

09/28/09
 11/15/2012
 *****DGN*****
 Florence & Hutcheson, Inc.

TIP PROJECT: BK-5117
TIP PROJECT: C203224

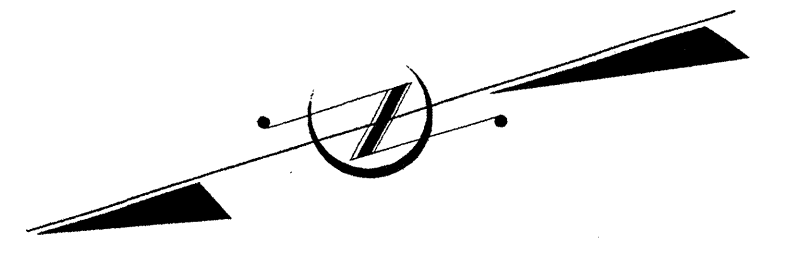
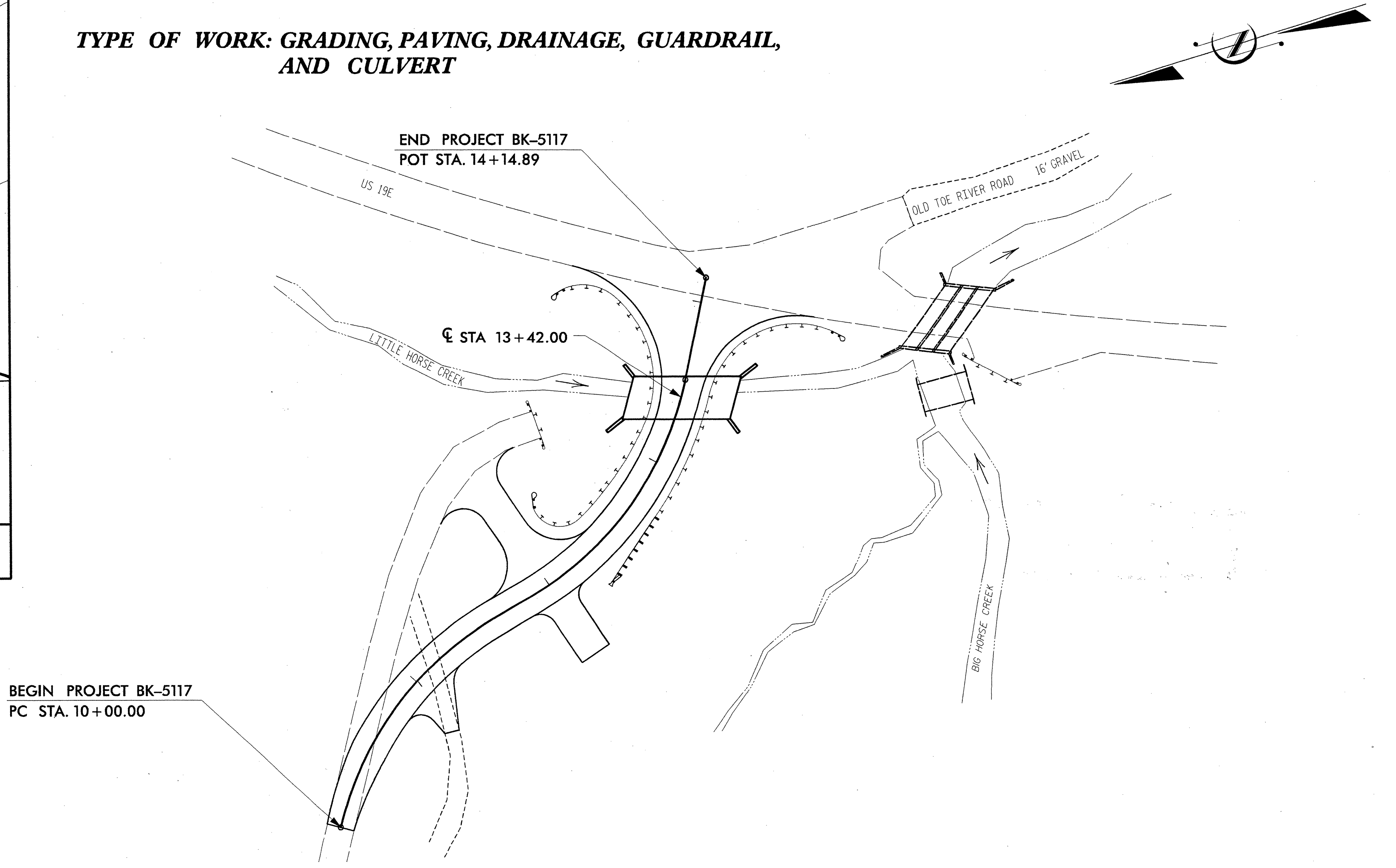
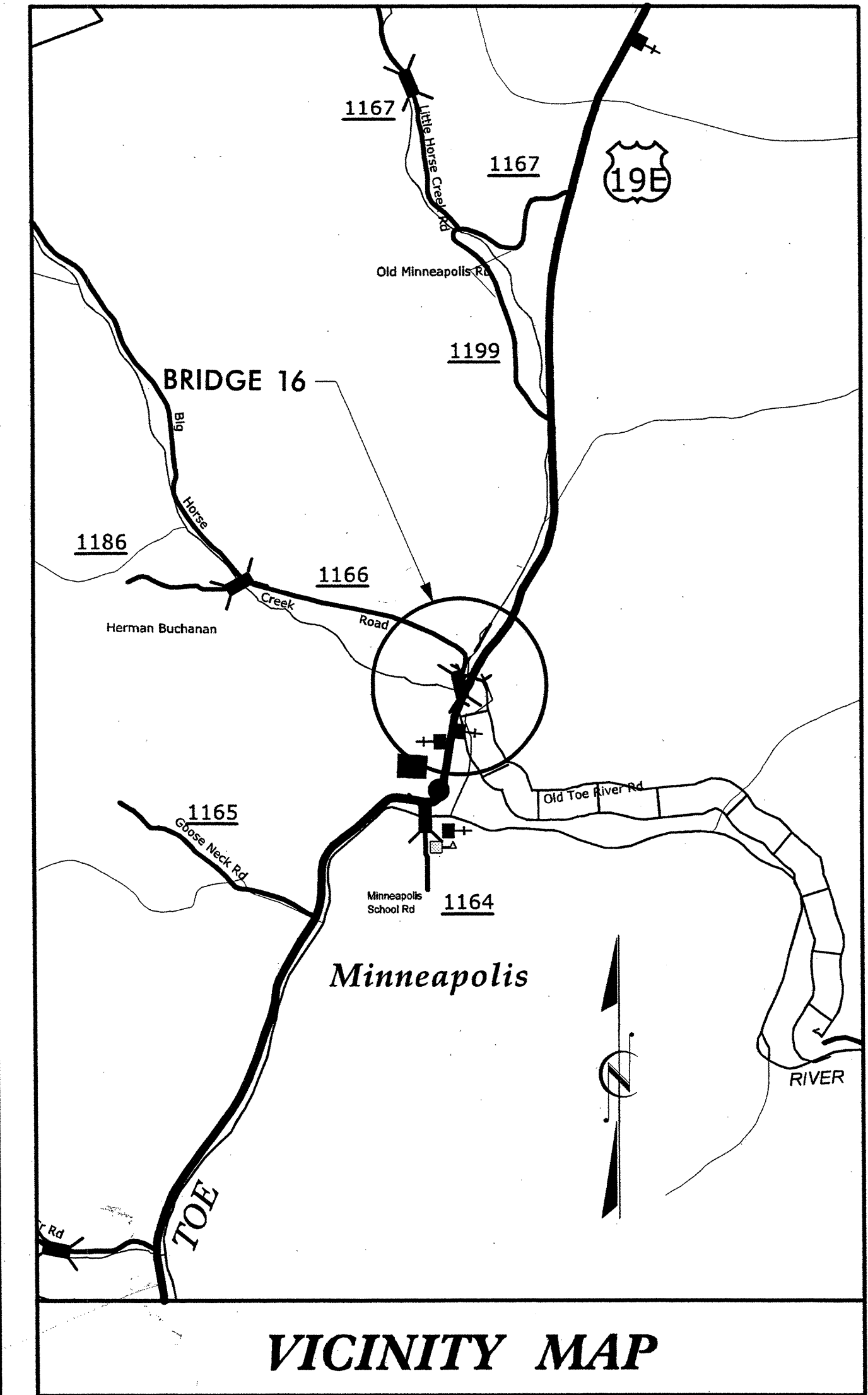
STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

AVERY COUNTY

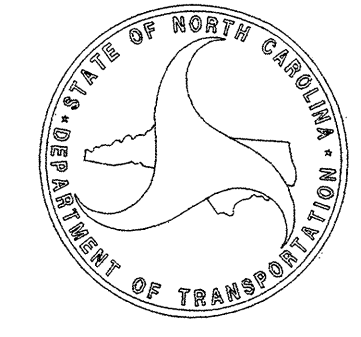
LOCATION: BRIDGE NO. 16 ON SR 1166 OVER LITTLE HORSE CREEK

**TYPE OF WORK: GRADING, PAVING, DRAINAGE, GUARDRAIL,
 AND CULVERT**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BK-5117	1	
AVERY COUNTY #16			
WBS PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
42568.1.1	BRZ-1166(8)	P.E.	
42568.3.1	BRZ-1166(8)	CONST	



DIVISION OF HIGHWAYS
 STATE OF NORTH CAROLINA



PROJECT LENGTH

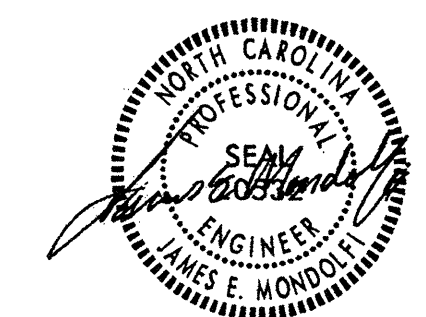
LENGTH ROADWAY PROJECT BK-5117	=	0.074 MILES
LENGTH STRUCTURES PROJECT BK-5117	=	0.005 MILES
TOTAL LENGTH PROJECT BK-5117	=	0.079 MILES

Prepared in the Office of:

Florence & Hutcheson
 CONSULTING ENGINEERS
3121 English Way, Suite 300 Raleigh, NC 27607
 NC License No. PE018

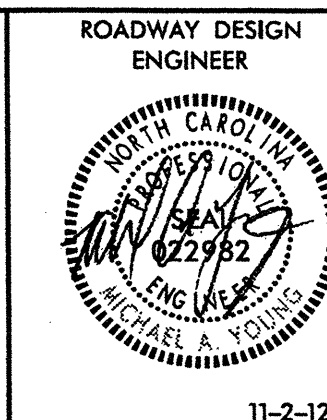
for the
NCDOT STRUCTURES MANAGEMENT UNIT
2012 STANDARD SPECIFICATIONS

LETTING DATE: JANUARY 15, 2013	RICK NELSON, P.E. PROJECT ENGINEER
	ZAKI WAFI, P.E. PROJECT MANAGEMENT ENGINEER



5/14/99

PROJECT REFERENCE NO.	SHEET NO.
BK-5117	1-A
RW SHEET NO.	



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
2	SUMMARY OF QUANTITIES
2-A	SUMMARIES OF EARTHWORK, DRAINAGE ITEMS, GUARDRAIL AND PAVEMENT REMOVAL
2-B	TEMPORARY DETOUR PLAN & PROFILE SHEET
3	ROADWAY PLAN & PROFILE SHEET
TCP-1 THRU TCP-5	TRAFFIC CONTROL PLANS
EC-1 THRU EC-8	EROSION CONTROL PLANS
RF-1	REFORESTATION PLAN
X-1	CROSS SECTION SUMMARY
X-2 THRU X-4	CROSS-SECTIONS
C-1 thru C-6	CULVERT PLANS

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 11.

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.

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.

DRIVEWAYS:

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

GUARDRAIL:

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

SUBSURFACE PLANS:

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

RIGHT-OF-WAY MARKERS:

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

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
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
848.02	Driveway Turnout - Radius Type
862.01	Guardrail Placement
862.02	Guardrail Installation

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04/15/11

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

Table with 2 columns: PROJECT REFERENCE NO. (BK-5117) and SHEET NO. (1-B)

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

Table listing symbols for State Line, County Line, Township Line, City Line, Reservation Line, Property Line, Existing Iron Pin, Property Corner, Property Monument, Parcel/Sequence Number, Existing Fence Line, Proposed Woven Wire Fence, Proposed Chain Link Fence, Proposed Barbed Wire Fence, Existing Wetland Boundary, Proposed Wetland Boundary, Existing Endangered Animal Boundary, Existing Endangered Plant Boundary, Known Soil Contamination: Area or Site, Potential Soil Contamination: Area or Site

BUILDINGS AND OTHER CULTURE:

Table listing symbols for Gas Pump Vent or U/G Tank Cap, Sign, Well, Small Mine, Foundation, Area Outline, Cemetery, Building, School, Church, Dam

HYDROLOGY:

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

RAILROADS:

Table listing symbols for Standard Gauge, RR Signal Milepost, Switch, RR Abandoned, RR Dismantled

RIGHT OF WAY:

Table listing symbols for Baseline Control Point, Existing Right of Way Marker, Existing Right of Way Line, Proposed Right of Way Line, Proposed Right of Way Line with Iron Pin and Cap Marker, Proposed Right of Way Line with Concrete or Granite RW Marker, Proposed Control of Access Line with Concrete CA Marker, Existing Control of Access, Proposed Control of Access, Existing Easement Line, Proposed Temporary Construction Easement, Proposed Temporary Drainage Easement, Proposed Permanent Drainage Easement, Proposed Permanent Drainage / Utility Easement, Proposed Permanent Utility Easement, Proposed Temporary Utility Easement, Proposed Aerial Utility Easement, Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

Table listing symbols for Existing Edge of Pavement, Existing Curb, Proposed Slope Stakes Cut, Proposed Slope Stakes Fill, Proposed Curb Ramp, Existing Metal Guardrail, Proposed Guardrail, Existing Cable Guiderail, Proposed Cable Guiderail, Equality Symbol, Pavement Removal, VEGETATION: Single Tree, Single Shrub, Hedge, Woods Line

Table listing symbols for Orchard, Vineyard

EXISTING STRUCTURES:

Table listing symbols for MAJOR: Bridge, Tunnel or Box Culvert, Bridge Wing Wall, Head Wall and End Wall; MINOR: Head and End Wall, Pipe Culvert, Footbridge, Drainage Box: Catch Basin, DI or JB, Paved Ditch Gutter, Storm Sewer Manhole, Storm Sewer

UTILITIES:

Table listing symbols for POWER: Existing Power Pole, Proposed Power Pole, Existing Joint Use Pole, Proposed Joint Use Pole, Power Manhole, Power Line Tower, Power Transformer, U/G Power Cable Hand Hole, H-Frame Pole, Recorded U/G Power Line, Designated U/G Power Line (S.U.E.*)

TELEPHONE:

Table listing symbols for Existing Telephone Pole, Proposed Telephone Pole, Telephone Manhole, Telephone Booth, Telephone Pedestal, Telephone Cell Tower, U/G Telephone Cable Hand Hole, Recorded U/G Telephone Cable, Designated U/G Telephone Cable (S.U.E.*), Recorded U/G Telephone Conduit, Designated U/G Telephone Conduit (S.U.E.*), Recorded U/G Fiber Optics Cable, Designated U/G Fiber Optics Cable (S.U.E.*)

WATER:

Table listing symbols for Water Manhole, Water Meter, Water Valve, Water Hydrant, Recorded U/G Water Line, Designated U/G Water Line (S.U.E.*), Above Ground Water Line

TV:

Table listing symbols for TV Satellite Dish, TV Pedestal, TV Tower, U/G TV Cable Hand Hole, Recorded U/G TV Cable, Designated U/G TV Cable (S.U.E.*), Recorded U/G Fiber Optic Cable, Designated U/G Fiber Optic Cable (S.U.E.*)

GAS:

Table listing symbols for Gas Valve, Gas Meter, Recorded U/G Gas Line, Designated U/G Gas Line (S.U.E.*), Above Ground Gas Line

SANITARY SEWER:

Table listing symbols for Sanitary Sewer Manhole, Sanitary Sewer Cleanout, U/G Sanitary Sewer Line, Above Ground Sanitary Sewer, Recorded SS Forced Main Line, Designated SS Forced Main Line (S.U.E.*)

MISCELLANEOUS:

Table listing symbols for Utility Pole, Utility Pole with Base, Utility Located Object, Utility Traffic Signal Box, Utility Unknown U/G Line, U/G Tank; Water, Gas, Oil, Underground Storage Tank, Approx. Loc., A/G Tank; Water, Gas, Oil, Geoenvironmental Boring, U/G Test Hole (S.U.E.*), Abandoned According to Utility Records, End of Information

SUMMARY OF QUANTITIES - BK-5117

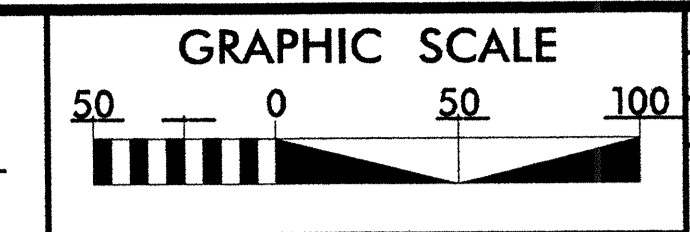
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C203224

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
0043000000-N	226	Lump Sum		GRADING
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUB-BING
0134000000-E	240	110	CY	DRAINAGE DITCH EXCAVATION
0318000000-E	300	20	TON	FOUNDATION CONDITIONING MATE-RIAL, MINOR STRUCTURES
0320000000-E	300	60	SY	FOUNDATION CONDITIONING GEO-TEXTILE
0335200000-E	305	40	LF	15" DRAINAGE PIPE
0342000000-E	310	64	LF	*** SIDE DRAIN PIPE (12")
0343000000-E	310	56	LF	15" SIDE DRAIN PIPE
0995000000-E	340	104	LF	PIPE REMOVAL
1220000000-E	545	50	TON	INCIDENTAL STONE BASE
1330000000-E	607	210	SY	INCIDENTAL MILLING
1489000000-E	610	590	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1498000000-E	610	190	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1519000000-E	610	370	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1575000000-E	620	58	TON	ASPHALT BINDER FOR PLANT MIX
2000000000-N	806	6	EA	RIGHT OF WAY MARKERS
3030000000-E	862	300	LF	STEEL BM GUARDRAIL
3045000000-E	862	37.5	LF	STEEL BM GUARDRAIL, SHOP CURVED
3105000000-N	862	2	EA	STEEL BM GUARDRAIL TERMINAL SECTIONS
3150000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
3195000000-N	862	3	EA	GUARDRAIL ANCHOR UNITS, TYPE AT-1
3270000000-N	SP	1	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3628000000-E	876	150	TON	RIP RAP, CLASS I

ItemNumber	Sec #	Quantity	Unit	Description
3649000000-E	876	5	TON	RIP RAP, CLASS B
3656000000-E	876	630	SY	GEOTEXTILE FOR DRAINAGE
4400000000-E	1110	155	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	112	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	60	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4430000000-N	1130	20	EA	DRUMS
4435000000-N	1135	20	EA	CONES
4445000000-E	1145	144	LF	BARRICADES (TYPE III)
4455000000-N	1150	90	DAY	FLAGGER
6000000000-E	1605	2,180	LF	TEMPORARY SILT FENCE
6006000000-E	1610	230	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	330	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	285	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	1	ACR	TEMPORARY MULCHING
6018000000-E	1620	50	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	1.25	TON	FERTILIZER FOR TEMPORARY SEED-ING
6024000000-E	1622	200	LF	TEMPORARY SLOPE DRAINS
6029000000-E	SP	100	LF	SAFETY FENCE
6030000000-E	1630	710	CY	SILT EXCAVATION
6036000000-E	1631	4,500	SY	MATTING FOR EROSION CONTROL
6037000000-E	SP	157	SY	COIR FIBER MAT
6038000000-E	SP	125	SY	PERMANENT SOIL REINFORCEMENT MAT
6042000000-E	1632	670	LF	1/4" HARDWARE CLOTH
6070000000-N	1639	6	EA	SPECIAL STILLING BASINS
6071010000-E	SP	55	LF	WATTLE
6071020000-E	SP	15	LB	POLYACRYLAMIDE (PAM)
6071030000-E	1640	210	LF	COIR FIBER BAFFLE

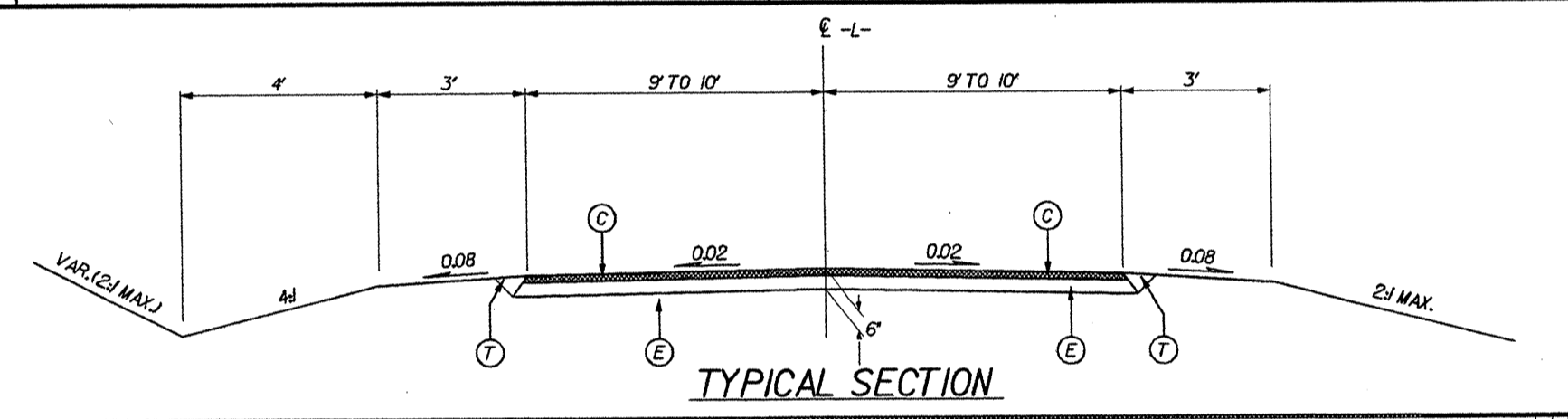
ItemNumber	Sec #	Quantity	Unit	Description
6071050000-E	SP	1	EA	**" SKIMMER (1-1/2")
6084000000-E	1660	1.5	ACR	SEEDING & MULCHING
6087000000-E	1660	0.75	ACR	MOWING
6090000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	50	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	1	TON	FERTILIZER TOPDRESSING
6111000000-E	SP	344	LF	IMPERVIOUS DIKE
6114500000-N	1667	10	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	25	EA	RESPONSE FOR EROSION CONTROL
6123000000-E	1670	0.3	ACR	REFORESTATION
8035000000-N	402	Lump Sum		REMOVAL OF EXISTING STRUCTURE AT STATION ***** (13+42.00)
8126000000-N	414	Lump Sum		CULVERT EXCAVATION, STA ***** (13+42.00)
8133000000-E	414	150	TON	FOUNDATION CONDITIONING MATERIAL, BOX CULVERT
8140000000-E	416	75	CY	CHANNEL EXCAVATION
8196000000-E	420	200	CY	CLASS A CONCRETE (CULVERT)
8245000000-E	425	34,000	LB	REINFORCING STEEL (CULVERT)

8/17/2012
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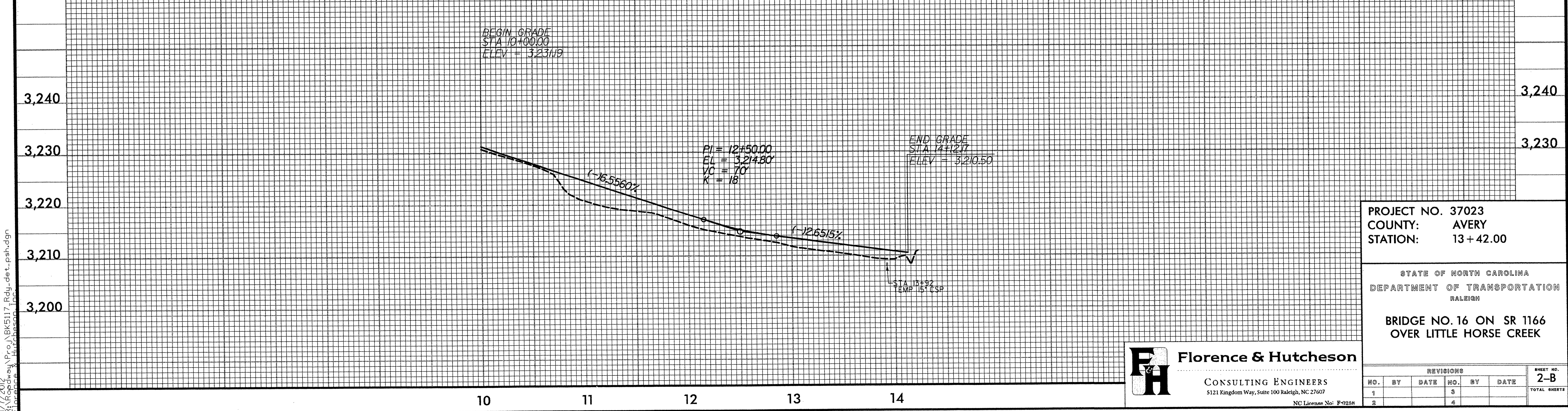


PROJECT REFERENCE NO. BK5117	SHEET NO. 2-B
RW SHEET NO.	
ROADWAY DESIGN ENGINEER MICHAEL A. YOUNG 1027987	HYDRAULICS ENGINEER HERBERT TURNER 1121162
11-2-12	11-2-12

PAVEMENT SCHEDULE	
(C)	2" SURFACE COURSE, TYPE S9.5B
(E)	4" BASE COURSE, TYPE B25.0B
(T)	EARTH MATERIAL
(U)	EXISTING PAVEMENT



RIGHT OF WAY AREA DATA						
PARCEL NO.	PROPERTY OWNERS NAME	TOTAL ACREAGE	AREA TAKEN	AREA REMAINING RIGHT	AREA REMAINING LEFT	CONSTR. EASEMENT
1	RALPH BURLESON		4,891.08 sf			197.75 sf
2	GERALDINE MCGEE		18,159.72 sf			8,610.02 sf
3	W.H. YOUNG					6993.92 sf



Florence & Hutcheson
 CONSULTING ENGINEERS
 5121 Kingdom Way, Suite 100 Raleigh, NC 27607
 NC License No: F-0288

PROJECT NO. 37023
 COUNTY: AVERY
 STATION: 13+42.00

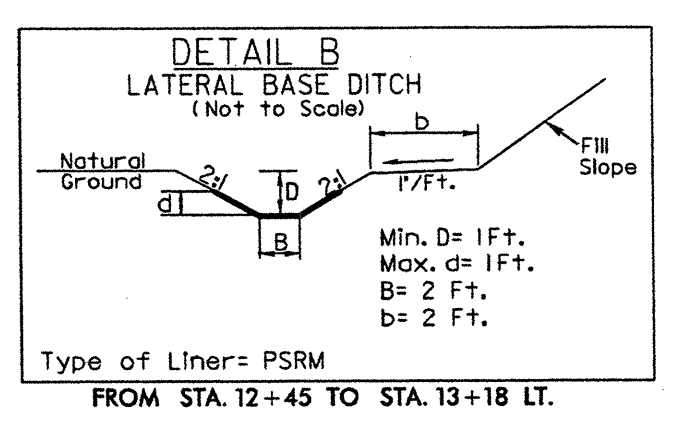
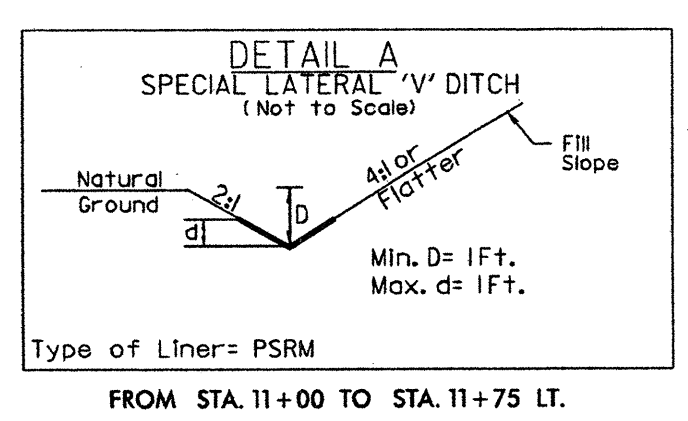
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE NO. 16 ON SR 1166
 OVER LITTLE HORSE CREEK

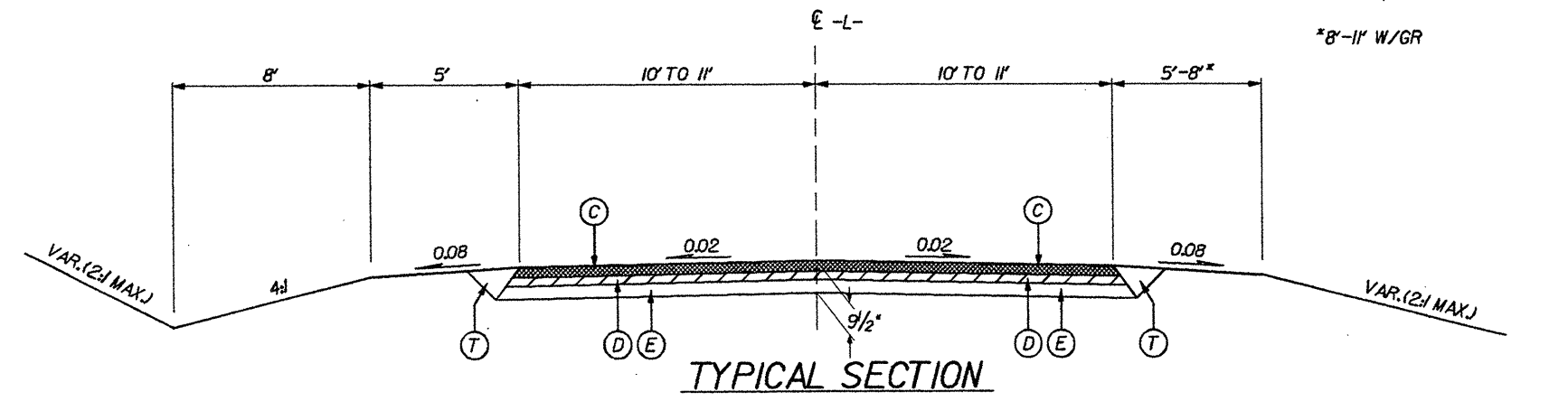
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO. 2-B
 TOTAL SHEETS

8/17/99
1/7/2002
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Florence & Hutcheson, Inc.

