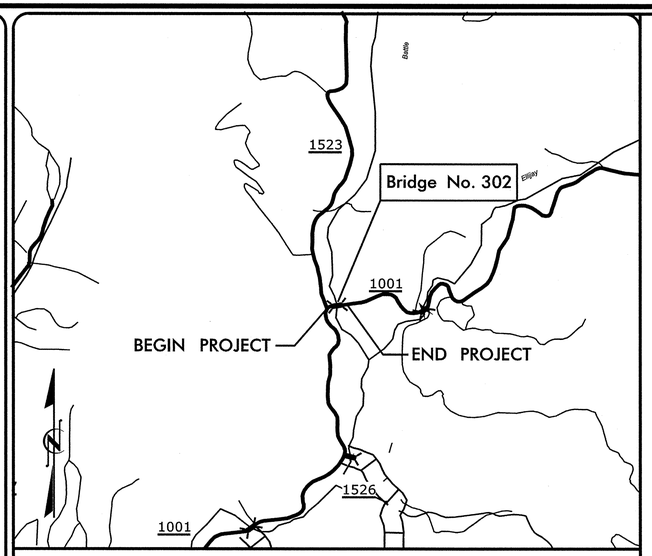
09/08/99

TIP PROJECT: 17BP.14.R.71

CONTRACT: DN00192



VICINITY MAP

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MACON COUNTY

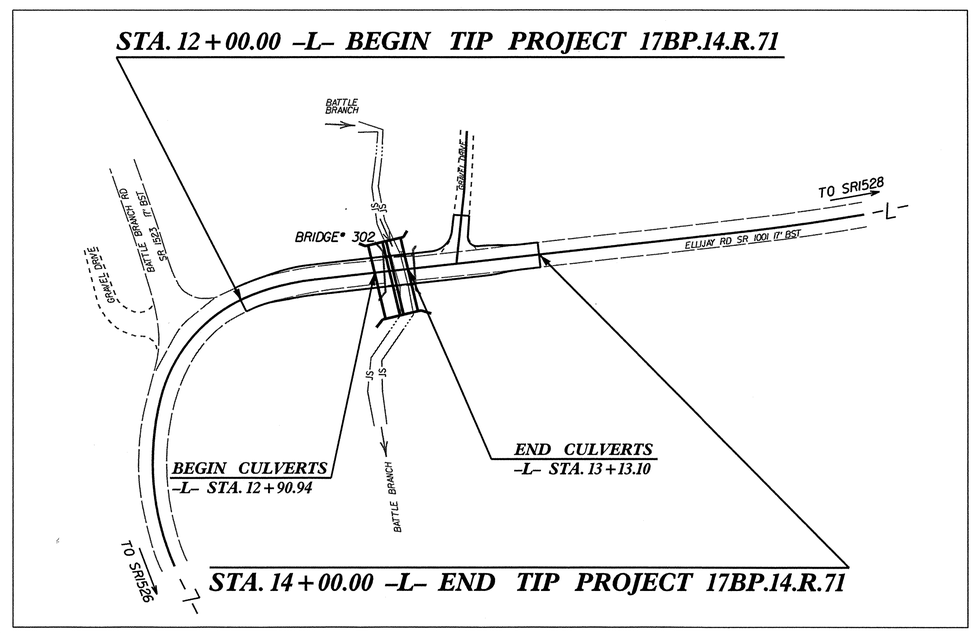
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.14.R.71	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
17BP.14.R.71		PE, R/W, UTIL
17BP.14.R.71		CONST

LOCATION: BRIDGE 302 OVER BATTLE BRANCH ON SR 1001 (ELLIJAY RD.)

TYPE OF WORK: GRADING, PAVING, DRAINAGE & STRUCTURE

NAD 83/
NSRS 2007



GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT (2009)= 1100

V = 25 MPH

FUNC CLASS =
LOCAL
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT 17BP.14.R.71	=	0.034 MI
LENGTH CULVERTS TIP PROJECT 17BP.14.R.71	=	0.004 MI
TOTAL LENGTH TIP PROJECT 17BP.14.R.71	=	0.038 MI

NCDOT CONTACT: JOSHUA DEYTON, P.E.
PROJECT ENGINEER

Prepared In the Office of:
Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 8, 2013

LETTING DATE:
FEBRUARY, 2014

JAMES B. VOSO, P.E.
PROJECT ENGINEER

DANA J. BOLDEN, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 028945 ENGINEER DANA J. BOLDEN
SIGNATURE:

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022639 ENGINEER JAMES B. VOSO
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION

P.E.
STATE HIGHWAY DESIGN ENGINEER

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PROJECT REFERENCE NO.	SHEET NO.
17BP14.R.71	1-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022559 ENGINEER JAMES B. VOSO

INDEX OF SHEETS – GENERAL NOTES – LIST OF STANDARDS

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	Title Sheet
1–A	Index of Sheets, General Notes, and List of Standards
1–B	Conventional Symbols
1–C	Survey Control Sheets
2	Typical Sections, and Pavement Schedule
2A	Guardrail Assembly Details
2B	Construction Staging (Stage 1 & 2)
2C	Construction Staging (Stage 3)
3	Summary of Quantities
3–A	Summary of Drainage Quantities, Summary of Guardrail, and Earthwork Summary
3–B	Summary of Drainage Quantities
4	Plan Sheet
5	Profile Sheet
TMP–1 THRU TMP–3	Transportation Management Plans
PMP–01	Pavement Marking Plans
EC–1 THRU RF–1	Erosion Control Plans
UBO–1 THRU UBO–2	Utilities By Others Plans
X–1A	Cross–Section Summary Sheet
X–1	Cross–Sections

2012 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch – N. C. Department of Transportation – Raleigh, N. C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 – EARTHWORK	
200.02	Method of Clearing – Method II
225.02	Guide for Grading Subgrade – Secondary and Local
225.04	Method of Obtaining Superelevation – Two Lane Pavement
DIVISION 3 – PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 5 – SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction – High Side of Superelevated Curve – Method I
DIVISION 8 – INCIDENTALS	
862.01	Guardrail Placement
862.02	Guardrail Installation
876.02	Guide for Rip Rap at Pipe Outlets
876.03	Structural Anchor Units

GENERAL NOTES: 2012 SPECIFICATIONS

EFFECTIVE: 01–17–12
REVISED: 07/30/12

GRADE LINE:
GRADING AND SURFACING:

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

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

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.

GUARDRAIL:

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

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

SUBSURFACE PLANS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE DUKE ENERGY AND FRONTIER COMMUNICATION
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT–OF–WAY MARKERS:

ALL RIGHT–OF–WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY CONTRACT IN ACCORDANCE WITH SECTION 801 OF THE 2012 NORTH CAROLINA STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.

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PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.71	1-B

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing High Quality Wetland Boundary — HQ WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- River Basin Buffer — RBB
- Flow Arrow
- Disappearing Stream
- Spring
- Swamp Marsh
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

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

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Wheel Chair Ramp — WCR
- Curb Cut for Future Wheel Chair Ramp — CCFR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equaility Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole — HH
- H-Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

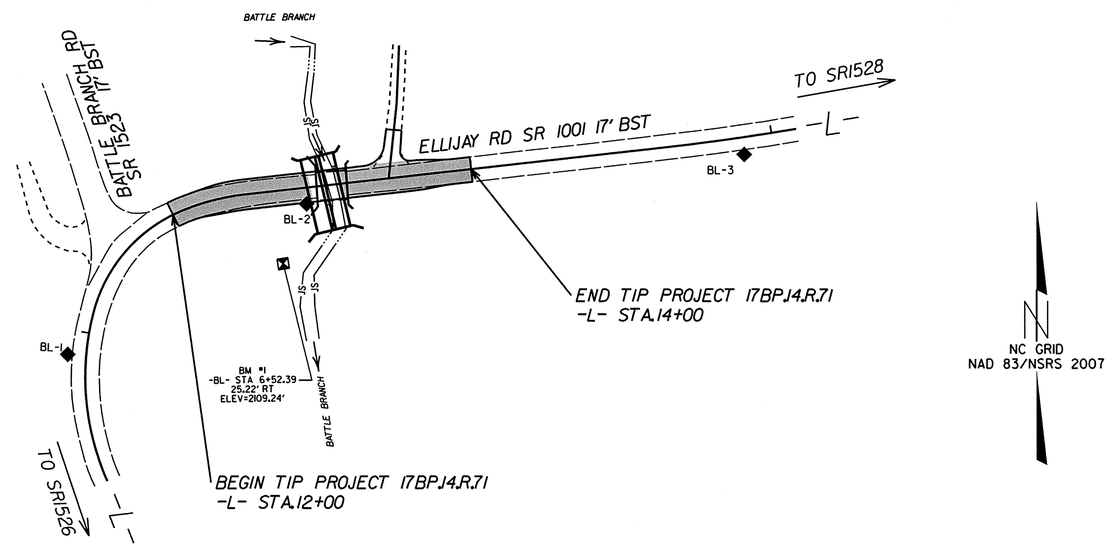
SANITARY SEWER:

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

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line — ?UTL
- U/G Tank; Water, Gas, Oil
- A/G Tank; Water, Gas, Oil
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

SURVEY CONTROL SHEET 17BP.14.R.71



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "55-0302 BL-3"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 547444.2020(ft) EASTING: 715623.3089(ft)
ELEVATION: 2110.22(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9997769
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "55-0302 BL-3" TO -L- STATION 10+00 IS
S62°49'45"W 473.1204'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

BL

POINT	DESC.	NORTH	EAST	ELEVATION	EL STATION	OFFSET
1	BL-1	547311.7933	715481.0201	2118.94	10+84.69	12.17 LT
2	BL-2	547411.5594	715638.8599	2112.37	12+89.41	10.75 RT
3	BL-3	547444.2020	715927.9830	2110.22	15+79.99	11.39 RT

BM1 ELEVATION = 2109.24
N 547372 E 715623
BL STATION 6+52.39 25.22 RIGHT
RR SPIKE IN UTILITY POLE

Scale 1" = 50'
50' 0 50' 100'

STRUCTURE: 55-0302
COUNTY: MACON

5/14/99
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PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.71	2

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 019262 ENGINEER JAMES B. VOSO

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 022503 ENGINEER JAMES B. VOSO

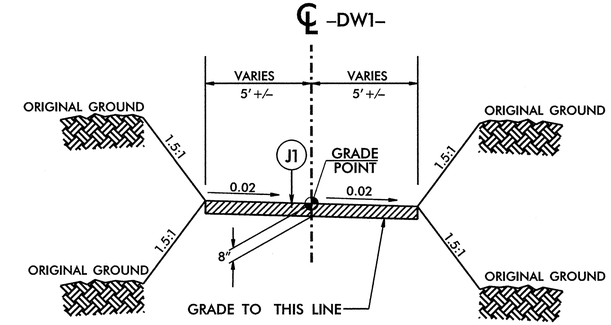
PLANS PREPARED BY:

Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

PAVEMENT SCHEDULE

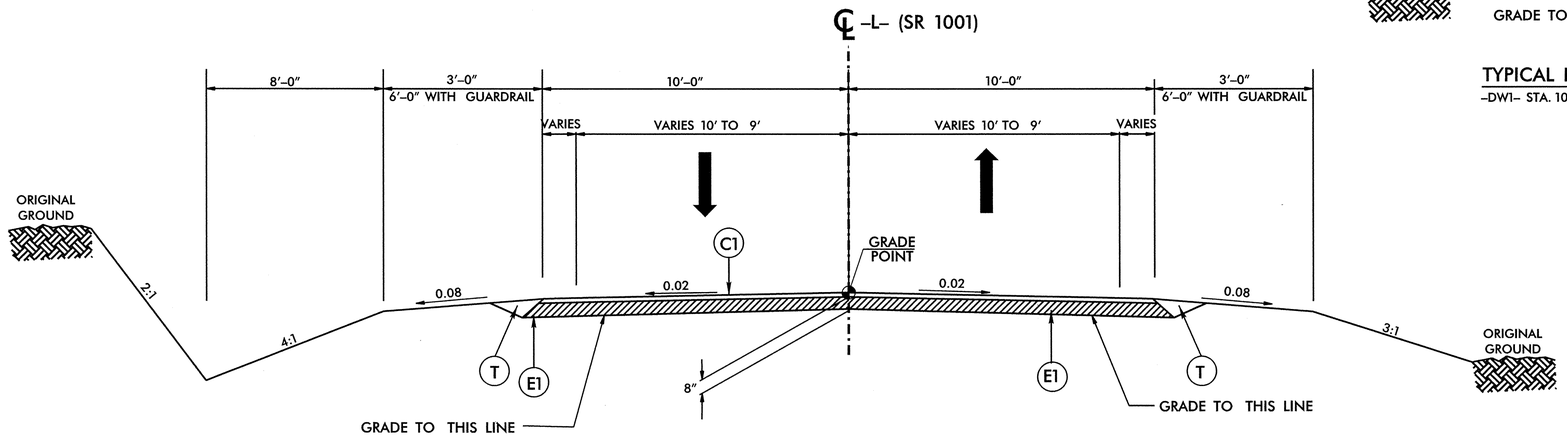
ITEM	DESCRIPTION	ITEM	DESCRIPTION
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF 2 LAYERS.		
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.		
T	EARTH MATERIAL.		

NOTE: ALL PAVEMENT EDGE SLOPES ARE TO BE 1:1



TYPICAL DRIVEWAY SECTION

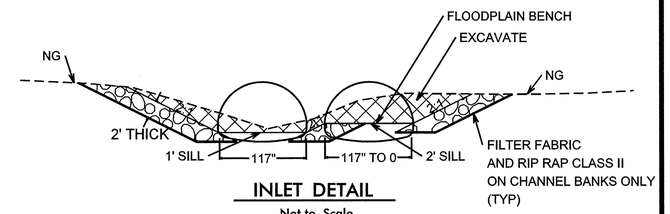
-DW1- STA. 10+10.00 TO STA. 10+35.00



TYPICAL SECTION NO. 1

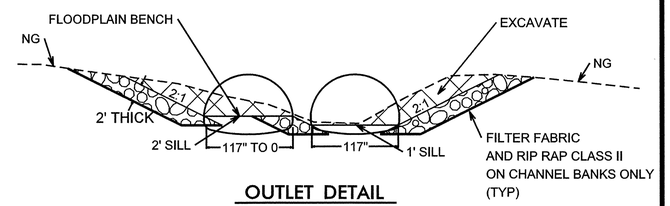
USE TYPICAL SECTION No. 1

-L- STA. 12+50.00 TO STA. 12+90.94 (Begin Culverts)
-L- STA. 13+13.10 (End Culverts) TO STA. 13+50.00
TRANSITION FROM TYPICAL SECTION NO. 1 TO EXISTING:
-L- STA. 12+00.00 to 12+50.00
-L- STA. 13+50.00 to 14+00.00



INLET DETAIL

Not to Scale



OUTLET DETAIL

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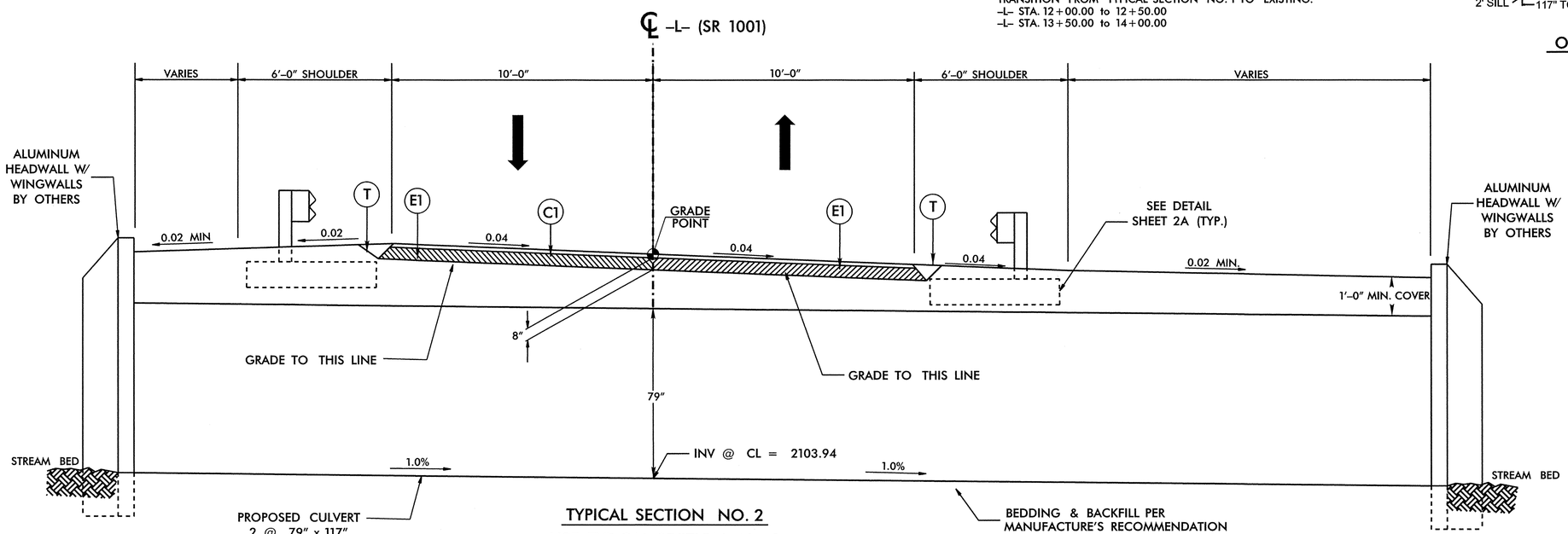
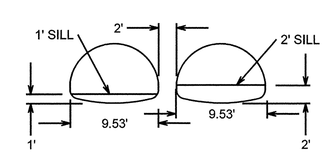


TYPICAL SECTION NO. 2

USE TYPICAL SECTION No. 2

-L- STA. 12+90.94 (Begin Culverts) TO STA. 13+13.10 (End Culverts)



SILL DETAIL

NOTE:
PLACE SILLS AT INLET AND OUTLET OF THE BARRELS ONLY. BACKFILL BOTH BARRELS WITH NATIVE BED MATERIAL SIMILAR IN SIZE TO CLASS 'B' RIP RAP. SUBSIDIZE WITH CLASS 'B' RIP RAP IF NEEDED.

