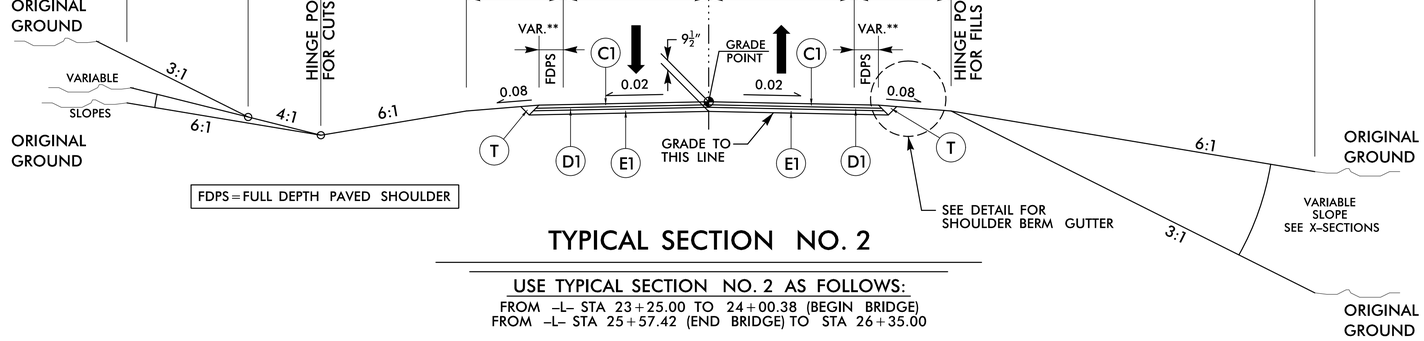


Detail Showing Method of Wedging



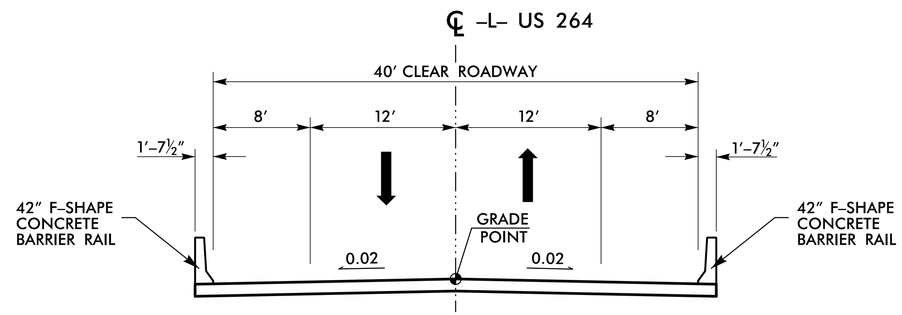
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 AS FOLLOWS:
FROM –L– STA 19+75.00 TO 23+25.00
FROM –L– STA 26+35.00 TO STA 29+75.00
NOTE: TRANSITION FROM EXISTING PAVEMENT WIDTH TO TYPICAL SECTION NO. 1 –L– STA 19+75.00 TO STA 20+25.00
TRANSITION FROM TYPICAL SECTION NO. 1 TO EXISTING PAVEMENT WIDTH –L– 29+25.00 TO STA 29+75.00



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 AS FOLLOWS:
FROM –L– STA 23+25.00 TO 24+00.38 (BEGIN BRIDGE)
FROM –L– STA 25+57.42 (END BRIDGE) TO STA 26+35.00

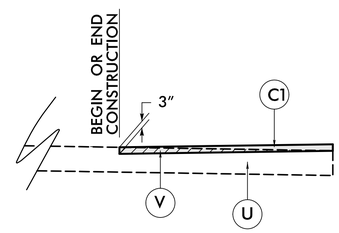


TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3 AS FOLLOWS:
FROM –L– STA 24+00.38 (BEGIN BRIDGE) TO STA 25+57.42 (END BRIDGE)

