

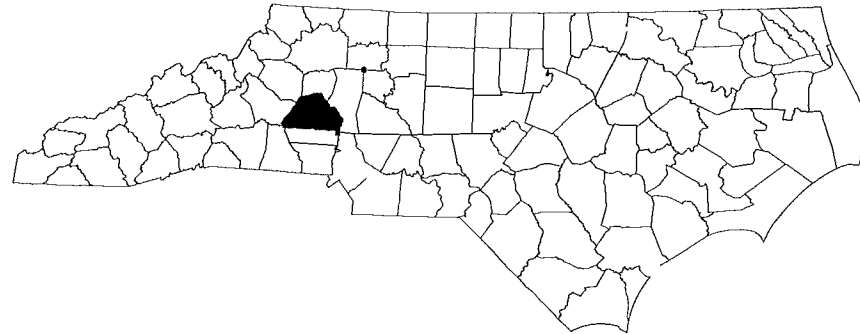
**CONTRACT: DL00054 PROJECT 12B.101811**

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

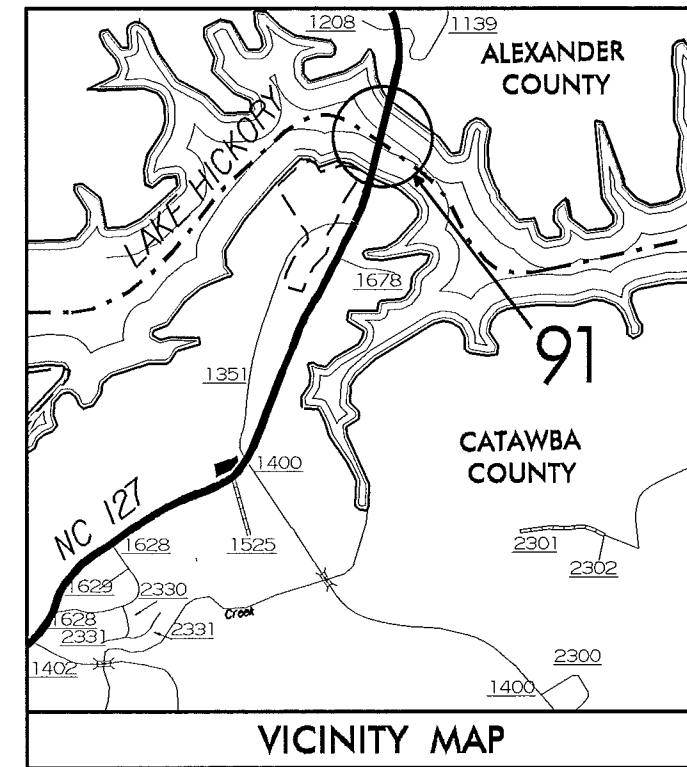
**CATAWBA COUNTY**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	12B.101811	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
12B.101811	NA	P.E.	
12B.101811	NA	CONST	

LOCATION: BRIDGE #91, CATAWBA CO., NC127 OVER LAKE HICKORY

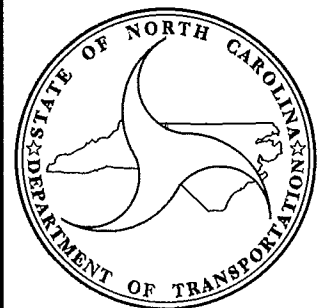


BRIDGE #91



VICINITY MAP

**TYPE OF WORK: CONSTRUCTING CAST-IN-PLACE INTEGRAL CURTAIN WALL ON EXISTING END BENT CAPS; INSTALLATION OF SOIL NAILS AND GROUND ANCHORS; INSTALLATION OF INTERCEPTOR DRAIN; PAVEMENT REPAIR**



**DESIGN DATA**  
CATAWBA  
#91 ADT 2011 = 20000

**PROJECT LENGTH**  
BRIDGE #91 = 0.02 MILE

Prepared in the Office of:  
**DEPARTMENT OF TRANSPORTATION**  
**DIVISION OF HIGHWAYS**  
STRUCTURES MANAGEMENT UNIT - PRESERVATION & REPAIR GROUP  
1000 BIRCH RIDGE DR. RALEIGH, N.C. 27610

**RICK NELSON, P.E.**  
PROJECT ENGINEER

LETTING DATE: JANUARY 14, 2014

**ENGINEER**  
*Timothy M. Sherill*  
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18565  
TIMOTHY M. SHERILL  
12/20/13  
PROJECT DESIGN ENGINEER

**CONTRACT: DL00054 PROJECT 12B.101811**

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	12B.101811	1A	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
12B.101811	N/A	P.E.	
12B101811	N/A	CONST	

**CATAWBA COUNTY**

INDEX OF SHEETS

<i>SHEET NUMBER</i>	<i>DESCRIPTION</i>
<i>1</i>	<i>TITLE SHEETS</i>
<i>1A</i>	<i>INDEX OF SHEETS</i>
<i>2</i>	<i>SUMMARY OF QUANTITIES</i>
<i>S-1 THRU S-6</i>	<i>STRUCTURAL PLANS</i>
<i>EC-1 THRU EC-3</i>	<i>EROSION CONTROL PLANS</i>

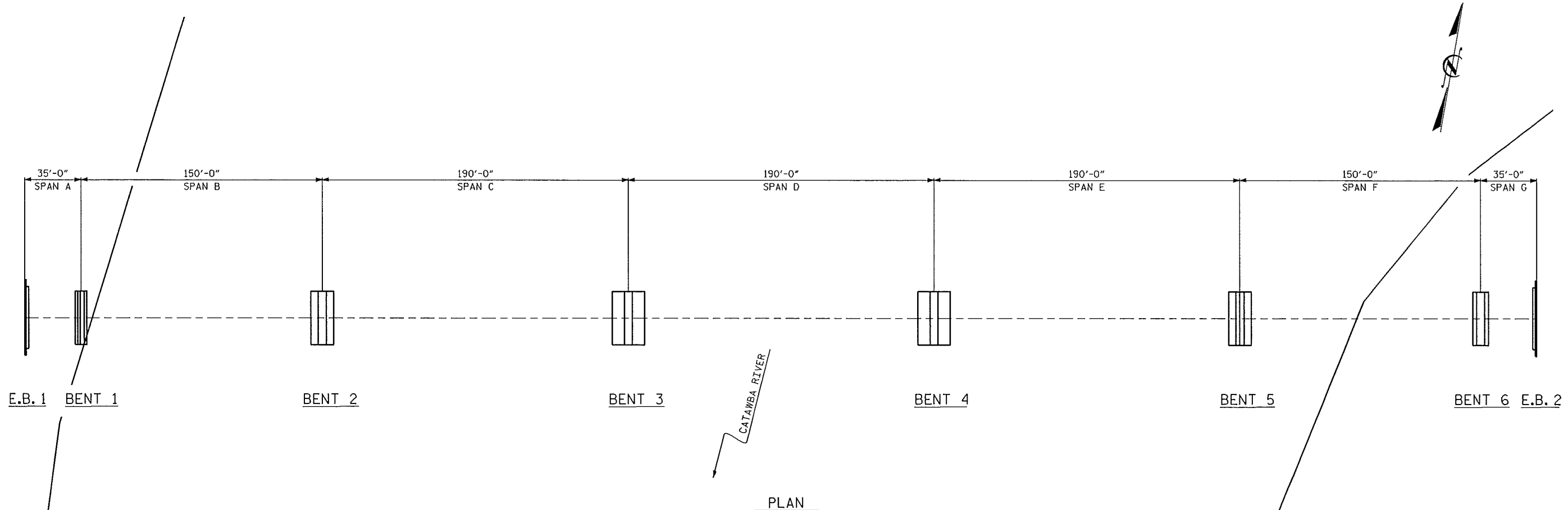
**CONTRACT: DL00054 PROJECT 12B.101811**

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**SUMMARY OF QUANTITIES**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	12B.101811	2	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
12B.101811	N/A	P.E.	
12B.101811	N/A	CONST	

Item No.	Sec #	Unit Bid Price	Quantity	Unit Cost
0000100000-N	800	MOBILIZATION	LS	LS
0022000000-E	225	UNCLASSIFIED EXCAVATION	55	CY
1489000000-E	610	ASPHALT CONC BASE COURSE, TYPE B25.0B	26	TON
1519000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	5	TON
2022000000-E	815	SUBDRAIN EXCAVATION	14	CY
2026000000-E	815	GEOTEXTILE FOR SUBSURFACE DRAINS	89	SY
2036000000-E	815	SUBDRAIN COARSE AGGREGATE	14	CY
2044000000-E	815	6" PERFORATED SUBDRAIN PIPE	100	LF
2070000000-N	815	SUBDRAIN PIPE OUTLET	4	EA
2077000000-E	815	6" OUTLET PIPE	10	LF
3656000000-E	876	GEOTEXTILE FOR DRAINAGE	105	SY
4400000000-E	1110	STATIONARY WORK ZONE SIGNS	80	SF
4405000000-E	1110	PORTABLE WORK ZONE SIGNS	160	SF
4410000000-E	1110	BARRICADE MOUNTED WORK ZONE SIGNS	20	SF
4430000000-N	1130	DRUMS	20	EA
4435000000-N	1135	CONES	20	EA
4445000000-N	1145	BARRICADES (TYPE III)	48	LF
4450000000-N	1150	FLAGGER (BY HOUR)	240	HR
4510000000-N	SP	LAW ENFORCEMENT	10	HR
4516000000-N	1180	SKINNY DRUM	20	EA
6000000000-E	1605	TEMPORARY SILT FENCE	425	SF
6012000000-E	1610	SEDIMENT CONTROL STONE	45	TON
6015000000-E	1615	TEMPORARY MULCHING	0.10	ACR
6036000000-E	1631	MATTING FOR EROSION CONTROL	335	SY
6037000000-E	SP	COIR FIBER MAT	75	SY
6042000000-E	1632	1/4" HARDWARE CLOTH	60	LF
6048000000-E	SP	FLOATING TURBIDITY CURTAIN	170	SY
6070000000-E	1639	SPECIAL STILLING BASINS	2	EA
6087000000-E	1660	SEEDING AND MULCHING	0.30	ACR
6090000000-E	1661	SEED FOR REPAIR SEEDING	50	LB
6093000000-E	1661	FERTILIZER FOR REPAIR SEEDING	0.25	TON
8017000000-N	SP	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMPORARY ACCESS AT END BENTS 1 AND 2	LS	LS
8182000000-E	420	CLASS A CONCRETE	4.2	CY
8217000000-E	425	REINFORCING STEEL	684	LB
8802015110-N	SP	SOIL NAIL PROOF TESTS	2	EA
8897000000-N	SP	GENERIC STRUCTURE ITEM - GROUND ANCHOR PROOF TESTS	10	EA
8897000000-N	SP	GENERIC STRUCTURE ITEM - SOIL NAILS	12	EA
8897000000-N	SP	GENERIC STRUCTURE ITEM - GROUND ANCHORS	10	EA



**TYPE OF WORK: CONSTRUCTING CAST-IN-PLACE CONCRETE INTEGRAL CURTAIN WALL ON EXISTING END BENT CAPS;  
 INSTALLATION OF SOIL NAILS THROUGH NEW INTEGRAL CURTAIN WALL AND GROUND ANCHORS THROUGH BENT CAPS; INSTALLATION OF INTERCEPTOR SUBSURFACE DRAINS; PAVEMENT REPAIR**

**NOTES**

EXISTING DIMENSIONS AND BRIDGE CONDITIONS ARE FROM BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL FIELD VERIFY THE INFORMATION INDICATED ON THE PLANS AND NOTIFY THE ENGINEER IF ACTUAL DIMENSIONS AND CONDITIONS DIFFER.