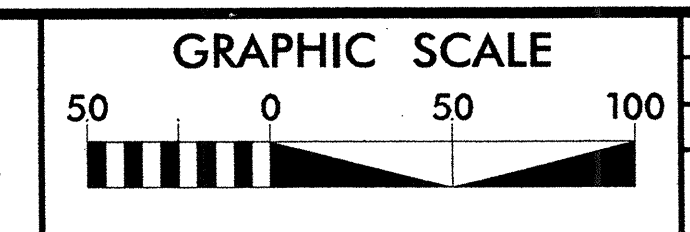
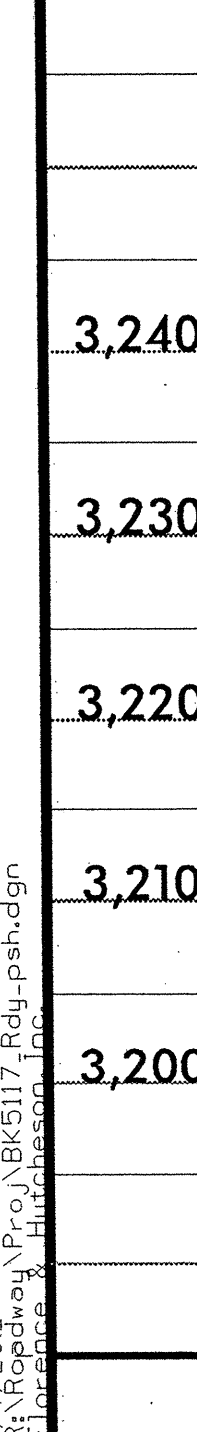
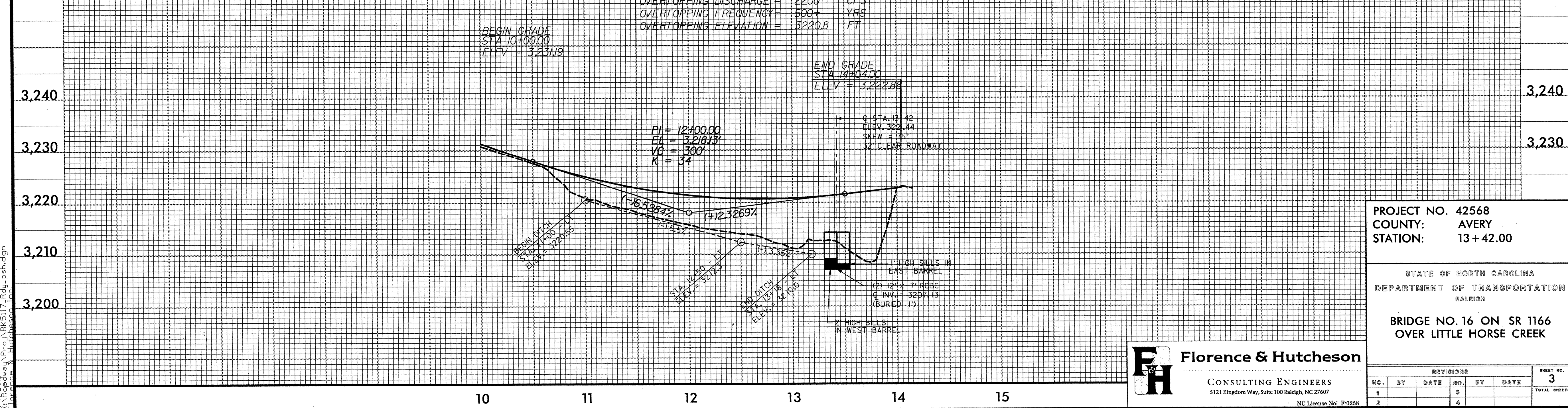


PAVEMENT SCHEDULE	
(C)	3" SURFACE COURSE, TYPE S9.5B
(D)	2 1/2" INTERMEDIATE COURSE, TYPE I19.0B
(E)	4" BASE COURSE, TYPE B25.0B
(T)	EARTH MATERIAL
(U)	EXISTING PAVEMENT

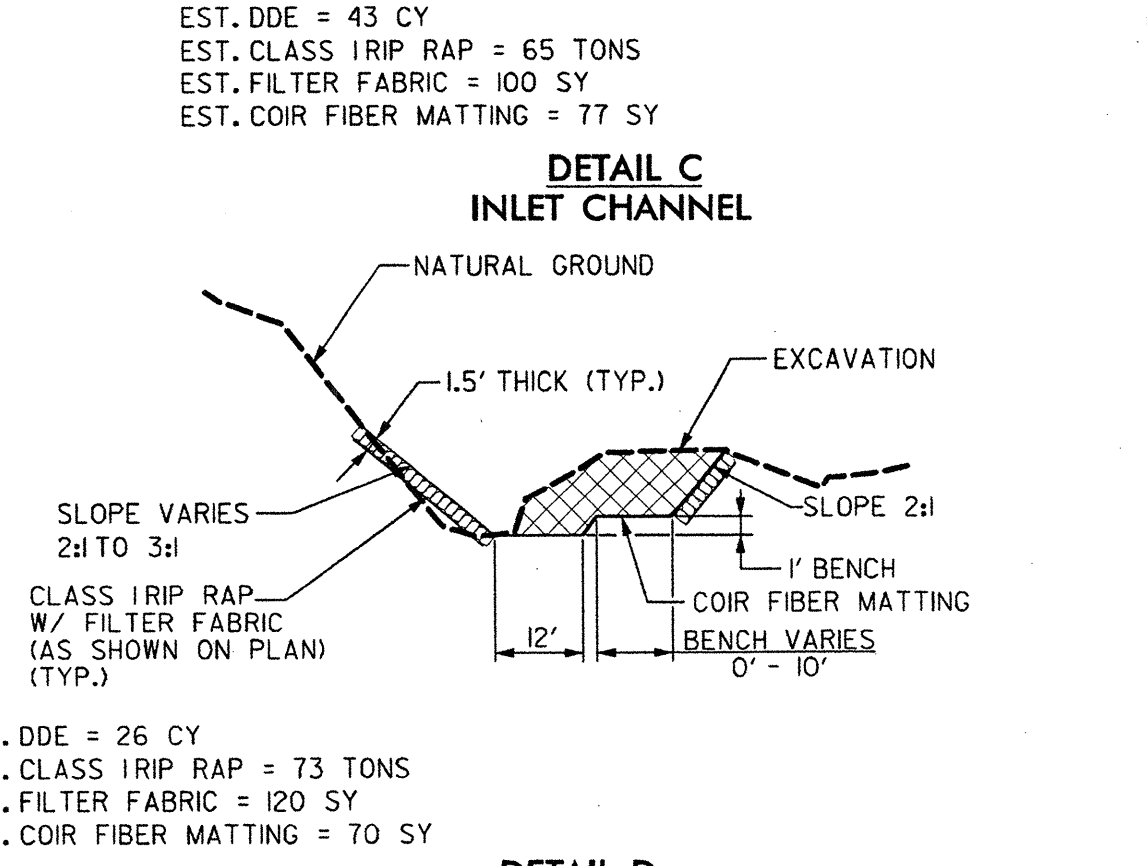
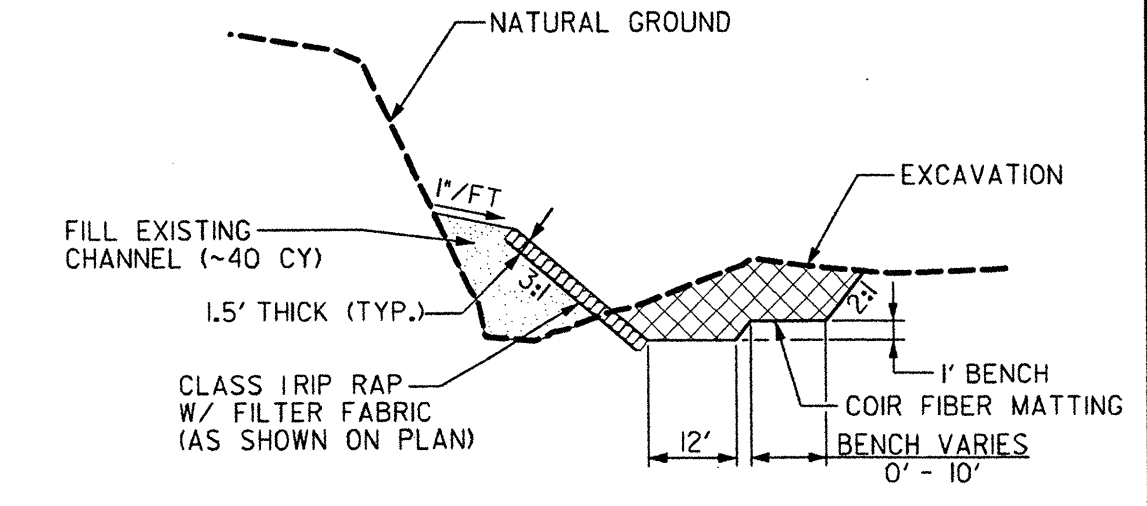


RIGHT OF WAY AREA DATA						
PARCEL NO.	PROPERTY OWNERS NAME	TOTAL ACRES	AREA TAKEN	AREA REMAINING RIGHT	AREA REMAINING LEFT	CONSTR. EASEMENT
1	RALPH BURLESON		4,891.08 sf			197.75 sf
2	GERALDINE MCGEE		18,159.72 sf			8,610.02 sf
3	W.H. YOUNG					6993.92 sf

CULVERT HYDRAULIC DATA	
DESIGN DISCHARGE	= 700 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 3214.5 FT
BASE DISCHARGE	= 700 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 3215.8 FT
OVERTOPPING DISCHARGE	= 2200 CFS
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING ELEVATION	= 3220.8 FT



PROJECT REFERENCE NO. BK5117	SHEET NO. 3
RW SHEET NO.	
ROADWAY DESIGN ENGINEER MICHAEL A. YOUNG 022198	HYDRAULICS ENGINEER HERBERT TURNER, JR. 021162
11-2-12	11-2-12



PROJECT NO. 42568
COUNTY: AVERY
STATION: 13 + 42.00

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE NO. 16 ON SR 1166
OVER LITTLE HORSE CREEK

Florence & Hutcheson
CONSULTING ENGINEERS
5121 Kingdom Way, Suite 100 Raleigh, NC 27607
NC License No: F-0258

REVISIONS						SHEET NO.	
NO.	BY	DATE	NO.	BY	DATE	3	
1			5			TOTAL SHEETS	
2			4				

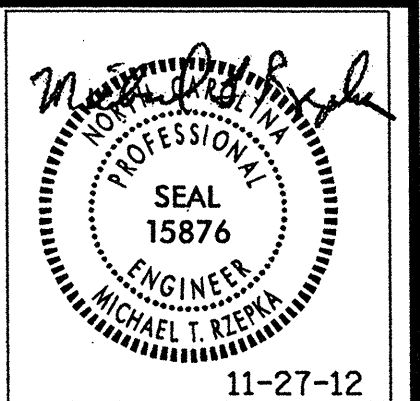
ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS"-
ROADWAY DESIGN UNIT-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
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUM
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGERS
1180.01	SKINNY-DRUM
1261.01	GUARDRAIL & BARRIER DELINEATOR SPACING
1261.02	GUARDRAIL & BARRIER DELINEATOR TYPES
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS
1264.02	PLACEMENT OF OBJECT MARKERS

INDEX OF SHEETS

SHEET NO.	TITLE
TCP-1	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND, AND INDEX OF SHEETS
TCP-2	GENERAL NOTES
TCP-3	PHASE I PHASING AND OVERVIEW
TCP-4	PHASE II PHASING AND OVERVIEW
TCP-5	PHASE III PHASING AND OVERVIEW



LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- NORTH ARROW
- PROPOSED PVMT.
- EXIST. PVMT.
- PROPOSED CONSTRUCTION
- REMOVAL OF EXIST. PAVEMENT

TRAFFIC CONTROL DEVICES

- TYPE I BARRICADE
- TYPE II BARRICADE
- TYPE III BARRICADE
- CONE
- DRUM
- FLASHING ARROW PANEL (TYPE C)
- TYPE 'B' WARNING LIGHT
- STATIONARY SIGN
- PORTABLE SIGN
- WARNING FLAGS
- CRASH CUSHION
- CHANGEABLE MESSAGE SIGN
- TRUCK MOUNTED IMPACT ATTENUATOR (TMIA)
- POLICE
- FLAGGER
- DRUM (PROFILE)

PAVEMENT MARKINGS

- CRYSTAL PAVEMENT MARKER
- CRYSTAL/RED PAVEMENT MARKER
- PAVEMENT MARKING SYMBOLS

PROJECT NO. 42568
COUNTY: AVERY
STATION: 13 + 42.00

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

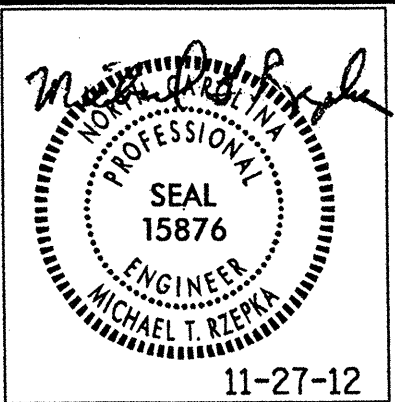
CULVERT ON SR 1166
OVER LITTLE HORSE CREEK

FH Florence & Hutcheson
CONSULTING ENGINEERS
5121 Kingdom Way, Suite 100 Raleigh, NC 27607
NC License No: F-0258

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TCP - 1
1			3			TOTAL SHEETS
2			4			5

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Florence & Hutcheson

DRAWN BY: G.E. PARKER DATE: FEBRUARY 2012
CHECKED BY: M.T. RZEPKA DATE: FEBRUARY 2012



PROJECT NOTES

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.

LANE AND SHOULDER CLOSURE REQUIREMENTS

- A) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.
- B) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.
- C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

PAVEMENT EDGE DROP OFF REQUIREMENTS

- D) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:

BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.

BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.

- E) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 500 FT. IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

- G) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
- H) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.
- I) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 100 ft IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

TRAFFIC CONTROL DEVICES

- J) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.
- K) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

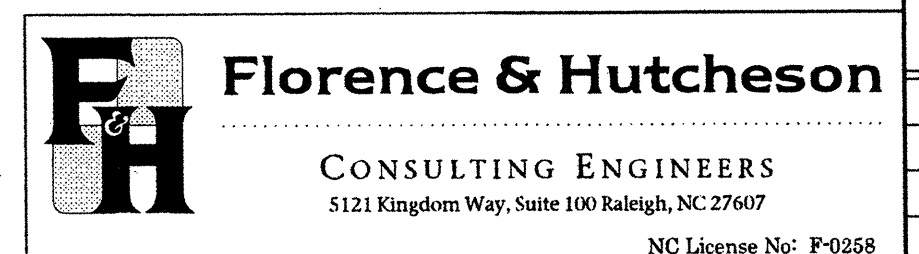
LOCAL NOTES

- 1) CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS, WITHIN THE PROJECT LIMITS, AT ALL TIMES.

PROJECT NO. 42568
 COUNTY: AVERY
 STATION: 13+42.00

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

CULVERT ON SR 1166
 OVER LITTLE HORSE CREEK

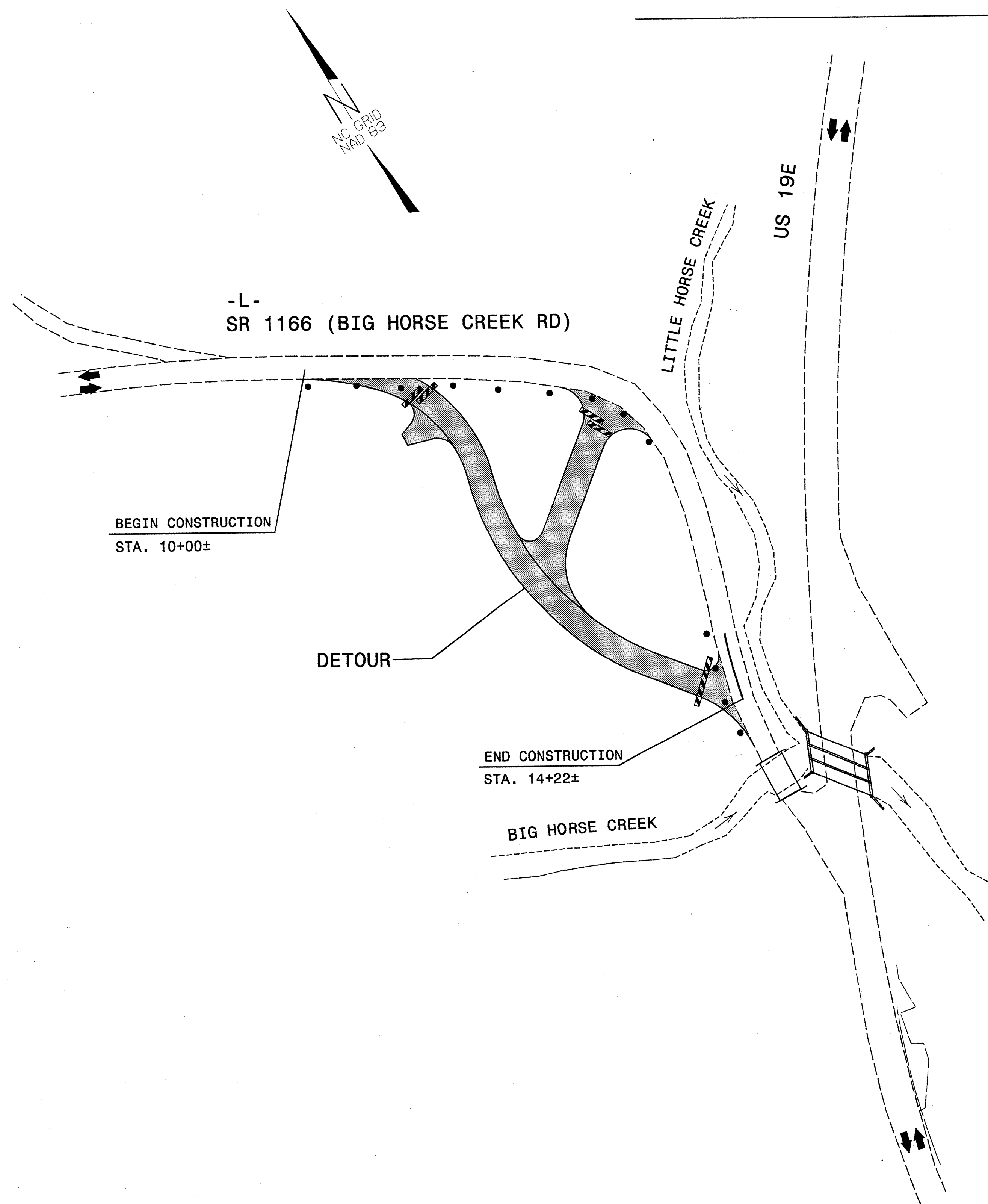
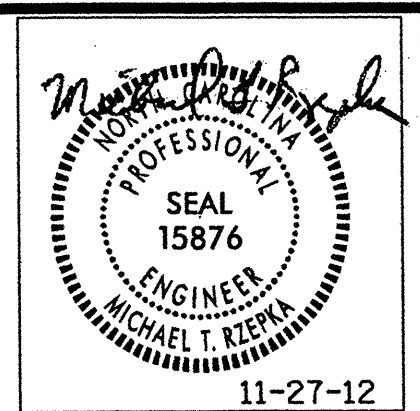


REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1			3			5
2			6			

DRAWN BY: G.E. PARKER DATE: FEBRUARY 2012
 CHECKED BY: M.T. RZEPKA DATE: FEBRUARY 2012

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PHASE I OVERVIEW



PHASE I

- STEP 1: - INSTALL ADVANCE WARNING WORK ZONE SIGNS (SEE ROADWAY STANDARD DRAWING NO. 1101.01, SHEET 3 OF 3)
- STEP 2: - USING ROADWAY STANDARD DRAWING NO. 1101.02, SHEET 1 OF 15, CONSTRUCT PROPOSED DETOUR UP TO EXISTING PAVEMENT ELEVATION FROM STA. 10+00± TO STA. 14+22±. (SEE LOCAL NOTE 1)

BEGIN CONSTRUCTION
STA. 10+00±

DETOUR

END CONSTRUCTION
STA. 14+22±

BIG HORSE CREEK

PROJECT NO. 42568
COUNTY: AVERY
STATION: 13 + 42.00

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CULVERT ON SR 1166
OVER LITTLE HORSE CREEK



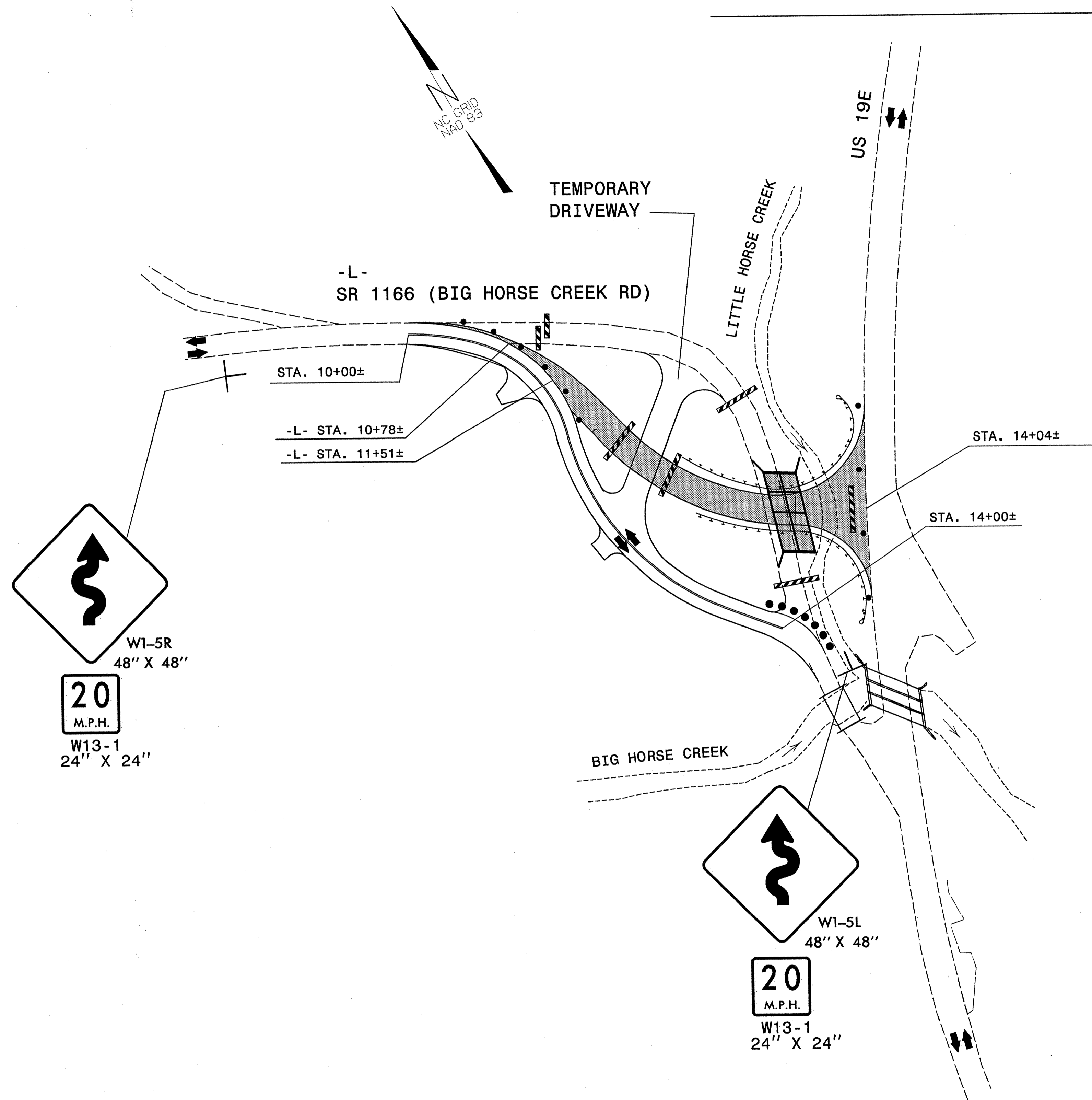
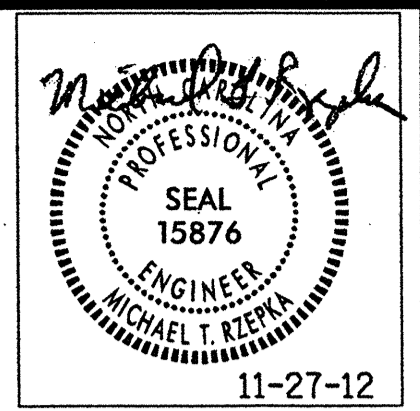
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TCP-3
1			5			TOTAL SHEETS
2			6			5

DRAWN BY: G.E. PARKER DATE: FEBRUARY 2012
CHECKED BY: M.T. RZEPKA DATE: FEBRUARY 2012

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NC License No: F-0258

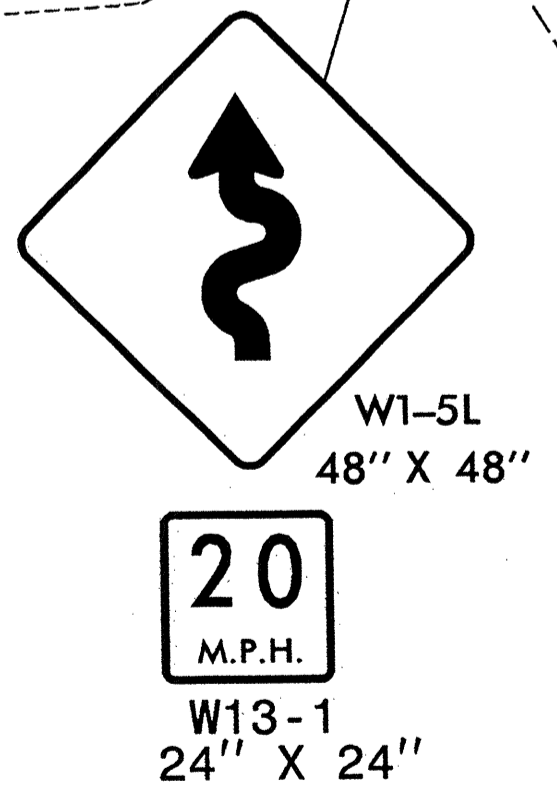
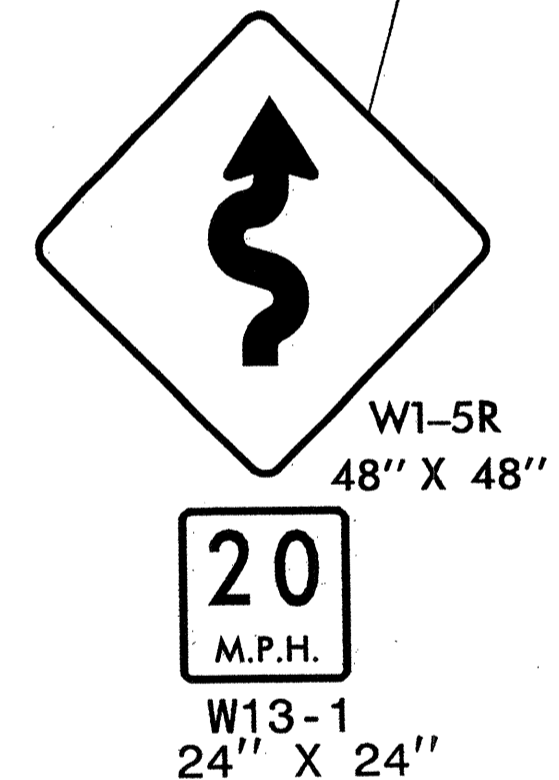
PHASE II OVERVIEW



PHASE II

WORKING IN A CONTINUOUS MANNER, COMPLETE THE FOLLOWING WORK IN PHASE II, STEP 1, IN ONE DAY'S OPERATION.

- STEP 1: - USING ROADWAY STANDARD DRAWING NO. 1101.02, SHEET 1 OF 15, PAVE/WEDGE AS NECESSARY TO SMOOTHLY TIE PROPOSED DETOUR WITH EXISTING SR 1166 (BIG HORSE CREEK RD.) FROM -L- STA. 10+00± TO -L- STA. 11+51±. SWITCH SR 1166 (BIG HORSE CREEK RD.) TRAFFIC ONTO DETOUR ALIGNMENT, PLACE TRAFFIC CONTROL DEVICES, AND OPEN BOTH LANES OF DETOUR TO TRAFFIC.
- STEP 2: - USING ROADWAY STANDARD DRAWING NO. 1101.02, SHEET 1 OF 15 (AS NECESSARY), CONSTRUCT PROPOSED -L-, SR 1166 (BIG HORSE CREEK RD.) FROM EDGE AND ELEVATION OF DETOUR PAVEMENT (STA. 10+78±) TO STA. 14+04± INCLUDING PROPOSED CULVERT. (SEE LOCAL NOTE 1)



PROJECT NO. 42568
 COUNTY: AVERY
 STATION: 13+42.00

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**CULVERT ON SR 1166
 OVER LITTLE HORSE CREEK**

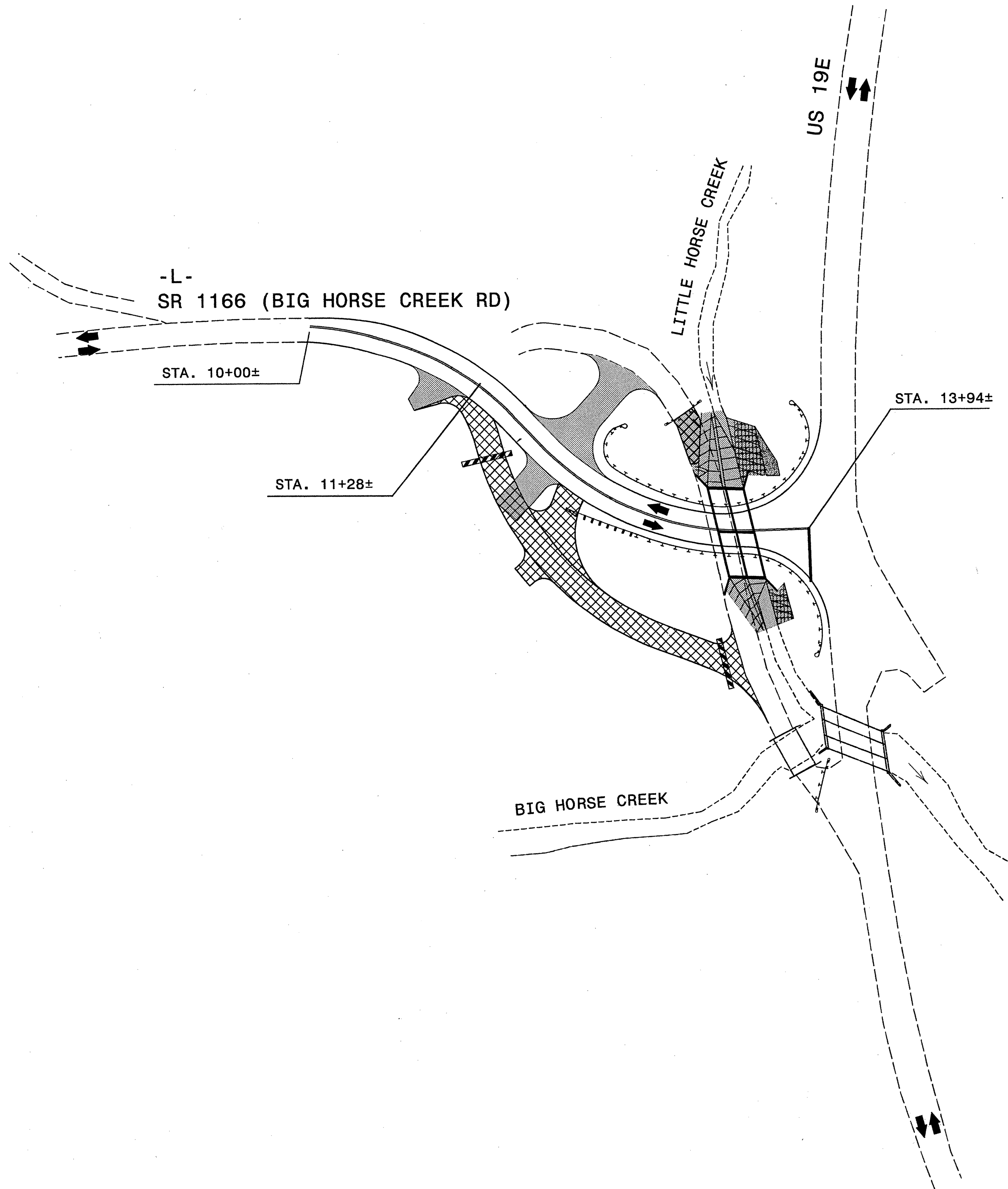
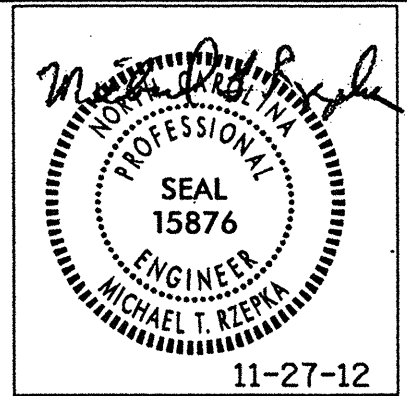
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 NC License No: F-0258

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TCP-4
1			3			TOTAL SHEETS
2			4			5

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 Florence & Hutcheson

DRAWN BY: G.E. PARKER DATE: FEBRUARY 2012
 CHECKED BY: M.T. RZEPKA DATE: FEBRUARY 2012

PHASE III OVERVIEW



PHASE III

WORKING IN A CONTINUOUS MANNER, COMPLETE THE FOLLOWING WORK IN PHASE III, STEP 1, IN ONE DAY'S OPERATION.