INCIDENTAL MILLING & RESURFACING DETAIL

NOTE: MIRROR FOR END OF CONSTRUCTION
25′ PER 1″ DEPTH



USE DETAIL AS FOLLOWS:
MILLING AND RESURFACING FOR TIE-INS:
-L- STA. 19+75.00 TO -L- STA. 21+00.00
-L- STA. 28+75.00 TO -L- STA 29+75.00

PROJECT REFERENCE NO.	SHEET NO.
B-4414	2G-1

GEOTECHNICAL ENGINEER

ENGINEER

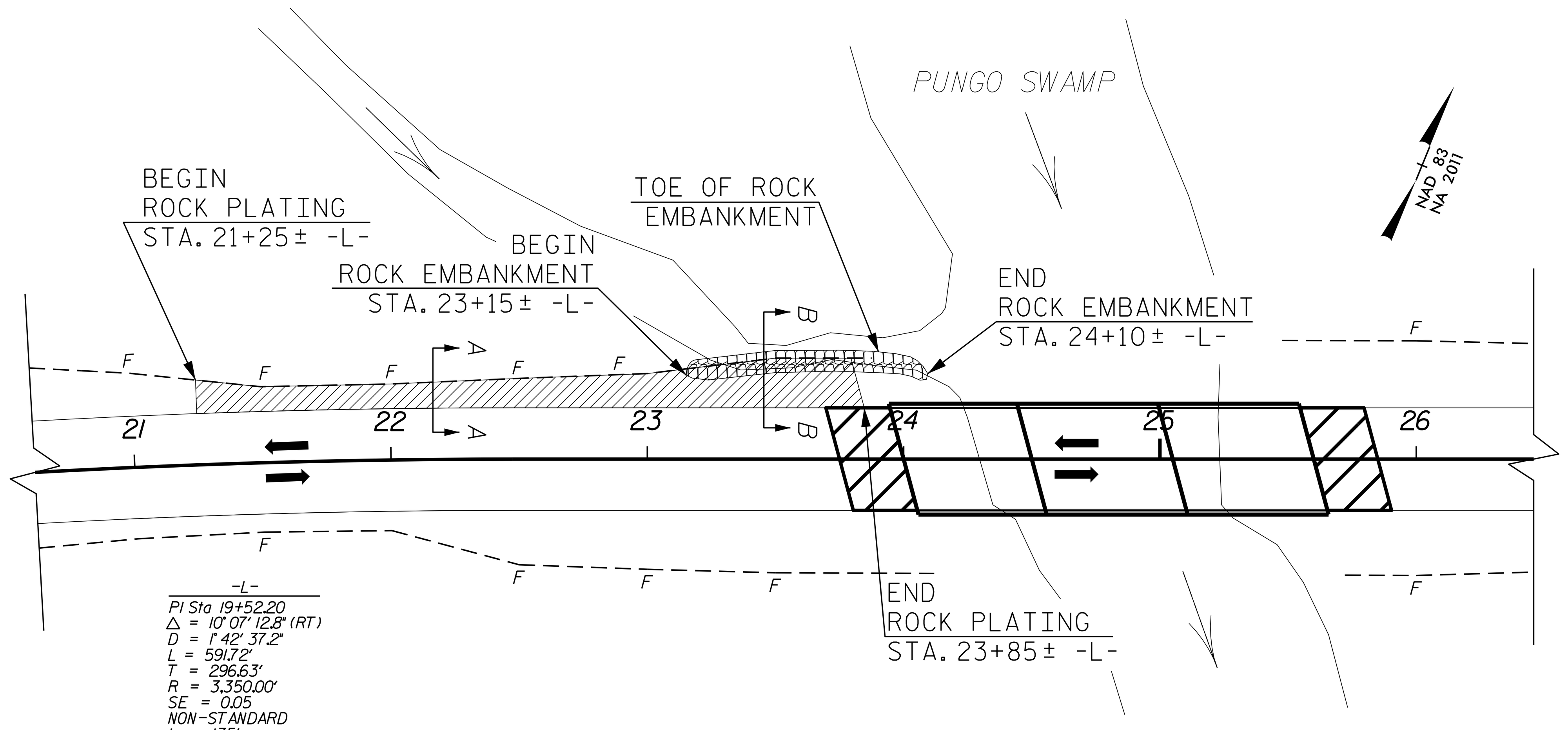
SEAL 032171 NORTH CAROLINA PROFESSIONAL ENGINEER JINYOUNG PARK

DocuSigned by:

