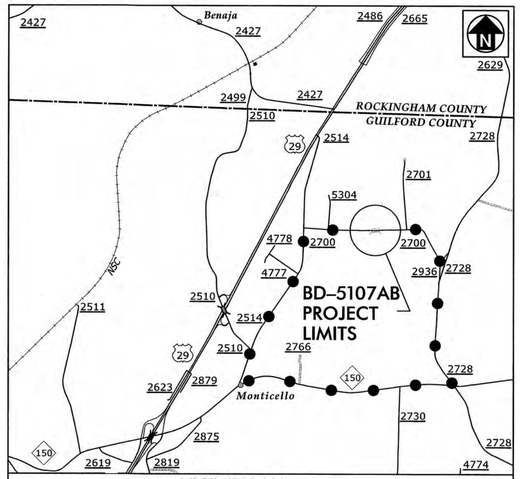
TIP PROJECT: BD-5107AB

CONTRACT:




VICINITY MAP
(NOT TO SCALE)
OFF-SITE DETOUR

# STATE OF NORTH CAROLINA
# DIVISION OF HIGHWAYS

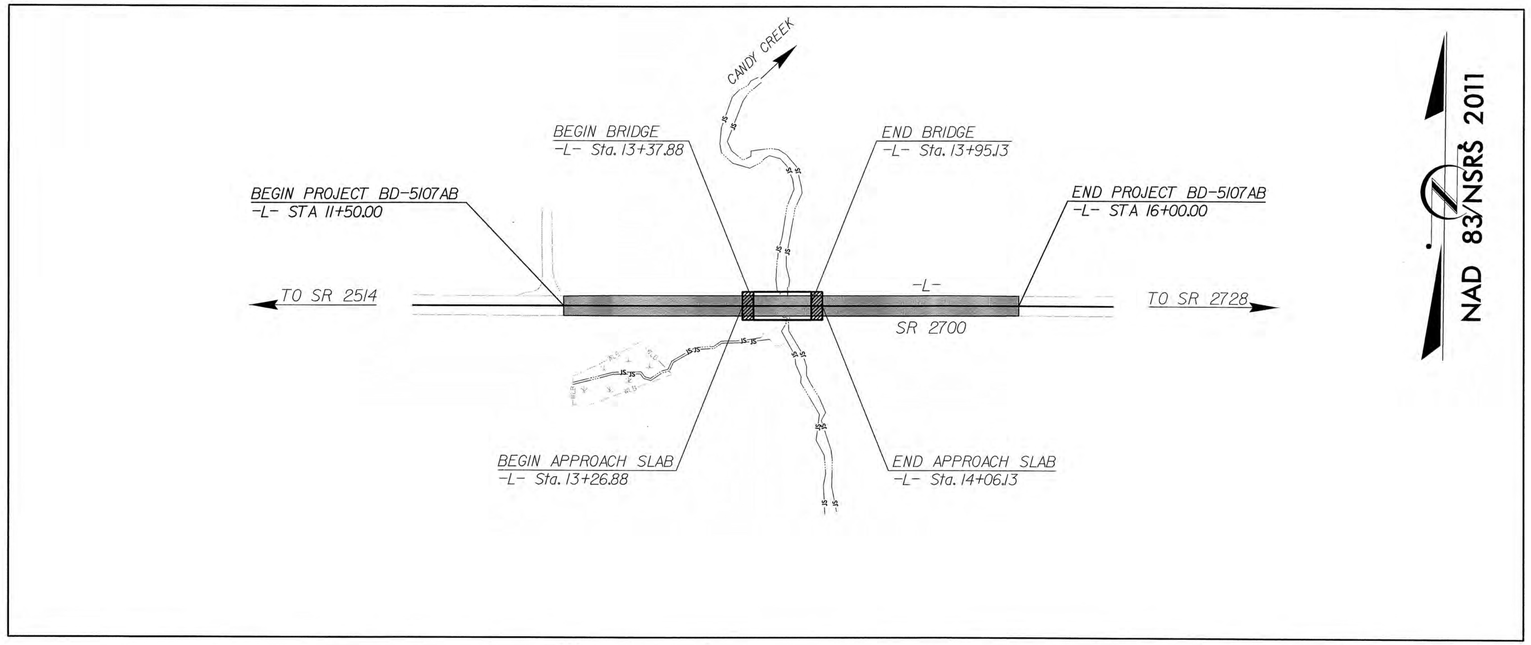
# GUILFORD COUNTY

LOCATION: BRIDGE NO. 145 OVER CANDY CREEK ON SR 2700 (HOPKINS ROAD)

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURE

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|
| N.C. | BD-5107AB | 1 | |

| STATE PROJECT NO. | F.A. PROJ. NO. | DESCRIPTION |
|---|---|---|
| 45353.1.29 | BRZ-2700(2) | P.E. |
| 45353.3.29 | BRZ-2700(2) | CONSTRUCTION |




STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

**DESIGN DATA**

ADT 2000 = 110

V = 55 MPH

SUB REGIONAL TIER
LOCAL

**PROJECT LENGTH**

| | | |
|---|---|---|
| LENGTH ROADWAY TIP PROJECT | = | 0.074 MILES |
| LENGTH STRUCTURE TIP PROJECT | = | 0.011 MILES |
| TOTAL LENGTH TIP PROJECT | = | 0.085 MILES |

Prepared In the Office of Hatch Matt MacDonald for
**DIVISION 7**
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2012 STANDARD SPECIFICATIONS

LETTING DATE:

TIM JORDAN, PE
PROJECT ENGINEER

DAVID FUH, PE
HYDRAULICS ENGINEER

NCDOT CONTACT: TIM POWERS, PE
DIVISION BRIDGE PROGRAM MANAGER

**ROADWAY DESIGN ENGINEER**

NORTH CAROLINA PROFESSIONAL SEAL 21102 ENGINEER JAMES TIMOTHY JORDAN

SIGNATURE: 9/24/14 P.E.

**HYDRAULICS ENGINEER**

NORTH CAROLINA PROFESSIONAL SEAL 019732 ENGINEER SHIH-CHIEN FUH

SIGNATURE: 9-24-14 P.E.

**PLANS PREPARED BY:**


Hatch Mott MacDonald
PO Box 700
Fuquay-Varina, NC 27526
(919) 552-2253
(919) 552-2254 (Fax)
www.hatchmott.com
LICENSE NO. F-0669

ICA Engineering
5121 Kingdom Way, Suite 100
Raleigh, NC 27607
NC License No: F-0258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| PROJECT REFERENCE | SHEET NO. |
|---|---|
| BD-5107AB - GUILFORD #145 | 1-A |

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21102 ENGINEER TIMOTHY JORDAN

9/24/14

HATCH MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

Prepared in the Office of: Hatch Mott MacDonald P.O. Box 700 Fuquay-Varina, NC 27526 www.hatchmott.com

GENERAL NOTES:

2012 SPECIFICATIONS
EFFECTIVE: 01-17-12
REVISED: 07/30/12

GRADE LINE:
GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

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.

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

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.

INDEX OF SHEETS


| SHEET NUMBER | DESCRIPTION |
|---|---|
| 1 | TITLE SHEET |
| 1-A | INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS |
| 1-B | CONVENTIONAL SYMBOLS |
| 2 | PAVEMENT SCHEDULE AND TYPICAL SECTIONS |
| 2-A | DETAIL FOR STRUCTURE ANCHOR UNITS |
| 4 | PLAN SHEET AND PROFILE SHEET |
| TMP-1 THRU TMP-3 | TRAFFIC MANAGEMENT PLANS |
| EC-1 THRU EC-5 | EROSION CONTROL PLANS |
| RF-1 | REFORESTATION DETAIL SHEET |
| X-1 THRU X-3 | CROSS-SECTIONS |
| S-1 THRU S-15 | STRUCTURE PLANS |


EFF. 01-17-2012
REV. 10-30-2012

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 |
| 225.02 | Guide for Grading Subgrade - Secondary and Local |
| 225.04 | Method of Obtaining Superelevation - Two Lane Pavement |
| DIVISION 3 - PIPE CULVERTS | |
| 300.01 | Method of Pipe Installation |
| 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 |
| DIVISION 6 - ASPHALT BASES AND PAVEMENTS | |
| 654.01 | Pavement Repairs |
| DIVISION 8 - INCIDENTALS | |
| 840.00 | Concrete Base Pad for Drainage Structures |
| 840.25 | Anchorage for Frames - Brick or Concrete or Precast |
| 840.29 | Frames and Narrow Slot Flat Grates |
| 840.35 | Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates |
| 840.46 | Traffic Bearing Precast Drainage Structure |
| 840.66 | Drainage Structure Steps |
| 846.01 | Concrete Curb, Gutter and Curb & Gutter |
| 846.04 | Drop Inlet Installation in Shoulder Berm Gutter |
| 862.01 | Guardrail Placement |
| 862.02 | Guardrail Installation |
| 876.01 | Rip Rap in Channels |
| 876.02 | Guide for Rip Rap at Pipe Outlets |
| 876.04 | Drainage Ditches with Class 'B' Rip Rap |

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***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

## *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 Utility Easement — PUE

## *ROADS AND RELATED FEATURES:*

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Wheel Chair Ramp — WCR
- 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 — HH
- 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
- 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
- A/G Tank; Water, Gas, Oil
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.


