This electronic collection of documents is provided for the convenience of the user and is Not a Certified Document –

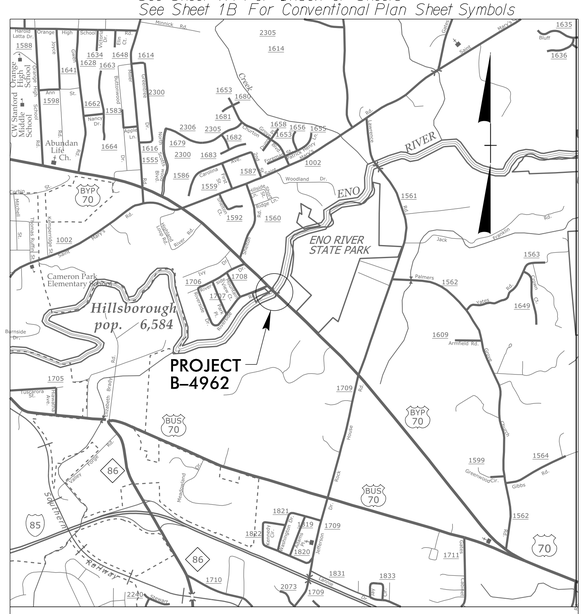
The documents contained herein were originally issued and sealed by the individuals whose names and license numbers appear on each page, on the dates appearing with their signature on that page.
This file or an individual page shall not be considered a certified document.

09/08/99

TIP PROJECT: B–4962

CONTRACT: C204078

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ORANGE COUNTY

LOCATION: BRIDGE NO. 46 OVER ENO RIVER ON US 70 BYPASS
TYPE OF WORK: GRADING, DRAINAGE, PAVING, CULVERT EXTENSION, AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–4962	1	

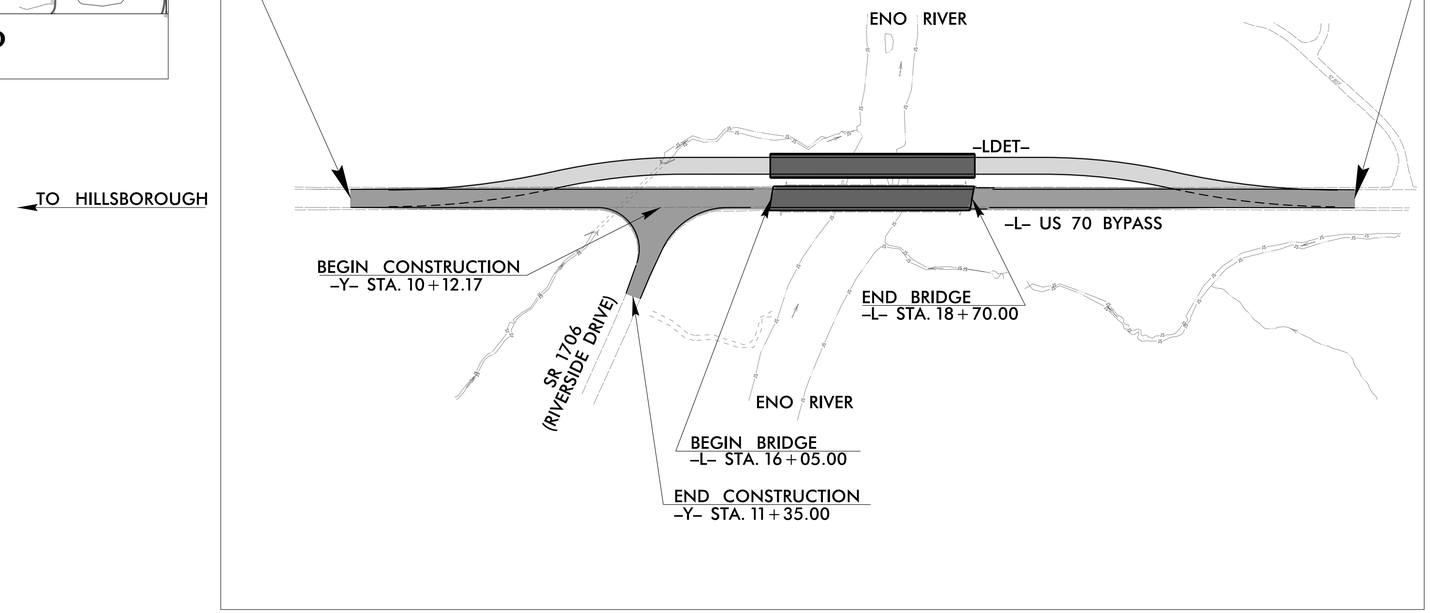
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
40174.1.1	BRSTP–0070(120)	P.E.
40174.2.1		ROW & UTILITIES
40174.3.1		CONSTRUCTION

NAD 83/ NSRS 2007

4/5

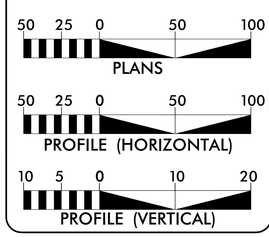
–L– STA. 10+50.00 BEGIN TIP PROJECT B–4962

–L– STA. 23+75.00 END TIP PROJECT B–4962



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT 2020 = 15000
ADT 2040 = 19000
K = 10 %
D = 70 %
T = 5 % *
V = 50 MPH
V_{DET} = 40 MPH
*TTST = 2% DUAL = 3%
FUNC CLASS =
MINOR ARTERIAL
"REGIONAL TIER"

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B–4962 = 0.201 MILES
LENGTH STUCTURE TIP PROJECT B–4962 = 0.050 MILES
TOTAL LENGTH OF TIP PROJECT B–4962 = 0.251 MILES

Prepared in the Office of:
SUMMIT
DESIGN AND ENGINEERING SERVICES
FIRM NO. P-0339
504 Meadowland Drive
Hillsborough, NC 27278-8551
Voice: (919) 732-3883
Fax: (919) 732-6776
www.summitde.net

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MAY 18, 2018

LETTING DATE:
APRIL 16, 2019

JAMES A. SPEER, PE
PROJECT ENGINEER

BRANDON W. JOHNSON, PE
PROJECT DESIGN ENGINEER

DAVID STUTTS, PE
NCDOT CONTACT

HYDRAULICS ENGINEER
2/11/2019
DocuSigned by:
SIGNATURE:
NORTH CAROLINA PROFESSIONAL SEAL 046226 ENGINEER JASON M. PATSKOSKI P.E.

ROADWAY DESIGN ENGINEER
2/6/2019
DocuSigned by:
James A. Speer
SIGNATURE:
NORTH CAROLINA PROFESSIONAL SEAL 014571 ENGINEER JAMES A. SPEER P.E.

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

28-JAN-2019 10:11
B4962_Rdy_tsh.dgn
sarajouktil

PROJECT REFERENCE NO.	SHEET NO.
B-4962	1A

ROADWAY DESIGN ENGINEER

2/6/2019

NORTH CAROLINA PROFESSIONAL SEAL 014571 ENGINEER JAMES A. SPEER

DocuSigned by: James A. Speer

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C-1	SURVEY CONTROL SHEET
2A-1 THRU 2A-2	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C-1 THRU 2C-2	SPECIAL DETAILS
2G-1	TEMPORARY SHORING DETAIL
3B-1	ROADWAY SUMMARIES
3D-1	DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
3P-1	PARCEL INDEX SHEET
4 THRU 7	PLAN AND PROFILE SHEETS
TMP-1 THRU TMP-6A	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-8	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
SIGN-1 THRU SIGN-4	SIGNING PLANS
UO-1 THRU UO-3	UTILITIES BY OTHERS PLANS
X-0	CROSS-SECTION INDEX
X-1	CROSS-SECTION SUMMARY SHEET
X-2 THRU X-13	CROSS-SECTIONS
S-1 THRU S-47	STRUCTURE PLANS

GENERAL NOTES:

2018 SPECIFICATIONS
EFFECTIVE: 01-16-2018
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. 225.05 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. 560.02

SIDE ROADS:

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

UNDERDRAINS:

UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS 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 NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE DUKE ENERGY , CENTURYLINK

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

EFF. 01-16-2018
REV.

2018 ROADWAY ENGLISH STANDARD DRAWINGS

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
225.06	Method of Grading Sight Distance at Intersections
275.01	Rock Plating
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.01	Bridge Approach Fills - Type I Standard Approach Fill
422.03	Reinforced Bridge Approach Fills - Type A Alternate Approach Fill for Integral Abutment
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
815.03	Pipe Underdrain and Blind Drain
840.00	Concrete Base Pad for Drainage Structures
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.22	Frames and Wide Slot Sag Grates
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46	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
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

8/17/99

06-FEB-2019 08:59
B4962_Rdy_tsh_1A.dgn

12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
B-4962	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

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

ROADS AND RELATED FEATURES:

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

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

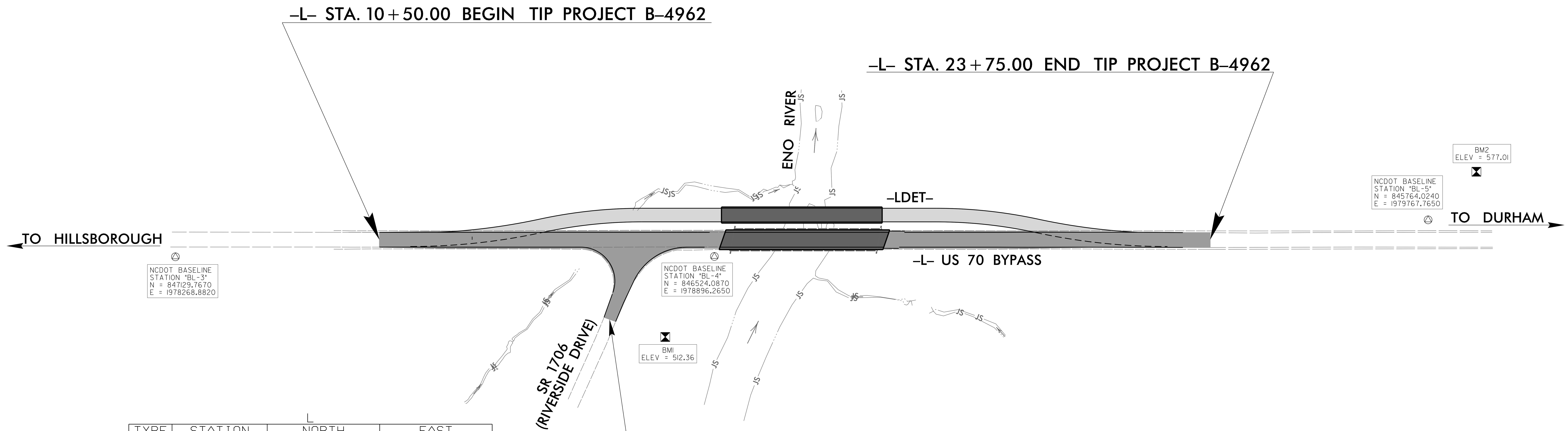
SANITARY SEWER:

- 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.

