09/08/99

See Sheet 1-A For Index of Sheets

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

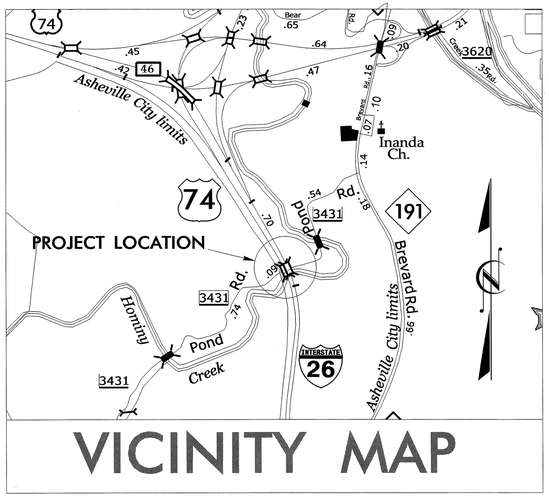
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–5178	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
42549.1.1	BRIMS–026–1(80)1	PE
42549.2.1	BRIMS–026–1(80)1	R/W & UTIL
42549.3.1	BRIMS–026–1(80)1)	CONSTR.

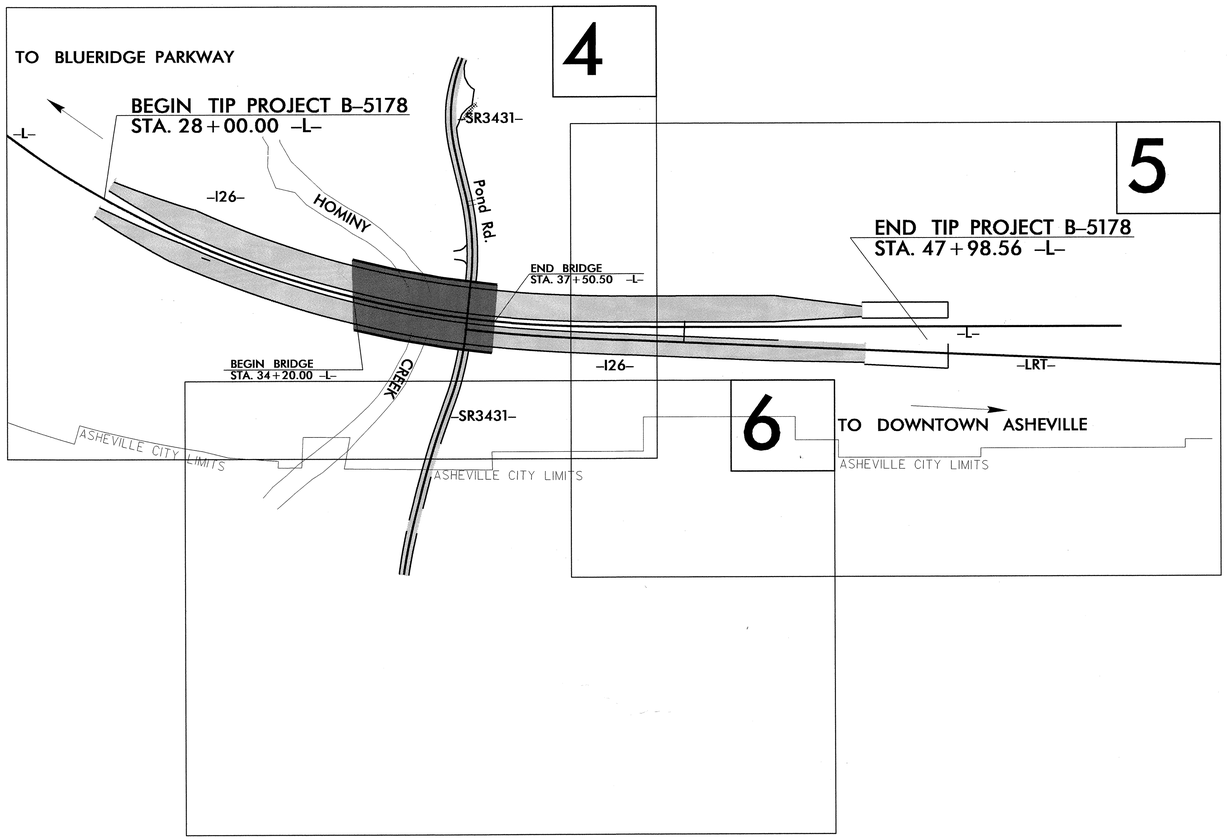
BUNCOMBE COUNTY

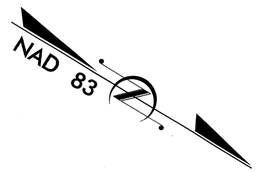
LOCATION: BRIDGES 235 AND 238 OVER SR 3431 (POND RD) & HOMINY CREEK ON I–26

TYPE OF WORK: PAVING, GRADING, DRAINAGE, & STRUCTURES



VICINITY MAP





THIS IS A CONTROLLED ACCESS PROJECT

CONTRACT: C202880

TIP PROJECT: B–5178

31-MAY-2012 14:28
R:\Roadway_Proj\B-5178_Rdy_tsh.dgn
$$$$USERNAME$$$$

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 2011 = 93400
ADT 2033 = 114900
DHV = 10 %
D = 55 %
T = 12 % *
V = 70 MPH
* TTST = 8 DUAL 4
FUNC CLASS = INTERSTATE
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B–5178 = 0.316 MILE

LENGTH STRUCTURE TIP PROJECT B–5178 = 0.063 MILE

TOTAL LENGTH TIP PROJECT B–5178 = 0.379 MILE

Prepared In the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: AUGUST 31, 2011

LETTING DATE: AUGUST 21. 2012

JIMMY GOODNIGHT, PE
PROJECT ENGINEER

TIM GOINS, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20870 ENGINEER MARC T. SHOWN

SIGNATURE:

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 037874 ENGINEER TIMOTHY D. GOINS

6-7-12

SIGNATURE:

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-5178	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 037874 ENGINEER TIMOTHY D. GOINS

6-25-12

Timothy D. Goins

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2-2A	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2-B	TEMPORARY ANCHOR UNIT DETAILS
2C	SPECIAL DITCH AND HYDRO DETAILS
2D-2E	TEMPORARY ALIGNMENT SHIFTS
2F-2H	STANDARDS TEMPORARY WALL
3 (2 Sheets)	SUMMARY OF QUANTITIES
3A-3B	SUMMARY OF DRAINAGE QUANTITIES SUMMARY OF GUARDRAIL, EARTHWORK SUMMARY, AND ASPHALT PAVEMENT REMOVAL SUMMARY
3C	PARCEL INDEX SHEET
4 THRU 6	PLAN SHEET
7 THRU 10	PROFILE SHEET
TMP-1 THRU TMP-38	TRANSPORTATION MANAGEMENT PLANS
ITS-1 THRU ITS-7	INTELLIGENT TRANSPORTATION SYSTEMS
PM-1 THRU PM-4	PAVEMENT MARKING PLANS
EC-1 THRU EC-9	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-7	SIGNING PLANS
UO-1 THRU UO-3	UTILITIES BY OTHERS PLANS
X-1	CROSS-SECTIONS SUMMARY SHEETS
X-2 THRU X-36	CROSS-SECTIONS
S-1 THRU S-88	STRUCTURE PLANS

LIST OF STANDARDS

2012 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, 2012 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
225.04	Method of Obtaining Superelevation – Two Lane Pavement
225.05	Method of Obtaining Superelevation – Divided Highways
225.09	Guide for Shoulder and Ditch Transition at Grade Separations
240.01	Guide for Berm Ditch Construction
DIVISION 3 – PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 4 – MAJOR STRUCTURES	
422.10	Reinforced Bridge Approach Fills
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	
610.01	Guide for Paving Shoulders Under Bridges – Method I
610.03	Guide for Paving Shoulders Under Bridges – Method III
654.01	Pavement Repairs
665.01	Asphalt Shoulders – Milled Rumble Strips
DIVISION 8 – INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
815.03	Pipe Underdrain and Blind Drain
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
840.14	Concrete Drop Inlet – 12" thru 30" Pipe
840.15	Brick Drop Inlet – 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates – for use with Std. Dwg 840.14 and 840.15
840.18	Concrete Grated Drop Inlet Type 'B' – 12" thru 36" Pipe
840.20	Frames and Wide Slot Flat Grates
840.22	Frames and Wide Slot Sag Grates
840.24	Frames and Narrow Slot Sag Grates
840.25	Anchorage for Frames – Brick or Concrete or Precast
840.27	Brick Grated Drop Inlet Type 'B' – 12" thru 36" Pipe
840.30	Driveway Drop Inlet
840.34	Traffic Bearing Junction Box – for Use with Pipes 42" and Under
840.35	Traffic Bearing Grated Drop Inlet – for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
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
848.04	Street Turnout
850.01	Concrete Paved Ditches
850.10	Guide for Berm Drainage Outlet – 15" and 18" Pipe
854.02	Double Faced Concrete Barrier – Types 'T', 'T1' and 'T2'
854.05	Concrete Median Transition Barrier – Location of Overhead Assembly
857.01	Precast Reinforced Concrete Barrier – 41" Single Faced
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
866.02	Woven Wire Fence – with Wood Post
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

GENERAL NOTES

GENERAL NOTES: 2012 SPECIFICATIONS

EFFECTIVE: 01-17-12
REVISED: 11/01/11

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 AND 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. 560.01.

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

BERM DITCHES:
BERM DITCHES SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 240.01 AT LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

UNDERDRAINS:
UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER.

DRIVEWAYS:
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".

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 Progress Energy – Power
AT&T – Telephone, City of Asheville – Water, Metropolitan Sewerage District (MSD) – Sewer
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.

04/16/11

PROJECT REFERENCE NO.	SHEET NO.
B-5178	1B

Note: Not to Scale

****S.U.E. = Subsurface Utility Engineering***

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- 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
- Known Soil Contamination: Area or Site
- Potential Soil Contamination: Area or Site

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:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite Marker — RW
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

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
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

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

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line — W
- Designated U/G Water Line (S.U.E.*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Satellite Dish
- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

- Sanitary Sewer Manhole — S
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line — ?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 (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-5178	1C
Location and Surveys	

SURVEY CONTROL SHEET B-5178

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
4	BL-4	670481.3066	928018.6880	2151.79	12+38.50	9.69 LT
5	BL-5	671716.4832	928194.0225	2101.50	24+85.72	7.84 RT
6	BL-6	672966.3194	928034.6247	2063.67	37+39.47	67.85 RT
7	BL-7	673962.0850	927352.3410	2059.05	49+38.44	7.89 LT
8	BL-8	674938.3957	926974.3715	2039.72	OUTSIDE PROJECT LIMITS	

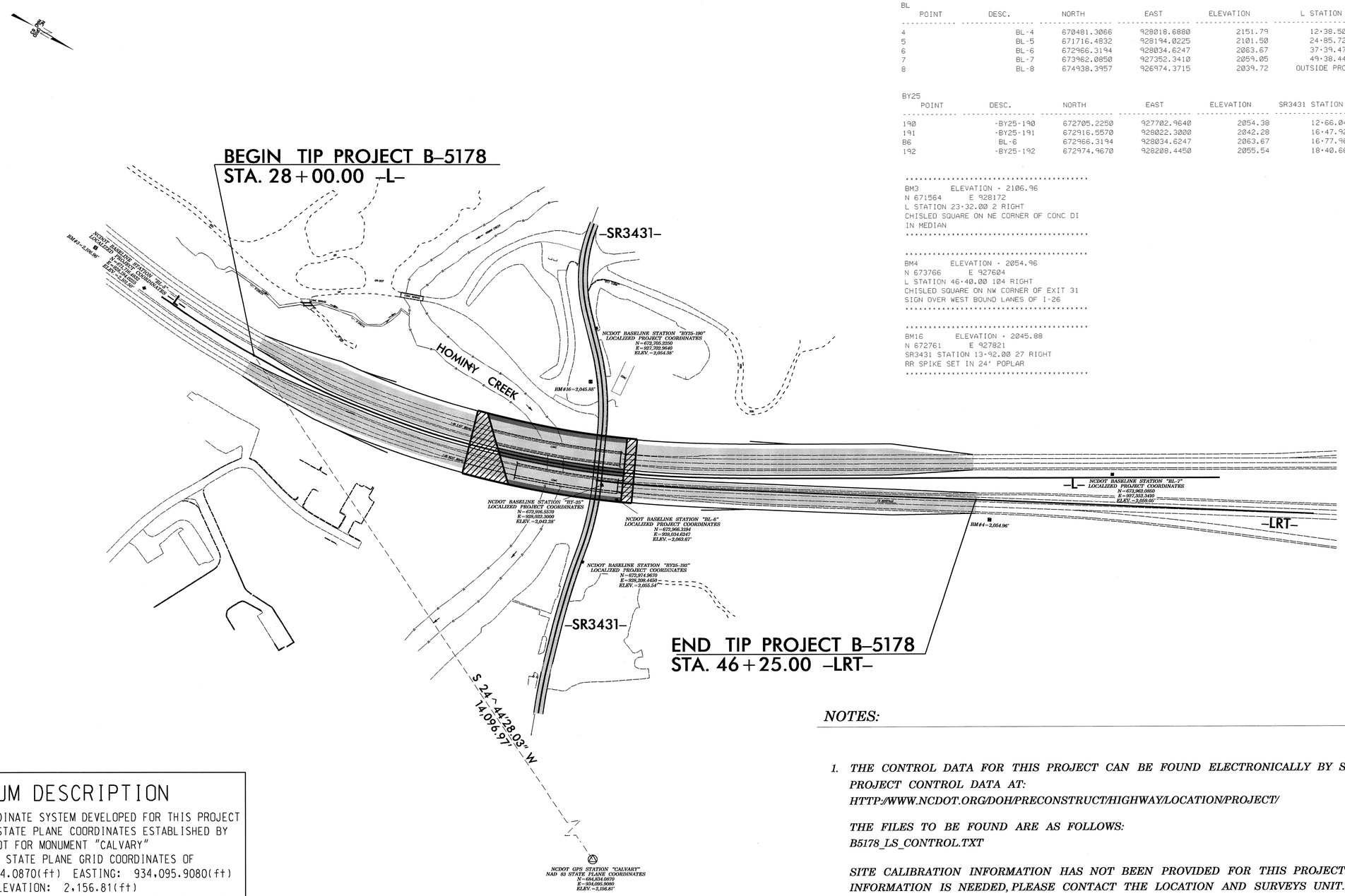
BY25

POINT	DESC.	NORTH	EAST	ELEVATION	SR3431 STATION	OFFSET
190	-BY25-190	672705.2250	927702.9640	2054.38	12+66.04	12.67 LT
191	-BY25-191	672916.5570	928022.3000	2042.28	16+47.92	12.39 LT
B6	BL-6	672966.3194	928034.6247	2063.67	16+77.96	52.85 LT
192	-BY25-192	672974.9670	928208.4450	2055.54	18+40.66	12.71 LT

BM3 ELEVATION - 2106.96
N 671564 E 928172
L STATION 23+32.00 2 RIGHT
CHISLED SQUARE ON NE CORNER OF CONC DI
IN MEDIAN

BM4 ELEVATION - 2054.96
N 673766 E 927604
L STATION 46+40.00 104 RIGHT
CHISLED SQUARE ON NW CORNER OF EXIT 31
SIGN OVER WEST BOUND LANES OF I-26

BM16 ELEVATION - 2045.88
N 672761 E 927821
SR3431 STATION 13+92.00 27 RIGHT
RR SPIKE SET IN 24" POPLAR



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "CALVARY" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 684,834.0870(ft) EASTING: 934,095.9080(ft) ELEVATION: 2,156.81(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9997841
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "CALVARY" TO -L- STATION 28+00.00 IS S 24°44'28.03 W 14,096.97'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTES:

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

   THE FILES TO BE FOUND ARE AS FOLLOWS: B5178_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.
NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION

NOTE: DRAWING NOT TO SCALE

10-MAY-2012 09:22
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$$$$USERNAME$$$$

6/2/99

PAVEMENT SCHEDULE

C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C3	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C4	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
C5	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
D1	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0D, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
D2	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D3	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D4	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0D, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2.5 " IN DEPTH OR GREATER THAN 4" IN DEPTH.
D5	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2.5 " IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 15" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD. IN EACH OF 3 LAYERS.
E2	PROP. APPROX. 4.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 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.
E4	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, 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.
R1	PROP. CONCRETE MEDIAN BARRIER
R2	2' - 6" CONCRETE CURB AND GUTTER
R3	8" X 12" CONCRETE CURB
R4	PROPOSED SINGLE FACED CONC. BARRIER
T	EARTH MATERIAL
U	EXISTING PAVEMENT.
V	MILLED RUMBLE STRIPS
W	WEDGING

NOTE: PAVEMENT SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.