- STEP 1: - USING ROADWAY STANDARD DRAWING NO. 1101.02, SHEET 1 OF 15, PAVE/WEDGE AS NECESSARY TO SMOOTHLY TIE PROPOSED -L- LINE WITH EXISTING SR 1166 (BIG HORSE CREEK RD.) FROM -L- STA. 10+00± TO -L- STA. 11+28±. SWITCH SR 1166 (BIG HORSE CREEK RD.) TRAFFIC ONTO -L- LINE ALIGNMENT, PLACE TRAFFIC CONTROL DEVICES, AND OPEN BOTH LANES OF -L- LINE TO TRAFFIC.
- STEP 2: USING ROADWAY STANDARD DRAWING NO. 1101.02, SHEET 1 OF 15:
- COMPLETE PROPOSED CULVERT ENDWALLS AND CHANNEL MODIFICATIONS.
 - REMOVE EXISTING BRIDGE, EXISTING SR 1166 (BIG HORSE CREEK RD) AND TEMPORARY DETOUR PAVEMENT AS SHOWN (SEE ROADWAY PLANS)
 - CONSTRUCT PROPOSED DRIVEWAYS.
- STEP 3: - USING ROADWAY STANDARD DRAWING NO. 1101.02, SHEET 1 OF 15, PLACE FINAL LAYER OF SURFACE COURSE ON -L-, SR 1166 (BIG HORSE CREEK RD) FROM -L- STA. 10+00± TO -L- STA. 14+15±.
- REMOVE ALL TRAFFIC CONTROL DEVICES.

PROJECT NO. 42568
 COUNTY: AVERY
 STATION: 13 + 42.00

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**CULVERT ON SR 1166
 OVER LITTLE HORSE CREEK**

FH Florence & Hutcheson
 CONSULTING ENGINEERS
 5121 Kingdom Way, Suite 100 Raleigh, NC 27607
 NC License No: P-0258

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TCP-5
1			3			TOTAL SHEETS
2			4			5

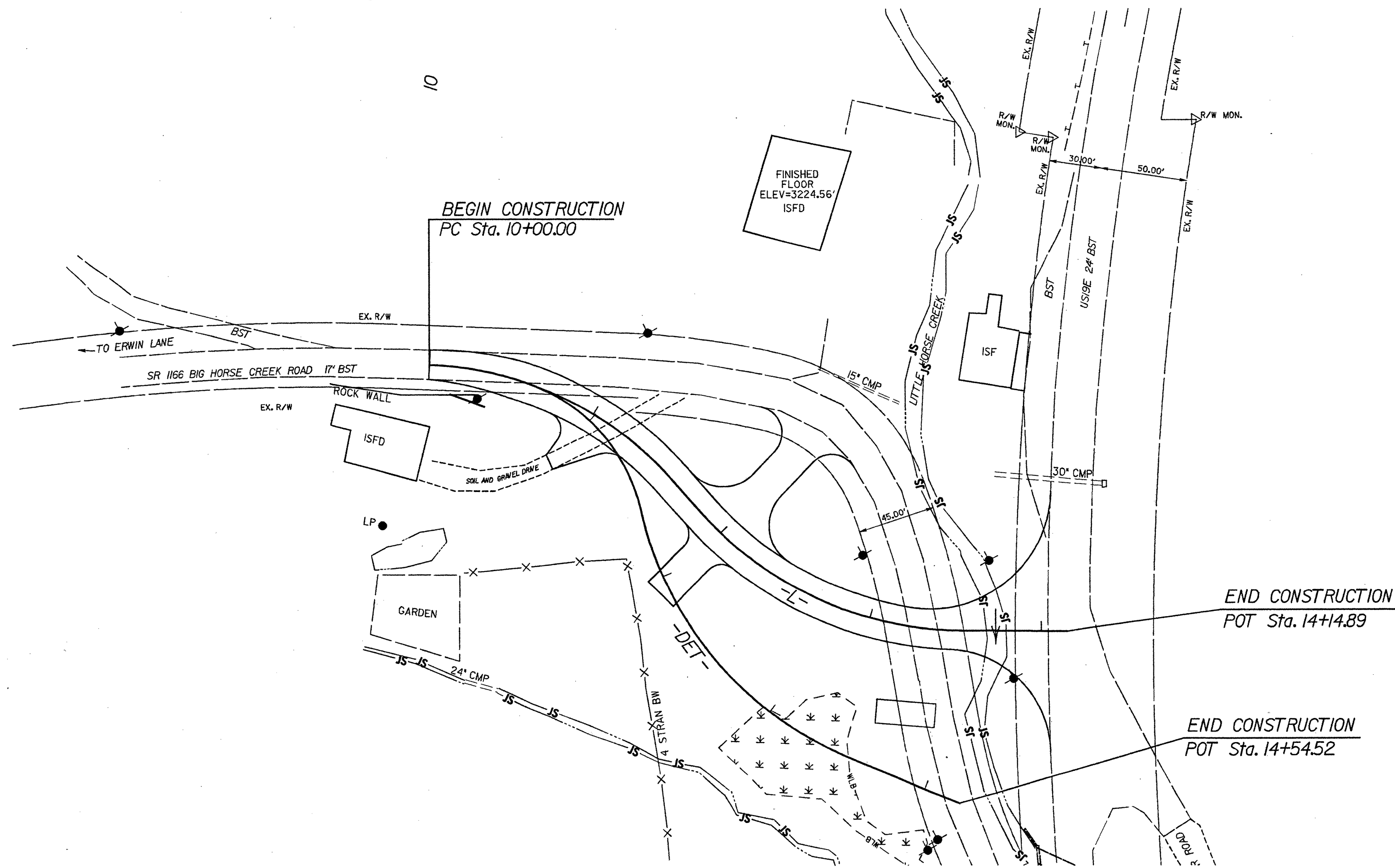
DRAWN BY: G.E. PARKER DATE: FEBRUARY 2012
 CHECKED BY: M.T. RZEPKA DATE: FEBRUARY 2012

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 Florence & Hutcheson

TIP PROJECT: BK-5117

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
 PLAN FOR PROPOSED
 HIGHWAY EROSION CONTROL
AVERY COUNTY

BRIDGE NO.16 ON SR 1166 OVER LITTLE HORSE CREEK



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BK-5117	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.05	Temporary Silt Ditch	TD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	III III III
1606.01	Special Sediment Control Fence	III III III
1622.01	Temporary Berms and Slope Drains	—
	Silt Basin Type B	□
1633.01	Temporary Rock Silt Check Type-A	□
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	□
	Temporary Rock Silt Check Type-B	□
	Wattle	—
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 □
1632.05	Type C	C □
	Skimmer Basin	□
	Tiered Skimmer Basin	□
	Infiltration Basin	□

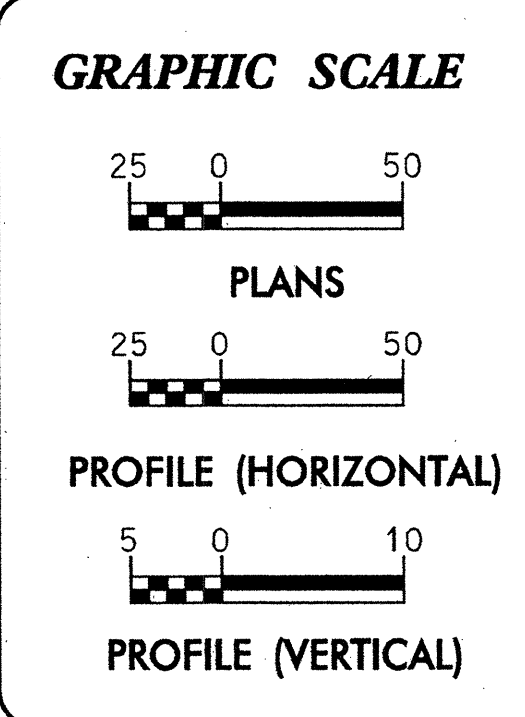
ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT
 Refer To E. C. Special Provisions for Special Considerations.

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

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

W. HERBERT TURNER, JR., P.E.
 ROADSIDE ENVIRONMENTAL ENGINEER
 3150
 LEVEL III CERTIFICATION NUMBER
STACEY H. BAILEY, P.E.
 ROADSIDE ENVIRONMENTAL PROJECT ENGINEER
 3074
 LEVEL III CERTIFICATION NUMBER

Florence & Hutcheson
 CONSULTING ENGINEERS
 5121 Kingdom Way, Suite 100 Raleigh, NC 27607
 NC License No: F-0258



ROADSIDE ENVIRONMENTAL PROJECT ENGINEER

LEVEL III CERTIFIED BY:
STACEY H. BAILEY, PE
 CERTIFICATION NUMBER: 3074
 ISSUED: NOVEMBER 29, 2012

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:
FLORENCE & HUTCHESON
 5121 KINGDOM WAY, SUITE 100
 RALEIGH NC 27607
 NC License No: F-0258

2012 STANDARD SPECIFICATIONS

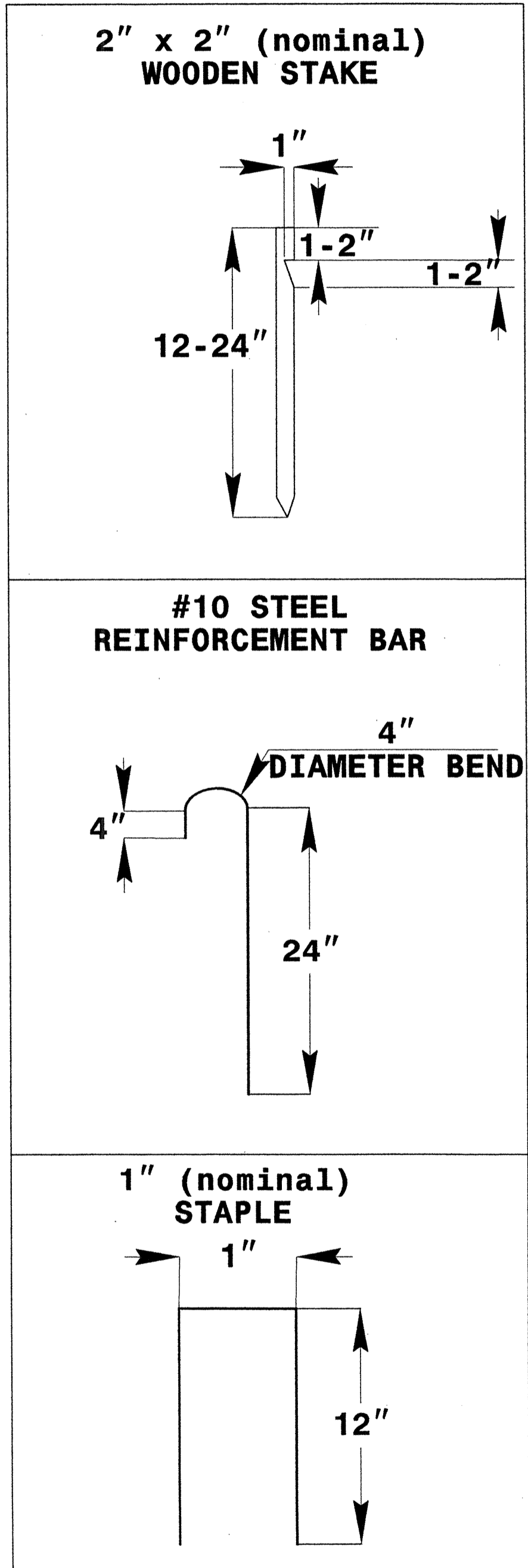
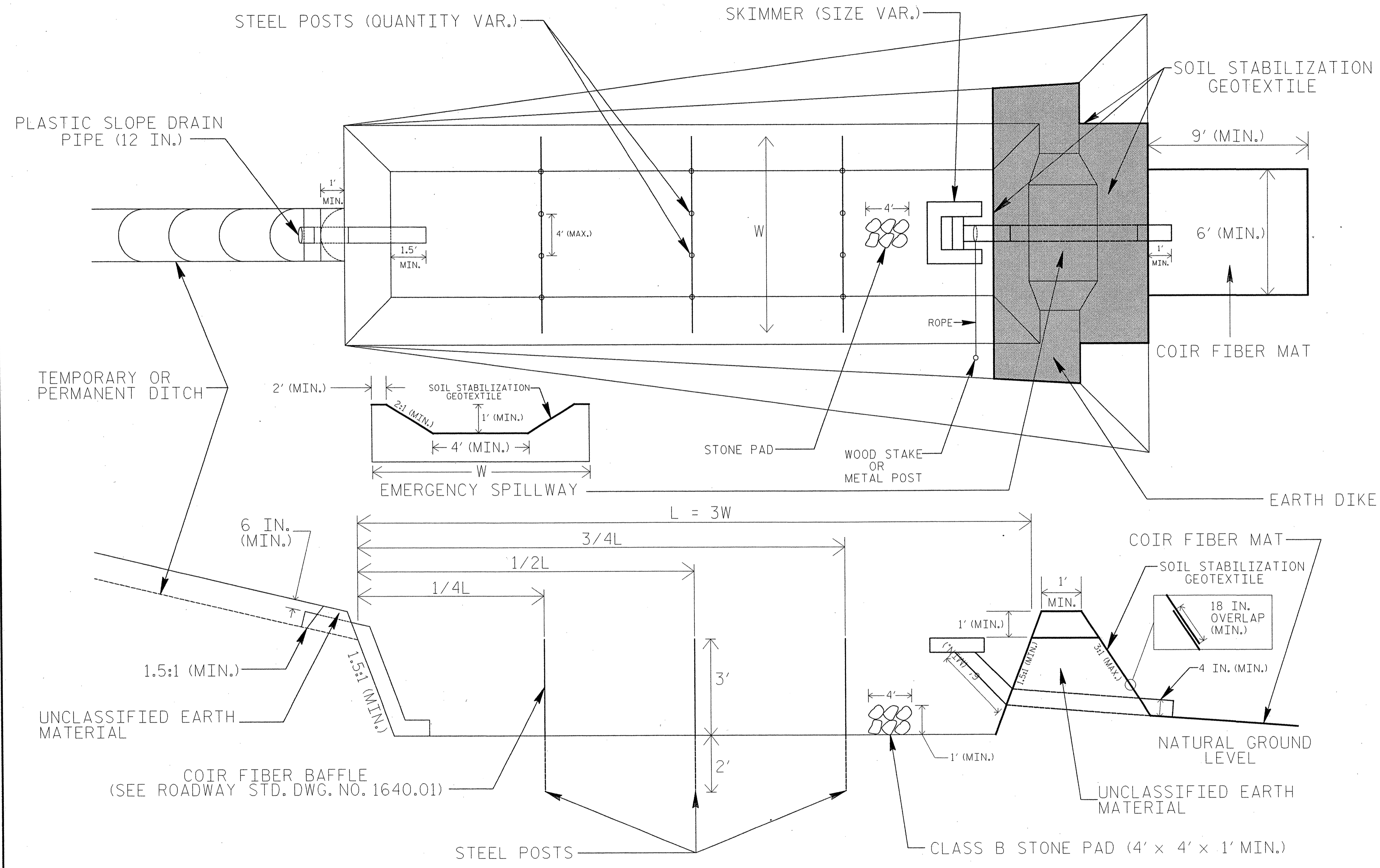
Roadway Standard Drawings

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 revision 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 Silt 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	

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 Florence & Hutcheson, Inc.

SKIMMER BASIN WITH BAFFLES DETAIL



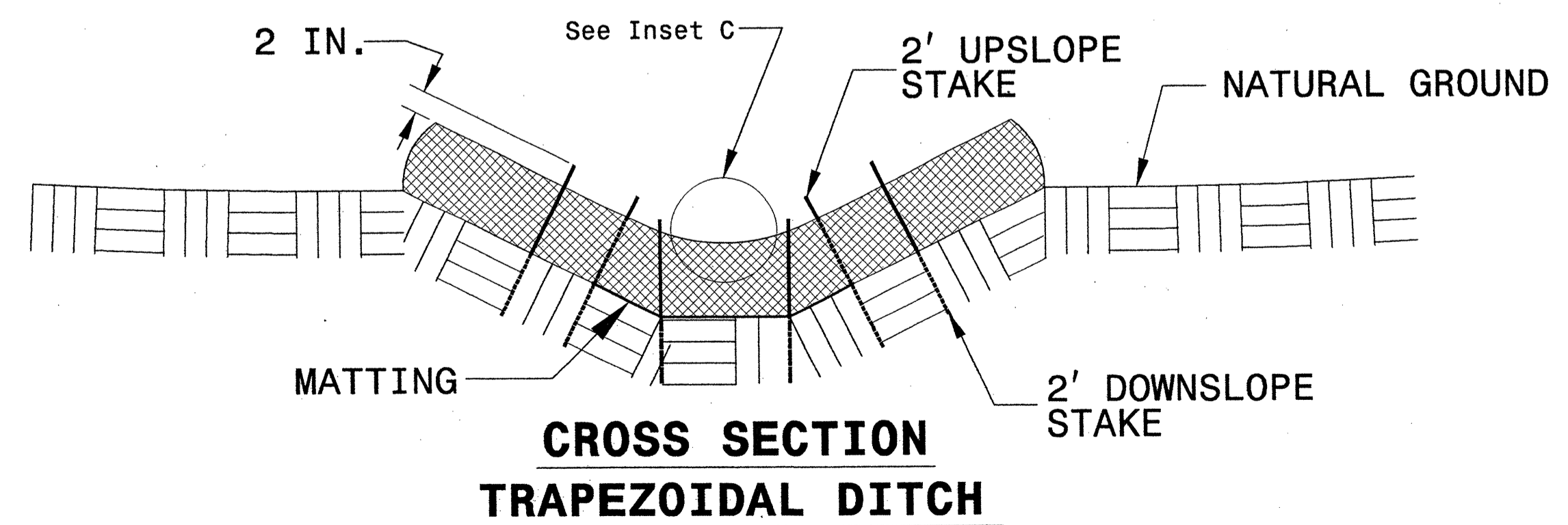
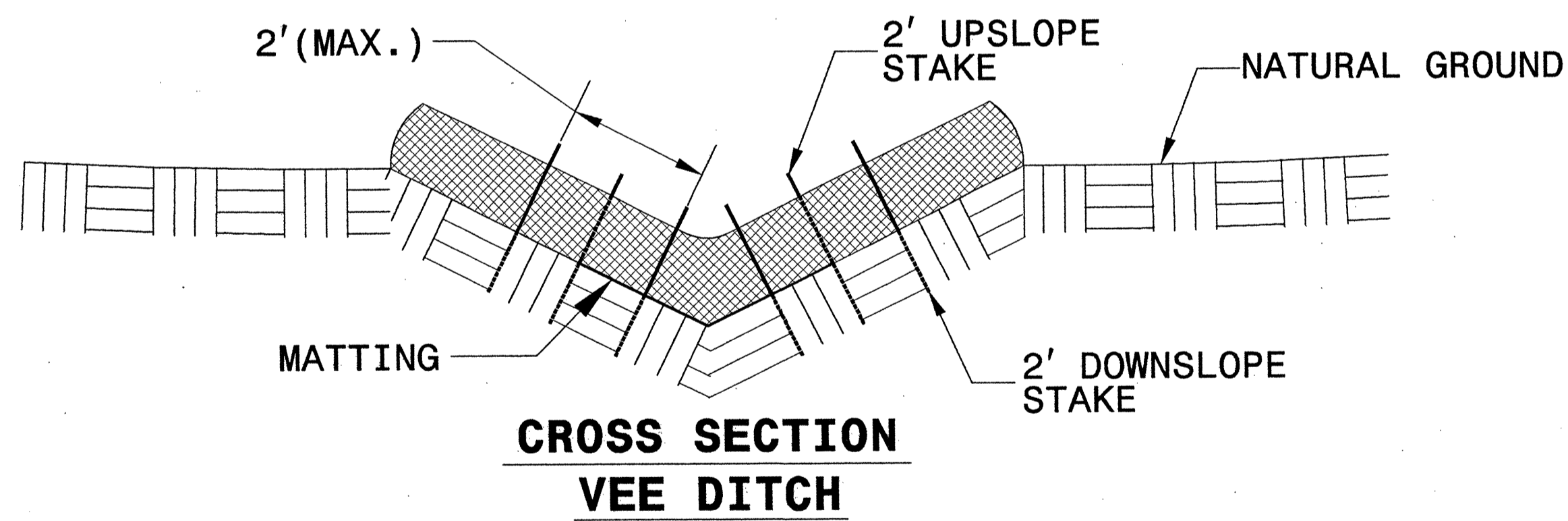
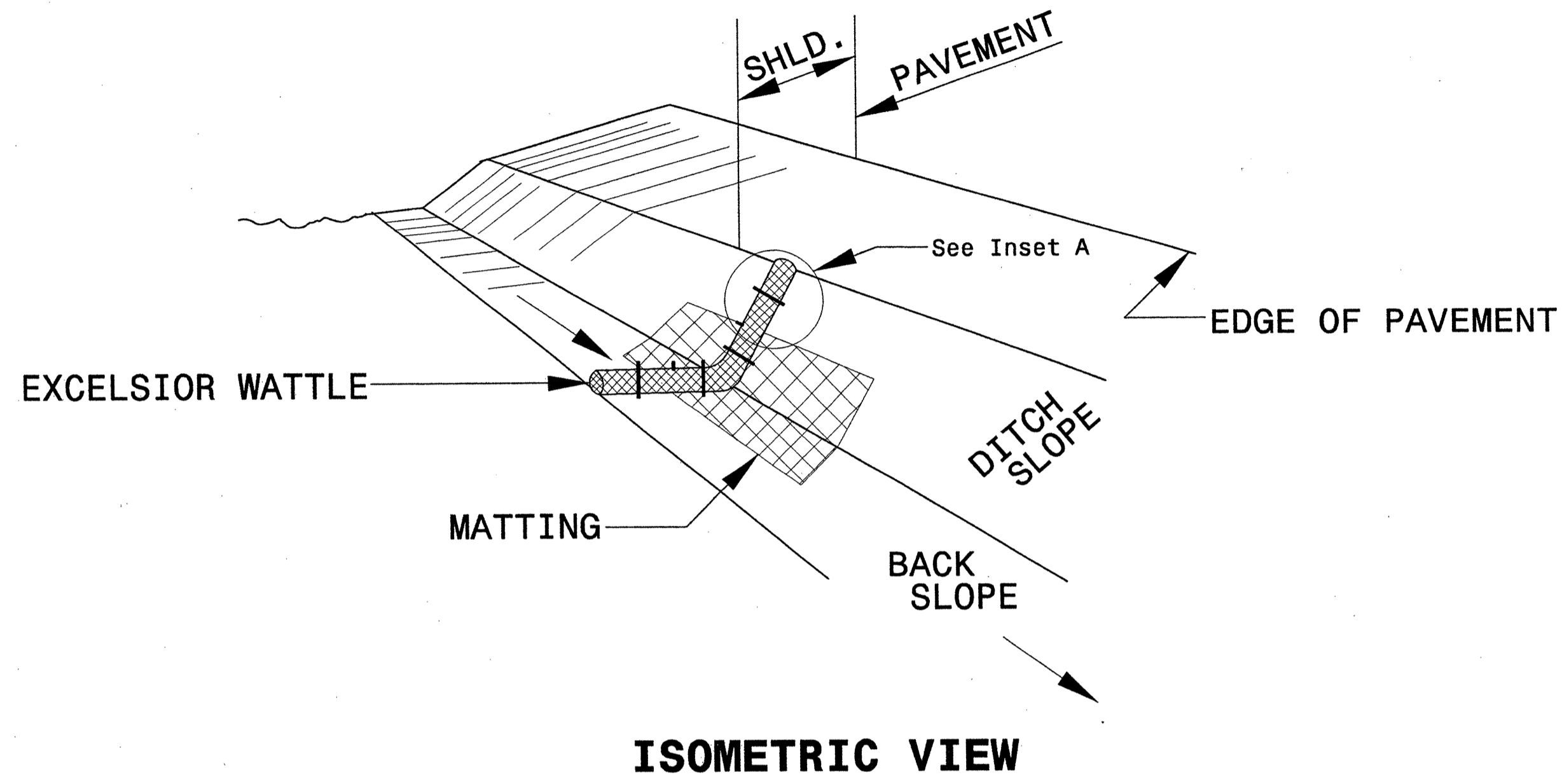
NOTES

1. SEED AND PLACE MATTING FOR EROSION CONTROL ON INTERIOR AND EXTERIOR SIDESLOPES.
2. LIMIT EARTH DIKE HEIGHT TO 5 FT.
3. FOR BASIN DEPTH OF 3 FT., THE MINIMUM BASIN WIDTH SHALL BE 9 FT.
4. DETERMINE EMERGENCY SPILLWAY LENGTH (FT.) USING $Q/0.8$, WHERE Q IS FLOW RATE (CFS) INTO BASIN.
5. PLASTIC SLOPE DRAIN PIPE AT INLET OF BASIN MAY BE REPLACED BY FILTRATION GEOTEXTILE AS DIRECTED.
6. SOIL STABILIZATION GEOTEXTILE FOR EMERGENCY SPILLWAY SHALL BE ONE CONTINUOUS PIECE OF MATERIAL OR OVERLAPPED 18 IN. (MIN.).

NOT TO SCALE

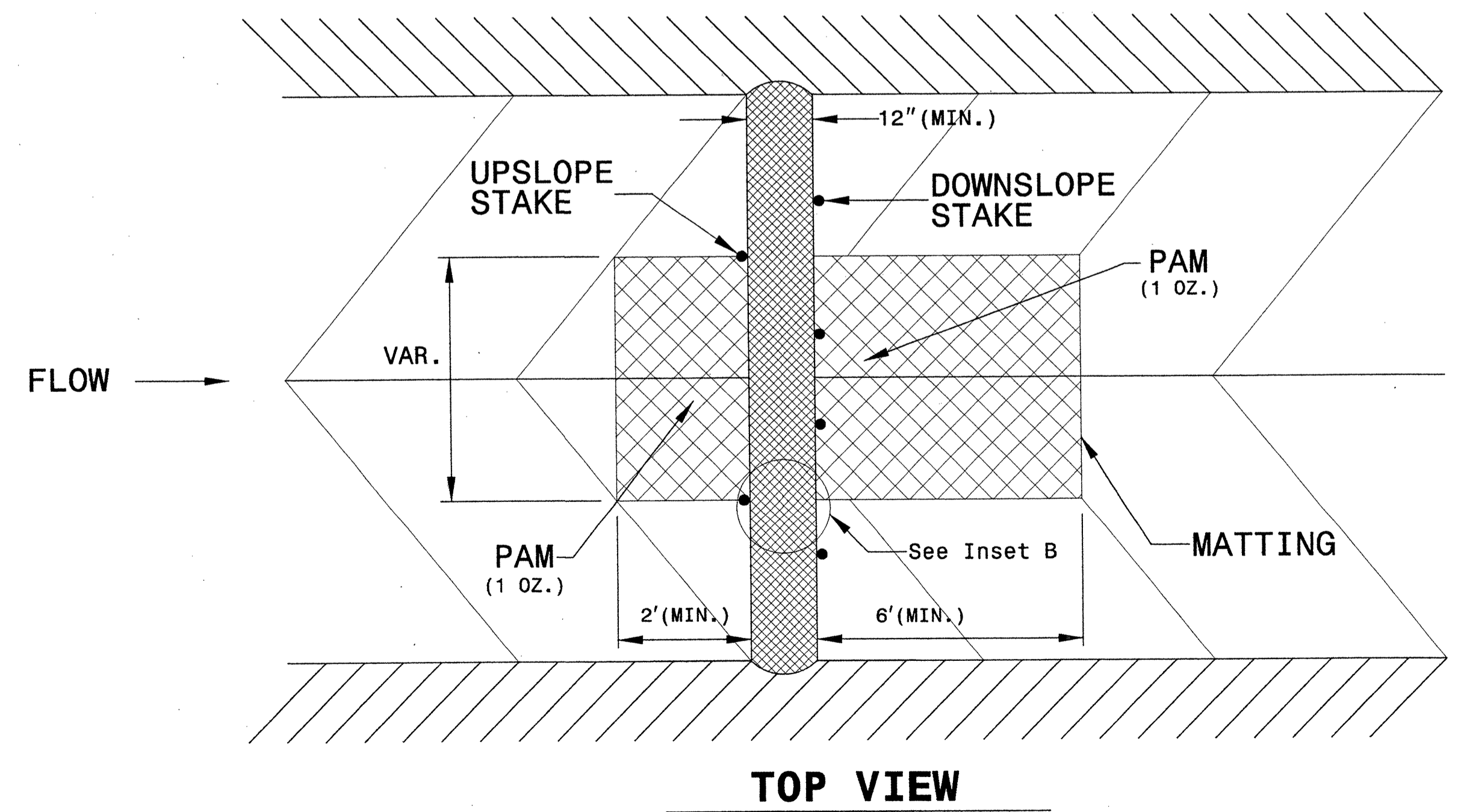
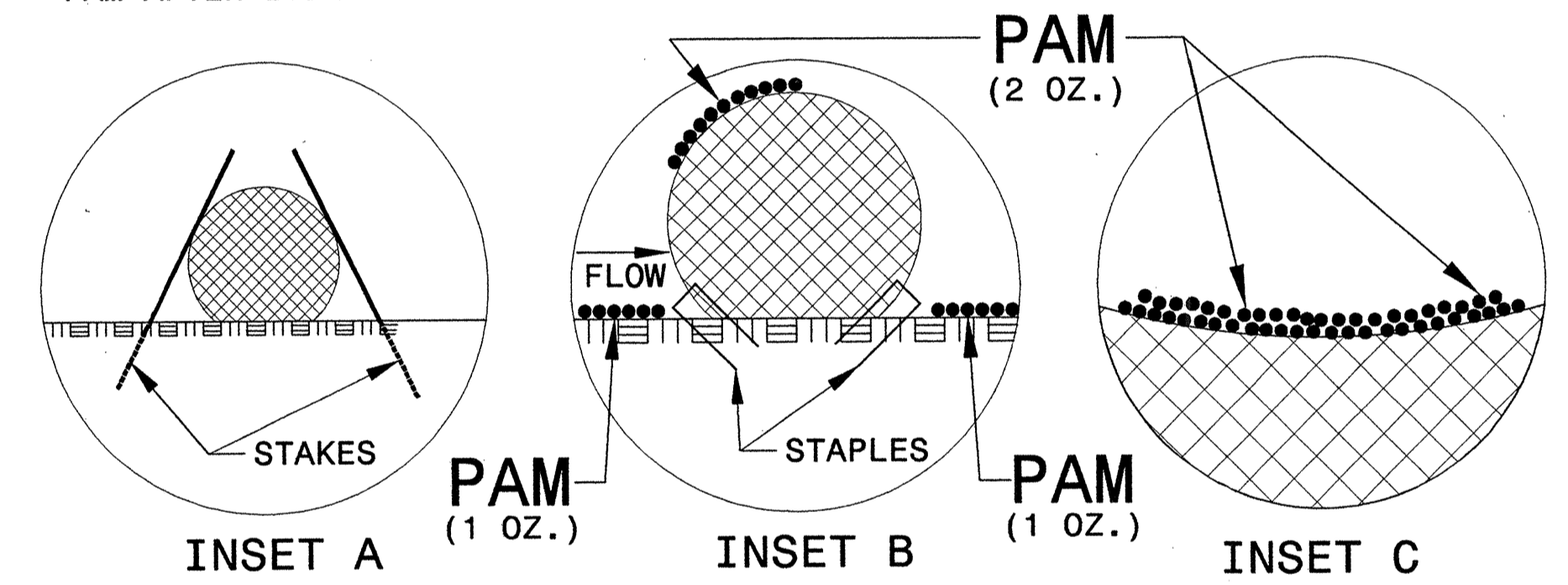
PROJECT REFERENCE NO. BK-5117	SHEET NO. EC-2A
RW SHEET NO.	
ROADSIDE ENVIRONMENTAL PROJECT ENGINEER	
LEVEL III CERTIFIED BY: STACEY H. BAILEY, PE CERTIFICATION NUMBER: 3074 ISSUED: FEBRUARY 23, 2012	

WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



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.



DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
BK-5117	EC-3
ROADSIDE ENVIRONMENTAL PROJECT ENGINEER	

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STACEY H. BAILEY, PE
CERTIFICATION NUMBER: 3074
ISSUED: FEBRUARY 23, 2012

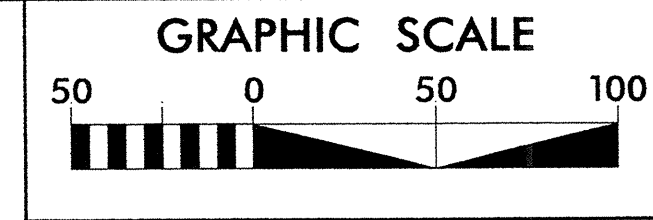
SOIL STABILIZATION TIMEFRAMES

<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
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.

8/17/99

2/23/2012
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FLORENCE & HUTCHESON, P.C.

NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.



PROJECT REFERENCE NO. BK5117 SHEET NO. EC-4/CONST 4A

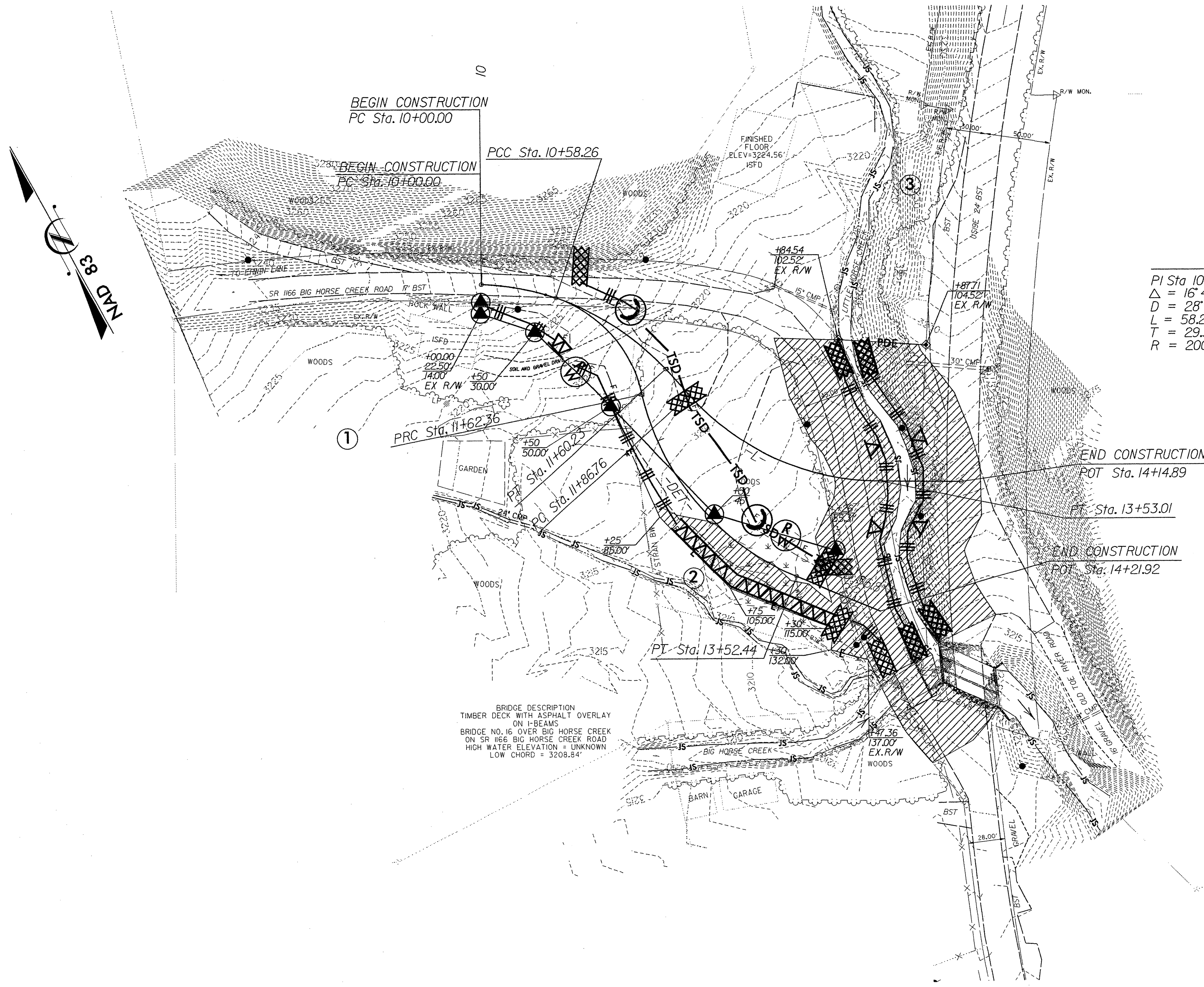
R/W SHEET NO. ROADSIDE ENVIRONMENTAL PROJECT ENGINEER

LEVEL III CERTIFIED BY:
STACEY H. BAILEY, PE
CERTIFICATION NUMBER: 3074
ISSUED: FEBRUARY 23, 2012



CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4A

TEMPORARY DETOUR



-DET-

PI Sta 10+29.34 Δ = 16° 41' 21.3" (RT) D = 28° 38' 52.4" L = 58.26' T = 29.34' R = 200.00'	PI Sta 11+15.58 Δ = 59° 38' 45.5" (RT) D = 57° 17' 44.8" L = 104.10' T = 57.32' R = 100.00'	PI Sta 12+65.27 Δ = 54° 27' 20.4" (LT) D = 28° 38' 52.4" L = 190.09' T = 102.91' R = 200.00'
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BRIDGE DESCRIPTION
TIMBER DECK WITH ASPHALT OVERLAY
ON I-BEAMS
BRIDGE NO. 16 OVER BIG HORSE CREEK
ON SR 1166 BIG HORSE CREEK ROAD
HIGH WATER ELEVATION = UNKNOWN
LOW CHORD = 3208.84'

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

PROJECT NO. 37023
COUNTY: AVERY
STATION: 14 + 66.00
REPLACES BRIDGE NO. 16

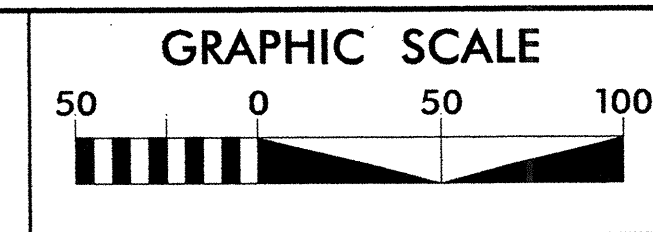
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE NO. 16 ON SR 1166
OVER LITTLE HORSE CREEK

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1			3			
2			4			

8/17/99

2/23/2012
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 Co. & Associates, P.C.

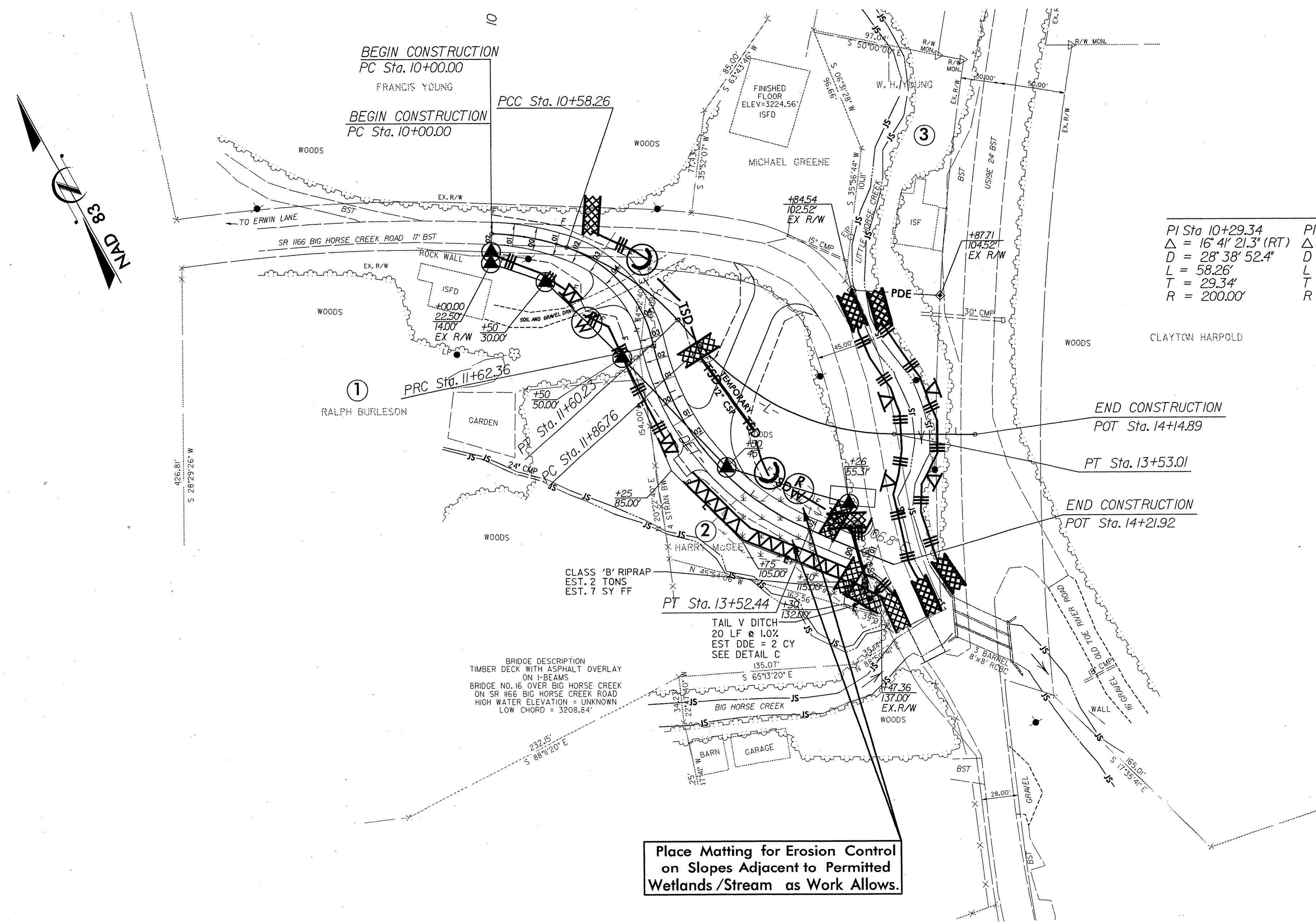


PROJECT REFERENCE NO. BK-5117 SHEET NO. EC-5/CONST 4A
 RW SHEET NO.
 ROADSIDE ENVIRONMENTAL PROJECT ENGINEER
 LEVEL III CERTIFIED BY:
 STACEY H. BAILEY, PE
 CERTIFICATION NUMBER: 3074
 ISSUED: FEBRUARY 23, 2012

Florence & Hutcheson
 CONSULTING ENGINEERS
 5121 Kingdom Way, Suite 100 Raleigh, NC 27607
 NC License No: P-0258

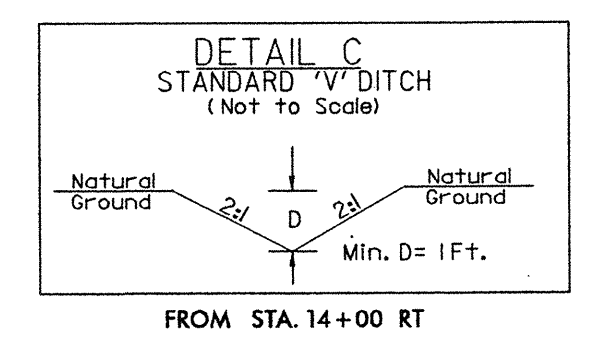
**FINAL GRADE EROSION CONTROL
 FOR CONSTRUCTION SHEET 4A**

TEMPORARY DETOUR



-DET-

PI Sta 10+29.34 Δ = 16° 41' 21.3" (RT) D = 28° 38' 52.4" L = 58.26' T = 29.34' R = 200.00'	PI Sta 11+15.58 Δ = 59° 38' 45.5" (RT) D = 57° 17' 44.8" L = 104.10' T = 57.32' R = 100.00'	PI Sta 12+65.27 Δ = 54° 27' 20.4" (LT) D = 28° 38' 52.4" L = 190.09' T = 102.91' R = 200.00'
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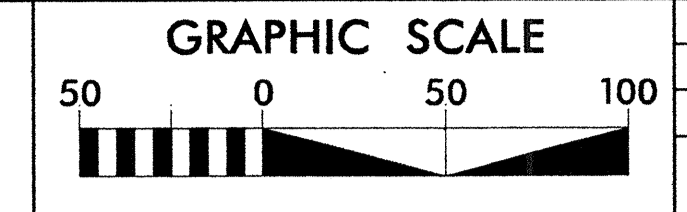


BRIDGE DESCRIPTION
 BRIDGE NO. 16 OVER BIG HORSE CREEK
 ON SR 1166 BIG HORSE CREEK ROAD
 HIGH WATER ELEVATION = UNKNOWN
 LOW CHORD = 3208.84'

Place Matting for Erosion Control
 on Slopes Adjacent to Permitted
 Wetlands/Stream as Work Allows.

PROJECT NO. 37023
 COUNTY: AVERY
 STATION: 14+66.00
 REPLACES BRIDGE NO. 16
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 BRIDGE NO. 16 ON SR 1166
 OVER LITTLE HORSE CREEK

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			5			TOTAL SHEETS
2			6			



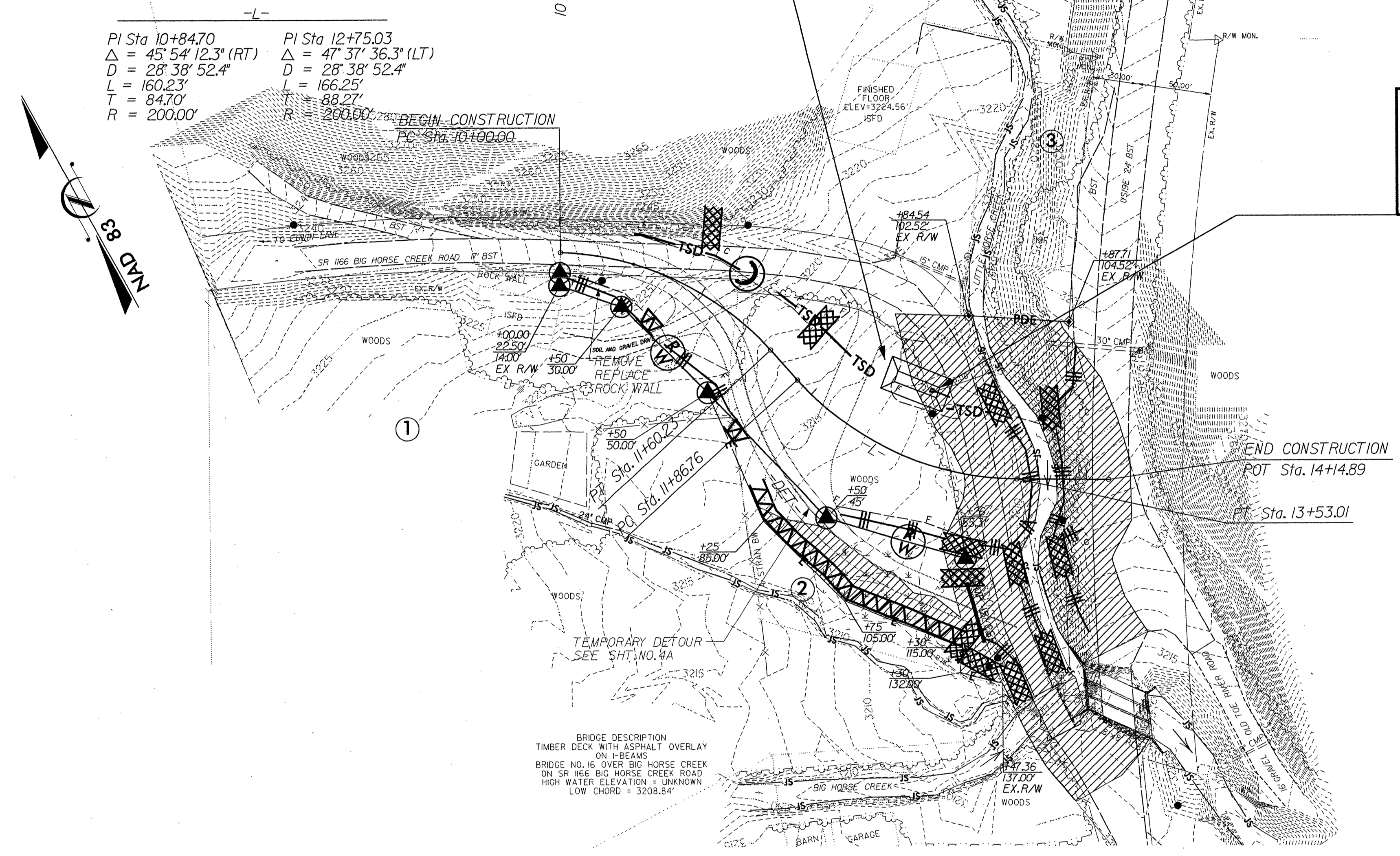
PROJECT REFERENCE NO.	SHEET NO.
BK5117	EC-6/CONST 4
RW SHEET NO.	
ROADSIDE ENVIRONMENTAL PROJECT ENGINEER	
LEVEL III CERTIFIED BY: STACEY H. BAILEY, PE CERTIFICATION NUMBER: 3074 ISSUED: FEBRUARY 23, 2012	
Florence & Hutcheson CONSULTING ENGINEERS 5121 Kingdom Way, Suite 100 Raleigh, NC 27607 NC License No: P-0258	

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

CULVERT LOCATION: -L- STA 13+42
FOR CONSTRUCTION SEQUENCE, SEE
SHEET EC-8

Stabilize and reinforce
bank to allow for
installation of skimmer basin

44 x 22 x 3
1.5 inch Skimmer
with .875 inch
Orifice Diameter
14 ft. weir
ID 4.1



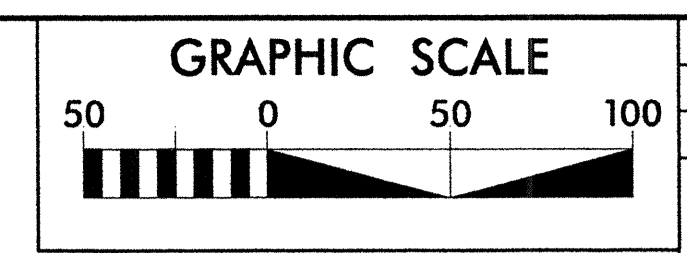
-L-
 PI Sta 10+84.70 PI Sta 12+75.03
 $\Delta = 45^\circ 54' 12.3''$ (RT) $\Delta = 47^\circ 37' 36.3''$ (LT)
 $D = 28^\circ 38' 52.4''$ $D = 28^\circ 38' 52.4''$
 $L = 160.23'$ $L = 166.25'$
 $T = 84.70'$ $T = 88.27'$
 $R = 200.00'$ $R = 200.00'$

BRIDGE DESCRIPTION
TIMBER DECK WITH ASPHALT OVERLAY
ON I-BEAMS
BRIDGE NO. 16 OVER BIG HORSE CREEK
ON SR 1166 BIG HORSE CREEK ROAD
HIGH WATER ELEVATION = UNKNOWN
LOW CHORD = 3208.84'

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

8/17/99
2/23/2012
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K&A Associates, P.C.

PROJECT NO. 37023					
COUNTY: AVERY					
STATION: 14+66.00					
REPLACES BRIDGE NO. 16					
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
BRIDGE NO. 16 ON SR 1166 OVER LITTLE HORSE CREEK					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		
TOTAL SHEETS					4

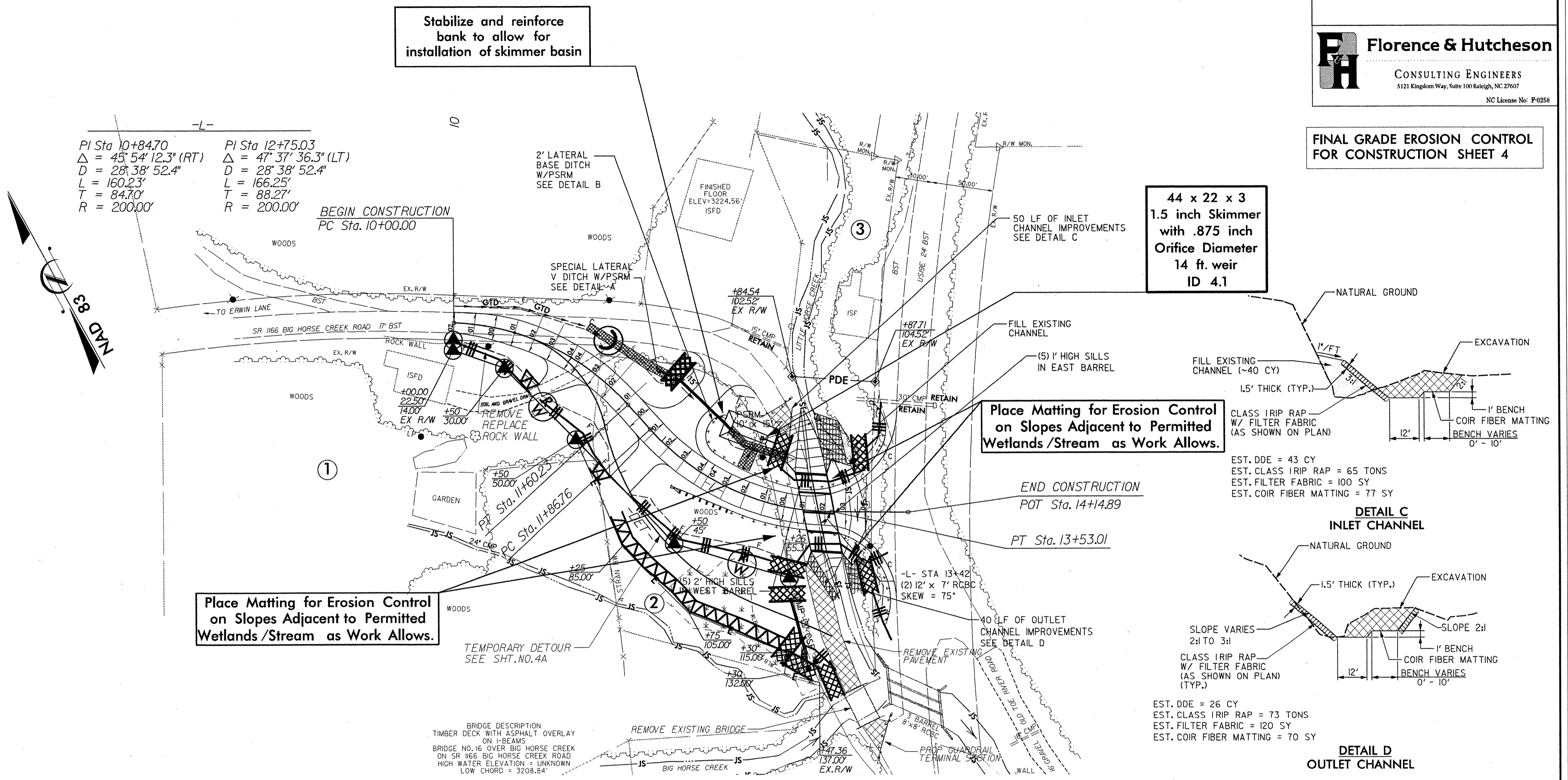
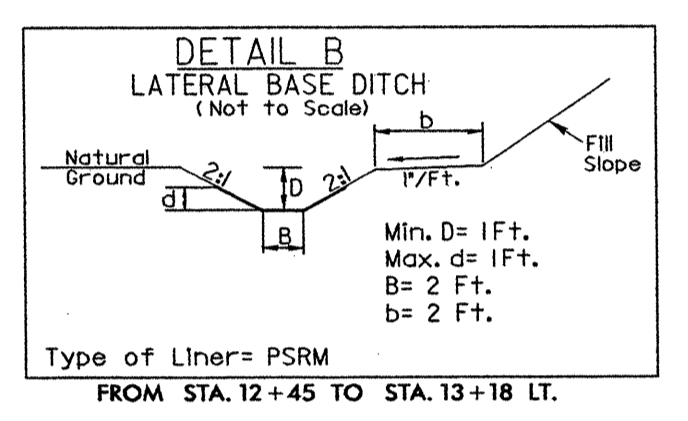
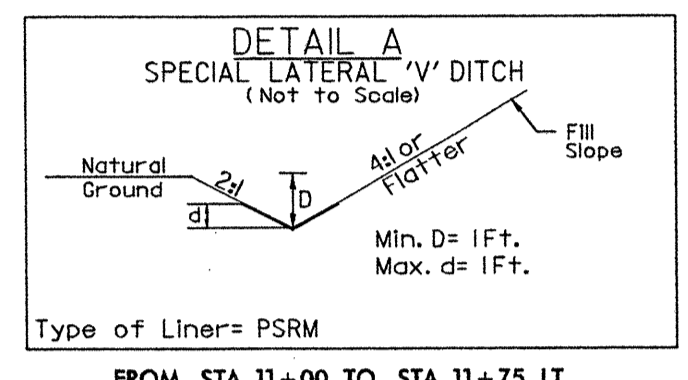


PROJECT REFERENCE NO. BK5117
 SHEET NO. EC-7/CONST 4
 R/W SHEET NO.
 ROADSIDE ENVIRONMENTAL PROJECT ENGINEER

LEVEL III CERTIFIED BY:
 STACEY H. BAILEY, PE
 CERTIFICATION NUMBER: 3074
 ISSUED: FEBRUARY 23, 2012



FINAL GRADE EROSION CONTROL FOR CONSTRUCTION SHEET 4



PROJECT NO. 37023
 COUNTY: AVERY
 STATION: 14+66.00
 REPLACES BRIDGE NO. 16

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALPHIGH

BRIDGE NO. 16 ON SR 1166 OVER LITTLE HORSE CREEK

REVISIONS						ENRST NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1			3			
2			4			