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| PROJECT REFERENCE | SHEET NO. |
|---|---|
| BD-5107AB – GUILFORD #145 | 2 |

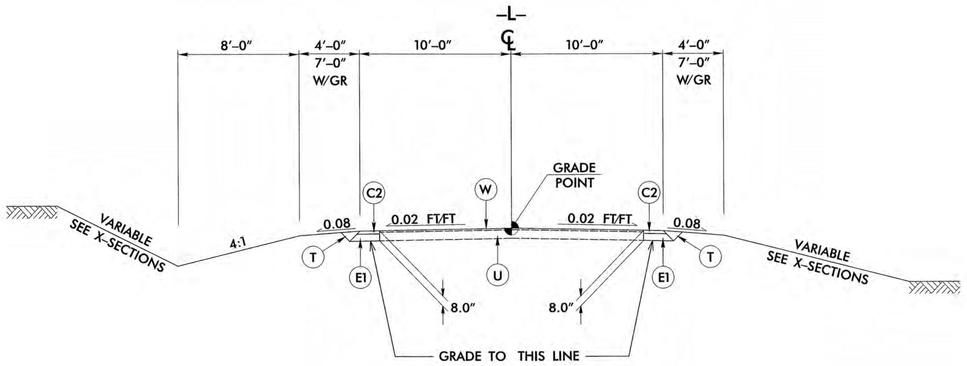
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 31102 ENGINEER TIMOTHY JORDAN

9/24/14

HATCH MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

Prepared in the Office of: Hatch Mott MacDonald P.O. Box 700 Fuquay-Varina, NC 27526 www.hatchmott.com

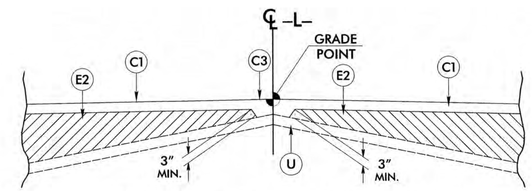



## TYPICAL SECTION NO. 1

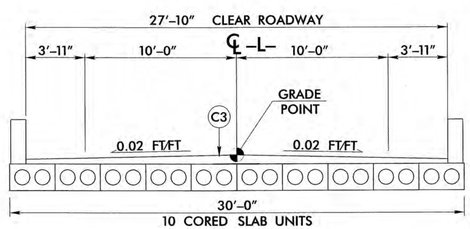
TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 1:
–L– STA 11+50.00 TO 12+00.00

USE TYPICAL SECTION NO. 1:
–L– STA 12+00.00 TO 13+37.88 (BEGIN BRIDGE)
–L– STA 13+95.13 (END BRIDGE) TO 15+50.00

TRANSITION FROM TYPICAL SECTION NO. 1 TO EXISTING:
–L– STA 15+50.00 TO 16+00.00




Detail Showing Method of Wedging




## TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2:
–L– STA 13+37.88 (BEGIN BRIDGE) TO 13+95.13 (END BRIDGE)

| PAVEMENT SCHEDULE | |
|---|---|
| C1 | PROP. APPROX. 1¼" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. |
| C2 | PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS. |
| C3 | PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1" IN DEPTH OR GREATER THAN 1½" IN DEPTH. |
| E1 | PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD. |
| E2 | 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. |
| T | EARTH MATERIAL. |
| U | EXISTING PAVEMENT. |
| W | WEDGING (SEE DETAIL SHOWING METHOD OF WEDGING). |

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

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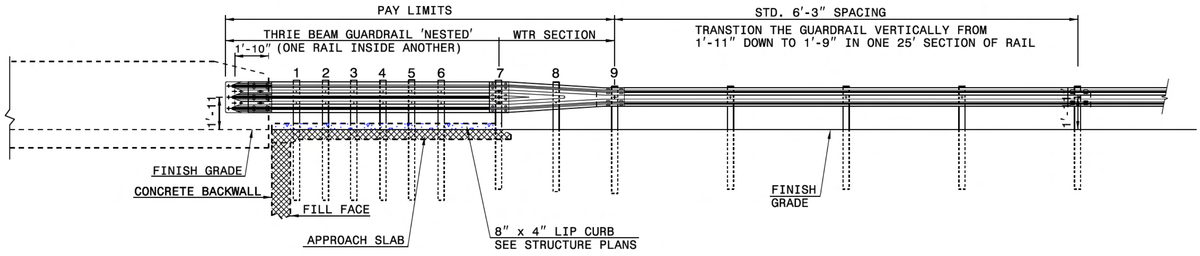
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

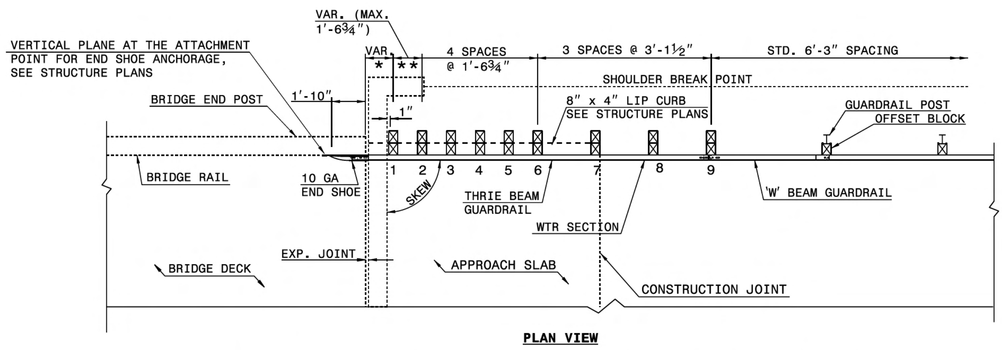
ENGLISH DETAIL DRAWING FOR
**STRUCTURE ANCHOR UNITS**
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON BRIDGE - SUB REGIONAL TIER

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 5 FOR POST SECTIONS 1 THRU 9.




**PLAN VIEW**

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


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

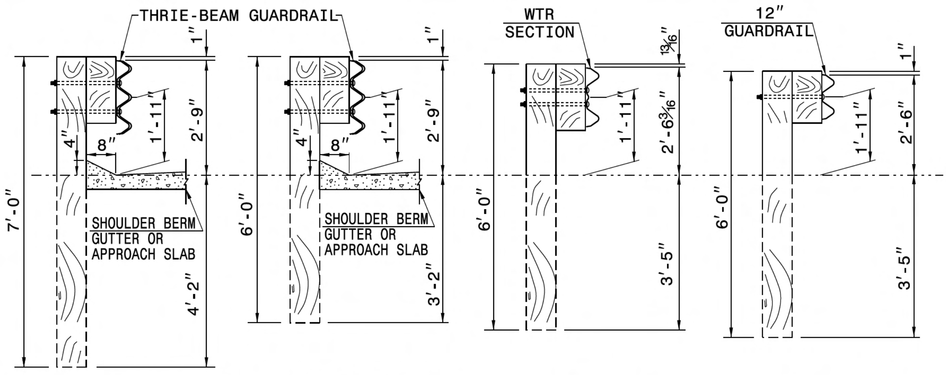
ENGLISH DETAIL DRAWING FOR
**STRUCTURE ANCHOR UNITS**
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7
**862d03**


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

ENGLISH DETAIL DRAWING FOR
**STRUCTURE ANCHOR UNITS**
GUARDRAIL ANCHOR UNIT, TYPE III

SHEET 3 OF 7
**862d03**

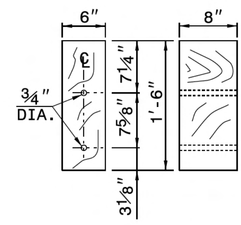



**SECTION OF THRIE BEAM POSTS 1 THRU 6**

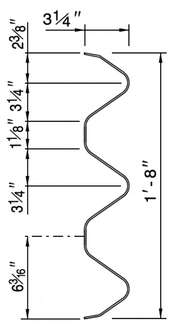
**SECTION OF THRIE BEAM POST 7**

**SECTION OF WTR BEAM POST 8**

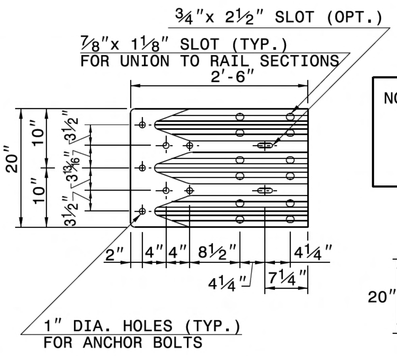
**SECTION OF 'W' BEAM POST 9**




**THRIE BEAM OFFSET BLOCK**

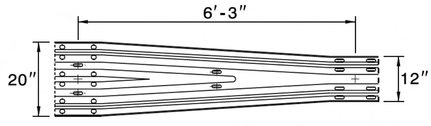



**THRIE-BEAM SECTION**

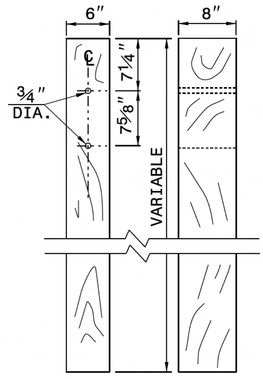



**END SHOE**

NOTE: THE MID POST AND OFFSET BLOCK OF THE WTR SECTION WILL REQUIRE SPECIAL BOLT HOLE DRILLING IN THE THRIE BEAM OFFSET BLOCK AND LINE POST.




**WTR SECTION**
ELEVATION VIEW




**THRIE BEAM LINE POST**


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

ENGLISH DETAIL DRAWING FOR
**STRUCTURE ANCHOR UNITS**
GUARDRAIL ANCHOR UNIT, TYPE III

SHEET 3 OF 7
**862d03**



**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.:

PROJECT REFERENCE NO.
SHEET NO.

| PROJECT REFERENCE | SHEET NO. |
|---|---|
| BD-5107AB - GUILFORD #145 | 4 |

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 21103 ENGINEER JAMES TIMOTHY JORDAN
9/24/14
HATCH MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

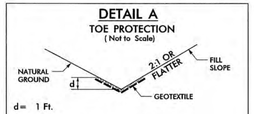
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 019732 ENGINEER SHUCHEN FUN
9-24-14

Prepared in the Office of: Hatch Mott MacDonald, PO Box 700, Fuquay-Varina, NC 27526, www.hatchmott.com

ICA Engineering, 5121 Kingdom Way, Suite 100, Raleigh, NC 27607, NC License No: F-0258

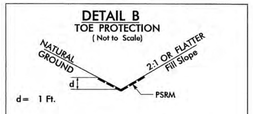
VERTICAL SCALE 5' 0 5' 10'
HORIZONTAL SCALE 25' 0 25' 50'

**DETAIL A**
TOE PROTECTION
( Not to Scale)



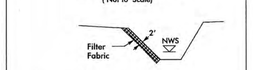

d= 1 Ft.
Type of Liner= CLASS B Rip-Rap
-L- STA. 12+30 TO 13+15 LT
-L- STA. 14+06 TO 15+70 RT