B-4962 SURVEY CONTROL SHEET



L

TYPE	STATION	NORTH	EAST
POT	10+00.00	846954.9518	1978489.4704
POT	23+94.07	845985.9850	1979491.7322

Y

TYPE	STATION	NORTH	EAST
POT	10+00.00	846633.9155	1978821.5379
PC	10+00.00	846633.9183	1978821.5350
PT	11+67.09	846555.2628	1978674.5092
POT	12+80.76	846513.1179	1978568.9441

-L- NEW PRELIMINARY R/W MONUMENTS

ALIGN	STATION	OFFSET	NORTH	EAST
L	13+24.00	-50.00	846765.6984	1978757.1626
L	13+24.00	-58.59	846771.8716	1978763.1308
L	16+03.00	-100.00	846607.7228	1978992.5022
L	17+46.47	-50.76	846472.6035	1979061.4220
L	17+50.87	-84.26	846493.6288	1979087.8719

BASELINE DATA

BL

POINT	DESC.	NORTH	EAST	ELEVATION
1	B4962-1	848318.2870	1977098.8750	550.50
2	B4962-2	847605.7800	1977852.0910	535.09
3	BL-3	847129.7670	1978268.8820	525.19
4	BL-4	846524.0870	1978896.2650	516.75
5	BL-5	845764.0240	1979767.7650	572.35
6	BL-6	845029.7750	1980447.7930	615.85

NOTES

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
   HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   b4962_ls_control.txt

   SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

△ *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4962-2"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 847605.7800(ft) EASTING: 1977852.0910(ft)
ELEVATION: 535.09'(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999559198
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4962-2" TO -L- STATION 10+50.00 IS
S 44°28'59" E 960.93'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

BENCHMARK DATA

BM1 ELEVATION = 512.36
N 846490 E 1978752
BL STATION 29+62.00 125 RIGHT
BM1-RR SPIKE IN 36" POPLAR

BM2 ELEVATION = 577.01
N 845766 E 1979878
BL STATION 42+72.00 82 LEFT
BM2-RR SPIKE IN ROOT OF 22" WHITE OAK

NOTE: DRAWING NOT TO SCALE

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-4962	2A-1

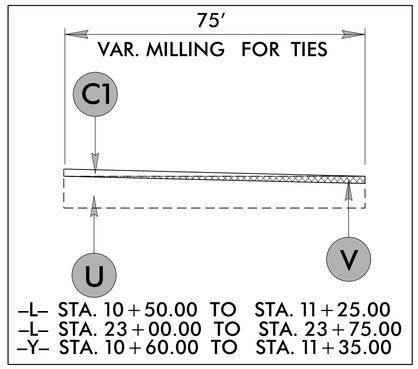
ROADWAY DESIGN ENGINEER
2/6/2019
NORTH CAROLINA PROFESSIONAL SEAL 014571 ENGINEER JAMES A. SPEER
DocuSigned by: James A. Speer

PAVEMENT DESIGN ENGINEER
2/11/2019
NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER CLARK S. MORRISON
DocuSigned by: Clark S. Morrison

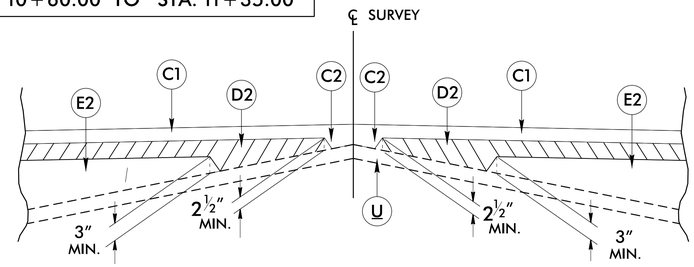
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVEMENT SCHEDULE

C1	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.	J2	PROP. 10″ AGGREGATE BASE COURSE
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1½″ OR GREATER THAN 2″ IN DEPTH.	R	SHOULDER BERM GUTTER.
D1	PROP. APPROX. 4″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	T	EARTH MATERIAL.
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.	U	EXISTING PAVEMENT.
E1	PROP. APPROX. 5″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.	V	MILLING BITUMINOUS PAVEMENT. 0″ TO 3″ IN DEPTH.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3″ IN DEPTH OR GREATER THAN 5½″ IN DEPTH.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL)
J1	PROP. 6″ AGGREGATE BASE COURSE		



–L– STA. 10+50.00 TO STA. 11+25.00
–L– STA. 23+00.00 TO STA. 23+75.00
–Y– STA. 10+60.00 TO STA. 11+35.00

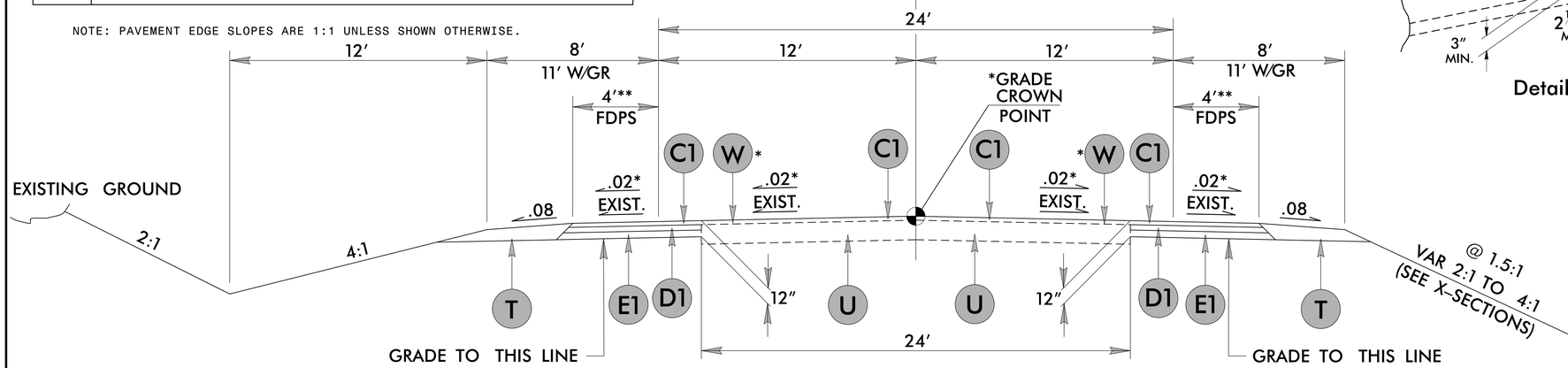


Detail Showing Method of Wedging

USE TYPICAL SECTION NO. 1
–L– STA. 11+25.00 TO STA. 12+50.00
*–L– STA. 12+50.00 TO STA. 15+00.00
*–L– STA. 19+20.00 TO STA. 21+00.00

@ USE 1.5:1 SLOPES FROM APPROX.
–L– STA. 13+25.00 TO STA. 13+75.00 (RT)
SEE SHEET X–3

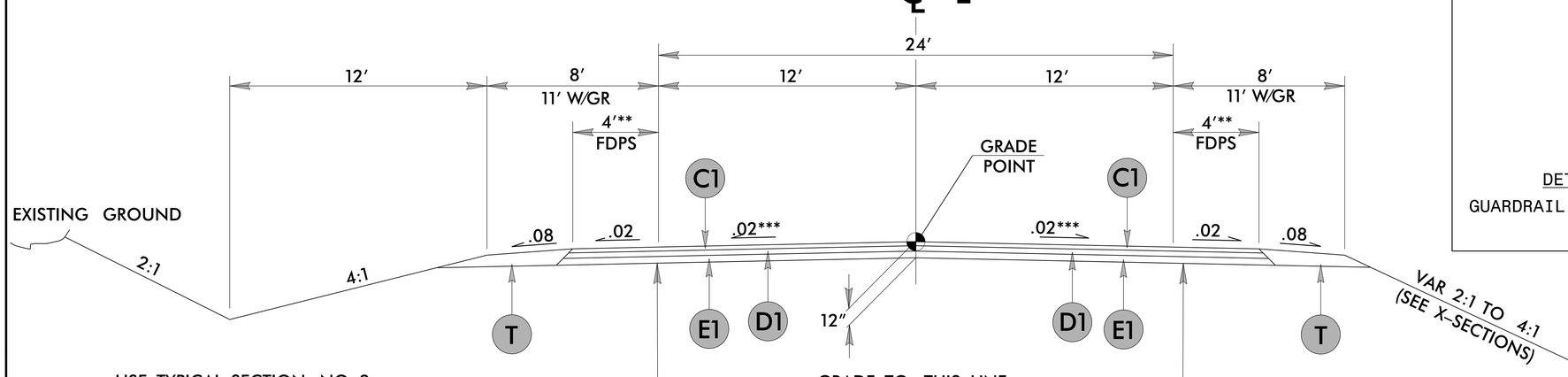
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



TYPICAL SECTION NO. 1

** PAVE TO FACE OF GR (SEE PLANS FOR LOCATIONS).

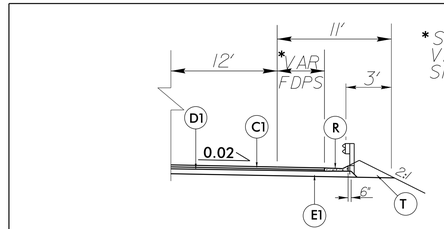
NOTE: TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 1
–L– STA. 10+50.00 TO STA. 11+50.00