4/30/2019

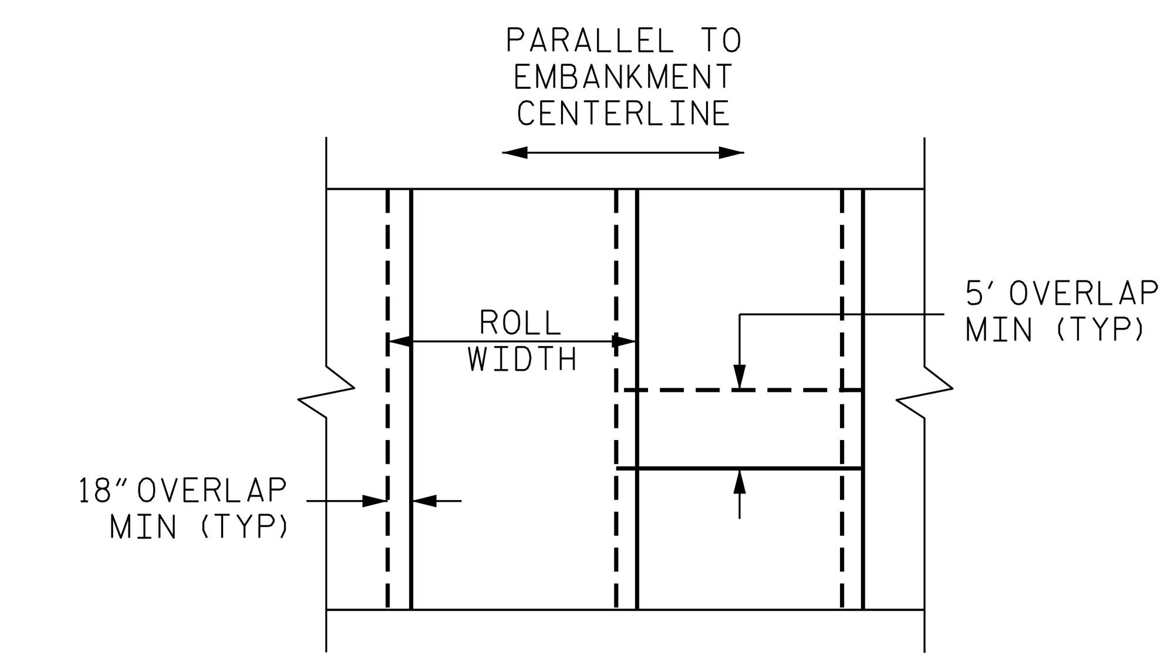
SIGNATURE DATE SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