**DETAIL B**
TOE PROTECTION
( Not to Scale)

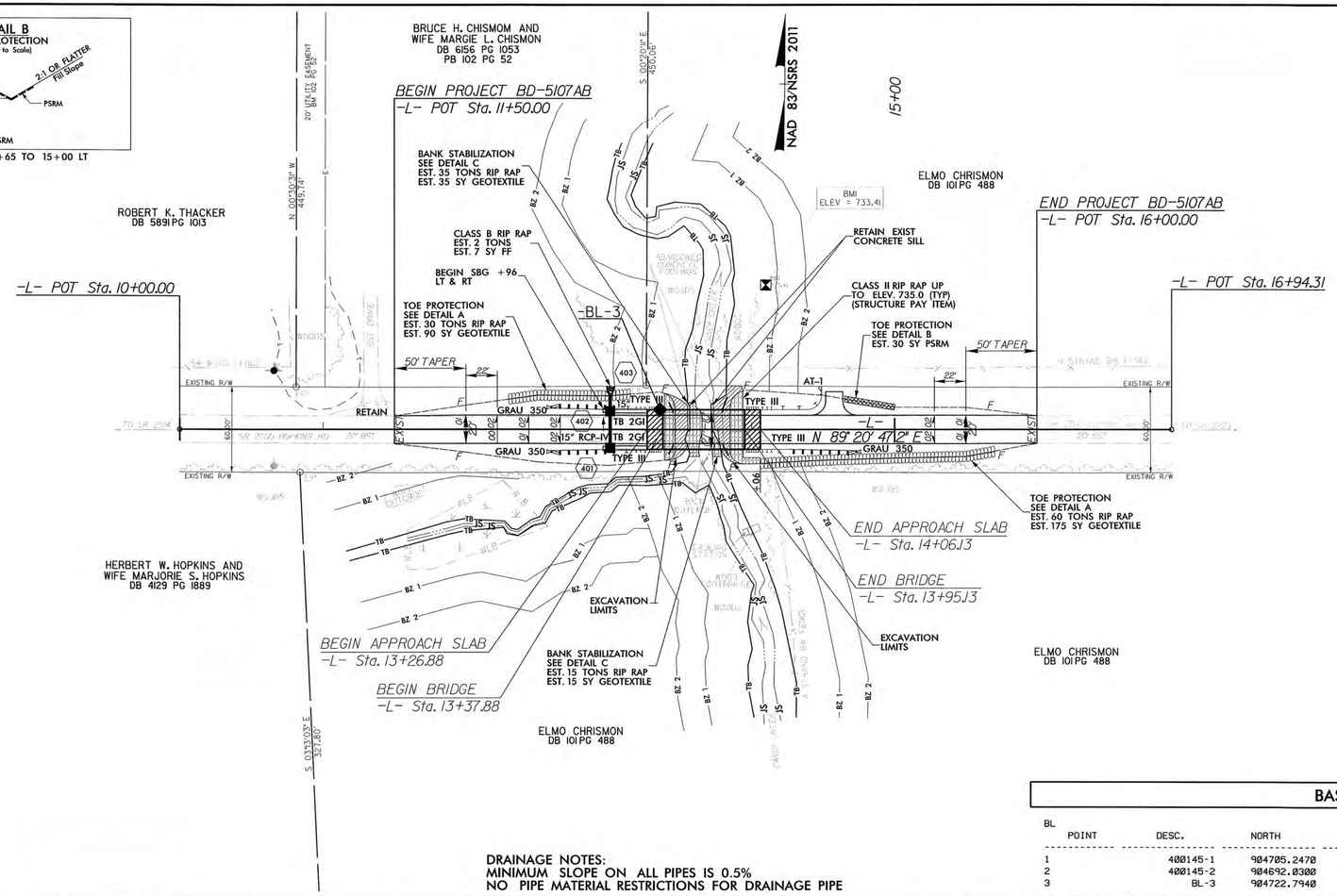



d= 1 Ft.
Type of Liner= PSRM
-L- STA. 14+65 TO 15+00 LT

**DETAIL C**
BANK STABILIZATION
( Not to Scale)




Type of Liner= CLASS II RIP RAP
-L- STA. 13+60
-L- STA. 13+75




## DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "400145-2"
WITH NAD 83/NSRS 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 904692.0300(ft) EASTING: 1804021.3680(ft)
ELEVATION: 780.82(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: .9999870726
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "400145-2" TO -L- STATION 10+00.00 IS
N 88 ° 28' 23.2" E 487.41'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

DRAINAGE NOTES:
MINIMUM SLOPE ON ALL PIPES IS 0.5%
NO PIPE MATERIAL RESTRICTIONS FOR DRAINAGE PIPE

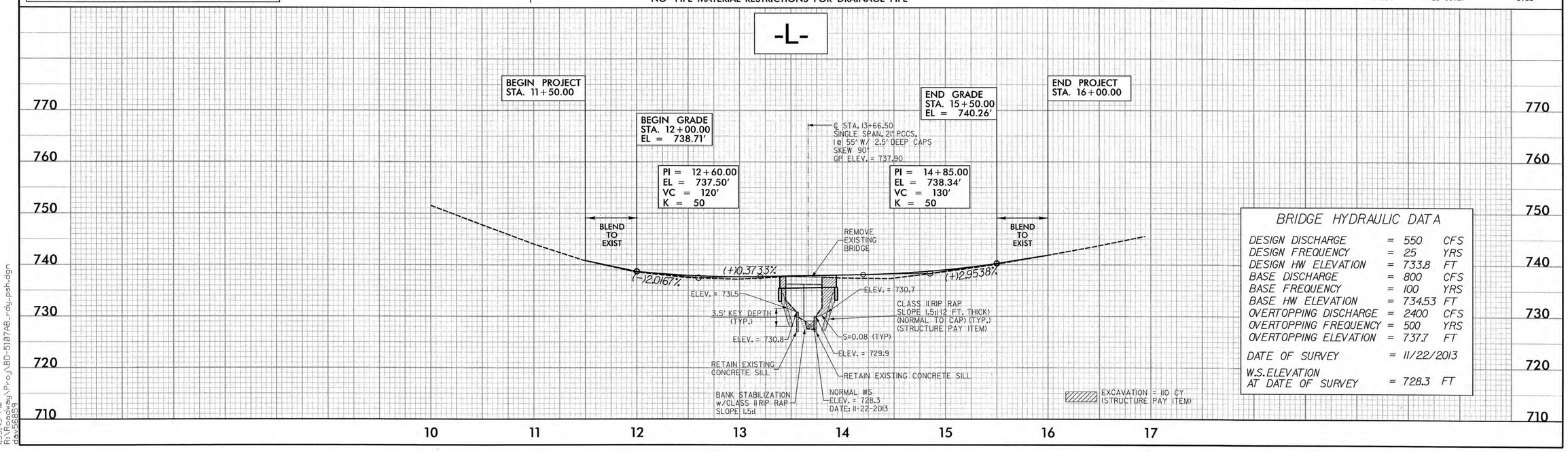
## BENCHMARK DATA

BM1 ELEVATION = 733.41
N 904811 E 1804917
BL STATION 5+00.00
N 82°26'29.27" E DIST 903.87
RR SPIKE IN BASE OF 16" MAPLE

## BASELINE DATA

BL

| POINT | DESC. | NORTH | EAST | ELEVATION | BL STATION | OFFSET |
|---|---|---|---|---|---|---|
| 1 | 400145-1 | 904705.2470 | 1803281.7180 | 811.45 | 5+00.00 | 0.00 |
| 2 | 400145-2 | 904692.0300 | 1804021.3680 | 780.82 | 12+39.77 | 0.00 |
| 3 | BL-3 | 904722.7940 | 1804844.2942 | 737.09 | 20+63.27 | 0.00 |




## BRIDGE HYDRAULIC DATA

| | | | |
|---|---|---|---|
| DESIGN DISCHARGE | = | 550 | CFS |
| DESIGN FREQUENCY | = | 25 | YRS |
| DESIGN HW ELEVATION | = | 733.8 | FT |
| BASE DISCHARGE | = | 800 | CFS |
| BASE FREQUENCY | = | 100 | YRS |
| BASE HW ELEVATION | = | 734.53 | FT |
| OVERTOPPING DISCHARGE | = | 2400 | CFS |
| OVERTOPPING FREQUENCY | = | 500 | YRS |
| OVERTOPPING ELEVATION | = | 737.7 | FT |
| DATE OF SURVEY | = | 11/22/2013 | |
| W.S.ELEVATION AT DATE OF SURVEY | = | 728.3 | FT |

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ds-9697

| PROJECT REFERENCE | SHEET NO. |
|---|---|
| BD-5107AB – GUILFORD #145 | TMP-1 |

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 21102 ENGINEER JAMES TIMOTHY JORDAN

9/24/14

HATCH MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

Prepared in the Office of: Hatch Mott MacDonald P.O. Box 700 Fuquay-Varina, NC 27526 www.hatchmott.com

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. | TITLE |
|---|---|
| 1101.03 | TEMPORARY ROAD CLOSURES |
| 1110.01 | STATIONARY WORK ZONE SIGNS |
| 1145.01 | BARRICADES |
| 1205.01 | PAVEMENT MARKINGS – LINE TYPES AND OFFSETS |
| 1205.02 | PAVEMENT MARKINGS – TWO–LANE AND MULTI–LANE ROADWAYS |
| 1205.12 | PAVEMENT MARKINGS – BRIDGES |
| 1261.01 | GUARDRAIL AND BARRIER DELINEATORS – INSTALLATION SPACING |
| 1261.02 | GUARDRAIL AND BARRIER DELINEATORS – TYPES AND MOUNTING |
| 1262.01 | GUARDRAIL END DELINEATION |

# GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

TRAFFIC PATTERN ALTERATIONS

A) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

B) PROVIDE PERMANENT SIGNING.

C) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

PROVIDE SIGNING REQUIRED FOR THE OFF–SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.

D) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.

COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF–SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.

E) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

TRAFFIC CONTROL DEVICES

F) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11–2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

PAVEMENT MARKINGS AND MARKERS

G) INSTALL PAVEMENT MARKINGS ON THE FINAL SURFACE.

# PHASING

STEP 1: USING ROADWAY STANDARD DRAWING NUMBER 1101.03, SHEET 1 OF 9, AND SHEET TMP–2, PERFORM THE FOLLOWING:
- INSTALL ALL ROAD CLOSURE AND DETOUR SIGNING INCLUDING BARRICADES
- CLOSE SR 2700 (HOPKINS ROAD)
- PLACE TRAFFIC ONTO OFF– SITE DETOUR

STEP 2: REMOVE EXISTING BRIDGE #145 AND CONSTRUCT THE PROPOSED BRIDGE AND APPROACHES AS SHOWN IN THE CONSTRUCTION PLANS.

STEP 3: INSTALL FINAL PAVEMENT MARKINGS.

STEP 4: REMOVE ALL TRAFFIC CONTROL SIGNING AND DEVICES AND RE–OPEN SR 2700 (HOPKINS ROAD) TO THE FINAL TRAFFIC PATTERN.