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
–L– STA. 15+00.00 TO STA. 16+05.00 (BEGIN BRIDGE)
–L– STA. 18+70.00 (END BRIDGE) TO STA. 19+20.00

***SEE PLANS FOR LOCATIONS OF .025 CROSS–SLOPES APPROACHING BRIDGE

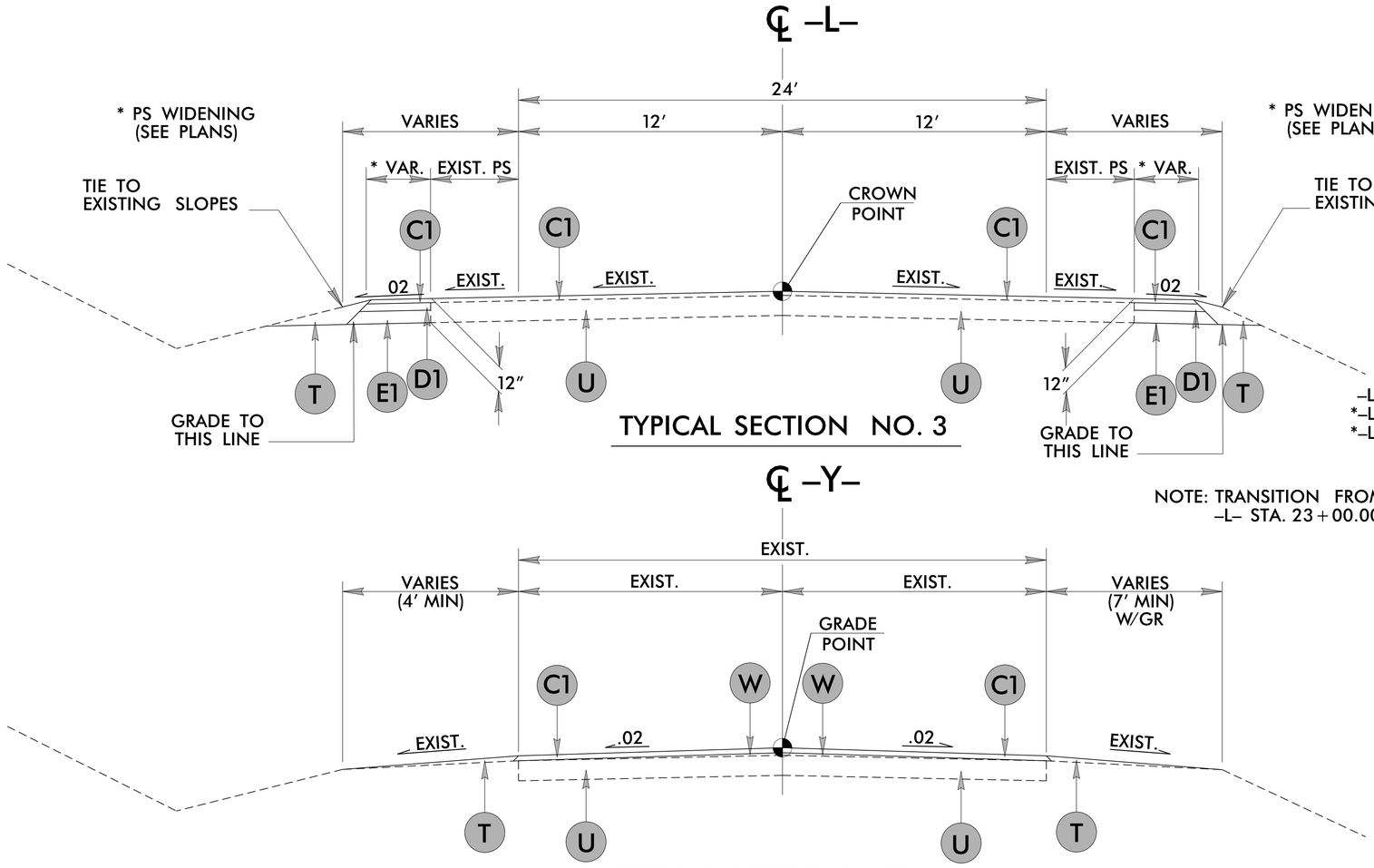


DETAIL SHOWING SHOULDER BERM GUTTER

GUARDRAIL WHERE SHOULDER BERM GUTTER IS REQUIRED (SEE PLANS FOR LOCATIONS)

31-JAN-2019 14:15
B4962_Rdy_typ_2A1.dgn
smorrison1

6/2/99



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

–L– STA. 21+00.00 TO STA. 23+00.00
*–L– STA. 21+00.00 TO STA. 21+45.00 LT.
*–L– STA. 21+00.00 TO STA. 22+46.14 RT.

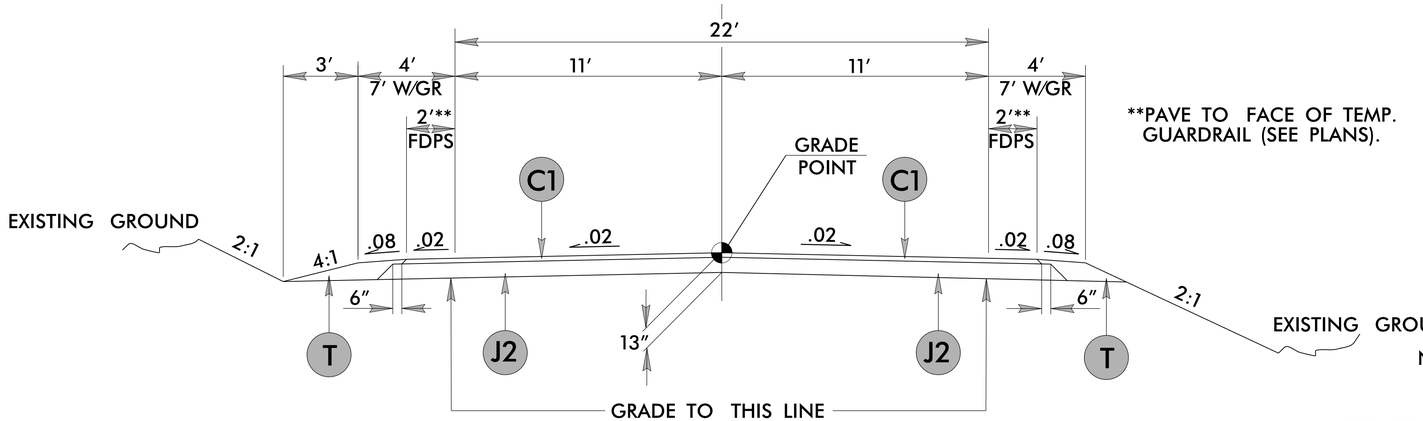
NOTE: MILLING REQUIRED AT TIE–IN

NOTE: TRANSITION FROM TYPICAL SECTION NO. 3 TO EXISTING –L– STA. 23+00.00 TO STA. 23+75.00

TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4
–Y– STA. 10+14.32 TO STA. 11+35.00

NOTE: MILLING REQUIRED AT TIE–IN



TYPICAL SECTION NO. 5

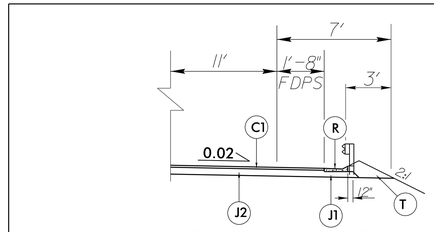
**PAVE TO FACE OF TEMP. GUARDRAIL (SEE PLANS).

NOTE: TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 5 –LDET– STA. 10+00.00 TO STA. 11+54.78

USE TYPICAL SECTION NO. 5

–LDET– STA. 11+54.78 TO STA. 15+07.00 (BEGIN BRIDGE)
–LDET– STA. 17+77.00 (END BRIDGE) TO STA. 21+02.58

NOTE: TRANSITION FROM TYPICAL SECTION NO. 5 TO EXISTING –LDET– STA. 21+02.58 TO STA. 22+59.12



DETAIL SHOWING TEMPORARY SHOULDER BERM GUTTER FOR DETOUR

GUARDRAIL WHERE SHOULDER BERM GUTTER IS REQUIRED (SEE PLANS FOR LOCATIONS)

PROJECT REFERENCE NO.	SHEET NO.
B-4962	2A-2

ROADWAY DESIGN ENGINEER
2/6/2019
NORTH CAROLINA PROFESSIONAL SEAL 014571 ENGINEER JAMES A. SHEEN
DocuSigned by: James A. Sheen

PAVEMENT DESIGN ENGINEER
2/11/2019
NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER CLARK S. MORRISON
DocuSigned by: Clark S. Morrison

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVEMENT SCHEDULE

C1	3″ S9.5C
C2	VAR. DEPTH S9.5C
D1	4″ I19.0C
D2	VAR. DEPTH I19.0C
E1	5″ B25.0C
E2	VAR. DEPTH B25.0C
J1	PROP. 6″ ABC
J2	PROP. 10″ ABC
R	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING
W	VAR. DEPTH ASPHALT PVMT

*PAVE TO FACE OF GUARDRAIL AS SHOWN ON PLANS

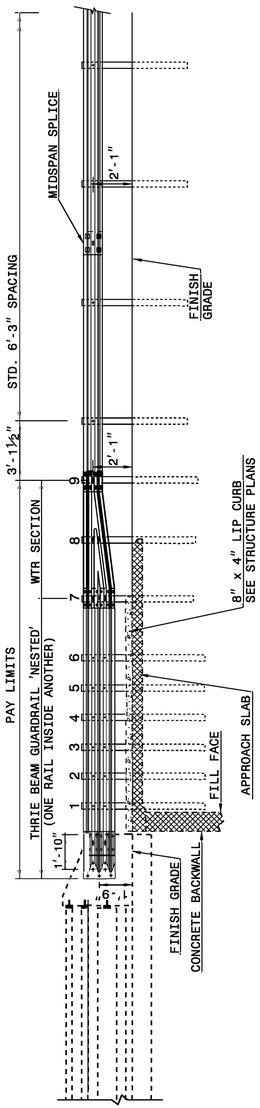
30-JAN-2019 11:43
B4962_Rdy_typ_2A2.dgn

PROJECT REFERENCE NO.	SHEET NO.
B-4962	2C-1

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

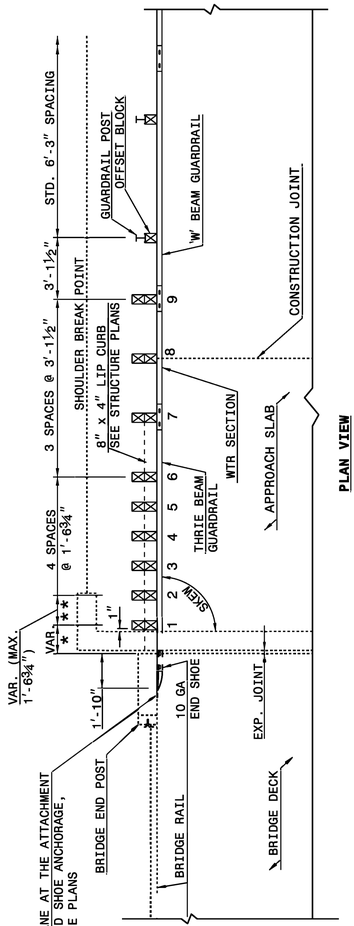
ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III
FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7
862D03



ELEVATION

NOTE:
**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.