PROJECT REFERENCE NO.	SHEET NO.
B-5178	2

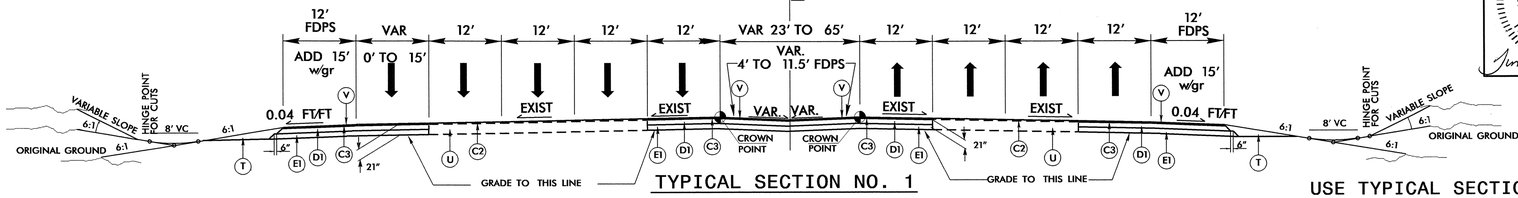
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 037874 ENGINEER TIMOTHY D. GOING
6-19-12

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON
6/24/12

–L–



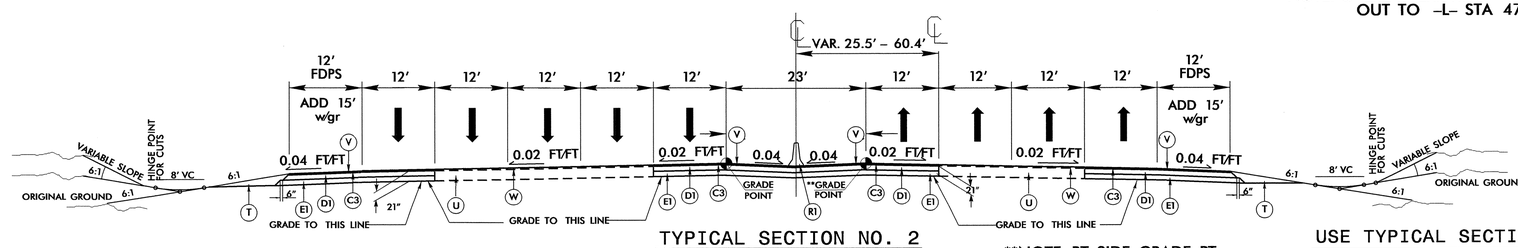
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

–L– STA 28+00.00 TO –L– STA 30+00.00
–L– STA 44+00.00 TO –L– STA 47+98.56

NOTE: OVERLAY EXISTING PAVEMENT LT & RT OUT TO –L– STA 47+98.56

–L– –LRT–



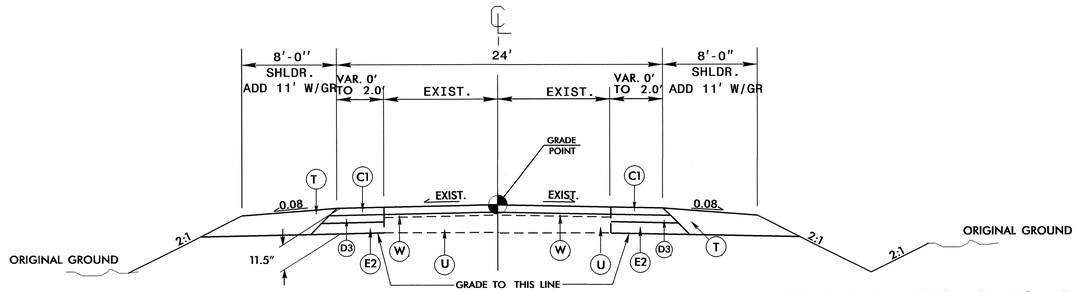
TYPICAL SECTION NO. 2

**NOTE: RT SIDE GRADE PT WILL SHIFT TO LRT ALIGNMENT AT –L– 37+84.59

USE TYPICAL SECTION NO. 2

–L– STA 30+00.00 TO –L– STA 34+20.00 (BEGIN BRIDGE)
–L– STA 37+50.50 (END BRIDGE) TO –L– STA 44+00.00

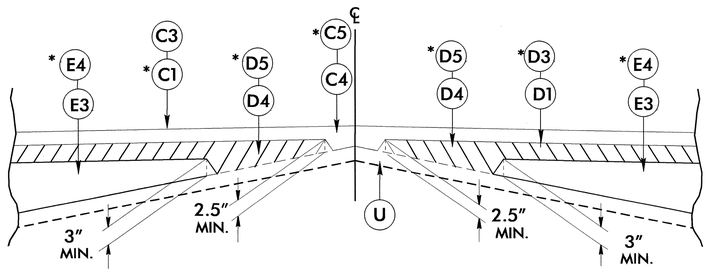
–SR3431–



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

–SR3431– STA 10+10 TO –SR3431– STA 11+25
–SR3431– STA 20+50 TO –SR3431– STA 22+24.94

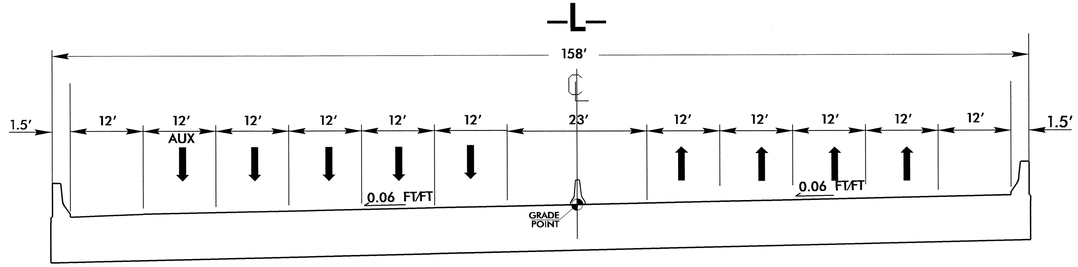


–L– STA 30+00.00 TO –L– STA 34+20.00
–SR3431– STA 20+50 TO –SR3431– STA 22+24.94
–SR3431– STA 10+10.00 TO –SR3431– STA 11+25.00

Detail Showing Method of Wedging

* DENOTES PAVEMENT DESIGN FOR –SR3431–

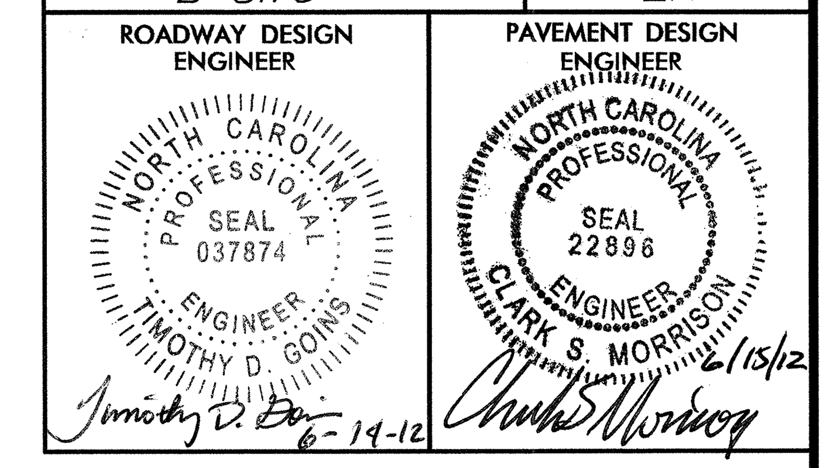
–L–



TYPICAL SECTION ON STRUCTURE

–L– STA 34+20.00 (BEGIN BRIDGE)
TO –L– STA 37+50.50 (END BRIDGE)

PROJECT REFERENCE NO.	SHEET NO.
B-5178	2A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER



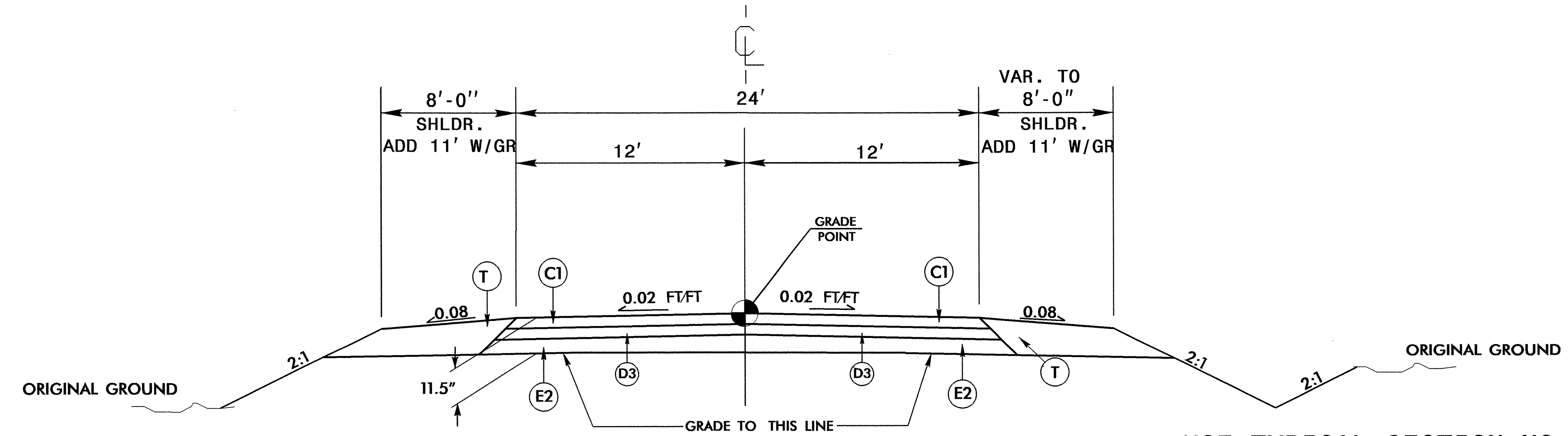
6/2/99

PAVEMENT SCHEDULE

C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C3	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C4	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
C5	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
D1	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0D, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
D2	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D3	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D4	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0D, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2.5 " IN DEPTH OR GREATER THAN 4" IN DEPTH.
D5	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2.5 " IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 15" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD. IN EACH OF 3 LAYERS.
E2	PROP. APPROX. 4.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 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.
E4	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, 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.
R1	PROP. CONCRETE MEDIAN BARRIER
R2	2' - 6" CONCRETE CURB AND GUTTER
R3	8" X 12" CONCRETE CURB
R4	PROPOSED SINGLE FACED CONC. BARRIER
T	EARTH MATERIAL
U	EXISTING PAVEMENT.
W	WEDGING

NOTE: PAVEMENT SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.

-SR3431-

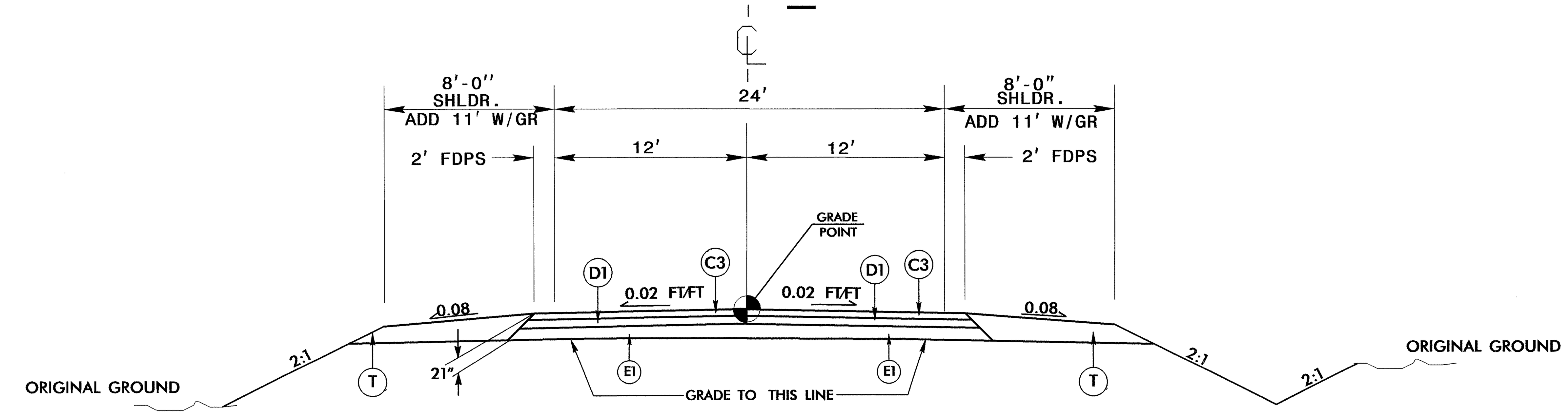


TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4

-SR3431- STA 11+25 TO -SR3431- STA 20+50

-TEMP_ALN1-
-TEMP_ALN2-

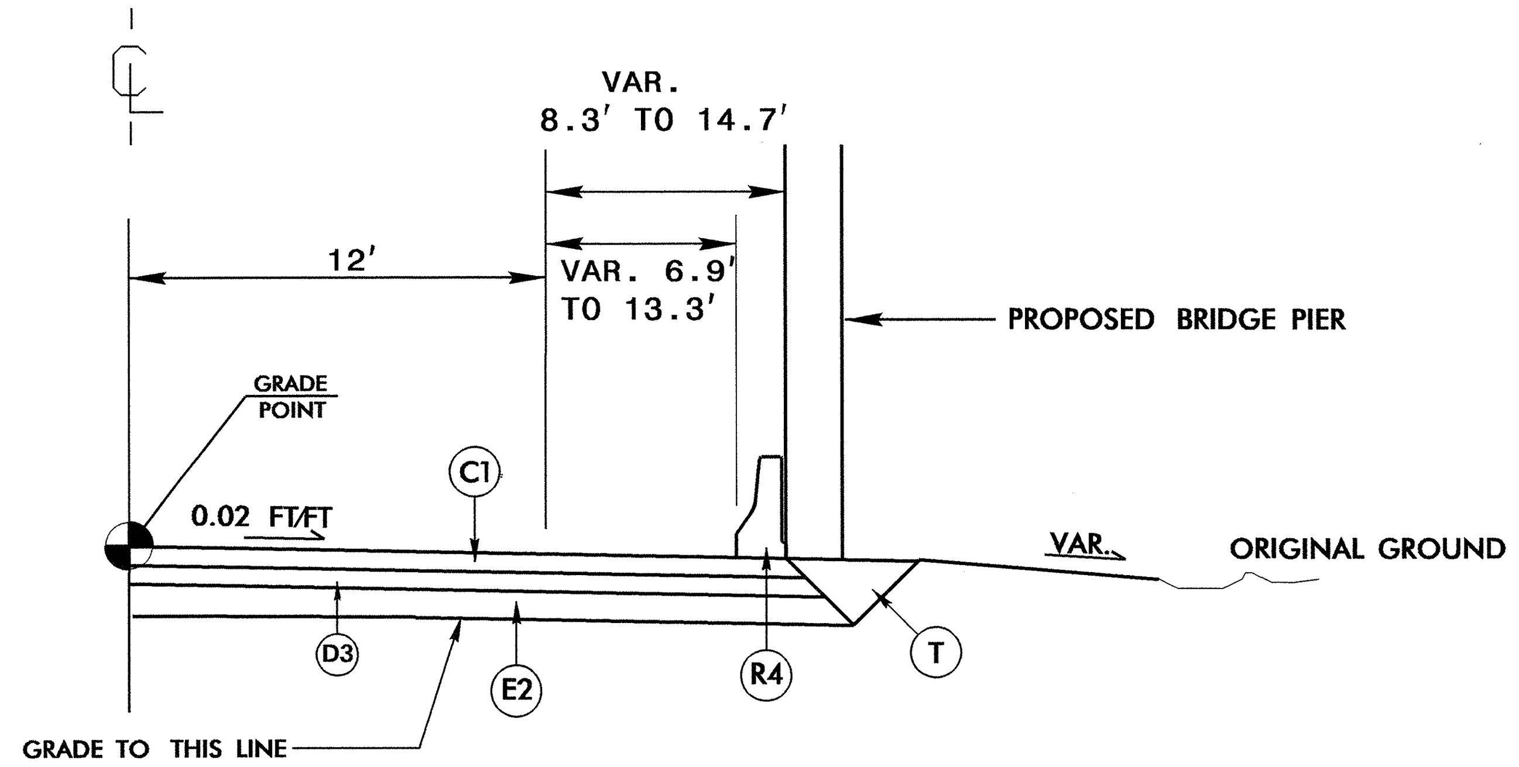


TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6

-TEMP_ALN1- STA 12+18.01 TO STA 15+64.58
-TEMP_ALN1- STA 19+50.35 TO STA 22+93.74
-TEMP_ALN2- STA 13+64.20 TO STA 19+44.11
-TEMP_ALN2- STA 23+26.07 TO STA 28+75.06