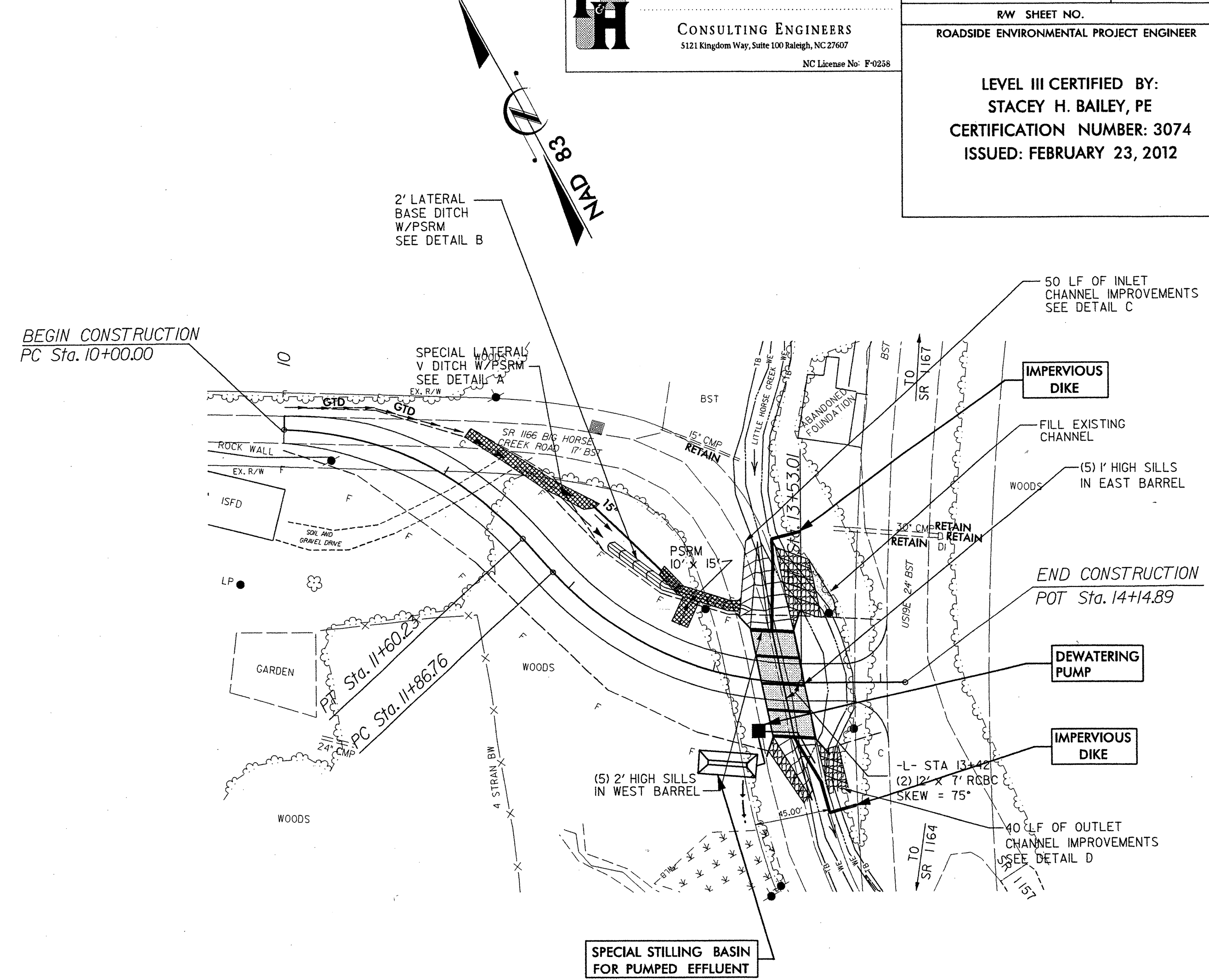
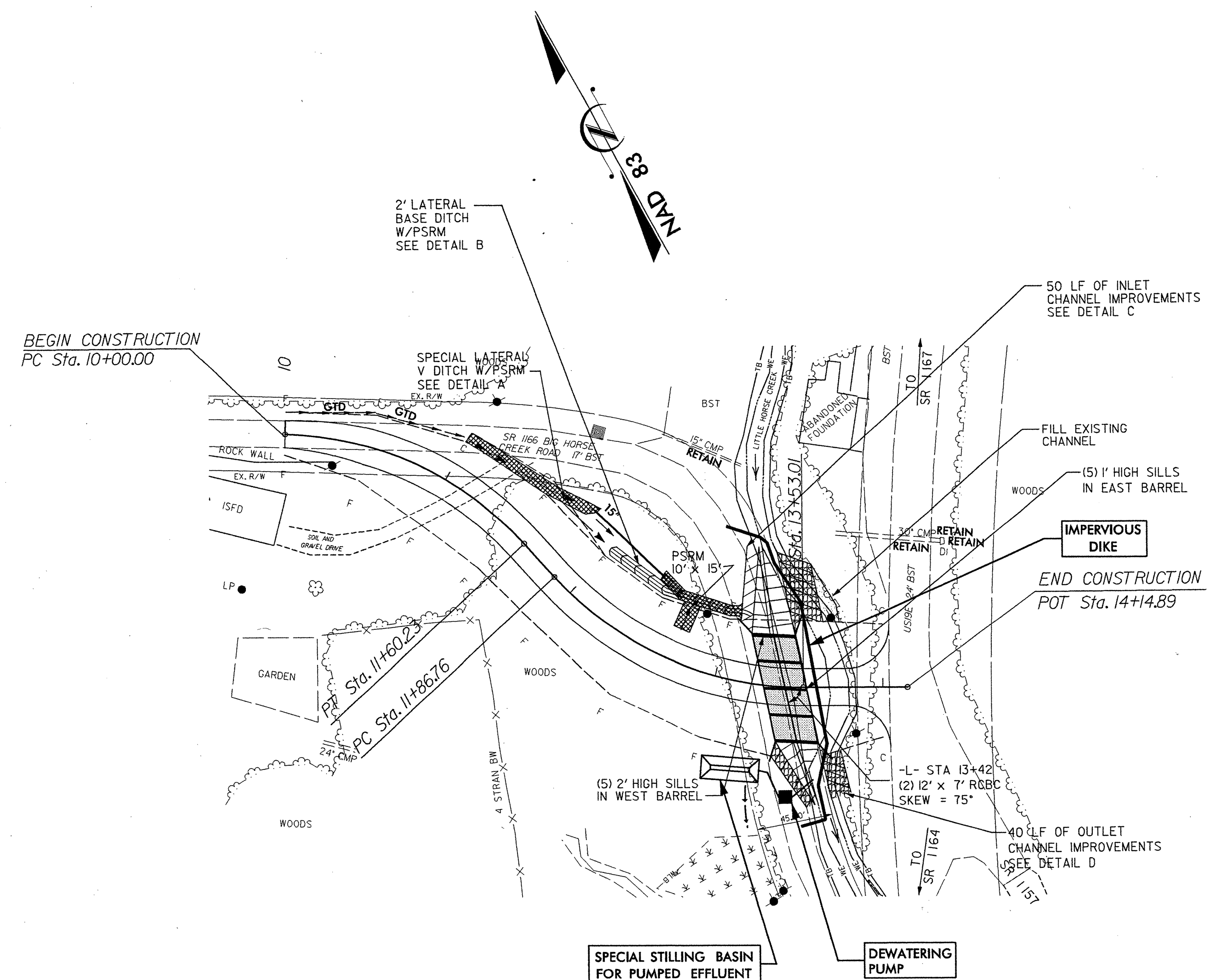
8/17/09
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 K. & Associates, P.C.

5/14/99

2/23/2012
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Florence & Hutcheson, Inc.

Florence & Hutcheson
CONSULTING ENGINEERS
5121 Kingdom Way, Suite 100 Raleigh, NC 27607
NC License No: P-0238

PROJECT REFERENCE NO.	SHEET NO.
BK5117	EC-8/CONST.4
RW SHEET NO.	
ROADSIDE ENVIRONMENTAL PROJECT ENGINEER	
LEVEL III CERTIFIED BY: STACEY H. BAILEY, PE CERTIFICATION NUMBER: 3074 ISSUED: FEBRUARY 23, 2012	



PHASE-1
CONSTRUCTION SEQUENCE (STA. 13+42 -L-)

(MAINTENANCE OF TRAFFIC VIA ON-SITE DETOUR.)

1. INSTALL SPECIAL STILLING BASIN.
2. PLACE PHASE-1 IMPERVIOUS DIKES.
3. MAINTAIN 4-FT MINIMUM BASE TO EXISTING CHANNEL.
4. PLACE PUMPING APPARATUS. DEWATER ENTRAPPED AREA.
5. CONSTRUCT BOX CULVERT, HEADWALLS, AND WEST SIDE WINGWALLS.
6. CONSTRUCT AND STABILIZE UPSTREAM AND DOWNSTREAM CHANNEL IMPROVEMENTS WITHIN THE PHASE-1 AREA (WEST SIDE). REFER TO ROADWAY PLANS FOR CHANNEL DETAIL.
7. REMOVE PHASE-1 IMPERVIOUS DIKES.

NOTES:

1. CULVERT CONSTRUCTION SHALL BE PERFORMED IN ONLY DRY OR ISOLATED SECTIONS OF CHANNEL.
2. IMPERVIOUS DIKES ARE TO BE USED TO ISOLATE WORK FROM STREAM FLOW AS NECESSARY.
3. ALL GRADED AREAS SHALL BE STABILIZED WITHIN 24 HOURS.
4. MAINTENANCE OF STREAM FLOW OPERATIONS SHALL BE INCIDENTAL TO THE WORK. THIS INCLUDES POLYETHYLENE SHEETING, DIVERSION PIPES, PUMPS AND HOSES.
5. PUMPS AND HOSES SHALL BE OF SUFFICIENT SIZE TO DEWATER THE WORK AREA.
6. THE CONTRACTOR SHALL NOT PUMP SEDIMENT-LADEN WATER DIRECTLY INTO STREAM. FOR DE-WATERING OF CULVERT SITES, THE CONTRACTOR SHALL FILTER SEDIMENT-LADEN WATER THROUGH SPECIAL STILLING BASIN.

PHASE-2
CONSTRUCTION SEQUENCE (STA. 13+42 -L-)

(ROAD CLOSURE - MAINTENANCE OF TRAFFIC VIA OFFSITE DETOUR.)

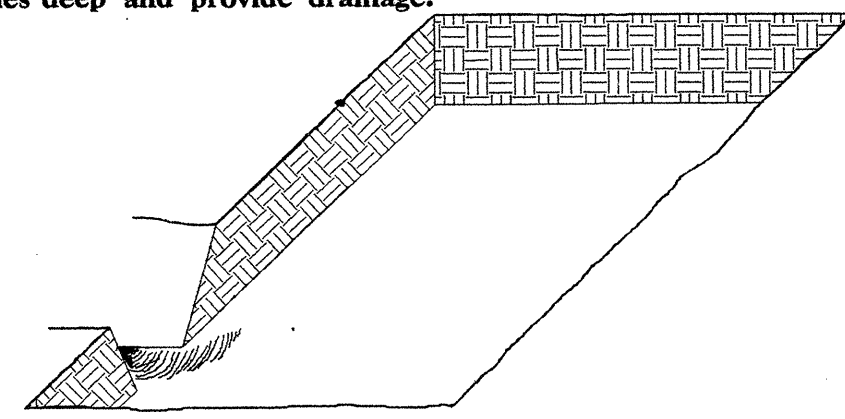
1. PLACE PHASE-2 UPSTREAM IMPERVIOUS DIKE.
2. DIVERT FLOW THROUGH HIGH FLOW BARREL (WEST).
3. PLACE PHASE-2 DOWNSTREAM IMPERVIOUS DIKE.
4. PLACE PUMPING APPARATUS. DEWATER ENTRAPPED AREA.
5. CONSTRUCT EAST SIDE WINGWALLS.
6. CONSTRUCT AND STABILIZE UPSTREAM AND DOWNSTREAM CHANNEL IMPROVEMENTS WITHIN THE PHASE-2 AREA (EAST SIDE). REFER TO ROADWAY PLANS FOR CHANNEL DETAIL.
7. REMOVE PHASE-2 IMPERVIOUS DIKES. DIVERT FLOW THROUGH LOW FLOW BARREL.
8. REMOVE SPECIAL STILLING BASIN. STABILIZE DISTURBED AREAS WITH SEED AND MULCH.
9. COMPLETE ROADWAY.

PLANTING DETAILS

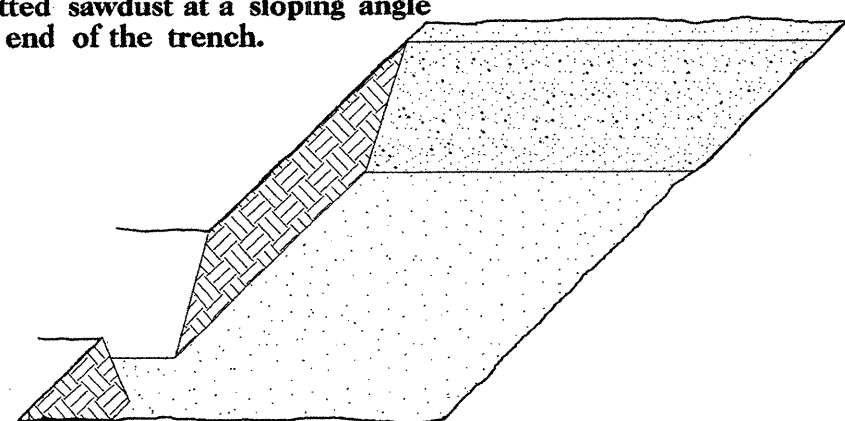
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

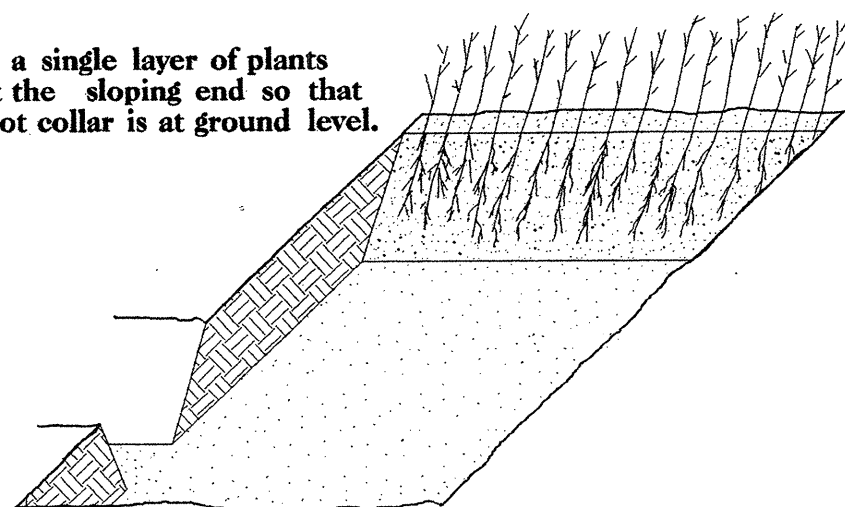
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



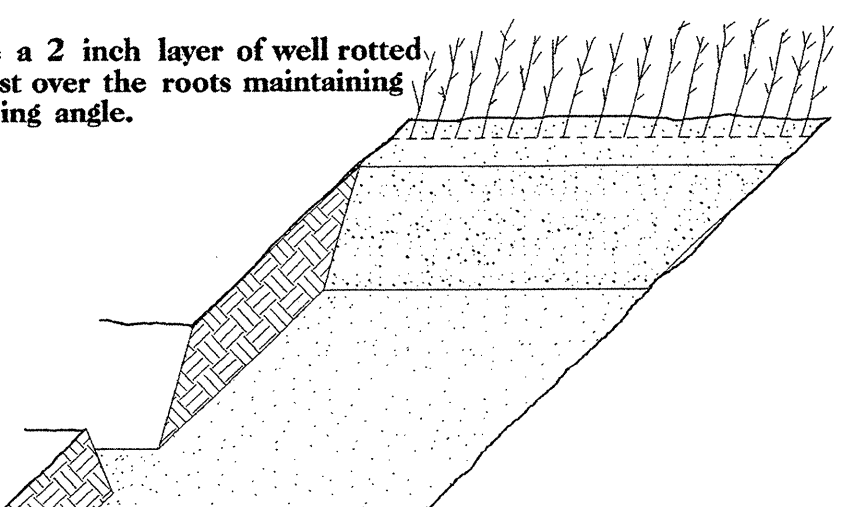
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

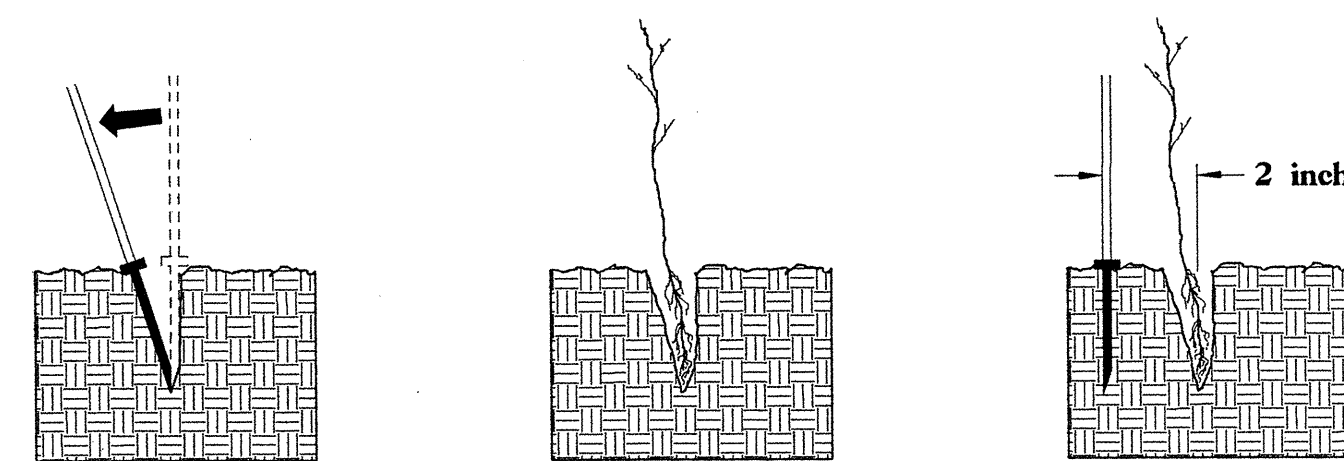


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

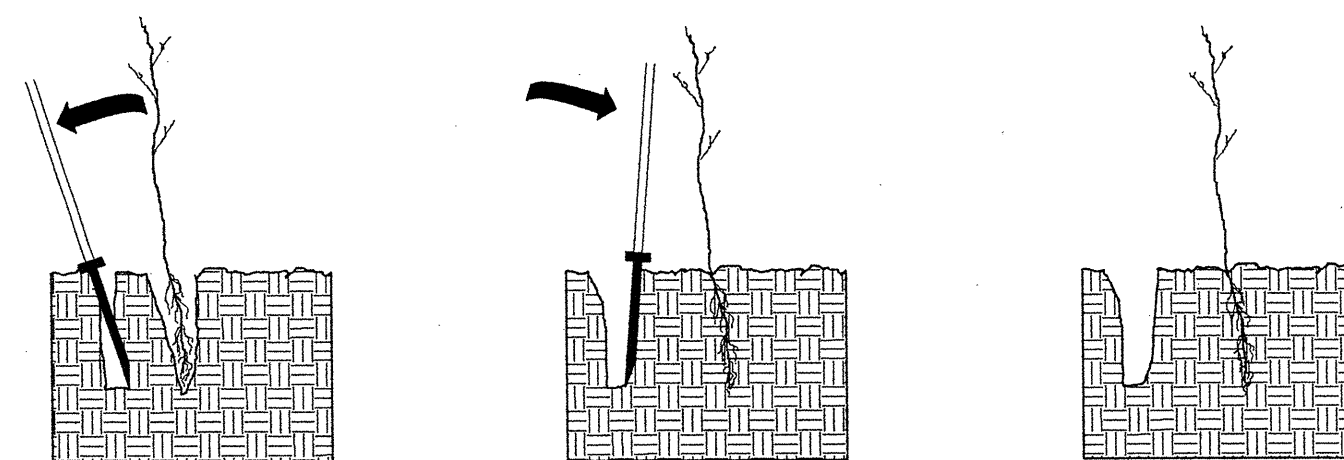


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

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

**STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS**

PROJ. REFERENCE NO.

SHEET NO.

BK-5117

X-1

Approximate quantities only. Unclassified excavation, fine grading, clearing and grubbing, breaking of existing pavement and removal of existing pavement will be paid for at the lump sum price for "Grading".

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDES BACKFILL FOR UNDERCUT

CROSS-SECTION SUMMARY

Station	Uncl. Exc.	Embt
L	(cu. yd.)	(cu. yd.)
10+00.00	0.0	0.0
10+50.00	4.1	7.4
11+00.00	31.9	35.2
11+50.00	37.1	125.9
12+00.00	27.4	352.4
12+50.00	19.0	646.6
13+00.00	0.0	823.9
13+50.00	0.0	1023.1
14+00.00	45.5	592.8

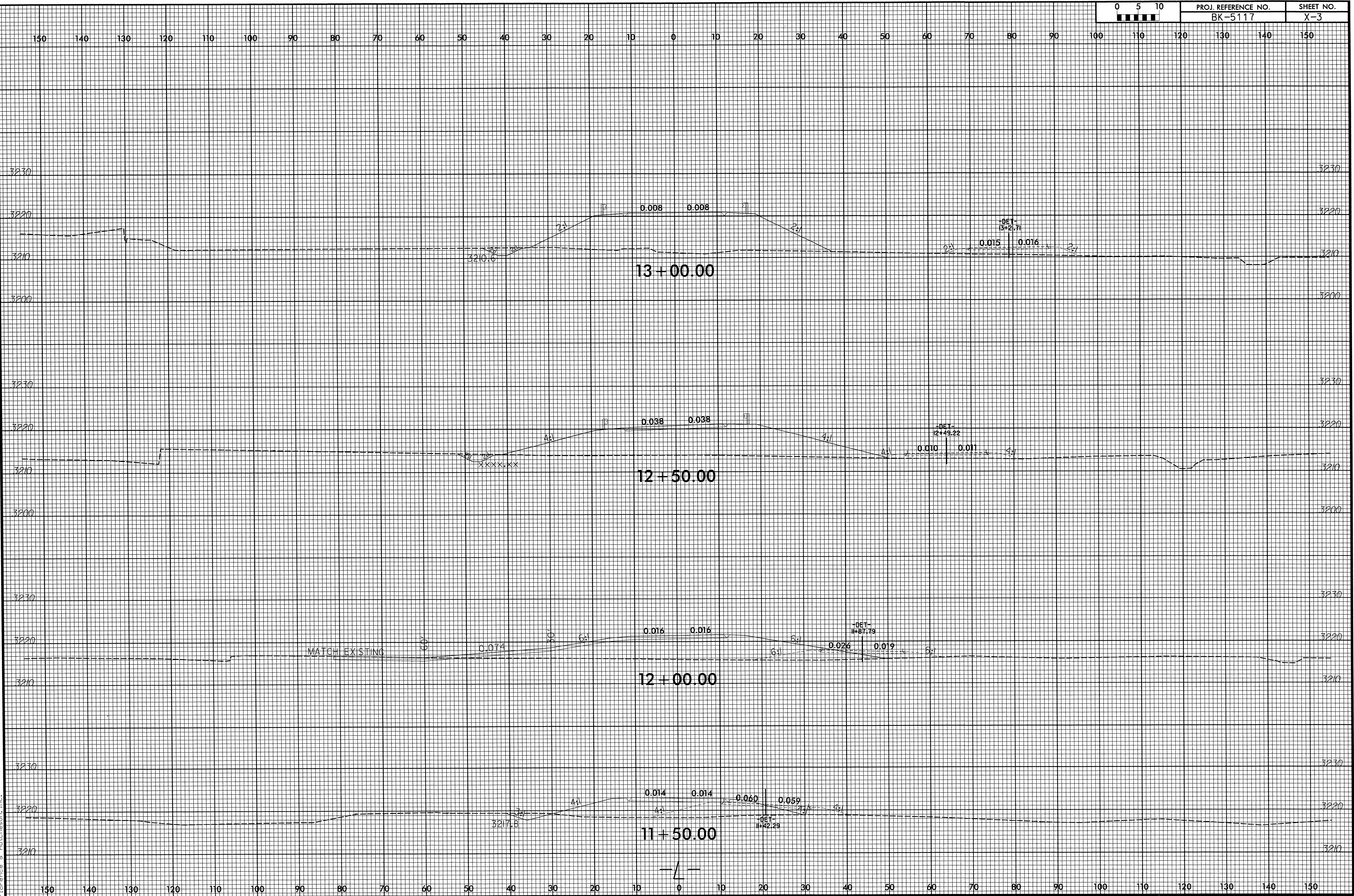
Station	Uncl. Exc.	Embt
DETOUR	(cu. yd.)	(cu. yd.)
10+00.00	0.0	0.0
10+50.00	1.1	9.8
10+99.14	1.1	100.5
11+42.29	0.0	143.2
11+87.79	0.0	102.3
12+49.22	0.0	78.0
13+21.71	0.0	78.4
13+50.00	0.0	37.3
14+00.00	0.0	53.2

Station	Uncl. Exc.	Embt
DETOUR REMOVAL	(cu. yd.)	(cu. yd.)
10+00.00	0.0	0.0
10+50.00	0.0	0.0
10+99.14	0.0	0.0
11+42.29	13.9	0.0
11+87.79	29.2	0.0
12+49.22	45.8	0.0
13+21.71	80.8	0.0
13+50.00	37.3	0.0
14+00.00	53.2	0.0

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Vopacek

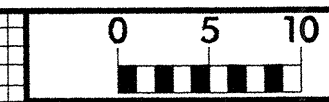


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Florence Hutchesson, Inc.

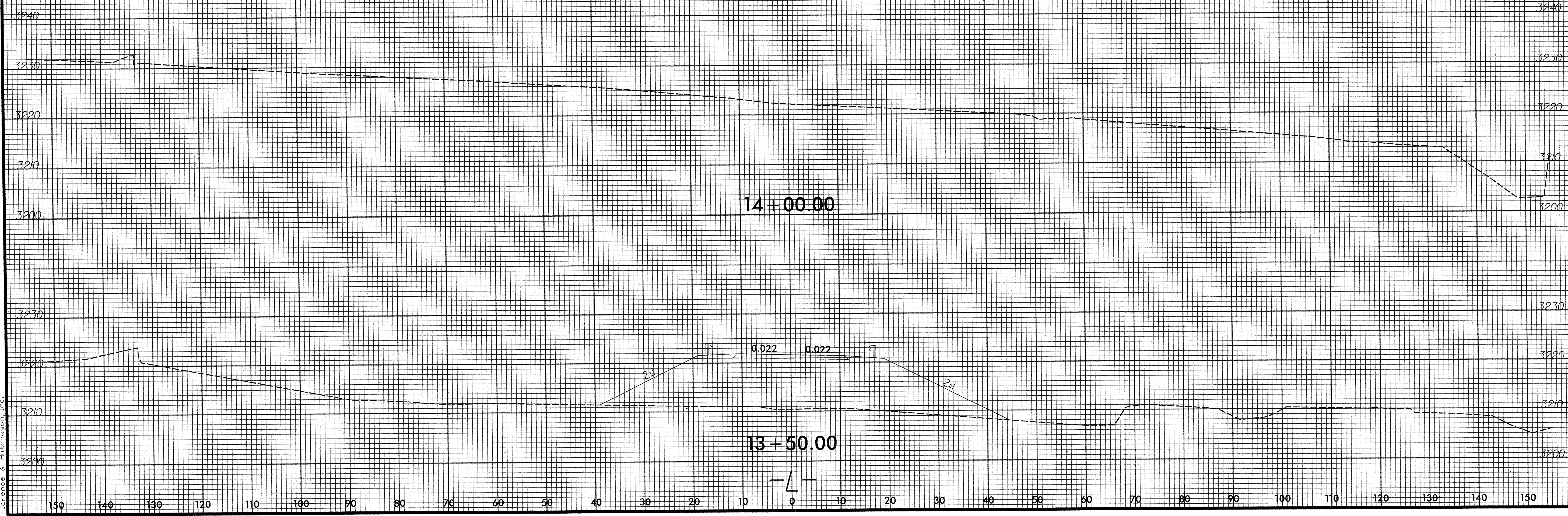
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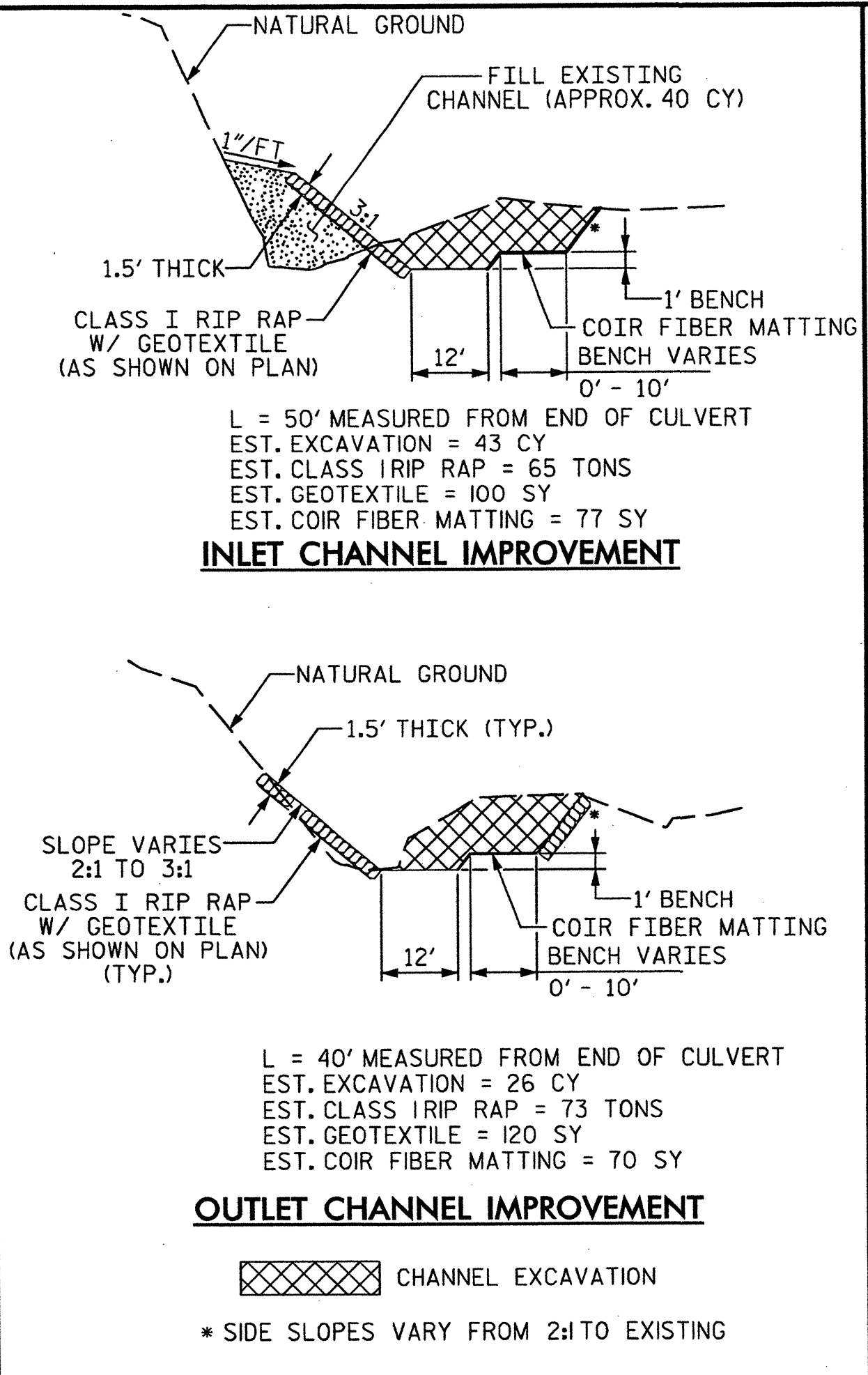
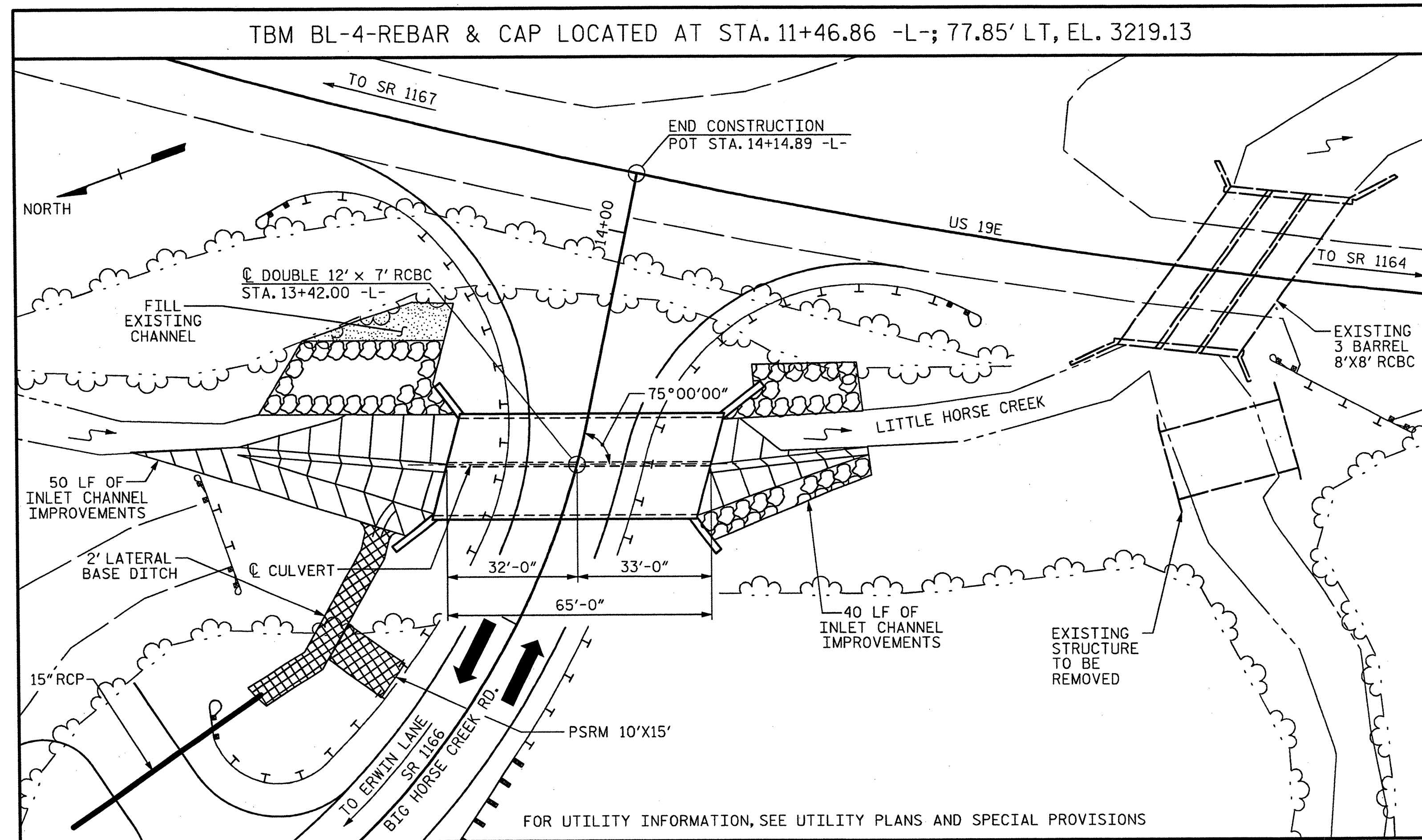
PROJ. REFERENCE NO.
BK-5117

SHEET NO.
X-4

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



11/27/2012
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NOTES

ASSUMED LIVE LOAD = HS-25 OR ALTERNATE LOADING.
 DESIGN FILL = 6.5'

FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.