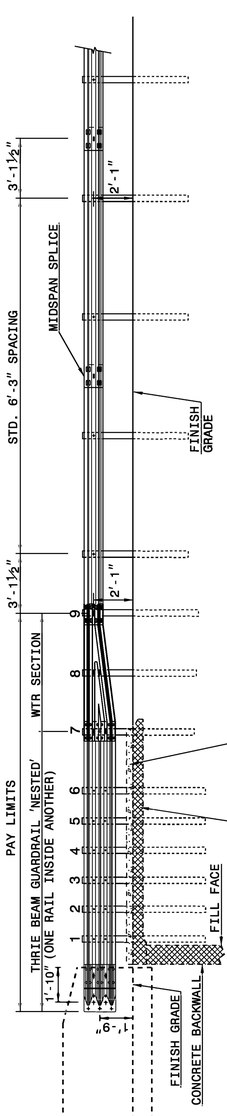
PLAN VIEW

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

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

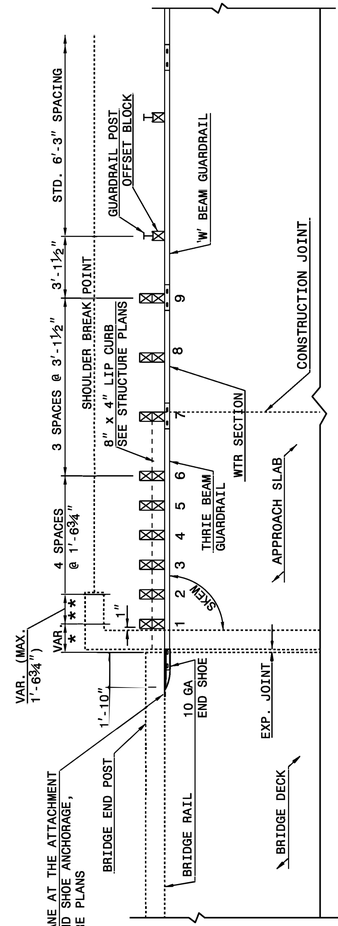
ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7
862D03



ELEVATION

NOTE:
**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.



PLAN VIEW

GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON BRIDGE - SUB REGIONAL TIER

1/30/2019

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by:
Joel S. Howerton
B73F3D17DCDC45F...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SEE TITLE BLOCK

ORIGINAL BY: J HOWERTON DATE: 06-22-12
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

14-DEC-2017 10:36
S:\Contracts\Contracts\Special Details\jhowerton\Standard Drawings\2018 Standard Drawings\Details in Lieu of Standards\Division 8\D862d0301.dgn
jhowerton AT CSD-2925595

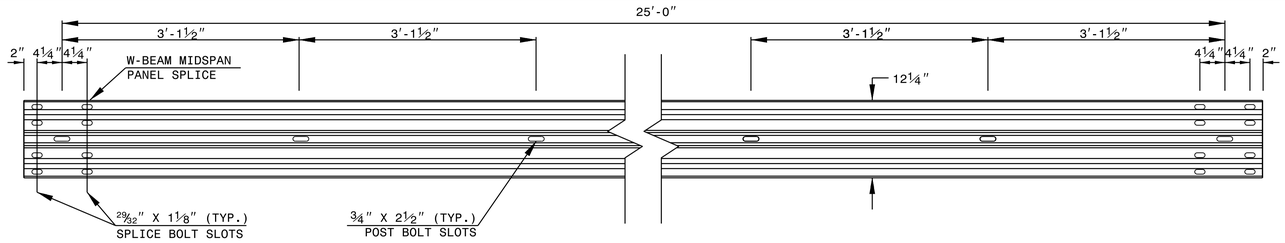
PROJECT REFERENCE NO.	SHEET NO.
B-4962	2C-2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

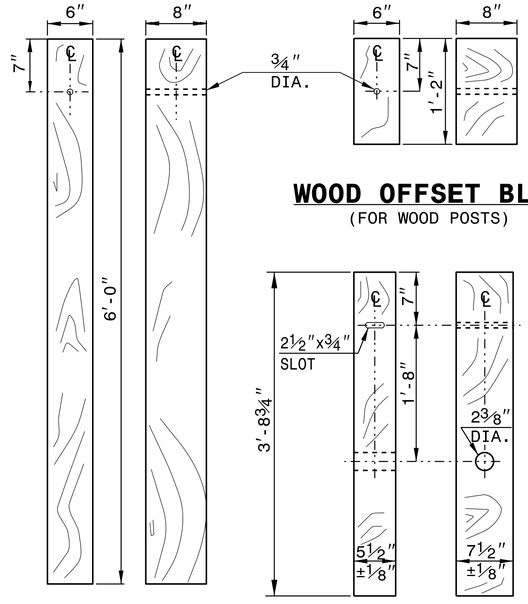
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02



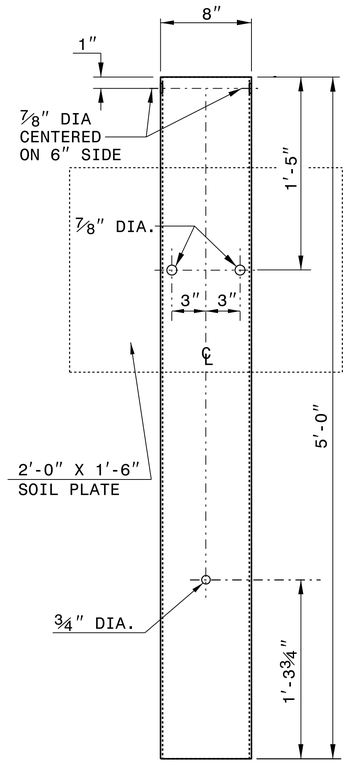
STANDARD W-BEAM GUARDRAIL



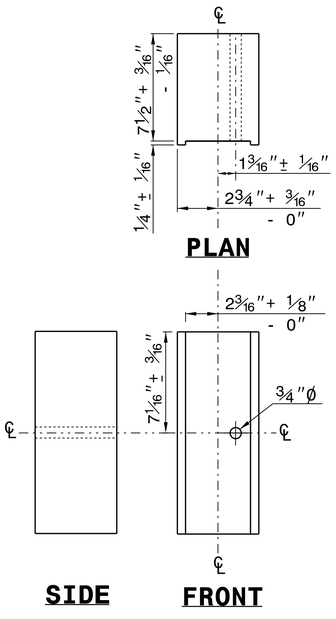
WOOD OFFSET BLOCK
(FOR WOOD POSTS)

STANDARD LINE POST

SHORT WOOD BREAKAWAY POST



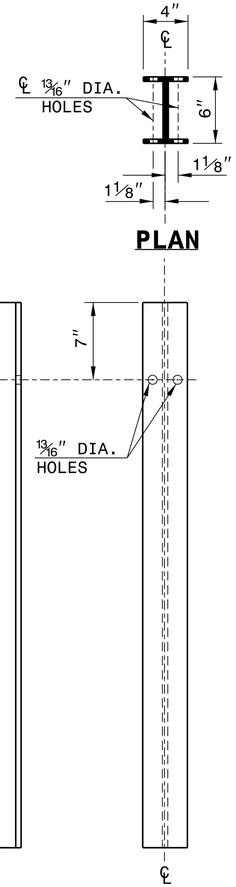
STEEL TUBE
TS 6"x8"x0.1875"



PLAN

SIDE FRONT

ROUTED OFFSET BLOCK



PLAN

SIDE FRONT

"W6" STEEL POST

SYSTEM PARTS

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02

1/30/2019
NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON
DocuSigned by: Joel S. Howerton
873F3D17DCDC45F...