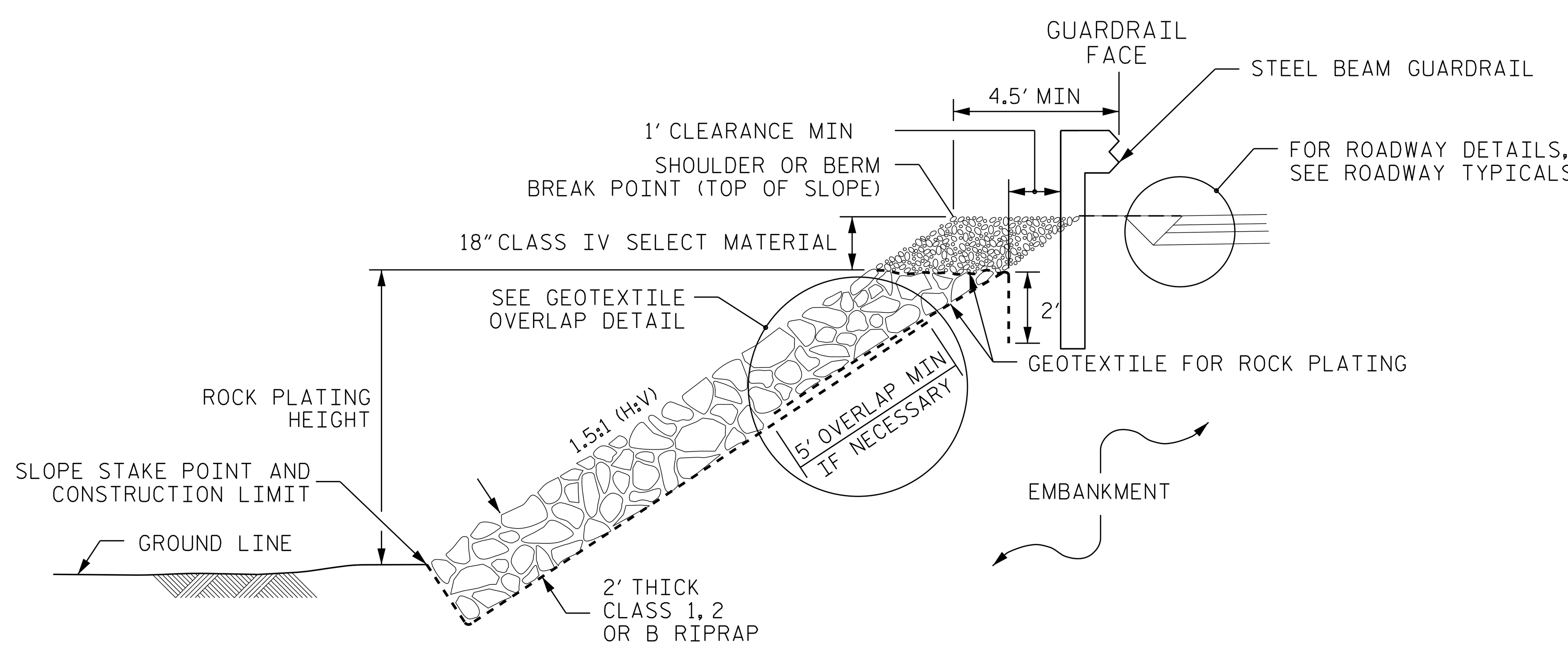
PLAN VIEW

NOT TO SCALE



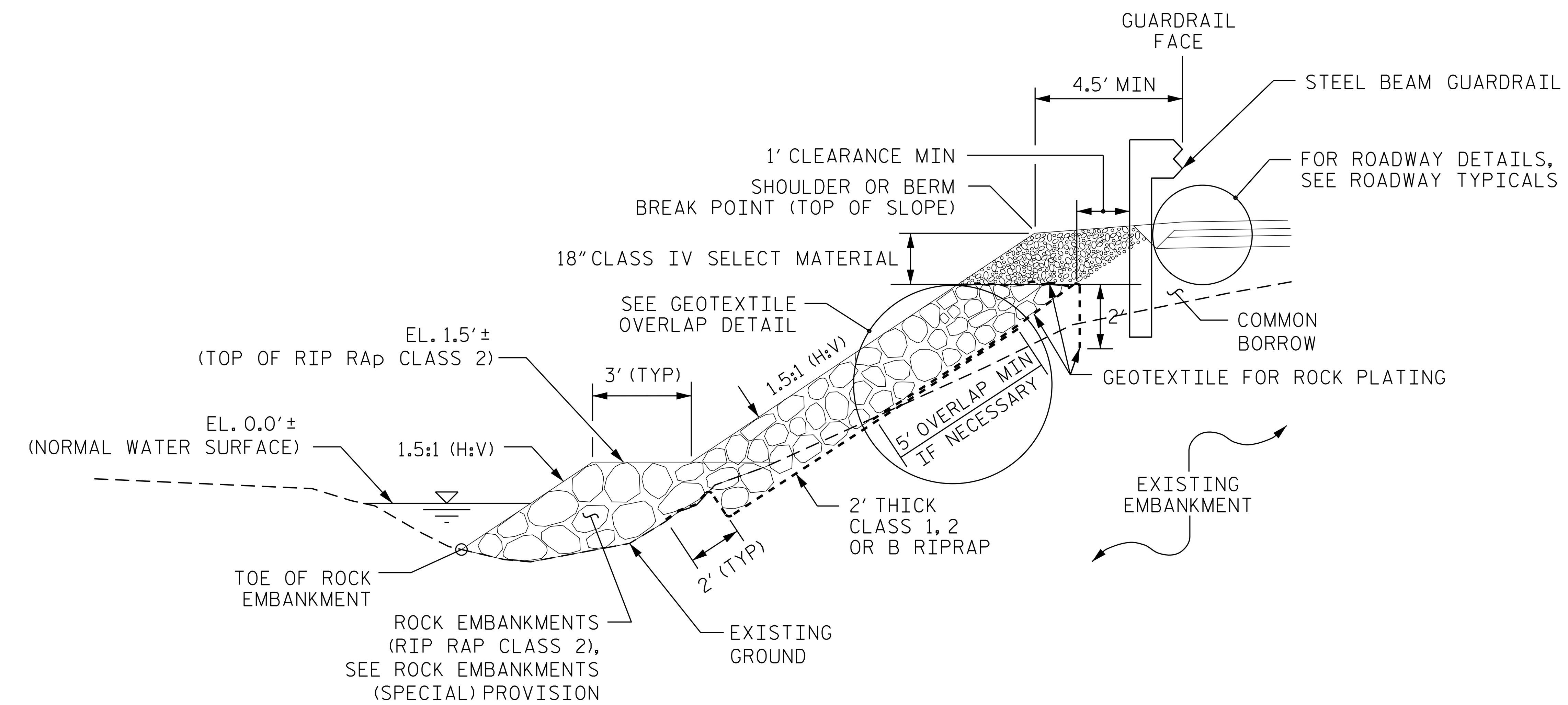
GEOTEXTILE OVERLAP DETAIL

(PLAN VIEW, N.T.S.)



ROCK PLATING TYPICAL SECTION A-A

NOT TO SCALE



ROCK EMBANKMENT TYPICAL SECTION B-B

NOT TO SCALE

NOTES

FOR ROCK EMBANKMENTS, SEE ROCK EMBANKMENTS (SPECIAL) PROVISION.

INSTALL ROCK EMBANKMENTS USING RIP RAP, CLASS 2 AS SHOWN IN THE PLAN.

CONSTRUCT ROCK PLATING WITH RIP RAP CLASS B ABOVE RIP RAP CLASS 1, 2 OR B AS SHOWN IN THE PLAN.

ESTIMATED QUANTITIES	
RIP RAP, CLASS 2	150 TONS
ROCK PLATING	250 SY

PREPARED BY: J. PARK	DATE: 04 / 2019
REVIEWED BY: J. BATTS	DATE: 04 / 2019

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

ROCK EMBANKMENT AND ROCK PLATING DETAILS

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

12/06/07

COMPUTED BY: PAS DATE: 09 MAY 2019
CHECKED BY: VML DATE: 31 JAN 2020

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-4414	3B-1

SUMMARY OF EARTHWORK
IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
–L– 19+75.00 TO 24+00.38 (BEGIN BRIDGE)	88		751	663	
–L– 25+57.42 (END BRIDGE) TO 29+75.00	24		1156	1132	
SUBTOTAL	112		1907	1795	
MATERIAL FOR SHOULDER CONSTRUCTION			18	18	
LOSS DUE TO CLEARING & GRUBBING					
ADDITIONAL UNDERCUT					
SELECT GRANULAR MAT'L IN LIEU OF BORROW					
PROJECT TOTAL	112		1925	1813	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				91	
GRAND TOTAL	112		1925	1904	
SAY	130			2100	