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PROJECT: 17BP.14.R.71
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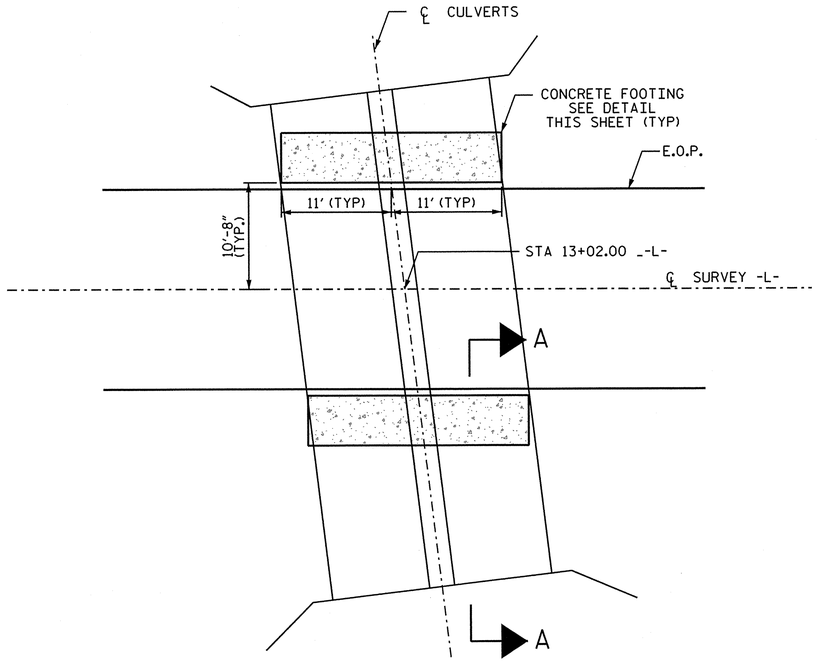
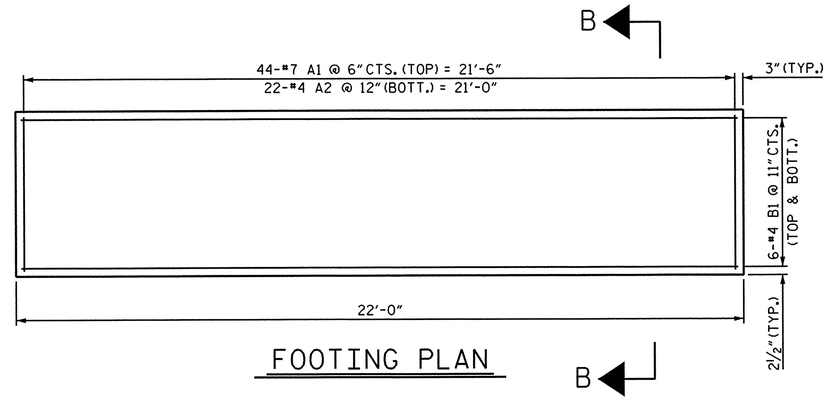
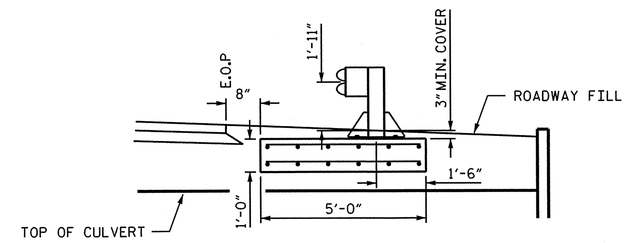


PLAN



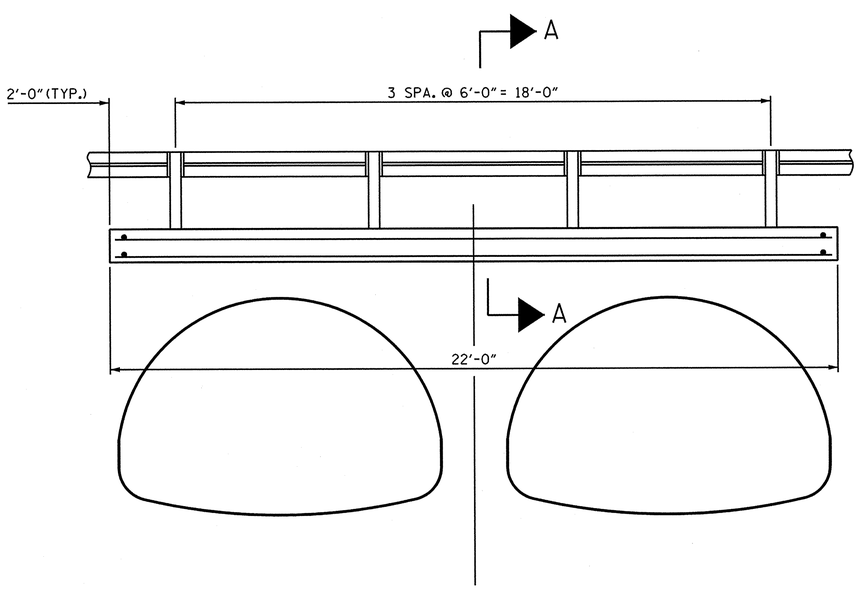
FOOTING PLAN



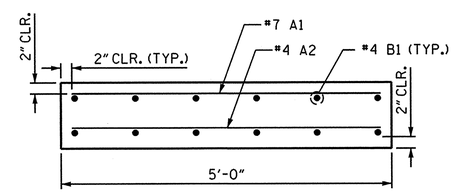
NOTES: FOR GUARDRAIL ANCHORAGE DETAILS SEE STANDARD DRAWING 862.03 SHEET 7 OF 7.

PLACE CONCRETE SLAB ON 6" MIN. (3" MIN ABOVE TOP OF CULVERTS) OF COMPACTED CLASS II TYPE 1 SELECT MATERIAL, SEE STANDARD SPECIFICATION SECTION 1016.

SECTION A-A



END ELEVATION



SECTION B-B

BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	44	#7	STR	4'-8"	420
A2	22	#4	STR	4'-8"	69
B1	12	#4	STR	21'-8"	174
REINFORCING STEEL (FOR ONE SLAB)					663 LBS.
CLASS A CONCRETE (FOR ONE SLAB)					4.1 C.Y.

PROJECT NO. 17BP.14.R.71

MACON COUNTY

STATION: 13+02.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GUARDRAIL ASSEMBLY DETAILS

Prepared in the Office of: Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

NORTH CAROLINA PROFESSIONAL SEAL 022219 ENGINEER JAMES B. VOSS 10/31/14

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

ASSEMBLED BY : PFC DATE : 1/14
CHECKED BY : CMT DATE : 1/14

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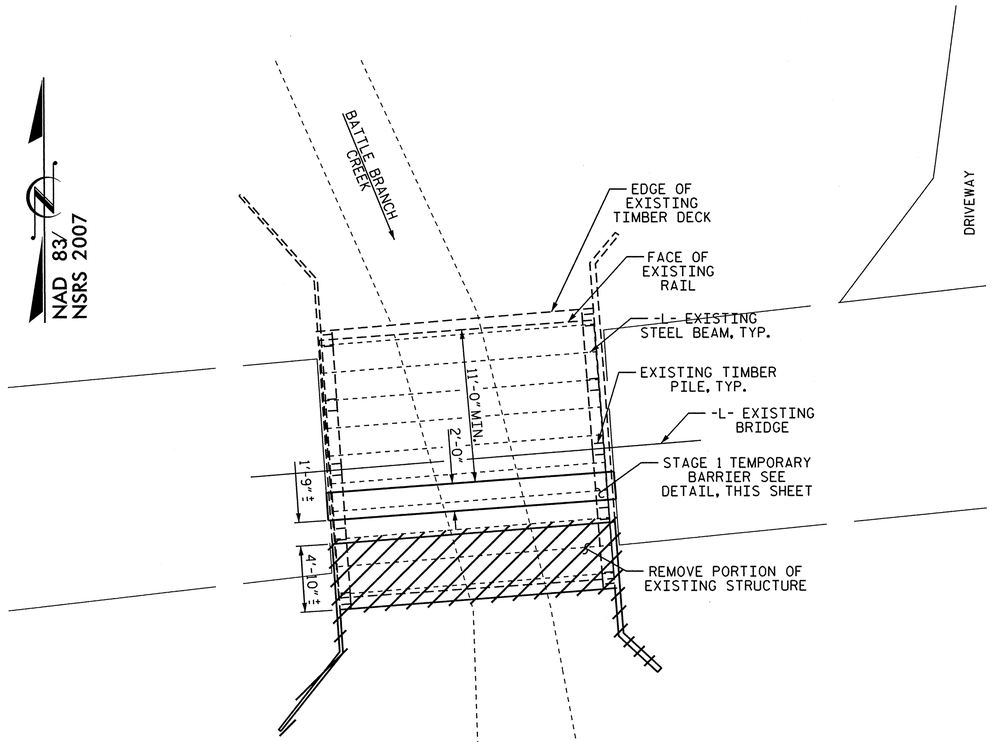
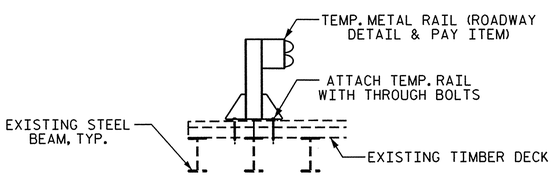


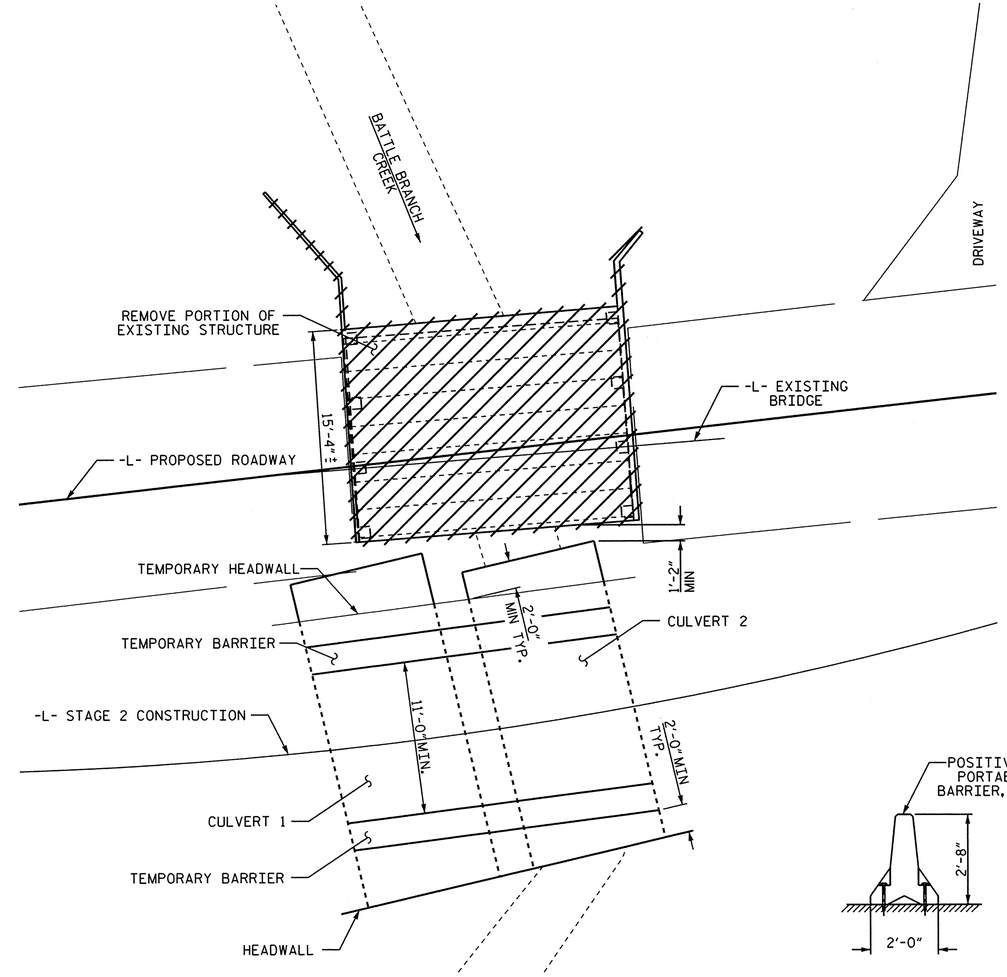


STAGE 1 TEMPORARY BARRIER

NOTE:
THE 4 - ¾" DIA. THROUGH BOLTS WITH WASHERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE ¾" DIA. GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

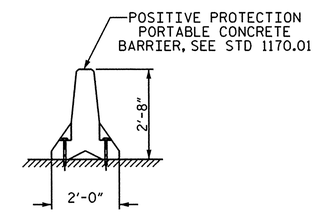
STAGE 1 CONSTRUCTION

STAGE 1 CONSTRUCTION NOTES:
1. MAINTAIN AN 11'-0" MIN. CLEAR ROADWAY
2. DEMOLISH THE 2 MOST DOWNSTREAM STEEL BEAMS AND APPROXIMATELY 4'-10" OF THE TIMBER DECK. THE TEMPORARY TRAFFIC BARRIER SHALL BE MOUNTED TO THE TIMBER DECK.
3. REMOVE ONLY ONE PILE AT EACH END BENT DURING STAGE 1.
4. CUT THE TIMBER PILE CAP ON THE DOWNSTREAM SIDE OF THE REMAINING TIMBER PILE.
5. MOUNT THE TEMPORARY TRAFFIC BARRIER TO THE TIMBER DECK SEE DETAIL, THIS SHEET.