FOR "ASPHALT CONCRETE BASE COURSE, TYPE B25.0B," SEE SPECIAL PROVISIONS.

FOR "ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B," SEE SPECIAL PROVISIONS.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW ALL STATE AND FEDERAL SAFETY REQUIREMENTS.

FOR "CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS AT END BENTS 1 AND 2," SEE SPECIAL PROVISIONS.

FOR "FALSEWORK AND FORMWORK," SEE SPECIAL PROVISIONS.

FOR "SUBMITTAL OF WORKING DRAWINGS," SEE SPECIAL PROVISIONS.

FOR "SOIL NAIL PROOF TESTS," SEE SPECIAL PROVISIONS.

FOR "SOIL NAILS," SEE SPECIAL PROVISIONS.

FOR "GROUND ANCHORS," SEE SPECIAL PROVISIONS.

FOR "GROUND ANCHOR PROOF TESTS," SEE SPECIAL PROVISIONS.

FOR "CRANE SAFETY," SEE SPECIAL PROVISIONS.

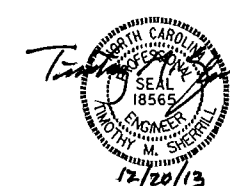
FOR "WORK IN, OVER, OR ADJACENT TO NAVIGABLE WATERS," SEE SPECIAL PROVISIONS.

FOR TRAFFIC STAGING, SEE THE "TRAFFIC CONTROL" SPECIAL PROVISIONS.

PROJECT NO. 12B.101811  
CATAWBA COUNTY  
 BRIDGE NO. 91

STRUCTURE TOTAL BILL OF MATERIAL								
UNCLASSIFIED EXCAVATION	ASPHALT CONCRETE BASE COURSE TYPE B25.0B	ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B	SUBDRAIN EXCAVATION	GEOTEXTILE FABRIC FOR SUBSURFACE DRAINS	SUBDRAIN COARSE AGGREGATE	6" PERFORATED SUBDRAIN PIPE	SUBDRAIN PIPE OUTLET	
CY	TON	TON	CY	SY	CY	LF	EA	
55	26	5	14	89	14	100	4	
6" OUTLET PIPE	CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS AT END BENTS 1 AND 2		CLASS A CONCRETE	REINFORCING STEEL	SOIL NAIL PROOF TESTS	GROUND ANCHOR PROOF TESTS	SOIL NAILS	GROUND ANCHORS
LF	LS	CY	LBS	EA	EA	EA	EA	
10	LS	4.2	684	2	10	12	10	

DRAWN BY : R. WEISZ DATE : 9/12  
 CHECKED BY : T. SHERRILL DATE : 06/13



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

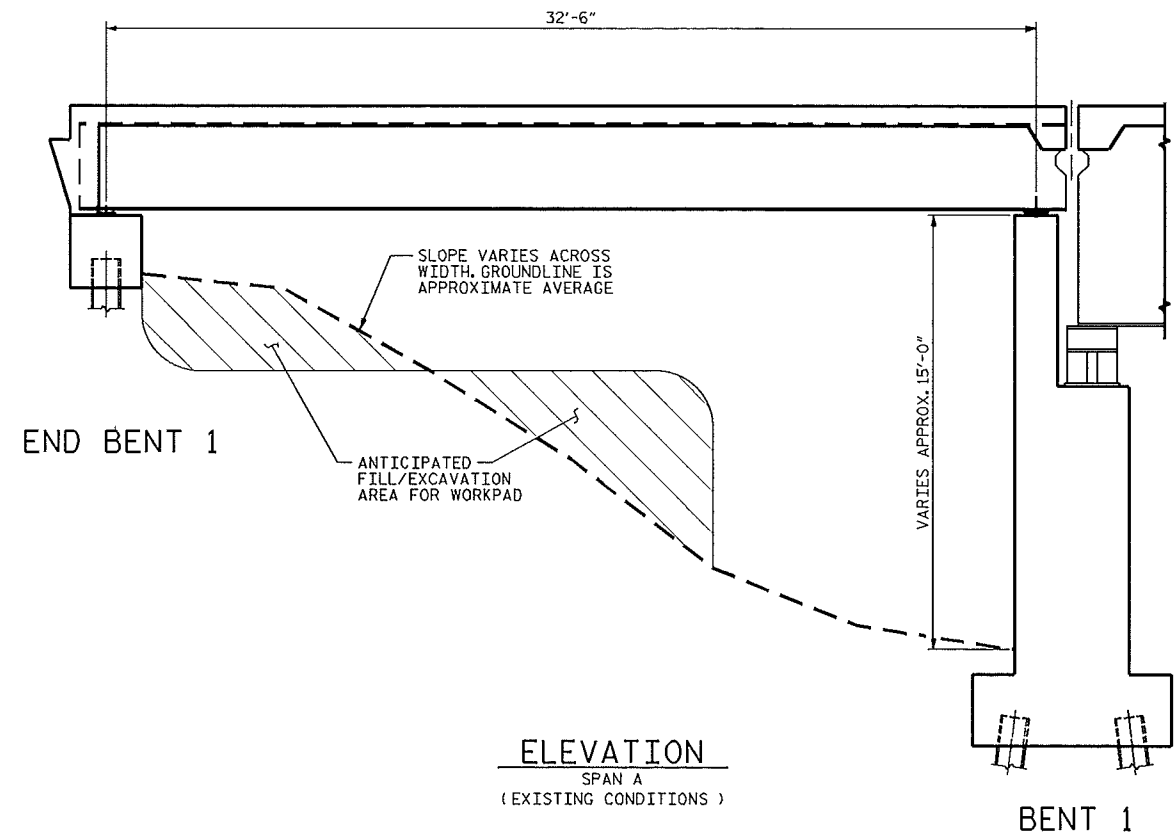
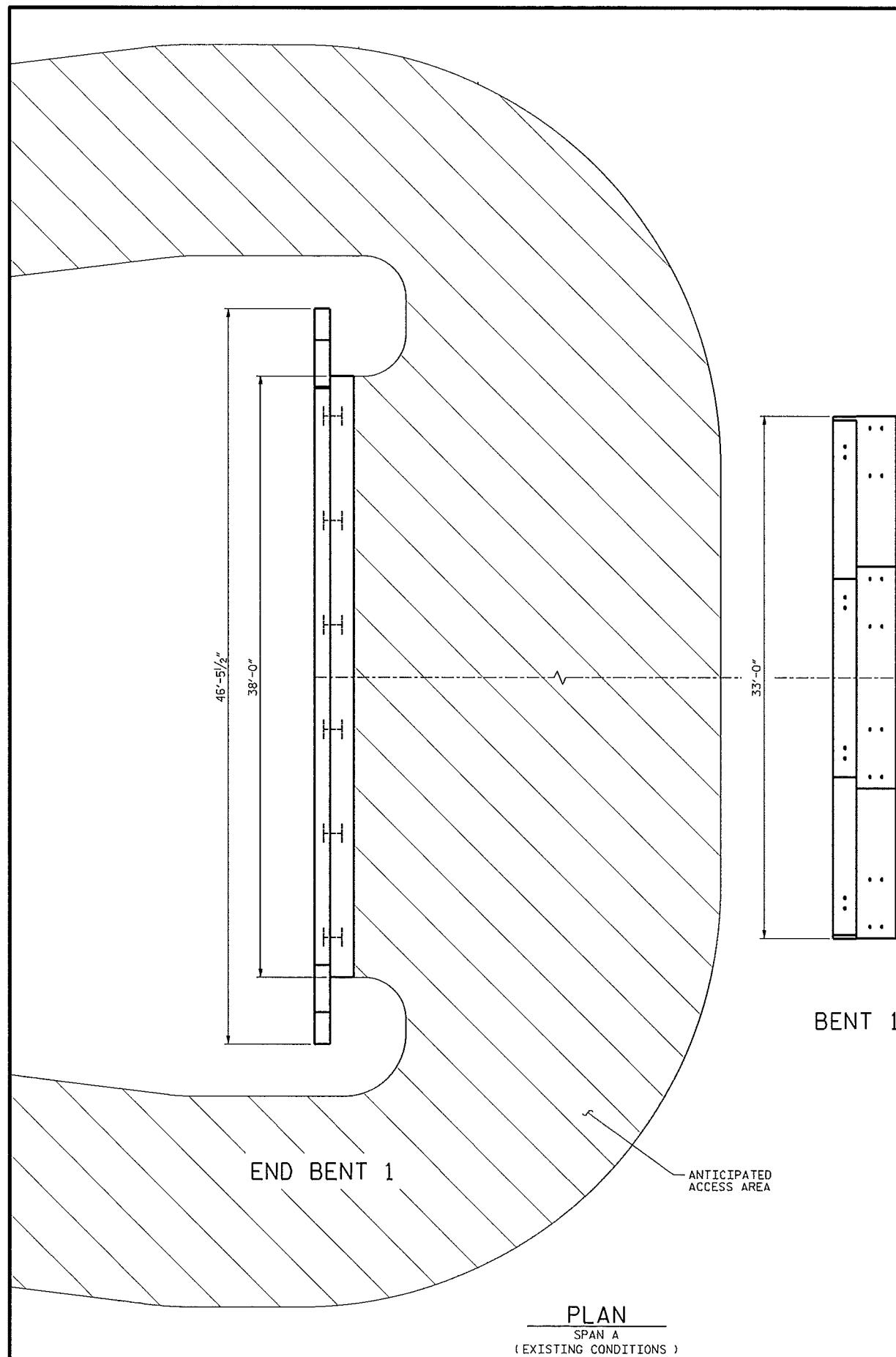
**GENERAL PLAN  
 AND BILL OF MATERIAL**

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-1
1			3			TOTAL SHEETS
2			4			10

**GENERAL NOTES:**

EXISTING BRIDGE DETAILS INDICATED ON THE PLANS ARE FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE AND REPAIR DETAILS SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

THE CONTRACTOR SHALL CONSTRUCT TEMPORARY ACCESS TO ABUTMENTS FOR INSTALLATION OF THE INTEGRAL CURTAIN WALL, SOIL NAILS, GROUND ANCHORS, AND OTHER NECESSARY WORK. SEE "CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS AT END BENTS 1 AND 2" PROJECT SPECIAL PROVISION.



**NOTE:**  
ANTICIPATED ACCESS AND WORKPAD AREAS INDICATED ARE NOT TO SCALE AND ARE FOR INFORMATION ONLY. CONTRACTOR SHALL DEVELOP ACCESS AND WORKPAD IN ACCORDANCE WITH THE "CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS AT END BENTS 1 AND 2" PROJECT SPECIAL PROVISION.