# PAVEMENT MARKING

| | |
|---|---|
| PAINT WHITE EDGELINE (4") | 1800 LF |
| PAINT YELLOW DOUBLE CENTER (4") | 1800 LF |

NOTE: QUANTITY INCLUDES 2 APPLICATIONS OF EACH

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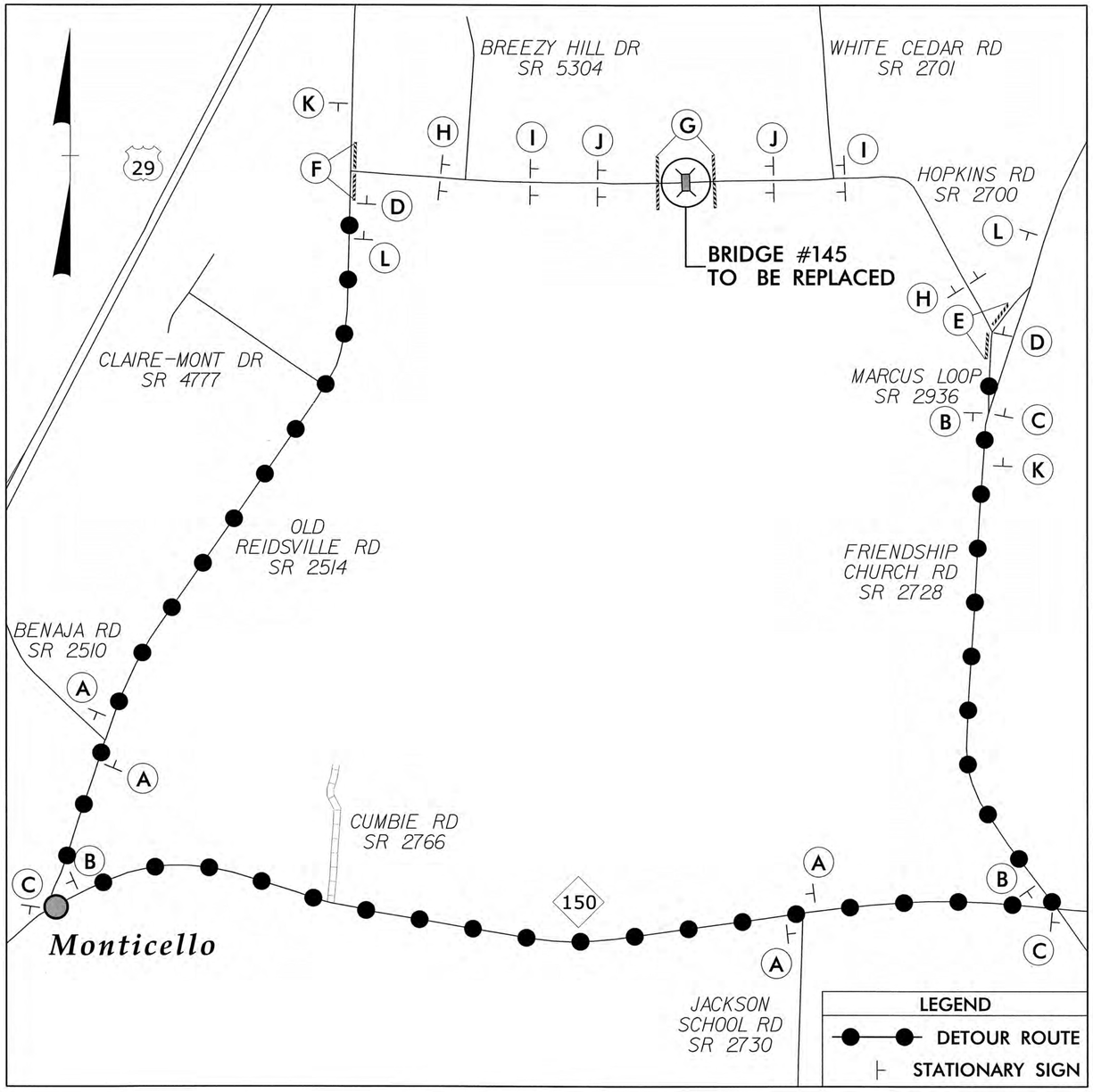
| PROJECT REFERENCE | SHEET NO. |
|---|---|
| BD-5107AB - GUILFORD #145 | TMP-2 |

ROADWAY DESIGN ENGINEER

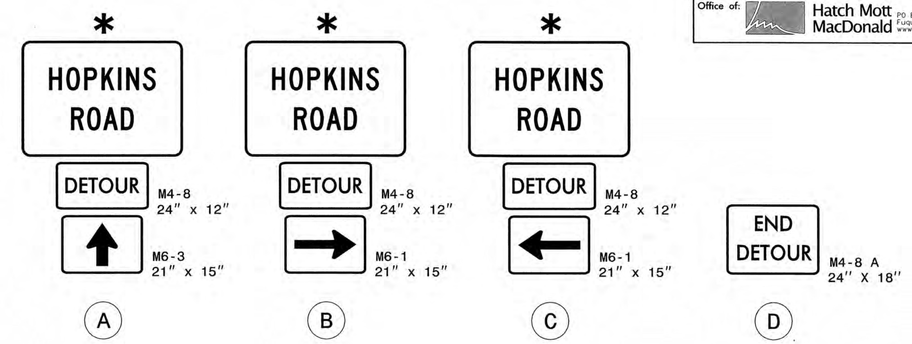
NORTH CAROLINA PROFESSIONAL SEAL 21102 ENGINEER TIMOTHY JORDAN 9/24/14

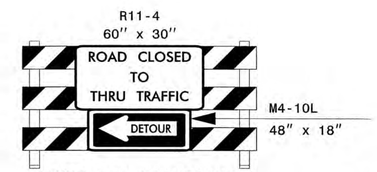
HATCH MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

Prepared in the Office of: Hatch Mott MacDonald PO Box 700 Fuquay-Varina, NC 27526 www.hatchmott.com



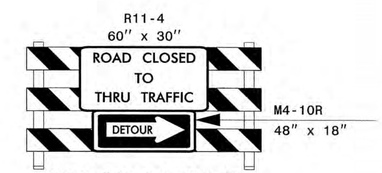

✱ SEE SHEET TMP-3 FOR SPECIAL SIGN DESIGNS



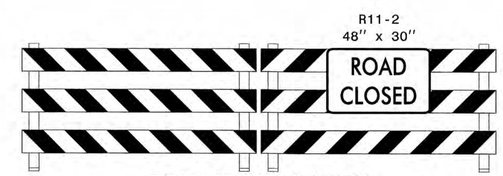

TYPE III BARRICADE

E



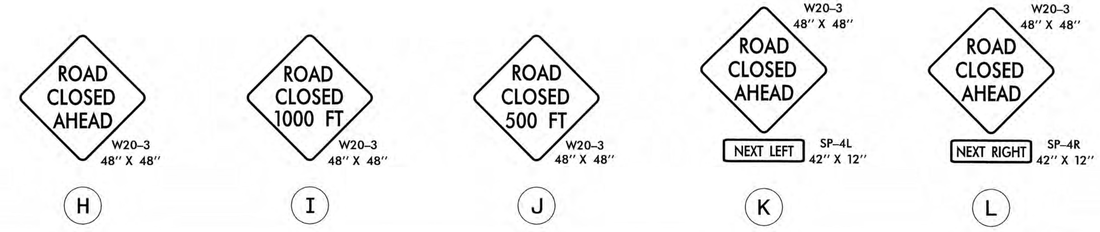

TYPE III BARRICADE

F




TYPE III BARRICADE(S)

G

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rdy56854\Proj\BD-5107AB_rdy_tcp.dgn
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| PROJECT REFERENCE | SHEET NO. |
|---|---|
| BD-5107AB – GUILFORD #145 | TMP-3 |

TRAFFIC ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 023488 ENGINEER NATHAN K. PHILLIPS

Nathan K. Phillips 9-23-14

HATCH MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

Prepared in the Office of: Hatch Mott MacDonald PO Box 700 Fuquay-Varina, NC 27526 www.hatchmott.com

SIGN NUMBER: SD-1
TYPE: D
QUANTITY: 12

SIGN WIDTH: 3′-6″
HEIGHT: 2′-6″
TOTAL AREA: 8.8 Sq.Ft.

BORDER TYPE: INSET
RECESS: 0.47″
WIDTH: 0.63″
RADII: 1.5″

NO. Z BARS:
LENGTH:

BACKG COLOR: Fluorescent Orange
COPY COLOR: Black

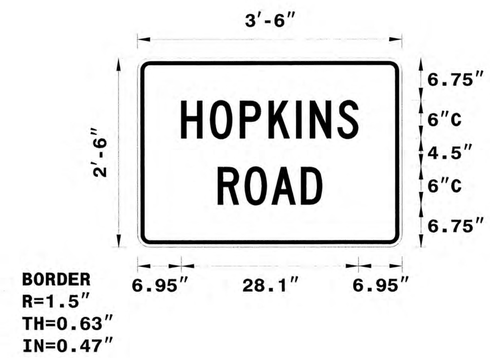
| SYMBOL | X | Y | WID | HT |
|---|---|---|---|---|
| | | | | |

MAT'L: 0.080″ (2.0 mm) ALUMINUM

DESIGN BY: JTD
PROJECT ID: BD-5107AB
CHECKED BY: NKP
DIV: 7
DATE: Oct 28, 2013

USE NOTES: 1,2

1. Legend and border shall be direct applied black non-reflective sheeting.
2. Background shall be NC GRADE B fluoresent orange retroreflective sheeting.




Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter locations are panel edge to lower left corner

| | | | | | | | | Series/Size Text Length |
|---|---|---|---|---|---|---|---|---|
| H | O | P | K | I | N | S | | C 2000 |
| 6.9 | 11.5 | 16.2 | 20.8 | 25.2 | 27.3 | 31.7 | | 28.1 |
| R | O | A | D | | | | | C 2000 |
| 12.7 | 17 | 21.2 | 25.9 | | | | | 16.6 |

FILENAME: BD-5107AB_rdy_SD1

NORTH CAROLINA D.O.T. SIGN DETAIL

dev56859
c:\pwworking\Proj\BD-5107AB_rdy_tcp.dgn
9/23/2014 1:39:57 PM

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|
| N.C. | BD-5107AB | EC-1 | |

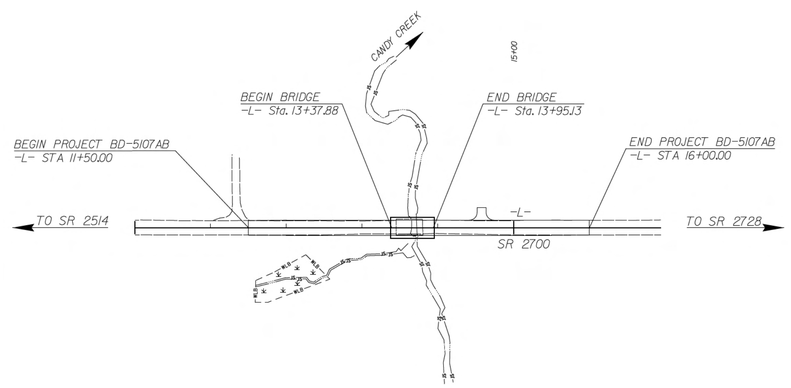
| STATE PROJ. NO. | F. A. PROJ. NO. | DESCRIPTION |
|---|---|---|
| 45353.1.29 | BRZ-2700(2) | P.E. |

# STATE OF NORTH CAROLINA
# DIVISION OF HIGHWAYS

## PLAN FOR PROPOSED
# HIGHWAY EROSION CONTROL

## *GUILFORD COUNTY*

BRIDGE NO. 145 ON SR 2700
OVER CANDY CREEK




## EROSION AND SEDIMENT CONTROL MEASURES

| Std. # | Description | Symbol |
|---|---|---|
| 1630.03 | Temporary Silt Ditch | TSD |
| 1630.05 | Temporary Diversion | TD |
| 1605.01 | Temporary Silt Fence | |
| 1606.01 | Special Sediment Control Fence | |
| 1622.01 | Temporary Berms and Slope Drains | |
| 1630.02 | Silt Basin Type B | |
| 1633.01 | Temporary Rock Silt Check Type-A | |
| | Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM) | |
| 1633.02 | Temporary Rock Silt Check Type-B | |
| | Wattle/Coir Fiber Wattle | |
| | Wattle/Coir Fiber Wattle with Polyacrylamide (PAM) | |
| 1634.01 | Temporary Rock Sediment Dam Type-A | |
| 1634.02 | Temporary Rock Sediment Dam Type-B | |
| 1635.01 | Rock Pipe Inlet Sediment Trap Type-A | |
| 1635.02 | Rock Pipe Inlet Sediment Trap Type-B | |
| 1630.04 | Stilling Basin | |
| 1630.06 | Special Stilling Basin | |
| | Rock Inlet Sediment Trap: | |
| 1632.01 | Type A | A |
| 1632.02 | Type B | B |
| 1632.03 | Type C | C |
| | Skimmer Basin | |
| | Tiered Skimmer Basin | |
| | Infiltration Basin | |

**THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.**

**ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT**

***Refer To E. C. Special Provisions for Special Considerations.***

**THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.**


ICA Engineering
5121 Kingdom Way, Suite 100
Raleigh, NC 27607
NC License No: F-0258


**BD-5107AB**

***GRAPHIC SCALE***

25 0 50
PLANS

25 0 50
PROFILE (HORIZONTAL)

5 0 10
PROFILE (VERTICAL)

***ROADSIDE ENVIRONMENTAL UNIT***
***DIVISION OF HIGHWAYS***
***STATE OF NORTH CAROLINA***

LEVEL III CERTIFIED BY:
ALEXANDER SNIDER, P.E.
CERTIFICATION NUMBER: 3064
ISSUED: AUGUST 20, 2014

***THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER QUALITY.***

*Prepared in the Office of:*

***ICA ENGINEERING***
*5121 KINGDOM WAY, SUITE 100*
*RALEIGH NC 27607*
*NC License No: F-0258*

***2012 STANDARD SPECIFICATIONS***

Roadway Standard Drawings

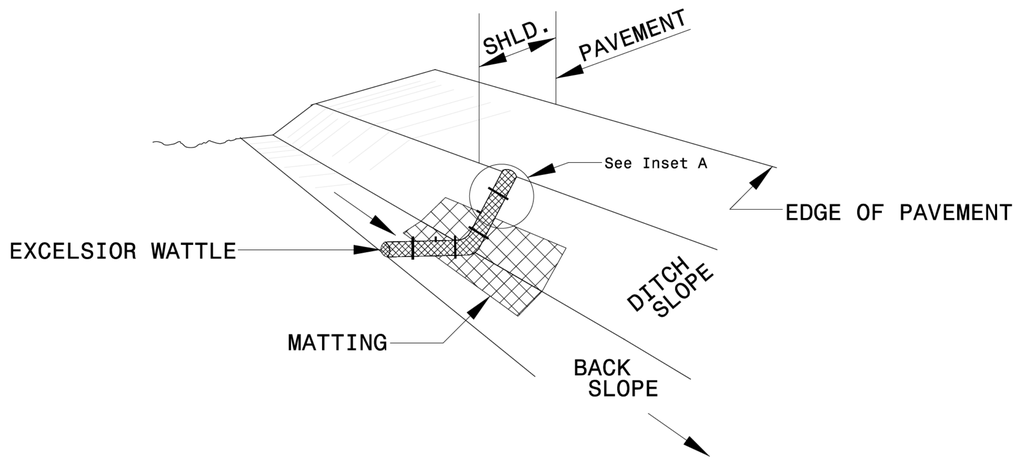
The following roadway english standards as appear in "Roadway Standard Drawings"– Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2012 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

| | | | |
|---|---|---|---|
| 1604.01 | Railroad Erosion Control Detail | 1632.01 | Rock Inlet Sediment Trap Type A |
| 1605.01 | Temporary Silt Fence | 1632.02 | Rock Inlet Sediment Trap Type B |
| 1606.01 | Special Sediment Control Fence | 1632.03 | Rock Inlet Sediment Trap Type C |
| 1607.01 | Gravel Construction Entrance | 1633.01 | Temporary Rock Silt Check Type A |
| 1622.01 | Temporary Berms and Slope Drains | 1633.02 | Temporary Rock Silt Check Type B |
| 1630.01 | Riser Basin | 1634.01 | Temporary Rock Sediment Dam Type A |
| 1630.02 | Silt Basin Type B | 1634.02 | Temporary Rock Sediment Dam Type B |
| 1630.03 | Temporary Silt Ditch | 1635.01 | Rock Pipe Inlet Sediment Trap Type A |
| 1630.04 | Stilling Basin | 1635.02 | Rock Pipe Inlet Sediment Trap Type B |
| 1630.05 | Temporary Diversion | 1640.01 | Coir Fiber Baffle |
| 1630.06 | Special Stilling Basin | 1645.01 | Temporary Stream Crossing |
| 1631.01 | Matting Installation | | |

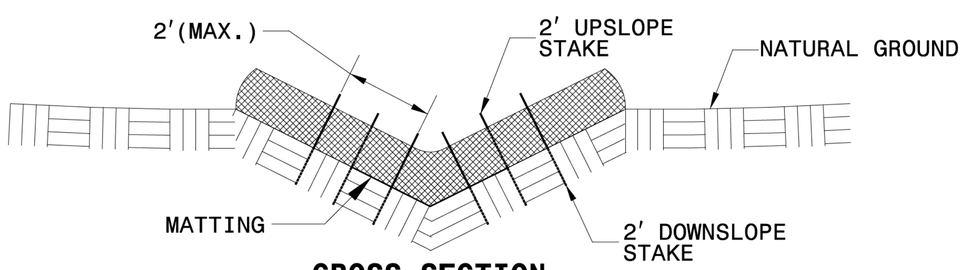

8/20/2014
ENGINEERING
DESIGN

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| BD-5107AB | EC-2 |

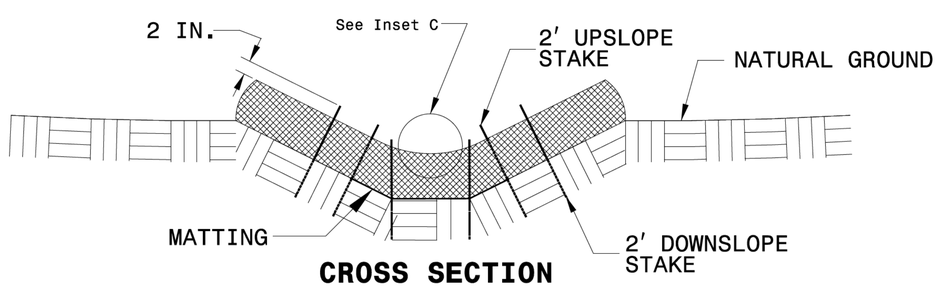
# WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL




**ISOMETRIC VIEW**




**CROSS SECTION VEE DITCH**




**CROSS SECTION TRAPEZOIDAL DITCH**

NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

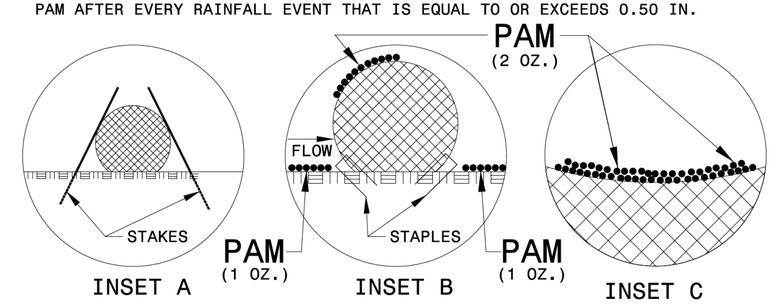
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

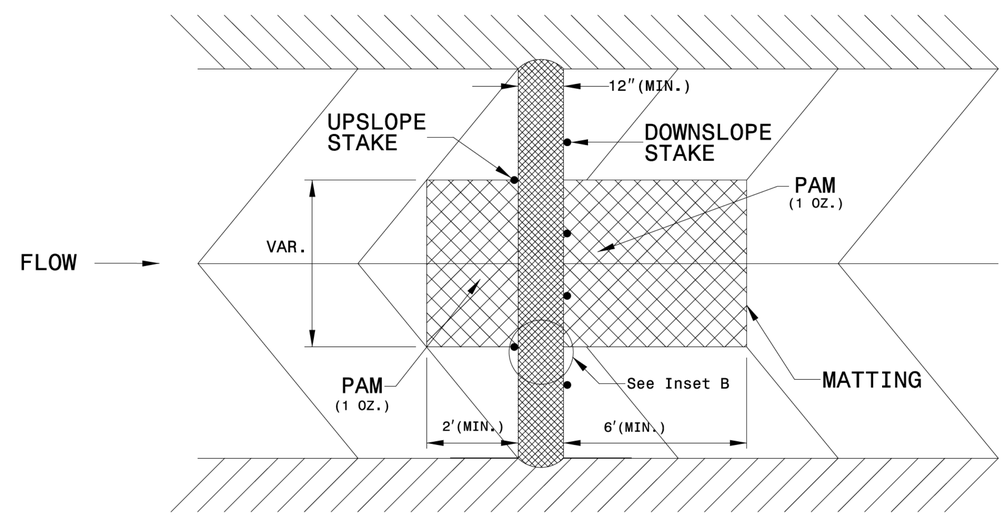
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE.

INITIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE OF PAM ON MATTING ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.

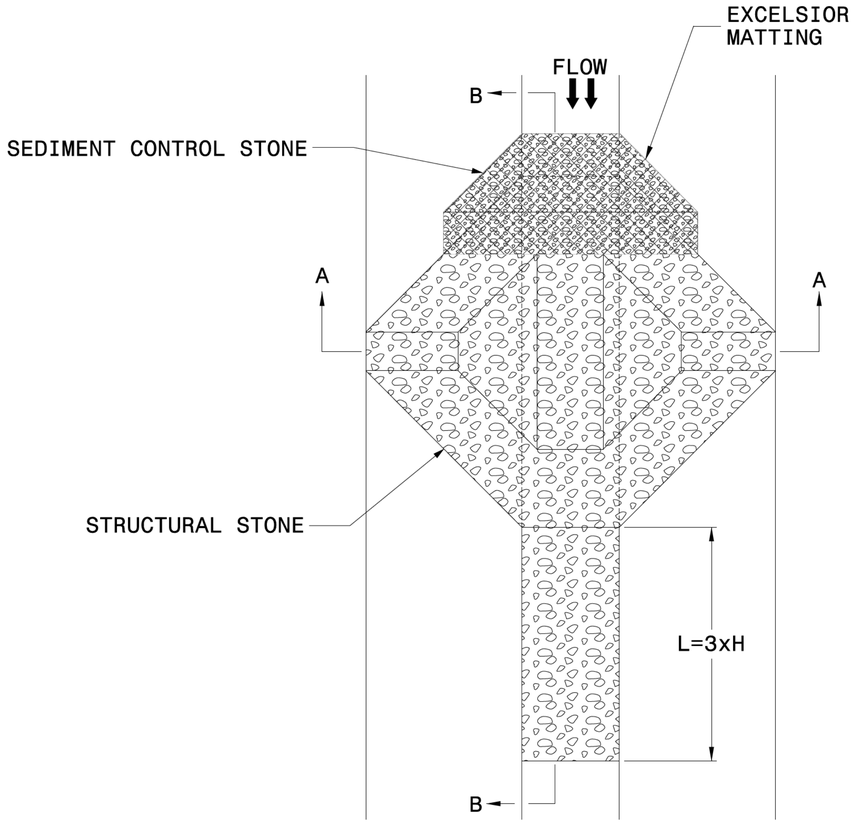



**TOP VIEW**

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| BD-5107AB | EC-2A |

# TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM)



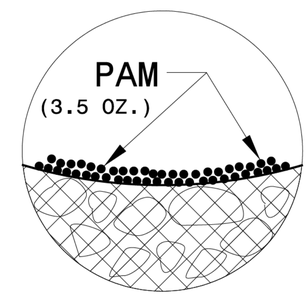

PLAN

NOTES

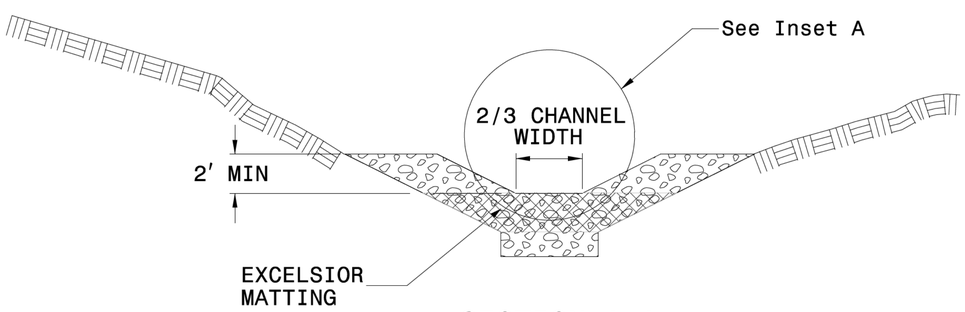
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH ROCK SILT CHECK.

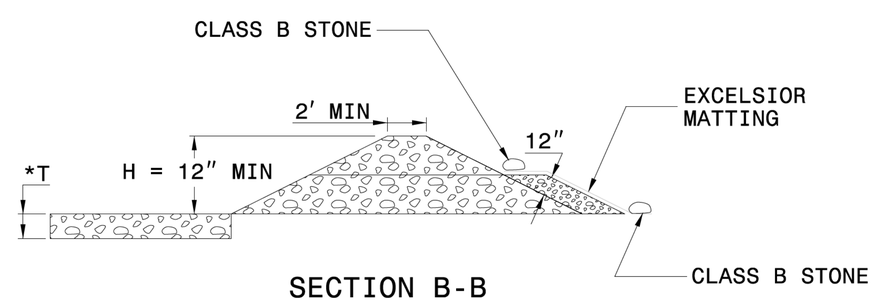
INITIALLY APPLY 3.5 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.




INSET A




SECTION A-A




SECTION B-B

*T = 12" MIN., 18" MAX.

NOT TO SCALE

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| BD-5107AB | EC-3 |

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

# SOIL STABILIZATION TIMEFRAMES

| SITE DESCRIPTION | STABILIZATION TIME | TIMEFRAME EXCEPTIONS |
|---|---|---|
| PERIMETER DIKES, SWALES, DITCHES AND SLOPES | 7 DAYS | NONE |
| HIGH QUALITY WATER (HQW) ZONES | 7 DAYS | NONE |
| SLOPES STEEPER THAN 3:1 | 7 DAYS | IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED. |
| SLOPES 3:1 OR FLATTER | 14 DAYS | 7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH. |
| ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1 | 14 DAYS | NONE, EXCEPT FOR PERIMETERS AND HQW ZONES. |

5/14/99

GRAPHIC SCALE
50 0 50 100

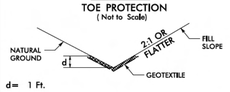
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| BD-5107AB | EC-4/CONST.4 |
| R/W SHEET NO. | |
| ROADSIDE ENVIRONMENTAL PROJECT ENGINEER | |

LEVEL III CERTIFIED BY:
ALEXANDER SNIDER, P.E.
CERTIFICATION NUMBER: 3064
ISSUED: AUGUST 20, 2014

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

N
NC GRID
NAD 83 NSRS 2011

## DETAIL A
TOE PROTECTION
( Not to Scale)

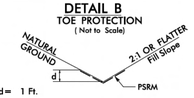



d= 1 Ft.

Type of Liner= CLASS B Rip-Rap

-L- STA. 12+30 TO 13+15 LT
-L- STA. 14+06 TO 15+70 RT

## DETAIL B
TOE PROTECTION
( Not to Scale)

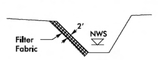



d= 1 Ft.

Type of Liner= PSRM

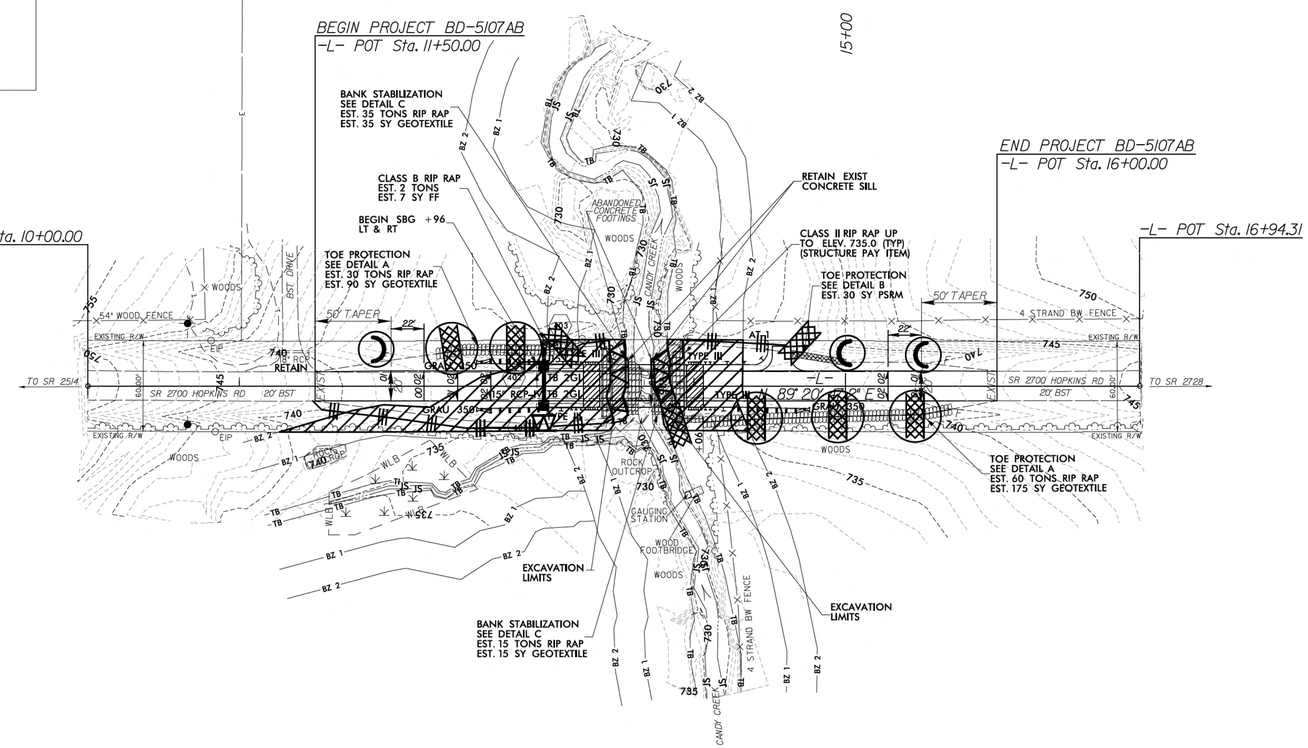
-L- STA. 14+65 TO 15+00 LT

## DETAIL C
BANK STABILIZATION
( Not to Scale)




Type of Liner= CLASS II RIP RAP

-L- STA. 13+60
-L- STA. 13+75




DRAINAGE NOTES:
MINIMUM SLOPE ON ALL PIPES IS 0.5%
NO PIPE MATERIAL RESTRICTIONS FOR DRAINAGE PIPE

NOTE:
ALL EROSION CONTROL DEVICES SHOWN ARE LOCATED WITHIN EXISTING/PROPOSED R/W OR EASEMENT.