STAGE 2 CONSTRUCTION

STAGE 2 CONSTRUCTION NOTES:
1. MAINTAIN A MINIMUM OF 1'-2" BETWEEN THE EXISTING STRUCTURE AND THE ENDS OF THE NEW PIPE CULVERTS.
2. INSTALL TEMPORARY HEADWALL WITH A MINIMUM OF 2 FEET OF THE CULVERT PROTRUDING PAST THE TEMPORARY HEADWALL.
3. PROVIDE A MINIMUM OF 2 FEET BETWEEN THE TEMPORARY HEADWALL AND THE BACK OF THE TEMPORARY BARRIER.
4. MAINTAIN AN 11'-0" MIN. CLEAR ROADWAY.
5. DEMOLISH REMAINING PORTION OF EXISTING STRUCTURE.
6. STAGE 2 PIPE CULVERT LENGTHS:
   CULVERT 1 - 24 FEET
   CULVERT 2 - 22 FEET



STAGE 2 TEMPORARY BARRIER

PROJECT NO. 17BP.14.R71
MACON COUNTY
STATION: 13+02.00

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

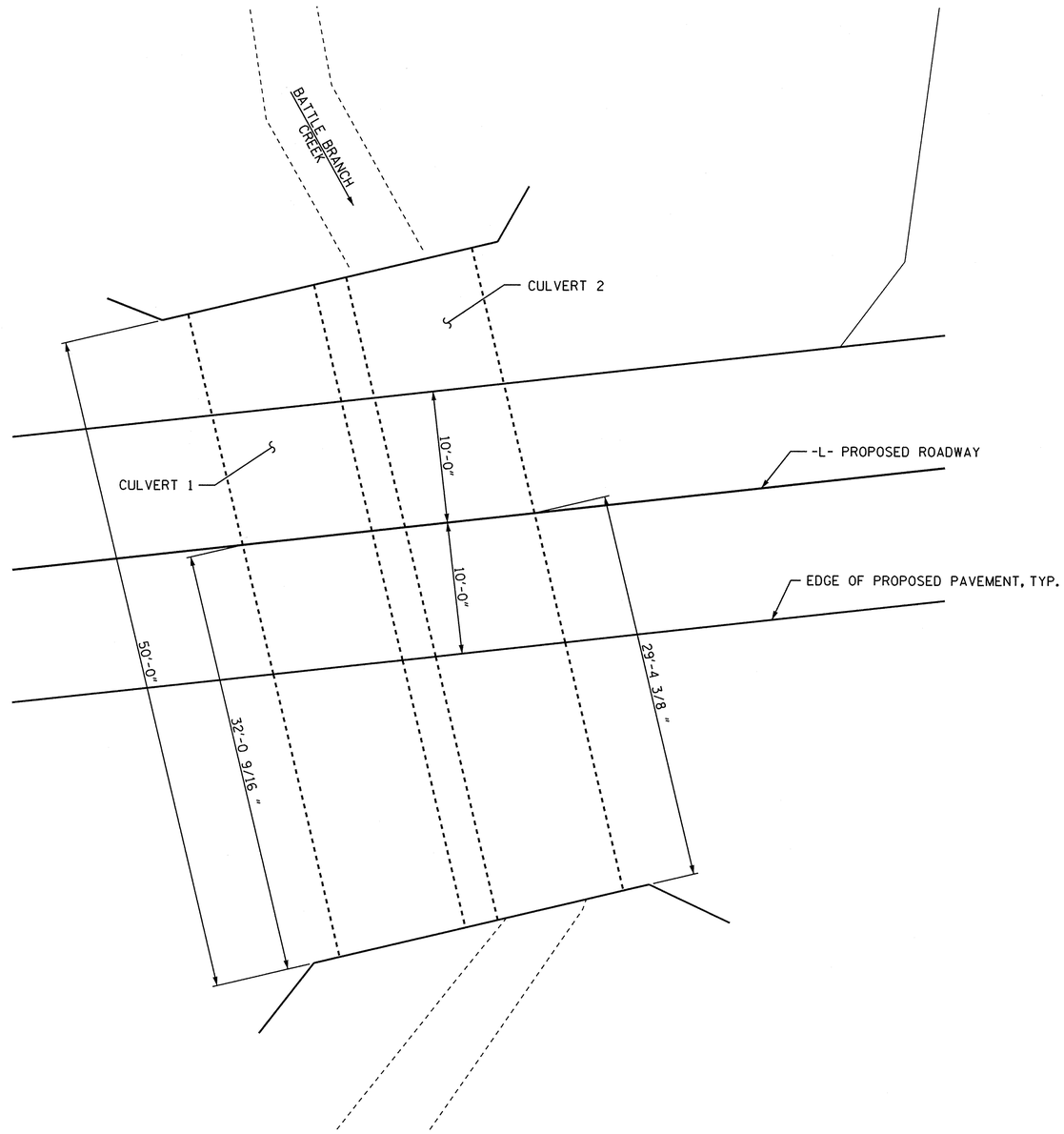
BRIDGE CONSTRUCTION STAGING FOR MAINTENACE OF TRAFFIC (STAGES 1&2)

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

Prepared in the Office of: Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022359 JAMES B. VOSS

ASSEMBLED BY :	PFC	DATE :	12/12
CHECKED BY :	CMT	DATE :	12/12



NAD 83/
NSRS 2007

STAGE 3 CONSTRUCTION

STAGE 3 CONSTRUCTION NOTES:
1. TEMPORARY HEADWALL TO REMAIN IN PLACE.
2. INSTALL REMAINDER OF PIPE CULVERTS.

PROJECT NO. 17BP.14.R71
MACON COUNTY
STATION: 13+02.00

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE CONSTRUCTION STAGING FOR MAINTENACE OF TRAFFIC (STAGE 3)

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

Prepared in the Office of:
Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

NORTH CAROLINA PROFESSIONAL SEAL 022699 ENGINEER JAMES B. VOGO

ASSEMBLED BY :	PFC	DATE :	12/12
CHECKED BY :	CMT	DATE :	12/12

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.71	3

SUMMARY OF QUANTITIES

M	0000100000-N	800	MOBILIZATION	1	LS
M	0000400000-N	801	CONSTRUCTION SURVEYING	1	LS
G	0050000000-E	226	SUPPLEMENTARY CLEARING & GRUBBING	0	ACR
G	0043000000-N	226	GRADING	1.00	LS
			UNCLASSIFIED EXCAVATION	150.00	CY
			BORROW EXCAVATION	450.00	CY
			REMOVAL OF EXISTING ASPHALT PAVEMENT	400.00	SY
			FINE GRADING	700.00	SY
G	0057000000-E	226	UNDERCUT EXCAVATION	50.00	CY
G	0195000000-E	265	SELECT GRANULAR MATERIAL	50.00	CY
M	0199000000-E	SP	TEMPORARY SHORING	150.00	SF
D	0318000000-E	300	FOUNDATION CONDITIONING MATERIAL,MINOR STRUCTURES	15.00	TON
D	0320000000-E	300	FOUNDATION CONDITIONING GEOTEXTILE	40.00	SY
D	0335300000-E	310	18" DRAINAGE PIPE	100.00	LF
G	0995000000-E	340	PIPE REMOVAL	55.00	LF
G	1220000000-E	545	INCIDENTAL STONE BASE	50.00	TON
P	1121000000-E	520	AGGREGATE BASE COURSE	14.00	TON
P	1489000000-E	610	ASPHALT CONC BASE COURSE, TYPE B25.0B	200.00	TON
P	1519000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	150.00	TON
P	1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	18.00	TON
D	2297000000-E	840	MASONRY DRAINAGE STRUCTURES	1.00	EA
D	2354000000-N	840	FRAME WITH GRATE, STD 840.22	1.00	EA
GR	3030000000-E	862	STEEL BM GUARDRAIL	125.00	LF
GR	3045000000-E	862	STEEL BM GUARDRAIL, SHOP CURVED	50.00	LF
GR	3150000000-N	862	ADDITIONAL GUARDRAIL POSTS	10.00	EA
GR	3165000000-N	SP	GUARDRAIL ANCHOR UNITS, TYPE 350 (TL-2)	3.00	EA
GR	3195000000-N	862	GUARDRAIL ANCHOR UNITS, TYPE AT-1	1.00	EA
F	3574000000-E	867	GENERIC FENCING ITEM - RESET WOOD FENCE & DEOCRATIVE WHEELS	30.00	LF
D	3656000000-E	876	GEOTEXTILE FOR DRAINAGE	20.00	SY
G	3635000000-E	876	RIP RAP, CLASS II	15.00	TON
			Erosion Control		
G	0196000000-E	270	GEOTEXTILE FOR SOIL STABILIZATION	510.00	SY
L	6000000000-E	1605	TEMPORARY SILT FENCE	570.00	LF
L	6009000000-E	1610	EROSION CONTROL STONE, CLASS B	100.00	TON
L	6012000000-E	1610	SEDIMENT CONTROL STONE	45.00	TON
L	6015000000-E	1615	TEMPORARY MULCHING	0.50	ACR
L	6018000000-E	1620	SEED FOR TEMPORARY SEEDING	50.00	LB
L	6021000000-E	1620	FERTILIZER FOR TEMPORARY SEEDING	0.25	TON
L	6024000000-E	1622	TEMPORARY SLOPE DRAINS	100.00	LF
L	6029000000-E	SP	SAFETY FENCE	100.00	LF
L	6030000000-E	1630	SILT EXCAVATION	130.00	CY
L	6036000000-E	1631	MATTING FOR EROSION CONTROL:	1300.00	SY
L	6038000000-E	SP	PERMANENT SOIL REINFORCEMENT MAT	70.00	SY
L	6071020000-E	SP	POLYACRYLAMIDE (PAM)	5.00	LB
L	6084000000-E	1660	SEEDING AND MULCHING	0.50	ACR
L	6090000000-E	1661	SEED FOR REPAIR SEEDING	50.00	LB
L	6093000000-E	1661	FERTILIZER FOR REPAIR SEEDING	0.25	TON
L	6096000000-E	1662	SEED FOR SUPPLEMENTAL SEEDING	50.00	LB
L	6108000000-E	1665	FERTILIZER TOPDRESSING	0.25	TON
L	6117000000-N	SP	RESPONSE FOR EROSION CONTROL	5.00	EA
L	6111000000-E	SP	IMPERVIOUS DIKE	60.00	LF
L	6120000000-E	SP	CULVERT DIVERSION CHANNEL	290.00	CY
L	6070000000-N	SP	SPECIAL STILLING BASINS	1.00	EA
L	6045000000-E	SP	48" TEMPORARY PIPE FOR CULVERT CONSTRUCTION	100.00	LF
			Traffic Management		
Y	4400000000-E	1110	WORK ZONE SIGNS (STATIONARY)	250.00	SF
Y	4430000000-N	1130	DRUMS	14.00	EA
Y	4465000000-N	1160	TEMPORARY CRASH CUSHIONS	2.00	EA
Y	4470000000-N	1160	RESET TEMPORARY CRASH CUSHION	2.00	EA
Y	4485000000-E	1170	PORTABLE CONCRETE BARRIER	20.00	LF
Y	4500000000-E	1170	RESET PORTABLE CONCRETE BARRIER	20.00	LF
Y	3380000000-E	862	TEMPORARY STEEL BM GUARDRAIL	25.00	LF
			Pavement Marking		
PM	4835000000-E	1205	PAINT PAVEMENT MARKING LINES (24")	40.00	LF
PM	4810000000-E	1205	PAINT PAVEMENT MARKING LINES (4')	2500.00	LF
PM	4850000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (4")	900.00	LF
			Temporary Signal		
Z	7980000000-N	SP	Portable Traffic Signal System (Actuated)	2.00	EA
			Structures		
B	8035000000-N	402	REMOVAL OF EXISTING STRUCTURE AT STATION 13+05	1	LS
B	8121000000-N	412	UNCLASSIFIED STRUCTURE EXCAVATION AT STATION 13+05	1	LS
C	8196000000-E	420	CLASS A CONCRETE (CULVERT)	8	CY
C	8245000000-E	425	REINFORCING STEEL (CULVERT)	1326	LB
D	0654000000-E	310	117" X 79" CS PIPE ARCH CULVERTS, .109" THICK	100.00	LF
B	8608000000-E	876	RIP RAP CLASS II (2'-0" THICK)	70.00	Tons
B	8622000000-E	876	GEOTEXTILE FOR DRAINAGE	127.00	SY
C	8804000000-N	SP	GENERIC CULVERT ITEM - ALUM HEADWALLS/WINGWALLS	1	LS

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6/21/00

COMPUTED BY: BGR	DATE: 12-19-12
CHECKED BY: JBV	DATE: 12-19-12

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS XI MOD	ANCHORS XI	ANCHORS GRAU 350 TYPE TL-2	ANCHORS M-350	ANCHORS TYPE III	ANCHORS CAT-1	ANCHORS VI MOD	ANCHORS BIC	ANCHORS AT-1	IMPACT ATTENUATOR TYPE 350 EA	IMPACT ATTENUATOR TYPE 350 G	IMPACT ATTENUATOR TYPE 350 NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
-L-	12+40.94	13+45.38	LT	75	45		CULVERT	CULVERT	3.00	6	31.25	N/A	0.625	N/A			1						1							
-L-	13+07.26	13+57.26	RT	125			CULVERT	CULVERT	3.00	6	31.25	31.25	0.625	0.625			2													
			TOTAL	200													3						1							
			DEDUCT ANCHORS																											
			GRAU 350 TYPE TL-2 – 25.00	-75																										
			AT-1 – 6.25		-6.25																									
			TOTAL	125	38.75																									
ADDITIONAL GUARDRAIL POSTS = 10			SAY	125	50												3						1							

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

ENDWALLS: STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) — CU. YDS.

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

FRAME, GRATES AND HOOD STANDARD 840.03 — TYPE OF GRATE

STATION / SIZE	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	C.S. PIPE (UNLESS NOTED OTHRWISE) 12"	15"	18"	24"	30"	36"	42"	117" x 79" C.S. PIPE ARCH	CLASS III R.C. PIPE (UNLESS OTHERWISE NOTED) 12"	15"	18"	24"	30"	36"	42"	48"	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS R.C.P.	ENDWALLS C.S.P.	PER EACH (0' THRU 5.0')	LIN. *FT. A 5.0' THRU 10.0'	LIN. *FT. B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	TYPE OF GRATE E	F	G	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32								CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN. FT.	REMARKS
THICKNESS OR GAUGE																.064	.064	.064	.064	.079	.079	.109	.109																																										
-L- 13+91.16	CL				2104.64	2102.64																				55																																							
-L- 13+91.16	CL																																																															55	

ABBREVIATIONS

- C.B. — CATCH BASIN
- N.D.I. — NARROW DROP INLET
- D.I. — DROP INLET
- G.D.I. — GRATED DROP INLET
- G.D.I. (N.S.) — GRATED DROP INLET (NARROW SLOT)
- J.B. — JUNCTION BOX
- M.H. — MANHOLE
- T.B.D.I. — TRAFFIC BEARING DROP INLET
- T.B.J.B. — TRAFFIC BEARING JUNCTION BOX

Note: Invert elevations are for bid purposes only. Contractor to field verify all existing and proposed elevations

SUMMARY OF EARTHWORK
IN CUBIC YARDS

PHASE I

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
-L- 12+00 TO 12+50	0		15	15	0
-L- 12+50 TO 13+00	0		118	118	0
-L- 13+00 TO 13+50	0		129	129	0
-L- 13+50 TO 14+00	0		66	66	0
TOTALS	0		328	328	0
EARTH WASTE TO REPLACE BORROW				0	0
GRAND TOTAL	0			328	
SAY	0			350	

PHASE II

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
-L- 12+00 TO 12+50	55		22	0	33
-L- 12+50 TO 13+00	32		92	60	0
-L- 13+00 TO 13+50	23		71	48	0
-L- 13+50 TO 14+00	23		2	0	21
TOTALS	133		544	108	54
EARTH WASTE TO REPLACE BORROW				-54	-54
GRAND TOTAL	133			54	0
SAY	150			100	
ESTIMATED:					
UNDERCUT EXCAVATION = 50					
SELECT GRANULAR MATIERIAL = 50					
INCIDENTAL STONE BASE = 50					

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
-L-	12+00.00	14+00.00	CL	400
			TOTAL:	400
			SAY:	400

Approximate quantities only. Unclassified excavation, borrow excavation, shoulder borrow, 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".