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

SEE TITLE BLOCK

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

PROJECT REFERENCE NO.	SHEET NO.
B-4962	2G-1

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 0222465 ENGINEER SCOTT A. HIDDEN

DocuSigned by: Scott A. Hidden 2/4/2019
F760CAEB96EC4D3...
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

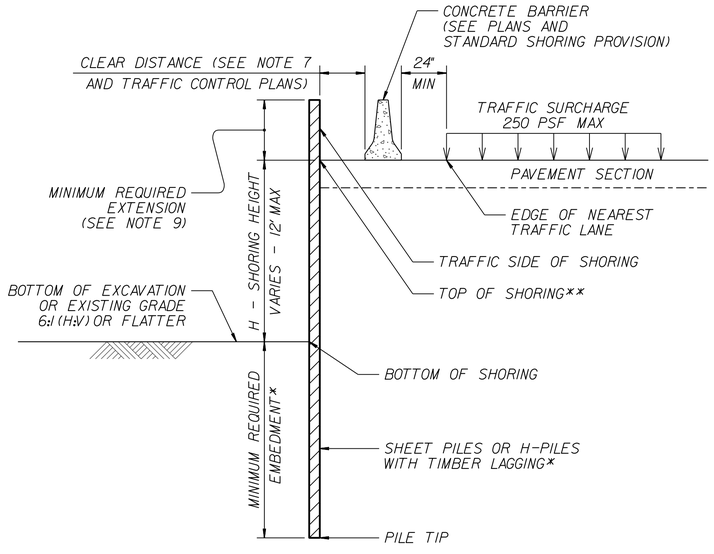
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS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

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

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

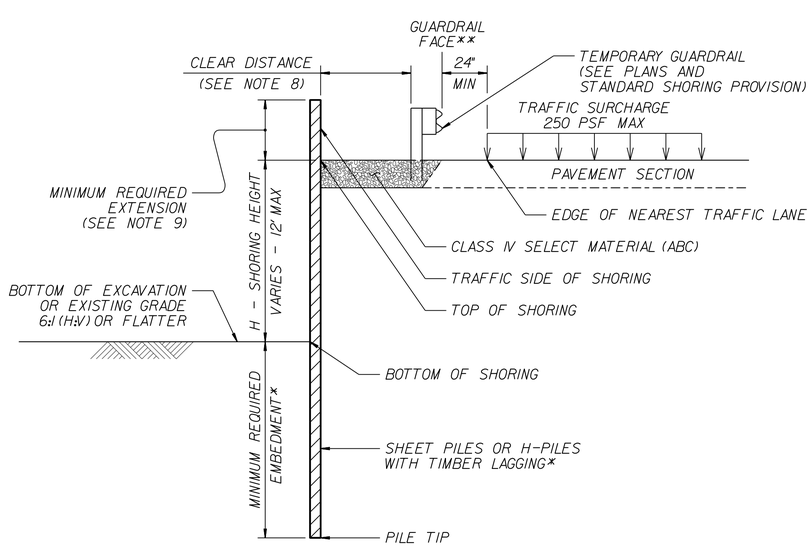
NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 PCF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 PSF
4. DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, USE "GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP" FOR GROUNDWATER CONDITION. DO NOT USE STANDARD TEMPORARY SHORING IF GROUNDWATER IS ABOVE BOTTOM OF SHORING.
7. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN THE MINIMUM REQUIRED FOR CONCRETE BARRIER, SET BARRIER NEXT TO AND UP AGAINST TRAFFIC SIDE OF PILES AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
8. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN 4' FOR TEMPORARY GUARDRAIL, ATTACH GUARDRAIL TO TRAFFIC SIDE OF PILES AS SHOWN IN THE PLANS AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
9. MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
10. MINIMUM REQUIRED EMBEDMENT FOR H-PILES WITH TIMBER LAGGING IS BASED ON DRIVEN H-PILES AT MAXIMUM 6' SPACING. AT THE CONTRACTOR'S OPTION, EMBEDMENT DEPTHS MAY BE REDUCED BY 25% FOR DRILLED-IN H-PILES.
11. SUBMIT A "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY SHORING CONSTRUCTION. UP TO 3 SHORING LOCATIONS MAY BE INCLUDED ON EACH FORM. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
12. CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.



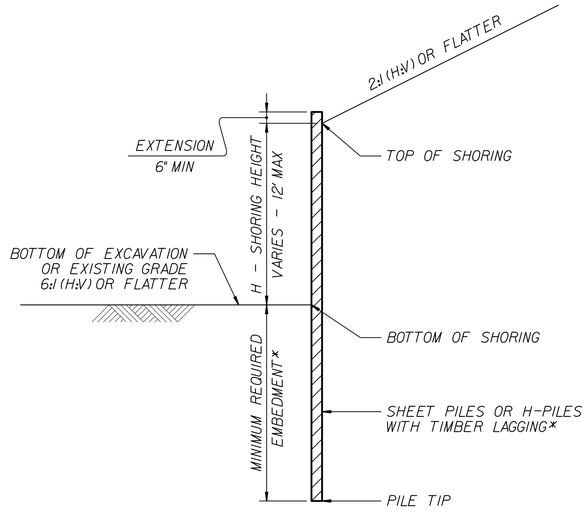
CONCRETE BARRIER

****TOP OF SHORING = EDGE OF PAVEMENT**



TEMPORARY GUARDRAIL

****GUARDRAIL FACE = EDGE OF PAVEMENT**



STANDARD TEMPORARY SHORING

(SLOPE CASE)
*SEE TABLE ABOVE.

STANDARD TEMPORARY SHORING

(SURCHARGE CASE)
*SEE TABLE ABOVE.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.01

STANDARD TEMPORARY SHORING

DATE: 11-19-13

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-4962	3B-1

Prepared in the Office of: SUMMIT — NC FIRM LICENSE No: P-0339, 504 Meadowlands Drive, Hillsborough, NC 27278, (919) 732-3883 • (919) 732-6676 (FAX)

"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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS								IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	TYPE-III	GREU TL-3	GREU TL-2	TEMP GREU TL-3	TEMP TYPE-III	VI MOD	BIC	AT-1	EA	G	NG				
-L-	11+50.00	13+75.00	RT	225					8'-0"	11'-0"	50'		1'				1													
-L-	15+14.22	16+07.97	LT	93.75				16+05	4'-0"	11'-0"		50'		2'		1	1											377		
-L-	15+46.07	16+02.32	RT	56.25			16+05		4'-0"	11'-0"						1												83		
-L-	18+67.33	22+92.33	RT	425				18+70	4'-0"	11'-0"		50'		1'		1												311		
-L-	18+72.97	20+97.97	LT	225			18+70		4'-0"	11'-0"	50'		4'			1	1											122		
-Y-	10+00.00	10+90.00	LT		131.25				8'-0"	11'-0"								1												
-Y-	10+40.00	10+98.00	RT		100				8'-0"	11'-0"													1							
			SUB-TOTAL	1025	231.25											4	3	1					1				1145			
	LESS ANCHOR DEDUCTIONS																													
			GREU, TL-3 3@50' =	-150'																										
			GREU, TL-2 1@25' =		-25'																									
			TYPE III 4@18.75 =	-75'																										
			AT-1 1@6.25 =		-6.25'																									
			PROJECT TOTAL	800.00	200.00											4	3	1					1				1145			
TEMPORARY GUARDRAIL																														
-L DET-	11+82.00	15+07.00	LT	331.25				15+07	4'-0"	11'-0"		50'		1'					1	1										
-L DET-	14+32.00	15+07.00	RT	87.5			15+07		4'-0"	11'-0"	50'		1'						1	1										
-L DET-	17+77.00	19+77.00	LT	206.25			17+77		4'-0"	11'-0"	50'		1'						1	1										
-L DET-	17+77.00	18+52.00	RT	75				17+77	4'-0"	11'-0"		50'		1'					1	1										
																			2										SEE TMP-3, TMP-4 AND TMP-5	
			SUB-TOTAL	700															6	4										
	LESS ANCHOR DEDUCTIONS		GREU, TL-3 4@50' =	-200'																										
			TYPE III 4@18.75 =	-75'																										
			PROJECT TOTAL	425'															6	4										

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

SUMMARY OF EARTHWORK
IN CUBIC YARDS

PHASE	LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+20%	BORROW	WASTE
PHASE I DETOUR CONSTRUCTION	-L_DET- STA. 10+00.00 TO 15+07.00	13	30	13,070	13,057	30
	-L_DET- STA. 17+77.00 TO 23+52.78	8,464		638		7,826
	WASTE TO REPLACE BORROW				-7,826	-7,826
	SUB TOTAL	8,477		13,708	5,231	30
PHASE II MAINLINE CONSTRUCTION						
	-L- STA. 10+50.00 TO 16+05.00	123	270	444	321	270
	-L- STA. 18+70.00 TO 23+75.00	225		230	5	
	WASTE TO REPLACE BORROW					
	SUB TOTAL	348		674	326	270
PHASE III DETOUR REMOVAL						
	(DETREM) -L- STA. 12+50.00 TO 21+50.00	4,911		3,236		1,675
	SUB TOTAL	4,911		3,236		1,675
	PROJECT SUBTOTALS	13,736		17,618	5,557	1,975
	MATERIAL FOR SHOULDER CONSTRUCTION			216	216	
	LOSS DUE TO CLEARING & GRUBBING	-800			800	
	5% TO REPLACE TOP SOIL				329	
	GRAND TOTALS	12,936	300	17,834	6,902	1,975
	SAY	13,200	*300	18,200	7,050	1,975

*GEOTECH RECOMMENDS UNDERCUT TO BE REPLACED BY SELECT GRANULAR MATERIAL

SUMMARY OF ASPHALT PAVEMENT REMOVAL

LOCATION	AREA (SQFT)	AREA (SQYD)
-L- STA. 15+00.00 TO 16+05.00	4027.65	447.52
-L- STA. 18+70.00 TO 19+20.00	1904.65	211.63
-LDET- STA. 10+51.00 TO 15+07.00	9876.31	1097.37
-LDET- STA. 17+77.00 TO 22+05.00	8973.92	997.10
TOTAL	24782.53	2753.62
SAY		2760

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LOCATION (LT/RT/CL)	LINEAR FEET
-L-	15+65.00	15+83.00	LT	18
-L-	15+65.00	15+78.00	RT	13
-LDET-	14+83.00	15+07.00	LT	24
-LDET-	14+83.00	15+07.00	RT	24
			TOTAL	79
			SAY	80

UNDERCUT EXCAVATION (CONTINGENCY) = 500 CY
SELECT GRANULAR MATERIAL = 300 CY
SELECT GRANULAR MATERIAL (CONTINGENCY) = 400 CY
GEOTEXTILE FOR SOIL STABILIZATION (CONTINGENCY) = 700 SY
SHALLOW UNDERCUT (CONTINGENCY) = 100 CY