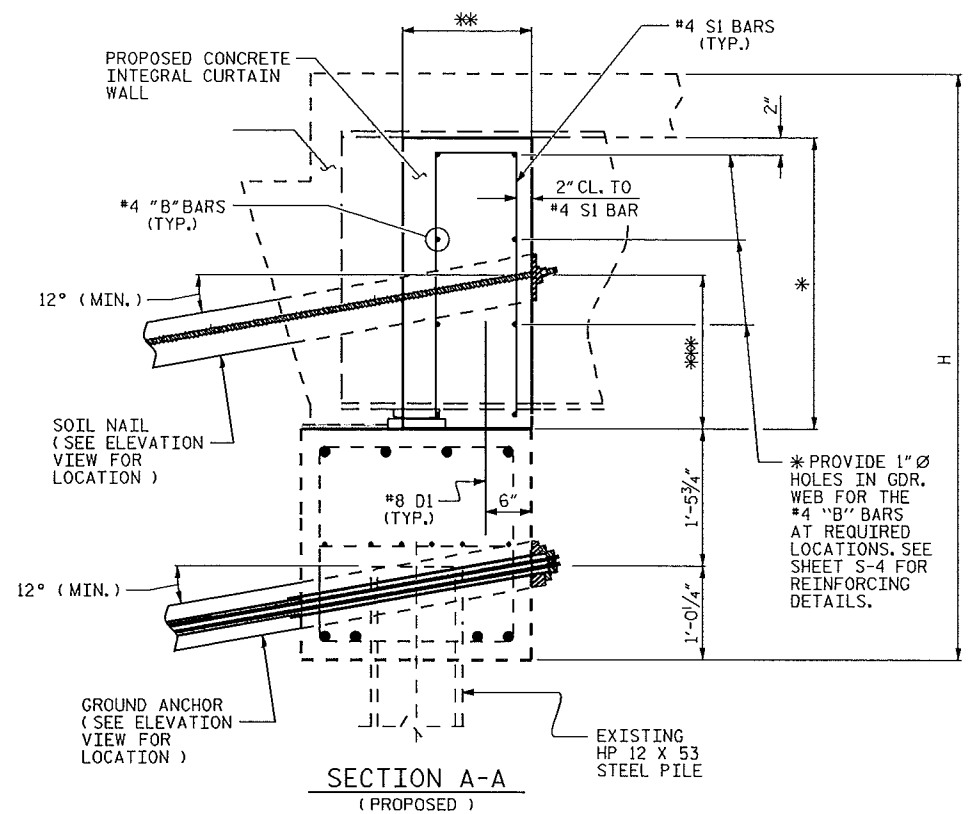
END BENT 1 INDICATED,  
END BENT 2 SIMILAR

PROJECT NO. 12B.101811  
CATAWBA COUNTY  
 BRIDGE NO. 91

*T. Sherrill*  
 12/20/13

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
END BENT AND APPROACH SPAN TYPICAL LAYOUT AND GEOMETRY					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 6

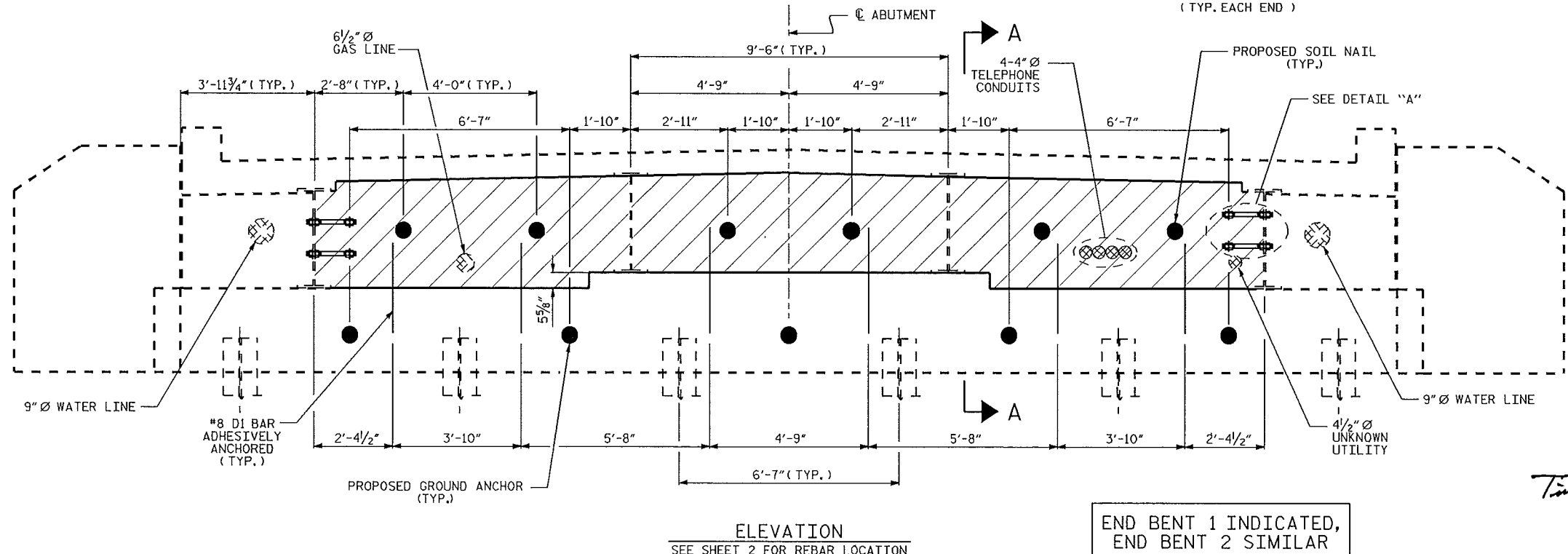
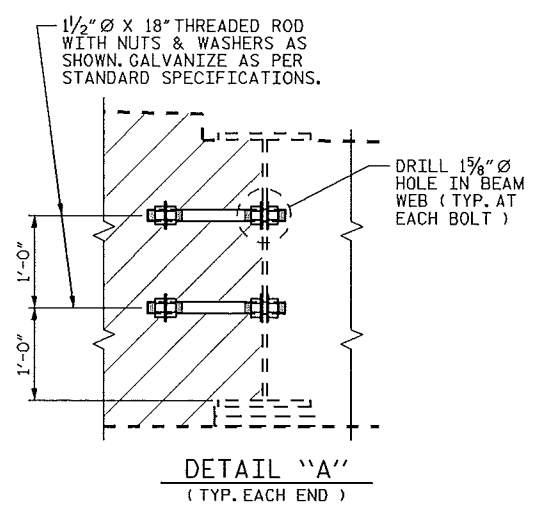
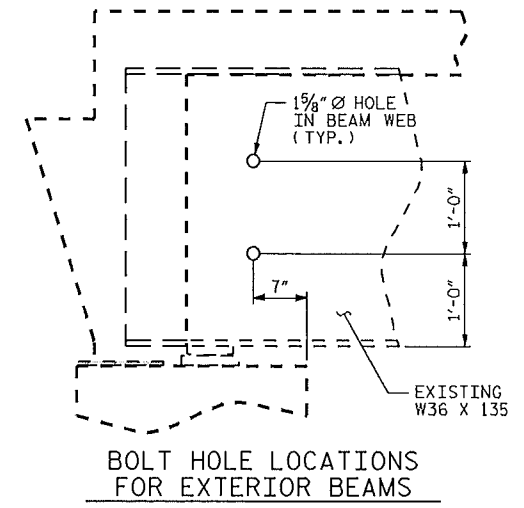
DRAWN BY : R. WEISZ DATE : 1/13  
 CHECKED BY : T. SHERRILL DATE : 3/13



\*DISTANCE BETWEEN TOP OF END BENT CAP AND DECK SLAB VARIES DUE TO STEP IN CAP AND SLOPE OF DECK SLAB. THE MINIMUM DIMENSION IS APPROX. 2'-10 1/2" AND THE MAXIMUM DIMENSION IS APPROXIMATELY 3'-4". SEE ELEVATION VIEW.

\*\*DISTANCE BETWEEN FACE OF END BENT CAP AND FACE OF CURTAIN WALL VARIES. THE MINIMUM DIMENSION IS APPROXIMATELY 1'-2 1/2" AND THE MAXIMUM DIMENSION IS APPROXIMATELY 1'-4 3/4".

\*\*\* 1'-9" FOR SOIL NAILS IN BAYS 1 AND 3 AND 1'-2 1/2" FOR SOIL NAILS IN BAY 2



ELEVATION  
SEE SHEET 2 FOR REBAR LOCATION

END BENT 1 INDICATED,  
END BENT 2 SIMILAR

**NOTES:**  
EXISTING DIMENSIONS AND BRIDGE CONDITION ARE FROM BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL FIELD VERIFY THE INFORMATION SHOWN ON THE PLANS AND NOTIFY THE ENGINEER IF ACTUAL DIMENSIONS AND CONDITIONS DIFFER.

USING A PACHOMETER, CHECK THE CAP FOR MAIN REINFORCING STEEL INTERFERENCE WITH THE DOWEL LOCATIONS. IF NECESSARY, ADJUST THE DOWEL LOCATIONS SLIGHTLY TO AVOID REINFORCING STEEL.

FOR INSTALLATION OF #8 'D1' DOWELS, SEE STANDARD SPECIFICATIONS FOR ADHESIVELY ANCHORED BOLTS OR DOWELS. SEE MANUFACTURER'S RECOMMENDATIONS FOR EMBEDMENT DEPTH REQUIREMENT. EMBEDMENT DEPTH SHALL NOT BE LESS THAN 9". NEW ADHESIVELY ANCHORED #8 D1 DOWELS SHALL BE SUBJECT TO LEVEL 1 FIELD TESTING, IN ACCORDANCE WITH STANDARD SPECIFICATION ARTICLE 420-13 (C), EXCEPT THAT THE TEST LOAD SHALL BE 20,000 LBS. TENSION.

THREADED ROD SHALL MEET THE REQUIREMENTS OF ASTM A307. NUTS SHALL MEET THE REQUIREMENT OF AASHTO M291-DH OR AASHTO M292-2. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHER. SHOP INSPECTION IS REQUIRED.

FOR ALL UTILITIES THROUGH NEW INTEGRAL CURTAIN WALL, PROVIDE A BLOCKOUT SIZED 4" LARGER THAN THE UTILITY PIPE DIAMETER. CENTER UTILITY IN BLOCKOUT AND FILL ANNULAR SPACE AROUND UTILITY PIPE WITH JOINT FILLER IN ACCORDANCE WITH STANDARD SPECIFICATIONS ARTICLE 1028-1.

DO NOT BEGIN SOIL NAIL INSTALLATIONS UNTIL CONCRETE FOR INTEGRAL CURTAIN WALL HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI.

HOLES THROUGH THE NEW INTEGRAL CURTAIN WALL MAY BE FORMED OR MAY BE CORED PRIOR TO INSTALLATION OF SOIL NAILS. HOLES THROUGH THE EXISTING CURTAIN WALL AND BENT CAP SHALL BE CORED, PRIOR TO INSTALLATION OF SOIL NAILS OR GROUND ANCHORS. PRIOR TO ANY CORING, PACHOMETER SHALL BE USED TO LOCATE REINFORCING STEEL, SO IT WILL BE AVOIDED DURING CORING.