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bcross

COMPUTED BY: BGR DATE: 12-19-12
CHECKED BY: JBV DATE: 12-19-12

6/21/00

PROJECT REFERENCE NO.	SHEET NO.
17BPJ4.R.71	3-B

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 54" & OVER)

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 54"	60"	66"	72"	78"	84"	C.S. PIPE 54" .109	54" .138	54" .168	54" SHOP ELON-GATED .138	54" SHOP ELON-GATED .168	60" .138	60" .168	66" .138	66" .168	117"x79" CS PIPE ARCH .109	STRUCTURAL PLATE PIPE 60" 12	60" 10	66" 12	66" 10	72" 12	72" 10	REINFORCED ENDWALLS WITH R.C. - C.Y.	WITH C.S. - C.Y.	MASONARY DRAINAGE STRUCTURES CUBIC YARDS	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION CATCH BASIN	DROP INLET	REINF. CONC. FLARED END SECTIONS NO. & SIZE	CORR. STEEL FLARED END SECTIONS NO. & SIZE	REINF. CONC. ELBOWS NO. & SIZE	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL "B" C.Y. STD 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-L- 13+02.02	CL				2090.93	2090.48																	50																							ALUM PIPE ARCH W/CULVERT
-L- 13+02.02	CL				2090.93	2090.48																	50																							ALUM PIPE ARCH W/CULVERT

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I. (N.S.)	GRATED DROP INLET (NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

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barnes

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.71	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022599 ENGINEER JAMES B. VOSS

SEAL 028945 ENGINEER DANA J. BOLDEN

Prepared in the Office of: Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

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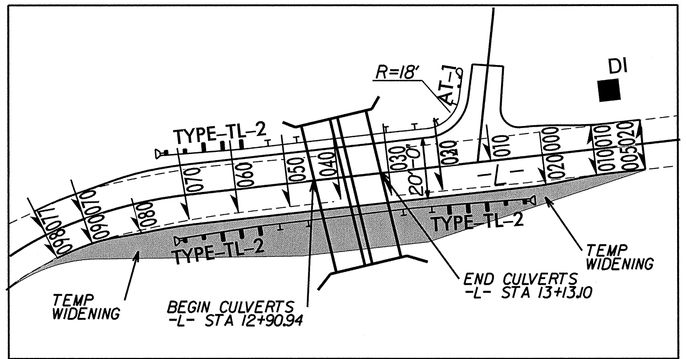
SCALE

5/14/99



SKETCH SHOWING THE RELATIONSHIP OF THE CULVERTS TO THE PAVEMENT

25 0 25 50

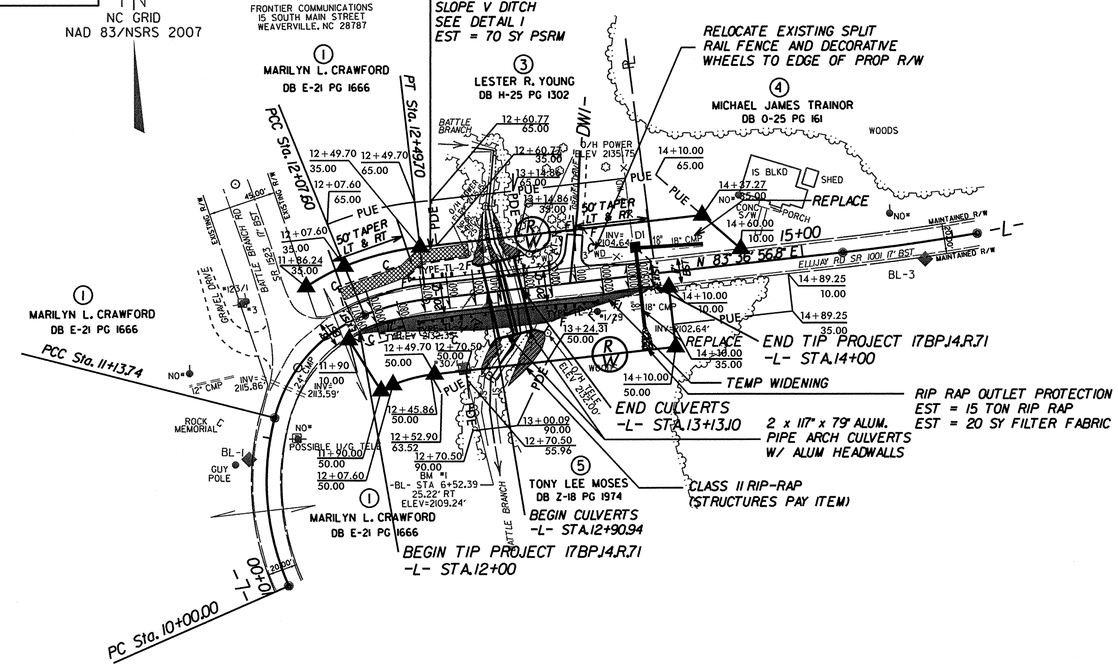
NC GRID
NAD 83/NSRS 2007

-L-

PI Sta 10+59.07
Δ = 38° 08' 34.2" (RT)
D = 33° 32' 04.3"
L = 113.74'
T = 59.07'
R = 170.86'

PI Sta 11+64.42
Δ = 53° 35' 50.2" (RT)
D = 57° 06' 07.7"
L = 93.86'
T = 50.68'
R = 100.34'
SE = VARIES
V = 20 MPH

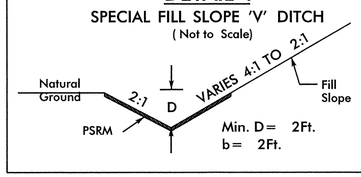
PI Sta 12+28.78
Δ = 15° 38' 15.5" (RT)
D = 37° 08' 46.8"
L = 42.10'
T = 21.18'
R = 154.24'



DETAIL 1

SPECIAL FILL SLOPE 'V' DITCH

(Not to Scale)



FROM STA. 12+00 TO STA. 12+90 LT

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Bridge

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PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.71	5

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022599 ENGINEER JAMES B. YOSO

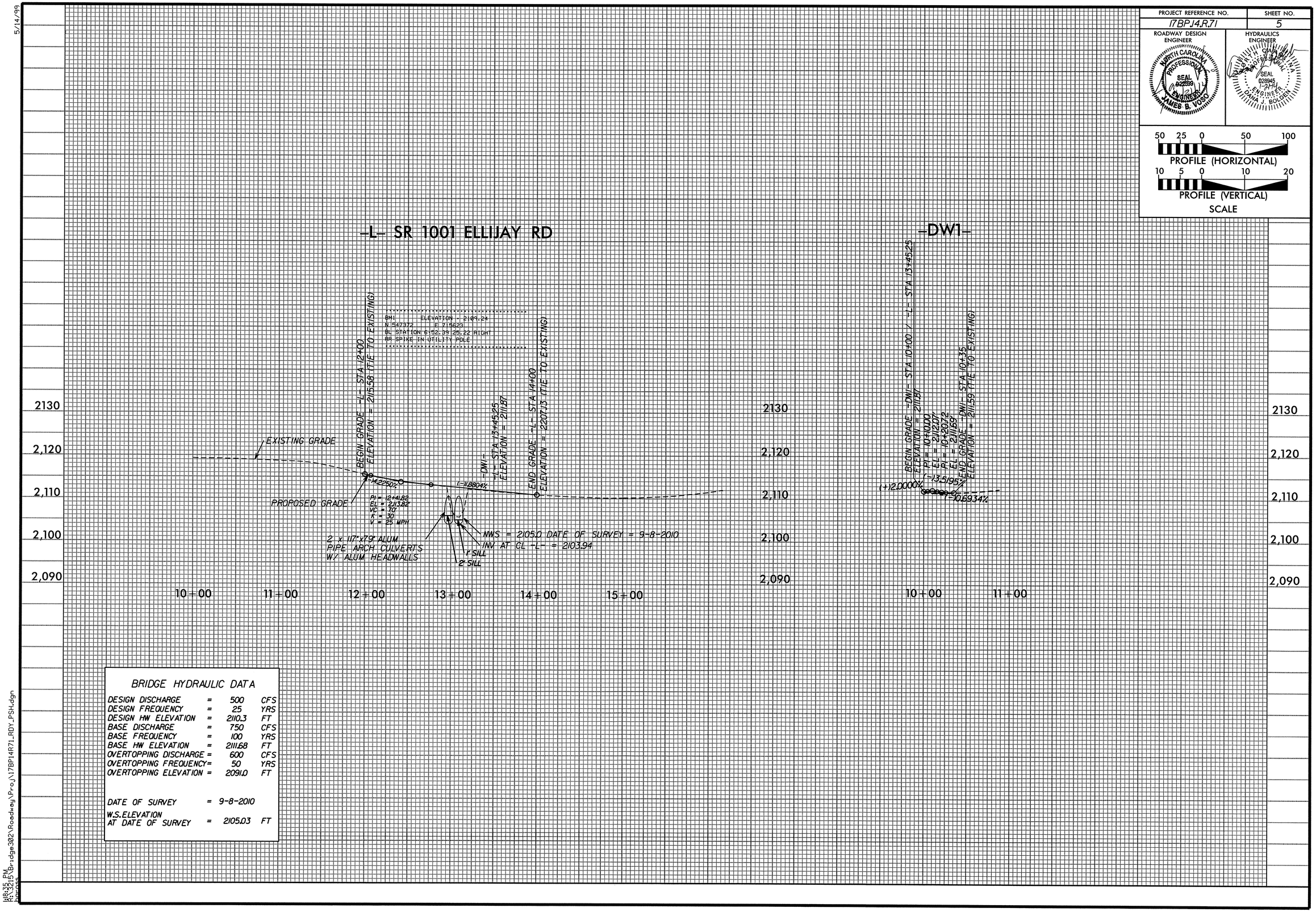
HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 028945 ENGINEER DINA J. BOLDEN

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

SCALE



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	500	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	2110.3	FT
BASE DISCHARGE	=	750	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	2111.68	FT
OVERTOPPING DISCHARGE	=	600	CFS
OVERTOPPING FREQUENCY	=	50	YRS
OVERTOPPING ELEVATION	=	2091.0	FT
DATE OF SURVEY	=	9-8-2010	
W.S. ELEVATION AT DATE OF SURVEY	=	2105.03	FT

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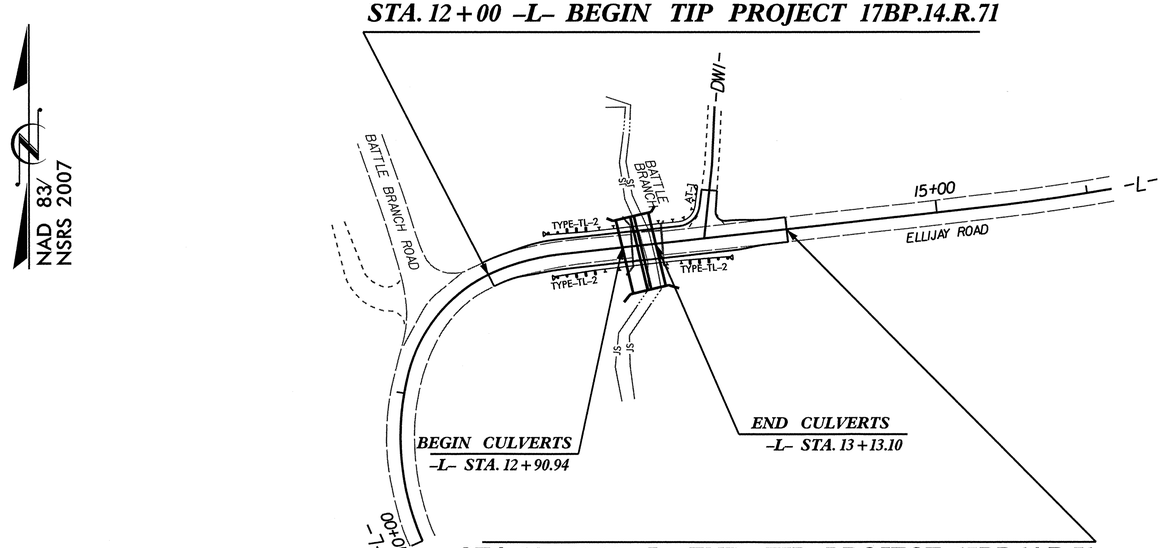
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

MACON COUNTY

STA. 12+00 –L– BEGIN TIP PROJECT 17BP.14.R.71



STA. 14+00.00 –L– END TIP PROJECT 17BP.14.R.71

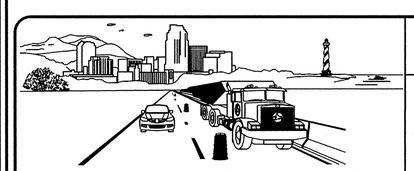
INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND, AND TEMPORARY PAVEMENT MARKING
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES AND LOCAL NOTES)
TMP-1C	STANDARD TEMPORARY SHORING DETAILS
TMP-2	TEMPORARY TRAFFIC CONTROL PHASE I
TMP-3	TEMPORARY TRAFFIC CONTROL PHASE II & III
PMP-1	PAVEMENT MARKING PLAN

SHEET NO.
TMP-1

17BP.14.R.71

TIP PROJECT:



WORK ZONE SAFETY & MOBILITY
"from the MOUNTAINS to the COAST"

N.C.D.O.T. WORK ZONE TRAFFIC CONTROL
1561 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699-1561
750 N. GREENFIELD PARKWAY, GARNER, NC 27529 (DELIVERY)
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DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

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APPROVED: James Voso
DATE: 1/21/14

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 022599 ENGINEER JAMES B. VOSO

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PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.71	TMP-1A

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANAUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHION
1165.01	WORK VEHICLE LIGHTING SYSTEMS AND TMA DELINEATION
1170.01	PORTABLE CONCRETE BARRIER
1180.01	SKINNY - DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

LEGEND

GENERAL

DIRECTION OF TRAFFIC FLOW

DIRECTION OF PEDESTRIAN TRAFFIC FLOW

EXIST. PVMT.

NORTH ARROW

PROPOSED PVMT.

WORK AREA

REMOVAL

USER DEFINED (IF NEEDED)

USER DEFINED (IF NEEDED)

TRAFFIC CONTROL DEVICES

BARRICADE (TYPE III)

CONE

DRUM SKINNY DRUM TUBULAR MARKER

TEMPORARY CRASH CUSHION

FLASHING ARROW BOARD

FLAGGER

LAW ENFORCEMENT

TRUCK MOUNTED ATTENUATOR (TMA)

CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

PORTABLE SIGN

STATIONARY SIGN

STATIONARY OR PORTABLE SIGN

SIGNALS

EXISTING PROPOSED TEMPORARY

PAVEMENT MARKINGS

EXISTING LINES

TEMPORARY LINES

PAVEMENT MARKERS

CRYSTAL/CRYSTAL

CRYSTAL/RED

YELLOW/YELLOW

PAVEMENT MARKING SYMBOLS

PAVEMENT MARKING SYMBOLS

TEMPORARY PAVEMENT MARKING

SYMBOL	DESCRIPTION	PAY ITEM
PA	WHITE EDGELINE 1X	PAINT (4")
P2	WHITE STOP BAR 1X	PAINT (24")

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ROADWAY STANDARD DRAWINGS & LEGEND

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PROJ. REFERENCE NO.	SHEET NO.
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GENERAL NOTES / LOCAL 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.

TIME RESTRICTIONS

A. DO NOT CONDUCT ANY HAULING OPERATIONS AGAINST THE FLOW OF TRAFFIC OF AN OPEN TRAVELWAY UNLESS THE HAULING OPERATION IS PROTECTED BY BARRIER OR GUARDRAIL OR AS DIRECTED BY THE ENGINEER.

LANE AND SHOULDER CLOSURE REQUIREMENTS

B. 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.

C. 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.

D. 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.

E. DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

PAVEMENT EDGE DROP OFF REQUIREMENTS

F. 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.

G. 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

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

SIGNING

I. 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.

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

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

TRAFFIC BARRIER

L. INSTALL TEMPORARY BARRIER ACCORDING TO THE TRANSPORTATION MANAGEMENT PLANS A MAXIMUM OF TWO (2) WEEKS PRIOR TO BEGINNING WORK IN ANY LOCATION. ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION PROCEED IN A CONTINUOUS MANNER TO COMPLETE THE PROPOSED WORK IN THAT LOCATION UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS OR AS DIRECTED BY THE ENGINEER.

DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE.

ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION AND NO WORK IS PERFORMED BEHIND THE TEMPORARY BARRIER FOR A PERIOD LONGER THAN TWO (2) MONTHS, REMOVE / RESET TEMPORARY BARRIER AT NO COST TO THE DEPARTMENT UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS, TEMPORARY BARRIER IS PROTECTING A HAZARD, OR AS DIRECTED BY THE ENGINEER.

INSTALL TEMPORARY BARRIER WITH THE TRAFFIC FLOW BEGINNING WITH THE UPSTREAM SIDE OF TRAFFIC. REMOVE TEMPORARY BARRIER AGAINST THE TRAFFIC FLOW BEGINNING WITH THE DOWNSTREAM SIDE OF TRAFFIC.

INSTALL AND SPACE DRUMS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (MPH) TO CLOSE OR KEEP THE SECTION OF THE ROADWAY CLOSED UNTIL THE TEMPORARY BARRIER CAN BE PLACED OR AFTER THE TEMPORARY BARRIER IS REMOVED.

M. PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER AT ALL TIMES DURING THE INSTALLATION AND REMOVAL OF THE BARRIER BY EITHER A TRUCK MOUNTED ATTENUATOR (MAXIMUM 72 HOURS) OR A TEMPORARY CRASH CUSHION.

PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER FROM ONCOMING TRAFFIC AT ALL TIMES BY A TEMPORARY CRASH CUSHION UNLESS THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER IS OFFSET FROM ONCOMING TRAFFIC AS FOLLOWS OR AS SHOWN IN THE PLANS: (SEE ALSO 1101.05)

POSTED SPEED LIMIT	MINIMUM OFFSET
40 OR LESS	15 FT
45-50	20 FT
55	25 FT
60 MPH OR GREATER	30 FT

TRAFFIC CONTROL DEVICES

N. 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.

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

PAVEMENT MARKINGS AND MARKERS

P. INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

ROAD NAME	MARKING	MARKER
SR 1001 ELLIJAY RD.	PAINT	NONE

Q. PLACE ONE APPLICATION OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A SECOND APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.

R. TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

S. REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

MISCELLANEOUS

T. IN THE EVENT A TIE-IN CANNOT BE MADE IN ONE DAY'S TIME, BRING THE TIE-IN AREA TO AN APPROPRIATE ROADWAY ELEVATION AS DETERMINED BY THE ENGINEER. PLACE BLACK ON ORANGE "LOOSE GRAVEL" SIGNS (W8-7) AND BLACK ON ORANGE "PAVEMENT ENDS" SIGNS (W8-3) 500 FT AND 500 FT RESPECTIVELY IN ADVANCE OF THE UNEVEN AREAS. USE DRUMS TO DELINEATE THE EDGE OF ROADWAY ALONG UNPAVED AREAS.

LOCAL NOTES

CONTRACTOR TO MAINTAIN DRIVEWAY ACCESS AT ALL TIMES

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APPROVED: James Voso DATE: 1/21/14

NORTH CAROLINA PROFESSIONAL SEAL 022599 ENGINEER JAMES B. VOSO

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

TRANSPORTATION OPERATIONS PLAN

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PROJECT REFERENCE NO.	SHEET
17BP.14.R.71	TMP-1C

GEOTECHNICAL ENGINEER

ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022599 ENGINEER JAMES B. VOSO

SIGNATURE DATE SIGNATURE DATE 1/21/14

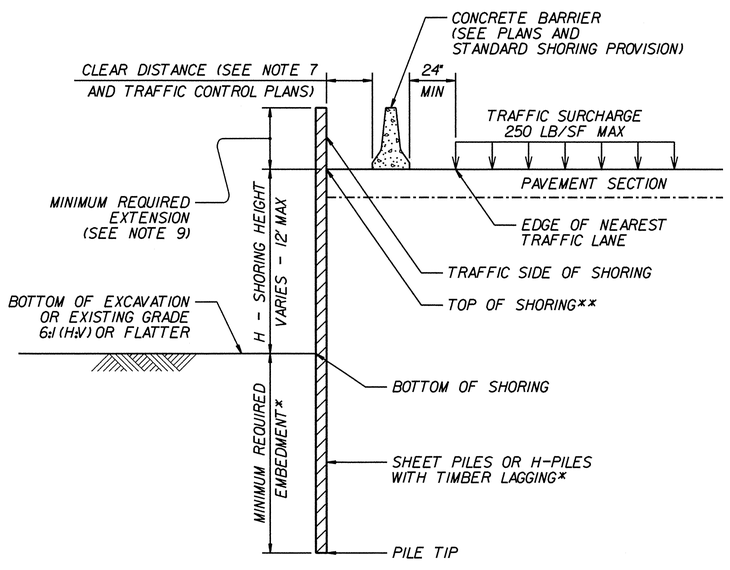
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS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

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

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

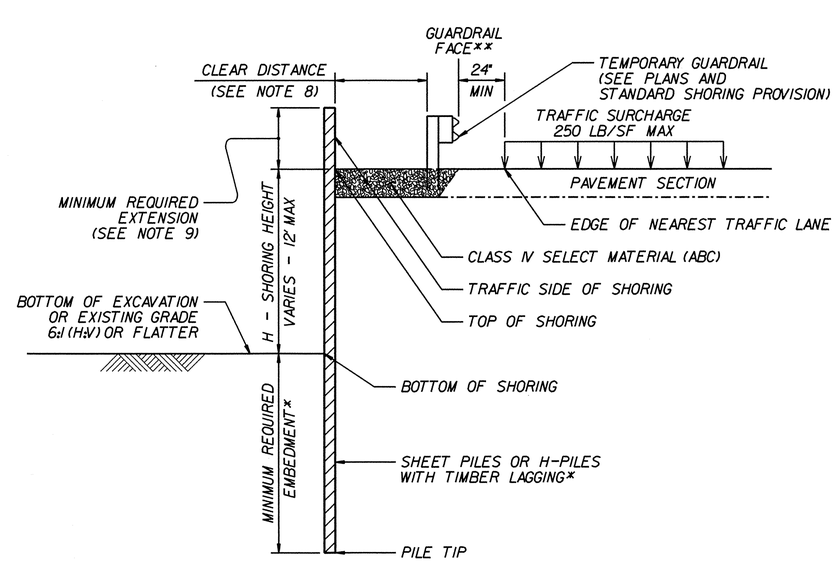
NOTES:

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



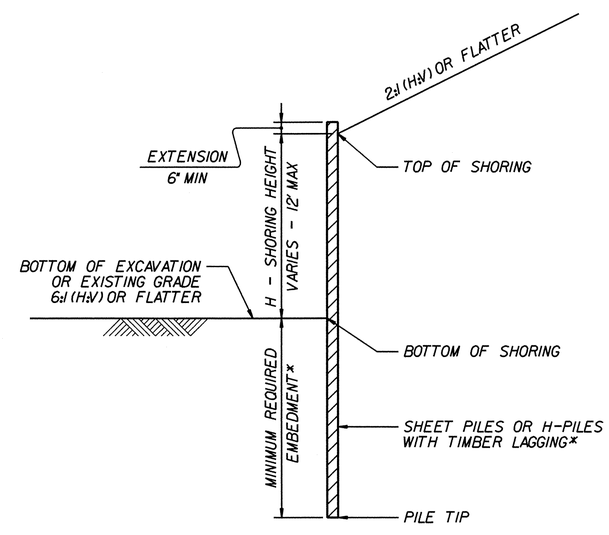
CONCRETE BARRIER

**TOP OF SHORING = EDGE OF PAVEMENT



TEMPORARY GUARDRAIL

**GUARDRAIL FACE = EDGE OF PAVEMENT



STANDARD TEMPORARY SHORING

(SLOPE CASE)
*SEE TABLE ABOVE.

STANDARD TEMPORARY SHORING

(SURCHARGE CASE)
*SEE TABLE ABOVE.

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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

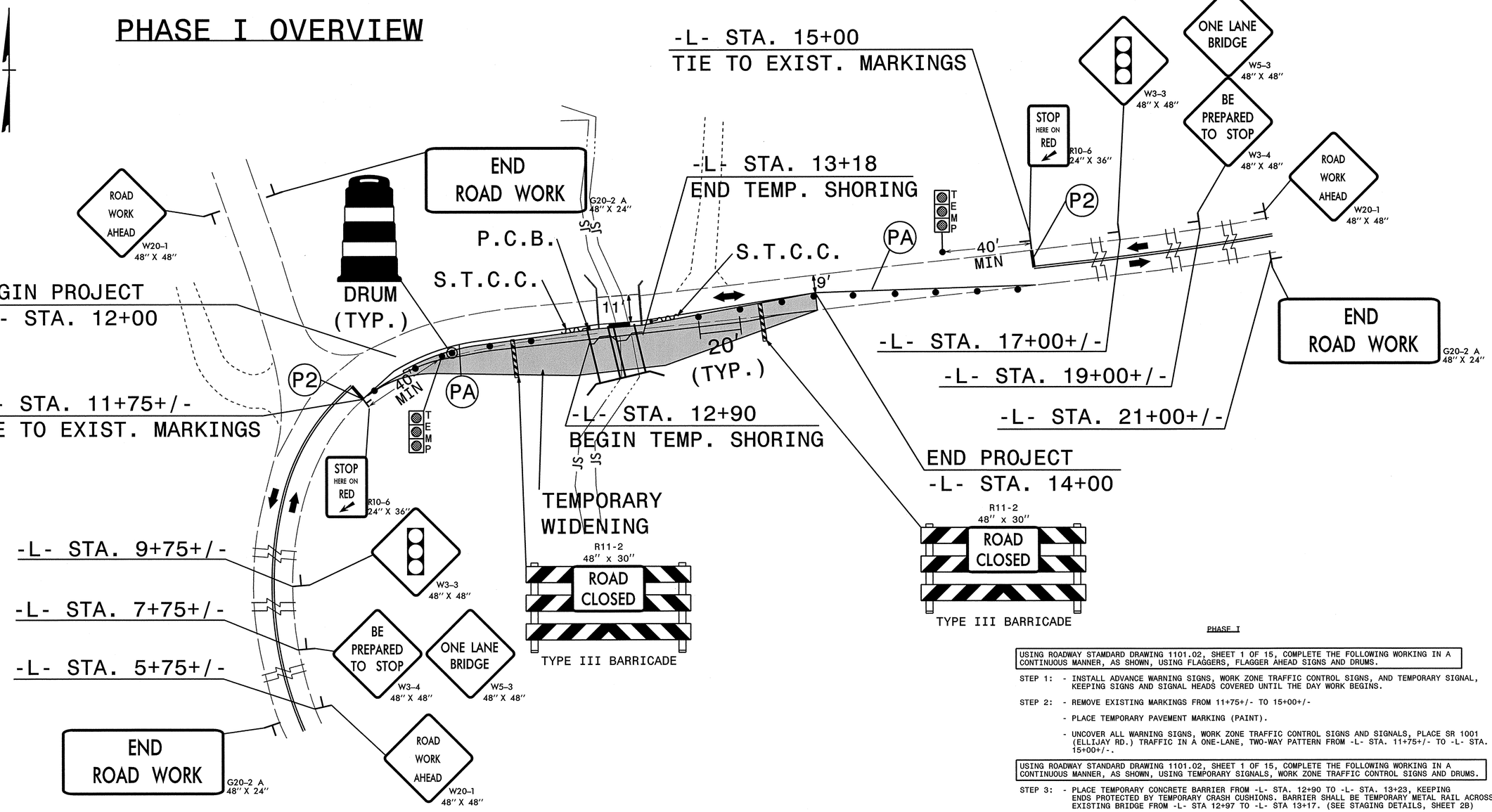
STANDARD DRAWING NO. 1801.01

STANDARD TEMPORARY SHORING

DATE: 1-17-12

PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.71	TMP-2

PHASE I OVERVIEW



PHASE I

USING ROADWAY STAMDARD DRAWING 1101.02, SHEET 1 OF 15, COMPLETE THE FOLLOWING WORKING IN A CONTINUOUS MANNER, AS SHOWN, USING FLAGGERS, FLAGGER AHEAD SIGNS AND DRUMS.

STEP 1: - INSTALL ADVANCE WARNING SIGNS, WORK ZONE TRAFFIC CONTROL SIGNS, AND TEMPORARY SIGNAL, KEEPING SIGNS AND SIGNAL HEADS COVERED UNTIL THE DAY WORK BEGINS.

STEP 2: - REMOVE EXISTING MARKINGS FROM 11+75+/- TO 15+00+/-

- PLACE TEMPORARY PAVEMENT MARKING (PAINT).

- UNCOVER ALL WARNING SIGNS, WORK ZONE TRAFFIC CONTROL SIGNS AND SIGNALS, PLACE SR 1001 (ELLIJAY RD.) TRAFFIC IN A ONE-LANE, TWO-WAY PATTERN FROM -L- STA. 11+75+/- TO -L- STA. 15+00+/-.

USING ROADWAY STANDARD DRAWING 1101.02, SHEET 1 OF 15, COMPLETE THE FOLLOWING WORKING IN A CONTINUOUS MANNER, AS SHOWN, USING TEMPORARY SIGNALS, WORK ZONE TRAFFIC CONTROL SIGNS AND DRUMS.

STEP 3: - PLACE TEMPORARY CONCRETE BARRIER FROM -L- STA. 12+90 TO -L- STA. 13+23, KEEPING ENDS PROTECTED BY TEMPORARY CRASH CUSHIONS. BARRIER SHALL BE TEMPORARY METAL RAIL ACROSS EXISTING BRIDGE FROM -L- STA 12+97 TO -L- STA 13+17. (SEE STAGING DETAILS, SHEET 2B)

- REMOVE A PORTION OF THE BRIDGE AND BEAMS ON THE SOUTHERN SIDE AS NOTED ON BRIDGE STAGE 1 CONSTRUCTION (SEE STRUCTURE PLANS).

STEP 4: - USING GEOTECHNICAL STANDARD DRAWING 1801.01, OR CONTRACTOR PROVIDED DESIGN, PLACE TEMPORARY SHORING BEHIND CONCRETE BARRIER AT THE FOLLOWING LOCATIONS:

-L- STA. 12+90, 10.8' RT. TO -L- STA. 13+18, 10.8' RT.

STEP 5: - BEHIND TEMPORARY BARRIER, BEGIN CONSTRUCTION OF PROPOSED STRUCTURE RIGHT OF -L- FROM -L- STA. 12+90.94 TO -L- STA. 13+13.10, AS SHOWN (SEE STRUCTURE PLANS).

STEP 6: - CONSTRUCT RIGHT OF -L- ALL PROPOSED ROADWAY, PROPOSED STRUCTURE, AND TEMPORARY WIDENING UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE, FROM -L- STA. 11+75+/- TO -L- STA. 15+00+/- (SEE ROADWAY PLANS).

LEGEND

PROPOSED CONSTRUCTION

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DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

TRANSPORTATION MANAGEMENT PLAN PHASE I

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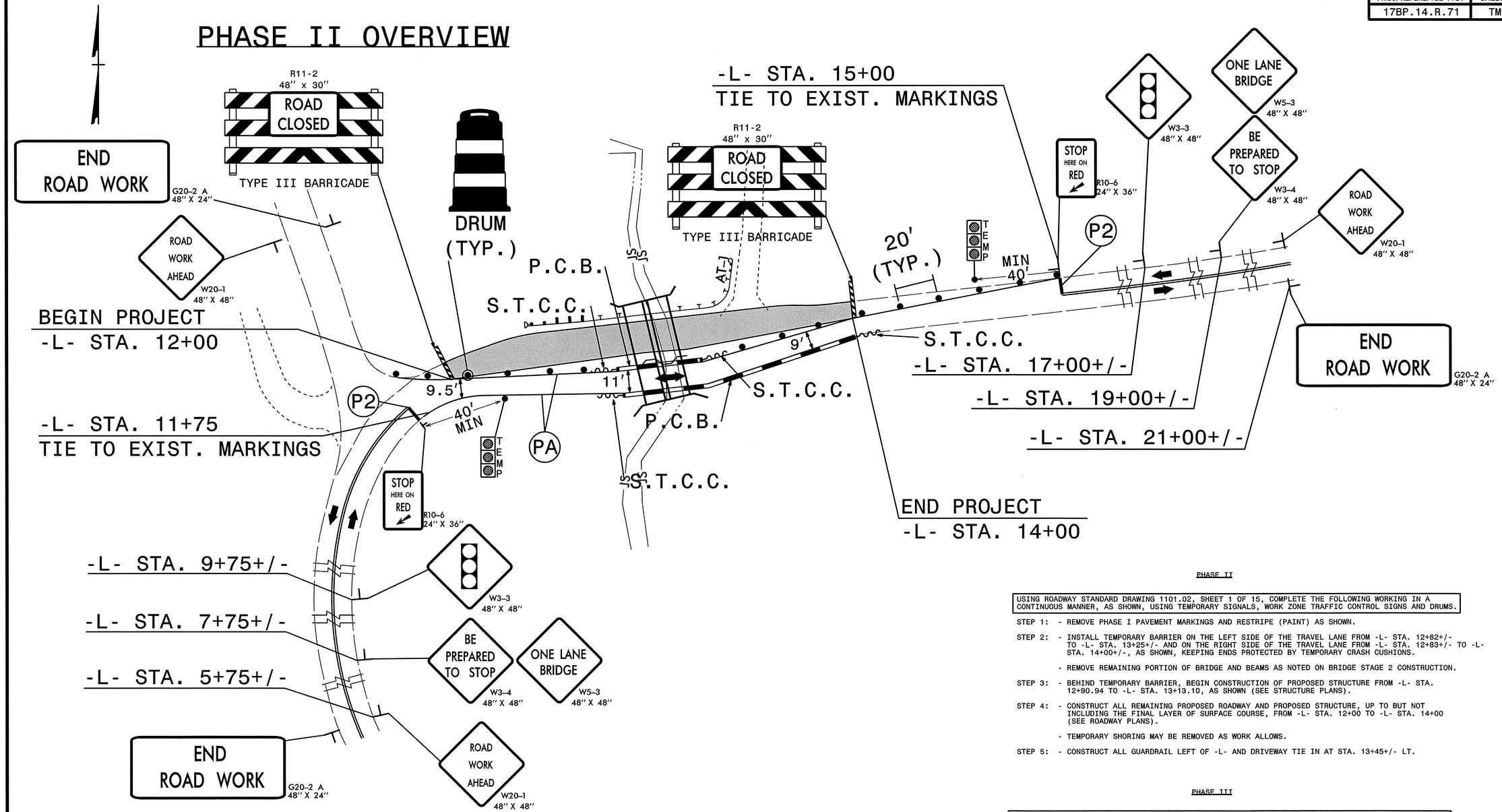
PHASE II OVERVIEW



PHASE II

USING ROADWAY STANDARD DRAWING 1101.02, SHEET 1 OF 15, COMPLETE THE FOLLOWING WORKING IN A CONTINUOUS MANNER, AS SHOWN, USING TEMPORARY SIGNALS, WORK ZONE TRAFFIC CONTROL SIGNS AND DRUMS.