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

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

PER "GEOTECHNICAL REPORT – DESIGN AND CONSTRUCTION RECOMMENDATIONS" DATED APRIL 30, 2019.
ESTIMATED UNDERCUT = 300 CY (CONTINGENCY, AS DIRECTED BY THE ENGINEER)
SELECT GRANULAR MATERIAL = 300 CY (CONTINGENCY, TO BE USED AS UNDERCUT AREAS BACKFILL)
GEOTEXTILE FOR SOIL STABILIZATION = 300 SY (CONTINGENCY, AS DIRECTED BY THE ENGINEER)
ROCK EMBANKMENTS (–L– STA 23+15.00 TO 24+10.00) = 150 TONS (SEE DETAIL SHEET 2G–1)
DDE = 320 CY

PAVEMENT REMOVAL SUMMARY
IN SQUARE YARDS

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	SY
–L–	19+75	23+25	LT	107
–L–	19+75	23+25	RT	87
–L–	23+25	24+17	CL	285
–L–	25+31	26+35	CL	337
–L–	26+35	29+75	LT	100
–L–	26+35	29+75	RT	114
		TOTAL:		1030
		SAY:		1040

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LOCATION	LENGTH (LF)
–L–	23+41.00	23+70.88	LT	29.88
–L–	20+94.45	23+81.60	RT	287.15
–L–	25+76.20	25+94.86	LT	18.66
–L–	25+86.92	26+41.99	RT	55.07
		TOTAL:		390.76
		SAY:		391

"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 STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS TYPE GREU, TL–3	ANCHORS B–77	ANCHORS	ANCHORS	ANCHORS	ANCHORS	ANCHORS	ANCHORS	IMPACT ATTENUATOR TYPE 350 EA	IMPACT ATTENUATOR TYPE 350 G	IMPACT ATTENUATOR TYPE 350 NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
–L–	20+85.62	23+95.02	LT	310.375′				20+85.62	8′	11′		50′		1′	1	1													
–L–	25+52.06	28+62.43	LT	310.375′			28+62.43		8′	11′	50′		1′		1	1													
–L–	20+44.15	24+05.74	RT	360.375′			20+44.15		8′	11′	50′		1′		1	1													
–L–	25+62.78	29+10.65	RT	347.875′				29+10.65	8′	11′		50′		1′	1	1													
		SUBTOTAL (LF)		1329.00′								TOTAL ANCHORS OR ATTENUATORS (EA)			4	4													
		LESS ANCHORS (LF)		291.50′								ANCHOR UNIT LENGTH (LF)			50′	22.875′													
		TOTAL GUARDRAIL (LF)		1037.50′								DEDUCTION PER TYPE (LF)			200′	91.5′													
		SAY GUARDRAIL (LF)		1037.50′			ADDITIONAL GUARDRAIL POSTS: SAY 5 EA					TOTAL DEDUCTION (LF)			291.50′														

COMPUTED BY: Kathleen P. Gray, PE DATE: 1/22/2021

CHECKED BY: David B. Petty, PE DATE: 1/22/2021

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

B-4414
Beaufort #060043

PROJECT NO.	SHEET NO.
38358.1.2	3D-1

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	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	30" .079	36" .079	42" .109	48" .109	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	** " R.C. PIPE (CLASS V)	**** RC PIPE CULVERTS, CONTRACTOR DESIGN	**** RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS	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	C.B. STD. 840.01 OR STD. 840.02	TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	T.B.D.I STD. 840.35 OR 840.46	FRAME AND NARROW FLAT GRATE STD. 840.29		15" ELBOW		CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-L- 23+47	LT	0401		8.3																																														1									1	1							
		0401	0403		5.0	4.9																															36																																
-L- 21+00	RT	0402		5.0																																														1									1	1							
		0402	0409		2.2	1.9			16																																																											
-L- 23+47	RT	0403		8.2																																														1									1	1							
		0403	0404		4.9	0.9			28							X																																														2					
-L- 25+88	LT	0405		8.5																																														1									1	1							
		0405	0406		5.8	0.5			30							X																																														2					
-L- 26+35	RT	0407		8.0																																														1									1	1							
		0407	0408		5.2	0.9			28							X																																														2					
SHEET TOTALS									102																												36													5									5	5		6					