3" Ø WEEP HOLES INDICATED TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.

CONCRETE IN CULVERTS TO BE POURED IN THE FOLLOWING ORDER:

1. WING FOOTINGS AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS.
2. THE REMAINING PORTIONS OF THE WALLS, SILLS AND WINGS FULL HEIGHT FOLLOWED BY ROOF SLAB AND HEADWALLS.

THE RESIDENT ENGINEER SHALL CHECK THE LENGTH OF CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.

DIMENSIONS FOR WING LAYOUT AS WELL AS ADDITIONAL REINFORCING STEEL EMBEDDED IN BARREL ARE SHOWN ON WING SHEET.

STEEL IN THE BOTTOM SLAB MAY BE SPLICED AT THE PERMITTED CONSTRUCTION JOINT AT THE CONTRACTOR'S OPTION.

AT THE CONTRACTOR'S OPTION, HE MAY SPLICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACE OF EXTERIOR WALL AND BOTH FACES OF INTERIOR WALLS ABOVE LOWER WALL CONSTRUCTION JOINT. THE SPLICE LENGTH SHALL BE AS PROVIDED IN THE SPLICE LENGTH CHART SHOWN ON THE PLANS.

A 3 FOOT STRIP OF GEOTEXTILE SHALL BE ATTACHED TO THE FILL FACE OF THE WING COVERING THE ENTIRE LENGTH OF THE EXPANSION JOINT.

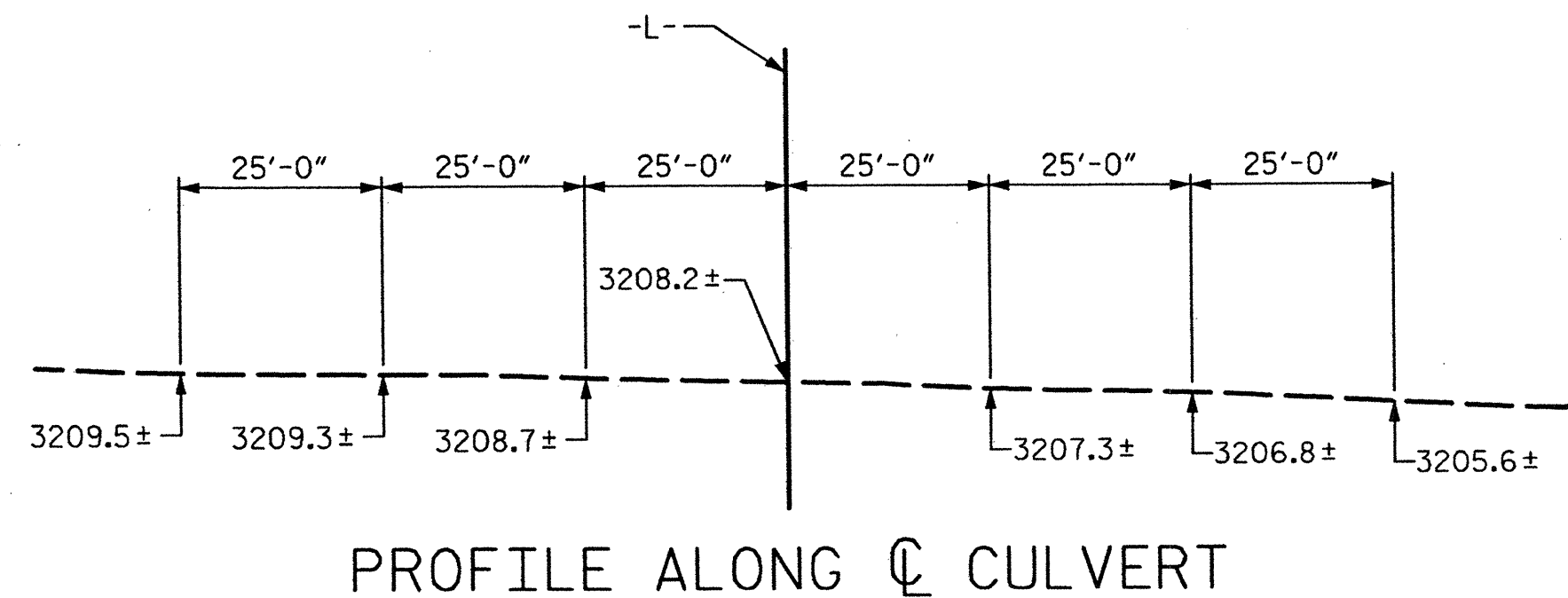
FOR CULVERT DIVERSION DETAILS, SEE EROSION CONTROL PLANS.
 FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
 FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
 FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
 FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

NO PRECAST REINFORCED BOX CULVERT OPTION WILL BE ALLOWED.

— LOCATION SKETCH —

TOTAL STRUCTURE QUANTITIES	
CLASS A CONCRETE	
BARREL @ 2.374 CY/FT	154.3 C.Y.
WINGS, SILLS, ETC.	41.4 C.Y.
TOTAL	195.7 C.Y.
REINFORCING STEEL	
BARREL	32,193 LBS.
WINGS, ETC.	1,753 LBS.
TOTAL	33,946 LBS.
FOUNDATION CONDITIONING MATERIAL	139 TONS
CULVERT EXCAVATION	LUMP SUM

HYDRAULIC DATA	
DESIGN DISCHARGE	= 700 CFS
FREQUENCY OF DESIGN FLOOD	= 25 YR.
DESIGN HIGH WATER ELEVATION	= 3214.5
DRAINAGE AREA	= 1.75 SQ MI
BASIC DISCHARGE (Q 100)	= 1100 CFS
BASIC HIGH WATER ELEVATION	= 3215.8
OVERTOPPING FLOOD DATA	
OVERTOPPING DISCHARGE	= 2200 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 500 YR.(+)
OVERTOPPING FLOOD ELEVATION	= 3220.8
GRADE DATA	
GRADE POINT ELEV. @ STATION 13+42.00	= 3221.444
BED ELEV. @ STATION 13+42.00	= 3207.130
ROADWAY SLOPES 2:1	



PROFILE ALONG CULVERT

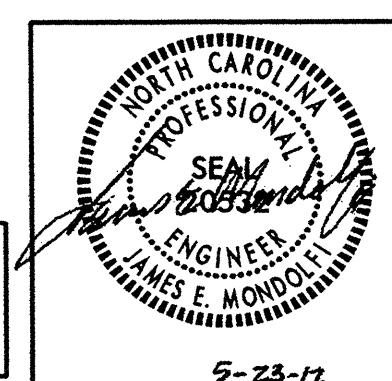
PROJECT NO. 42568
 AVERY COUNTY
 STATION: 13+42.00 -L-
 SHEET 1 OF 5 REPLACES BRIDGE NO. 16

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

DOUBLE BARREL
 12FT X 7FT RCBC
 75° SKEW
 LITTLE HORSE CREEK

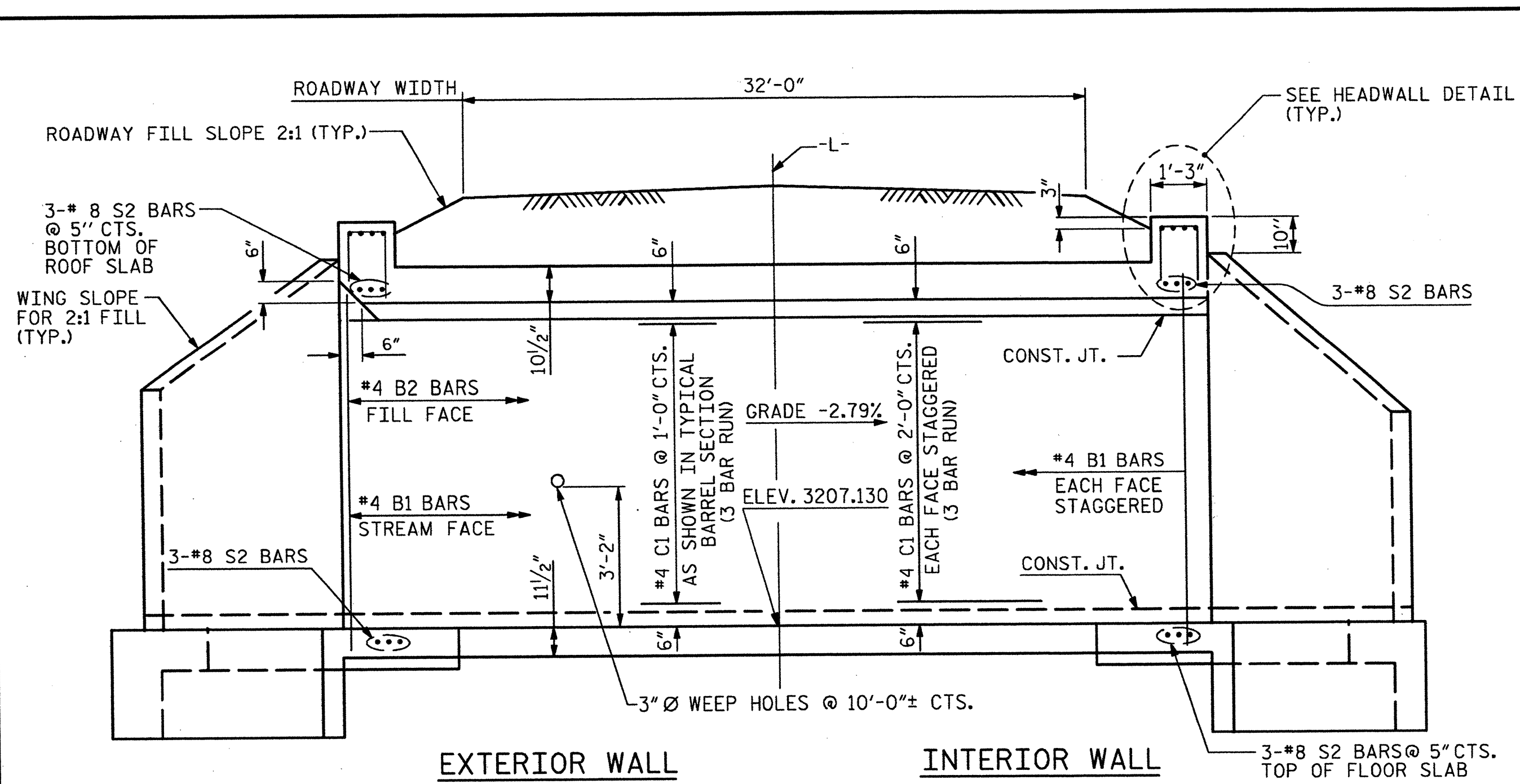
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SHEET NO. C-1
 TOTAL SHEETS 5

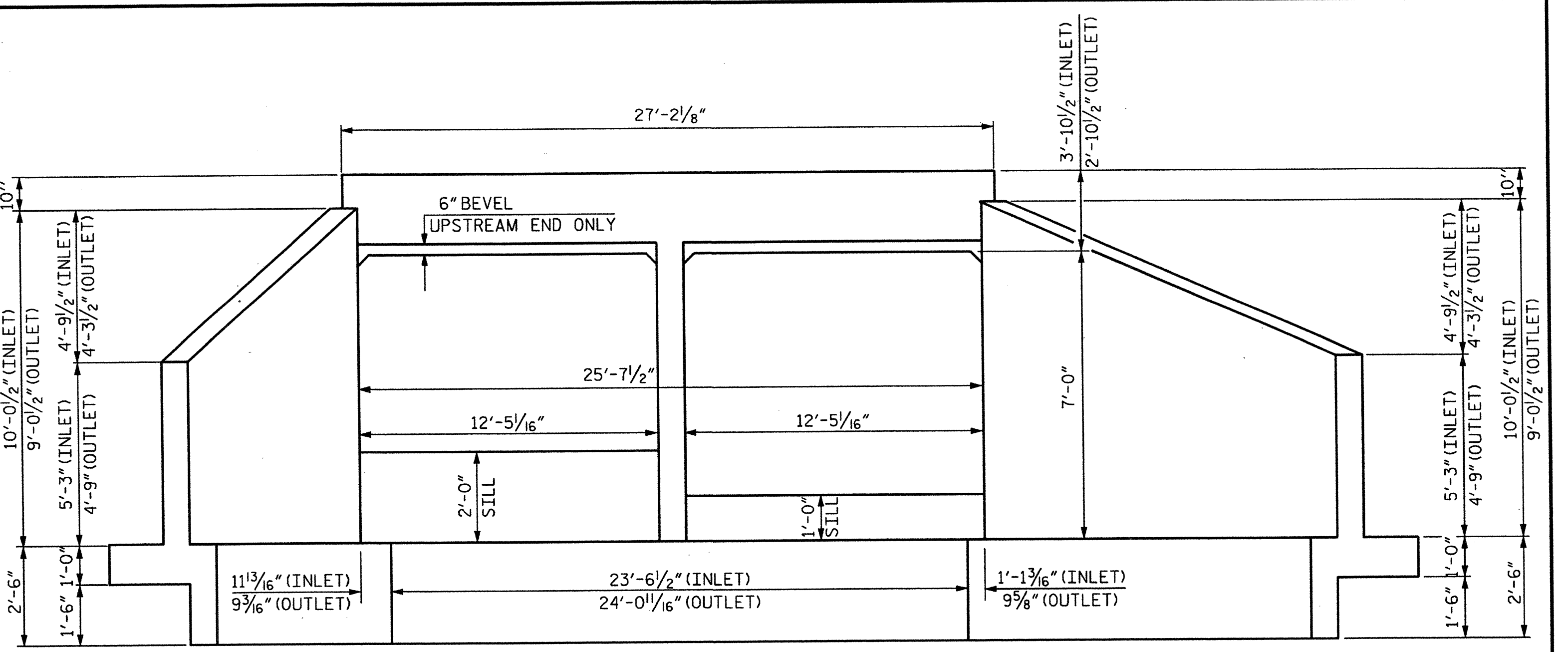


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 Florence & Hutcheson - An ICA Company

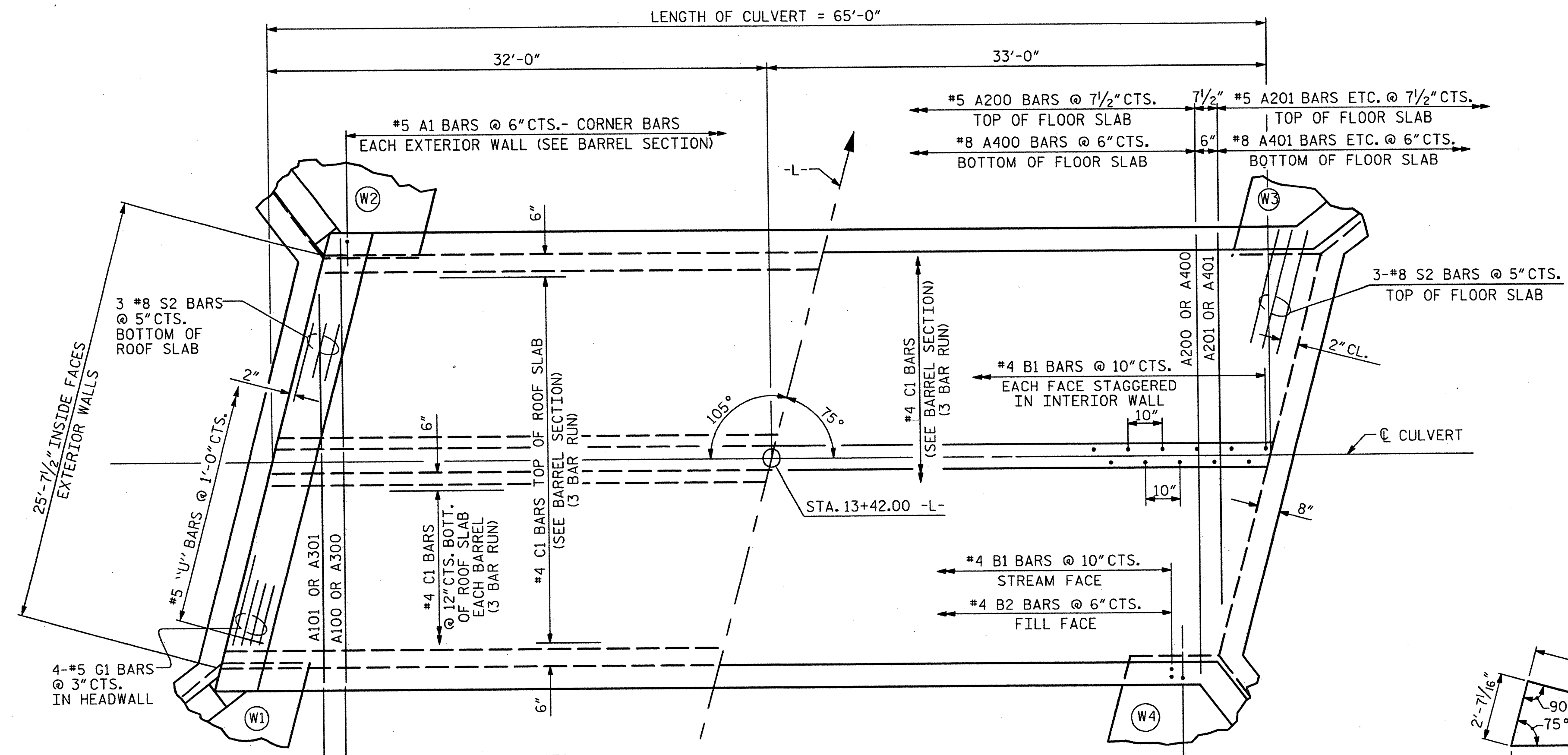
DRAWN BY: G. M. GILLAND DATE: FEB 2012
 CHECKED BY: J. E. MONDOLFI DATE: FEB 2012



EXTERIOR WALL INTERIOR WALL
CULVERT SECTION NORMAL TO ROADWAY

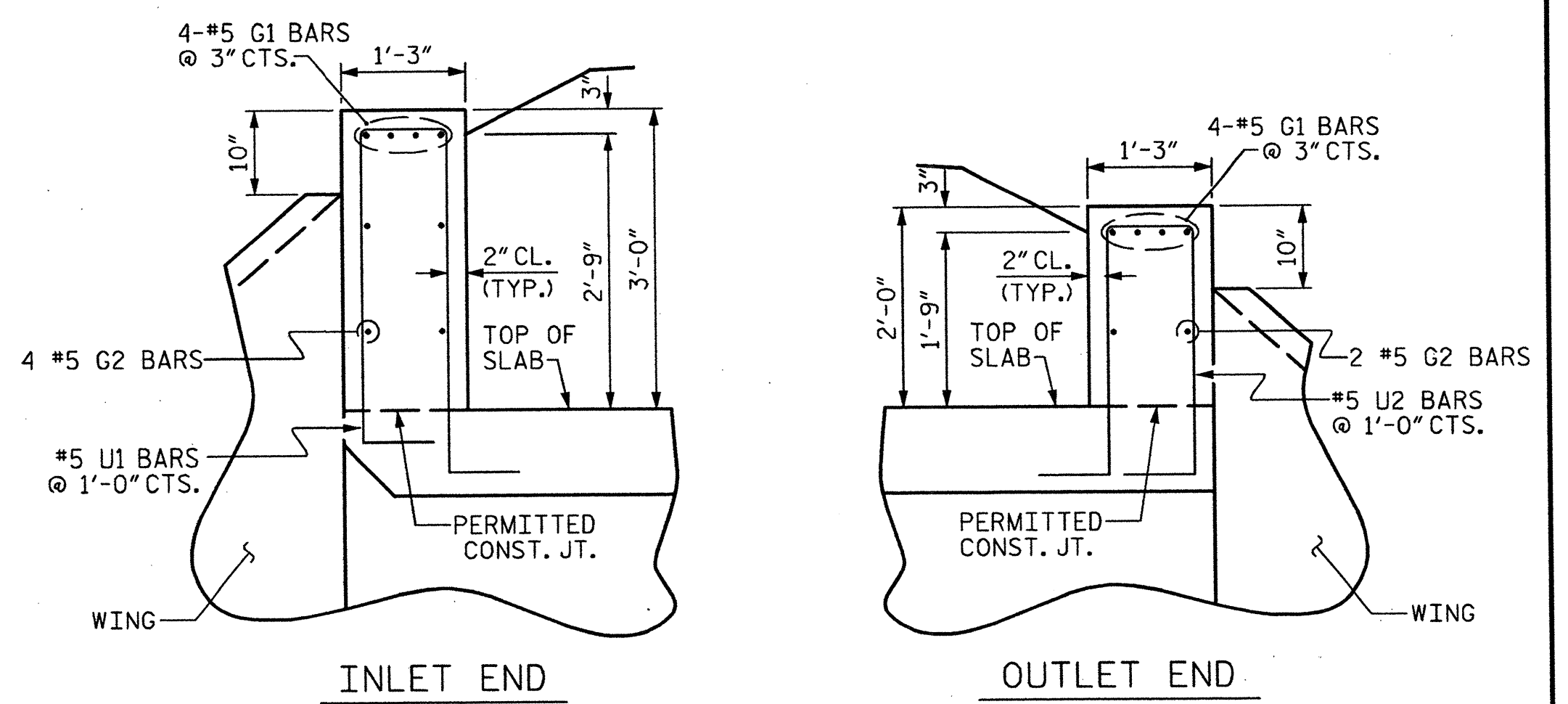


END ELEVATION NORMAL TO SKEW

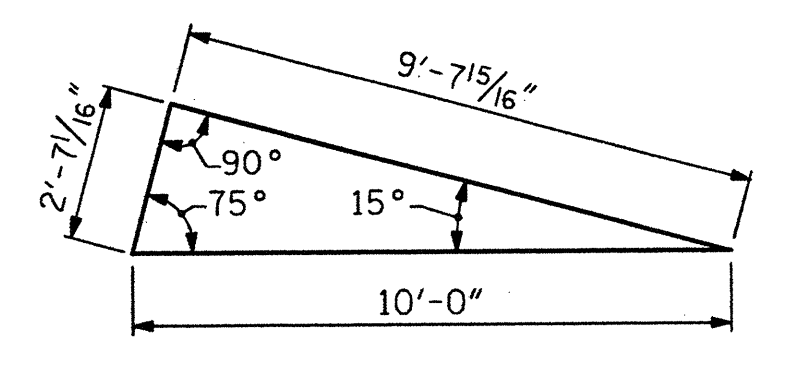


PART PLAN - ROOF SLAB

PART PLAN - FLOOR SLAB



HEADWALL DETAILS

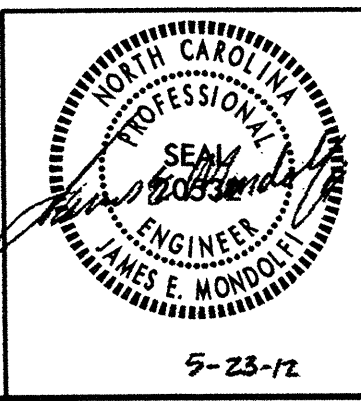


SKEW TRIANGLE

PROJECT NO. 42568
 AVERY COUNTY
 STATION: 13+42.00 -L-
 SHEET 2 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 DOUBLE BARREL
 12FT X 7FT RCBC
 75° SKEW
 LITTLE HORSE CREEK

Florence & Hutcheson
 CONSULTING ENGINEERS
 1221 Kingsley Way, Suite 100 Raleigh, NC 27607
 NC License No. P-0288



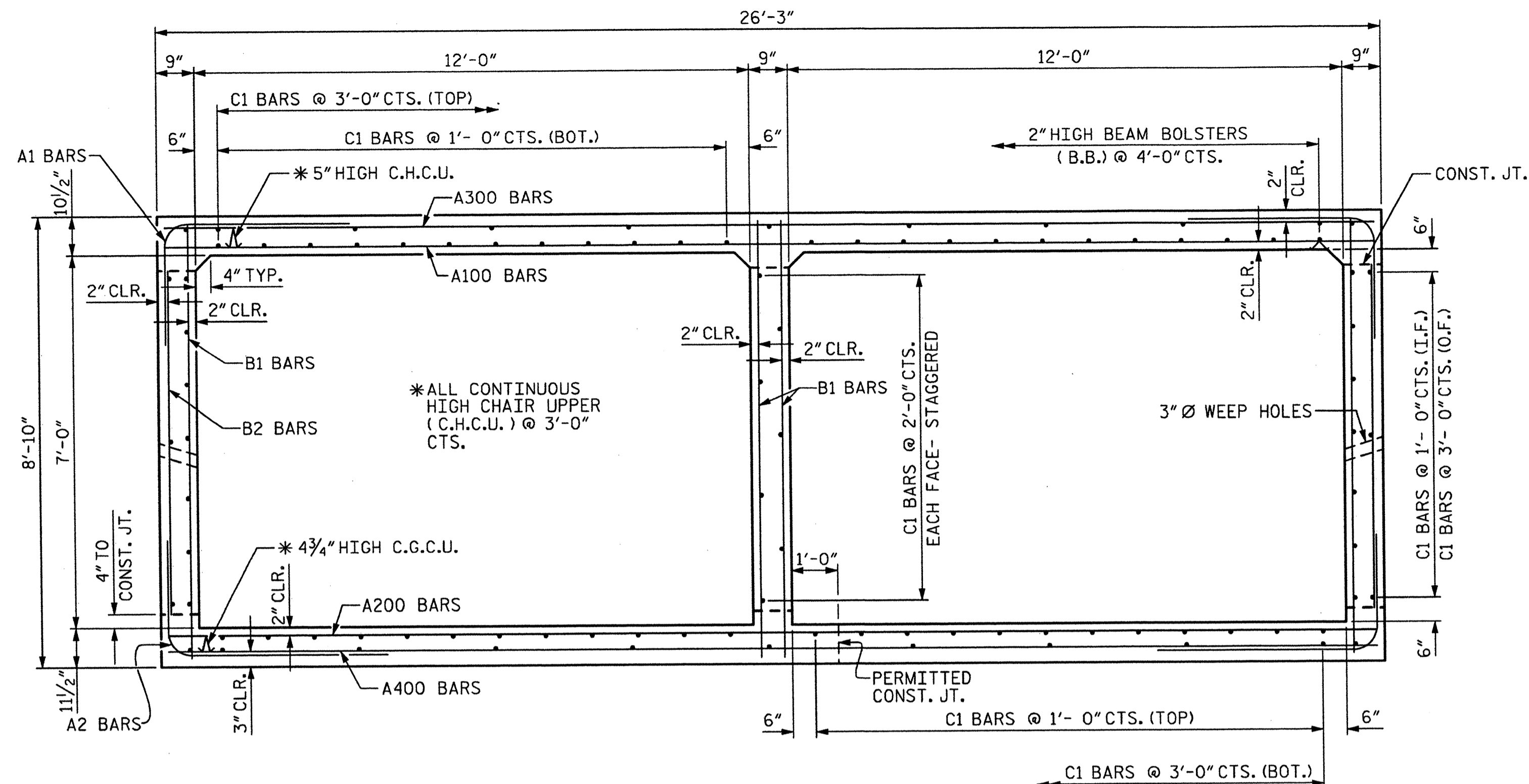
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	

TOTAL SHEETS: 5

5/23/2012
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 Florence & Hutcheson - An ICA Company

DRAWN BY: G. M. GILLAND DATE: FEB 2012
 CHECKED BY: J. E. MONDOLFI DATE: FEB 2012

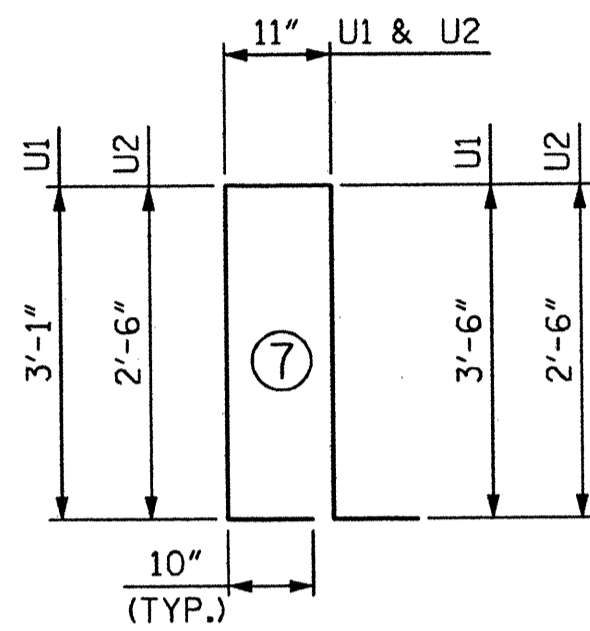
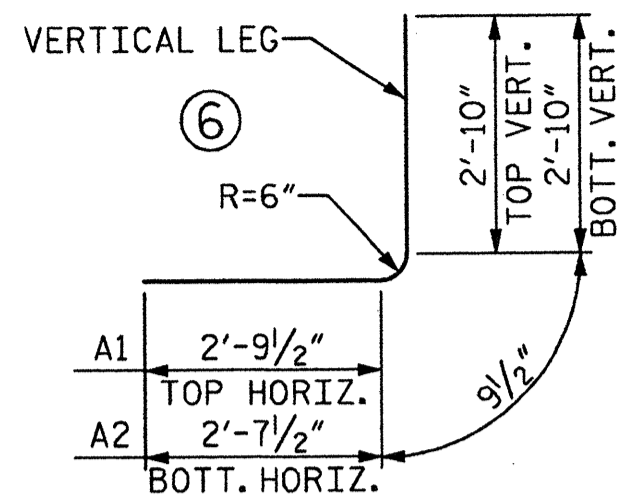
5-23-12