STEP 1: - REMOVE PHASE I PAVEMENT MARKINGS AND RESTRIPE (PAINT) AS SHOWN.

STEP 2: - INSTALL TEMPORARY BARRIER ON THE LEFT SIDE OF THE TRAVEL LANE FROM -L- STA. 12+82+/- TO -L- STA. 13+25+/- AND ON THE RIGHT SIDE OF THE TRAVEL LANE FROM -L- STA. 12+83+/- TO -L- STA. 14+00+/-, AS SHOWN, KEEPING ENDS PROTECTED BY TEMPORARY CRASH CUSHIONS.

- REMOVE REMAINING PORTION OF BRIDGE AND BEAMS AS NOTED ON BRIDGE STAGE 2 CONSTRUCTION.

STEP 3: - BEHIND TEMPORARY BARRIER, BEGIN CONSTRUCTION OF PROPOSED STRUCTURE FROM -L- STA. 12+90.94 TO -L- STA. 13+13.10, AS SHOWN (SEE STRUCTURE PLANS).

STEP 4: - CONSTRUCT ALL REMAINING PROPOSED ROADWAY AND PROPOSED STRUCTURE, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE, FROM -L- STA. 12+00 TO -L- STA. 14+00 (SEE ROADWAY PLANS).

- TEMPORARY SHORING MAY BE REMOVED AS WORK ALLOWS.

STEP 5: - CONSTRUCT ALL GUARDRAIL LEFT OF -L- AND DRIVEWAY TIE IN AT STA. 13+45+/- LT.

PHASE III

USING ROADWAY STANDARD DRAWING 1101.02, SHEET 1 OF 15, COMPLETE THE FOLLOWING WORKING IN A CONTINUOUS MANNER, AS SHOWN, USING TEMPORARY SIGNALS, WORKZONE TRAFFIC CONTROL SIGNS AND DRUMS.

STEP 1: - CONSTRUCT ALL GUARDRAIL RIGHT OF -L- MAINTAINING ONE-LANE, TWO-WAY TRAFFIC AT ALL TIMES.

STEP 2: - PLACE THE FINAL LAYER OF SURFACE COURSE , FINAL MARKINGS (PAINT) IN THE FINAL PATTERN, AND OPEN -L-, SR 1001 (ELLIJAY RD.) TO THE FINAL TWO-LANE, TWO-WAY PATTERN (SEE ROADWAY PLANS). MAINTAIN ONE-LANE, TWO-WAY TRAFFIC AT ALL TIMES.

STEP 3: - REMOVE ALL TRAFFIC CONTROL DEVICES.

LEGEND

PROPOSED CONSTRUCTION

Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

APPROVED: James B. Vosso DATE: 1/21/14

NORTH CAROLINA PROFESSIONAL SEAL 022539 ENGINEER JAMES B. VOSSO

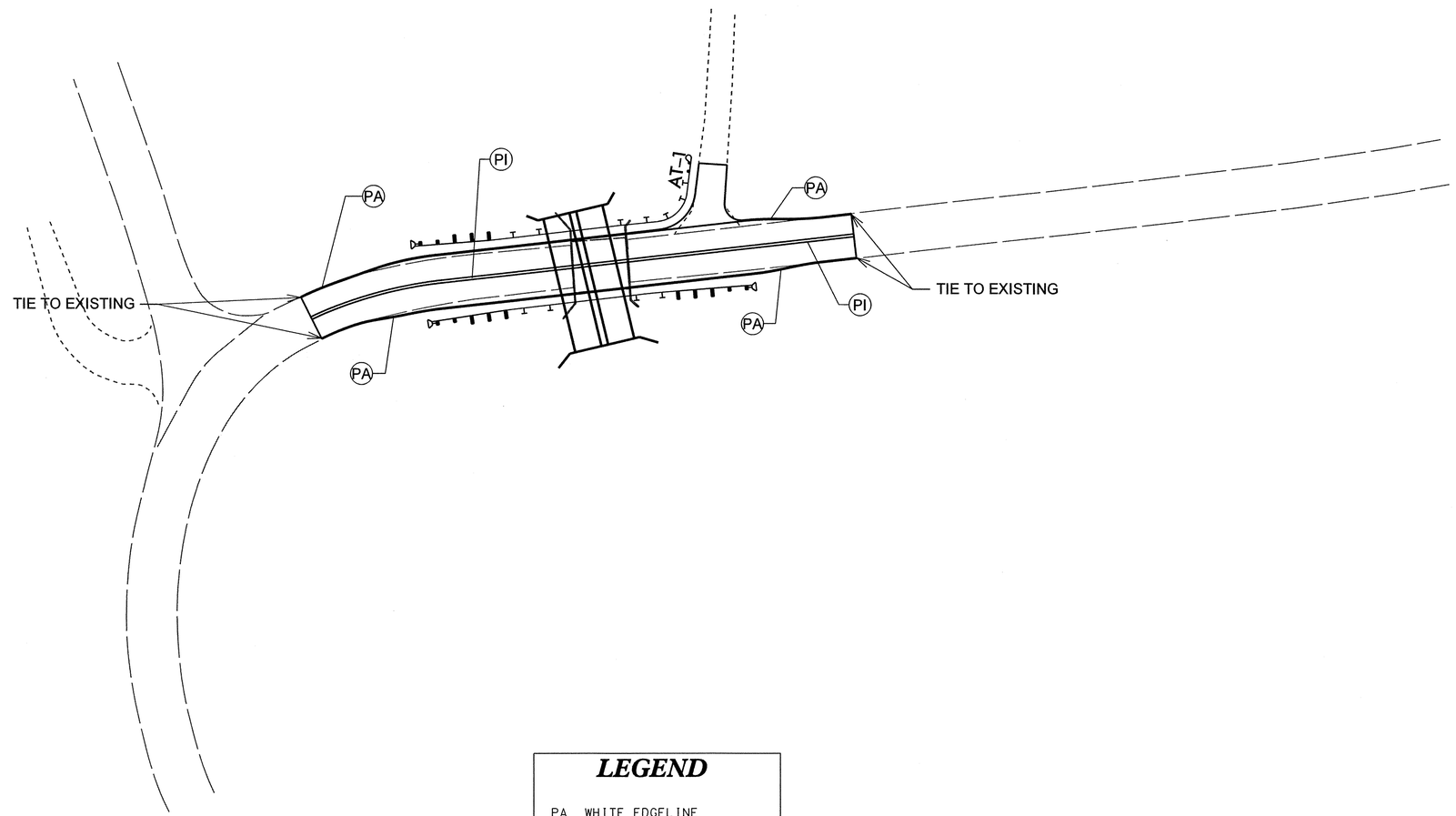
DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

TRANSPORTATION MANAGEMENT PLAN PHASE II/III

9:35:39 AM
R:\3215\Bridge302\Traffic\TrafficControl\Roadway\17BP14R71_TC_TMP3.DGN
bgross

PROJ. REFERENCE NO.	SHEET NO.
17BP.14.R.71	PMP-1

NAD 83/
NSRS 2007



LEGEND

PA WHITE EDGELINE
PI YELLOW DOUBLE CENTER

PROJECT MARKING SCHEDULE
BRIDGE 302

SYMBOL	DESCRIPTION	PAY ITEM	PAY ITEM QUANTITY
PI	YELLOW DOUBLE CENTER	PAINT 4" (DOUBLE COAT)	800 LF
PA	WHITE EDGELINE	PAINT 4" (DOUBLE COAT)	800 LF

GRAPHIC SCALE
25' 0' 25' 50'
100'
PLANS

Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

APPROVED: DATE: 11/21/14

NORTH CAROLINA PROFESSIONAL SEAL 022599 ENGINEER JAMES B. VOSO

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WORK ZONE TRAFFIC CONTROL

PAVEMENT MARKING PLAN

H24133 PM
R2532S\Bridge302\Traffic\TrafficControl\Roadway\17BP14R71_TC_PMP1.DGN
bgross

PROJECT NO: 17BP.14.R.71

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.14.R.71	EC-1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

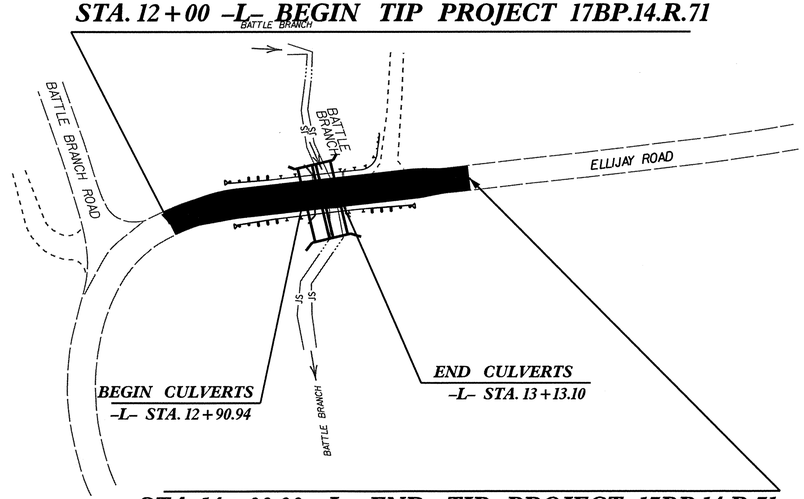
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

MACON COUNTY

NAD 83/
NSRS 2007

LOCATION: BRIDGE 302 OVER BATTLE BRANCH
ON SR 1001 (ELLIJAY ROAD)
TYPE OF WORK: GRADING, DRAINAGE, PAVING, & STRUCTURE

STA. 12+00 –L– BEGIN TIP PROJECT 17BP.14.R.71



STA. 14+00.00 –L– END TIP PROJECT 17BP.14.R.71

EROSION AND SEDIMENT CONTROL MEASURES

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

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

DANA BOLDEN
LEVEL IIIA NAME

3171
LEVEL IIIA CERTIFICATION NO.

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

GRAPHIC SCALE

0 50
PLANS

0 50
PROFILE (HORIZONTAL)

0 10
PROFILE (VERTICAL)

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:

Mattern & Craig
CONSULTING ENGINEERS - SURVEYORS
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201 - FAX (828) 254-4562

Reviewed 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 revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

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

12/5/12 2:25:32 PM
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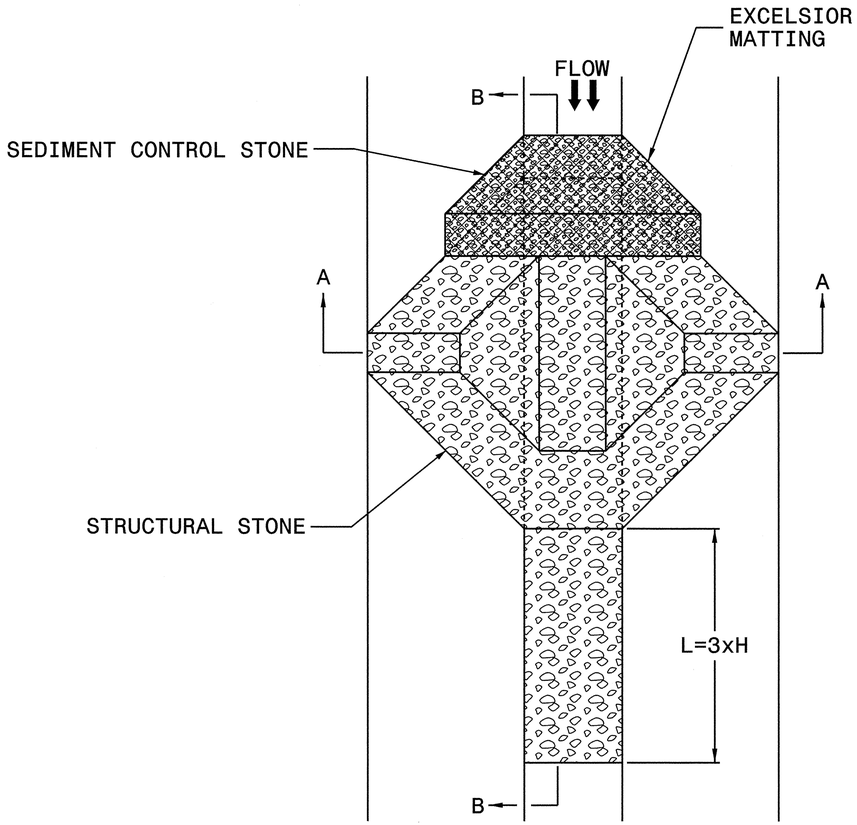
PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.71	EC-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



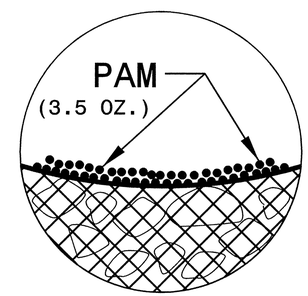
PLAN

NOTES

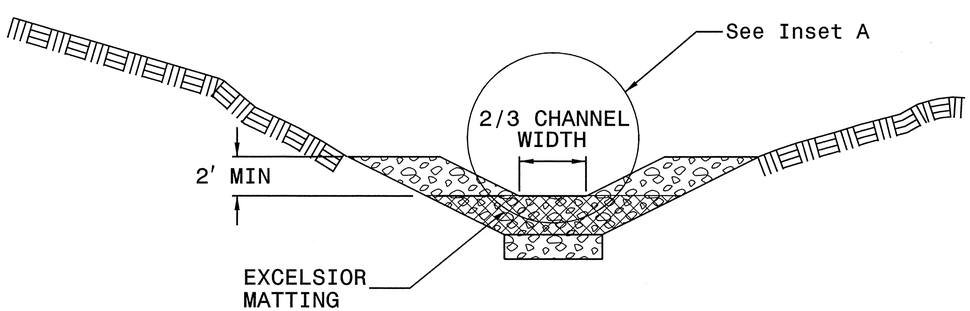
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

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

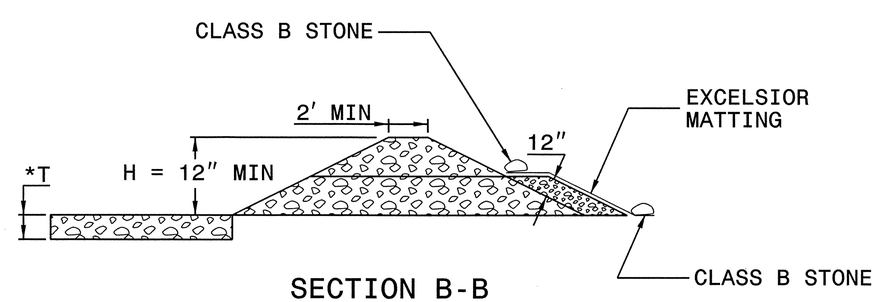
INITIALLY APPLY 3.5 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A



SECTION A-A



SECTION B-B

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

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.71	EC-3

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	12+00	14+00	LT&RT	1300
				SUBTOTAL	1300
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					0
				TOTAL	1300
				SAY	1300

PERMANENT SOIL REINFORCING MATTING

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	12+00	12+90	LT	70
				SUBTOTAL	70
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					0
				TOTAL	70
				SAY	70

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.71	EC-3A

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

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

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.71	EC-4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 042599 ENGINEER JAMES B. VOSO