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

ICA Engineering
5121 Kingdom Way,
Suite 100
Raleigh, NC 27607
NC License No: P-0258

8/23/2014
R:\Roadways\Erosion Control\cadd\BD-5107AB_erosion_c&g.dgn
Ka & Associates P.C.

GRAPHIC SCALE
50 0 50 100

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| BD-5107AB | EC-5/CONST.4 |
| R/W SHEET NO. | |
| ROADSIDE ENVIRONMENTAL PROJECT ENGINEER | |

LEVEL III CERTIFIED BY:
ALEXANDER SNIDER, P.E.
CERTIFICATION NUMBER: 3064
ISSUED: AUGUST 20, 2014

FINAL EROSION CONTROL FOR CONSTRUCTION SHEET 4

N
NC GRID
NAD 83 NSRS 2011

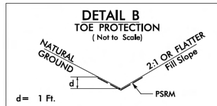
## DETAIL A
TOE PROTECTION
( Not to Scale)

d= 1 Ft.

Type of Liner= CLASS B Rip-Rap

-L- STA. 12+30 TO 13+15 LT
-L- STA. 14+06 TO 15+70 RT

## DETAIL B
TOE PROTECTION
( Not to Scale)

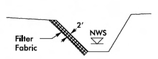



d= 1 Ft.

Type of Liner= PSRM

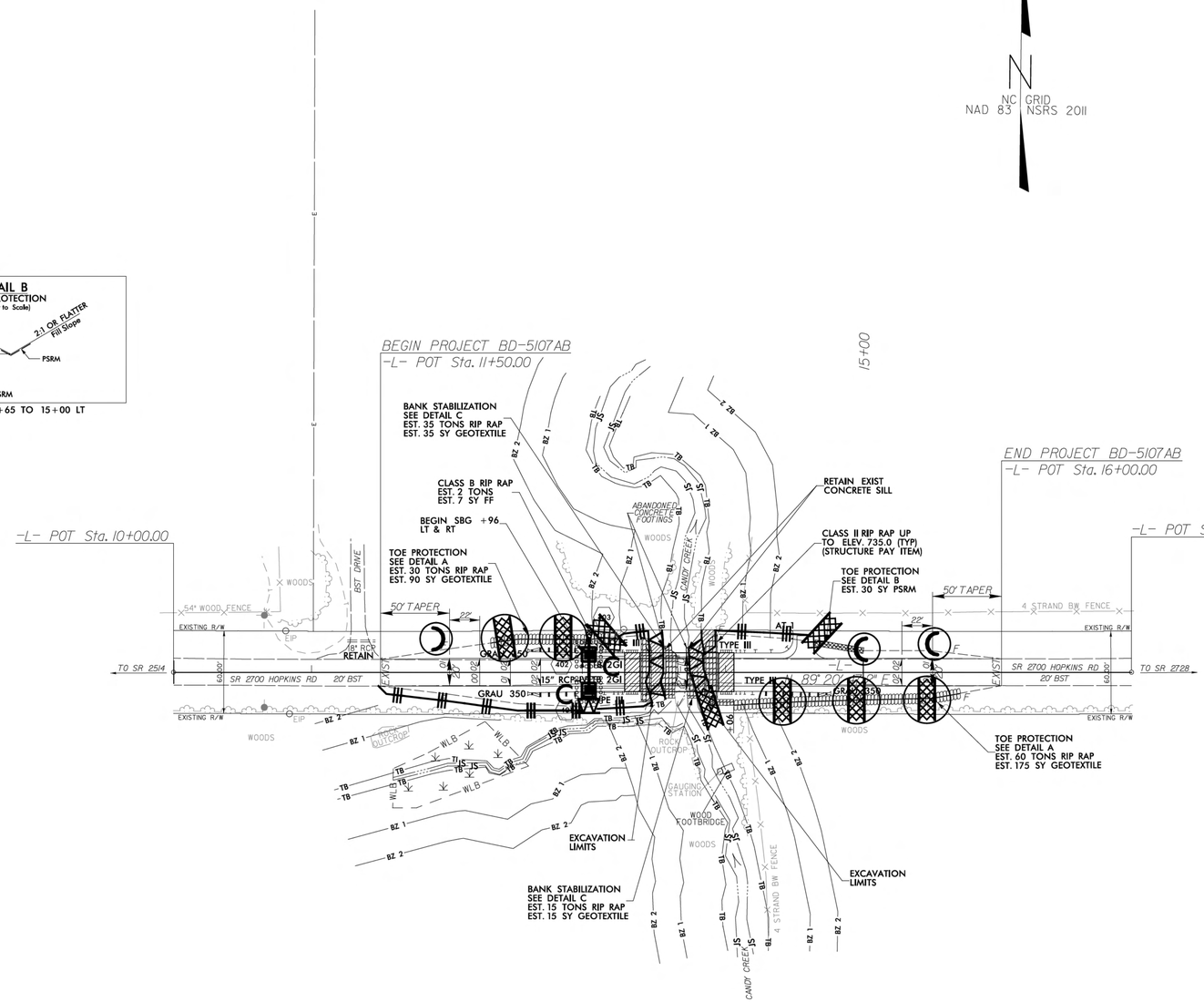
-L- STA. 14+65 TO 15+00 LT

## DETAIL C
BANK STABILIZATION
( Not to Scale)




Type of Liner= CLASS II RIP RAP

-L- STA. 13+60
-L- STA. 13+75




DRAINAGE NOTES:
MINIMUM SLOPE ON ALL PIPES IS 0.5%
NO PIPE MATERIAL RESTRICTIONS FOR DRAINAGE PIPE

NOTE:
ALL EROSION CONTROL DEVICES SHOWN ARE LOCATED WITHIN EXISTING/PROPOSED R/W OR EASEMENT.

ICA Engineering
5121 Kingdom Way,
Suite 100
Raleigh, NC 27607
NC License No: F-0258

8/21/2014
R:\Graphics\Erosion Control\cadd\BD-5107AB_hyd_erosion_final.dgn
Ko & Associates P.C.

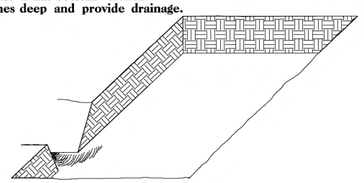
| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|
| N.C. | BD-5107AB | RF-1 | |
| STATE PROJ. NO. | F. A. PROJ. NO. | DESCRIPTION | |
| | | | |

# PLANTING DETAILS

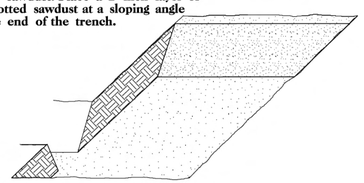
## SEEDLING / LINER BAREROOT PLANTING DETAIL

### HEALING IN

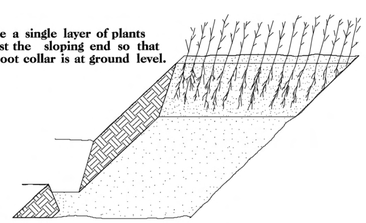
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



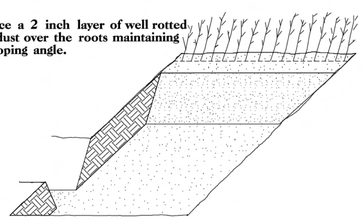
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



4. Place a single layer of plants against the sloping end so that the root collar is at ground level.

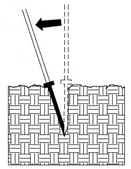


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

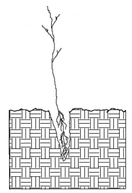


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

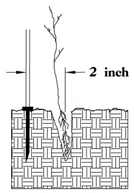
### DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



1. Insert planting bar as shown and pull handle toward planter.

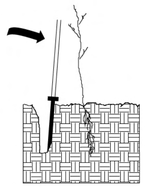


2. Remove planting bar and place seedling at correct depth.

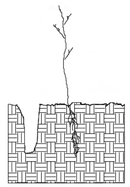



3. Insert planting bar 2 inches toward planter from seedling.

4. Pull handle of bar toward planter, firming soil at bottom.



5. Push handle forward firming soil at top.



6. Leave compaction hole open. Water thoroughly.

### PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.

KBC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.

ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

# REFORESTATION

☐ TREE REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

**REFORESTATION**

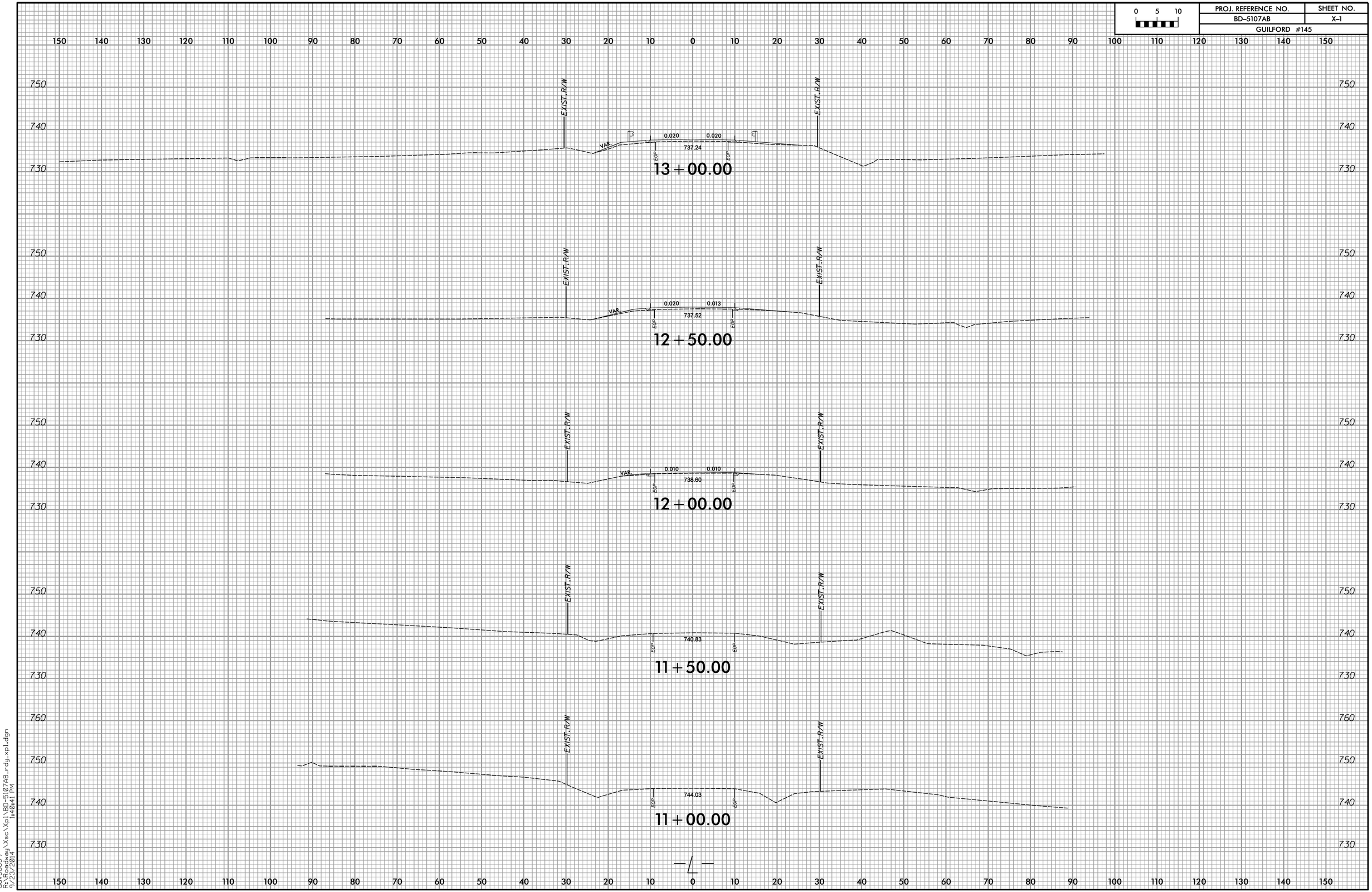
MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

| | | | |
|---|---|---|---|
| 25% | LIRIODENDRON TULIPIFERA | TULIP POPLAR | 12 in - 18 in BR |
| 25% | PLATANUS OCCIDENTALIS | SYCAMORE | 12 in - 18 in BR |
| 25% | FRAXINUS PENNSYLVANICA | GREEN ASH | 12 in - 18 in BR |
| 25% | BETULA NIGRA | RIVER BIRCH | 12 in - 18 in BR |

# REFORESTATION DETAIL SHEET

N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

| PROJ. REFERENCE NO. | SHEET NO. |
|---|---|
| BD-5107AB | X-1 |
| GUILFORD #145 | |

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| PROJ. REFERENCE NO. | SHEET NO. |
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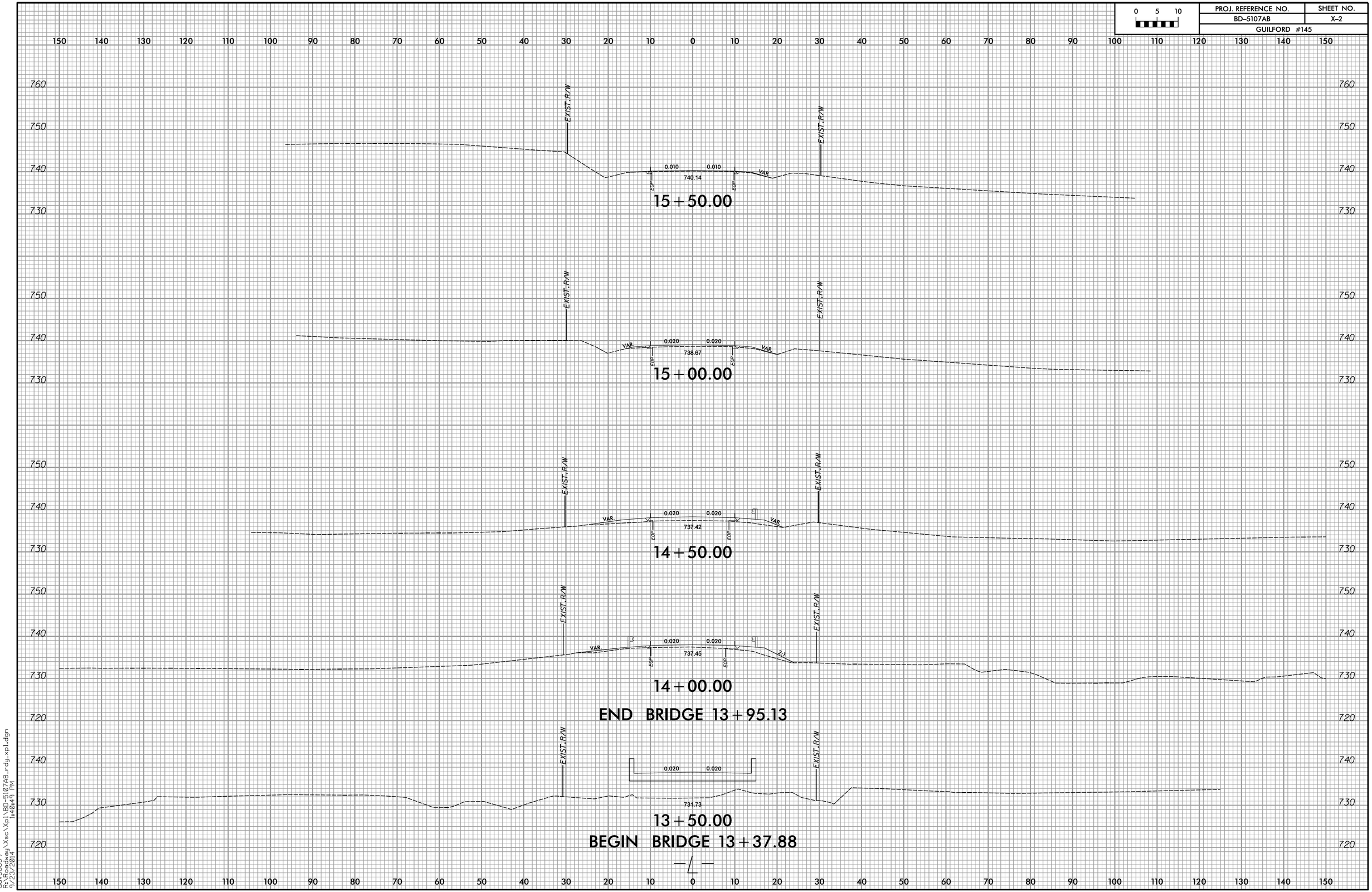
| GUILFORD #145 | |

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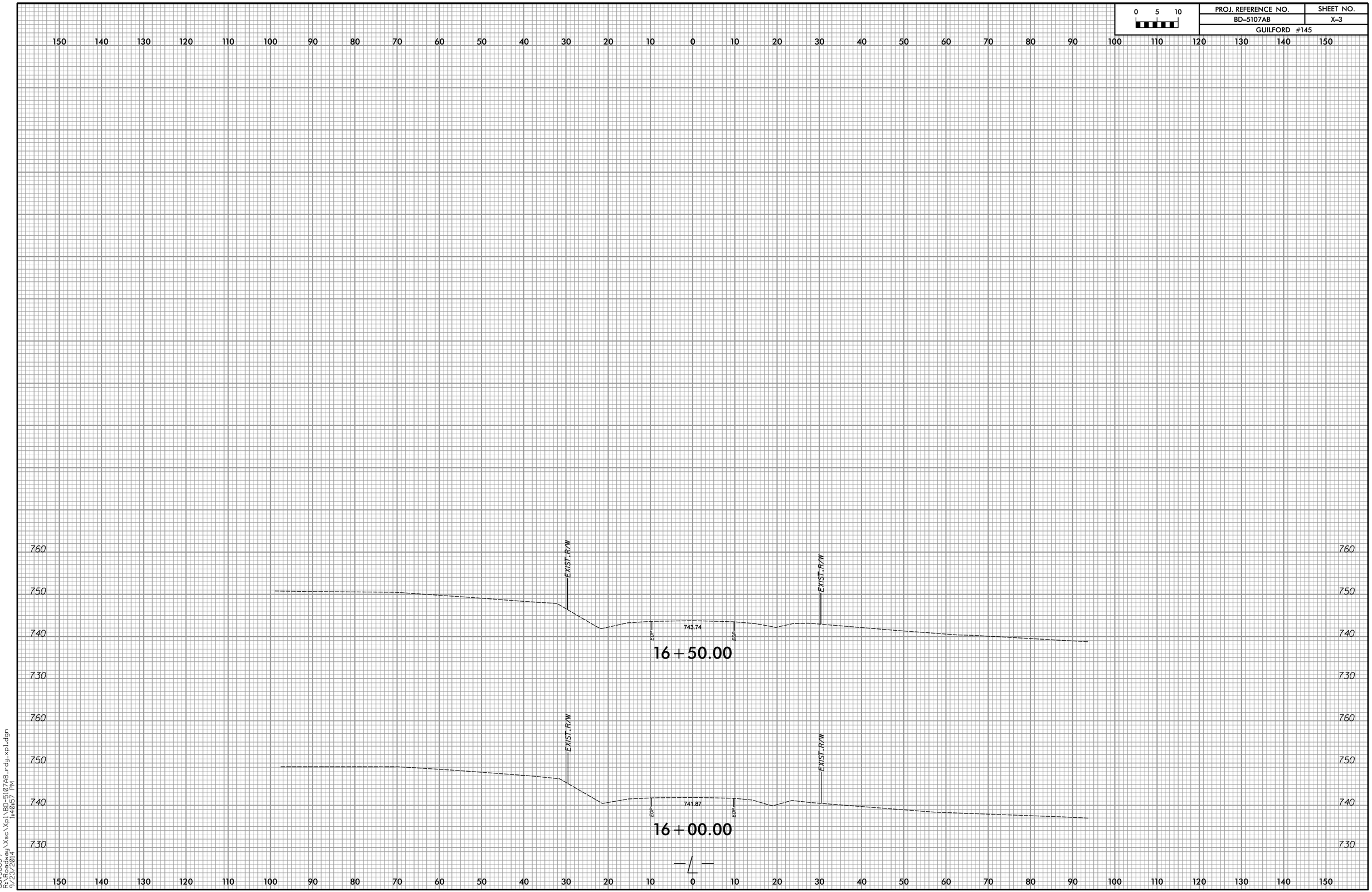
| GUILFORD #145 | |

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