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.)	(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 C. Bottoms DATE: 3/13/19
CHECKED BY: Jinyoung Park DATE: 4/26/2019

(5-15-18)

PROJECT NO.	SHEET NO.
B-4414	3G-1

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

SUMMARY OF ROCK PLATING

LINE	Beginning Slope (H:V)	Approx. Station	Ending Slope (H:V)	Approx. Station	Location LT/RT	Rock Plating Detail No. 1/2/3/4	Riprap Class* 1/2/B	Rock Plating SY
-L-	2.5:1	21+25	1.5:1	23+85	LT	1		250
							TOTAL SY:	250

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

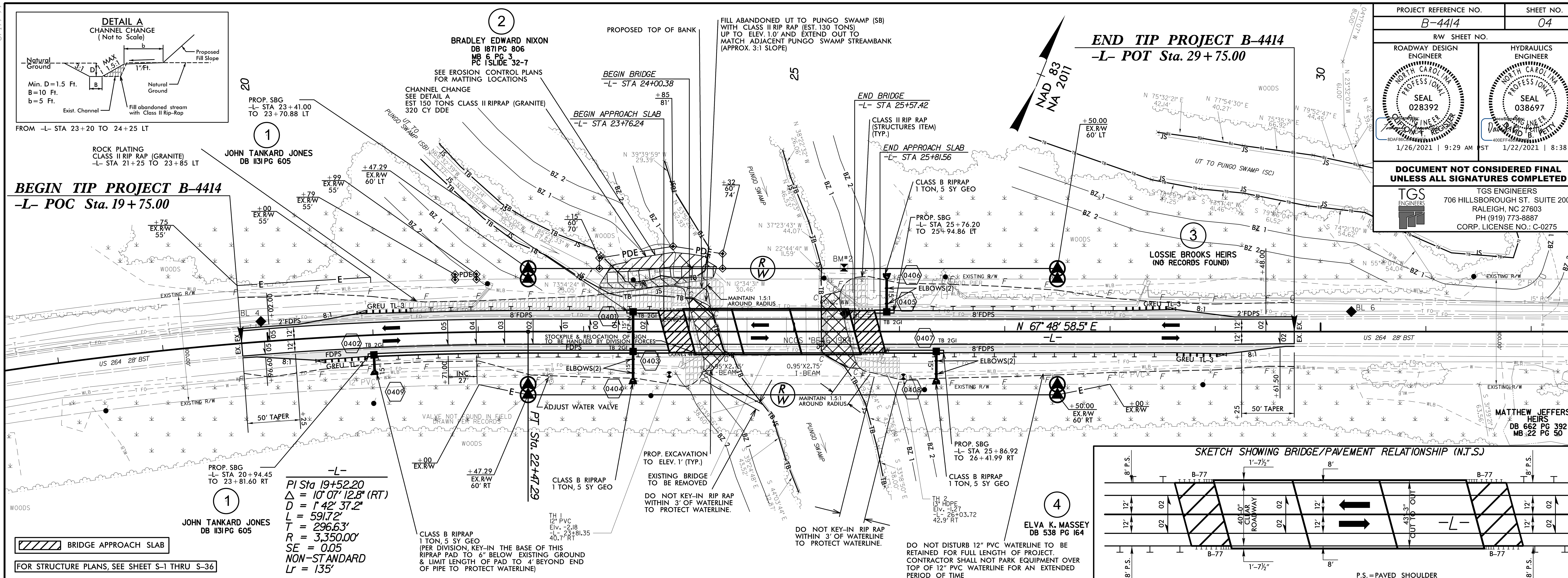
PROJECT REFERENCE NO.	SHEET NO.
B-4414	04
R/W SHEET NO.	