FOR "SOIL NAILS", SEE SPECIAL PROVISIONS.  
FOR "GROUND ANCHORS", SEE SPECIAL PROVISIONS.

BEFORE BEGINNING SOIL NAIL OR ANCHOR LOCATIONS; DESIGN, SURVEY, AND SUBMIT DESIGN AND CALCULATIONS FOR REVIEW. DO NOT START CONSTRUCTION UNTIL THE SUBMITTED SOIL NAIL AND ANCHOR DESIGN IS ACCEPTED.

- DESIGN SOIL NAILS FOR THE FOLLOWING:
1. FACTORED TENSILE LOAD = 30,000 LBS.
  2. DESIGN LIFE = 75 YEARS
  3. IN-SITU ASSUMED MATERIAL PARAMETERS  
UNIT WEIGHT,  $\gamma = 120$  LB/CF  
FRICTION ANGLE,  $\phi = 30^\circ$
- DESIGN GROUND ANCHORS FOR THE FOLLOWING:
1. FACTORED TENSILE LOAD = 40,000 LBS.
  2. DESIGN LIFE = 75 YEARS
  3. IN-SITU ASSUMED MATERIAL PARAMETERS  
UNIT WEIGHT,  $\gamma = 120$  LB/CF  
FRICTION ANGLE,  $\phi = 30^\circ$   
LOCK-OFF LOAD = 30,000 LBS.

EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS, OR UTILITIES MAY INTERFERE WITH SOIL NAILS. CONTRACTOR SHALL VERIFY IF OBSTRUCTIONS TO THE INSTALLATION OF THE SOIL NAILS OR GROUND ANCHORS EXIST. PRIOR TO INSTALLATION. IF OBSTRUCTIONS EXIST, THE CONTRACTOR SHALL NOT PROCEED WITH INSTALLATION UNTIL A RESOLUTION TO THE OBSTRUCTION IS AGREED TO BY THE ENGINEER.

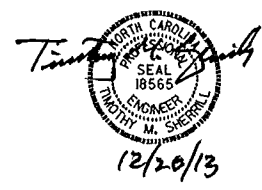
ALL NAIL AND ANCHOR PLATES, NUTS, WASHERS, AND EXPOSED STEEL SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

PROJECT NO. 12B.101811  
CATAWBA COUNTY  
BRIDGE NO. 91

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

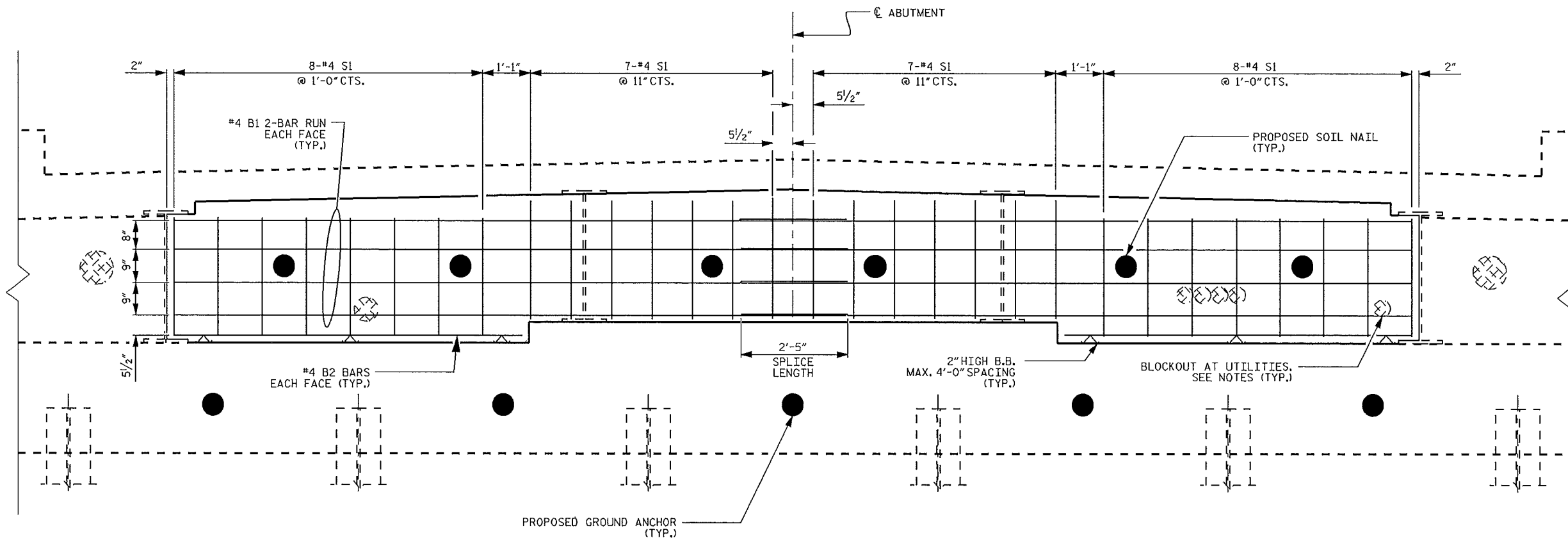
END BENT  
PROPOSED REPAIRS



REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-3
1			3			TOTAL SHEETS
2			4			6

DRAWN BY : R. WEISZ DATE : 1/13  
CHECKED BY : T. SHERRILL DATE : 3/13

BAR TYPES		BILL OF MATERIAL					
		BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
		B1	16	#4	STR	15'-4"	164
		B2	4	#4	STR	7'-11"	21
		S1	30	#4	I	6'-3"	125
		D1	6	#8	STR	2'-0"	32
		REINFORCING STEEL = 342 LBS					
		EPOXY COATED REINF. STEEL = 0 LBS					
ALL BAR DIMENSIONS ARE OUT TO OUT		CLASS A CONCRETE 2.1 CU. YDS.					
QUANTITIES INDICATED ARE FOR ONE INTEGRAL CURTAIN WALL.							

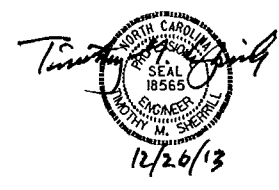


**ELEVATION**  
 REINFORCEMENT SHOWN, DOWEL BARS AND ANCHOR BOLTS NOT SHOWN FOR CLARITY  
 UTILITY LOCATIONS ARE APPROXIMATE. REBAR MAY BE SHIFTED SLIGHTLY TO AVOID CONFLICTS.

END BENT 1 INDICATED,  
 END BENT 2 SIMILAR

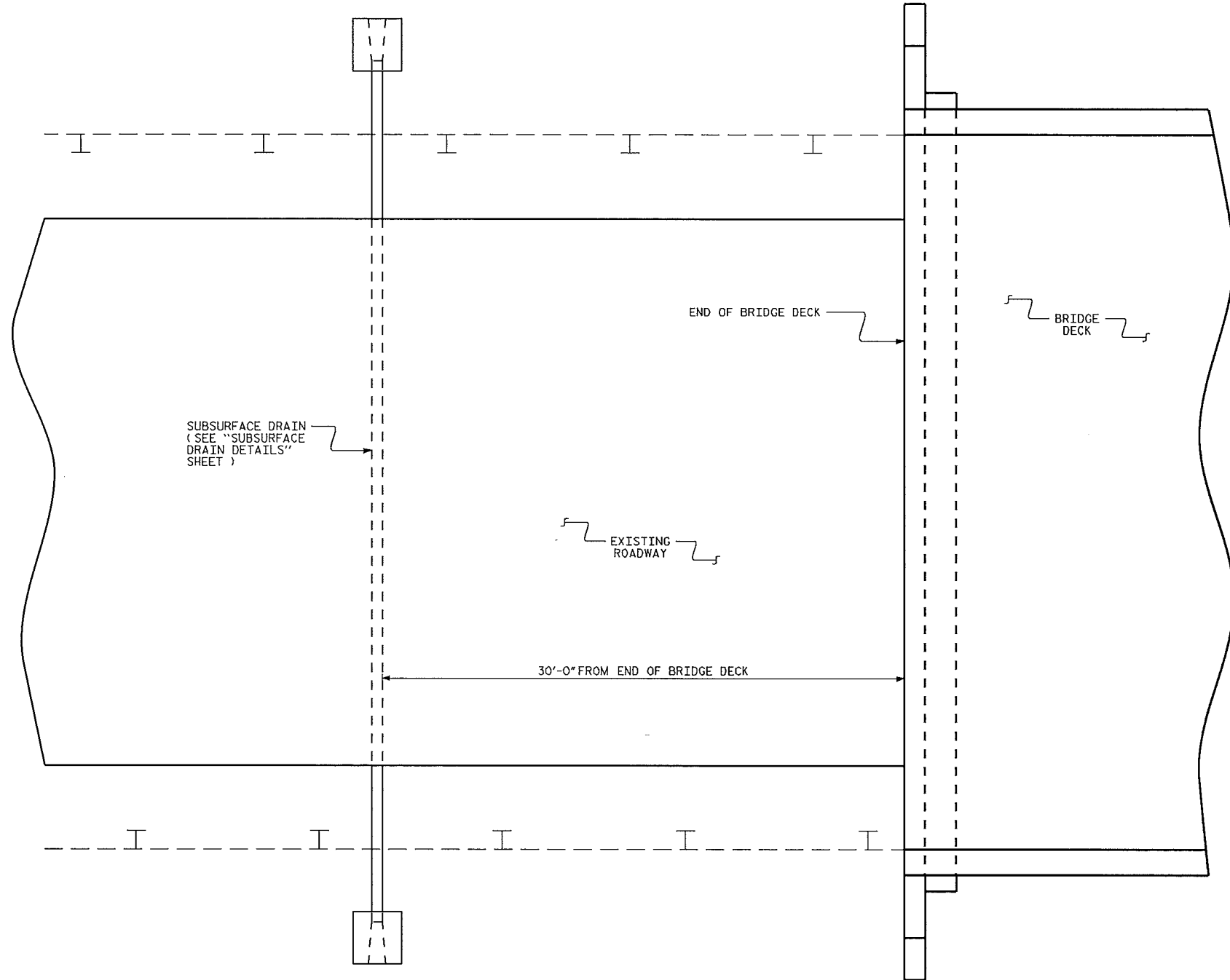
PROJECT NO. 12B.101811  
CATAWBA COUNTY  
 BRIDGE NO. 91

SHEET 2 OF 2  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 END BENT  
 PROPOSED REPAIRS

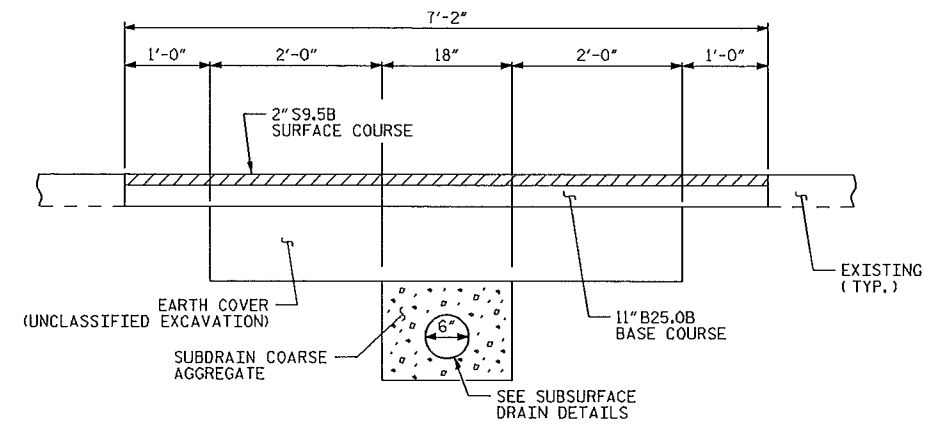


DRAWN BY : R. WEISZ DATE : 1/13  
 CHECKED BY : T. SHERRILL DATE : 3/13

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-4
1			3			TOTAL SHEETS
2			4			6



LAYOUT



PAVEMENT REPAIRS ON ROAD TO BE RESURFACED  
(PIPE IS PLACED UNDER EXISTING PAVEMENT)

**NOTES:**  
 EXTEND SUBSURFACE DRAIN TO DAYLIGHT ON BOTH SIDES OF THE ROAD.  
 PATCH ROAD PAVEMENT WITH NEW SECTION AS SHOWN IN "PAVEMENT REPAIRS ON ROAD TO BE RESURFACED" DETAIL.