-SR3431-



DETAIL NO. 2

USE DETAIL NO. 2 IN CONJUNCTION WITH T.S. NO.4

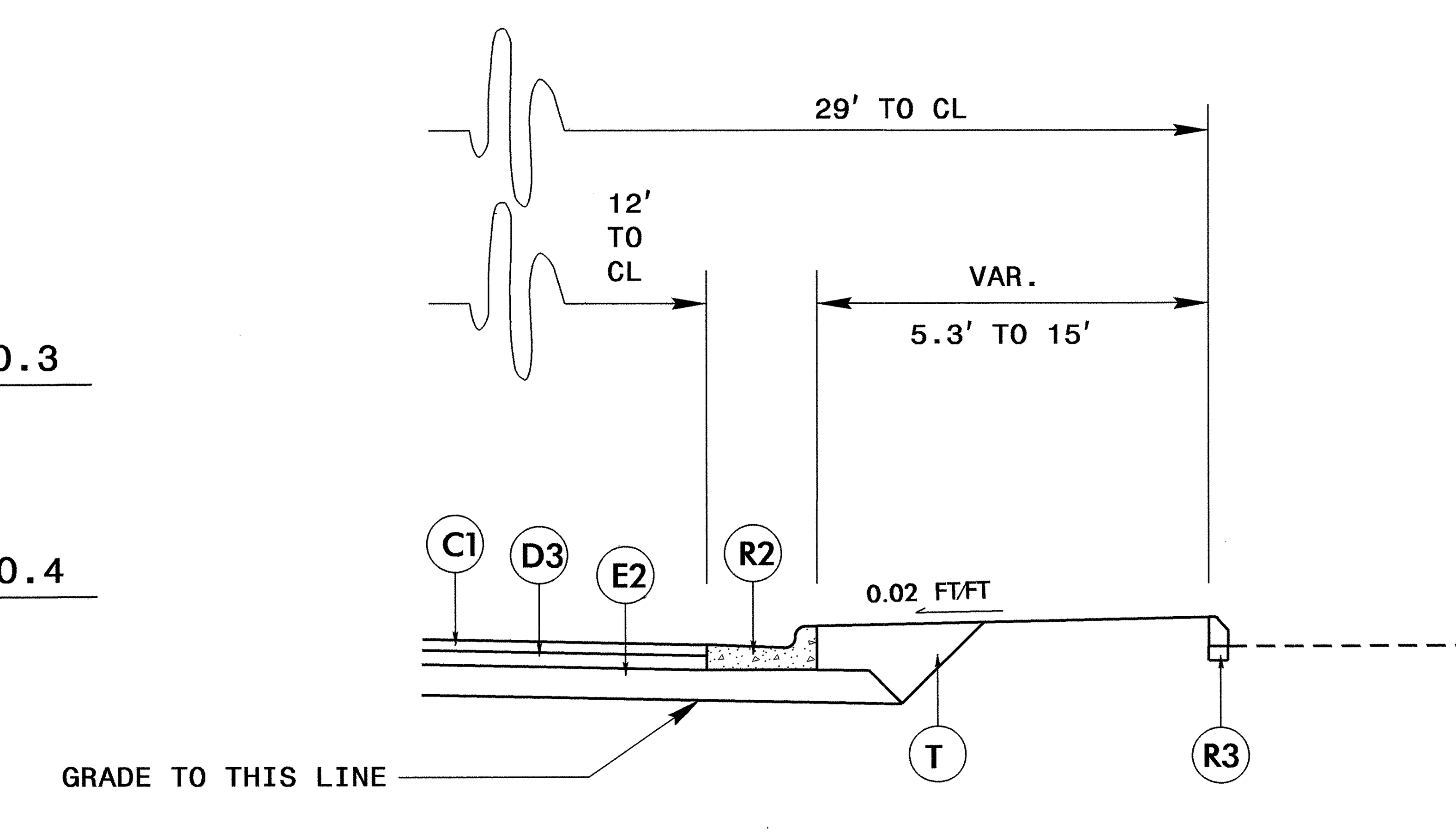
-SR3431- STA 16+40 TO STA 17+00

USE DETAIL NO. 1 IN CONJUNCTION WITH T.S. NO.3

-SR3431- STA 21+30 RT TO -SR3431- STA 22+00 RT

USE DETAIL NO. 1 IN CONJUNCTION WITH T.S. NO.4

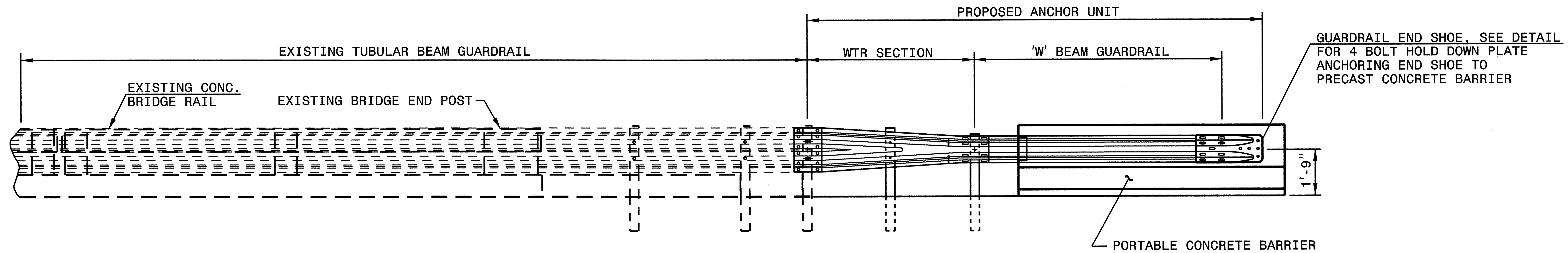
-SR3431- STA 11+81.50 LT TO -SR3431- STA 12+64.11 LT
-SR3431- STA 12+98.94 LT TO -SR3431- STA 13+80.36 LT
-SR3431- STA 14+42.32 LT TO -SR3431- STA 15+18.97 LT
-SR3431- STA 19+10 LT TO -SR3431- STA 19+30 LT
-SR3431- STA 19+50 RT TO -SR3431- STA 20+80 RT
-SR3431- STA 19+82.4 RT TO -SR3431- STA 20+75.18 RT



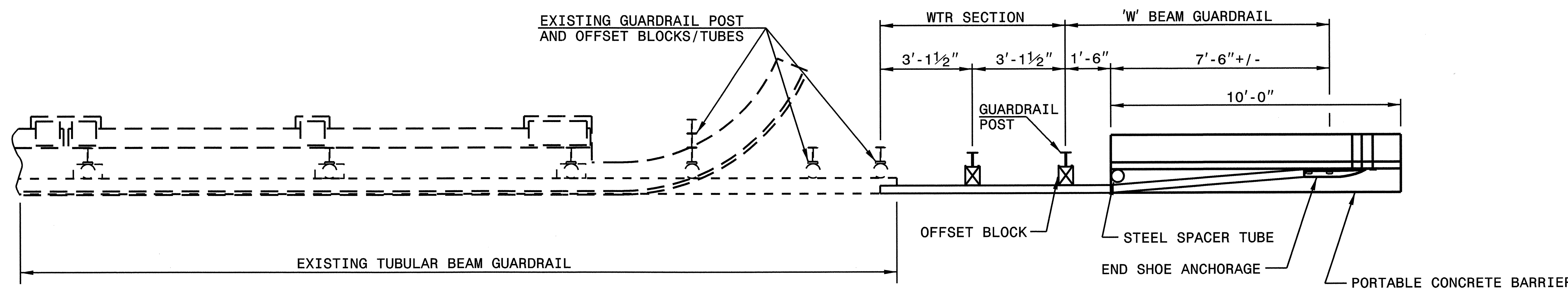
DETAIL NO. 1

11-JUN-2012 16:21
R:\Roadway\Proj\B-5178_Rdy_typ.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-5178	2-B



ELEVATION VIEW



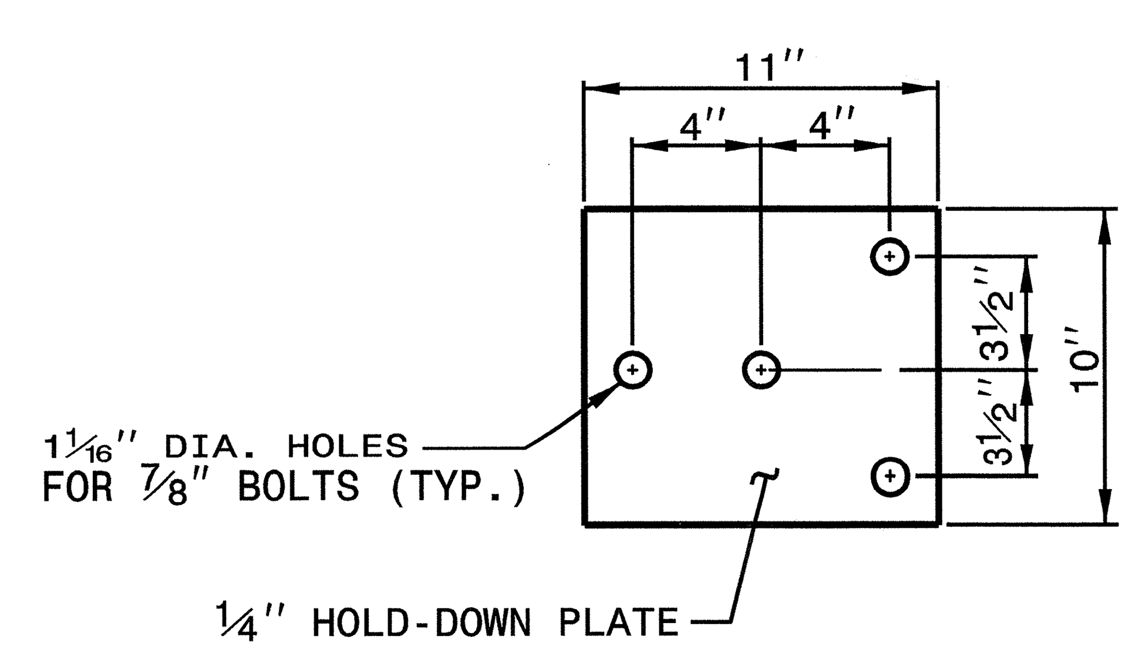
PLAN VIEW

NOTES FOR 4 BOLT HOLD DOWN PLATE

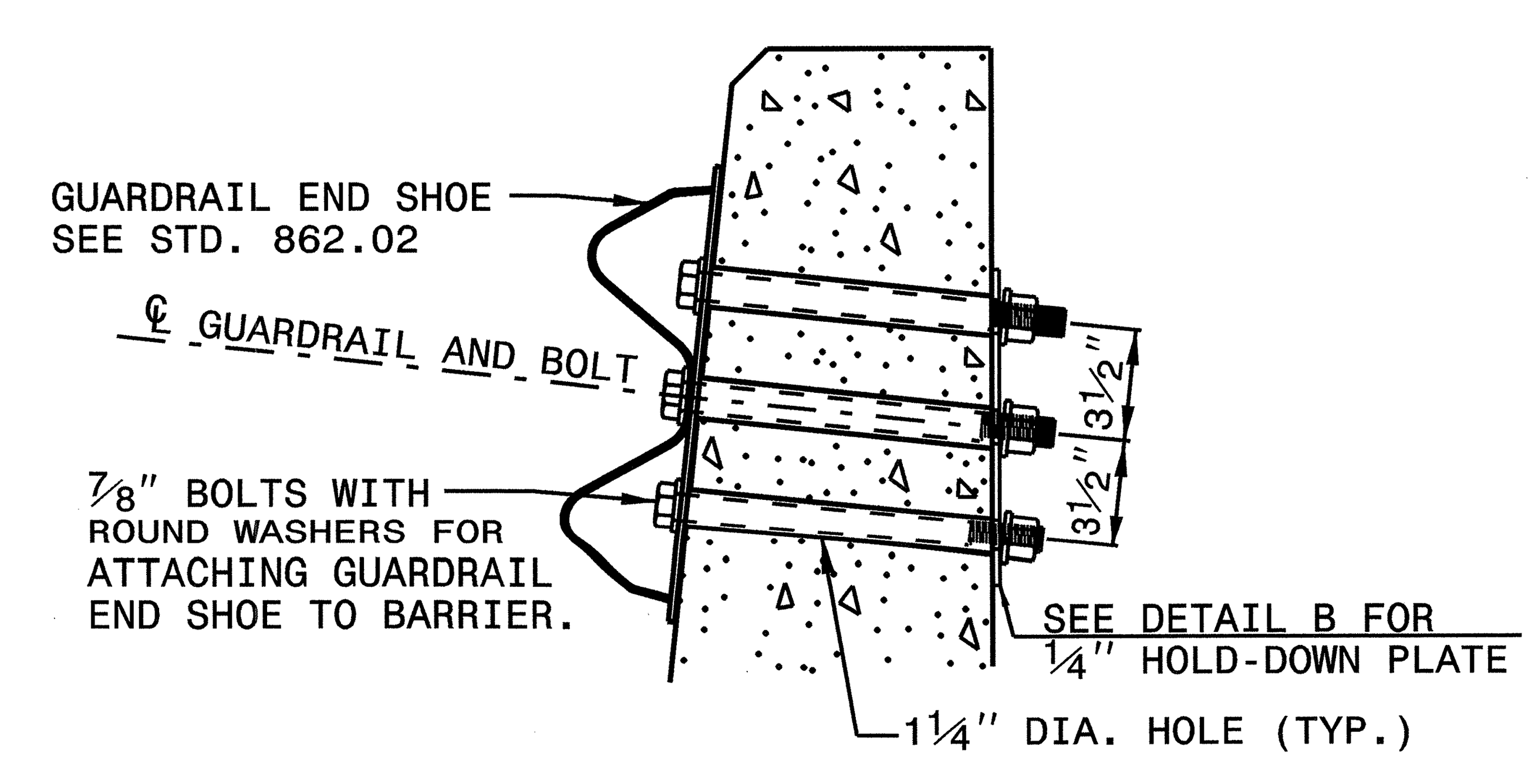
THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A ¼" HOLD DOWN PLATE AND 4 - ⅞" DIA. BOLTS WITH NUTS AND WASHERS.