06-FEB-2019 14:04
B4962_Rdy_sum_3B1.dgn
sarajones11

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-4962	3D-1

Prepared in the Office of: SUMMIT DESIGN AND ENGINEERING SERVICES — NC FIRM LICENSE No: P-0339, 504 Meadowlands Drive, Hillsborough, NC 27278, (919) 732-3883 - (919) 732-6676 (FAX)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NOTE: INVERT ELEVATIONS INDICATED ARE FOR BID PURPOSES ONLY AND SHALL NOT BE USED FOR PROJECT CONSTRUCTION STAKEOUT. SEE "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, SECTION 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & 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) 12"	15"	18"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC
15+71.94 –L–	LT	0401		520.0′	—	—									
15+71.94 –L–	LT	0401	0402	—	517.3′	517.1′									
15+71.99 –L–	LT	0402		520.0′	—	—									
15+71.99 –L–	LT	0402	0403	—	517.1′	490.8′									
19+49.99 –L–	RT	0404		528.0′	—	—									
19+41.99 –L–	LT/RT	0404	0405	—	525.3′	524.9′									
19+49.99 –L–	LT	0405		528.0′	—	—									
19+41.99 –L–	LT	0405	0406	—	524.9′	485.0′									
TOTALS															
TEMPORARY DRAINAGE															
13+50.79 –LDET–	RT	0501		515.7′	—	—									
13+50.79 –LDET–	LT/RT	0501	0502	—	512.9′	496.8′									
15+00.00 –LDET–	RT	0503		531.6′	—	—									
15+00.00 –LDET–	RT/LT	0503	0504	—	528.9′	528.9′									
15+00.00 –LDET–	LT	0504		531.6′	—	—									
15+00.00 –LDET–	LT	0504	0505	—	528.9′	488.52′									
18+53.17 –LDET–	LT/RT	0506	0507	—	528.9′	488.52′									
18+53.17 –LDET–	LT	0507		531.6′	—	—									
15+00.00 –LDET–	LT	0507	0508	—	528.9′	485.0′									
TOTALS															
GRAND TOTAL															

STATION (SIZE / THICKNESS OR GAUGE)	C.S. PIPE (UNLESS NOTED OTHRWISE) 12" .064	15" .064	18" .064	24" .064	24"	30" .079	30"	36" .079	36"	42" .109	42"	48" .109	48"	CLASS IV R.C. PIPE (UNLESS OTHERWISE NOTED) 12"	15"	18"	24"	30"	36"	42"	48"
15+71.94 –L–																					
15+71.94 –L–															28′						
15+71.99 –L–																					
15+71.99 –L–		116′																			
19+49.99 –L–																					
19+41.99 –L–															68′						
19+49.99 –L–																					
19+41.99 –L–			124′																		
TOTALS		116′	124′												96′						
TEMPORARY DRAINAGE																					
13+50.79 –LDET–																					
13+50.79 –LDET–			88′																		
15+00.00 –LDET–																					
15+00.00 –LDET–		28′																			
15+00.00 –LDET–																					
15+00.00 –LDET–		72′																			
18+53.17 –LDET–			42′																		
18+53.17 –LDET–																					
15+00.00 –LDET–			120′																		
TOTALS		100′	250′																		
GRAND TOTAL		216′	374′												96′						

STATION	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" 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')	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	
15+71.94 –L–						1							
15+71.94 –L–													
15+71.99 –L–						1							
15+71.99 –L–													
19+49.99 –L–						1							
19+41.99 –L–													
19+49.99 –L–						1							
19+41.99 –L–													
TOTALS						4							
TEMPORARY DRAINAGE													
13+50.79 –LDET–						1							
13+50.79 –LDET–													
15+00.00 –LDET–						1							
15+00.00 –LDET–													
15+00.00 –LDET–						1							
15+00.00 –LDET–													
18+53.17 –LDET–													
18+53.17 –LDET–						1							
15+00.00 –LDET–													
TOTALS						4							
GRAND TOTAL						8							

* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B')

STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	G.D.I STD. 840.35 AND 340.20	G.D.I. FRAME (N.S. FLAT) W/2 STD. 840.29	T.B.D.I STD. 840.35 OR 840.46	T.B.D.I WITH FRAME & GRATE STD. 840.20	T.B.D.I WITH FRAME & GRATE STD. 840.29	15" CORR. STEEL ELBOWS NO. & SIZE	18" CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.		REMARKS
15+71.94 –L–													1		1							
15+71.94 –L–																						
15+71.99 –L–													1		1							
15+71.99 –L–																2						WITH ELBOWS
19+49.99 –L–				1			1															
19+41.99 –L–																						WITH ELBOWS
19+49.99 –L–				1			1															
19+41.99 –L–																	2					WITH ELBOWS
TOTALS				2			2						2		2	2	2					
TEMPORARY DRAINAGE																						
13+50.79 –LDET–				1			1															TEMP 2GI
13+50.79 –LDET–																	2			88′		TEMP PIPE WITH ELBOWS
15+00.00 –LDET–													1		1							TEMP 2GI
15+00.00 –LDET–																				28′		TEMP PIPE
15+00.00 –LDET–													1		1							TEMP 2GI
15+00.00 –LDET–																2				72′		TEMP PIPE WITH ELBOWS
18+53.17 –LDET–																				42′		TEMP PIPE
18+53.17 –LDET–				1			1															TEMP 2GI
15+00.00 –LDET–																	2			120′		TEMP PIPE WITH ELBOWS
TOTALS				2			2						2		2	2	4			350′		
GRAND TOTAL				4			4						4		4	4	6			350′		

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

20-FEB-2019 16:04
B4962_Rdy_sum_3D1.dgn
sara.louk...

COMPUTED BY: B. Smith DATE: 3/1/18
CHECKED BY: J. Speer DATE: 1/29/19

(1-29-19)

PROJECT NO.	SHEET NO.
B-4962	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
L			LT	UD	200
L DET			LT	UD	200
CONTINGENCY				UD	200
				TOTAL LF:	600

*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. (RSD)	Riprap Class* 1/2/B	Rock Plating SY
-L-	1.5:1	13+25	1.5:1	13+75	RT	275.01		175
							TOTAL SY:	175

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

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU/AST	Aggregate Thickness INCHES	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY					100	200	300		
			TOTAL CY/TONS/SY:		100	200**	300**	0	0

*ASU = Aggregate Subgrade
*AST = Aggregate Stabilization
**Total tons of "Class IV Subgrade Stabilization" and total square yards of "Geotextile for Soil Stabilization" are only the estimated quantities for ASU/AST and may only represent a portion of the subgrade stabilization and geotextile quantities shown in the Item Sheets of the Proposal.

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-4962	3P-1

Prepared in the Office of: SUMMIT DESIGN AND ENGINEERING SERVICES
NC FIRM LICENSE No: P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883 - (919) 732-6676 (FAX)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

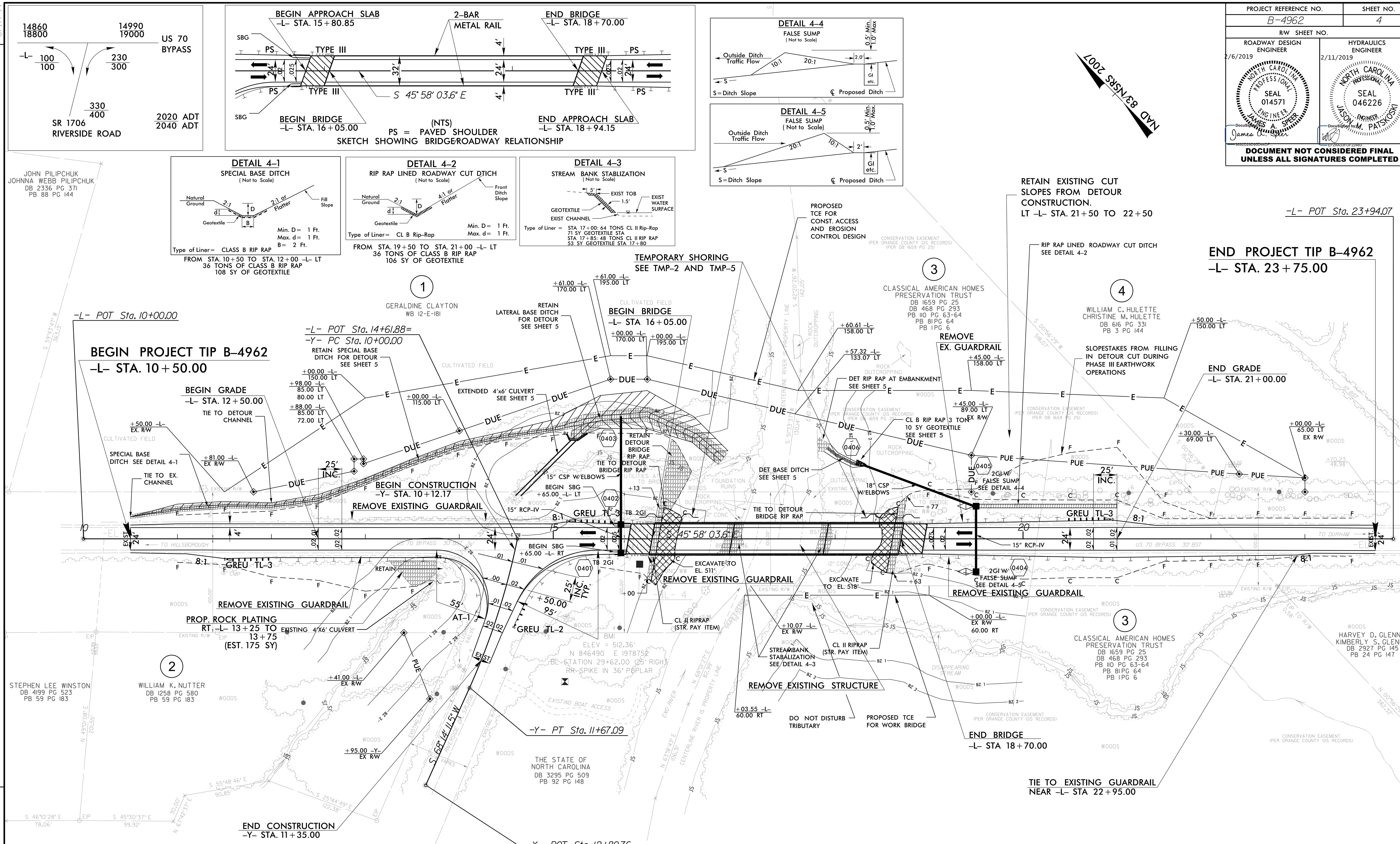
PARCEL INDEX SHEET

PARCEL NO.	SHEET NO.	PROPERTY OWNER NAME
1	4 & 5	GERALDINE CLAYTON
2	4 & 5	WILLIAM K. NUTTER
3	4 & 5	CLASSICAL AMERICAN HOMES PRESERVATION TRUST
4	4 & 5	WILLIAM C. HULETTE CHRISTINE M. HULETTE

29-JAN-2019 13:41
B4962_Rdy_sum_3P1.dgn
$$$$user$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-4962	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
2/6/2019	2/11/2019
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 014571 JAMES A. SPEER	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 046226 JASON M. PATSKOSKI

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



-Y-
PI Sta 10+83.90
Δ = 12° 45' 52.6" (RT)
D = 7° 38' 22.0"
L = 167.09'
T = 83.89'
R = 750.00'
SE = EXIST.