NORTH CAROLINA PROFESSIONAL SEAL 028945 ENGINEER DINA J. BOLDEN

NAD 83/
NSRS 2007

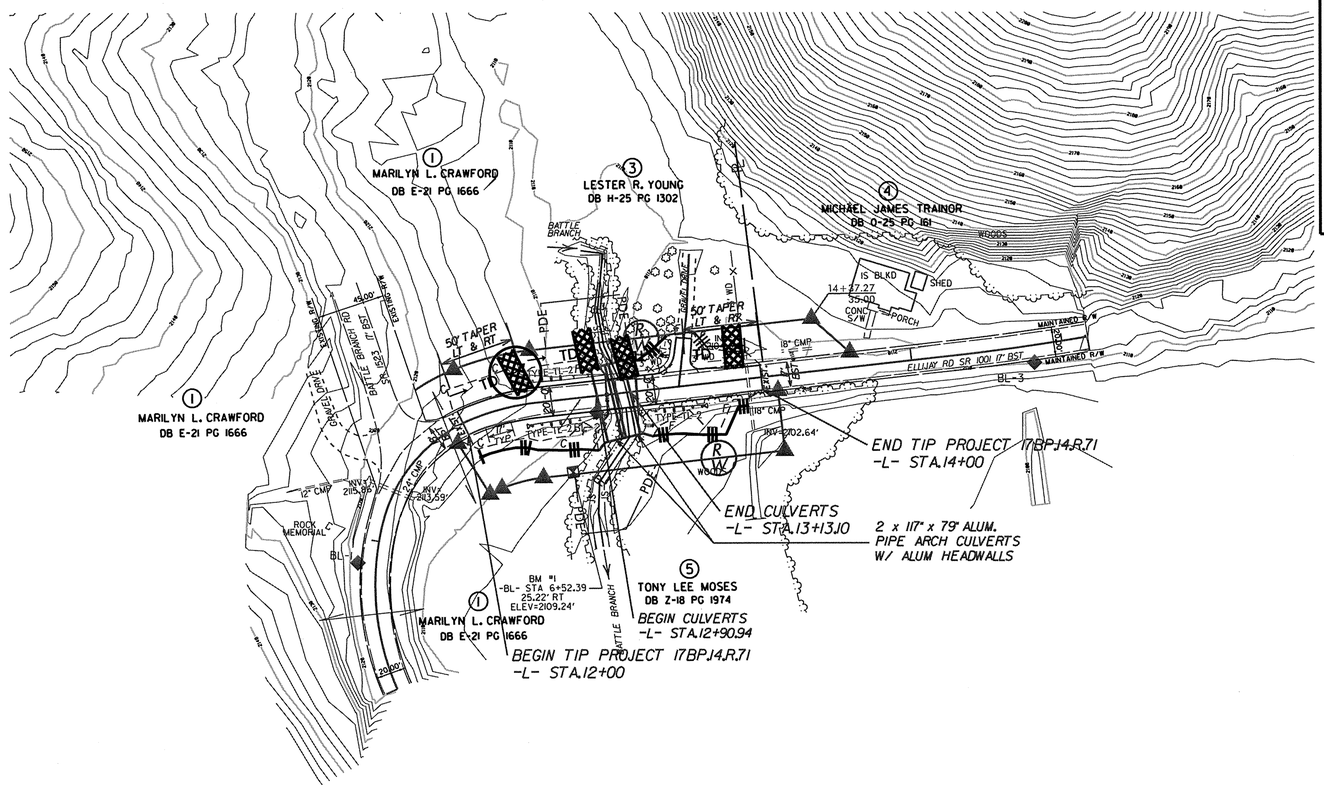
CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

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.

IF ANY PUMPED DEWATERING IS REQUIRED, A SPECIAL STILLING BASIN SHALL BE PROVIDED AS NEEDED

NOTE:
PLACE TEMPORARY ROCK SILT CHECKS TYPE – A AT DRAINAGE OUTLETS.



PROJECT REFERENCE NO.	SHEET NO.
17BPJ4.R.71	EC-5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022599 ENGINEER JAMES B. VOSO

NORTH CAROLINA PROFESSIONAL SEAL 028945 ENGINEER DANA J. BOLDEN

NAD 83/
NSRS 2007

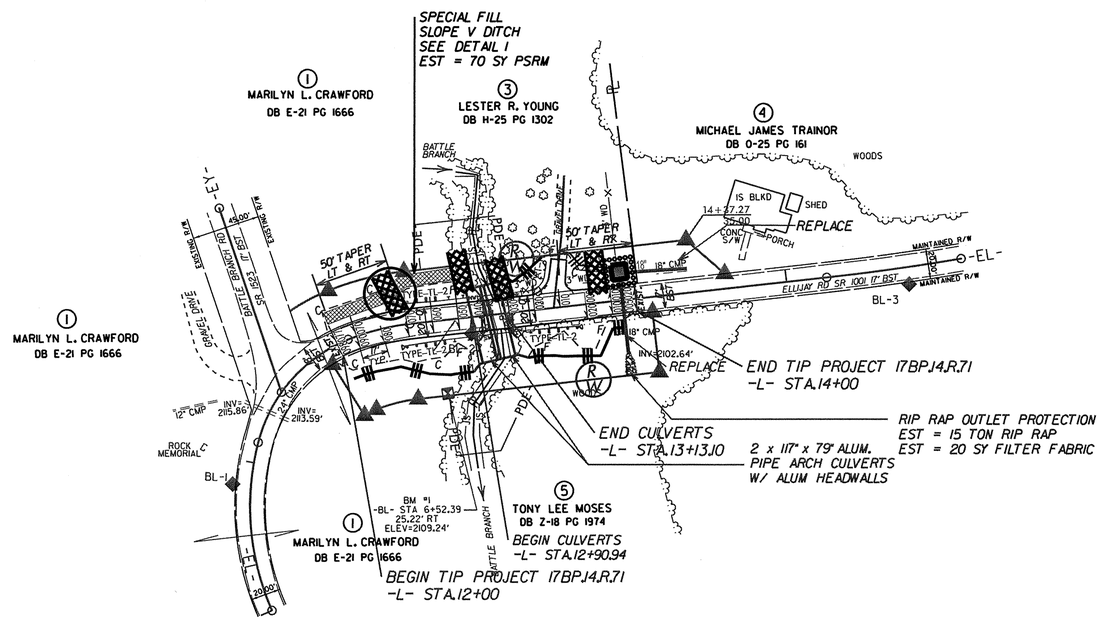
Place Matting for Erosion Control on Slope as Work Allows.

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.

IF ANY PUMPED DEWATERING IS REQUIRED, A SPECIAL STILLING BASIN SHALL BE PROVIDED AS NEEDED

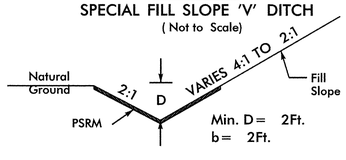
NOTE:
PLACE TEMPORARY ROCK SILT CHECKS TYPE – A AT DRAINAGE OUTLETS.



DETAIL 1

SPECIAL FILL SLOPE 'V' DITCH

(Not to Scale)

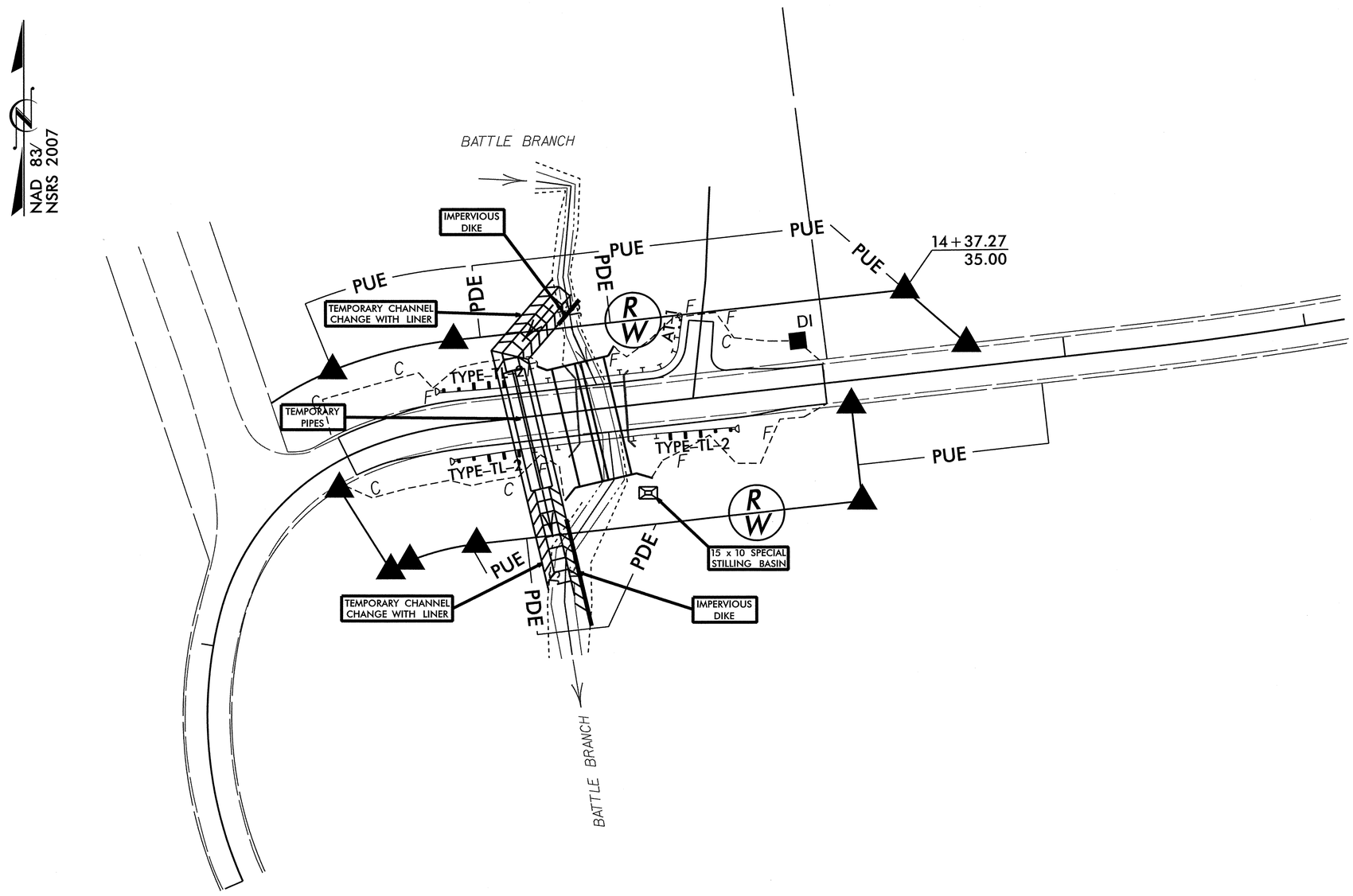


FROM STA. 12+00 TO STA. 12+90 LT

PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.71	EC-6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

CULVERT CONSTRUCTION SEQUENCE STA. 12+75 -L-

1. COSTRUCT SPECIAL STILLING BASIN (15' X 10').
2. CONSTRUCT TEMPORARY CHANNEL CHANGE WITH LINER (6 FT. BASE, MIN. 2 FT. DEEP, 2:1 SIDE SLOPES) AND TEMPORARY STREAM CROSSING (2 @ 48" CMP, 50' LENGTH) BY JACKING AND BORING OR OPEN CUT. TEMPORARY ROAD CLOSURES SHALL NOT BE LONGER THAN 60 MINUTES. UTILIZE AN IMPERVIOUS DIKE FOR ONE SIDE OF CHANNEL, DIVERTING FLOW.
3. CONSTRUCT PROPOSED CULVERT AND PORTION OF INLET/OUTLET CHANNEL IMPROVEMENTS.
4. REMOVE IMPERVIOUS DIKE AND TEMPORARY CHANNEL CHANGE, DIVERTING FLOW THROUGH CULVERT.
5. CONSTRUCT REMAINDER OF INLET/OUTLET CHANNEL IMPROVEMENTS.



SPECIAL STILLING BASIN:

Description

This work consists of furnishing, placing, and removing special stilling basin(s) as directed. The special stilling basin shall be used to filter pumped water during construction of drilled piers, footing excavation, and/or culvert construction. The special stilling basin shall also be used for sediment storage at the outlet of temporary slope drain pipe(s).

Materials

Refer to Division 10

Item	Section
Filter Fabric for Drainage, Type 2	1056
Sediment Control Stone	1005

The filter fabric and sediment control stone shall be clean and shall not contain debris.

The special stilling basin shall be a water permeable fabric bag that traps sand, silt, and fines as sediment-laden water is pumped into it, or as runoff flows into it through the temporary slope drain pipe(s).

The special stilling basin shall be a bag constructed to a minimum size of 10* x 15* made from a nonwoven fabric. It shall have a sewn-in 8* (maximum) spout for receiving pump discharge. The bag seams shall be sewn with a double needle machine using a high strength thread. The seams shall have a minimum wide width strength as follows:

Test Method	Minimum Specifications
ASTM D-4884	60 lb/in

The fabric used to construct the bag shall be stabilized to provide resistance to ultra-violet degradation and meet the following specifications for flow rates, strength, and permeability:

Property	Test Method	Minimum Specifications
Weight	ASTM D-3776	8.0 oz/yd
Grab tensile	ASTM D-4632	200.0 lb
Puncture	ASTM D-4833	130.0 lb
Flow rate	ASTM D-4491	80.0 gal/min/sf
Permittivity	ASTM D-4491	1.2 1/sec
UV Resistance	ASTM D-4355	70.0%

Construction Methods

The Contractor shall install the special stilling basin(s), filter fabric, and stone in accordance with Standard Drawing No. 1630.06 and at locations on the plans and as directed.

The special stilling basin(s) shall be constructed such that it is portable and can be used adjacent to each drilled pier, footing, and/or culvert. Temporary slope drain pipe(s) shall be attached to the special stilling basin(s) so that the runoff in the slope drain pipe(s) flows directly into the special stilling basin(s). The special stilling basin(s) shall be placed so the incoming water flows into and through the bag without causing erosion. The neck or spout of the bag shall be tied off tightly to stop the water from flowing out of the bag without going through the walls. If applicable, the neck or spout of the silt bag shall be cut to allow for a slope drain pipe to be inserted into the special stilling basin, and tied off tightly to stop the water from flowing out of the bag.

The special stilling basin(s) shall be replaced and disposed of when it is * full of sediment or when it is impractical for the bag to filter the sediment out at a reasonable flow rate. Prior approval from the Engineer shall be received before removal and replacement.

The Contractor shall be responsible for providing a sufficient quantity of bags to contain silt from pumped effluent during construction of drilled piers, footing excavation, and/or culvert construction. A sufficient quantity of special stilling basins shall be provided to contain sediment from temporary slope drain runoff.

The quantity of sediment control stone, filter fabric for drainage, and special stilling basin(s) as measured above will be paid for at contract price for "Lump Sum for Erosion Control". Such price and payment will be full compensation for all work covered by this provision, including but not limted to, furnishing all materials, placing and maintaining the special stilling basin(s), and removal and disposal of silt accumulations and bag.

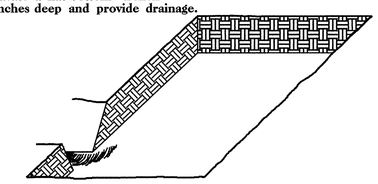
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.14.R.71	RF-1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	

PLANTING DETAILS

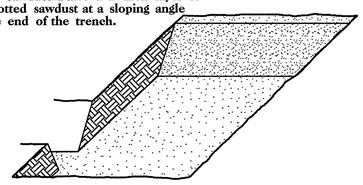
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

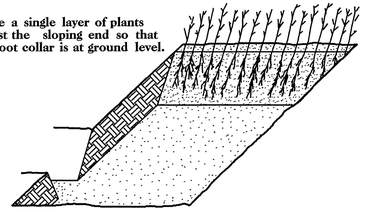
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



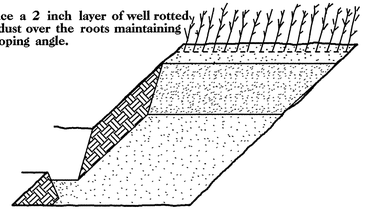
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

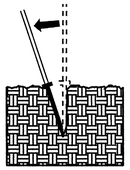


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

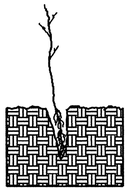


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

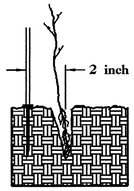
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



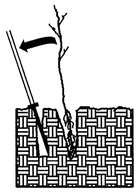
1. Insert planting bar as shown and pull handle toward planter.