RIGHT ANGLE SECTION OF BARREL

THERE ARE 97 "C" BARS IN SECTION OF BARREL

BAR TYPES

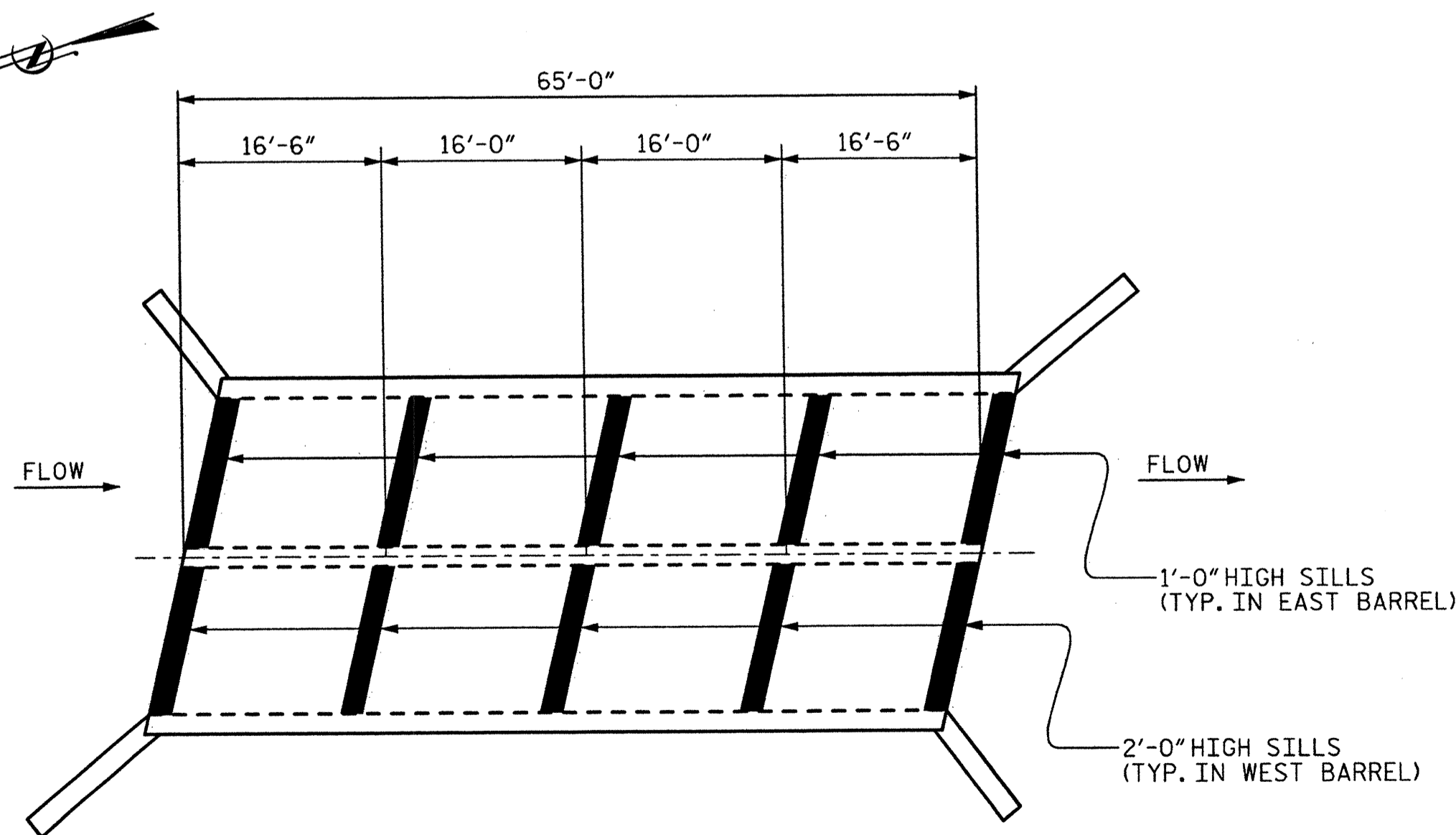


BILL OF MATERIAL

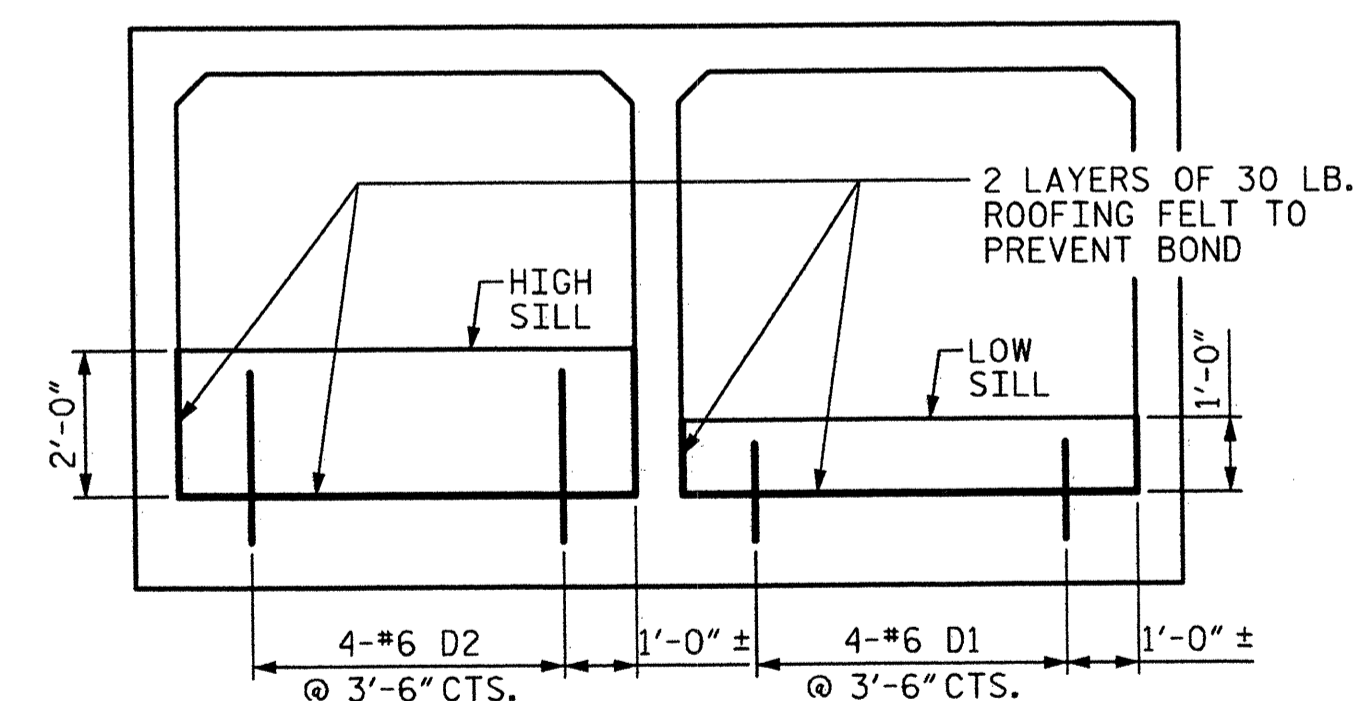
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
A100	#5	STR	25'-11"	2676	A400	#8	STR	25'-11"	8027
A101	#5	STR	24'-9"	52	A401	#8	STR	24'-5"	130
A102	#5	STR	22'-6"	47	A402	#8	STR	22'-6"	120
A103	#5	STR	20'-4"	42	A403	#8	STR	20'-8"	110
A104	#5	STR	18'-2"	38	A404	#8	STR	18'-10"	101
A105	#5	STR	16'-0"	33	A405	#8	STR	16'-11"	90
A106	#5	STR	13'-10"	29	A406	#8	STR	15'-1"	81
A107	#5	STR	11'-8"	24	A407	#8	STR	13'-2"	70
A108	#5	STR	9'-6"	20	A408	#8	STR	11'-4"	61
A109	#5	STR	7'-4"	15	A409	#8	STR	9'-6"	51
A110	#5	STR	5'-1"	11	A410	#8	STR	7'-7"	40
A111	#5	STR	2'-11"	9	A411	#8	STR	5'-9"	31
					A412	#8	STR	3'-11"	21
					A413	#8	STR	2'-0"	11
A200	#5	STR	25'-11"	2514					
A201	#5	STR	23'-11"	50					
A202	#5	STR	21'-7"	45	A1	#5	6	6'-4"	1704
A203	#5	STR	19'-3"	40	A2	#5	6	6'-2"	1659
A204	#5	STR	16'-11"	35					
A205	#5	STR	14'-7"	31	B1	#4	312	8'-5"	1754
A206	#5	STR	12'-3"	26	B2	#4	260	6'-3"	1086
A207	#5	STR	9'-11"	21					
A208	#5	STR	7'-7"	16	C1	#4	291	22'-10"	4439
A209	#5	STR	5'-3"	11					
A210	#5	STR	2'-11"	6	D1	#6	20	1'-6"	45
					D2	#6	20	2'-6"	75
A300	#6	STR	25'-11"	4516					
A301	#6	STR	24'-5"	73	G1	#5	8	26'-10"	224
A302	#6	STR	22'-6"	68	G2	#4	6	26'-10"	108
A303	#6	STR	20'-8"	62					
A304	#6	STR	18'-10"	57	S2	#8	12	26'-10"	860
A305	#6	STR	16'-11"	51					
A306	#6	STR	15'-1"	45	U1	#5	27	9'-2"	258
A307	#6	STR	13'-2"	40	U2	#5	27	7'-7"	214
A308	#6	STR	11'-4"	34					
A309	#6	STR	9'-6"	29					
A310	#6	STR	7'-7"	23					
A311	#6	STR	5'-9"	17					
A312	#6	STR	3'-11"	12					
A313	#6	STR	2'-0"	6					
				REINFORCING STEEL	32,193 LBS				
				CLASS A CONCRETE	CULVERT 154.3 CY				
					SILLS 6.9 CY				
				TOTAL	= 161.2 CY				

SPLICE LENGTH CHART

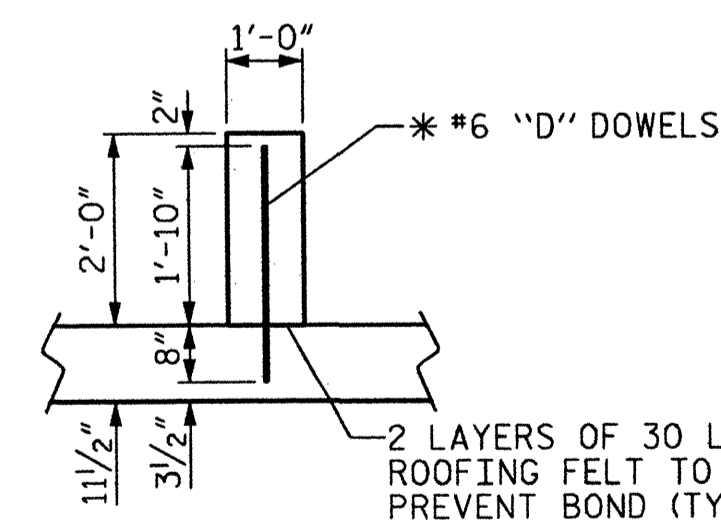
BAR	SIZE	SPLICE LENGTH	
A200	#5	1'-9"	
A400	#6	2'-10"	
B1	#4	1'-9"	
B3	#4	1'-9"	
A1	#5	1'-8"	
C1	#4	1'-11"	
A308	#6	STR 11'-4"	34
A309	#6	STR 9'-6"	29
A310	#6	STR 7'-7"	23
A311	#6	STR 5'-9"	17
A312	#6	STR 3'-11"	12
A313	#6	STR 2'-0"	6



CULVERT SILL LAYOUT



END ELEVATION (LOOKING UPSTREAM)



SECTION THROUGH HIGH SILL (LOW SILL SIMILAR)

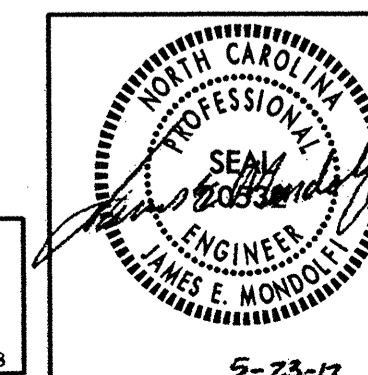
PROJECT NO. 42568
 AVERY COUNTY
 STATION: 13+42.00 -L-

SHEET 3 OF 5

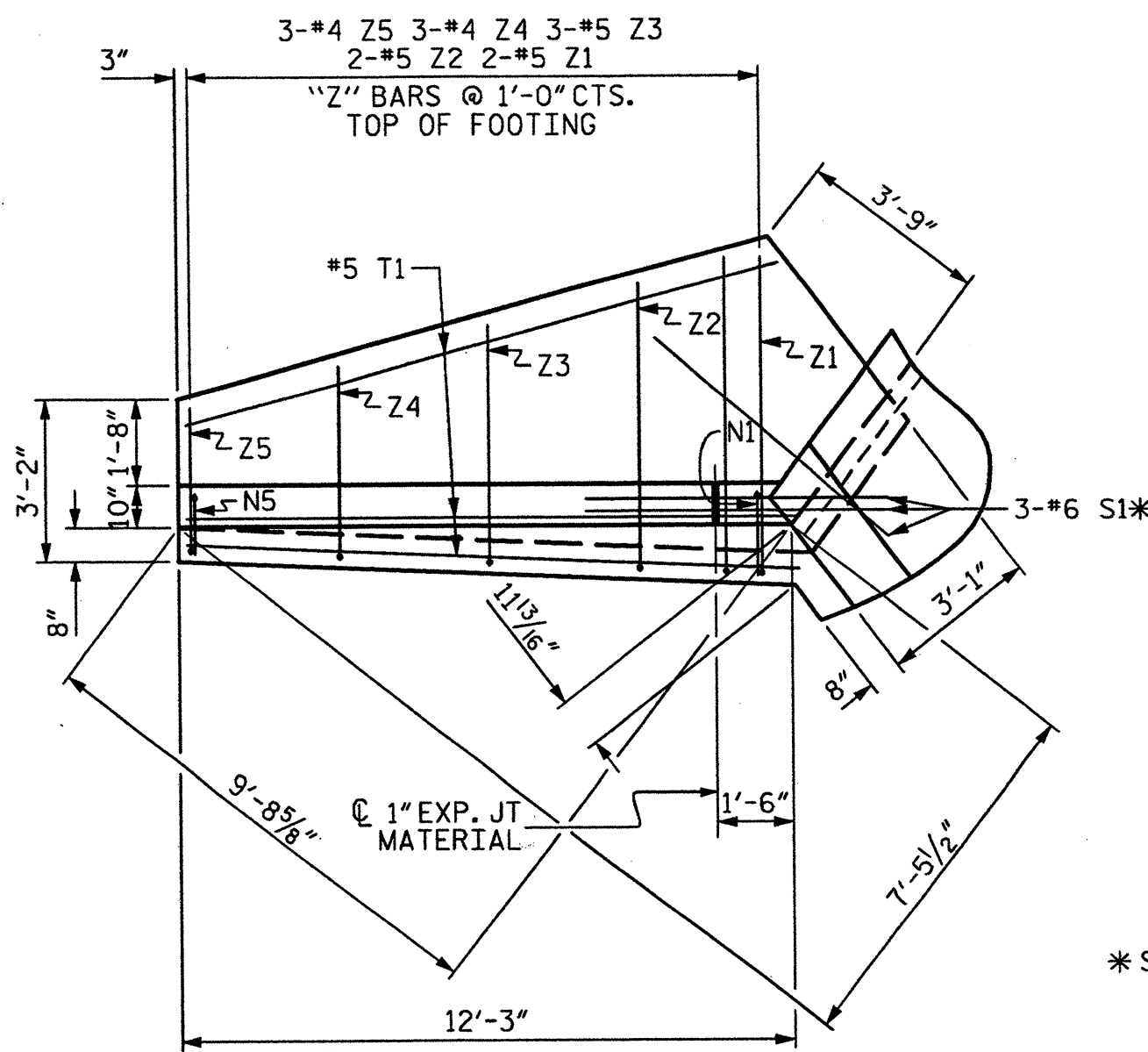
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 DOUBLE BARREL
 12FT X 7FT RCBC
 75° SKEW
 LITTLE HORSE CREEK

REVISIONS						SHEET NO.	
NO.	BY	DATE	NO.	BY	DATE	C-3	
1			3			TOTAL SHEETS	5
2			4				

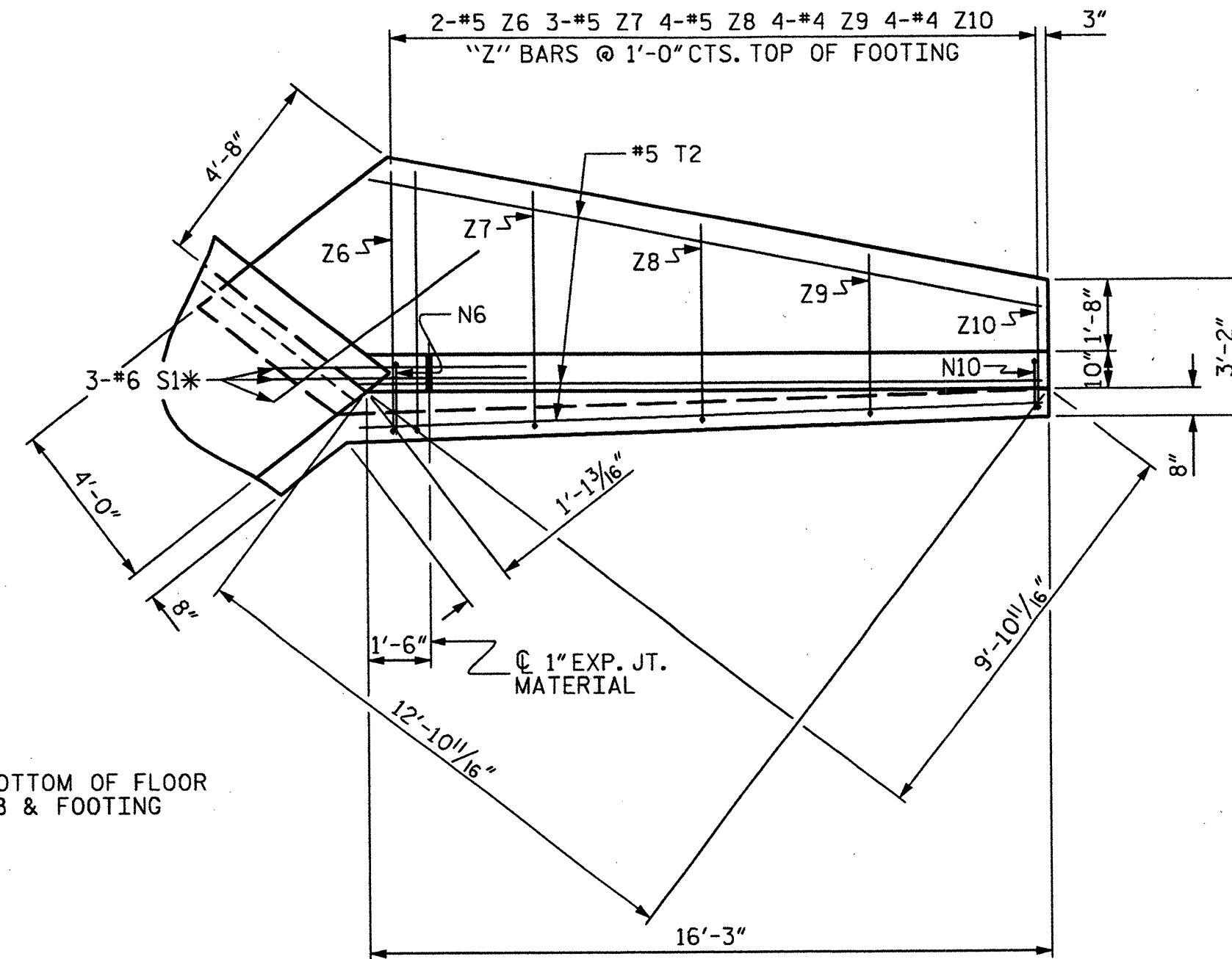
Florence & Hutcheson
 CONSULTING ENGINEERS
 5121 Raleigh Way, Suite 100 Raleigh, NC 27607
 NC License No. P-0258



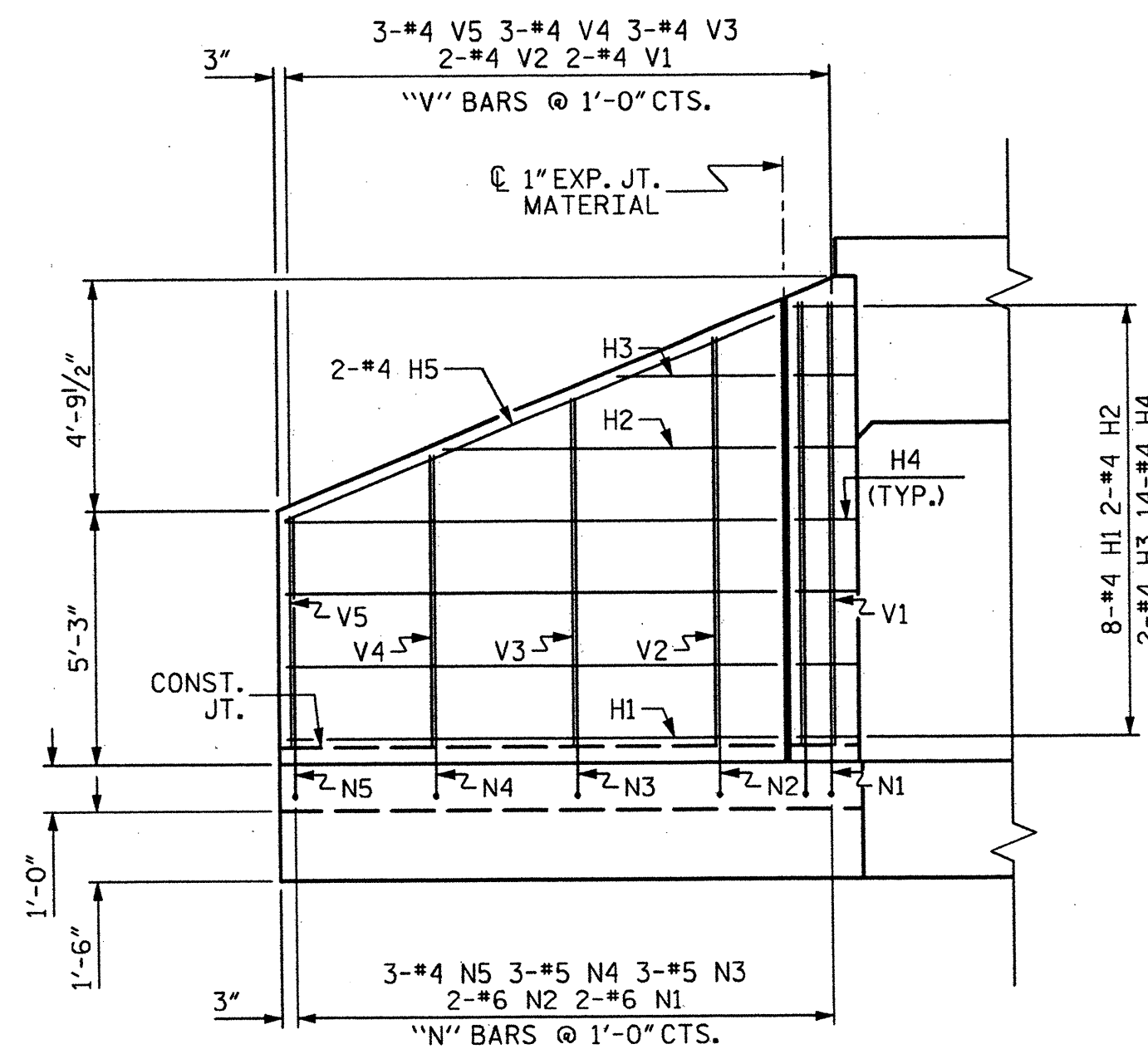
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 Drawn by: G.M. GILLAND DATE: FEB 2012
 Checked by: J.E. MONDOLFI DATE: FEB 2012