SEE SHEET 6 FOR -L- AND -Y- PROFILES
SEE SHEETS S-1 THRU S-41 FOR STRUCTURE PLANS
SEE SHEETS S-42 THRU S-47 FOR CULVERT PLANS

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
B-4962	5
RW SHEET NO.	

ROADWAY DESIGN ENGINEER 2/6/2019 — NORTH CAROLINA PROFESSIONAL SEAL 014571 ENGINEER JAMES A. SPEER — James A. Speer

HYDRAULICS ENGINEER 2/11/2019 — NORTH CAROLINA PROFESSIONAL SEAL 046226 ENGINEER JASON M. PATSKOSKI

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

14860 / 18800 — 14990 / 19000 — US 70 BYPASS

–L– 100 / 100 — 230 / 300

330 / 400

SR 1706 RIVERSIDE ROAD — 2020 ADT / 2040 ADT

TEMP. SBG — TEMP. TYPE III — 4' — 2' — 30' — –L DET– — 43' — –L– — S 45° 58' 03.6" E — END BRIDGE –LDET– STA. 17+77.00 — BEGIN BRIDGE –LDET– STA. 15+07.00

(NTS)

PS = PAVED SHOULDER

SKETCH SHOWING BRIDGE/ROADWAY RELATIONSHIP

DETAIL 5–1 SPECIAL BASE DITCH (Not to Scale)

Natural Ground — 2:1 — d — D — 2:1 or Flatter — Fill Slope — Geotextile — B

Min. D = 1 Ft. Max. d = 1 Ft. B = 2 Ft.

Type of Liner = CLASS 1 RIP RAP

FROM STA. 10+55 TO STA. 14+37 –L DET– LT
127 TONS OF CLASS 1 RIP RAP
268 SY OF GEOTEXTILE

DETAIL 5–2 LATERAL BASE DITCH (Not to Scale)

Natural Ground — 2:1 — d — D — 2:1 — b — 1':1Ft. — Fill Slope — GEOTEXTILE — B

*When B is < 6.0'

Min. D = 2.5 Ft. Max. d = 2.5 Ft. B = 5 Ft. b = 5 Ft.

Type of Liner = CLASS B RIP RAP DDE = 558 CY

FROM STA. 14+37 TO STA. 15+87 –L DET– LT
91 TONS OF CLASS B RIP RAP
270 SY OF GEOTEXTILE

DETAIL 5–3 OUTLET CULVERT CHANNEL WITH RIP RAP (Not to Scale)

Natural Ground — 2:1 — d — D — 2:1 — Natural Ground — GEOTEXTILE — B

S = 0.013 FT/FT

Min. D = 3 Ft. Max. d = 3 Ft. B = 4 Ft.

Type of Liner = CLASS B Rip–Rap DDE = 15.3 CY

FROM STA. 14+25 TO STA. 14+50 –L DET– LT
13 TONS OF CLASS B RIP RAP
39 SY OF GEOTEXTILE

DETAIL 5–4 PSRM LINED ROADWAY CUT DITCH (Not to Scale)

Natural Ground — 2:1 — d — D — 4:1 or Flatter — Fill Slope

Min. D = 1 Ft. Max. d = 1 Ft.

Type of Liner = PSRM

FROM STA. 19+76 TO STA. 21+06 –L DET– LT
92 SY OF PSRM

DETAIL 5–8 FALSE SUMP (Not to Scale)

Outside Ditch Traffic Flow — 10:1 — 20:1 — 2.0' — 0.5' Min. 1.0' Max. — GI etc. — S — S = Ditch Slope — ℄ Proposed Ditch

DETAIL 5–6 FALSE SUMP (Not to Scale)

Outside Ditch Traffic Flow — 10:1 — 20:1 — 2' — 0.5' Min. 1.0' Max. — GI etc. — S — S = Ditch Slope — ℄ Proposed Ditch

NAD 83/NSRS 2007

PILIPCHUK
EBB PILIPCHUK
336 PG 371
38 PG 144

BEGIN PROJECT TIP B–4962
–L– STA. 10+50.00

–LDET– PRC Sta. 12+20.87

–LDET– PC Sta. 10+00.00
–L– POT Sta. 11+00.00
BEGIN CONSTRUCTION

–L– POT Sta. 10+00.00

+50.00 –L– EX. R/W

TIE TO EXISTING CHANNEL

81.00 –L– EX R/W

+00.00 –L– 150.00 LT

+98.00 –L– 85.00 LT 80.00 LT

+88.00 –L– 85.00 LT 72.00 LT

+00.00 –L– 115.00 LT

SPECIAL BASE DITCH SEE DETAIL 5–1 (PERMANENT)

REMOVE EXISTING GUARDRAIL

TEMP 18" CSP W/ELBOWS

INV = 490.97'

TEMP TB 2GI

TEMP. GREU TL–3

2' PS

RETAIN

TEMP 2GI

TEMP 15" CSP

TEMP SBG STA 14+83 – STA 15+07 –L DET– LT & RT

EXISTING 4'X6' CULVERT

–LDET– PT Sta. 13+90.95

BEGIN GRADE
–LDET– STA. 11+54.78

1

GERALDINE CLAYTON
WB 12-E-181

CULTIVATED FIELD

+61.00 –L– 170.00 LT

+61.00 –L– 195.00 LT

LATERAL BASE DITCH SEE DETAIL 5–2 (PERMANENT)

TIE TO PROPOSED DITCH

OUTLET CULVERT CHANNEL SEE DETAIL 5–3 (PERMANENT)

EXTEND 4' x 6' CULVERT 83 FT (PERMANENT)

TIE TO EXISTING CHANNEL

BEGIN BRIDGE
–LDET– STA 15+07.00

+00.00 –L– 170.00 LT

+00.00 –L– 195.00 LT

TEMP 15" CSP W/ELBOWS

CL II RIPRAP (STR. PAY ITEM)

BASE DITCH WITH RIP RAP SEE DETAIL 5–6 (PERMANENT)

REMOVE EXISTING STRUCTURE

S 45° 58' 03.6" E

–L– BL

2

WILLIAM K. NUTTER
DB 1258 PG 580
PB 59 PG 183

LEE WINSTON
9 PG 523
9 PG 183

BMI
ELEV = 512.36'
N 846490 E 1978752
BL STATION 29+62.00 125' RIGHT
RR SPIKE IN 36" POPLAR

THE STATE OF NORTH CAROLINA
DB 3295 PG 509
PB 92 PG 148

+41.00 –L– EX R/W

+95.00 –Y– EX R/W

END BRIDGE
–LDET– STA 17+77.00

+03.55 –L– 60.00 RT

DO NOT DISTURB TRIBUTARY

PROPOSED TCE FOR WORK BRIDGE

PROPOSED TCE FOR CONST. ACCESS AND EROSION CONTROL DESIGN

TEMPORARY SHORING
SEE TMP–2 AND TMP–5

3

CLASSICAL AMERICAN HOMES PRESERVATION TRUST
DB 1659 PG 25
DB 468 PG 293
PB 110 PG 63-64
PB 81PG 64
PB 1PG 6

+60.61 –L– 158.00 LT

+57.32 –L– 133.07 LT

RIP RAP AT EMBANKMENT SEE DETAIL 5–5 (PERMANENT)

CL B RIP RAP 3 TON 10 SY GEOTEXTILE (PERMANENT)

TEMP 18" CSP W/ELBOWS

+45.00 –L– 158.00 LT

+45.00 –L– 89.00 LT EX R/W

4

WILLIAM C. HULETTE
CHRISTINE M. HULETTE
DB 616 PG 331
PB 3 PG 144

–LDET– PC Sta. 18+68.17

TEMP 2GI W/FALSE SUMP SEE DETAIL 5–8

TEMP RIP RAP LINED ROADWAY CUT DITCH SEE DETAIL 5–7

20' INC + 98.17

TEMP. PUE GREU TL–3

TEMP FS SEE DETAIL 5–6

TEMP. 18" CSP

–LDET– PRC Sta. 20+38.25

TEMP PSRM LINED ROADWAY CUT DITCH SEE DETAIL 5–4

+00.00 –L– 65.00 LT EX R/W

–LDET– PT Sta. 22+59.12
–L– POT Sta. 23+52.78
END CONSTRUCTION

–L– POT Sta. 23+94.07

END GRADE
–LDET– STA. 21+02.58

+50.00 –L– 150.00 LT

+00.00 –L– EX R/W 60.00 RT

+10.07 –L– EX R/W

3

CLASSICAL AMERICAN HOMES PRESERVATION TRUST
DB 1659 PG 25
DB 468 PG 293
PB 110 PG 63-64
PB 81PG 64
PB 1PG 6

HARVEY D. GLENN
KIMBERLY S. GLENN
DB 2927 PG 145
PB 24 PG 147

END PROJECT TIP B–4962
–L– STA. 23+75.00

DETAIL 5–5 RIP RAP AT EMBANKMENT (Not to Scale)

10' min. — Ditch Grade — 1.0' min. — 1.5' — GEOTEXTILE

Type of Liner = 8 TONS,CL II Rip–Rap Geotextile = 9 sy

FROM STA. 16+84 TO STA. 16+94 –L DET– LT

DETAIL 5–6 STANDARD BASE DITCH WITH RIP RAP (Not to Scale)

Natural Ground — 2:1 — d — D — 2:1 — Natural Ground — GEOTEXTILE — B

*When B is < 6.0'

Min. D = 1 Ft. Max. d = 1 Ft. B = 2 Ft.