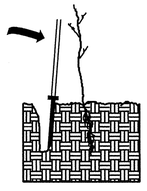
2. Remove planting bar and place seedling at correct depth.



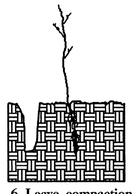
3. Insert planting bar 2 inches toward planter from seedling.



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



5. Push handle forward firming soil at top.



6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

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

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

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

REFORESTATION

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

REFORESTATION

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

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

REFORESTATION DETAIL SHEET

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

09/08/99

TIP PROJECT: 17BP.14.R.71

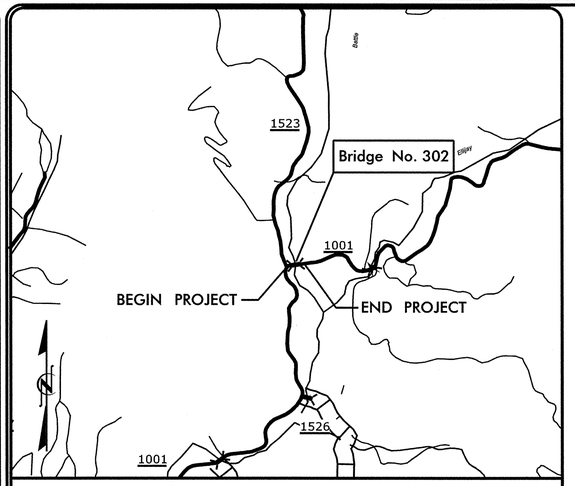
T.I.P. NO.	SHEET NO.
17BP.14.R.71	UBO-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES BY OTHERS PLANS
MACON COUNTY

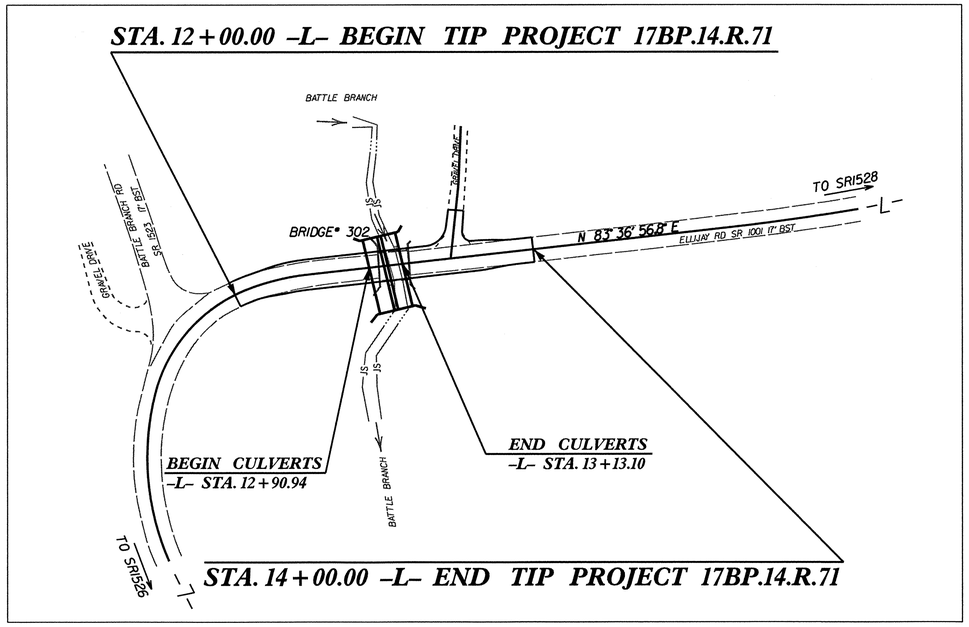
LOCATION: BRIDGE 302 OVER BATTLE BRANCH ON SR 1001 (ELLIJAY RD.)

TYPE OF WORK: ELECTRIC TELEPHONE



VICINITY MAP

NAD 83/
NSRS 2007



GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UBO-1	TITLE SHEET
UBO-1A	UTILITIES PLAN SHEETS SYMBOLS
UBO-2	UTILITY BY OTHERS PLAN SHEETS

UTILITY OWNERS ON PROJECT

(1) DUKE ENERGY
(2) FRONTIER COMMUNICATIONS

PREPARED IN THE OFFICE OF:
DIVISION OF HIGHWAYS
UTILITIES UNIT
UTILITIES ENGINEERING
1591 MAIL SERVICES CENTER
RALEIGH NC 27699-1591
PHONE (919) 707-6690
FAX (919) 250-4151

Roger Worthington, P.E. UTILITIES SECTION ENGINEER
P.E. UTILITIES SQUAD LEADER PROJECT ENGINEER
UTILITIES PROJECT DESIGNER

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PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.71	UBO-1A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

- Water Line (Sized as Shown)
- 11¼ Degree Bend
- 22½ Degree Bend
- 45 Degree Bend
- 90 Degree Bend
- Plug
- Tee
- Cross
- Reducer
- Gate Valve — GV
- Butterfly Valve — BV
- Tapping Valve — TGV
- Line Stop — LS
- Line Stop with Bypass — LS/BP
- Blow Off — BO
- Fire Hydrant — PFH
- Relocate Fire Hydrant — RFH
- Remove Fire Hydrant — REM FH
- Water Meter — PWM
- Relocate Water Meter — RWM
- Remove Water Meter — REM WM
- Water Pump Station — PS(W)
- RPZ Backflow Preventer — PBPZ
- DCV Backflow Preventer — PBFP
- Relocate RPZ Backflow Preventer — RBPZ
- Relocate DCV Backflow Preventer — RBFP

PROPOSED SEWER SYMBOLS

- Gravity Sewer Line (Sized as Shown)
- Force Main Sewer Line (Sized as Shown)
- Manhole (Sized per Note)
- Sewer Pump Station — PS(SS)

PROPOSED MISCELLANOUS UTILITIES SYMBOLS

- Power Pole
- Telephone Pole
- Joint Use Pole
- Telephone Pedestal — TEL PED
- Utility Line by Others (Type as Shown)
- Trenchless Installation
- Encasement by Open Cut
- Encasement
- Thrust Block
- Air Release Valve — AR
- Utility Vault — UV
- Concrete Pier — CP
- Steel Pier — SP
- Plan Note — NOTE
- Pay Item Note — PAY ITEM

EXISTING UTILITIES SYMBOLS

- Power Pole
- Telephone Pole
- Joint Use Pole
- Utility Pole
- Utility Pole with Base
- H-Frame Pole
- Power Transmission Line Tower
- Water Manhole
- Power Manhole
- Telephone Manhole
- Sanitary Sewer Manhole
- Hand Hole for Cable
- Power Transformer
- Telephone Pedestal
- CATV Pedestal
- Gas Valve
- Gas Meter
- Located Miscellaneous Utility Object
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.
- *Underground Power Line
- *Underground Telephone Cable
- *Underground Telephone Conduit
- *Underground Fiber Optics Telephone Cable
- *Underground TV Cable
- *Underground Fiber Optics TV Cable
- *Underground Gas Pipeline
- Aboveground Gas Pipeline — A/G Gas
- *Underground Water Line
- Aboveground Water Line — A/G Water
- *Underground Gravity Sanitary Sewer Line
- Aboveground Gravity Sanitary Sewer Line — A/G Sanitary Sewer
- *Underground SS Forced Main Line
- Underground Unknown Utility Line
- SUE Test Hole
- Water Meter
- Water Valve
- Fire Hydrant
- Sanitary Sewer Cleanout

*For Existing Utilities

- Utility Line Drawn from Record (Type as Shown)
- Designated Utility Line (Type as Shown)

REV: 2/1/2012

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PROJECT REFERENCE NO.	SHEET NO.
17BP.14.R.71	UBO-2

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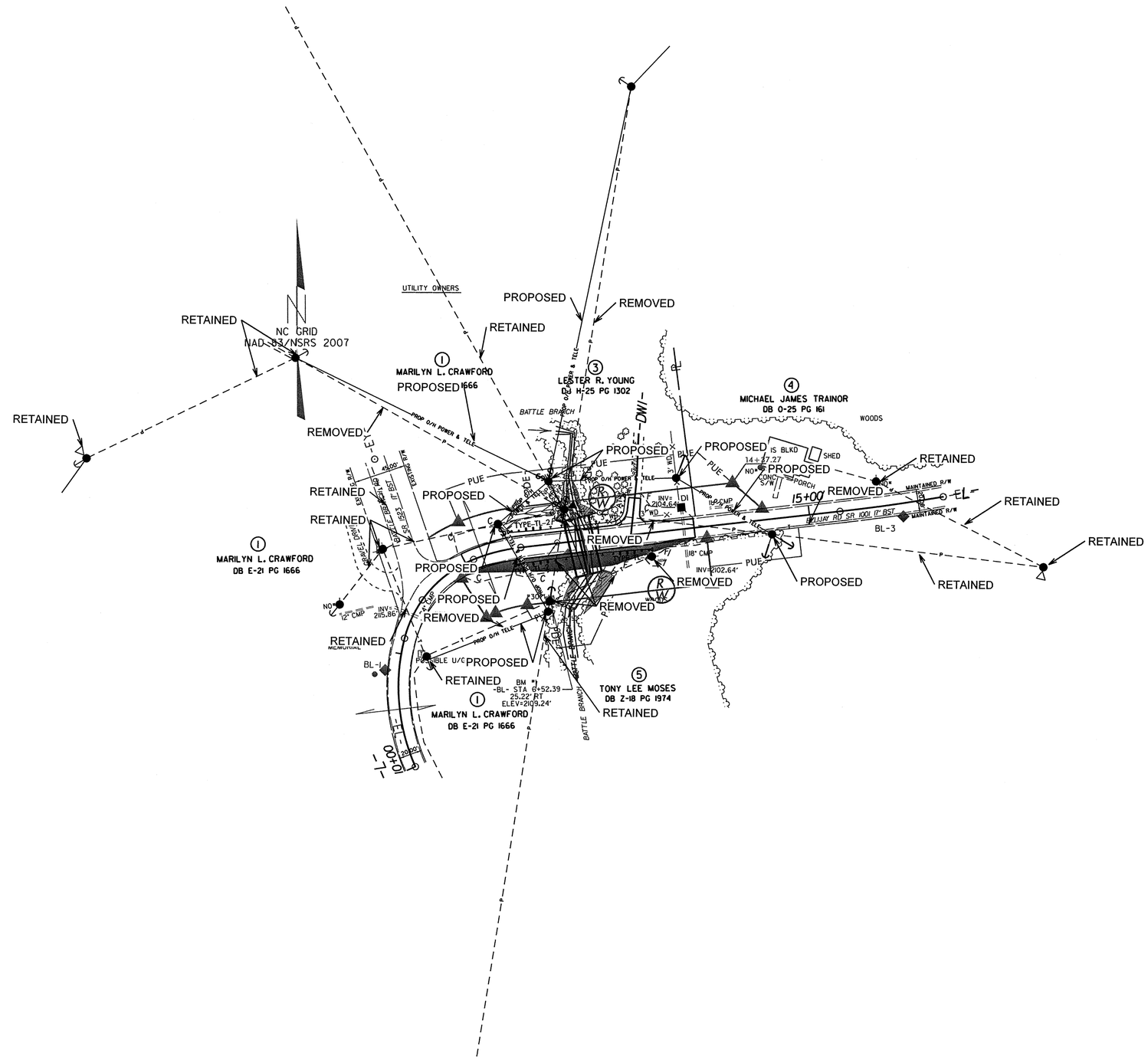
SCALE

UTILITIES BY OTHERS
BRIDGE: 302

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS



BL POINT	DESC.	NORTH	EAST	ELEVATION	EL STATION	OFFSET
1	BL-1	547311.7933	715481.0201	2118.94	10+84.69	12.17 LT
2	BL-2	547411.5594	715638.8599	2112.37	12+89.41	10.75 RT
3	BL-3	547444.2020	715927.9830	2110.22	15+79.99	11.39 RT

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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CROSS SECTION SUMMARY

PHASE I

LOCATION	UNCLASSIFIED EXCAVATION	EMBT+%
-L- 12+00 TO 12+50	0	15
-L- 12+50 TO 13+00	0	118
-L- 13+00 TO 13+50	0	129
-L- 13+50 TO 14+00	0	66

PHASE II

LOCATION	UNCLASSIFIED EXCAVATION	EMBT+%
-L- 12+00 TO 12+50	55	22
-L- 12+50 TO 13+00	32	92
-L- 13+00 TO 13+50	23	71
-L- 13+50 TO 14+00	23	2

Note: Embankment column does not include fill for undercut.

Approximate quantities only. Unclassified excavation, borrow excavation, shoulder borrow, 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".

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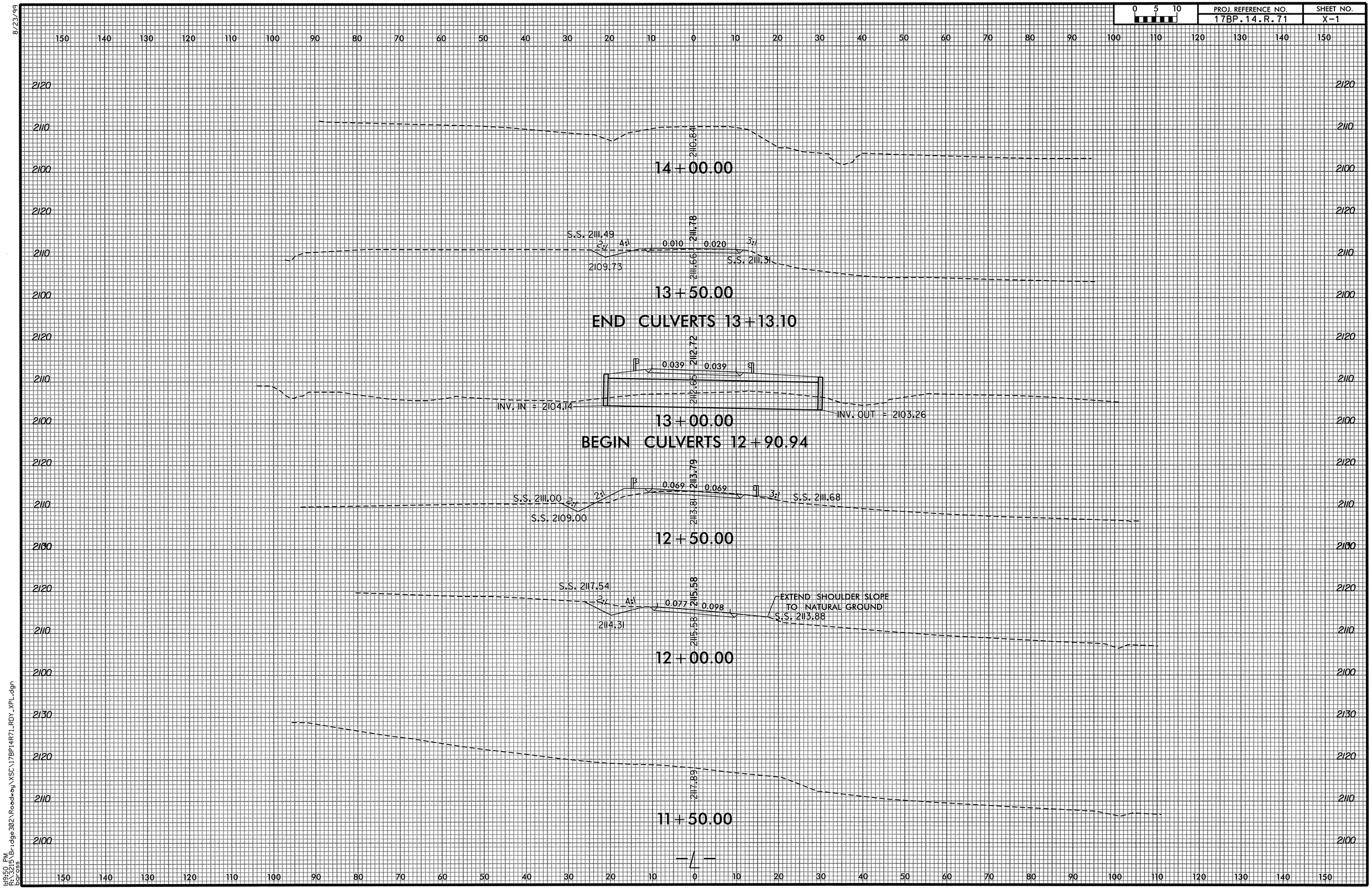
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	17BP.14.R.71	X-1



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