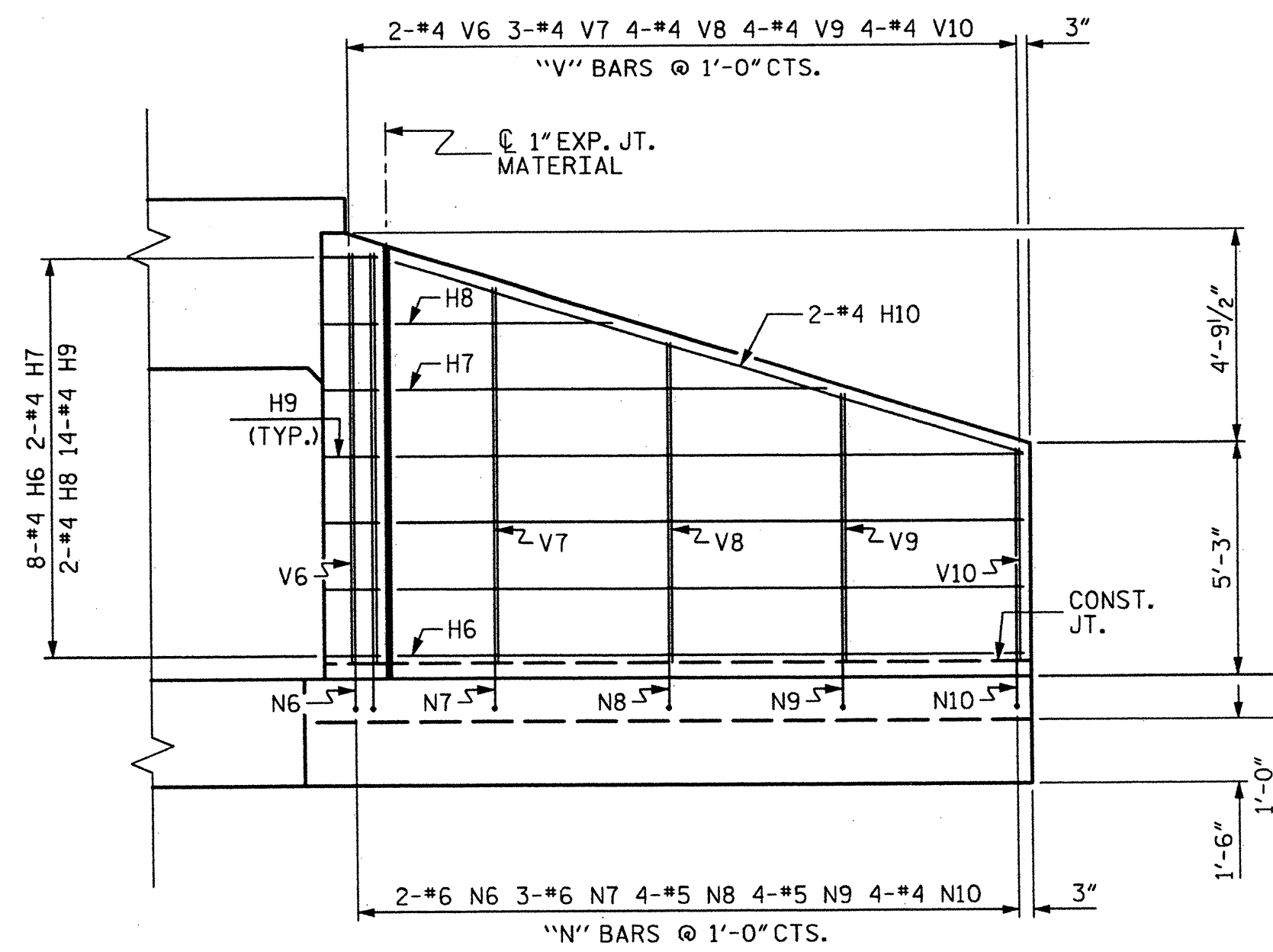
PLAN W2



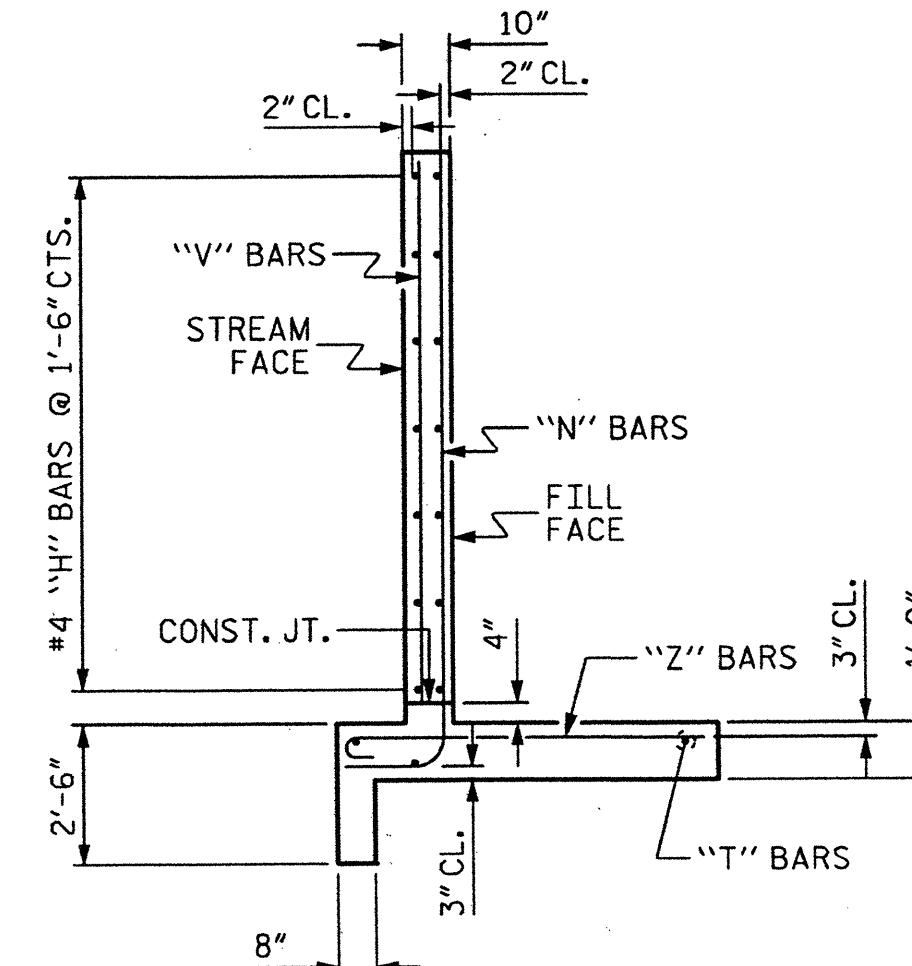
PLAN W1



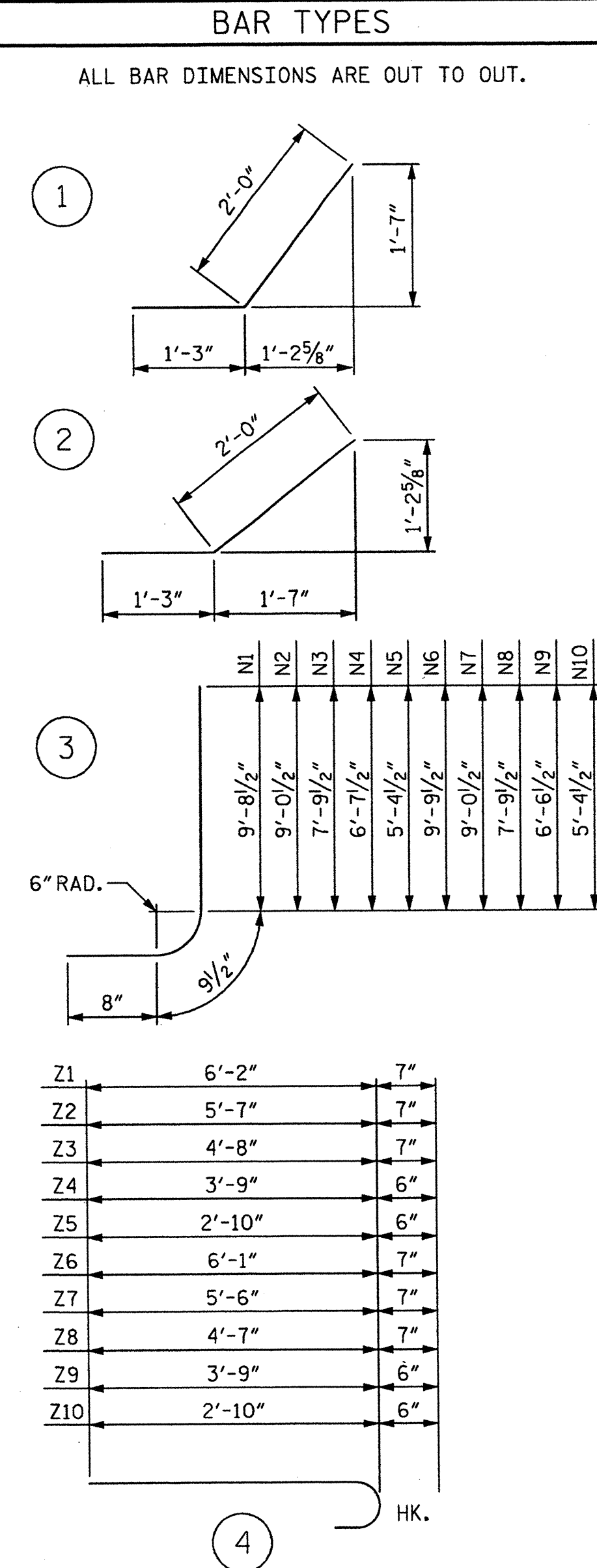
ELEVATION W2



ELEVATION W1



TYPICAL WING SECTION



BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	8	#4	STR	10'-4"	55
H2	2	#4	STR	7'-0"	9
H3	2	#4	STR	3'-3"	4
H4	14	#4	1	3'-3"	30
H5	2	#4	STR	11'-2"	15
H6	8	#4	STR	14'-4"	77
H7	2	#4	STR	9'-10"	13
H8	2	#4	STR	4'-11"	7
H9	14	#4	2	3'-3"	30
H10	2	#4	STR	15'-0"	20
N1	2	#6	3	11'-2"	34
N2	2	#6	3	10'-6"	32
N3	3	#5	3	9'-3"	29
N4	3	#5	3	8'-1"	25
N5	3	#4	3	6'-10"	14
N6	2	#6	3	11'-3"	34
N7	3	#6	3	10'-6"	47
N8	4	#5	3	9'-3"	39
N9	4	#5	3	8'-0"	33
N10	4	#4	3	6'-10"	18
S1	6	#6	STR	6'-0"	54
T1	3	#5	STR	12'-3"	38
T2	3	#5	STR	16'-3"	51
V1	2	#4	STR	9'-2"	12
V2	2	#4	STR	8'-5"	11
V3	3	#4	STR	7'-3"	15
V4	3	#4	STR	6'-0"	12
V5	3	#4	STR	4'-10"	10
V6	2	#4	STR	9'-3"	12
V7	3	#4	STR	8'-5"	17
V8	4	#4	STR	7'-2"	19
V9	4	#4	STR	6'-0"	16
V10	4	#4	STR	4'-9"	13
Z1	2	#5	4	6'-9"	14
Z2	2	#5	4	6'-2"	13
Z3	3	#5	4	5'-3"	16
Z4	3	#4	4	4'-3"	9
Z5	3	#4	4	3'-4"	7
Z6	2	#5	4	6'-8"	14
Z7	3	#5	4	6'-1"	19
Z8	4	#5	4	5'-2"	22
Z9	4	#4	4	4'-3"	11
Z10	4	#4	4	3'-4"	9
REINFORCING STEEL FOR 2 WINGS					979 LBS
CLASS A CONCRETE					
2 WINGS					13.9 CY
1 HEADWALLS					3.8 CY
1 END CURTAIN WALLS					1.5 CY
TOTAL					19.2 CY

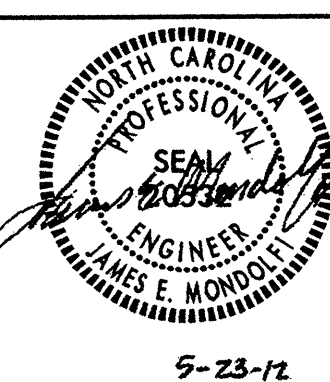
PROJECT NO. 42568
 AVERY COUNTY
 STATION: 13+42.00 -L-
 SHEET 4 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

WINGS AT INLET
 END OF CONCRETE
 BOX CULVERT

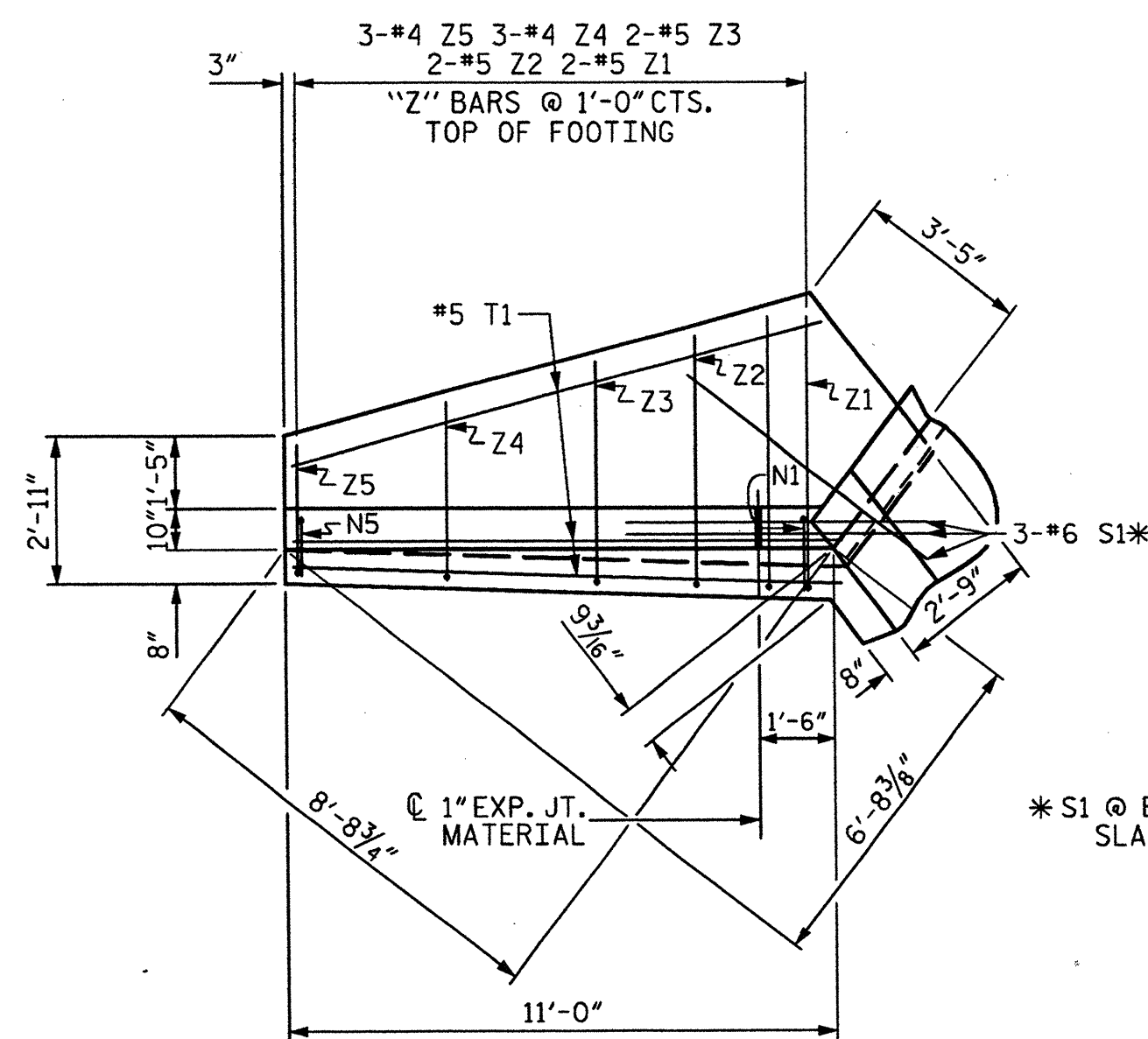
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-4
1			3			TOTAL SHEETS
2			4			5

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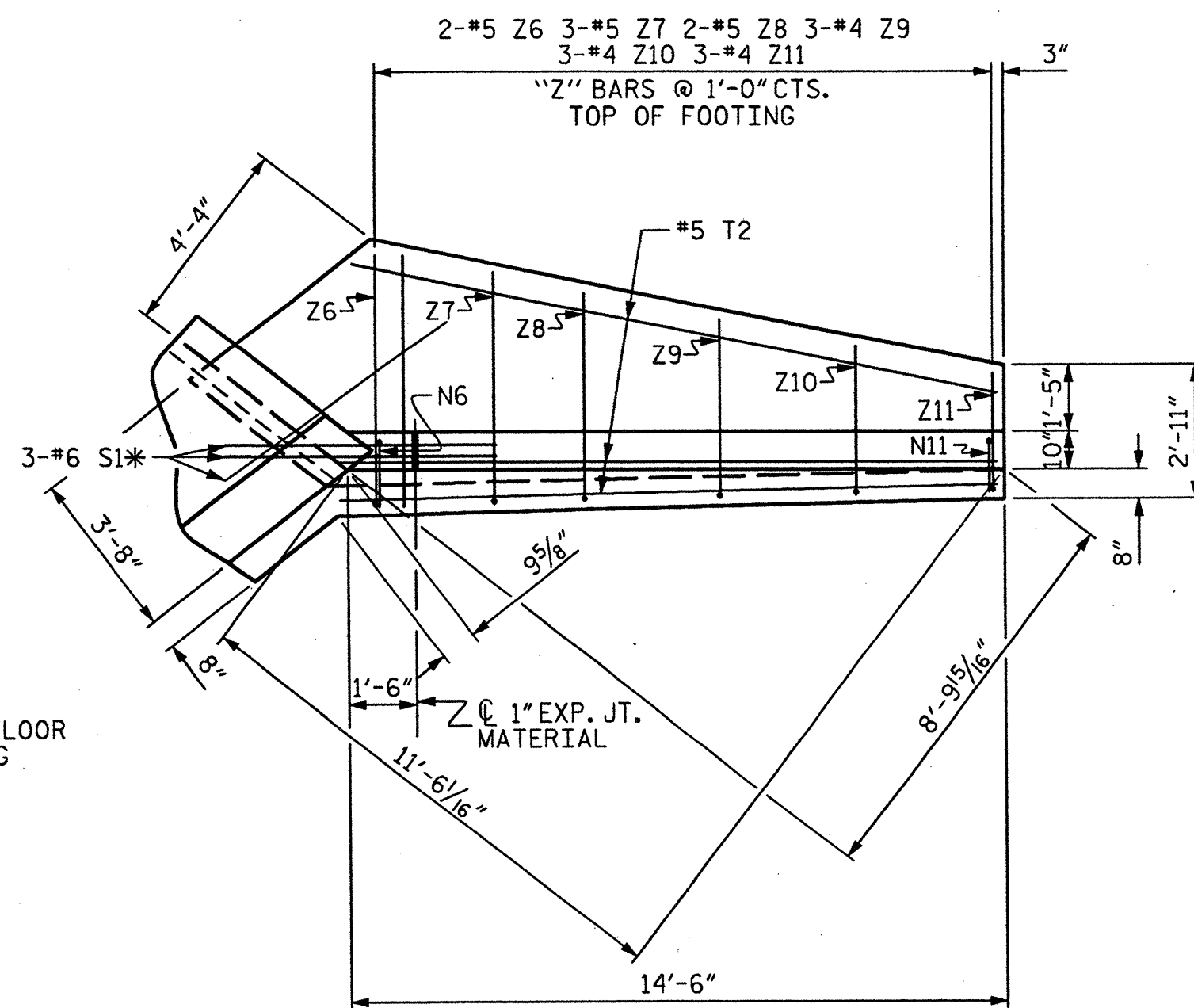


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 Florence & Hutcheson, Inc. TCA Company

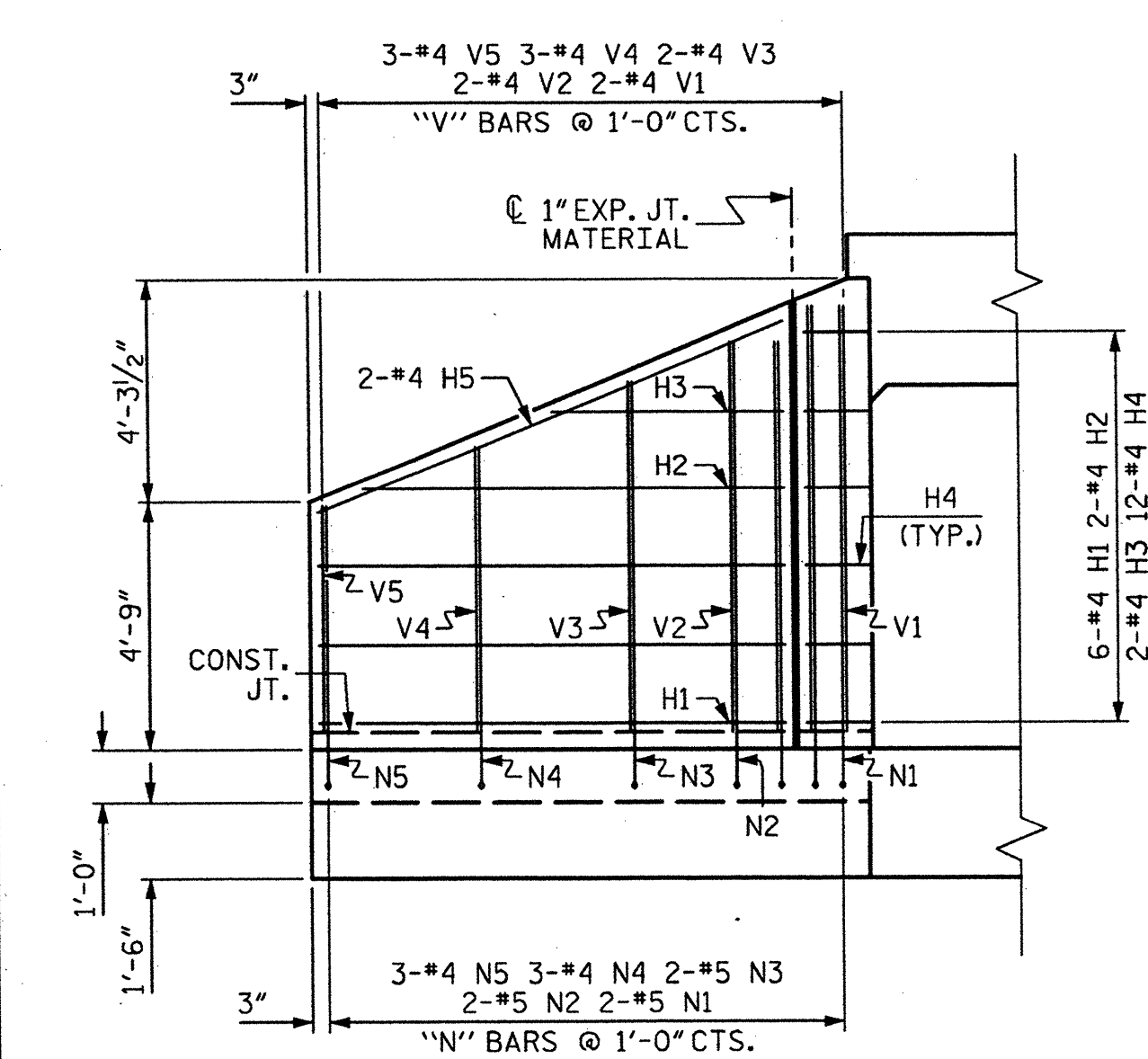
DRAWN BY : G. M. GILLAND DATE : FEB 2012
 CHECKED BY : J. E. MONDOLFI DATE : FEB 2012



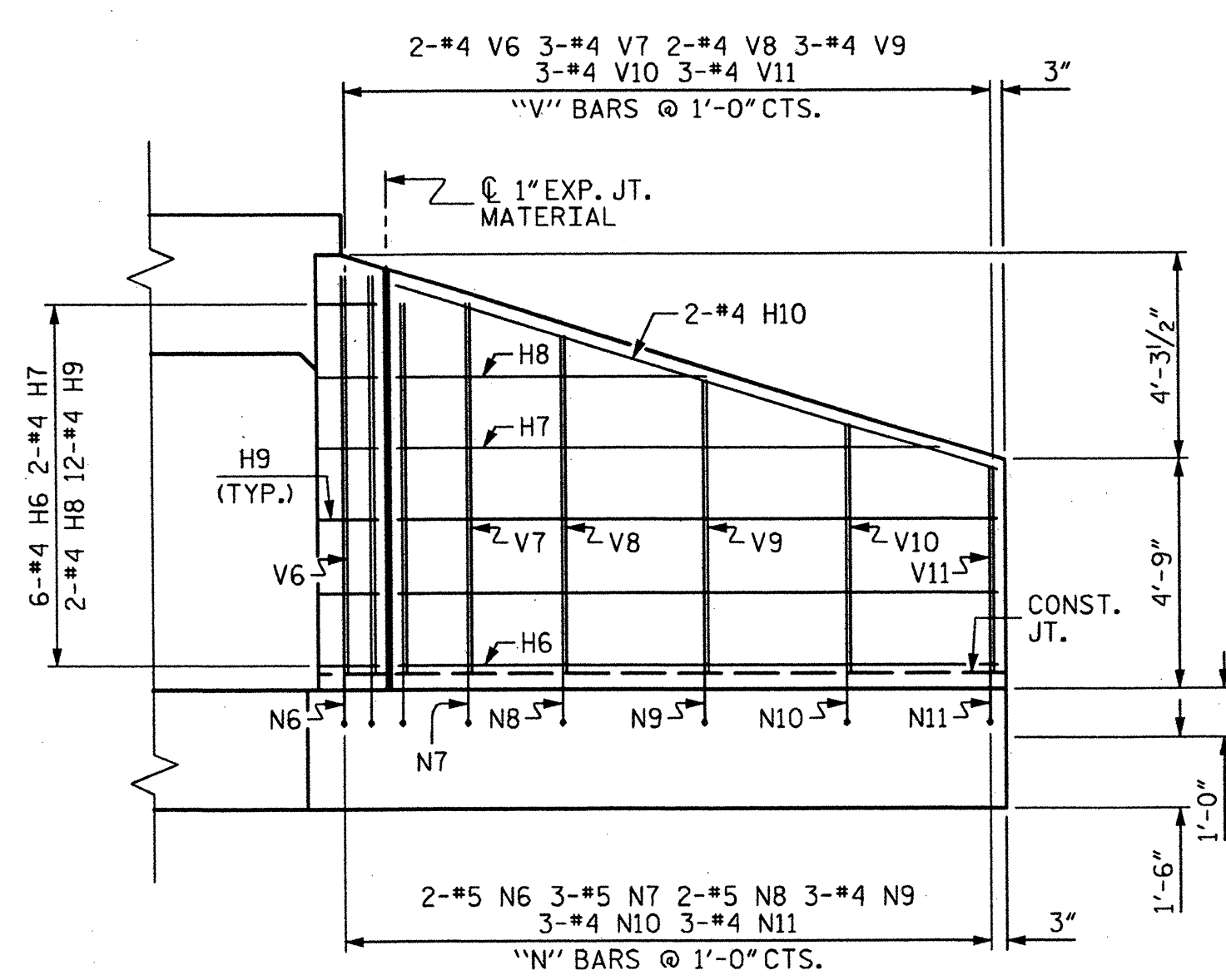
PLAN W4



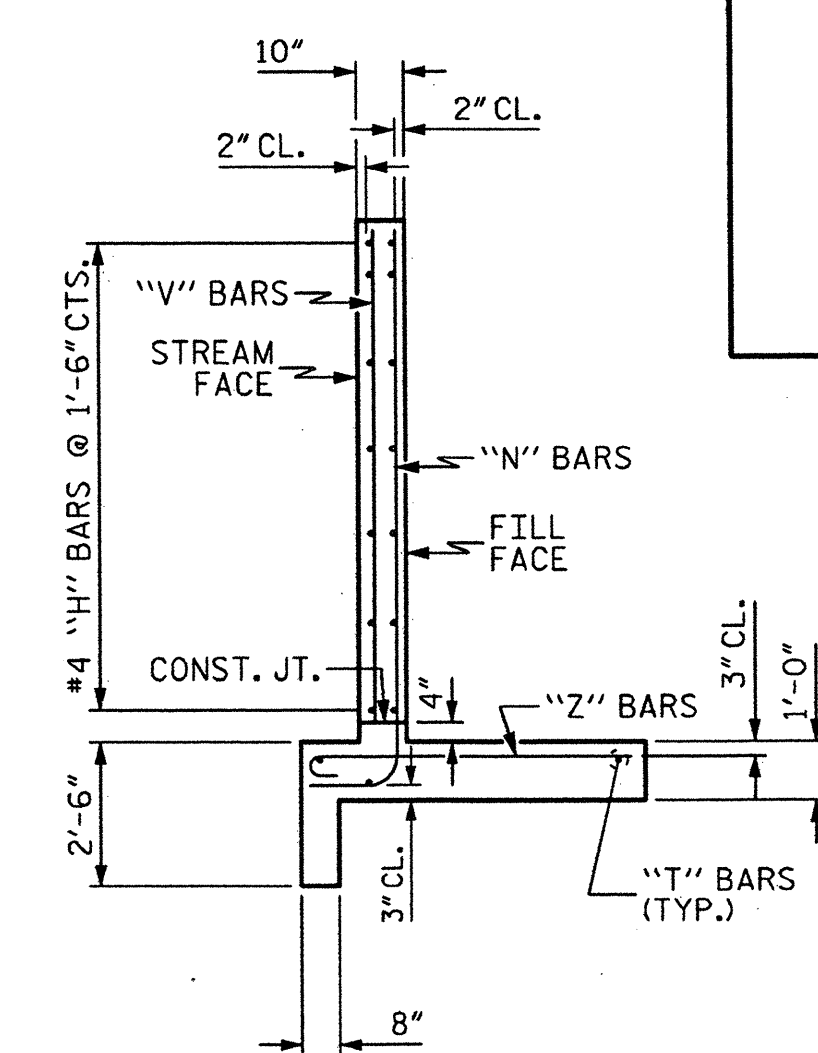
PLAN W3



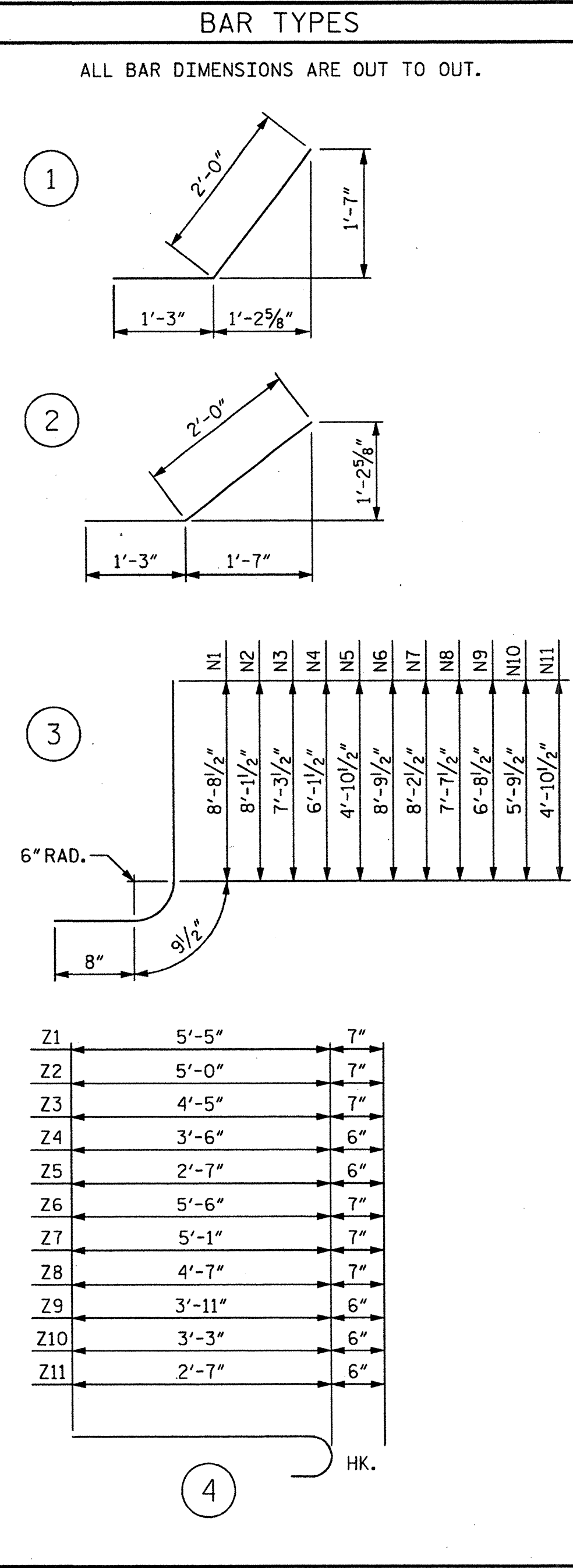
ELEVATION W4



ELEVATION W3



TYPICAL WING SECTION

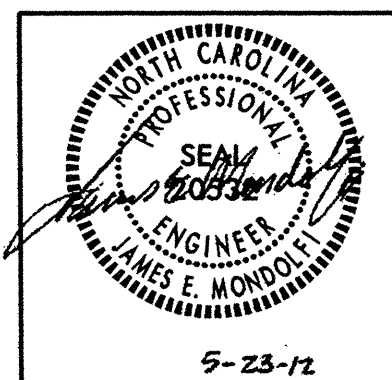


Z1	5'-5"	7"
Z2	5'-0"	7"
Z3	4'-5"	7"
Z4	3'-6"	6"
Z5	2'-7"	6"
Z6	5'-6"	7"
Z7	5'-1"	7"
Z8	4'-7"	7"
Z9	3'-11"	6"
Z10	3'-3"	6"
Z11	2'-7"	6"

BILL OF MATERIAL					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	6	#4	STR	9'-1"	36
H2	2	#4	STR	8'-2"	11
H3	2	#4	STR	4'-6"	6
H4	12	#4	1	3'-3"	26
H5	2	#4	STR	9'-10"	13
H6	6	#4	STR	12'-7"	50
H7	2	#4	STR	11'-4"	15
H8	2	#4	STR	6'-6"	9
H9	12	#4	2	3'-3"	26
H10	2	#4	STR	13'-2"	18
N1	2	#5	3	10'-2"	21
N2	2	#5	3	9'-7"	20
N3	2	#5	3	8'-9"	18
N4	3	#4	3	7'-7"	15
N5	3	#4	3	6'-4"	13
N6	2	#5	3	10'-3"	21
N7	3	#5	3	9'-8"	30
N8	2	#5	3	9'-1"	19
N9	3	#4	3	8'-2"	16
N10	3	#4	3	7'-3"	15
N11	3	#4	3	6'-4"	13
S1	6	#6	STR	6'-0"	54
T1	3	#5	STR	11'-0"	34
T2	3	#5	STR	14'-6"	45
V1	2	#4	STR	8'-2"	11
V2	2	#4	STR	7'-6"	10
V3	2	#4	STR	6'-9"	9
V4	3	#4	STR	5'-6"	11
V5	3	#4	STR	4'-4"	9
V6	2	#4	STR	8'-3"	11
V7	3	#4	STR	7'-8"	15
V8	2	#4	STR	7'-0"	9
V9	3	#4	STR	6'-1"	12
V10	3	#4	STR	5'-2"	10
V11	3	#4	STR	4'-3"	9
Z1	2	#5	4	6'-0"	13
Z2	2	#5	4	5'-7"	12
Z3	2	#5	4	5'-0"	10
Z4	3	#4	4	4'-0"	8
Z5	3	#4	4	3'-1"	6
Z6	2	#5	4	6'-1"	13
Z7	3	#5	4	5'-8"	18
Z8	2	#5	4	5'-2"	11
Z9	3	#4	4	4'-5"	9
Z10	3	#4	4	3'-9"	8
Z11	3	#4	4	3'-1"	6
REINFORCING STEEL FOR 2 WINGS				774	LBS
CLASS A CONCRETE					
2 WINGS				11.3	CY
1 HEADWALLS				2.5	CY
1 END CURTAIN WALLS				1.5	CY
TOTAL				15.3	CY

PROJECT NO. 42568
 AVERY COUNTY
 STATION: 13+42.00 -L-

SHEET 5 OF 5
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 WINGS AT OUTLET
 END OF CONCRETE
 BOX CULVERT



REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

5/23/2012
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 G. M. GILLAND
 J. E. MONDOLFI

DRAWN BY: G. M. GILLAND DATE: FEB 2012
 CHECKED BY: J. E. MONDOLFI DATE: FEB 2012

5-23-12

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	-----	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	-----	SEE PLANS
IMPACT ALLOWANCE	-----	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF		
STRUCTURAL STEEL - AASHTO M270 GRADE 36	-	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	-	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	-	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION		
GRADE 60	--	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	-----	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	-----	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR		
UNTREATED - EXTREME FIBER STRESS	-----	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	-----	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	-----	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2012 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE. ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

SHEET NO. C-6

ENGLISH

JANUARY, 1990

STD. NO. SN