PROJECT NO. 12B.101811  
CATAWBA COUNTY  
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SHEET 1 OF 2  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

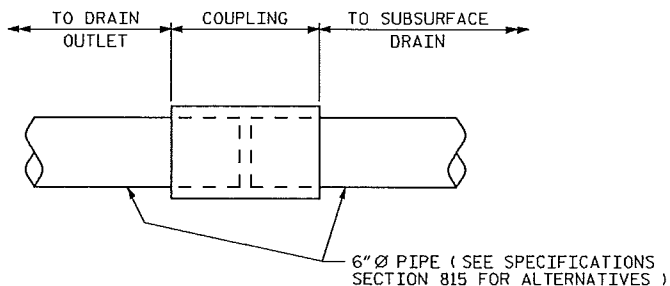
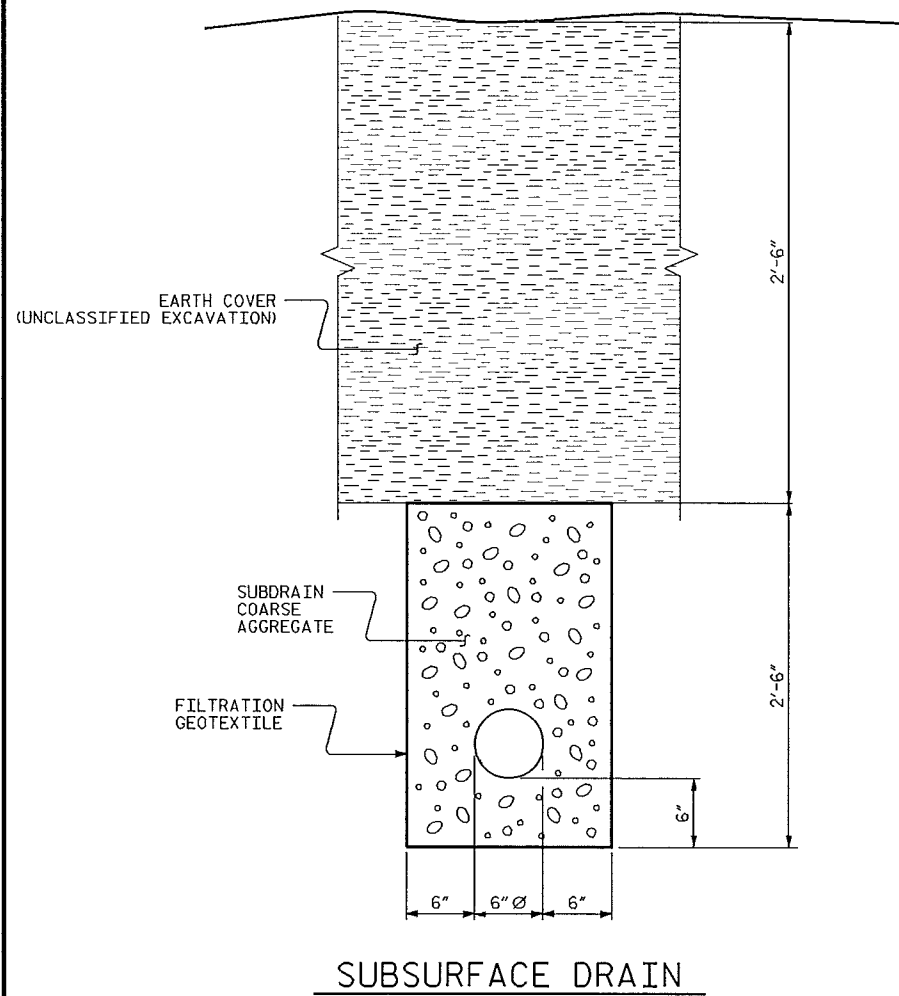
SUBSURFACE  
 DRAIN LAYOUT



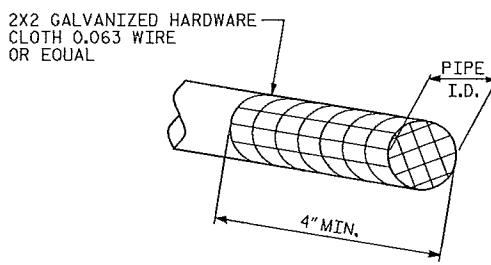
DRAWN BY : P.C. BREWER DATE : 4/13  
 CHECKED BY : T.M. SHERRILL DATE : 4/13  
 DESIGN ENGINEER OF RECORD: DATE :

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1			3			5
2			4			6

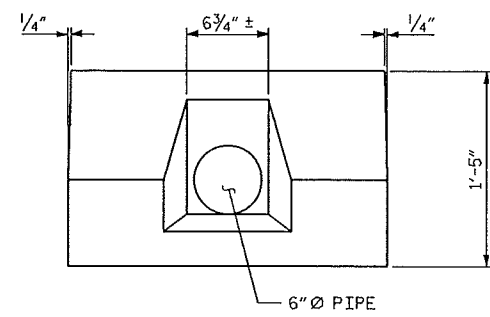




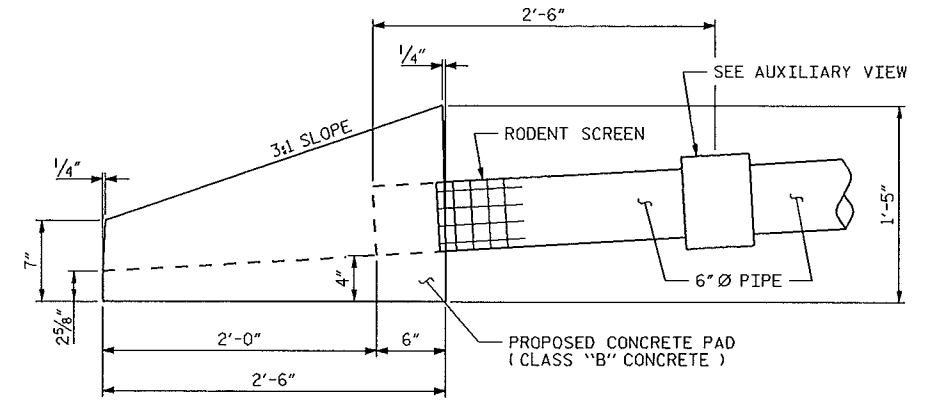
**AUXILIARY VIEW**



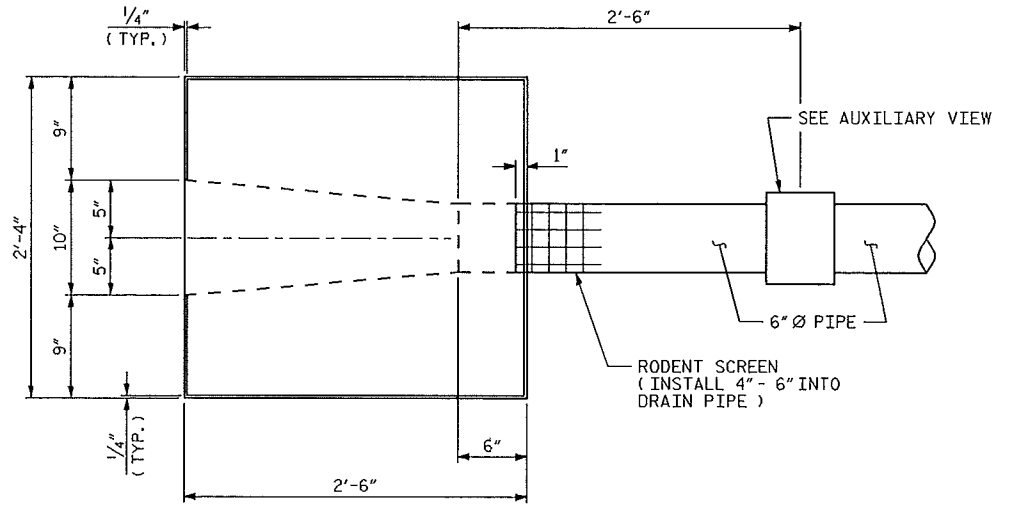
**RODENT SCREEN**



**END ELEVATION**



**ELEVATION**



**PLAN**

**NOTES:**

REFER TO SECTION 815 OF THE STANDARD SPECIFICATIONS FOR INSTALLATION OF DRAINAGE PIPES.

CONNECT PIPE OUTLET INTO DRAINAGE STRUCTURE WHEREVER POSSIBLE. IF NOT CONNECTED TO DRAINAGE STRUCTURE, PROTECT END OF PIPE BY CONCRETE PAD FOR OUTLET END OF DRAIN. PADS ARE NEEDED AT LOCATIONS WHERE PIPE IS NOT PLACED IN DRAINAGE STRUCTURE TO FACILITATE MAINTENANCE AND AID IN IDENTIFICATION. OUTLETS ARE REQUIRED EVERY 500' OR AS DIRECTED BY THE ENGINEER.