Type of Liner = CLASS B Rip–Rap DDE = 100 CY

FROM STA. 16+94 TO STA. 17+33 –L DET– LT
9 TONS OF CLASS B RIP RAP
28 SY OF GEOTEXTILE

NOTE: SR 1706 (RIVERSIDE DRIVE) TO REMAIN CLOSED DURING THE DURATION OF THE ON–SITE DETOUR. ACCESS WILL BE BE PROVIDED BY THE WESTERN ACCESS OF SR 1706 (RIVERSIDE DRIVE) TO US 70 BYPASS.

VDET = 40 MPH

–LDET–			
PI Sta 11+10.89	PI Sta 13+06.26	PI Sta 19+53.56	PI Sta 21+49.14
Δ = 12° 39' 18.7" (LT)	Δ = 12° 39' 18.7" (RT)	Δ = 12° 39' 18.7" (RT)	Δ = 12° 39' 18.7" (LT)
D = 5° 43' 46.5"	D = 7° 26' 27.6"	D = 7° 26' 27.6"	D = 5° 43' 46.5"
L = 220.87'	L = 170.07'	L = 170.07'	L = 220.87'
T = 110.89'	T = 85.38'	T = 85.38'	T = 110.89'
R = 1,000.00'	R = 770.00'	R = 770.00'	R = 1,000.00'
SE = .04	SE = .04	SE = .04	SE = .04
RO = 83'	RO = 83'	RO = 83'	RO = 83'

DETAIL 5–7 RIP RAP LINED ROADWAY CUT DITCH (Not to Scale)

Natural Ground — 2:1 — d — D — 4:1 or Flatter — Front Ditch Slope — Geotextile

Type of Liner = CL B Rip–Rap Min. D = 1 Ft. Max. d = 1 Ft.

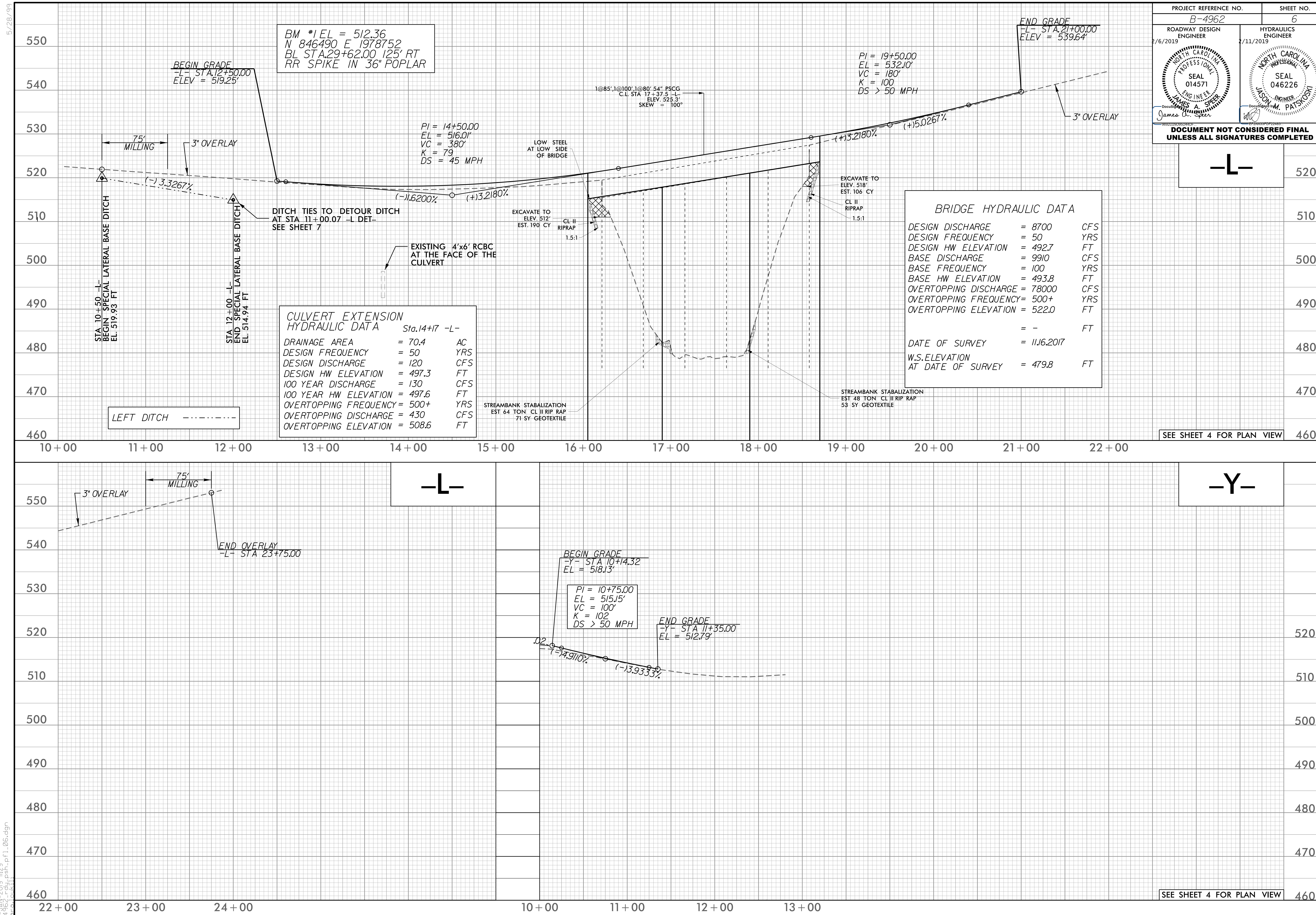
FROM STA. 18+53 TO STA. 19+76 –L DET– LT
29 TONS OF CLASS B RIP RAP
87 SY OF GEOTEXTILE

SEE SHEET 7 FOR –LDET– PROFILE
SEE SHEETS S–42 THRU S–47 FOR CULVERT PLANS

31-JAN-2019 11:24
B4962_Rdy_psh_05.dgn

PROJECT REFERENCE NO.	SHEET NO.
B-4962	6
ROADWAY DESIGN ENGINEER 2/6/2019	HYDRAULICS ENGINEER 2/11/2019
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 014571 JAMES A. SPEER	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 046226 JASON M. PATSKOSKI

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



CULVERT EXTENSION HYDRAULIC DATA Sta.14+17 -L-

DRAINAGE AREA	= 70.4	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 120	CFS
DESIGN HW ELEVATION	= 497.3	FT
100 YEAR DISCHARGE	= 130	CFS
100 YEAR HW ELEVATION	= 497.6	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 430	CFS
OVERTOPPING ELEVATION	= 508.6	FT

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 8700	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 492.7	FT
BASE DISCHARGE	= 9910	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 493.8	FT
OVERTOPPING DISCHARGE	= 78000	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 522.0	FT
	= -	FT
DATE OF SURVEY	= 11.16.2017	
W.S.ELEVATION AT DATE OF SURVEY	= 479.8	FT

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-4962	7

ROADWAY DESIGN ENGINEER
2/6/2019
NORTH CAROLINA PROFESSIONAL SEAL 014571 ENGINEER JAMES A. SPEER
DocuSigned by: James A. Speer

HYDRAULICS ENGINEER
2/11/2019
NORTH CAROLINA PROFESSIONAL SEAL 046226 ENGINEER JASON M. PATSKOSKI
DocuSigned by:

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

–LDET–

BEGIN GRADE
–L DET– STA 11+54.78
ELEV = 518.82'

PI = 13+40.00
EL = 516.43'
VC = 280'
K = 64
DS = 40 MPH

270' DETOUR BRIDGE
C.L. STA 16+42 –L DET–
ELEV. 525.7'
SKEW = 90°

LOW STEEL AT LOW SIDE OF BRIDGE

(–)1.2904%
(+)3.0843%
(–)6.7109%
(–)10.4310%
(–)5.8424%
(–)1.5892%
(–)1.9021%
(+)1.7448%
(+)9.9229%
(+)3.0843%
(+)4.6916%

PI = 18+50.00
EL = 532.16'
VC = 220'
K = 137
DS = 60 MPH

END GRADE
–L DET– STA 21+02.58
ELEV = 544.01'

STA 10+55.00 –L DET–
BEGIN SPECIAL LATERAL BASE DITCH
EL. 517.97 FT

STA 12+01.36 –L DET–
EL. 508.15 FT

STA 13+02.98 –L DET–
EL. 497.55 FT

STA 14+25 –L DET–
BEGIN CULVERT OUTLET DITCH
EL. 489.87 FT

PI=14+37.00 –L DET–
EL=489.72 FT

STA 14+50 –L DET–
END CULVERT OUTLET DITCH
EL. 489.47 FT

CL II RIPRAP 1.5:1

STA 15+87.00 –L DET–
END LATERAL BASE DITCH
EL. 486.87 FT

STA 16+94 –L DET–
BEGIN BASE DITCH
EL. 481.88 FT

STA 17+03.17 –L DET–
EL. 482.04

STA 17+33 –L DET–
END BASE DITCH
EL. 485.00 FT

CL II RIPRAP 1.5:1

LEFT DITCH

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 5600	CFS
DESIGN FREQUENCY	= 10	YRS
DESIGN HW ELEVATION	= 489.5	FT
BASE DISCHARGE	= –	CFS
BASE FREQUENCY	= –	YRS
BASE HW ELEVATION	= –	FT
OVERTOPPING DISCHARGE	= –	CFS
OVERTOPPING FREQUENCY	= –	YRS
OVERTOPPING ELEVATION	= –	FT
	= –	FT
DATE OF SURVEY	= 11/6/2017	
W.S.ELEVATION AT DATE OF SURVEY	= 479.8	FT

SEE SHEET 5 FOR PLAN VIEW

550 540 530 520 510 500 490 480 470 460

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00

31-JAN-2019 11:24
B4962_Rdy_psh_pfl_07.dgn
$$$$login
$$$$pltdrv