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

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



4 BOLT HOLD DOWN PLATE



PART SECTION OF BARRIER

THRU END SHOE SECTION AND 4 BOLT HOLD DOWN PLATE

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON 6/20/12

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

TEMPORARY ANCHOR UNIT CONECTING TUBULAR BEAM GUARDRAIL TO PORTABLE CONCRETE BARRIER

ORIGINAL BY: E.E. WARD DATE: 9-9-04
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: \usr\details\stand\862stds\anc.dgn

5/14/99

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

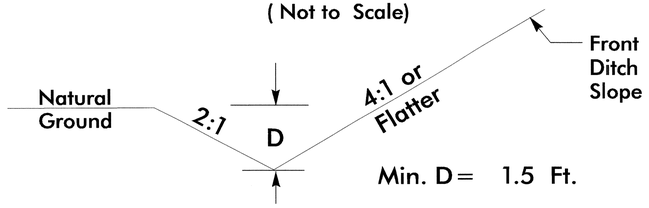
6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-5178	2-C
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 29010 ENGINEER MARC T. SHOWN
6/19/12

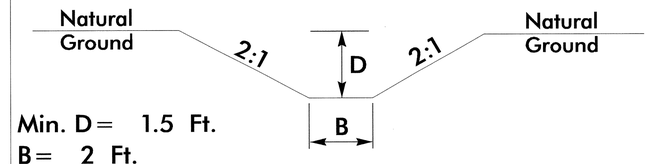
SPECIAL DITCH AND HYDRO DETAILS

DETAIL 'A'
SPECIAL CUT DITCH
(Not to Scale)



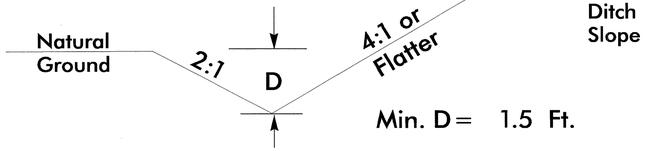
FROM STA. 38+00 LT. TO STA. 41+00 LT. –L–
FROM STA. 32+00 RT. TO STA. 33+00 RT. –L–

DETAIL 'B'
STANDARD BASE DITCH
(Not to Scale)



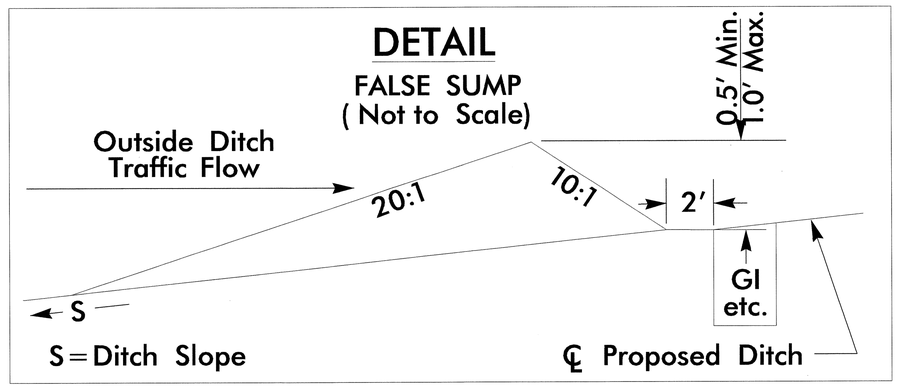
FROM STA. 14+36 RT. TO STA. 15+20 RT. –SR3431–

DETAIL 'A'
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 41+00 LT. TO STA. 41+50 LT. –L–

DETAIL
FALSE SUMP
(Not to Scale)



REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
B-5178	2-D
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 037874 ENGINEER TIMOTHY D. GOINS

Timothy D. Goins 6-7-12

TEMP_ALN1

-TEMP_ALN1-

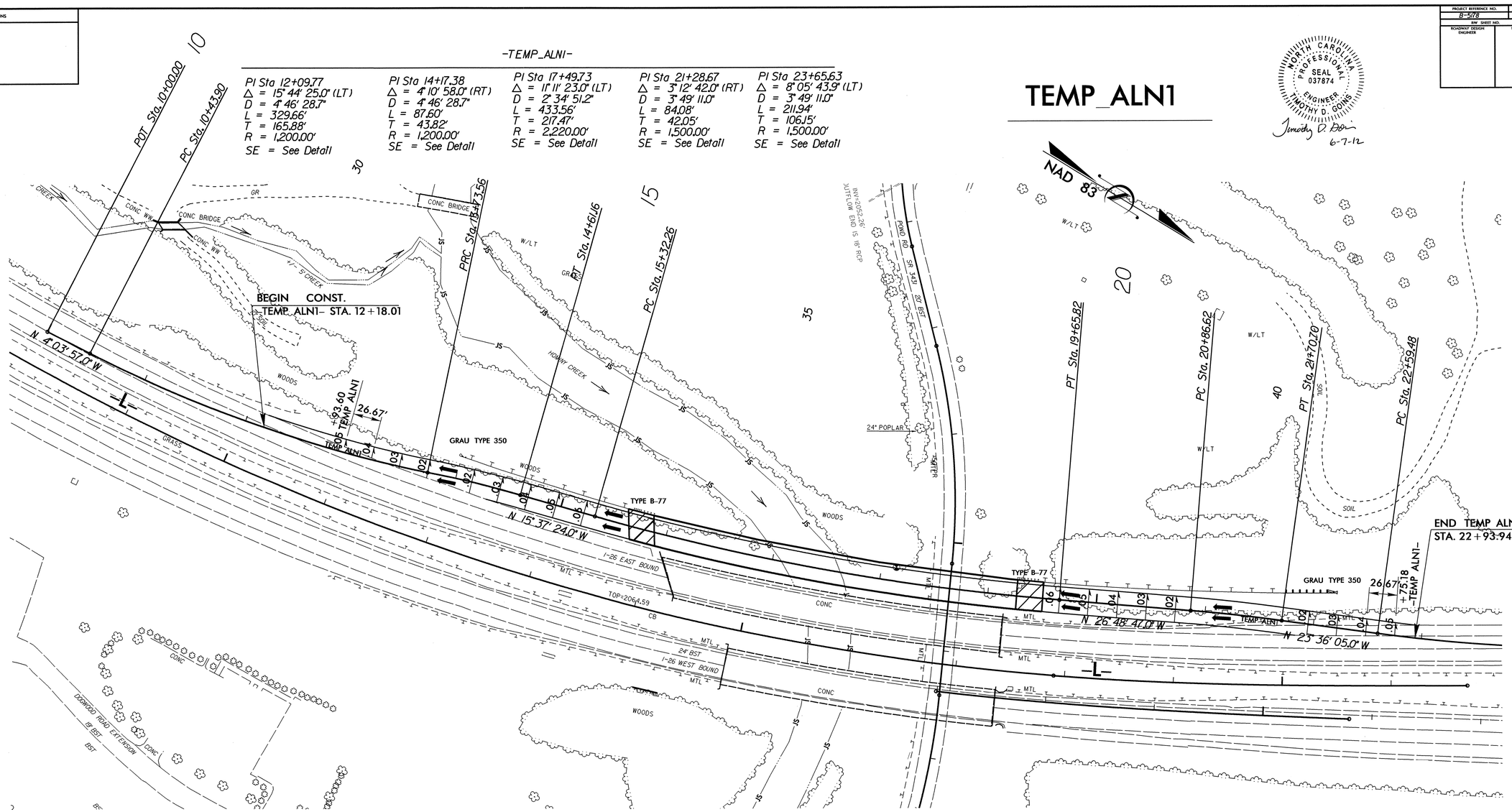
PI Sta 12+09.77
△ = 15° 44' 25.0" (LT)
D = 4° 46' 28.7"
L = 329.66'
T = 165.88'
R = 1,200.00'
SE = See Detail

PI Sta 14+17.38
△ = 4° 10' 58.0" (RT)
D = 4° 46' 28.7"
L = 87.60'
T = 43.82'
R = 1,200.00'
SE = See Detail

PI Sta 17+49.73
△ = 11° 11' 23.0" (LT)
D = 2° 34' 51.2"
L = 433.56'
T = 217.47'
R = 2,220.00'
SE = See Detail

PI Sta 21+28.67
△ = 3° 12' 42.0" (RT)
D = 3° 49' 11.0"
L = 84.08'
T = 42.05'
R = 1,500.00'
SE = See Detail

PI Sta 23+65.63
△ = 8° 05' 43.9" (LT)
D = 3° 49' 11.0"
L = 211.94'
T = 106.15'
R = 1,500.00'
SE = See Detail



TEMPORARY ALIGNMENT SHIFT FOR PHASE II (SEE TMP PLANS)

NOTE: BRIDGE IS DRAWN IN APPROXIMATE LOCATION. SEE TMP PLANS FOR PHASE CONSTRUCTION.

PLEASE SEE SHEET 10 FOR -TEMP_ALN1- PROFILE

GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION: REPLACEMENT OF BRIDGES NO. 235 AND 238 ON I-26 OVER SR. 3431 (POND RD.) AND HOMINY CREEK
TIP NO. B-5178 COUNTY: BUNCOMBE
DESIGNED BY: TIM GOINS, PE
CHECKED BY: JIMMY GOODNIGHT, PE DATE: MAY 11, 2012

PROJECT REFERENCE NO.	SHEET NO.
B-5178	2-E

R/W SHEET NO.

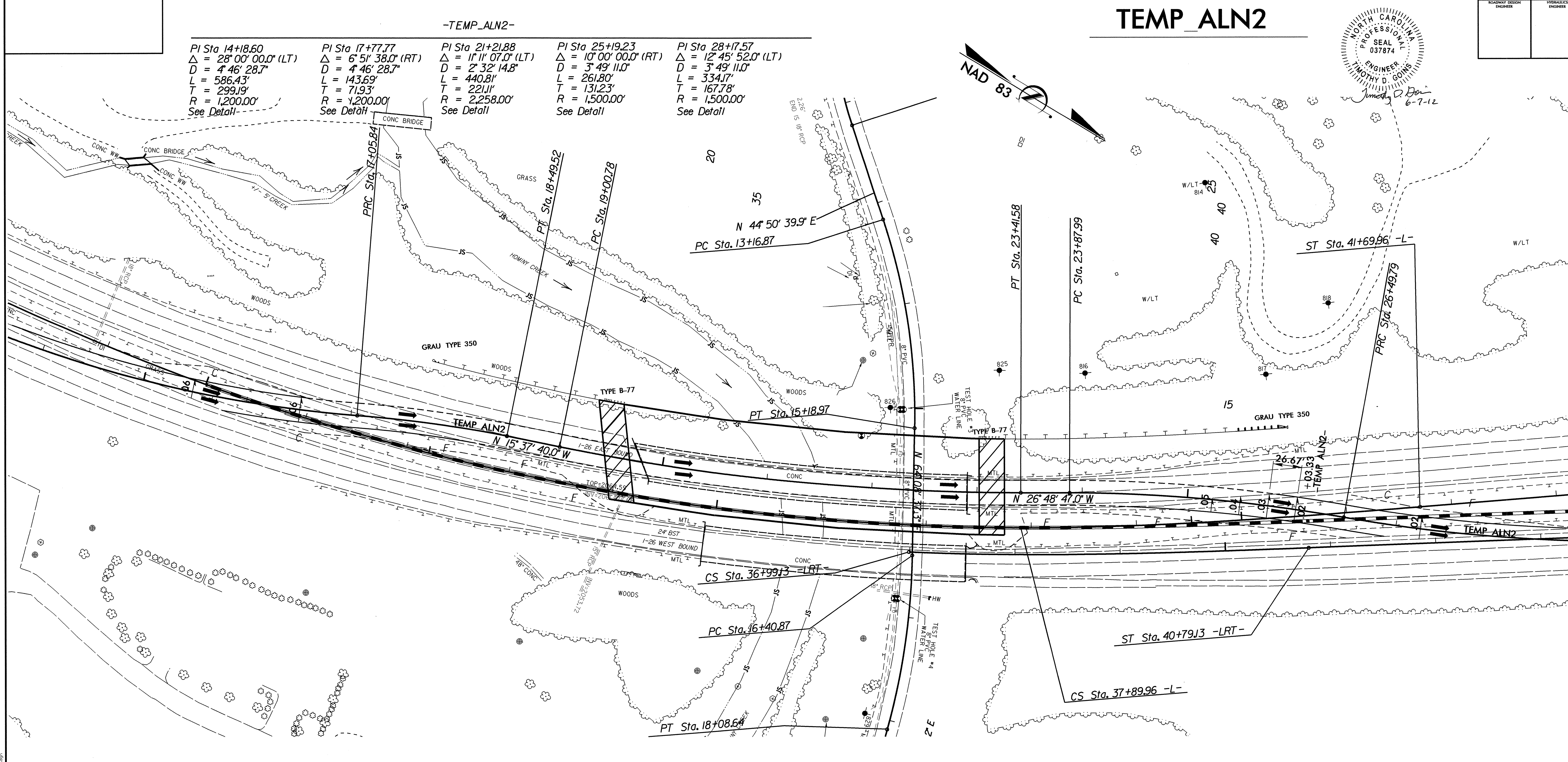
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

REVISIONS

TEMP_ALN2

-TEMP_ALN2-

PI Sta 14+18.60	PI Sta 17+77.77	PI Sta 21+21.88	PI Sta 25+19.23	PI Sta 28+17.57
Δ = 28° 00' 00.0" (LT)	Δ = 6° 51' 38.0" (RT)	Δ = 11° 11' 07.0" (LT)	Δ = 10° 00' 00.0" (RT)	Δ = 12° 45' 52.0" (LT)
D = 4° 46' 28.7"	D = 4° 46' 28.7"	D = 2° 32' 14.8"	D = 3° 49' 11.0"	D = 3° 49' 11.0"
L = 586.43'	L = 143.69'	L = 440.81'	L = 261.80'	L = 334.17'
T = 299.19'	T = 71.93'	T = 221.11'	T = 131.23'	T = 167.78'
R = 1,200.00'	R = 1,200.00'	R = 2,258.00'	R = 1,500.00'	R = 1,500.00'
See Detail	See Detail	See Detail	See Detail	See Detail



TEMPORARY ALIGNMENT SHIFT FOR PHASE III (SEE TMP PLANS)

NOTE: BRIDGE IS DRAWN IN APPROXIMATE LOCATION. SEE TMP PLANS FOR PHASE CONSTRUCTION.

PLEASE SEE SHEET 10 FOR -TEMP_ALN2- PROFILE

GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION:
REPLACEMENT OF BRIDGES NO. 235 AND 238 ON I-26 OVER SR. 3431 (POND RD.) AND HOMINY CREEK

TIP NO.: B-5178 COUNTY: BUNCOMBE

DESIGNED BY: TIM GOINS, PE

CHECKED BY: JIMMY GOODNIGHT, PE DATE: MAY 11, 2012

PROJECT REFERENCE NO.	SHEET
B-5178	2-F

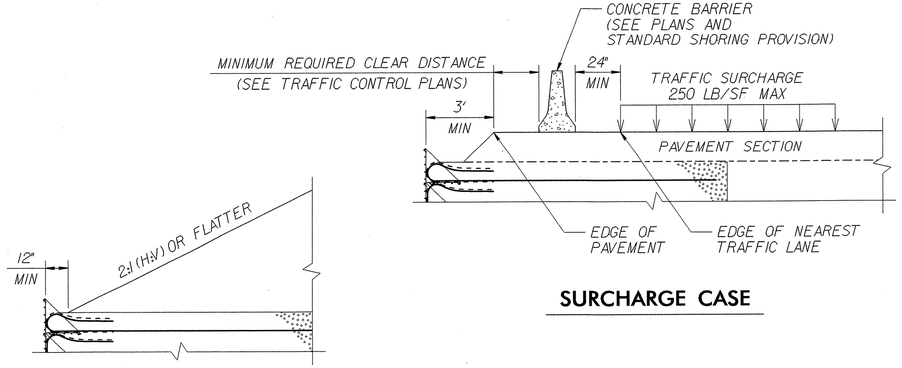
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A HIDDEN