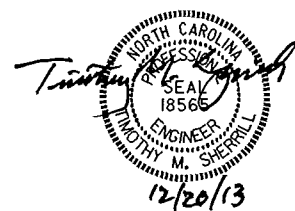
PROJECT NO. 12B.101811  
CATAWBA COUNTY  
 BRIDGE NO. 91

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

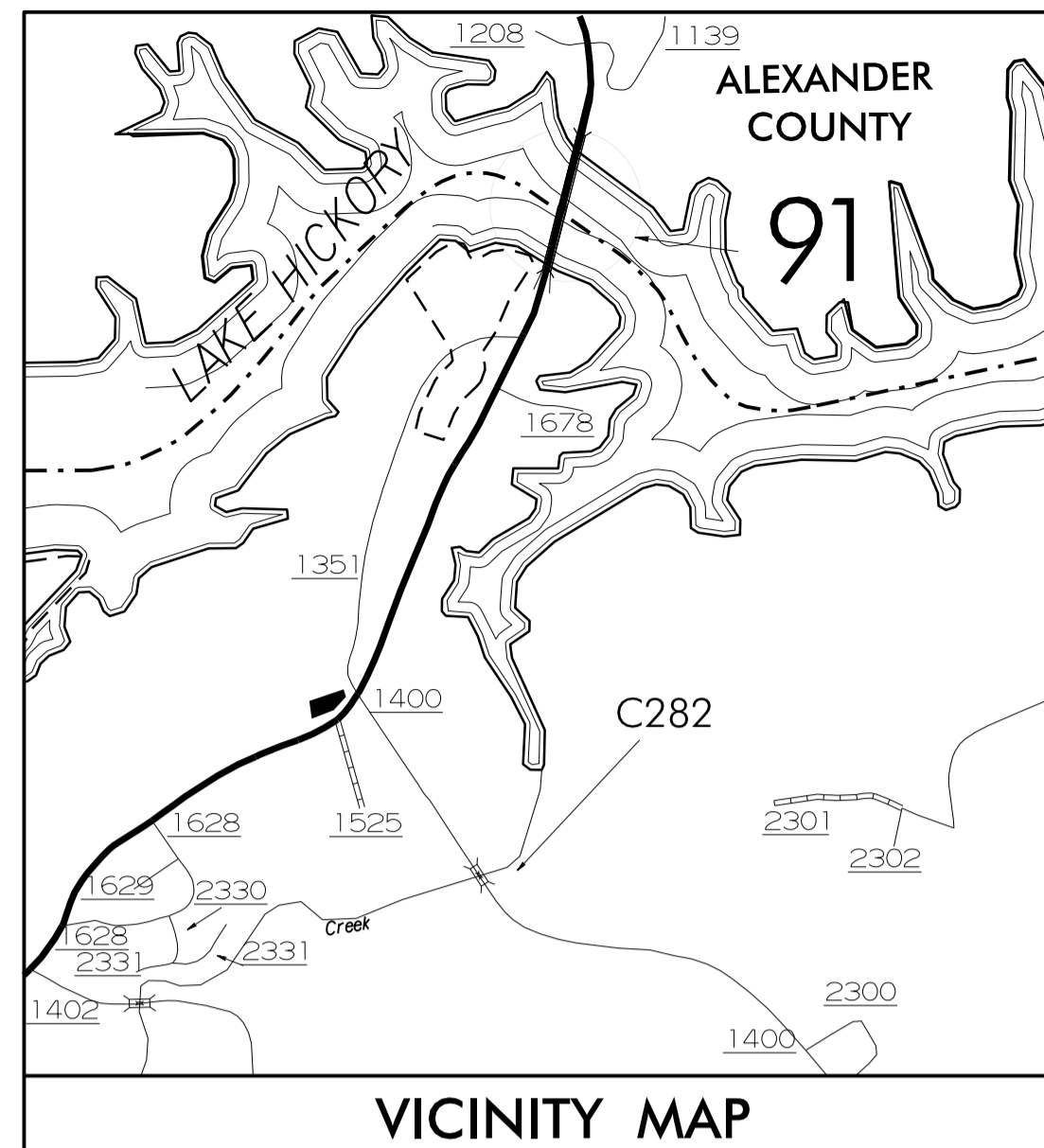
**SUBSURFACE DRAIN DETAILS**

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1			3			S-6
2			4			6



DRAWN BY : P.C. BREWER DATE : 4/13  
 CHECKED BY : T.M. SHERRILL DATE : 4/13  
 DESIGN ENGINEER OF RECORD: DATE :

**PROJECT: 12B.101811**

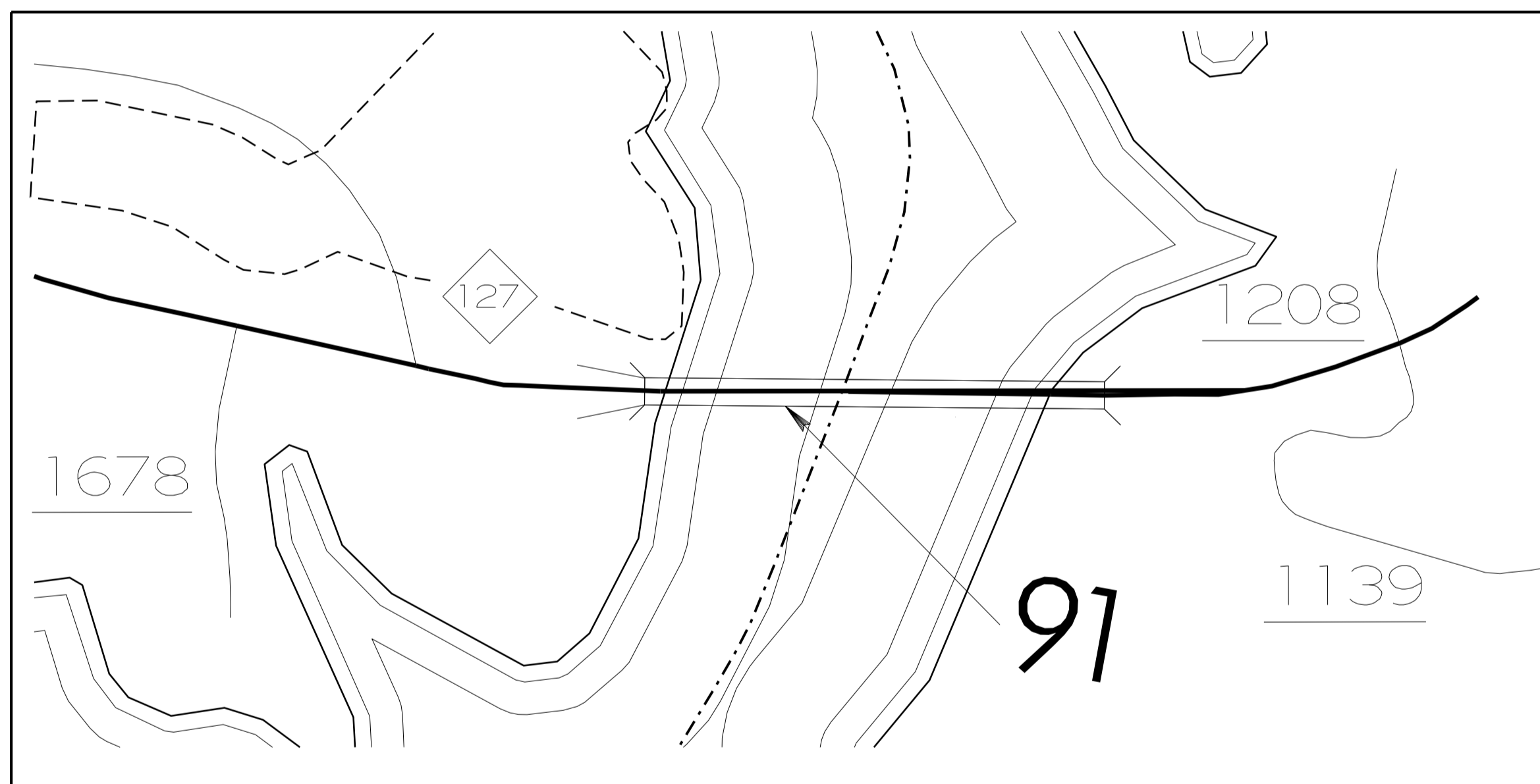
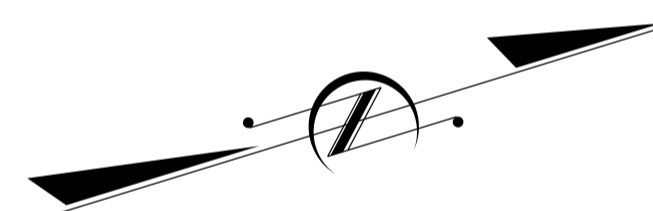


VICINITY MAP

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

**LOCATION: BRIDGE #91 NC 127 OVER LAKE HICKORY**

**TYPE OF WORK: CONSTRUCTING CAST-IN-PLACE INTEGRAL CURTAIN WALL ON EXISTING END BENT CAPS; INSTALLATION OF SOIL NAILS AND GROUND ANCHORS; INSTALLATION OF INTERCEPTOR DRAIN; PAVEMENT REPAIR**



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	12B.101811	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

**EROSION AND SEDIMENT CONTROL MEASURES**

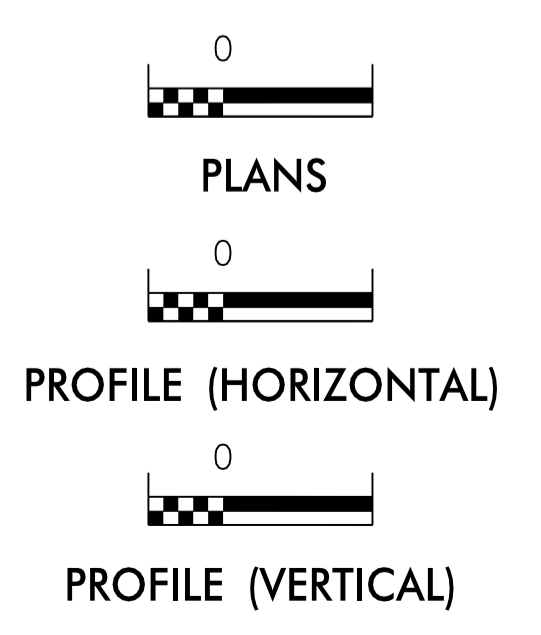
Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	III III III
1606.01	Special Sediment Control Fence	X X X X X X
1622.01	Temporary Berms and Slope Drains	TD
1630.02	Silt Basin Type B	SB
1633.01	Temporary Rock Silt Check Type-A	RS
	Temporary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

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

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

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

**GRAPHIC SCALE**



ROADSIDE ENVIRONMENTAL UNIT  
 DIVISION OF HIGHWAYS  
 STATE OF NORTH CAROLINA

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:  
**ROADSIDE ENVIRONMENTAL UNIT**  
 1 South Wilmington St.  
 Raleigh, NC 27611  
**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 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	

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DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

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PROJECT REFERENCE NO. <i>12BJ01811</i>	SHEET NO. <i>EC-02</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

# ***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.

# EROSION CONTROL PLAN

PROJECT REFERENCE NO. <b>12B.101811</b>	SHEET NO. <b>EC-03</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