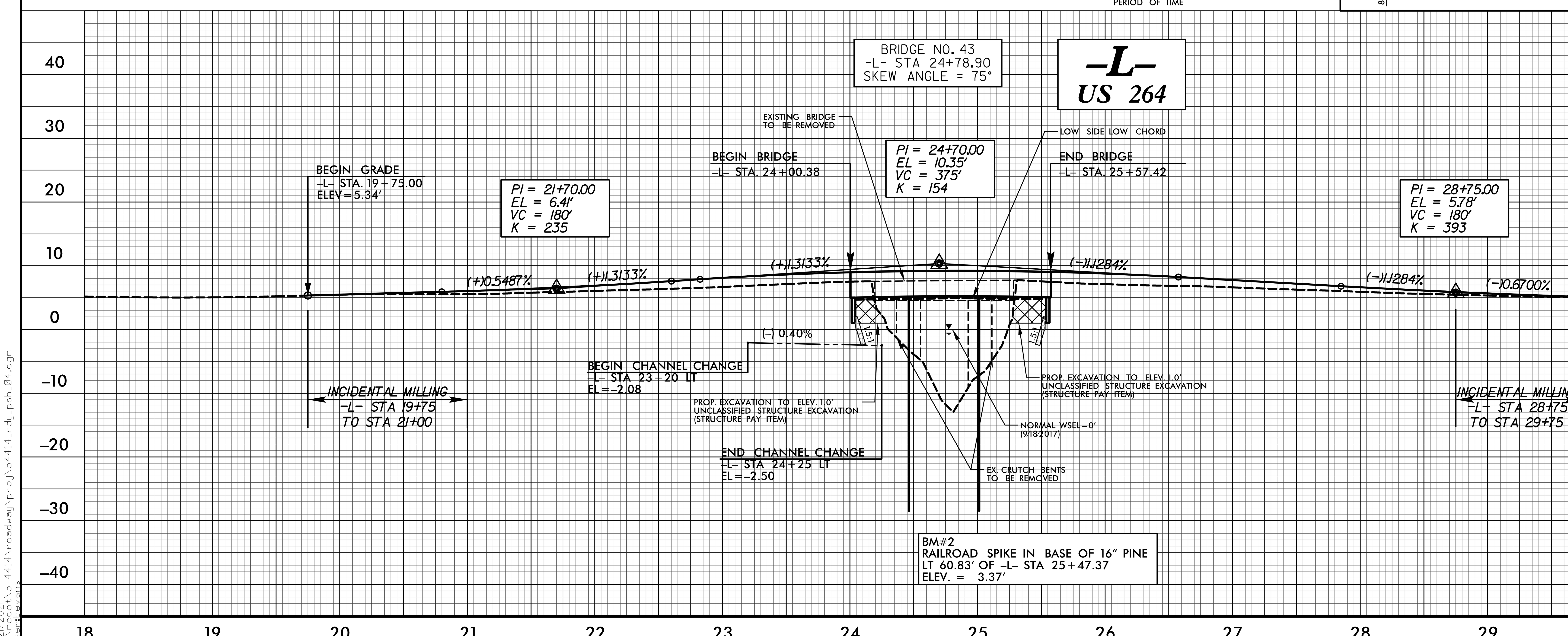
ROADWAY DESIGN ENGINEER — SEAL 028392 — 1/26/2021 | 9:29 AM PST

HYDRAULICS ENGINEER — SEAL 038697 — 1/22/2021 | 8:38 AM PST

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
706 HILLSBOROUGH ST. SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275





BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	4838 CFS
DESIGN FREQUENCY	=	50 YRS
DESIGN HW ELEVATION	=	4.3 FT
BASE DISCHARGE	=	5881 CFS
BASE FREQUENCY	=	100 YRS
BASE HW ELEVATION	=	4.9 FT
OVERTOPPING DISCHARGE	=	6300 CFS
OVERTOPPING FREQUENCY	=	100+ YRS
OVERTOPPING ELEVATION	=	5.1 FT*

*OVERTOPPING ELEVATION REPRESENTS LOWEST HIGH POINT ON DECK/ROADWAY WHICH OCCURS AT SAG @ -L- STA.29+81

DATE OF SITE VISIT = 9/18/2017

APPROX. W.S. ELEVATION ON DATE OF SITE VISIT = 0 FT