Scott A. Hidden 11/18/11
SIGNATURE DATE

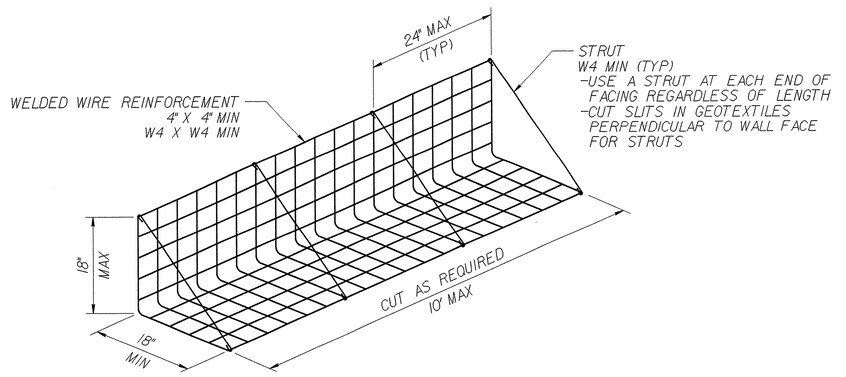
ENGINEER

SIGNATURE DATE

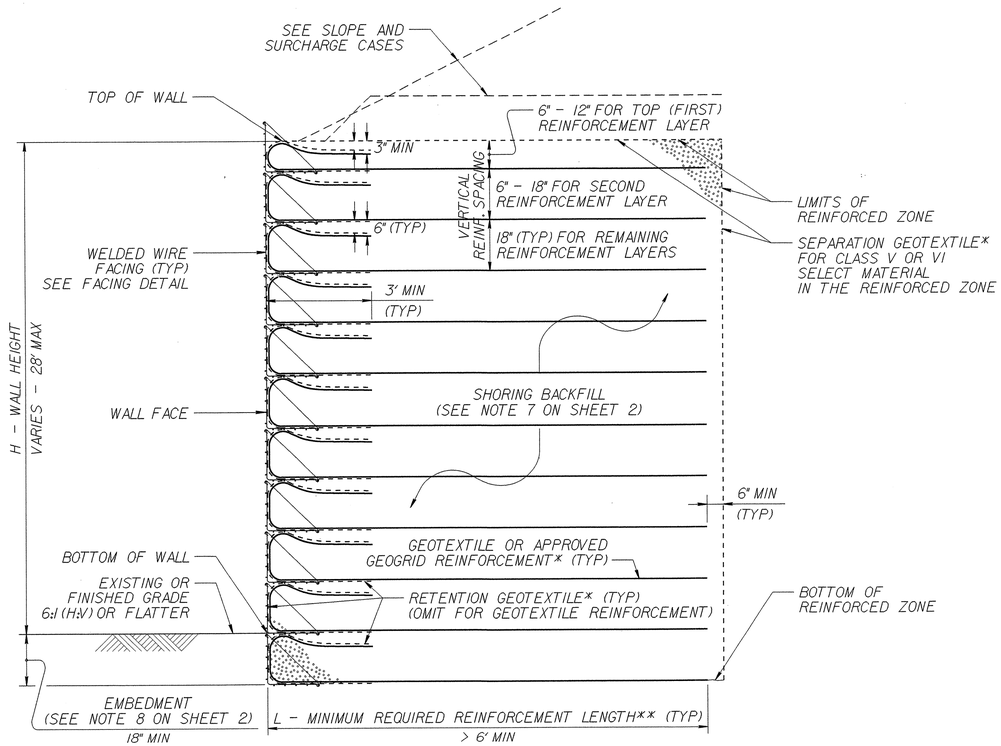


SURCHARGE CASE

SLOPE CASE

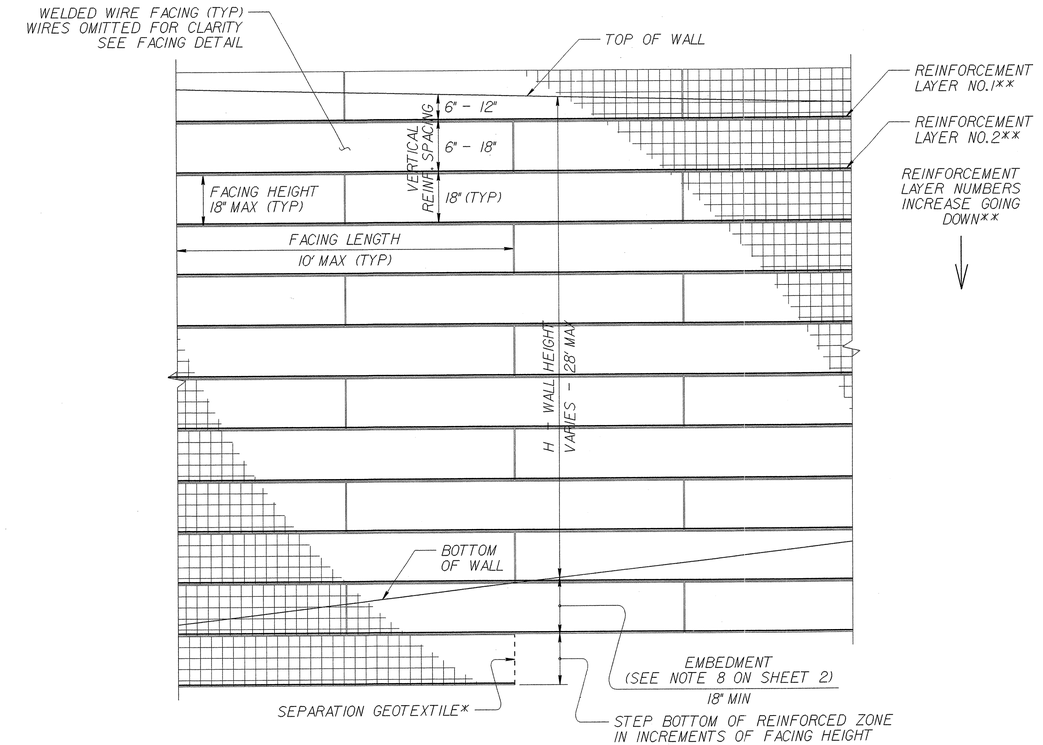


FACING DETAIL



STANDARD TEMPORARY WALL

(FOR STANDARD TEMPORARY WALLS ON STRUCTURES, SEE TEMPORARY WALL ON STRUCTURE DETAIL ON SHEET 2.)
***SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.**
****SEE REINFORCEMENT TABLES ON SHEET 3.**



STANDARD TEMPORARY WALL – PARTIAL ELEVATION

***SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.**
****SEE REINFORCEMENT TABLES ON SHEET 3.**

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD DRAWING NO. 1801.02

STANDARD
TEMPORARY WALL
Sheet 1 of 3

DATE: 1-17-12

PROJECT REFERENCE NO.	SHEET
B-5178	2-6

GEOTECHNICAL ENGINEER

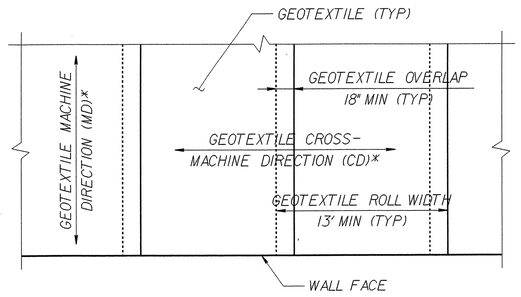
NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 11/18/11

SIGNATURE DATE

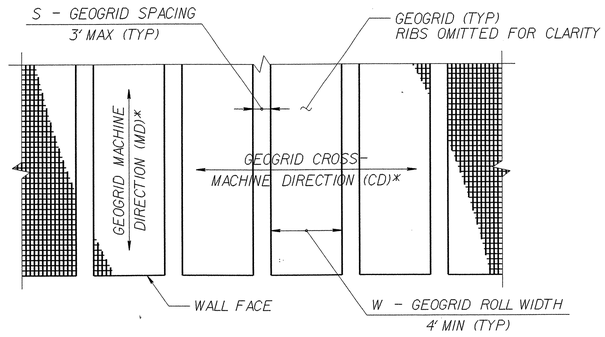
ENGINEER

SIGNATURE DATE



GEOTEXTILE PLACEMENT

(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)

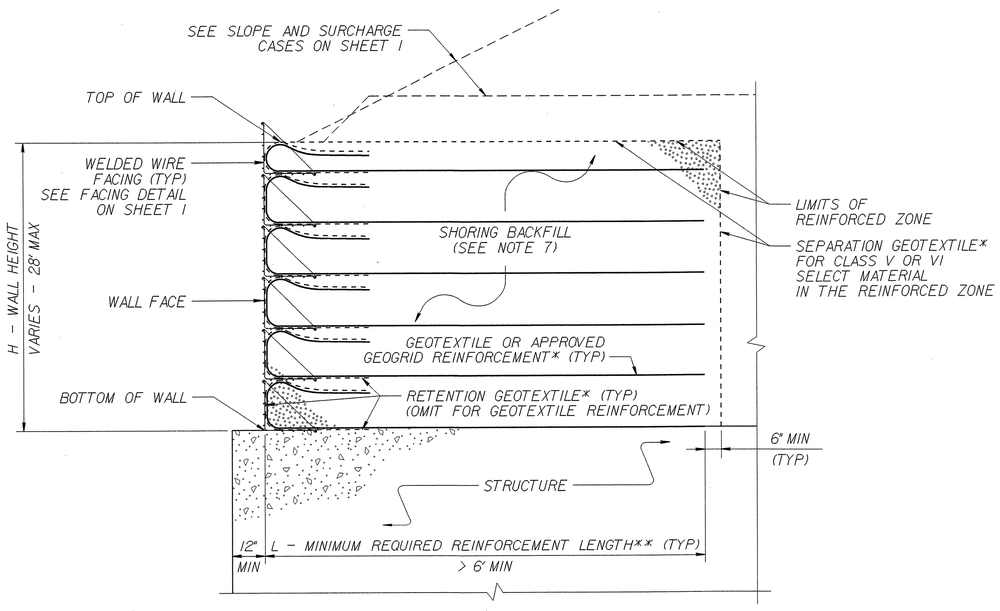


GEOGRID PLACEMENT

(80% COVERAGE MIN FOR GEOGRID REINFORCEMENT – $\frac{W}{W+S}$ x 100 $\geq$ 80%, SEE NOTE 11)

GEOSYNTHETIC PLACEMENT DETAILS

(PLAN VIEW)
***SEE NOTE 12.**



TEMPORARY WALL ON STRUCTURE DETAIL

***SEE GEOSYNTHETIC PLACEMENT DETAILS.**
****SEE REINFORCEMENT TABLES ON SHEET 3.**

NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY WALLS AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY WALLS, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY WALLS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 LB/CF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 LB/SF
4. DO NOT USE STANDARD TEMPORARY WALLS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW TEMPORARY WALLS.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, ASSUME GROUNDWATER DEPTH IS LESS THAN 7' BELOW BOTTOM OF REINFORCED ZONE. DO NOT USE STANDARD TEMPORARY WALLS IF GROUNDWATER IS ABOVE BOTTOM OF REINFORCED ZONE.
7. DO NOT USE A-2-4 SOIL FOR STANDARD TEMPORARY WALLS AROUND CULVERTS OR IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS FOR SLOPE CASES. DO NOT USE CLASS VI SELECT MATERIAL IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS WITH GEOTEXTILE REINFORCEMENT.
8. EMBEDMENT IS NOT REQUIRED FOR STANDARD TEMPORARY WALLS ON STRUCTURES OR ROCK AS DETERMINED BY THE ENGINEER.
9. DO NOT USE MORE THAN 4 DIFFERENT REINFORCEMENT STRENGTHS FOR EACH STANDARD TEMPORARY WALL.
10. GEOGRIDS ARE APPROVED FOR SHORT-TERM DESIGN STRENGTHS FOR A 3-YEAR DESIGN LIFE IN THE MACHINE DIRECTION (MD) AND CROSS-MACHINE DIRECTION (CD) BASED ON MATERIAL TYPE. FOR DETAILS OF APPROVED GEOGRIDS AND SHORT-TERM DESIGN STRENGTHS, SEE www.ncdot.org/doh/operations/materials/soils/gep.html
    DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SHORING BACKFILL AS FOLLOWS:

MATERIAL TYPE	SHORING BACKFILL
BORROW	A-2-4 SOIL
FINE AGGREGATE	CLASS II, TYPE 1 OR CLASS III SELECT MATERIAL
COARSE AGGREGATE	CLASS V OR VI SELECT MATERIAL

11. FOR GEOGRID REINFORCEMENT WITH LESS THAN 100% COVERAGE, STAGGER REINFORCEMENT SO GEOGRIDS ARE CENTERED OVER GAPS IN THE REINFORCEMENT LAYER BELOW.
12. AT THE CONTRACTOR'S OPTION, REINFORCEMENT MAY BE INSTALLED WITH THE MD PARALLEL TO THE WALL FACE IF BOTH THE FOLLOWING CONDITIONS OCCUR:
    - W (REINFORCEMENT ROLL WIDTH) $\geq$ L (MINIMUM REQUIRED REINFORCEMENT LENGTH) + 4.5' AND
    - REINFORCEMENT STRENGTH IN CD $\geq$ MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD.
13. SUBMIT A "STANDARD TEMPORARY WALL SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY WALL CONSTRUCTION.
14. DO NOT PLACE SHORING BACKFILL OR REINFORCEMENT UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
15. FOR STANDARD TEMPORARY WALLS WITH PILE FOUNDATIONS IN THE REINFORCED ZONE, DRIVE PILES THROUGH REINFORCEMENT AFTER CONSTRUCTING TEMPORARY WALLS.
16. DO NOT SPLICE OR OVERLAP REINFORCEMENT SO SEAMS ARE PARALLEL TO THE WALL FACE.
17. CONTACT THE ENGINEER WHEN EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT.
18. FOR STANDARD TEMPORARY WALLS WITH INTERIOR ANGLES LESS THAN 90 DEGREES, WRAP GEOSYNTHETICS AT ACUTE CORNERS AS DIRECTED BY THE ENGINEER.
19. FOR STANDARD TEMPORARY WALLS WITH TOP OF WALL WITHIN 5' OF FINISHED GRADE, REMOVE TOP FACING AND INCORPORATE TOP REINFORCEMENT LAYER INTO FILL WHEN PLACING FILL IN FRONT OF WALL.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1801.02

STANDARD TEMPORARY WALL
Sheet 2 of 3

DATE: 1-17-12

PROJECT REFERENCE NO.	SHEET
B-5178	2-H

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

scott a. hidden 11/18/11
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

SLOPE OR SURCHARGE CASE	GROUNDWATER DEPTH BELOW BOTTOM OF REINFORCED ZONE (SEE NOTE 6 ON SHEET 2) (FT)	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)	H - WALL HEIGHT (FT)																								
			< 4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
SLOPE CASE	> 0	CLASS II,TYPE I, CLASS III,CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	8	9	11	12	13	13	14	15	16	17	18	19	20	21	22	23	24	24	25	26	27	27
SURCHARGE CASE	> 0 TO 7 FOR H < 20' > 0 TO 10 FOR H ≥ 20'	ALL SHORING BACKFILL TYPES	6	7	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16	17	18	18	19	20	20	21
	> 7 FOR H < 20' > 10 FOR H ≥ 20'	A-2-4 SOIL	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	15	16	16	17	17	18	19	19	20
		CLASS II,TYPE I OR CLASS III SELECT MATERIAL	6	6	7	7	8	8	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	17	17	18	19
		CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	7	7	8	8	9	9	10	10	11	11	12	12	13	13	14	14	15	16	16	17	18	18

L – MINIMUM REQUIRED REINFORCEMENT LENGTH (FT)

(FOR ALL REINFORCEMENT TYPES)

WALL HEIGHT (H) + EMBEDMENT (FT)	NUMBER OF REINFORCEMENT LAYERS*
2.5 - 4	3
4 - 5.5	4
5.5 - 7	5
7 - 8.5	6
8.5 - 10	7
10 - 11.5	8
11.5 - 13	9
13 - 14.5	10
14.5 - 16	11
16 - 17.5	12
17.5 - 19	13
19 - 20.5	14
20.5 - 22	15
22 - 23.5	16
23.5 - 25	17
25 - 26.5	18
26.5 - 28	19
28 - 29.5	20

*BASED ON VERTICAL REINFORCEMENT SPACING SHOWN ON SHEET 1.

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL	A-2-4 SOIL	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL
1	2400	2400	2400	2400	2400
2	2400	2400	2400	2400	2400
3	2400	2400	2400	2400	2400
4	2400	2400	2500	2400	2400
5	2500	2400	3000	2400	2400
6	3000	2400	3500	2800	2400
7	3500	2700	4000	3200	2600
8	4000	3100	4500	3600	2900
9	4500	3500	5000	4000	3200
10	5000	3900	5500	4400	3500
11	5500	4300	6000	4800	3800
12	6000	4700	6500	5200	4100
13	6500	5100	7000	5600	4400
14	7000	5400	7500	6000	4700
15	7500	5800	8000	6400	5000
16	8000	6200	8500	6800	5300
17	8500	6600	9000	7200	5600
18	9000	7000	9500	7600	5900
19	9500	7400	10000	8000	6200
20	10000	7800	10500	8400	6500

GEOTEXTILE REINFORCEMENT ULTIMATE TENSILE STRENGTH (LB/FT)

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL	A-2-4 SOIL	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL
1	240	200	340	290	240
2	380	310	520	430	350
3	530	420	700	570	460
4	690	550	870	720	570
5	860	690	1050	860	680
6	1030	830	1220	1000	790
7	1200	970	1400	1150	900
8	1370	1110	1580	1290	1010
9	1550	1240	1750	1430	1120
10	1720	1380	1930	1580	1230
11	1890	1520	2100	1720	1340
12	2060	1660	2280	1860	1450
13	2240	1800	2450	2010	1560
14	2410	1940	2630	2150	1670
15	2580	2080	2800	2290	1780
16	2750	2220	2980	2440	1890
17	2930	2360	3160	2580	2000
18	3100	2500	3330	2720	2110
19	3270	2640	3510	2860	2220
20	3440	2780	3690	3000	2330

GEOGRID REINFORCEMENT SHORT-TERM DESIGN STRENGTH (LB/FT)

(SEE NOTE 10 ON SHEET 2.)

MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD

(SEE NOTE 9 ON SHEET 2.)
*SEE PARTIAL ELEVATION ON SHEET 1 FOR REINFORCEMENT LAYER NUMBERING.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1801.02

STANDARD TEMPORARY WALL
Sheet 3 of 3

DATE: 1-17-12

5/28/99

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202880

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ************ (35+85.25 -L-)
0043000000-N	226	Lump Sum		GRADING
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUB-BING
0057000000-E	226	100	CY	UNDERCUT EXCAVATION
0134000000-E	240	130	CY	DRAINAGE DITCH EXCAVATION
0141000000-E	240	80	LF	BERM DITCH CONSTRUCTION
0194000000-E	SP	100	CY	SELECT GRANULAR MATERIAL, CLASS III
0196000000-E	270	200	SY	GEOTEXTILE FOR SOIL STABILIZA-TION
0199000000-E	SP	2,240	SF	TEMPORARY SHORING
0318000000-E	300	240	TON	FOUNDATION CONDITIONING MATE-RIAL, MINOR STRUCTURES
0320000000-E	300	760	SY	FOUNDATION CONDITIONING GEO-TEXTILE
0343000000-E	310	706	LF	15" SIDE DRAIN PIPE
0344000000-E	310	620	LF	18" SIDE DRAIN PIPE
0345000000-E	310	172	LF	24" SIDE DRAIN PIPE
0348000000-E	310	8	EA	**" SIDE DRAIN PIPE ELBOWS (15")
0448200000-E	310	674	LF	15" RC PIPE CULVERTS, CLASS IV
0448300000-E	310	44	LF	18" RC PIPE CULVERTS, CLASS IV
0448400000-E	310	72	LF	24" RC PIPE CULVERTS, CLASS IV
0995000000-E	340	31	LF	PIPE REMOVAL
1099500000-E	505	100	CY	SHALLOW UNDERCUT
1099700000-E	505	100	TON	CLASS IV SUBGRADE STABILIZA-TION
1220000000-E	545	300	TON	INCIDENTAL STONE BASE
1330000000-E	607	2,430	SY	INCIDENTAL MILLING
1489000000-E	610	880	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1491000000-E	610	15,470	TON	ASPHALT CONC BASE COURSE, TYPE B25.0C
1498000000-E	610	780	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1508000000-E	610	3,060	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0D
1519000000-E	610	670	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1524200000-E	610	4,230	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5D
1575000000-E	620	935	TON	ASPHALT BINDER FOR PLANT MIX
1577000000-E	620	245	TON	POLYMER MODIFIED ASPHALT BIN-DER FOR PLANT MIX
1693000000-E	654	100	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
1840000000-E	665	5,695	LF	MILLED RUMBLE STRIPS (ASPHALT CONCRETE)
2000000000-N	806	30	EA	RIGHT OF WAY MARKERS
2022000000-E	815	112	CY	SUBDRAIN EXCAVATION
2033000000-E	815	84	CY	SUBDRAIN FINE AGGREGATE
2044000000-E	815	500	LF	6" PERFORATED SUBDRAIN PIPE
2070000000-N	815	1	EA	SUBDRAIN PIPE OUTLET
2077000000-E	815	6	LF	6" OUTLET PIPE
2190000000-N	828	4	EA	TEMPORARY STEEL PLATE COVERS FOR MASONRY DRAINAGE STRUCTURE
2286000000-N	840	24	EA	MASONRY DRAINAGE STRUCTURES
2308000000-E	840	1.8	LF	MASONRY DRAINAGE STRUCTURES
2352000000-N	840	1	EA	FRAME WITH GRATE, STD 840.**** (840.16)
2364200000-N	840	10	EA	FRAME WITH TWO GRATES, STD 840.20
2365000000-N	840	7	EA	FRAME WITH TWO GRATES, STD 840.22
2366000000-N	840	2	EA	FRAME WITH TWO GRATES, STD 840.24

ItemNumber	Sec #	Quantity	Unit	Description
2374000000-N	840	3	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)
2418000000-E	SP	72	LF	FRAME WITH GRATES, DRIVEWAY DROP INLET
2535000000-E	846	810	LF	**"X **" CONCRETE CURB (8" X 12")
2549000000-E	846	429	LF	2'-6" CONCRETE CURB & GUTTER
2556000000-E	846	170	LF	SHOULDER BERM GUTTER
2619000000-E	850	15	SY	4" CONCRETE PAVED DITCH
2703000000-E	854	520	LF	CONCRETE BARRIER, TYPE ******* (T-1)
2703000000-E	854	260	LF	CONCRETE BARRIER, TYPE ******* (T-2)
2710000000-N	854	2	EA	CONCRETE BARRIER TRANSITION SECTION
2724000000-E	857	70	LF	PRECAST REINFORCED CONCRETE BARRIER, SINGLE FACED
3030000000-E	862	2,887.5	LF	STEEL BM GUARDRAIL
3150000000-N	862	10	EA	ADDITIONAL GUARDRAIL POSTS
3210000000-N	862	1	EA	GUARDRAIL ANCHOR UNITS, TYPE CAT-1
3270000000-N	SP	6	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3317000000-N	862	10	EA	GUARDRAIL ANCHOR UNITS, TYPE B-77
3360000000-E	863	4,910	LF	REMOVE EXISTING GUARDRAIL
3380000000-E	862	262.5	LF	TEMPORARY STEEL BM GUARDRAIL
3387000000-N	862	2	EA	TEMPORARY GUARDRAIL ANCHOR UNITS, TYPE ********** (B-77)
3387000000-N	862	1	EA	TEMPORARY GUARDRAIL ANCHOR UNITS, TYPE ********** (TUBULAR BEAM TO PCB)
3435000000-N	SP	1	EA	GENERIC GUARDRAIL ITEM IMPACT ATTENUATOR UNIT, TYPE 350 TL-2
3503000000-E	866	2,960	LF	WOVEN WIRE FENCE, 47" FABRIC
3509000000-E	866	160	EA	4" TIMBER FENCE POSTS, 7'-6" LONG

ItemNumber	Sec #	Quantity	Unit	Description
3515000000-E	866	110	EA	5" TIMBER FENCE POSTS, 8'-0" LONG
3649000000-E	876	10	TON	RIP RAP, CLASS B
3656000000-E	876	4,380	SY	GEOTEXTILE FOR DRAINAGE
4048000000-E	902	3	CY	REINFORCED CONCRETE SIGN FOUN-DATIONS
4054000000-E	902	1	CY	PLAIN CONCRETE SIGN FOUNDA-TIONS
4057000000-E	SP	30	CY	OVERHEAD FOOTING
4060000000-E	903	1,962	LB	SUPPORTS, BREAKAWAY STEEL BEAM
4072000000-E	903	70	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
4078000000-E	903	2	EA	SUPPORTS, 2-LB STEEL U-CHANNEL
4082000000-E	903	121	LF	SUPPORTS, WOOD
4082100000-N	SP	Lump Sum		SUPPORTS, OVERHEAD SIGN STRUC-TURE AT STA ****** (33+00 -L-)
4082100000-N	SP	Lump Sum		SUPPORTS, OVERHEAD SIGN STRUC-TURE AT STA ****** (46+00 -L-)
4096000000-N	904	2	EA	SIGN ERECTION, TYPE D
4102000000-N	904	6	EA	SIGN ERECTION, TYPE E
4109000000-N	904	6	EA	SIGN ERECTION, TYPE *** (OVER-HEAD) (A)
4109000000-N	904	2	EA	SIGN ERECTION, TYPE *** (OVER-HEAD) (B)
4110000000-N	904	4	EA	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (A)
4110000000-N	904	1	EA	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (B)
4114000000-N	904	2	EA	SIGN ERECTION, MILEMARKERS
4116000000-N	904	2	EA	SIGN ERECTION, OVERLAY (GROUND MOUNTED)
4149000000-N	907	2	EA	DISPOSAL OF SIGN SYSTEM, OVER-HEAD
4152000000-N	907	3	EA	DISPOSAL OF SIGN SYSTEM, STEEL BEAM
4155000000-N	907	14	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
4236000000-N	907	2	EA	DISPOSAL OF SIGN, A, B OR C (GROUND MOUNTED)
4400000000-E	1110	2,158	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	606	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	180	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4415000000-N	1115	4	EA	FLASHING ARROW BOARD
4420000000-N	1120	4	EA	PORTABLE CHANGEABLE MESSAGE SIGN
4430000000-N	1130	250	EA	DRUMS
4435000000-N	1135	100	EA	CONES
4445000000-E	1145	176	LF	BARRICADES (TYPE III)
4450000000-N	1150	284	HR	FLAGGER
4465000000-N	1160	4	EA	TEMPORARY CRASH CUSHIONS
4470000000-N	1160	6	EA	RESET TEMPORARY CRASH CUSHION
4480000000-N	1165	5	EA	TMA
4485000000-E	1170	3,940	LF	PORTABLE CONCRETE BARRIER
4490000000-E	1170	350	LF	PORTABLE CONCRETE BARRIER (ANCHORED)
4500000000-E	1170	6,060	LF	RESET PORTABLE CONCRETE BAR-RIER
4505000000-E	1170	350	LF	RESET PORTABLE CONCRETE BAR-RIER (ANCHORED)
4510000000-N	SP	40	HR	LAW ENFORCEMENT
4516000000-N	1180	100	EA	SKINNY DRUM
4650000000-N	1251	184	EA	TEMPORARY RAISED PAVEMENT MARKERS
4700000000-E	1205	542	LF	THERMOPLASTIC PAVEMENT MARKING LINES (12", 90 MILS)
4770000000-E	1205	3,419	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (IV)
4785000000-E	1205	161	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (12") (II)

STATE OF NORTH CAROLINA
SUMMARY OF QUANTITIES

PROJECT REFERENCE No.	SHEET No.
B-5178	3 (2 of 2)

ItemNumber	Sec #	Quantity	Unit	Description
4810000000-E	1205	48,268	LF	PAINT PAVEMENT MARKING LINES (4")
4847100000-E	1205	9,084	LF	POLYUREA PAVEMENT MARKING LINES (6", **********) (HIGHLY REFLECTIVE ELEMENTS)
4850000000-E	1205	9,004	LF	REMOVAL OF PAVEMENT MARKING LINES (4")
4900000000-N	1251	16	EA	PERMANENT RAISED PAVEMENT MARKERS
4905000000-N	1253	63	EA	SNOWPLOWABLE PAVEMENT MARKERS
6000000000-E	1605	4,425	LF	TEMPORARY SILT FENCE
6006000000-E	1610	750	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	900	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	1,500	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	20	ACR	TEMPORARY MULCHING
6018000000-E	1620	650	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	2.5	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	300	LF	TEMPORARY SLOPE DRAINS
6029000000-E	SP	400	LF	SAFETY FENCE
6030000000-E	1630	1,860	CY	SILT EXCAVATION
6036000000-E	1631	14,500	SY	MATTING FOR EROSION CONTROL
6038000000-E	SP	1,500	SY	PERMANENT SOIL REINFORCEMENT MAT
6042000000-E	1632	1,150	LF	1/4" HARDWARE CLOTH
6048000000-E	SP	85	SY	FLOATING TURBIDITY CURTAIN
6070000000-N	1639	48	EA	SPECIAL STILLING BASINS
6071010000-E	SP	250	LF	WATTLE
6071020000-E	SP	200	LB	POLYACRYLAMIDE (PAM)
6071030000-E	1640	600	LF	COIR FIBER BAFFLE
6084000000-E	1660	20	ACR	SEEDING & MULCHING
6087000000-E	1660	10	ACR	MOWING

ItemNumber	Sec #	Quantity	Unit	Description
6090000000-E	1661	200	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	0.75	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	575	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	17	TON	FERTILIZER TOPDRESSING
6114500000-N	1667	10	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	25	EA	RESPONSE FOR EROSION CONTROL
7300000000-E	1715	50	LF	UNPAVED TRENCHING (**********) (2, 2")
7324000000-N	1716	2	EA	JUNCTION BOX (STANDARD SIZE)
7360000000-N	1720	1	EA	WOOD POLE
7408000000-E	1722	1	EA	1" RISER WITH WEATHERHEAD
7575142200-N	SP	1	EA	NEW ELECTRICAL SERVICE
7613000000-N	SP	1	EA	SOIL TEST
7614100000-E	SP	5.25	CY	DRILLED PIER FOUNDATION
7960000000-N	SP	1	EA	METAL POLE FOUNDATION REMOVAL
7980000000-N	SP	1	EA	GENERIC SIGNAL ITEM METAL POLE FOUNDATION DESIGN
7985000000-N	SP	Lump Sum		GENERIC SIGNAL ITEM RELOCATE EXISTING ITS EQUIPMENT

COMPUTED BY: ___NNA_____ DATE: ___03/19/2012____
CHECKED BY: _____ DATE: _____

PROJECT NO.	SHEET NO.
B-5178	3-A

RD248595

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

IN CUBIC YARDS

Station	Uncl. Excav.	Embank. +%	Borrow	Waste
-TEMP-_ALN1-12+18.01 TO 15+88.61	942	825	0	117
-TEMP-_ALN1-19+19.64 TO 22+93.74	20725	14	0	20711
-L- 28+00 TO 30+00.00 LT	349	271	0	78
-L- 30+50 TO 34+00.00 LT	1247	161	0	1086
-L- 37+50.50 TO 41+00.00 LT	386	184	0	202
-L- 41+50.00 TO 46+00.00 LT	5345	405	0	4940
SUBTOTAL PHASE 1 -L-	28994	1860	0	4940
-TEMP-_ALN2-14+05.14 TO 19+57.36	154	913	759	0
-TEMP-_ALN2-23+02.73 TO 28+75.06	15	900	885	0
SUBTOTALS PHASE 2	169	1813	1644	0
-L- 28+00.00 TO 34+00.00 RT	835	1424	589	0
-L- 38+00.00TO 46+00.00 RT	20143	25	0	20118
WASTE IN LIEU OF BORROW			-589	
SUBTOTALS PHASE 3 -L-	20978	1449	0	19529
-TEMP_ALN2- 14+05.14 TO 19+57.36 (REMOVAL)	497	170	0	327
-TEMP_ALN2- 23+02.73 TO 28+75.06 (REMOVAL)	684	98	0	586
SUBTOTAL PHASE 4	1181	268	0	913
-SR3431- 10+00.00 TO 22+24.94	15783	225	0	15558
SUBTOTAL PHASE 1 -SR3431-	15783	225	0	15558
PROJECT SUBTOTALS:	67105	5615	1644	63134
LOSS DUE TO CLEAR & GRUB	-200			-200
SHOULDER MATERIAL		2070	2070	
PROJECT TOTALS:	66905	7685	3714	62934
REPL TOPSOIL IN BORROW PIT			186	
GRAND TOTALS:	66905		3900	
SAY:	**67000**		3900	
PAV'T STRUCTURE VOL = 4630 CY.				
DRAINAGE DITCH EXCAVATION	**130**			
SHALLOW UNDERCUT EXCAVATION	**100**			
SHOULDER BORROW	**0**			
SELECT GRANULAR MAT'L	**100**			
CLASS IV SUBGRADE STAB. MAT'L	**100**	Tons		
CONTINGENCY UNDERCUT	100	CY		

Note: 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.

Note: Approximate quantities only. Borrow Excavation. Fine Grading, Clearing and Grubbing and Removal of Existing Pavement will be paid for at the Lump Sum price.