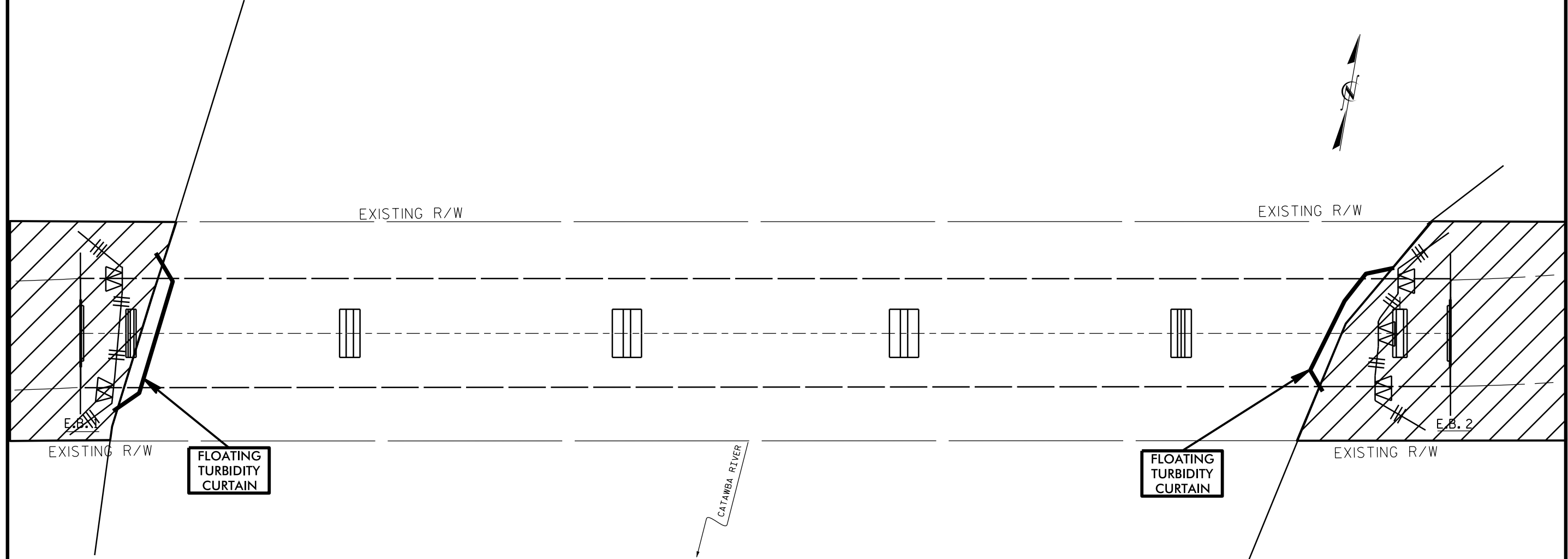
NOTES: EROSION AND SEDIMENT CONTROL PLANS ARE NOT TO SCALE.

ALL LOCATIONS SHOWN ARE FOR INFORMATION ONLY AND SHOULD BE FIELD VERIFIED PRIOR TO INSTALLATION OF EROSION CONTROL DEVICES.

LIMITS OF DISTURBANCE SHOULD NOT EXCEED THE EXISTING RIGHT OF WAY LIMITS. NO EROSION AND SEDIMENT CONTROL DEVICES SHALL BE PLACED OUTSIDE OF RIGHT OF WAY.

SILT FENCE SHALL BE INSTALLED TO CONTAIN RUNOFF FROM DISTURBED AREAS, EQUIPMENT STAGING AREAS, AND STOCKPILE SITES.

TURBIDITY CURTAIN SHALL BE INSTALLED PARALLEL TO THE BANKS TO CONTAIN RUNOFF FROM DISTURBED AREAS.



 ENVIRONMENTALLY SENSITIVE AREA  
SEE PROJECT SPECIAL PROVISIONS

NOTE: ENVIRONMENTALLY SENSITIVE AREAS SHALL BE DEFINED AS FROM THE WATERS EDGE AND EXTENDING FIFTY (50) FEET FROM THE TOP OF BANK PARALLEL TO THE RIVER THROUGHOUT THE PROJECT LIMITS.

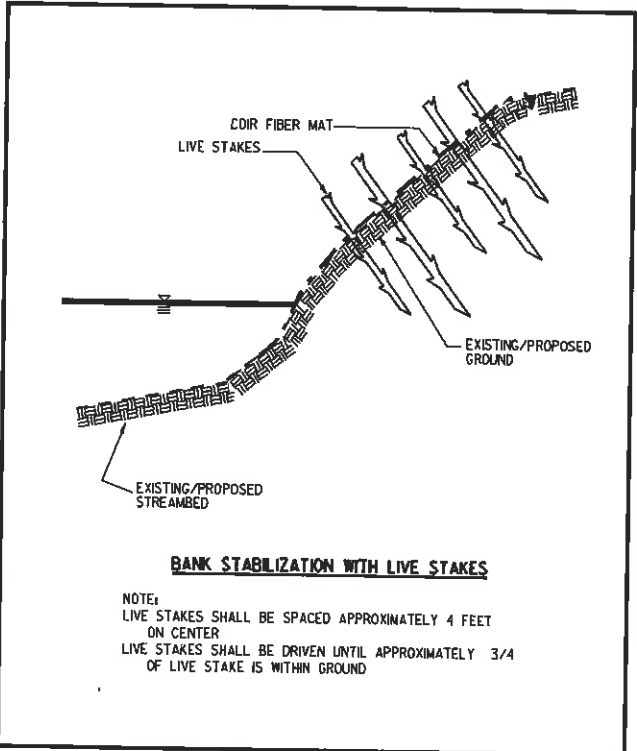
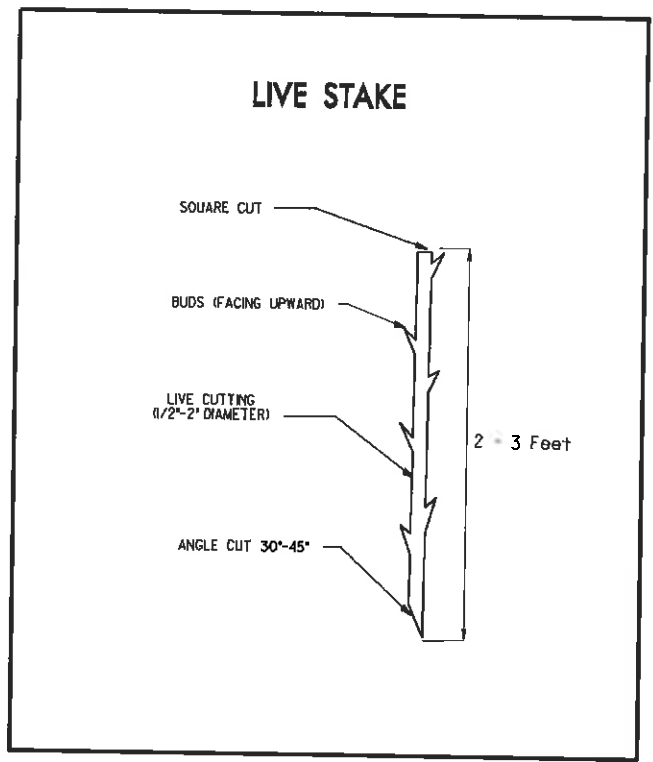
NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

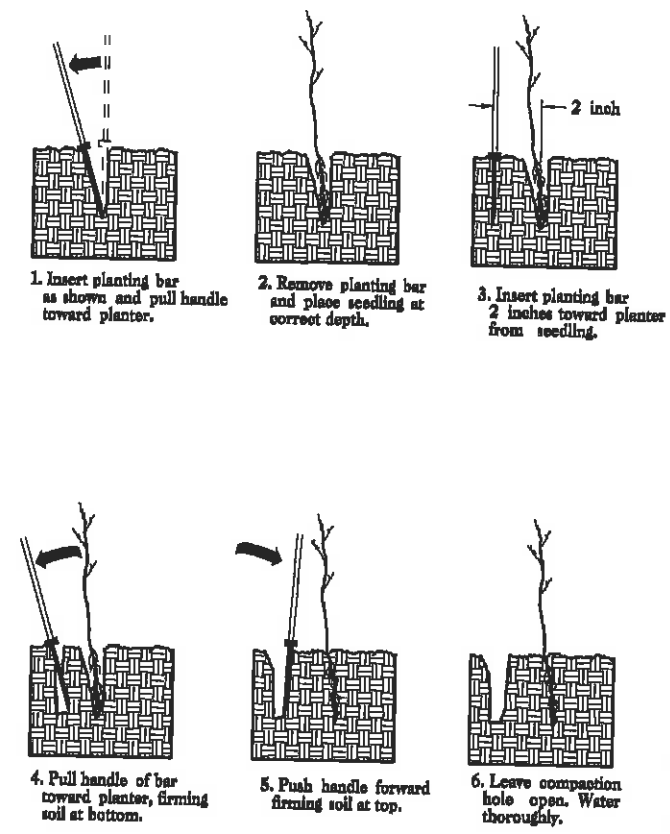
PROJECT NO. 12B.101811  
CATAWBA COUNTY  
 BRIDGE NO. 91

# PLANTING DETAILS

## LIVE STAKES PLANTING DETAIL



## BAREROOT PLANTING DETAIL DIBBLE PLANTING METHOD USING THE KBC PLANTING BAR



### 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.

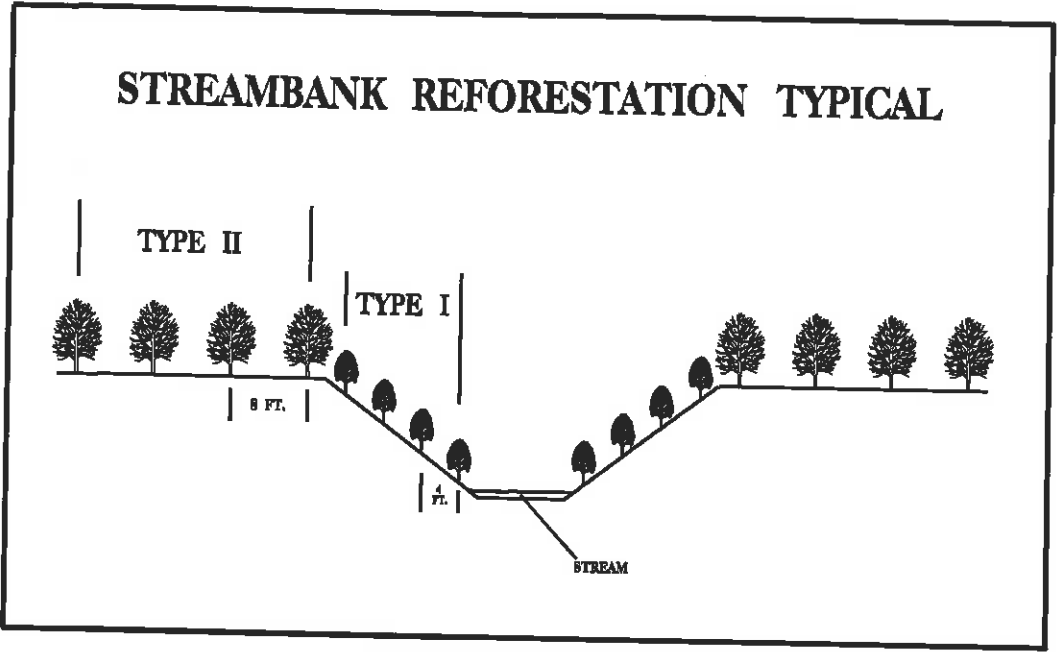


**KBC PLANTING BAR**  
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.



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

- TYPE 1 STREAMBANK REFORESTATION SHALL BE PLANTED 3 FT. TO 5 FT. ON CENTER, RANDOM SPACING, AVERAGING 4 FT. ON CENTER, APPROXIMATELY 2724 PLANTS PER ACRE.
- TYPE 2 STREAMBANK REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.
- NOTE: TYPE 1 AND TYPE 2 STREAMBANK REFORESTATION SHALL BE PAID FOR AS "STREAMBANK REFORESTATION"