SUMMARY OF EXISTING CONCRETE PAVEMENT REMOVAL

LINE	Station	Station	LOC LT/RT/CL	YD^2
L	28+00	34+07	LT	674.79
L	28+00	34+15	LT	247.56
L	37+51	46+00	LT	767.56
L	37+51	46+00	LT	355.00
L	28+00	34+26	RT	296.06
L	28+00	34+33	RT	612.86
L	37+51	47+24	RT	422.33
L	37+51	46+18	RT	492.22
			TOTAL:	3,868.37
			SAY:	**3,870**

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

LINE	Station	Station	LOC	YD2
SR3431	12+50	20+50	LT,RT	1745.50
			TOTAL:	1745.50
			SAY:	**1,750**

SUMMARY OF WOVEN WIRE FENCE

Station	Station	FABRIC L.F	4" POST	5' POST
31+98.51 TO 36+34.41 (RT)		497.66	20	28
36+82.45 TO 46+52.45 (RT)		1,084.17	61	31
28+89.00 TO 35+55.88 (LT)		653.95	36	19
37+12.45 TO 43+74.29 (LT)		722.38	36	28
TOTAL:		2,958.16	153.44	106.00
SAY:		**2,960**	**160**	**110**

GUARDRAIL SUMMARY

LINE	BEG. STA.	END STA.	LOC.	LENGTH STRAIGHT	LENGTH TEMP GR	LENGTH DOUBLE FACED	WARRANT POINT APPR. END	WARRANT POINT TRAIL. END	N" DIS FROM E.O.L.	TOTAL SHLDR WIDTH	FLAIR LENGTH APPR. END	FLAIR LENGTH TRAIL. END	W APPR. END	W TRAIL. END	ANCHORS TEMP B-77	ANCHORS XI	ANCHORS GRAU 350	ANCHORS B-77	ANCHORS XII	ANCHORS CAT-1	ANCHORS AT-1	IMP. ATTEN. 350 TL-2 G	IMP. ATTEN. 350 TL-2 NG	REMOVE EXISTING GRDRAIL		REMARKS
L	28+00	30+00	LT	200				Freeway Median										1								
L	27+96.53	33+96.53	LT	600			Bridge	Bridge	13.5									1								
L	37+48.72	40+48.72	LT	300			Bridge	Bridge	12.5		50'		1				1	1								
L	40+90	46+02.5	LT	512.5			Freeway Median	Freeway Median										**1**								
L	28+00	30+00	RT	200			Freeway Median	Freeway Median										1								
L	31+13.76	34+38.76	RT	325			Bridge	Bridge	12.5		50'		1				1	1								
L	44+12.17	46+12.5	RT	200				Rigid Obstacle			50'		1				1			1						
L	40+90	47+71.25	RT	681.25											1 (39+70)			1								
SR3431	11+00	11+25	RT	25			WALL				6.25												1			
SR3431	13+50	14+50	RT	100				WALL				50'		1			1	1								
SR3431	14+83.75	1640	RT	156.25			PIER		4		50'		1				1	1								
SR3431	17+00	17+81.25	RT	81.25				PIER	3			50'		1			1	1								
L	28+00	30+47.19	LT																					247.19		
L	28+00	34+31.88	LT																					631.88		
L	37+38.10	40+54.18	LT																					316.08		
L	37+38.60	45+84.05	LT																					845.45		
L	28+00	34+91.24	RT																					691.24		
L	31+27.08	34+91.77	RT																					364.69		
L	37+47.38	47+50.87	RT																					1003.49		
L	44+59.17	46+73.35	RT																					214.18		
SR3431	11+09.83	14+31.71	RT																					321.88		
SR3431	14+94.8	15+63.67	RT																					68.87		
SR3431	15+93.29	16+29.75	RT																					36.46		
SR3431	16+64.15	18+27.90	RT																					163.75		
-TEMP_ALN1-	19+80	22+42.50	LT		262.5										1											
		TOTAL		3381.25	262.5										2		6	10		1			1			
		LESS ANCHORS		518.75																						
		TOTAL GUARDRAIL LENGTH		2862.5																						
		SAY		**2887.5**	**262.5**																			4905.16		
	ADDITIONAL GUARDRAIL POST = 10 EACH																							**SAY 4910**		

ANCHOR	DEDUCTIONS	TOTAL
GRAU-350	6@ 50	300
B-77	10 @ 18.75	187.5
CAT-1	1@ 6.25	6.25
TL-2	1 @ 25	25
TOTAL DEDUCTIONS =		518.75

COMPUTED BY: EM DATE: 8/26/2011

CHECKED BY: NNA DATE: 5/9/2012

RD238358

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
B-5178	3-B

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

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

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	SIDE DRAIN 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"	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 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	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 DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND 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 TWO GRATE STD. 840.20	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	FRAME WITH GRATES, DRIVEWAY DROP INLET (LF)	DRIVEWAY DROP INLET STD. 840.30	TRAFFIC BEARING GRATED DROP INLET STD.840.35	TRAFFIC BEARING JB STD. 840.34	TEMPORARY STEEL PLATE COVERS STD. 828	SIDE DRAIN PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-L- Sta. 33+64.26	LT	401		2067.4																																														1											1		1														
		401	400		2064.2	2063.9																														90																																											
-L- Sta. 32+68	LT	400		2069.5																																														1											1		1														
		400	402		2063.9	2062.0			26							X																																																										2X15"				W/ ELBOWS
-L- Sta. 33+64.26	CL	403		2071.0																																														1											1		1														
		403	404		2067.9	2067.6																														72																																											
-L- Sta. 33+64.29	RT	404		2074.4																																														1	1.8										1		1														
		404	405		2067.6	2054.0			48							X																																																										2X15"				W/ ELBOWS
-L- Sta. 37+79.41	LT	406		2060.4																																														1											1		1														
		406	407		2057.2	2055.1			28																																																																				
-L- Sta. 37+99.89	LT	407		2057.9																																														1											1			1													
		407	414		2055.1	2054.0			268																																																																				
-L- Sta. 39+06.61	CL	408		2063.0																																														1											1		1									1					
		408	409		2059.8	2059.4																														52																																												
-L- Sta. 39+57.55	CL	409		2062.5																																														1											1		1									1					
		409	410		2059.4	2058.9																														52																																												
-L-Sta 40+10.23	CL	410		2062.0																																														1											1		1									1					
		410	411		2058.9	2058.6																														28																																												
-L- Sta 40+37.95	CL	411		2061.8																																														1													1							1		1					
		411	412		2058.6	2055.9																														80																																												
-L- Sta. 40+47.23	RT	412		2058.6																																														1											1			1													
		412	505		2055.6	2050.9				356																																																																			
		413	414		2099.0	2054.3			92							X																																																											2X15"				BERM DITCH OUTLET. W/ ELBOWS
-L- Sta. 40+75.63	LT	414		2057.0																																														1											1			1													
		414	501		2054.0	2051.8				248																																																																			
-SR3431- 12+29.86	LT	415		2057.6																																														1			1		1																								
		415	416		2054.6	2042.3																														144																																												
SR3431- 13+73.73	LT	416		2045.3																																														1			1		1																								
		416	417		2042.3	2036.1																														100																																												
SR3431- 14+73.17	LT	417		2039.1																																														1			1		1																								
		417	419		2036.1	2031.3			60																																																																					
SR3431- 14+45.82	LT	418		2045.8																																														1																				72	1								
		418	422		2042.3	2036.6			20																																																																					
SR3431- 14+99.66	LT	419		2034.0																																														1											1		1														
		419	420		2030.5	2029.5																																72																																										
SR3431- 14+66.43	RT	420	421						68																																																																				
SR3431- 14+65.53	LT	422		2039.8																																														1									1	1																						
		422	417		2036.6	2036.1				16																																																																				
SR3431 -17+00.23	LT	430		2037.7																																																										1					1											
		430	423		2035	2034.2																														56																																												
SR3431- 17+01.06	RT	423		2036.9																																														1											1					1											
		423	424		2034.2	2030.8			24																																																																						
-L- Sta. 32+99.65	RT	428		2070.8																																														1											1			1													
		428	429		2068.1	2054.0			72							X																																																										2X15"				W/ ELBOWS
-L- Sta. 43+25.22	LT	501		2055.1																																														1											1			1													
		501	502		2052.1	2051.7																															44																																									31	Remove 18" CMP -L- Sta 43+57
-L- Sta 43+57.21	LT	502		2054.9																																														1																								1						TBJB with SLAB LID
-L- Sta. 44+00.47	RT	505		2055.1																																														1											1			1													
		505	506		2050.4	2049.3					128																																																																
-L- Sta. 45+26.53	RT	506		2054.0																																														1											1			1													
		506	507		2049.3	2048.0					44																																																																
SHEET TOTALS									706	620	172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	674	44	72	0	0	0	0	0	0	0	0	0	0	0	24	1.8	0	3	0	3	0	0	0	1	1	0	18	0	10	7	0	2	0	72	1		1	4	8X15"	0 0 0	0	31	

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

RD248777,4/11/2012,R:\Roadway\Estimate\Final\B-5178_rowparcels.xls

PROJ. REFERENCE NO.	SHEET NO.
B-5178	3-C

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
2	4	ROGER G. WILSON & NANCY F. WILSON
4	4	INTERACTIVE DYNAMX SPACE, LLC
5	4,5	J.B. HARRISON PROPERTIES, LLC
9	4	APB II, LLC
10	4	MURMAX, LLC
12	4	JMJ TOMATO COMPANY, LLC
13	5,6	SONIA GRIBBLE
16	4,5	CHARLES W. MORSE & WIFE EVON T. MORSE
19	4,6	SOUTHERN CONCRETE MATERIALS, INC.

PARCEL No.	SHEET No.	PROPERTY OWNER NAME

PROJECT REFERENCE NO.	SHEET NO.
B-5178	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SEE SHEETS 7 & 8 FOR -L- & -LRT- PROFILE
SEE SHEET 9 FOR -SR3431- PROFILE
SEE SHEETS S-1 THRU S-88 FOR STRUCTURE PLANS
SEE STRUCTURE PLANS FOR WALL DETAILS

-SR3431-

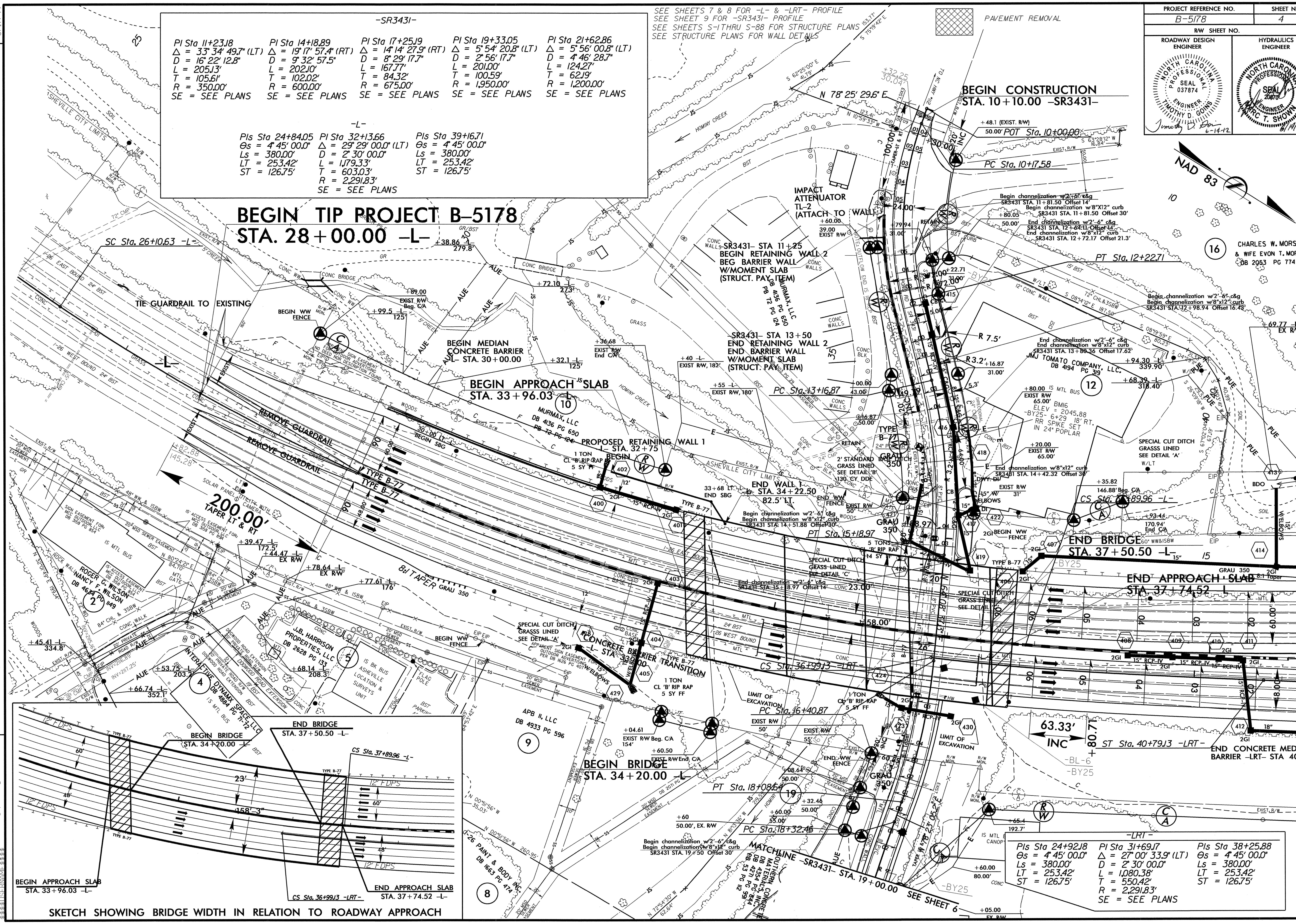
PI Sta 11+23.18	PI Sta 14+18.89	PI Sta 17+25.19	PI Sta 19+33.05	PI Sta 21+62.86
Δ = 33° 34' 49.7" (LT)	Δ = 19° 17' 57.4" (RT)	Δ = 14° 14' 27.9" (RT)	Δ = 5° 54' 20.8" (LT)	Δ = 5° 56' 00.8" (LT)
D = 16° 22' 12.8"	D = 9° 32' 57.5"	D = 8° 29' 17.7"	D = 2° 56' 17.7"	D = 4° 46' 28.7"
L = 205.13'	L = 202.10'	L = 167.77'	L = 201.00'	L = 124.27'
T = 105.61'	T = 102.02'	T = 84.32'	T = 100.59'	T = 62.19'
R = 350.00'	R = 600.00'	R = 675.00'	R = 1,950.00'	R = 1,200.00'
SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS

-L-

PIs Sta 24+84.05	PI Sta 32+13.66	PIs Sta 39+16.71
Θs = 4° 45' 00.0"	Δ = 29° 29' 00.0" (LT)	Θs = 4° 45' 00.0"
Ls = 380.00'	D = 2° 30' 00.0"	Ls = 380.00'
LT = 253.42'	L = 1,179.33'	LT = 253.42'
ST = 126.75'	T = 603.03'	ST = 126.75'
	R = 2,291.83'	
	SE = SEE PLANS	

-LRT-

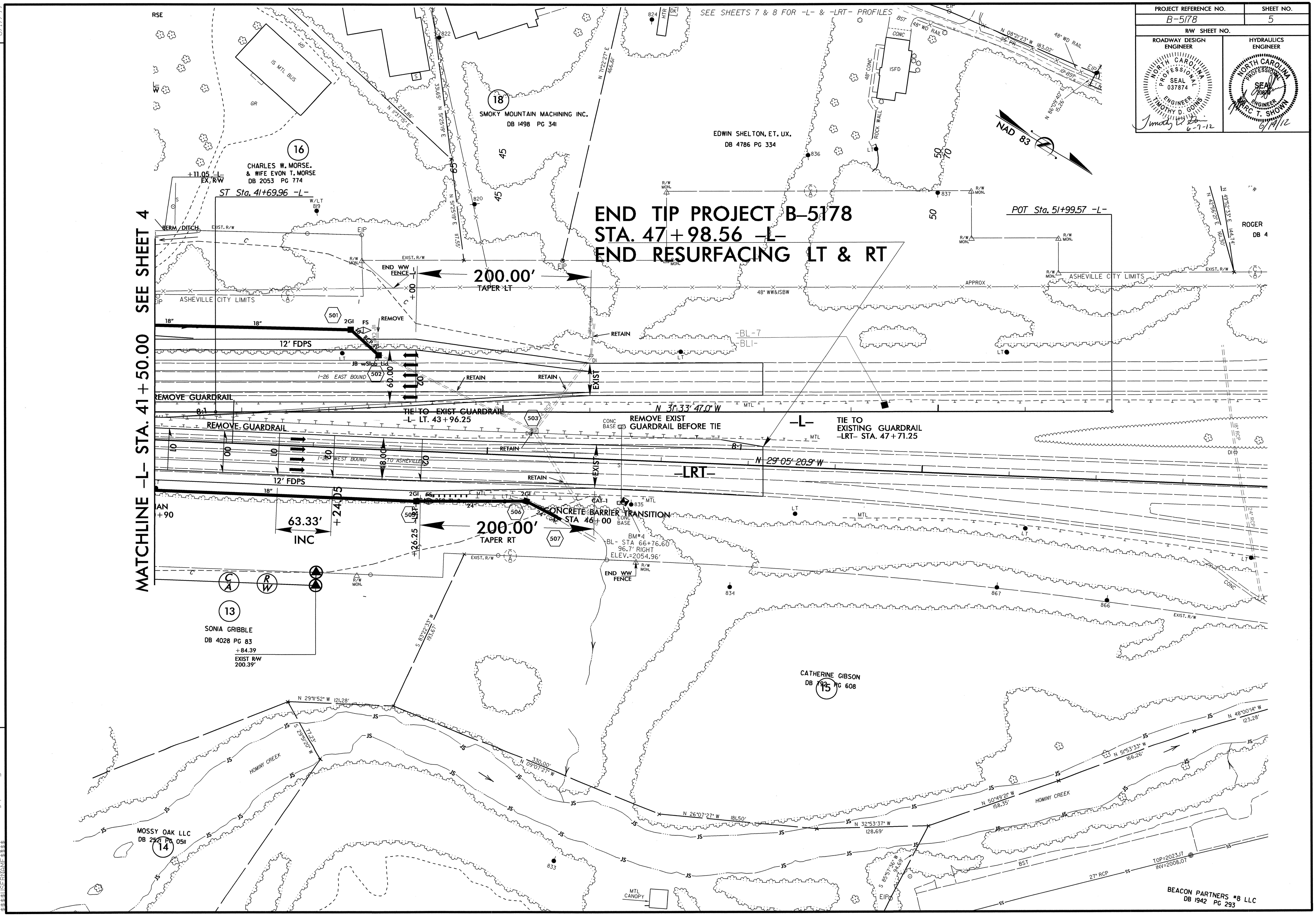
PIs Sta 24+92.18	PI Sta 31+69.17	PIs Sta 38+25.88
Θs = 4° 45' 00.0"	Δ = 27° 00' 33.9" (LT)	Θs = 4° 45' 00.0"
Ls = 380.00'	D = 2° 30' 00.0"	Ls = 380.00'
LT = 253.42'	L = 1,080.38'	LT = 253.42'
ST = 126.75'	T = 550.42'	ST = 126.75'
	R = 2,291.83'	
	SE = SEE PLANS	



PAVEMENT REMOVAL
NAD 83
BEGIN TIP PROJECT B-5178
STA. 28+00.00 -L-
BEGIN CONSTRUCTION
STA. 10+10.00 -SR3431-
BEGIN APPROACH SLAB
STA. 33+96.03 -L-
BEGIN BRIDGE
STA. 34+20.00 -L-
END BRIDGE
STA. 37+50.50 -L-
END APPROACH SLAB
STA. 37+74.52 -L-
MATCHLINE -L- STA. 41+50.00 SEE SHEET 5
MATCHLINE -SR3431- STA. 19+00.00 SEE SHEET 6
-SR3431- STA 11+25 BEGIN RETAINING WALL 2 BEG BARRIER WALL W/MOMENT SLAB (STRUCT. PAY ITEM)
-SR3431- STA 13+50 END RETAINING WALL 2 END BARRIER WALL W/MOMENT SLAB (STRUCT. PAY ITEM)
PROPOSED RETAINING WALL 1
IMPACT ATTENUATOR TL-2 (ATTACH TO WALL)
BEGIN MEDIAN CONCRETE BARRIER -L- STA. 30+00.00
CONCRETE BARRIER TRANSITION
END CONCRETE MEDIAN BARRIER -LRT- STA 40
REMOVE GUARDRAIL
TIE GUARDRAIL TO EXISTING
200.00' TAPER LT & RT
CHARLES W. MORSE & WIFE EVON T. MORSE DB 2053 PG 774
JMJ TOMATO COMPANY, LLC. DB 4194 PG 319
MURMAX, LLC DB 4136 PG 650 PB 72 PG 124
ROGER C. WILSON NANCY F. WILSON DB 4634 PG 149
J.B. HARRISON PROPERTIES, LLC DB 2628 PG 133
DYNAMIX SPACE, LLC DB 4864 PG 172
APB II, LLC DB 4933 PG 596
I-26 PAINT & BODY INC. DB 1663 PG 474
ASHEVILLE CITY LIMITS
HOMINY CREEK
BEGIN BRIDGE STA. 34+20.00 -L-
END BRIDGE STA. 37+50.50 -L-
CS Sta. 37+89.96 -L-
BEGIN APPROACH SLAB STA. 33+96.03 -L-
END APPROACH SLAB STA. 37+74.52 -L-
CS Sta. 36+99.13 -LRT-
158'-3"

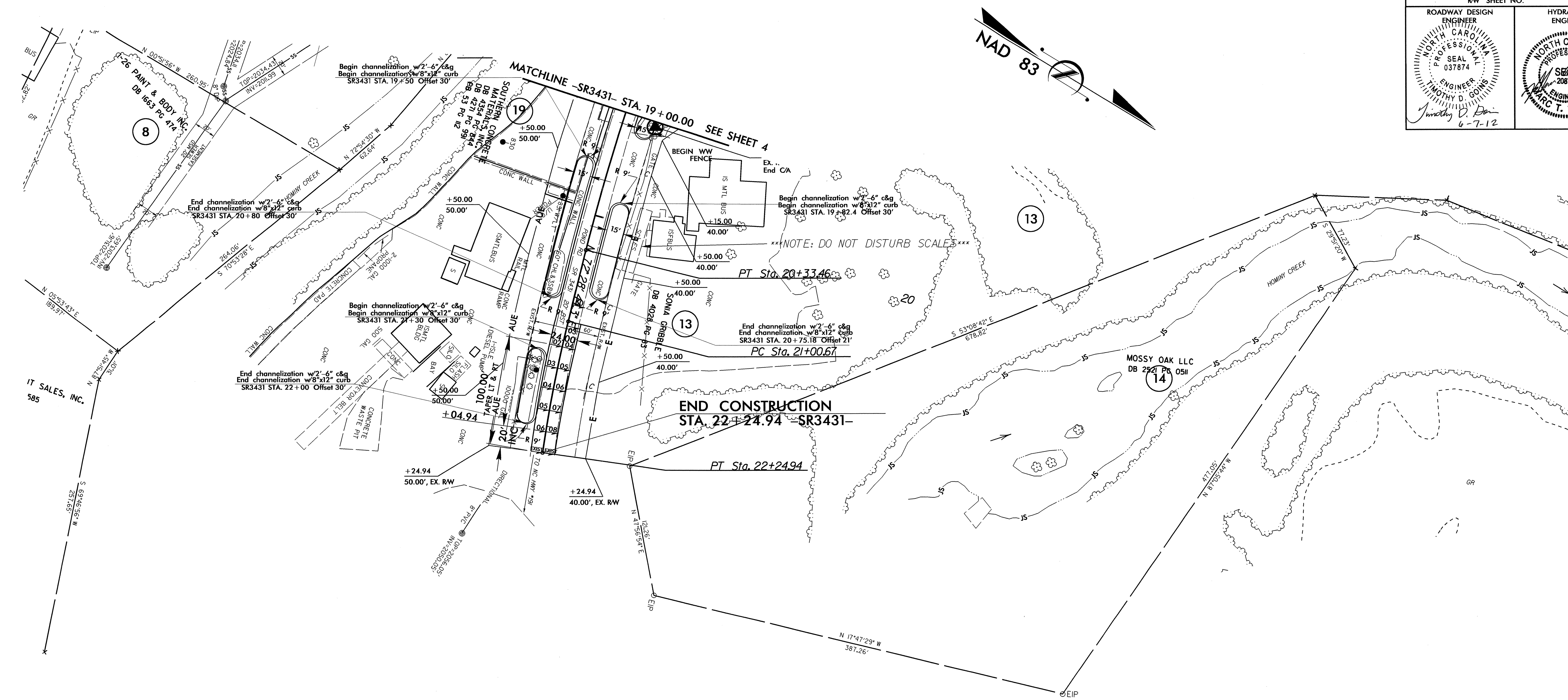
SKETCH SHOWING BRIDGE WIDTH IN RELATION TO ROADWAY APPROACH

REVISIONS


PROJECT REFERENCE NO. B-5178
SHEET NO. 5
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
END TIP PROJECT B-5178
STA. 47+98.56 -L-
END RESURFACING LT & RT
MATCHLINE -L- STA. 41+50.00 SEE SHEET 4
SEE SHEETS 7 & 8 FOR -L- & -LRT- PROFILES
CHARLES W. MORSE & WIFE EVON T. MORSE DB 2053 PG 774
SMOKY MOUNTAIN MACHINING INC. DB 1498 PG 341
EDWIN SHELTON, ET. UX. DB 4786 PG 334
SONIA GRIBBLE DB 4028 PG 83
CATHERINE GIBSON
MOSSY OAK LLC
BEACON PARTNERS #8 LLC DB 1942 PG 293
ASHEVILLE CITY LIMITS
200.00' TAPER LT
200.00' TAPER RT
12' FDPS
I-26 EAST BOUND
I-26 WEST BOUND
REMOVE GUARDRAIL
TIE TO EXIST GUARDRAIL -L- LT. 43+96.25
REMOVE EXIST GUARDRAIL BEFORE TIE
TIE TO EXISTING GUARDRAIL -LRT- STA. 47+71.25
CONCRETE BARRIER TRANSITION STA 46+00
POT Sta. 51+99.57 -L-
ST Sta. 41+69.96 -L-
N 31°33' 47.0" W
N 29°05' 20.9" W
-L-
-LRT-
63.33' INC
HOMINY CREEK
NAD 83

PROJECT REFERENCE NO.	SHEET NO.
B-5178	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SEE SHEET 9 FOR -SR3431- PROFILE



REVISIONS

8/17/99

31-MAY-2012 14:28
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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-5178	7

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 037874 ENGINEER TIMOTHY D. GOING

Timothy D. Going 6-7-12

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20870 ENGINEER MARC T. SHOWN

6/11/12

2,080 / 2,070 / 2,060 / 2,050 / 2,040 / 2,030 / 2,020 / 2,010 / 2,000

29 30 31 32 33 34 35 36 37 38 39 40 41

BEG. RTDITCH
-L- STA. 32+00
ELEV. = 2076.62'

BEG. RTDITCH
-L- STA. 32+00
ELEV. = 2070.8'

PI = 33+70.00
EL = 2,068.85'
VC = 725'
K = 256

2083.24'

(-) 5.8200%

(-) 3.8903%

(-) 1.0559%

-L- BEGIN GRADE
STA. 30+00.00 -L-
ELEV. = 2083.24'

BEGIN BRIDGE
STA. 34+20.00 -L-

END BRIDGE
STA. 37+50.50 -L-

2061.14

2056.95

(-) 0.3000%

BEG. RTDITCH
-L- STA. 38+00
ELEV. = 2057.85'

NOTE: OVERLAY EXISTING PAVEMENT LT & RT
BACK TO -L- STA 28+00

2,080 / 2,070 / 2,060 / 2,050 / 2,040 / 2,030 / 2,020 / 2,010 / 2,000

41 42 43 44 45

2061.14

(-) 1.0559%

(-) 0.3000%

2056.95

END RTDITCH
-L- STA. 41+50
ELEV. = 2056.80'

-L- END GRADE
STA. 44+00.00 -L-
ELEV. = 2057.97

NOTE: OVERLAY EXISTING PAVEMENT LT & RT
UP TO -L- STA 47+98.56

BM4 ELEVATION = 2054.96'
N 673766 E 927604
BL STATION 66+77 97' RIGHT
CHISLED SQUARE ON NW CORNER OF EXIT 31
SIGN OVER WEST BOUND LANES OF I-26
****
-L- 36+36.97 211.79' LT.
****
BM16 ELEVATION = 2045.88'
N 672761 E 927821
BY25 STATION 6+29 18 RIGHT
RR SPIKE SET IN 24" SYCAMORE
-L- 46+89.60 103.82' RT

DATUM DESCRIPTION
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE NAD83 STATE PLANE COORDINATES FOR THE NCDOT GPS MONUMENT "CALVARY" WITH A NORTHING OF 684834.0870, EASTING OF 934095.9080 THE AVERAGE COMBINED FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS 0.9997841. ALL LINEAR DISTANCES ARE LOCALIZED HORIZONTAL DISTANCES. THE VERTICAL DATUM IS BASED ON NCDOT MONUMENT "GPS I-4401 6" (ELEV. 2073.54') (NAVD 88).

31-MAY-2012 14:29
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PROJECT REFERENCE NO.	SHEET NO.
B-5178	8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 037874 ENGINEER TIMOTHY D. GOINS Timothy D. Goins 6-7-12	NORTH CAROLINA PROFESSIONAL SEAL 20870 ENGINEER MARC T. SHOWN 6/19/12

5/14/99

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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-5178	9

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 037874 ENGINEER TIMOTHY D. GOINS

Timothy D. Goins 6-7-12

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20670 ENGINEER MARC T. SHOWN

6/14/12

-SR3431-

-SR3431- END GRADE
STA. 22+24.94 -SR3431-
ELEV. = 2055.16

PI = 11+50.00
EL = 2,066.27'
VC = 215'
K = 18

PI = 20+00.00
EL = 2,068.08'
VC = 350'
K = 23

PI = 15+60.00
EL = 2,025.76'
VC = 510'
K = 26

(+)2.1298%

(-)9.8809%

(-)9.8809%

(+)9.6186%

(+)9.6186%

(-)15.7447%

-SR3431- BEGIN GRADE
STA. 10+10.00 -SR3431-
ELEV. = 2063.29

2,070
2,060
2,050
2,040
2,030
2,020
2,010
2,000

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

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PROJECT REFERENCE NO.	SHEET NO.
B-5178	10

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 037874 ENGINEER TIMOTHY D. COINS
Timothy D. Coins 6-7-12

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 20676 ENGINEER MARC T. SHOWN
6/11/12

PI = 13+35.00
EL = 2,075.29'
VC = 170'
K = 116

(-)4.8594%

(-)3.3917%

–TEMP_ALN1– END GRADE
STA. 15+32.26
ELEV. = 2068.6'
=–L– STA. 33+42.56

–TEMP_ALN1– BEGIN GRADE
STA. 12+42.61
ELEV. = 2079.78'

–TEMP_ALN1– BEGIN GRADE
STA. 19+65.82
ELEV. = 2060.904'
=–L– STA. 37+89.77

PI = 21+00.00
EL = 2,059.40'
VC = 180'
K = 127

(–)1.1209%

(+)0.3014%

–TEMP_ALN1– END GRADE
STA. 22+79.17
ELEV. = 2059.94'

–TEMP_ALN1–

2,090 2,080 2,070 2,060 2,050 2,040 2,030 2,020 2,010 2,000

12 13 14 15 16 17 18 19 20 21 22 23

(-)3.5703%

–TEMP_ALN2– END GRADE
STA. 16+38.56
ELEV. = 2080.69'
=–L– STA. 30+80

–TEMP_ALN2– BEGIN GRADE
STA. 14+49.36
ELEV. = 2087.45'

–TEMP_ALN2– BEGIN GRADE
STA. 26+32.34
ELEV. = 2061.58'
=–L– STA. 40+80

(-)1.6445%

–TEMP_ALN2– END GRADE
STA. 27+91.05
ELEV. = 2058.97'
=–L– STA. 42+35

–TEMP_ALN2–

2,090 2,080 2,070 2,060 2,050 2,040 2,030 2,020 2,010 2,000

14 15 16 17 18 19 20 21 22 23 24 25 26 27 28

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