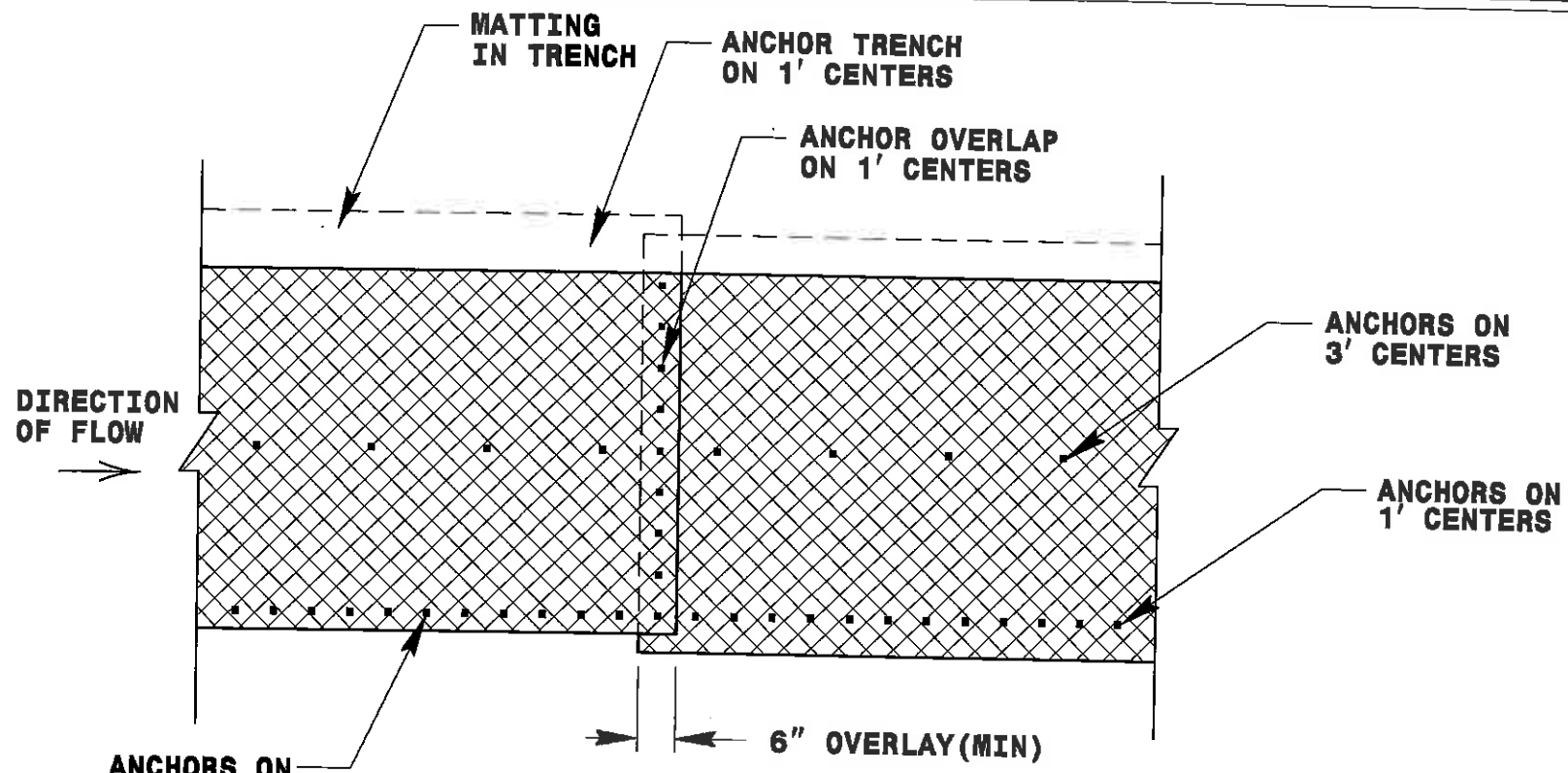
### STREAMBANK REFORESTATION

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

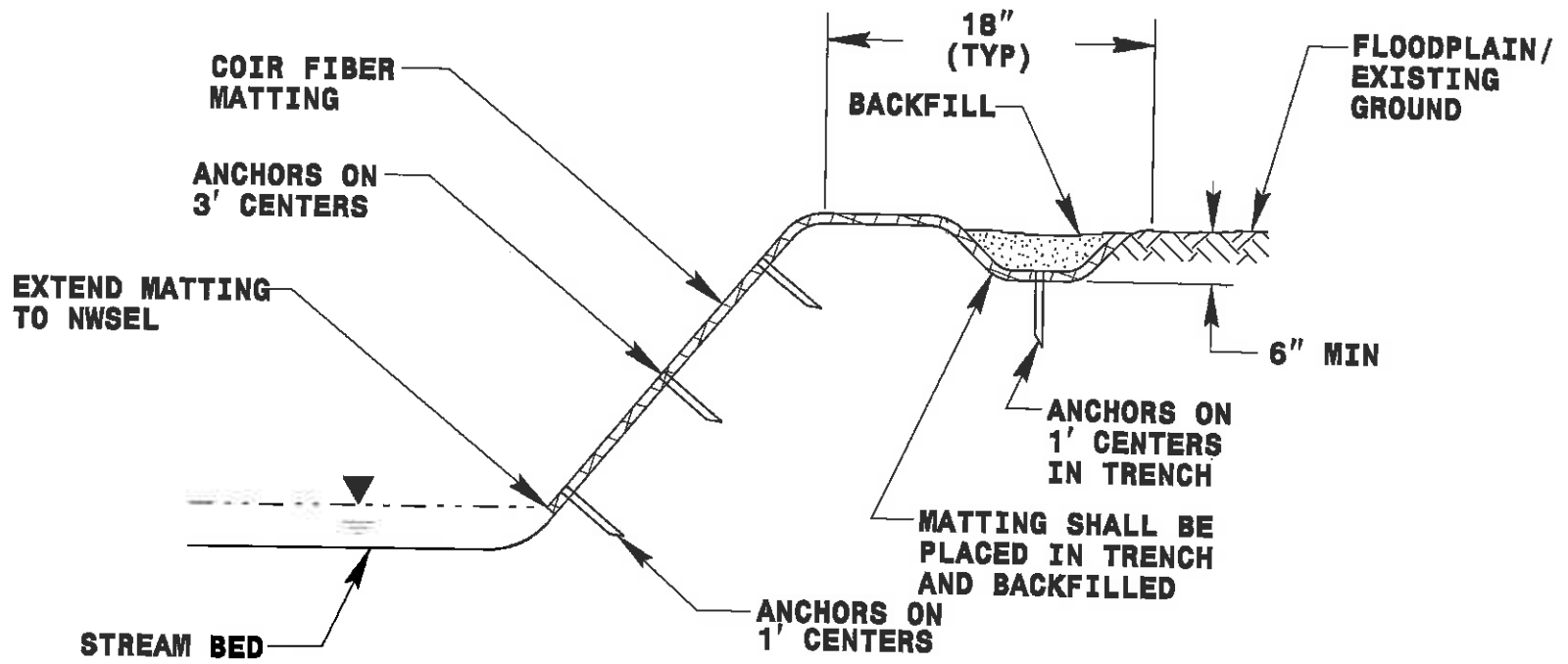
TYPE 1		
50% SALIX NIGRA	BLACK WILLOW	2 ft - 3 ft LIVE STAKES
50% CORNUS AMOMUM	SILKY DOGWOOD	2 ft - 3 ft LIVE STAKES
TYPE 2		
25% LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in - 18 in BR
25% PLATANUS OCCIDENTALIS	SYCAMORE	12 in - 18 in BR
25% PRUNUS SEROTINA	BLACK CHERRY	12 in - 18 in BR
25% BETULA NIGRA	RIVER BIRCH	12 in - 18 in BR

SEE PLAN SHEETS FOR AREAS TO BE PLANTED

PROJECT REFERENCE NO. 12BJO1811	SHEET NO. 2 OF 2
RDW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



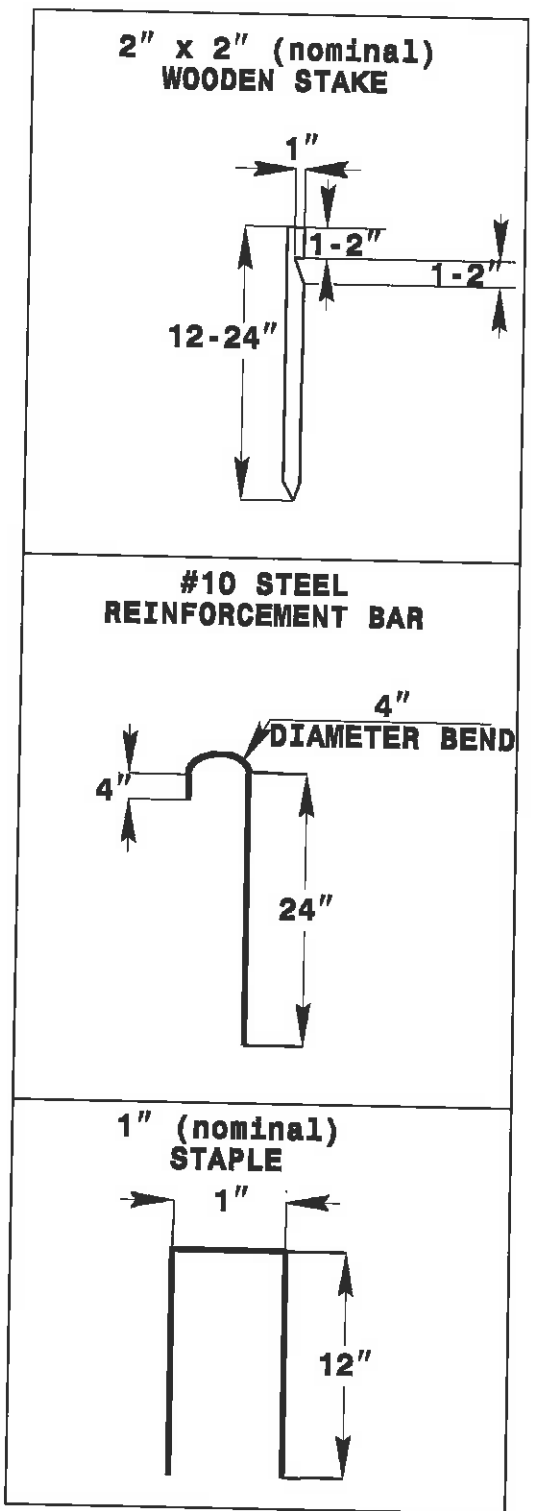
**PLAN VIEW**



**TYPICAL CROSS SECTION**

**COIR FIBER MATTING DETAIL**

NOT TO SCALE



**ANCHOR OPTIONS**